Clayton and Henry Counties

P.I. Numbers 0009156 and 0009157

The proposed project involves construction of a reversible, barrier-separated, managed lane system and Intelligent Transportation System infrastructure along I-75 in Henry and Clayton Counties. The project begins 2.1 miles south of SR 155 on I-75 south and ends 2.1 miles north of SR 138 (Stockbridge Highway) on I-75 south and 2.1 miles north of the I-75 interchange along I-675 in Clayton County, with a total length of 17.94 miles. The managed lanes begin approximately 600 feet south of the I-75 southbound on ramp from SR 138 (Stockbridge Hwy) and at SR 138 on I-675, and end at the I-75 bridge over SR 155, for a total length of 12.24 miles. From SR 155 to approximately 1 mile south of Mt. Carmel Road, the managed lane system would consist of one reversible lane transitioning to two reversible lanes. Additional proposed improvements include: the replacement of the existing Mt. Carmel Road bridge with a new bridge; a new managed lane only connection 2,000 feet south of Jonesboro Road; addition of a signal and turn lanes to the intersection of Mt. Carmel Road and Jonesboro Road; widening of the existing I-75 overpass bridge at Flippen Road; and the addition of new single span I-675 bridge over I-75 northbound, to connect the managed lanes to I-675.

DRAFT ENVIRONMENTAL ASSESSMENT

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
GEORGIA DEPARTMENT OF TRANSPORTATION

SUBMITTED PURSUANT TO 42 USC 4321 et seq.

Margaret Moore 3/8/2013
NEPA DATE

Glenn Bowman 3.8.13
Glenn Bowman, P.E. DATE
State Environmental Administrator

APPROVAL FOR ADVANCEMENT TO AVAILABILITY/PUBLIC HEARING PHASE

3/12/13
DATE

FOR: RODNEY N. BARRY, P.E.
DIVISION ADMINISTRATOR
FEDERAL HIGHWAY ADMINISTRATION

****

NEPA DATE

Glenn Bowman, P.E. DATE
State Environmental Administrator

APPROVAL OF ENVIRONMENTAL ASSESSMENT

DATE

FOR: RODNEY N. BARRY, P.E.
DIVISION ADMINISTRATOR
FEDERAL HIGHWAY ADMINISTRATION

ENVIRONMENTAL COMMITMENTS TABLE

PI#s: 0009156, 0009157| Counties: Clayton, Henry | Date Updated: 10/23/12| Stage: (DEA) | Date on Plans Reviewed by OES: August 2012

Review

☐ These commitments are feasible.
(must be checked at all stages)
Project Manager (PM) _____
PM Signature/Date _____

☐ Plans incorporate the commitments.
(must be checked to certify for letting)
Engineer of Record (EOR) _____
EOR Signature/Date _____

Air/Noise _____ *Arch* _____
Eco _____ *Hist* _____
NEPA _____

A. Resources to be Delineated on the Plans and/or Listed in the Environmental Resource Impact Table (ERIT)

Resource Name		*Additional Information*	*Name and Date of Report or Transmittal*	*Correctly Shown?*	
				Plan Sheet	*ERIT*
A-1	Historic Horseshoe Farm	No Adverse Effect; Refer to Plan Note C-1	Assessment of Effects - August 2011	Yes	N/A
A-2	Rowan House	Outside of Area of Potential Effects	Historic Resources Survey Report Addendum February 2012	Yes	N/A
A-3	Brennan Farm	Outside of Area of Potential Effects	Historic Resources Survey Report Addendum February 2012	Yes	N/A
A-4	Intermittent Stream (IS) 1a	0.00 acre of impact; Refer to Plan Note C-1	Ecology Addendum – October 2012	Yes	N/A
A-5	IS 1a buffer	“	“	Yes	N/A
A-6	Perennial Stream 1b	“	“	Yes	N/A
A-7	PS 1b buffer	“	“	Yes	N/A
A-8	Intermittent Stream 1c	“	“	Yes	N/A
A-9	IS 1c buffer	“	“	Yes	N/A
A-10	Intermittent Stream 1d	“	“	Yes	N/A
A-11	IS 1d buffer	“	“	Yes	N/A
A-12	Perennial Stream 1e	“	“	Yes	N/A
A-13	PS 1e buffer	“	“	Yes	N/A
A-14	Intermittent Stream 1f	“	“	Yes	N/A
A-15	IS 1f buffer	“	“	Yes	N/A
A-16	Intermittent Stream 1g	“	“	Yes	N/A
A-17	IS 1g buffer	“	“	Yes	N/A
A-18	NBSW 1h	“	“	Yes	N/A
A-19	Detention Basin 1i	“	“	Yes	N/A
A-20	1i buffer	“	“	Yes	N/A
A-21	Perennial Stream 1	25 linear feet (0.009 ac) permanent impact; 0.0 temporary impact; Refer to Plan Note C-1, Permit D-2, and Mitigation D-3	“	Yes	N/A
A-22	PS 1 buffer	Anticipated Buffer Impacts Exempted; Refer to Plan Note C-1	“	Yes	N/A
A-23	Perennial Stream 2	50 linear feet (0.017 ac) permanent impact; 0.0 temporary impact; Refer to Plan Note C-1, Permit D-2, and Mitigation D-3	“	Yes	N/A
A-24	PS 2 buffer	Anticipated Buffer Impacts Exempted; Refer to Plan	“	Yes	N/A

Resource Name		*Additional Information*	*Name and Date of Report or Transmittal*	*Correctly Shown?*	
				Plan Sheet	*ERIT*
		Note C-1			
A-25	Perennial Stream 3	50 linear feet (0.020 ac) permanent impact; 0.0 temporary impact; Refer to Plan Note C-1, Permit D-2, and Mitigation D-3	"	Yes	N/A
A-26	PS 3 buffer	Anticipated Buffer Impacts Exempted; Refer to Plan Note C-1	"	Yes	N/A
A-27	WL 4	0.00 acre of impact; Refer to Plan Note C-1	"	Yes	N/A
A-28	Intermittent Stream 5	"	"	Yes	N/A
A-29	IS 5 buffer	"	"	Yes	N/A
A-30	Intermittent Stream 6	"	"	Yes	N/A
A-31	IS 6 buffer	"	"	Yes	N/A
A-32	NBSW 7	"	"	Yes	N/A
A-33	Detention Basin 7a	"	"	Yes	N/A
A-34	Intermittent Stream 8	25 linear feet (0.002 ac.) permanent impacts; 0.0 temporary impacts; Refer to Plan Note C-1, Permit D-2, and Mitigation D-3	"	Yes	N/A
A-35	IS 8 buffer	Anticipated Buffer Impacts Exempted; Refer to Plan Note C-1	"	Yes	N/A
A-36	WL 9	0.115 ac. permanent impact; 0.0 temporary impacts; Refer to Plan Note C-1, Permit D-2, and Mitigation D-3	"	Yes	N/A
A-37	WL 10	0.00 acre of impact; Refer to Plan Note C-1	"	Yes	N/A
A-38	NBSW 11	"	"	Yes	N/A
A-39	NBSW 11a	"	"	Yes	N/A
A-40	Perennial Stream 12	50 linear feet (0.020 ac) permanent impact; 0.0 temporary impact; Refer to Plan Note C-1, Permit D-2, and Mitigation D-3	"	Yes	N/A
A-41	PS 12 buffer	Anticipated Buffer Impacts Exempted; Refer to Plan Note C-1	"	Yes	N/A
A-42	WL 12a	0.256 ac of permanent impact; 0.0 temporary impact; Refer to Plan Note C-1, Permit D-2, and Mitigation D-3	"	Yes	N/A
A-43	Intermittent Stream 12b	0.00 acre of impact; Refer to Plan Note C-1	"	Yes	N/A
A-44	IS 12b buffer	"	"	Yes	N/A
A-45	Perennial Stream 12c	"	"	Yes	N/A
A-46	PS 12c buffer	Anticipated Buffer Impacts Exempted; Refer to Plan Note C-1	"	Yes	N/A
A-47	Intermittent Stream 12d	0.00 acre of impact; Refer to Plan Note C-1	"	Yes	N/A
A-48	IS 12d buffer	"	"	Yes	N/A
A-49	Intermittent Stream 12e	"	"	Yes	N/A
A-50	IS 12e buffer	Anticipated Buffer Impacts Exempted; Refer to Plan	"	Yes	N/A

Resource Name		*Additional Information*	*Name and Date of Report or Transmittal*	*Correctly Shown?*	
				Plan Sheet	*ERIT*
		Note C-1			
A-51	WL 12f	0.315 ac. of permanent impact; 0.0 temporary impact; Refer to Plan Note C-1, Permit D-2, and Mitigation D-3	“	Yes	N/A
A-52	Perennial Stream 12g	130 linear feet (0.036 ac) of permanent impacts; Refer to Plan Note C-1	“	Yes	N/A
A-53	PS 12g buffer	Anticipated Buffer Impacts Exempted; Refer to Plan Note C-1	“	Yes	N/A
A-54	WL 12h	0.00 acre of impact; Refer to Plan Note C-1	“	Yes	N/A
A-55	Perennial Stream 13	30 linear feet (0.006 ac) permanent impact; 0.0 temporary impact; Refer to Plan Note C-1, Permit D-2, and Mitigation D-3	“	Yes	N/A
A-56	PS 13 buffer	Anticipated Buffer Impacts Exempted; Refer to Plan Note C-1	“	Yes	N/A
A-57	Intermittent Stream 14	0.00 acre of impact; Refer to Plan Note C-1	“	Yes	N/A
A-58	IS 14 buffer	“	“	Yes	N/A
A-59	Perennial Stream 15	20 linear feet (0.006 ac) permanent impact; 0.0 temporary impact; Refer to Plan Note C-1, Permit D-2, and Mitigation D-3	“	Yes	N/A
A-60	PS 15 buffer	Anticipated Buffer Impacts Exempted; Refer to Plan Note C-1	“	Yes	N/A
A-61	Perennial Stream 16	20 linear feet (0.02 ac) permanent impact; 0.0 temporary impact; Refer to Plan Note C-1, Permit D-2, and Mitigation D-3	“	Yes	N/A
A-62	PS 16 buffer	Anticipated Buffer Impacts Exempted; Refer to Plan Note C-1	“	Yes	N/A
A-63	WL 17	0.023 ac. permanent impact; 0.0 temporary impact; Refer to Plan Note C-1, Permit D-2, and Mitigation D-3	“	Yes	N/A
A-64	WL 18	0.168 ac. permanent impact; 0.0 temporary impact; Refer to Plan Note C-1, Permit D-2, and Mitigation D-3	“	Yes	N/A
A-65	Intermittent Stream 19	0.00 acre of impact; Refer to Plan Note C-1	“	Yes	N/A
A-66	IS 19 buffer	“	“	Yes	N/A
A-67	Intermittent Stream 20	“	“	Yes	N/A
A-68	IS 20 buffer	“	“	Yes	N/A
A-69	Perennial Stream 21	“	“	Yes	N/A
A-70	PS 21 buffer	“	“	Yes	N/A
A-71	Intermittent Stream 22	“	“	Yes	N/A
A-72	IS 22 buffer	“	“	Yes	N/A
A-73	Perennial Stream 23	75 linear feet (0.030 ac.) permanent impact; 0.0 temporary impact; Refer to Plan Note C-1, Permit D-2, and Mitigation D-3	“	Yes	N/A

Resource Name		*Additional Information*	*Name and Date of Report or Transmittal*	*Correctly Shown?*	
				Plan Sheet	*ERIT*
A-74	PS 23 buffer	Anticipated Buffer Impacts Exempted; Refer to Plan Note C-1,	"	Yes	N/A
A-75	Intermittent Stream 24	50 linear feet (0.005 ac.) permanent impact; 0.0 temporary impact; Refer to Plan Note C-1, Permit D-2, and Mitigation D-3	"	Yes	N/A
A-76	IS 24 buffer	550 linear feet (0.631 ac.) of temporary impact; Refer to Plan Note C-1 and Permit D-3	"	Yes	N/A
A-77	NBSW 25	20 linear feet (0.001 ac.) permanent impact; 0.0 temporary impact; Refer to Plan Note C-1	"	Yes	N/A
A-78	NBSW 26	70 linear feet (0.010 ac.) permanent impact; 0.0 temporary impact; Refer to Plan Note C-1	"	Yes	N/A
A-79	NBSW 27	20 linear feet (0.002 ac.) permanent impact; 0.0 temporary impact; Refer to Plan Note C-1	"	Yes	N/A
A-80	NBSW 27a	0.00 acre of impact; Refer to Plan Note C-1	"	Yes	N/A
A-81	NBSW 27a-1	"	"	Yes	N/A
A-82	Ephemeral Channel 27b	"	"	Yes	N/A
A-83	Detention Basin 27b-1	"	"	Yes	N/A
A-84	Detention Basin 27b-1 buffer	"	"	Yes	N/A
A-85	NBSW 27c	"	"	Yes	N/A
A-86	NBSW 27d	"	"	Yes	N/A
A-87	Intermittent Stream 27e	"	"	Yes	N/A
A-88	IS 27e buffer	"	"	Yes	N/A
A-89	WL 27f	"	"	Yes	N/A
A-90	NBSW 27g	"	"	Yes	N/A
A-91	Intermittent Stream 27h	"	"	Yes	N/A
A-92	IS 27h buffer	"	"	Yes	N/A
A-93	Intermittent Stream 27i	"	"	Yes	N/A
A-94	IS 27i buffer	"	"	Yes	N/A
A-95	NBSW 27j	"	"	Yes	N/A
A-96	Intermittent Stream 27k	"	"	Yes	N/A
A-97	IS 27k buffer	"	"	Yes	N/A
A-98	Perennial Stream 27l	"	"	Yes	N/A
A-99	PS buffer 27l	"	"	Yes	N/A
A-100	WL 27m	"	"	Yes	N/A
A-101	Intermittent Stream 27n	"	"	Yes	N/A
A-102	IS 27n buffer	"	"	Yes	N/A
A-103	Intermittent Stream 27n-1	"	"	Yes	N/A
A-104	IS 27n-1 buffer	"	"	Yes	N/A

Resource Name		*Additional Information*	*Name and Date of Report or Transmittal*	*Correctly Shown?*	
				Plan Sheet	*ERIT*
A-105	NBSW 27o	"	"	Yes	N/A
A-106	NBSW 27p	"	"	Yes	N/A
A-107	NBSW 27q	"	"	Yes	N/A
A-108	NBSW 27r	0.00 acre of impact; Refer to Plan Note C-1	"	Yes	N/A
A-109	Intermittent Stream 27s	"	"	Yes	N/A
A-110	IS 27s buffer	"	"	Yes	N/A
A-111	NBSW 27t	"	"	Yes	N/A
A-112	Intermittent Stream 27u	"	"	Yes	N/A
A-113	IS 27u buffer	"	"	Yes	N/A

B. Special Provisions (Attach all special provisions to the commitments table, if available)

Special Provision		*Purpose*	*Est. Cost*	*SP's Latest Date*
B-1	SP 107.23G – Protection of Federally Protected Species	Protection of migratory birds	Negligible	8/01/2012

C. Plan Notes and Design Features (Description: For plan notes, provide exact wording in "quotes" and approximate location)

Purpose		*Description*	*Est. Cost*	*Correctly Shown?*
C-1	Protect Environmental Resources	Include the following note on all plan sheets with resources delineated as ESAs: "See Environmental Resources Impact Table in the General Notes for Construction Restrictions." Delineate ESAs with orange barrier fencing.	Negligible	Yes
C-2	Noise Barriers	Include Noise Barriers 1, 2, 5, 6, 7, 8, 9, 10, and 11 on plans. *See Commitment E-3 for required noise barrier public outreach.	Negligible	Yes

D. Permits, Buffer Variances and Mitigation Credits

Permit, Variance, etc		*Additional Information (permit details, number of credits needed, etc.)*	*Est. Cost*	*Acquired?*
D-1	Notice of Intent (NOI) for NPDES	The Office of Bidding Administration and Construction Contractor will submit a NOI to the NPDES General Permit following award of the contract but prior to construction.	Negligible	Will be acquired following letting
D-2	Section 404 Nationwide Permit	Obtain Section 404 Nationwide Permit for approximately 525 linear feet (0.171 acre) of permanent impacts to jurisdictional streams and approximately 0.877 acre of permanent impacts jurisdictional wetlands.	N/A	Will be acquired by Design Build Team
D-3	Mitigation Credits	Obtain 1,972 stream mitigation credits and 6.3 wetland mitigation credits from a USACE approved commercial mitigation bank servicing HUC 03070103	$216,790	Will be acquired by Design Build Team

D-4	Stream Buffer Variance	Obtain Stream Buffer Variance for encroachment of Stream 24 buffer.	N/A	Will be acquired by Design Build Team

E. Other Commitments or Requirements (Status: Pre- and Post – Complete or Incomplete; During – Signature Req'd)

Pre-, Post-, or During, Construction		*Commitment*	*Responsible party*	*Est. Cost*	*Status*
E-1	Pre-construction	Cash-based and cash-preferred customer solutions would be implemented to facilitate toll lane access to those who may need or prefer to purchase Peach Pass accounts with cash and in person rather than online and with a credit card. These cash-based and cash-preferred customer solutions would also entail providing additional locations for Peach Pass Purchase, including retail outlets. In addition, minimum required initial values and re-load amounts for the Peach pass will occur. Finally, the transaction cost associated with reloading the card would be set to minimize the financial impact to cash-based and cash-preferred customers.	GDOT	Part of Public Outreach and Toll Operations	Incomplete
E-2	Post-construction	Annual surveys of users over a three-year period to be conducted; dissemination of monitoring information on SRTA and GDOT web sites. While the data gathered from these surveys may not enable near-term mitigation with this particular toll project, it will be available to assist in making decisions about any future toll-related projects that may be studied in the future.	GDOT	Part of Public Outreach and Toll Operations	Incomplete
E-3	Pre-construction	Public outreach with property owners and tenants of benefited receptors regarding proposed noise abatement, per GDOT's July 2011 Policy will be conducted.	Design Build Team/ GDOT	N/A	Incomplete
E-4	Pre-construction	Construct Noise Walls if approved by property owners.	Design Build Team/ GDOT	$10,724,327	Incomplete

Total Estimated Cost	$10,941,117

If Project is Complete or Under Construction, Area or Construction Engineer affirms that all Special Provisions, Plan Notes and During Construction Commitments were or are being adhered to during the project's construction. *PI#(s):* _____.

Please Print Name and Title: _____ *Signature*: _____ Date: _____ *Please provide an explanation if unable to sign.*

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

SPECIAL PROVISION

PROJECT: CSNHS-0009-00(156)(157) HENRY & CLAYTON COUNTIES
P.I.# 0009156 & 0009157

Section 107 – Legal Regulations and Responsibility to the Public

-

Add the following to Subsection 107.23:

G. Protection of Federally Protected Species

The following conditions are intended as a minimum to protect these species and its habitat during any activities that are in close proximity to the known location(s) of these species. When there is a conflict between the General Provisions and the Special Provisions, these Special Provisions will govern the work.

1. The Contractor shall advise all project personnel employed on this project about the potential presence and appearance of the federally protected barn swallow (*Hirundo rustica*), cliff swallow (*Petrochelidon pyrrhonota*), and eastern phoebe (*Sayornis phoebe*). Migratory bird nests were observed within the box culverts where Camp Creek (Stream 1), Birch Creek (Stream 2), Crittle Creek (Stream 4 and Stream 12g), Walnut Creek (Stream 13), Pates Creek (Stream 16), Rum Creek (Stream 21), Reeves Creek (Stream 23), and Panther Creek (Stream 27l) cross the project corridor. All personnel shall be advised that there are civil and criminal penalties for harassing, harming, pursuing, hunting, shooting, wounding, killing, capturing, or collecting these species in knowing violation of the Migratory Bird Treaty Act of 1918. Pictures and habitat information will be provided to the Contractor at the preconstruction conference and shall be posted in a conspicuous location in the project field office until such time that Final Acceptance of the project is made.

2. Work on bridges and culverts shall take place outside of the breeding and nesting season of phoebes and swallows, which begins April 1 and extends through August 31, unless exclusionary barriers are put in place to prevent birds from nesting beneath the existing bridge. Exclusionary devices in the form of netting made of plastic, canvas or other materials that are proposed by the contractor may be installed on the bridge(s) prior to March 1 or after August 31, but in no time in between this period. If exclusionary barriers are to be used, these steps shall be followed:

a. Notify the project ecologist by phone (404) 631-1100 of the decision to install exclusionary devices under the existing bridge and the date of installation, prior to the installation of any exclusionary devices.

b. Check the underside of the bridge for nests prior to the placement of exclusionary netting. If nests are present, check to ensure that eggs or birds are not present in the nests. If the nests are found to be occupied, postpone construction activities associated with the bridge until after August 31 when the breeding season is complete.

c. Place exclusionary netting along the full length of the bridge to prevent the birds from accessing any existing nesting habitat. Installed netting prior to March 1 and leave in place until August 31 or until the bridgework is complete, whichever occurs first. If the exclusionary netting fails to prevent nesting (i.e., birds are able to bypass barriers and build nests), postpone construction activities associated with the bridge until after August 31.

d. During construction activities, inspect exclusionary netting for holes or other defects that impair the netting's ability to exclude phoebes or swallows from inhabiting the bridge. Any holes or defects shall be repaired immediately.

3. In the event any incident occurs that causes harm to the barn swallow, cliff swallow, and eastern phoebe along the project corridor, the Contractor shall report the incident immediately to the Project Engineer who in turn will notify Glenn Bowman, State Environmental Administrator, Georgia Department of Transportation, Office of Environmental Services at (404) 631-1101. All activity shall cease pending consultation by the Department with the U. S. Fish and Wildlife Service and the lead Federal Agency.

4. The Contractor shall keep a log detailing any sightings or injury to barn swallows, cliff swallows, and eastern phoebes in or adjacent to the project until such time that Final Acceptance of the project is made. Following project completion, the log and a report summarizing any incidents and/or sightings with these species shall be submitted by the Contractor to the:

   a. Project Engineer;

   b. U.S. Fish and Wildlife Service, Athens Field Office, 105 West Park Drive, Suite D, Athens, Georgia 30606;

   c. Glenn Bowman, P.E., State Environmental Administrator, Georgia Department of Transportation, Office of Environmental Services, 600 West Peachtree Street NW, Atlanta, Georgia 30308;

   d. Georgia Department of Natural Resources, Wildlife Resources Division, Nongame Wildlife Regional Office, 116 Rum Creek Drive, Forsyth, GA 31029; and

   e. Federal Highway Administration, Georgia Division, 61 Forsyth Street, S.W., Suite 17T100, Atlanta, Georgia 30303-3104.

5. All costs pertaining to any requirement contained herein shall be included in the overall bid submitted unless such requirement is designated as a separate Pay Item in the Proposal.

EXECUTIVE SUMMARY

The Georgia Department of Transportation (GDOT), in cooperation with the Federal Highway Administration (FHWA), proposes to construct managed lanes in Henry and Clayton Counties on Interstate 75 (I-75) south of Atlanta. Henry and Clayton Counties are located on the southern side of the greater Atlanta metropolitan area and contain a mixture of urban and suburban development. Managed lanes are highway facilities or a set of lanes where operational strategies are proactively implemented and managed in response to changing conditions. Managed lanes seek to optimize efficiency and performance by offering travel time savings and reliability through the limiting of access to the lanes using either tolls or vehicle occupancy requirements. The project, including intelligent transportation systems (ITS) infrastructure, begins approximately two miles north of the I-75 southbound off ramp to SR 138 (Stockbridge Highway) and approximately two miles north of SR 138 (Stockbridge Highway) on I-675 in Clayton County and ends approximately two miles south of the I-75 bridge over SR 155 for a total length of approximately 18 miles.

S.1 NEED AND PURPOSE

The project is needed to conform with local and regional planning, reduce travel time and increase mobility, expand travel choices, include congestion pricing to expedite project delivery, relieve congestion, and accommodate regional growth and accessibility.

The proposed project is consistent with both regional and local planning efforts. Data on travel time and level of service indicate that travel times have become unpredictable and congestion occurs now and would worsen in the future. The general purpose lanes are currently the only travel choice for users of I-75, including express buses and vanpools/carpools. Higher reliability of travel times could provide inducements to greater usage of these alternative modes of travel. The implementation of a tolled project would ensure free flow of travel on the managed lanes as well as expedite its construction based on the limited transportation funding available in the foreseeable future. Henry and Clayton Counties have experienced considerable population and employment growth, both of which generate pressure on the transportation network. The proposed project would address these needs.

S.2 ALTERNATIVES

S.2.1 Alternative 1

Alternative 1 includes the construction of reversible, barrier-separated, express toll lanes (ETL) and ITS infrastructure along I-75 in Henry County and Clayton Counties. The ITS component of the project begins and ends approximately two miles on either side of the proposed express toll lanes. In Henry County, the ITS improvements begin 2.1 miles south of the I-75 bridge over SR 155 and continue north along both I-75 and I-675 into Clayton County. Along I-75, the ITS component of the project ends 2.1 miles north of the I-75 southbound off-ramp to SR 138 (Stockbridge Highway) and along I-675, it ends 2.1 miles north of SR 138. The total project length including the ITS component is 17.94 miles.

The express toll lanes begin in Henry County at the I-75 bridge over SR 155 and end in Clayton County approximately 600 feet south of the I-75 southbound on-ramp from SR 138 and at SR 138 on I-675, for a total length of 12.24 miles. From SR 155 to approximately one mile south of Mt. Carmel Road, a single express toll lane would be constructed. The single lane would then transition to two reversible lanes, which would continue to the northern terminus of the facility,

where they would diverge, providing access to the I-75 general purpose lanes and a direct single-lane connection to the median of I-675, where the lane would then connect to the I-675 general purpose lanes.

The following additional improvements are also proposed as part of the project:

- Replacement of existing Mt. Carmel Road bridge with a new two-lane, two-span bridge to accommodate the reversible-lanes typical section and the widening of the general-purpose lanes along I-75;
- A dedicated access ramp that would allow connection to the express toll lanes from Jonesboro Road at Foster Drive, just east of the Jonesboro interchange with I-75. The ramp would require partial acquisition of three parcels for right-of-way;
- Installation of a traffic signal and a left-turn turn lane along the northbound leg of the intersection of Mt. Carmel Road and Jonesboro Road to meet future demand;
- Widening of the existing I-75 overpass bridge at Flippen Road to accommodate the reversible-lanes typical section;
- Addition of a new single span I-675 bridge over the I-75 northbound lanes to provide a dedicated connection to I-675;
- A dedicated 150-foot right-turn lane along the southbound leg of Industrial Boulevard at SR 20 to reduce the overall delay at the intersection;
- Modification of the southbound right turn movement at the intersection of SR 20 and I-75 southbound ramp to a free flow movement in order to reduce delay at the intersection and improve the overall LOS of the intersection. The existing right-turn lane along westbound SR 20 would be restriped and used as the third receiving lane. This third lane would then become exclusive right-turn lane at the intersection of SR 20 and NEC Drive;
- Addition of a 150-foot right-turn lane along the southbound approach of Industrial Boulevard at its intersection with SR 155. This would reduce the overall delay at the intersection.

S.2.2 Alternative 2

Alternative 2, High Occupancy Toll-3+ (HOT-3+) lanes, includes the same lane configuration and physical footprint as the express toll lanes in Alternative 1. The key difference between HOT-3+ lanes (Alternative 2) and ETL (Alternative 1) is the toll policy and physical operations of the toll collection due to the occupancy requirements of HOT lanes. Those vehicles that contain three or more passengers are designated as a high occupancy vehicle (HOV-3+) and are exempt from paying the toll. Single occupant vehicles and HOV-2 vehicles would be required to pay a toll. Therefore, Alternative 2 is defined as HOT-3+. The typical sections are the same for HOT-3+ as for ETL. Both the ITS components and the actual lanes begin and end in the same locations as Alternative 1. Because the lane configuration is the same under Alternatives 1 and 2, the additional improvements proposed for Alternative 1 are also proposed for Alternative 2.

S.2.3 Alternative 3

The no action or No-Build Alternative provides a baseline of conditions against which to compare the Build Alternatives. Under the No-Build Alternative, the proposed managed lanes are not constructed and I-75 remains in its present configuration with three basic through lanes in

each direction from SR 155 in Henry County to SR 138 in Clayton County plus auxiliary lanes between the I-675 interchange and Eagles Landing Parkway/Hudson Bridge Road.

S.2.4 Alternatives No Longer Under Consideration

Five other alternatives were evaluated during the concept development phase, but were dropped from further consideration. These alternatives, which are discussed in Chapter 2 were:

Alternative 4 – General Purpose Lanes.

Alternative 5 – High-Occupancy Vehicle Reversible Lanes

Alternative 6 – Concurrent Managed Lanes

Alternative 7 – Shift northbound I-75 (instead of southbound I-75, as currently proposed in the Preferred Alternative) to make adequate space for the managed lanes facility.

Alternative 8 – Alternative 1 or 2 with dedicated access to the managed lanes via Mt. Carmel Road.

S.3 ABILITY TO MEET NEEDS

All of the developed alternatives went through a screening process to determine their individual ability to meet the need and purpose of the project. A summary of the ability of each alternative to meet the need and purpose is provided here. A detailed examination of the alternatives appears in Chapter 2.

S.3.1 Consistency with Regional Transportation Planning Initiatives

Alternatives 1, 2, 7, and 8 are consistent with regional planning. Alternatives 3, 4, and 5 are not. Alternative 6 is consistent but was recommended for further study at a more preliminary stage.

S.3.2 Unreliable Travel Times and Impaired Mobility

Alternatives 1 and 2 maximize travel time savings and mobility. Alternatives 3 and 4 do not address either need. Alternative 5 addresses this need for transit. Alternative 6 does not address peak direction congestion as well as Alternatives 1 or 2. Alternative 7 does meet this need but causes safety issues on other areas of the roadway network. Alternative 8 meets this need but has potential community impacts.

S.3.3 Lack of Travel Choices

Alternatives 1, 2, 5, 6, 7, and 8 expand travel choices. Alternatives 3 and 4 do not expand travel choices.

S.3.4 Tolling for Financing

Alternative 1 provides revenue for financing the project. Alternative 2 provides 5% less revenue than Alternative 1. This need is inapplicable for Alternative 3. Alternatives 4 and 5 provide no financing for the project. Alternative 6 could potentially have higher toll rates to keep a single peak managed lane functioning at free flow. Alternatives 7 and 8 both provide revenue for the project.

S.3.5 Reduce Congestion by Adding Transportation Capacity

Alternatives 1 and 2 reduce congestion. Alternative 3 does not reduce congestion. Alternative 4 may reduce some congestion in the short-term. Alternatives 5, 6, 7 and 8 reduce congestion but

the capacity added would not be as efficiently utilized as under Alternative 1 or 2.

S.3.6 Accommodate Regional Growth and Accessibility

Alternatives 1 and 2 accommodate regional growth. Alternative 3 does not address this issue. Alternative 4 may accommodate growth, but only in the short-term. Alternatives 5, 6, 7 and 8 accommodate growth, but not to the extent of either Alternative 1 or 2.

S.4 ENVIRONMENTAL CONSEQUENCES

Environmental consequences of the alternatives were estimated based on the Alternatives Carried Forward identified in Section S.2. Table S-1 presents the comparative environmental impacts of the alternatives. As can be seen, Alternatives 1 and 2 would have the same environmental impacts.

Based on analysis showing that Alternative 1 would be more effective for meeting the project's need and purpose, Alternative 1 has been identified as the Preferred Alternative.

Table S-1. Summary of Impacts

Impact Category	Alternative 1 (ETL)	Alternative 2 (HOT-3+)	Alternative 3 No-Build
Land Use Changes	7 acres of right-of-way acquisition	7 acres of right-of-way acquisition	0
Economics/Potential Business Relocations	0	0	0
Potential Residential Relocations	0	0	0
Community Cohesion	0	0	0
Churches and Institutions Affected	0	0	0
Community Impacts/Environmental Justice	No Disproportionate Adverse Effects	No Disproportionate Adverse Effects	0
Historic Resources within APE	1 – No Adverse Effect	1 – No Adverse Effect	0
Archaeological Resources within APE	0	0	0
Parkslands/Recreations Areas/Wildlife Refuges/Section 4(f)/Section 6(f)	0	0	0
Water Quality	No Significant Impacts	No Significant Impacts	No Significant Impacts
Stream Impacts: Length (linear feet) Acres	525 0.171	525 0.171	0
Wetland Impacts (acres)	0.877	0.877	0
Floodplains	0	0	0
Farmlands	0	0	0
Federal and State Protected Species Affected	0	0	0
Wildlife and Habitat	Minimal Effects	Minimal Effects	No Effects
Number of Impacted Receivers Number of Impacted Receptors	237 606	237 606	193 452
Number of Noise Walls Feasible and Reasonable	9	9	0
Violations of National Ambient Air Quality Standards	0	0	0
USTs/Hazardous Waste Sites	0	0	0

Note: Summary from Environmental Assessment.

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APPENDICES – UNDER SEPARATE COVER

Appendix A – Memoranda, Correspondence, Additional Documentation
Appendix B – Adverse Impact Factors for Riverine Systems Worksheets
Appendix C – Special Provision 107.23G: Protection of Federally Protected Species

I. NEED AND PURPOSE

A. Introduction

The Georgia Department of Transportation (GDOT), in cooperation with the Federal Highway Administration (FHWA), proposes to construct managed lanes in Henry and Clayton Counties on Interstate 75 (I-75) south of Atlanta. Henry and Clayton Counties are located on the southern side of the greater Atlanta metropolitan area and contain a mixture of urban and suburban development. Both counties are members of the ten-county Atlanta Regional Commission (ARC), the designated metropolitan planning organization (MPO) in the Atlanta region.

The project, including intelligent transportation systems (ITS) infrastructure, begins approximately two miles south of the I-75 bridge over SR 155 and ends approximately two miles north of the I-75 southbound off ramp to SR 138 (Stockbridge Highway) and approximately two miles north of SR 138 (Stockbridge Highway) on I-675 in Clayton County for a total length of approximately 18 miles (Figure 1).

Managed lanes are highway facilities or a set of lanes where operational strategies are proactively implemented and managed in response to changing conditions. Managed lanes seek to optimize efficiency and performance by offering travel time savings and reliability through the limiting of access to the lanes using either tolls or vehicle occupancy requirements.

The project is needed to conform with local and regional planning, reduce travel time and increase mobility, expand travel choices, include congestion pricing to expedite project delivery, relieve congestion, and accommodate regional growth and accessibility.

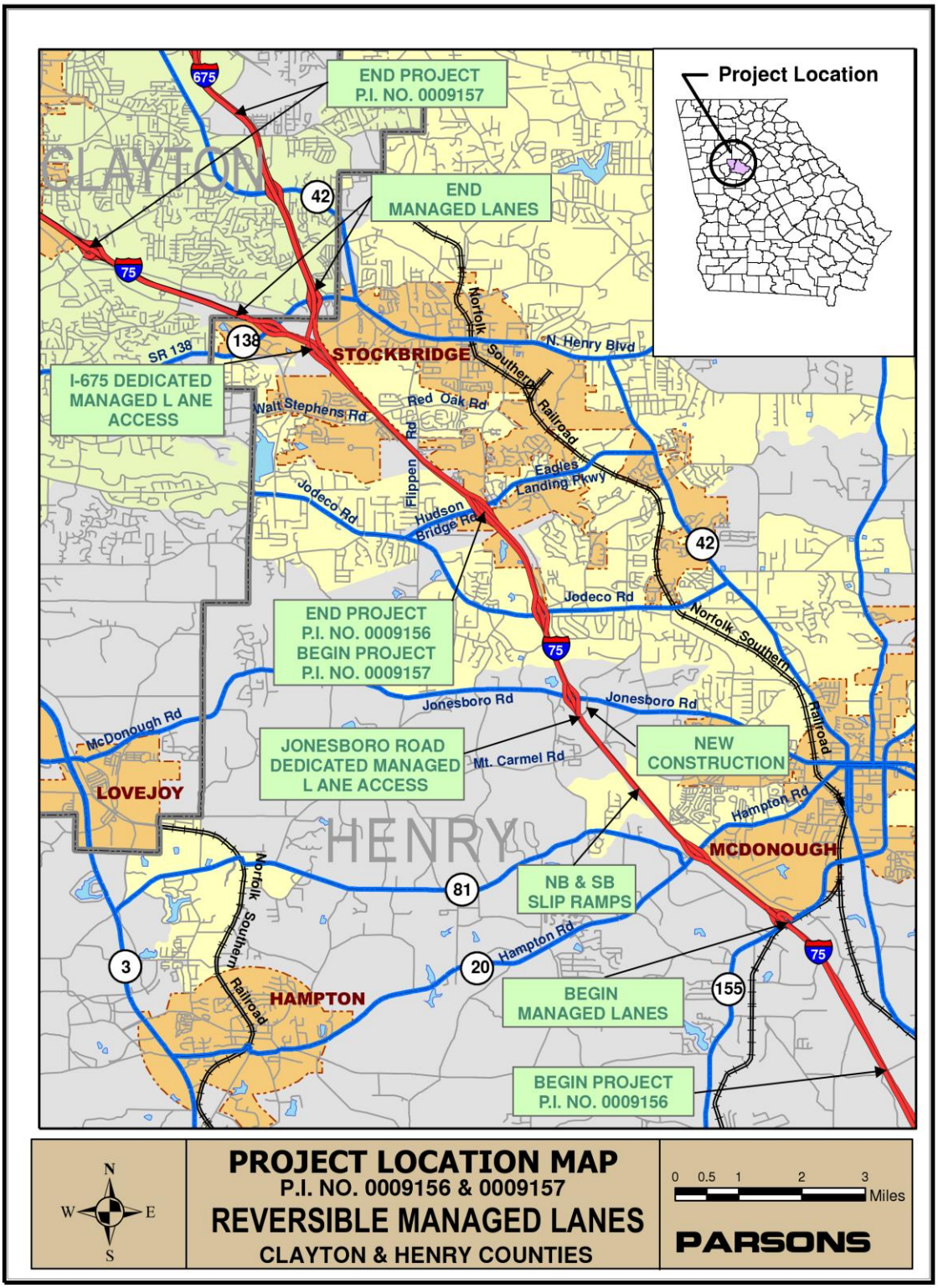
B. Project Need

1. Consistency with Regional Transportation Planning Initiatives

Like many urban areas, the Atlanta region experiences acute congestion on its transportation system. The ARC forecasts that 2.3 million more people will move to this region in the next 25 years, further adding to interstate travel demand. The ARC adopted *Plan 2040: Blueprint for the Future of the Atlanta Region* and the *Plan 2040* Regional Transportation Plan (RTP) for the 18-county Atlanta metropolitan area in July 2011. The RTP addresses current and expected needs on the region's transportation system through the year 2040. The RTP is the direct result of a comprehensive, cooperative, and continuous process conducted by ARC, local governments, and the GDOT in cooperation with the Federal Highway and Federal Transit Administrations. These administrations found that *Plan 2040* conforms with the transportation requirements of the Clean Air Act (40 CFR 93) on September 6, 2011.

The ARC and GDOT have further recognized that traditional highway capacity expansion alone is unlikely to satisfactorily meet the growing interstate travel demand because such expansion has become increasingly expensive and unaffordable, and the human impacts and physical constraints in a highly urbanized area make it exceedingly difficult to implement. Traditional expansion, such as general purpose lanes, is increasingly expensive because of funding issues within the state governments. In urban areas like Metro Atlanta, the right-of-way costs and construction costs are high, and environmental and societal impacts also contribute to escalating costs. As mentioned in the Managed Lanes Primer section of FHWA's *Freeway Management and Operations Book*, it can be understood that "increasing vehicle miles traveled with limited roadway expansion has led to serious traffic congestion in the nation's urban centers". While it is

Figure 1. Project Location



commonly understood that people place a high value on reaching their destinations in a timely manner, it is also recognized that people place a high value on the ability to reach their destinations in a reliable manner. The existing interstates in Metro-Atlanta have become so congested in recent years that the current system cannot provide reliable travel times in peak hours.

To address transportation users' demand for reliable travel time, the ARC and GDOT have proposed a system of managed lanes. Managed lanes are restricted by some combination of eligibility (number of people in the vehicle or type of vehicle) and/or pricing (tolls). Accordingly, on June 21, 2007, the Georgia State Transportation Board adopted policies to:

- Implement new capacity lanes within limited access corridors in Metro-Atlanta as managed lanes;
- Promote more reliable mobility in the managed lanes; and
- Utilize various management concepts such as eligibility, congestion pricing, and/or accessibility as appropriate, tailoring each solution to individual corridor needs within the context of a system-wide plan.

Further, on June 27, 2007, ARC adopted managed lane policies as guidance for decisions in development of the regional transportation plan and transportation improvement program and in future planning decisions. Among the policies were the following:

- Congestion management is the primary goal of the managed lane system.
- The managed lane system is intended to provide reliable travel times to all users.
- Implementation of managed lanes would occur within the context of a regional managed lane system.

A detailed multi-step evaluation was conducted, starting in 2007 to assess goals, objectives of managed lanes, the justification and benefits associated with managed lanes, the evaluation frame work, and to develop an implementation plan. High-Occupancy Toll (HOT) - 3+ emerged from this process as the recommended eligibility policy for the managed lane system. Under the HOT-3+ policy, high-occupancy vehicles with 3 or more occupants are permitted in the managed lanes at no charge, as are motorcycles, alternative fuel vehicles, and emergency vehicles. The managed lanes can also accommodate 60 buses per hour at no charge. Vehicles with one or two occupants can access the managed lanes by paying a toll. The recommended tolling strategy is designed to maximize lane utilization through variable tolling with a targeted speed in the managed lanes of 45 mph. In addition, the managed lanes are recommended to be separated from general purpose lanes through barrier or buffer separation, depending on the needs of the corridor. Another key assumption was that the managed lanes would, for the most part, be created by either converting existing HOV lanes or through new construction. General purpose lane conversion was considered only where construction of the recommended number of lanes is infeasible.

Subsequently, on December 10, 2009, the State Transportation Board approved the *Atlanta Regional Managed Lane System Plan* (MLSP) to be used as a guide by GDOT in developing individual managed lane projects within Metro-Atlanta. The MLSP proposed a tiered approach to provide for a systematic implementation plan for ultimate completion of the regional system

of managed lanes. Tier 1 projects include the most critical corridors to be implemented earliest in the development of the overall system.

I-75 south of Atlanta is recognized as one of the most traveled highways in the Atlanta region. I-75 provides the primary north-south connection between employment centers in the Atlanta metropolitan area and the fast-growing residential areas in Henry County and areas south of Henry County. It also serves intercity and interstate travel beyond the Atlanta metropolitan area. I-75 has three basic through lanes in each direction from SR 155 in Henry County to SR 138 in Clayton County plus a southbound auxiliary lane between the I-675 interchange and Eagles Landing Parkway/Hudson Bridge Road.

This section of I-75 is among the Tier 1 project corridors identified in the MLSP, and two projects (GDOT P.I. Numbers 0009156 and 0009157) are included in the conforming *Plan 2040* Constrained Long-Range Transportation Plan (CLRTP) and the FY2012-2017 Transportation Improvement Program (TIP), as adopted by the ARC on August 17, 2012 (AR-ML-630 and AR-ML-640). The *Plan 2040* CLRTP recommends managed lanes to be constructed within the I-75 right-of-way from SR 155 to SR 138. The project is also consistent with the Joint Henry County/Cities Comprehensive Transportation Plan adopted in 2007. The proposed project is therefore fully consistent with regional and local planning efforts.

2. Unreliable Travel Times and Impaired Mobility

As the south Atlanta metropolitan area continues to grow, increased travel demands are placed on the existing roadway network. This trend is evident in the growing traffic volumes on the interstates. According to the ARC, 36% of the average daily vehicle miles traveled in the MPO was on interstates and freeways (*2010 Transportation Fact Book*, ARC, 2010). Travel demand is projected to increase throughout the southern portion of the Atlanta region as population and employment opportunities continue to increase over the next twenty years. GDOT historical (1987–2010) traffic count data was collected for I-75 and the major cross roads within the project corridor. Regression analysis indicated that during the period from 1987 to 2006, I-75 traffic had been growing at an average rate of over approximately 11 percent per year (computed linearly) and the cross roads traffic had been growing at an average rate of approximately 13 percent per year. Beginning in 2007, traffic volumes began to decline, most likely as the economy slowed down and then entered into a recession in 2008; the average annual traffic growth decreased from 2006 to 2010 is just over 1 percent per year. Data in 2010 indicates some recovery may have begun to occur as 2010 volumes are higher than 2009; however, they still remain below 2006 data. Existing (2010) average daily traffic for I-75 from SR 155 to SR 138 ranges from 103,200 to 147,880 vehicles per day. The ARC *Plan 2040* model was used to develop future forecasts. The average projected annual growth on all sections of the corridor between SR 138 and SR 155 ranges between 1.4% and 2.5% between 2009 and 2015 and between 1.2% and 1.4% between 2015 and 2035 year. More detail on the traffic analysis can be found in the *Traffic Study: I-75 Managed Lanes from SR 138 to SR 155*, on file with GDOT's Office of Environmental Services.

As increasing traffic volumes approach and exceed the capacity of the roadway, congestion occurs, which results in reduced speeds and increased travel times. Table 1 shows estimated peak period travel times and speeds within the limits of the proposed project. Travel times are substantially higher and travel speeds are substantially lower than could be achieved if travel at the posted speed limit were possible. However, existing and forecasted future congestion during

the peak hour does not permit travel at the posted speed limit during the peak hour. Under existing conditions, average travel times within the limits of the proposed project are 4.7-5.6 minutes higher during the peak hours than travel times at the posted speed limit. By the design year 2035, the average travel times are expected to be 8.8 to 16.3 minutes higher during the peak hours than the travel times at the posted speed limit (Table 1).

The No-Build and Build condition include other projects funded for construction in the region listed in the *Plan 2040* CLRTP and the most recent TIP (FY2012-2017) . All of these are detailed in Chapter 2, however, two projects are of particular note because they occur on this project corridor: improvements to the I-75 and Jodeco Road interchange (P.I. No. 312160; expected completion date 4/30/2015) and the I-75 northbound auxiliary lane between Eagles Landing Parkway/Hudson Bridge Road and I-675 (P.I. No. 0010126; expected completion date 12/31/2013). The Jodeco Road interchange improvement includes: three through lanes in each direction; an additional right turn lane from the southbound I-75 off-ramp; an additional left turn lane from eastbound Jodeco Road to northbound I-75 traffic and a longer two lane section on the ramp; and an additional left turn lane from the I-75 northbound off-ramp to westbound Jodeco Road.

Table 1. Travel Times and Speeds: Existing and No-Build Conditions

Year/Scenario	Peak Traffic Direction	Average Travel Time Through Project Limits	Travel Time at Posted Speed of 65 mph	Average Travel Speed Through Project Limits
2010 Existing	NB (AM)	16.0 min.	11.3 min	49 mph
	SB (PM)	16.9 min.	11.3 min	48 mph
2015 No-Build	NB (AM)	17.5 min.	11.3 min	45 mph
	SB (PM)	19.7 min.	11.3 min	42 mph
2035 No-Build	NB (AM)	20.1 min.	11.3 min	42 mph
	SB (PM)	27.6 min.	11.3 min	33 mph

Source: Traffic Study: I-75 Managed Lanes from SR 138 to SR 155, GDOT, July 2012.
Note: Travel times and speeds were calculated using VISSIM, a micro-scale traffic flow simulation model based on roadway parameters and driver behavior. The model outputs the average time that the simulated vehicles take to travel from one end of a freeway segment to the other – the average is for all vehicles during the simulation period.

The above discussion and table illustrate the recurring daily congestion resulting from travel demand exceeding available highway capacity, resulting in slower travel speeds and increased travel times. However, while the average travel time is increasing, the variability of travel time is increasing as well. As traffic flows approach and exceed capacity, the higher traffic densities result in vehicles being more closely spaced, increasing the interaction among vehicles and distractions to drivers. The flow becomes unstable and abrupt stop-and-go traffic movements occur. Because of the unstable nature of the traffic flow, the exact onset, severity, and frequency of the congested conditions are difficult to predict and the actual travel time may vary considerably from the average from one day to the next, especially when crashes or breakdowns result in lane restrictions or closures. Such non-recurring congestion (non-recurring because it happens differently every day) increases the unreliability of travel times in the corridor. Because of the unreliable travel times, people must allow extra time for travel during more congested conditions to be sure that they will arrive at their destinations on time. This additional "buffer time" is not captured in the measurements and forecasts of average travel times on a section of roadway.

The Georgia Regional Transportation Authority (GRTA) each year conducts an assessment of the performance of Atlanta's regional transportation system. One of the categories of performance is mobility, the ease and reliability with which an individual vehicle can travel on the road network. One measure that GRTA uses to assess mobility on a number of freeway sections in the Atlanta metropolitan area is the buffer time index (BTI), a measure of trip reliability. The BTI represents the extra time (or buffer) that a traveler needs to add to a congested trip time to consistently arrive on time 19 out of 20 times. The BTI is expressed as a percentage of the average congested trip time. For example, for the same 5:00 o'clock evening trip on a section of I-75 that might take on average about 20 minutes, a traveler may need to allow for a buffer of 40 percent to be on time 19 out of 20 times. In other words, this traveler needs to allow about 8 extra minutes for a total of 28 minutes (40 percent more time than 20 minutes), to be sure of arriving on time 19 out of 20 times. A lower BTI percentage (closer to 0) is better. More information on BTI index and its usefulness can be found in the *2010 Transportation Metropolitan Atlanta Performance Report* by GRTA. This document sets performance measures for tracking the performance of the transportation system in Metropolitan Atlanta. Measures are organized in six general categories—Mobility, Transit Accessibility, Air Quality, Safety, Customer Satisfaction, and Transportation System Performance.

The data compiled by GRTA in the *2010 Transportation Metropolitan Atlanta Performance Report* for 2009 conditions do not include a freeway section directly comparable to the section within the limits of the proposed project. However, they do include a section of I-75 between Eagles Landing Parkway/Hudson Bridge Road and I-285 to the north. Based on freeway travel data compiled for that section, travelers along the peak directional flow of I-75 must allow an additional 27 percent of their travel time northbound in the AM peak and an additional 67 percent of their travel time southbound in the PM peak as a "buffer" to ensure on-time arrival during peak travel periods (GRTA, 2010, pp. 16-19).

The breakdown in travel conditions can also be measured by level of service (LOS), a rating that identifies the degree of congestion on a roadway. LOS for this project was calculated using Highway Capacity Software (HCS). LOS for individual freeway segments, and merges and diverges, is based on vehicle density. The LOS scale uses letter grades ranging from A to F, with LOS A indicating free flow of traffic at low densities and high speeds, and LOS F indicating severe congestion and impeded traffic flow at high densities and low speeds.

I-75 within the project limits is classified as an urban principal arterial. LOS A through D are considered desirable LOS for an urban principal arterial; LOS E and F are considered undesirable. Due to commuter traffic utilizing the I-75 corridor as one of the main routes into and out of Atlanta, congestion is more prevalent on I-75 northbound in the morning peak and I-75 southbound in the afternoon peak. The traffic directional split during the AM peak hour is 65% northbound and 35% southbound and during the PM peak hour is 53% southbound and 47% northbound. The directional flow and its impact on traffic operations are described further below. The traffic analyses for both the No-Build and Build conditions included the interchange configuration under construction for I-75 and Jodeco Road, which is detailed previously.

Tables 2, 3 and 4 show No-Build condition LOS grades for 7 freeway (general purpose lane) segments along the project corridor in the existing, opening, and design years. Also shown in the tables are LOS grades for two freeway segments immediately north of the northern project terminus, one on I-75 and one on I-675, and grades for the one freeway segment immediately south of the southern terminus, present on I-75 only. Both am and pm peak periods and

southbound and northbound directions are shown, bringing the total LOS grades for the project corridor to 28 and the total grades for beyond the project corridor to 12.

Set apart by bold borders are the 14 grades for the peak hour directions (north in the am and south in the pm). It is important to note a general pattern: all of the undesirable LOS grades in the three tables occur in the peak hour direction.

The data reveal a reliability and congestion problem in the design year. For the existing and opening years, all segments operate in the desirable LOS range (Tables 2 and 3). However, by the design year, four of the peak hour direction movements within the project termini have degraded to an undesirable level (LOS E or F), and an additional movement beyond the project termini has degraded to a LOS E (Table 4). It can be seen that that congestion and reliability concerns become most acute in the 2035 PM period, during which time three of the seven southbound segments would operate at an undesirable LOS (Table 4).

Table 2. Freeway Capacity Analysis Summary: Existing Condition 2010

Location		AM		PM	
From	**To**	**Density (pc/mi/ln)**	**LOS**	**Density (pc/mi/ln)**	**LOS**
I-75 southbound (SB)					
Mt. Zion Rd.	***SR 138****	***9.6***	***A***	***16.3***	***B***
SR 138	I-675	11.8	B	15.1	B
I-675	Hudson Bridge Rd./Eagles Landing Pkwy.	13.7	B	20.8	C
Hudson Bridge Rd./ Eagles Landing Pkwy.	Jodeco Rd.	17.1	B	30.8	D
Jodeco Rd.	Jonesboro Rd.	17.5	B	29.7	D
Jonesboro Rd.	SR 20/SR 81	16.1	B	24.4	C
SR 20/SR 81	SR 155	13.0	B	18.4	C
SR 155	***South of SR 155****	***10.2***	***A***	***14.0***	***B***
I-675 SB					
North of SR 138	***SR 138****	***10.8***	***A***	***27.6***	***D***
SR 138	South of SR 138	9.5	A	17.7	B
I-75 northbound (NB)					
South of SR 155	***SR 155****	***15.5***	***B***	***12.7***	***B***
SR 155	SR 20/SR 81	18.1	C	14.0	B
SR 20/SR 81	Jonesboro Rd.	20.9	C	17.2	B
Jonesboro Rd.	Jodeco Rd.	24.6	C	19.6	C
Jodeco Rd.	Hudson Bridge Rd./Eagles Landing Pkwy.	28.4	D	19.2	C
Hudson Bridge Rd./Eagles Landing Pkwy.	I-675	32.2	D	19.8	C
I-675	SR 138	15.4	B	12.7	B
SR 138	***Mt. Zion Rd.****	***16.4***	***B***	***10.8***	***A***
I-675 NB					
South of SR 138	SR 138	17.9	B	9.8	A
SR 138	***North of SR 138****	***21.2***	***C***	***10.9***	***A***

Source: Traffic Study: I-75 Managed Lanes from SR 138 to SR 155, GDOT, July 2012.

Note: For basic freeway segments, LOS A=0-11 passenger cars/mile/lane (pc/mi/ln); LOS B=11-18 pc/mi/ln; LOS C=18-26 pc/mi/ln; LOS D=26-36 pc/mi/ln; LOS E=36-45 pc/mi/ln; LOS F= >45 pc/mi/ln.

Beyond project termini.

Table 3. Freeway Capacity Analysis Summary: No-Build Condition 2015

Location		AM		PM	
From	**To**	**Density (pc/mi/ln)**	**LOS**	**Density (pc/mi/ln)**	**LOS**
I-75 southbound (SB)					
Mt. Zion Rd.	***SR 138****	***10.1***	***A***	***17.5***	***B***
SR 138	I-675	12.3	B	16.5	B
I-675	Hudson Bridge Rd./Eagles Landing Pkwy.	14.2	B	21.6	C
Hudson Bridge Rd./Eagles Landing Pkwy.	Jodeco Rd.	17.8	B	33.6	D
Jodeco Rd.	Jonesboro Rd.	18.1	C	31.7	D
Jonesboro Rd.	SR 20/SR 81	16.8	B	26.5	D
SR 20/SR 81	SR 155	13.7	B	19.7	C
SR 155	***South of SR 155****	***11.1***	***B***	***15.3***	***B***
I-675 SB					
North of SR 138	***SR 138****	***11.3***	***B***	***29.6***	***D***
SR 138	South of SR 138	10.0	A	19.4	C
I-75 northbound (NB)					
South of SR 155	***SR 155****	***16.8***	***B***	***14.0***	***B***
SR 155	SR 20/SR 81	19.3	C	14.9	B
SR 20/SR 81	Jonesboro Rd.	22.5	C	18.1	C
Jonesboro Rd.	Jodeco Rd.	26.1	D	20.2	C
Jodeco Rd.	Hudson Bridge Rd./Eagles Landing Pkwy.	30.6	D	20.1	C
Hudson Bridge Rd./Eagles Landing Pkwy.	I-675	23.2	C	15.4	B
I-675	SR 138	16.8	B	13.5	B
SR 138	***Mt. Zion Rd.****	***17.6***	***B***	***11.6***	***B***
I-675 NB					
South of SR 138	SR 138	19.2	C	10.5	A
SR 138	***North of SR 138****	***22.7***	***C***	***11.6***	***B***

Source: Traffic Study: I-75 Managed Lanes from SR 138 to SR 155, GDOT, July 2012.

Notes: For basic freeway segments, LOS A=0-11 pc/mi/ln; LOS B=11-18 pc/mi/ln; LOS C=18-26 pc/mi/ln; LOS D=26-36 pc/mi/ln; LOS E=36-45 pc/mi/ln; LOS F= >45 pc/mi/ln.

Beyond project termini.

Table 4. Freeway Capacity Analysis Summary: No-Build Condition 2035

Location		AM		PM	
From	**To**	**Density (pc/mi/ln)**	**LOS**	**Density (pc/mi/ln)**	**LOS**
I-75 southbound (SB)					
Mt. Zion Rd.	***SR 138****	***11.7***	***B***	***22.3***	***C***
SR 138	I-675	14.0	B	22.5	C
I-675	Hudson Bridge Rd./Eagles Landing Pkwy.	16.5	B	34.6	D
Hudson Bridge Rd./Eagles Landing Pkwy.	Jodeco Rd.	20.9	C	47.4	F
Jodeco Rd.	Jonesboro Rd.	20.7	C	39.9	E
Jonesboro Rd.	SR 20/SR 81	19.8	C	36.0	E
SR 20/SR 81	SR 155	16.9	B	25.0	C
SR 155	***South of SR 155****	***15.0***	***B***	***20.7***	***C***
I-675 SB					
North of SR 138	***SR 138****	***13.1***	***B***	***38.9***	***E***
SR 138	South of SR 138	11.6	B	27.3	D
I-75 northbound (NB)					
South of SR 155	SR 155*	21.9	C	19.4	C
SR 155	SR 20/SR 81	24.8	C	18.6	C
SR 20/SR 81	Jonesboro Rd.	30.0	D	21.9	C
Jonesboro Rd.	Jodeco Rd.	33.2	D	22.4	C
Jodeco Rd.	Hudson Bridge Rd./Eagles Landing Pkwy.	41.5	E	23.7	C
Hudson Bridge Rd./Eagles Landing Pkwy.	I-675	33.2	D	19.5	C
I-675	SR 138	22.9	C	16.7	B
SR 138	***Mt. Zion Rd.****	***23.1***	***C***	***14.7***	***B***
I-675 NB					
South of SR 138	SR 138	24.7	C	13.1	B
SR 138	***North of SR 138****	***29.0***	***D***	***14.4***	***B***

Source: Traffic Study: I-75 Managed Lanes from SR 138 to SR 155, GDOT, July 2012.

Notes: For basic freeway segments, LOS A=0-11 pc/mi/ln; LOS B=11-18 pc/mi/ln; LOS C=18-26 pc/mi/ln; LOS D=26-36 pc/mi/ln; LOS E=36-45 pc/mi/ln; LOS F= >45 pc/mi/ln.
Yellow shading indicates LOS E, while orange is LOS F.
Beyond project termini.

Of the 12 LOS grades for segments beyond the termini in Tables 2-4, one peak hour movement is undesirable (LOS E) in 2035. This is the southbound movement on I-675 from north of SR 138 to SR 138 in the pm peak hour. Since this freeway segment is beyond the northern terminus of the project, it is discussed in the Logical Termini section of this document.

It should be noted that during the capacity analysis, there were several roadway sections that required different analysis than a standard freeway segment. These special cases for freeway sections were analyzed following Highway Capacity Manual (HCM) 2000 methods: 1) when capacity for a basic freeway segment was exceeded, density would not be calculated and the LOS would be F; 2) for a single lane off-ramp with lane drop, only capacity check would be performed for the ramp roadway and no density value would be reported; and 3) for a major merge area, capacity check would be performed for upstream and downstream freeway segments and ramp roadway, and no density value would be reported. These special cases are represented as asterisks in the tables and defined in the individual table notes.

The capacity analysis of ramp merge and diverge areas (on-ramps and off-ramps) indicates that all 60 would operate at LOS D or better during both am and pm peak hours during existing conditions (Table 5). Under 2015 No-Build Conditions, 58 ramps would operate at LOS D or better in both peak hours, , and one location in each peak hour would operate at an undesirable LOS E (Table 6). For the 2035 No-Build Conditions, nine locations would operate at an undesirable LOS of E or F (Table 7). In general, there is a geographic correspondence between the locations of LOS E/F freeway segments and LOS E/F ramp locations based on high traffic demands.

Table 5. Ramp Merge and Diverge Capacity Analysis Summary: Existing Condition 2010

Type	Location	AM		PM	
		Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
I-75 southbound (SB)					
Off-Ramp	To SR 138	*	Capacity not exceeded	*	Capacity not exceeded
On-Ramp	From SR 138	15.8	B	19.0	B
On-Ramp	From I-675	**	Capacity not exceeded	**	Capacity not exceeded
Off-Ramp	To Hudson Bridge Rd./Eagles Landing Pkwy.	11.2	B	16.4	B
On-Ramp	From Hudson Bridge Rd./Eagles Landing Pkwy.	18.3	B	28.9	D
Off-Ramp	To Jodeco Rd.	23.3	C	32.4	D
On-Ramp	From Jodeco Rd.	21.7	C	30.8	D
Off-Ramp	To Jonesboro Rd.	24.0	C	32.5	D
On-Ramp	From Jonesboro Rd.	18.4	B	25.5	C
Off-Ramp	To SR 20/SR 81	23.0	C	30.5	D
On-Ramp	From SR 20/SR 81	16.2	B	22.0	C
Off-Ramp	To SR 155	17.2	B	23.5	C
On-Ramp	From SR 155	7.5	A	11.8	B
I-675 SB					
Off-Ramp	To SR 138	16.1	B	34.0	D
On-Ramp	From SR 138	14.0	B	23.1	C
I-75 northbound (NB)					
Off-Ramp	To SR 155	12.6	B	9.4	A
On-Ramp	From SR 155	20.6	C	15.9	B
Off-Ramp	To SR 20/SR 81	23.9	C	19.5	B
On-Ramp	From SR 20/SR 81	25.2	C	22.0	C
Off-Ramp	To Jonesboro Rd.	25.8	C	22.4	C
On-Ramp	From Jonesboro Rd.	28.2	D	23.8	C
Off-Ramp	To Jodeco Rd.	31.6	D	27.1	C
On-Ramp	From Jodeco Rd.	30.8	D	22.5	C
Off-Ramp	To Hudson Bridge Rd./Eagles Landing Pkwy.	34.6	D	27.0	C
On-Ramp	From Hudson Bridge Rd./Eagles Landing Pkwy.	13.3	B	3.0	A
Off-Ramp	To I-675	16.6	B	11.8	B
Off-Ramp	To SR 138	19.3	B	16.3	B
On-Ramp	From SR 138	24.1	C	15.0	B
I-675 NB					
Off-Ramp	To SR 138	24.9	C	14.8	B
On-Ramp	From SR 138	23.6	C	12.7	B

Source: Traffic Study: I-75 Managed Lanes from SR 138 to SR 155, GDOT, July 2012.

Notes: * This is a single lane off-ramp with lane drop and analyzed as a ramp roadway for capacity check.

** This is a major merge area and capacity check was performed for upstream and downstream freeway and the ramp.

For basic freeway segments, LOS A=0-11 pc/mi/ln; LOS B=11-18 pc/mi/ln; LOS C=18-26 pc/mi/ln; LOS D=26-36 pc/mi/ln; LOS E=36-45 pc/mi/ln; LOS F= >45 pc/mi/ln.

Table 6. Ramp Merge and Diverge Capacity Analysis: No-Build Condition 2015

Type	Location	AM		PM	
		Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
I-75 southbound (SB)					
Off-Ramp	To SR 138	*	Capacity not exceeded	*	Capacity not exceeded
On-Ramp	From SR 138	16.3	B	19.9	B
On-Ramp	From I-675	**	Capacity not exceeded	**	Capacity not exceeded
Off-Ramp	To Hudson Bridge Rd./Eagles Landing Pkwy.	*	Capacity not exceeded	*	Capacity not exceeded
On-Ramp	From Hudson Bridge Rd./Eagles Landing Pkwy.	19.1	B	30.6	D
Off-Ramp	To Jodeco Rd.	22.5	C	33.9	D
On-Ramp	From Jodeco Rd.	21.6	C	32.3	D
Off-Ramp	To Jonesboro Rd.	24.7	C	33.4	D
On-Ramp	From Jonesboro Rd.	19.1	B	27.2	C
Off-Ramp	To SR 20/SR 81	23.7	C	31.9	D
On-Ramp	From SR 20/SR 81	17.0	B	23.2	C
Off-Ramp	To SR 155	18.0	B	24.7	C
On-Ramp	From SR 155	8.7	A	13.3	B
I-675 SB					
Off-Ramp	To SR 138	16.7	B	35.5	E
On-Ramp	From SR 138	14.5	B	24.9	C
I-75 northbound (NB)					
Off-Ramp	To SR 155	14.1	B	11.1	B
On-Ramp	From SR 155	21.9	C	16.9	B
Off-Ramp	To SR 20/SR 81	25.1	C	20.6	C
On-Ramp	From SR 20/SR 81	26.6	C	23.0	C
Off-Ramp	To Jonesboro Rd.	27.1	C	23.4	C
On-Ramp	From Jonesboro Rd.	29.3	D	24.2	C
Off-Ramp	To Jodeco Rd.	33.0	D	27.6	C
On-Ramp	From Jodeco Rd.	32.6	D	23.6	C
Off-Ramp	To Hudson Bridge Rd./Eagles Landing Pkwy.	36.3	E	27.9	C
On-Ramp	From Hudson Bridge Rd./Eagles Landing Pkwy.	**	Capacity not exceeded	**	Capacity not exceeded
Off-Ramp	To I-675	*	Capacity not exceeded	*	Capacity not exceeded
Off-Ramp	To SR 138	20.6	C	17.2	B
On-Ramp	From SR 138	18.2	B	12.9	B
I-675 NB					
Off-Ramp	To SR 138	26.4	C	15.7	B
On-Ramp	From SR 138	24.9	C	13.6	B

Source: Traffic Study: I-75 Managed Lanes from SR 138 to SR 155, GDOT, July 2012.

Notes: * This is a single lane off-ramp with lane drop and analyzed as a ramp roadway for capacity check.

** This is a major merge area and capacity check was performed for upstream and downstream freeway and the ramp.

For basic freeway segments, LOS A=0-11 pc/mi/ln; LOS B=11-18 pc/mi/ln; LOS C=18-26 pc/mi/ln; LOS D=26-36 pc/mi/ln; LOS E=36-45 pc/mi/ln; LOS F= >45 pc/mi/ln. Yellow shading indicates LOS E.

Table 7. Ramp Merge and Diverge Capacity Analysis: No-Build Condition 2035

Type	Location	AM		PM	
		Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
I-75 southbound (SB)					
Off-Ramp	To SR 138	*	Capacity not exceeded	*	Capacity not exceeded
On-Ramp	From SR 138	18.2	B	25.0	C
On-Ramp	From I-675	**	Capacity not exceeded	**	Capacity not exceeded
Off-Ramp	To Hudson Bridge Rd./Eagles Landing Pkwy.	*	Capacity not exceeded	*	Capacity not exceeded
On-Ramp	From Hudson Bridge Rd./Eagles Landing Pkwy.	22.0	C	***	F
Off-Ramp	To Jodeco Rd.	27.2	C	***	F
On-Ramp	From Jodeco Rd.	24.8	C	***	F
Off-Ramp	To Jonesboro Rd.	27.1	C	***	F
On-Ramp	From Jonesboro Rd.	22.0	C	33.3	D
Off-Ramp	To SR 20/SR 81	26.5	C	36.5	E
On-Ramp	From SR 20/SR 81	20.6	C	27.6	D
Off-Ramp	To SR 155	21.3	C	28.6	D
On-Ramp	From SR 155	13.2	B	19.2	B
I-675 SB					
Off-Ramp	To SR 138	19.1	B	40.8	F
On-Ramp	From SR 138	16.3	B	31.4	D
I-75 northbound (NB)					
Off-Ramp	To SR 155	19.2	B	17.3	B
On-Ramp	From SR 155	27.2	C	20.7	C
Off-Ramp	To SR 20/SR 81	27.8	C	24.5	C
On-Ramp	From SR 20/SR 81	31.9	D	26.4	C
Off-Ramp	To Jonesboro Rd.	31.8	D	26.9	C
On-Ramp	From Jonesboro Rd.	30.8	D	25.7	C
Off-Ramp	To Jodeco Rd.	35.3	E	29.1	D
On-Ramp	From Jodeco Rd.	***	F	27.5	C
Off-Ramp	To Hudson Bridge Rd./Eagles Landing Pkwy.	***	F	31.1	D
On-Ramp	From Hudson Bridge Rd./Eagles Landing Pkwy.	**	Capacity not exceeded	**	Capacity not exceeded
Off-Ramp	To I-675	*	Capacity not exceeded	*	Capacity not exceeded
Off-Ramp	To SR 138	25.8	C	20.6	C
On-Ramp	From SR 138	20.0	C	15.0	B
I-675 NB					
Off-Ramp	To SR 138	31.7	D	19.1	B
On-Ramp	From SR 138	29.6	D	16.8	B

Source: Traffic Study: I-75 Managed Lanes from SR 138 to SR 155, GDOT, July 2012.

Notes: * This is a single lane off-ramp with lane drop and analyzed as a ramp roadway for capacity check.
** This is a major merge area and capacity check was performed for upstream and downstream freeway and the ramp.
*** Freeway capacity is exceeded.
For basic freeway segments, LOS A=0-11 pc/mi/ln; LOS B=11-18 pc/mi/ln; LOS C=18-26 pc/mi/ln; LOS D=26-36 pc/mi/ln; LOS E=36-45 pc/mi/ln; LOS F= >45 pc/mi/ln. Yellow shading indicates LOS E, orange is LOS F.

3. Lack of Travel Choices

Under existing conditions, all vehicles, whether single-occupant vehicles (SOV), high-occupancy vehicles (HOV), or transit vehicles, traveling on I-75 must utilize the general purpose lanes. Accordingly, no speed or travel time advantage is gained by ridesharing or using transit. Three express bus routes are provided in the area by the Georgia Regional Transportation Authority (http://xpressga.com). Currently, these are the only transit services that regularly utilize the corridor. Henry County Transit also operates within the county and may utilize I-75, but it is a demand-responsive provider and routes are not fixed. While express transit services and ride sharing are currently available in the corridor, they are no more reliable than SOV travel because they use the same congested general purpose travel lanes. Higher reliability of travel times could provide inducements to greater usage of transit and ridesharing. In summary, drivers in the general purpose lanes currently have limited choices available to avoid freeway congestion and the potential delays in reaching their destination.

4. Expedite Project Delivery through the Use of Tolling For Financing

As described in Section 1, GDOT and ARC have established a plan for completing a network of managed lanes in the Atlanta region. Tolling is an integral element in the implementation of the network, both as a tool to accomplish the purposes of the network and as a partial source of funding. This project is intended to complete a link in that network. The use of tolls is expressly necessary as a method to manage the new lanes in a way that would achieve the reliable travel times and expansion of travel choices discussed in Sections 2 and 3. More specifically, varying toll rates are envisioned in order to maintain free-flowing traffic in those lanes at a minimum desirable operating speed (45 mph).

The MLSP as a whole relies on tolling to make managed lane improvements financially feasible. The toll receipts from this project would be used to pay off state revenue bonds issued to help fund construction, and subsequently would go toward operation and maintenance of the facility. The operations and maintenance activities and expenditures fall into several categories, including roadway, lane equipment, reversible lane operations, tolling services, general administration, and insurance. Without the tolling funds, improvements could be delayed indefinitely. Furthermore, tolling has been assumed as part of the regional financial forecasting for purposes of developing the fiscally constrained regional long-range transportation plan (*Plan 2040*). Appendix M of the previous regional long-range transportation plan contains detailed Managed Lanes Policies, including the disposition of toll revenues, adopted by the ARC Board. The ARC adopted a draft of the new long-range transportation plan, *Plan 2040*, and the tolled, managed lanes are included in the plan.

In view of the above, the decision to incorporate tolling has a solid underlying foundation in the planning process and the timely construction of the project is predicated in part on toll-based financing. GDOT would implement tolls on the facility under Section 129(a)(1)(B) of the Moving Ahead for Progress in the 21st Century Act (MAP-21) because "the facility has the same number of toll-free lanes after construction as it did before (excluding HOV lanes and auxiliary lanes)" (http://www.fhwa.dot.gov/map21/guidance/guidetoll.cfm).

In an effort to provide additional funding for transportation, the Georgia General Assembly passed the Transportation Investment Act of 2010, which implemented a process to identify regional transportation priorities and fund these priorities through a Transportation Special Purpose Local Option Sales Tax (T-SPLOST). The sales tax must be approved by voter

referendum; the referendum for the T-SPLOST region including Atlanta was not approved by voters in July 2012. The failure of the legislation further demonstrates the constrained financial atmosphere for transportation projects.

5. Reduce Congestion by Adding Transportation Capacity

As the south Atlanta metropolitan area continues to grow, especially in Henry County, increased travel demands are placed on the existing roadway network. This is evident in the growing traffic volumes and traffic congestion on the interstates. In 2009, interstates and freeways in the region accommodated 36% of the region's vehicle miles traveled (*2010 Transportation Fact Book*, ARC, 2010). As a result, traffic congestion is worse during morning and afternoon peak hour. Travel demand is projected to increase throughout the southern portion of the Atlanta region as population and employment opportunities continue to increase over the next twenty years.

As discussed in Section 2, Unreliable Travel Times and Impaired Mobility, the increasing congestion results in longer and less reliable travel times. Tables 2 through 7 reflect the increasing congestion as measured by level of service. The cause of the congestion is insufficient capacity to serve the travel demand.

6. Accommodate Regional Growth and Accessibility

Henry County is one of the fastest growing counties in the state and it will continue rapid growth. The percent change in population between 1990 and 2000 was over 103%, and between 2000 and 2010 the population grew by 70.87% to 203,922 residents (Table 8). By 2030, the population in Henry County is projected to almost double. Butts and Clayton Counties have also experienced steady population growth, which is projected to continue in both cases. Spalding County has experienced steady population growth but not at the same pace as the neighboring counties. However, total population in Spalding County is projected to grow significantly by 2030.

Table 8. County Population over Time

	1990	2000	1990-2000	2010	2000-2010	2030	2010-2030
Butts County	15,326	19,522	27.38%	23,655	21.17%	44811	89.44%
Clayton County	182,052	236,517	29.92%	259,424	9.69%	331,028	27.60%
Henry County	58,741	119,341	103.16%	203,922	70.87%	407,649	99.90%
Spalding County	54,457	58,417	7.27%	64,073	9.68%	96,851	51.16%

Sources: Decennial U.S. Census 1990, 2000, 2010; Georgia Office of Planning and Budget, 2005.

Employment growth and opportunities in Henry County continue to expand as well. Henry County has undergone a rapid transition from rural to suburban residential and commercial/light industrial land uses. Employment and residential data were last available from the 2000 U.S. Census. Even though the data is somewhat dated, it still provides good information on commuting trends south of Atlanta. At that time, only one-third of Henry County residents remained within the county to work. Fifty-five percent of the employed population was traveling northwest to Clayton, Fulton, and DeKalb counties for employment (U.S. Census, 2000). As the population increases in number and density, and traffic volumes and congestion continue to increase, accessibility to residential and employment centers is hampered by travel delays.

Henry County is forecast to more than triple its 2000 population by 2040 to lead the 10-county ARC region. It is forecasted to add 315,000 people in the next 30 years and many "of the areas close to major employment centers experience a large number of external trips from suburban communities." (ARC, 2011b).

Within the ARC region, Plan 2040 forecasts that 1.5 million jobs will be added by 2040 (ARC, 2011a). The economic sectors expected to lead the job growth are healthcare/social assistance, followed by professional and technical services, and the real estate sector (ARC, 2011a). In addition, Plan 2040 describes growth in the Atlanta region, "largely on the basis of the several trends:

- National migration trends to the Southeast
- Federal funding programs that supported highway construction and decentralized growth
- Access to one of the world's busiest airports
- Inexpensive land
- Low cost of living, business costs and wages
- Proximity to major ports, substantial opportunity for higher education, homegrown and new Fortune 500 business headquarters as well as national facilities such as the Centers for Disease Control (CDC)" (ARC, 2011b).

C. Project Purpose

The purpose of the I-75 project is to provide motorists with the most effective and expeditious response to increased transportation demand in accordance with the MLSP that would: 1. be consistent with regional and local planning initiatives; 2. achieve reliable travel times; 3. increase travel choices; 4. expedite delivery through the use of tolls; 5. improve system management and operation; and 6. accommodate regional growth and accessibility.

D. Logical Termini

Logical termini are defined as rational end points for a transportation improvement and rational end points for a review of the environmental impacts (http://environment.fhwa.dot.gov/projdev/tdmtermini.asp). The most common termini are points of major traffic generation, especially intersecting roadways. In order to ensure meaningful evaluation of alternatives and to avoid commitments to transportation improvements before they are fully evaluated, FHWA regulations (23 CFR 771.111(f)) require that the action evaluated shall:

(1) Connect logical termini and be of sufficient length to address environmental matters on a broad scope. In the highway context, logical termini generally are represented by crossroads, population centers, major traffic generators, or major breakpoints in traffic volumes. At a minimum, in order for a project to possess logical termini, the terminus must be at a point where there is an opportunity for traffic to enter or exit and, preferably, the terminus should be at a point where No-Build condition LOS is desirable. Desirable LOS for an urban principal arterial such as I-675 is LOS grades A through D, whereas LOS E and F are considered undesirable (a more complete discussion of LOS was presented previously in Section I.B.2.).

The termini for the project along I-75 are just beyond the junction with I-675 on the northern end and 2.1 miles south of SR 155 on the southern end. Both I-675 and SR 155 are major traffic

generators and, as will be examined in Section 2, No-Build condition LOS beyond both termini is acceptable in the opening and design years.

On the northern end, the project has a second terminus on I-675 at the SR 138 ramps. SR 138 is a major traffic generator. No-Build condition LOS north of SR 138 is desirable in the opening and design years with one exception: the PM southbound movement would operate at LOS E in the design year. I-675 beyond the northern terminus is a two-lane freeway with a capacity of approximately 3,260 passenger cars/hour. While LOS analysis demonstrates a future need for increased capacity in the southbound direction along this section of I-675, there are no projects planned to widen I-675 at this time, and it is not the need and purpose of this project to address capacity deficiencies along I-675.

The combined length of the project is eighteen miles, which is sufficient to address environmental matters on a broad scope. Additional improvements, such as intelligent transportation systems (ITS) equipment and signage, beyond the actual roadway construction, would also be taken into consideration in the environmental analyses.

(2) Have independent utility or independent significance, i.e., be usable and be a reasonable expenditure even if no additional transportation improvements in the area are made. Determinations regarding independent utility are based on whether a proposed undertaking can function or operate on its own and is considered usable if no other improvements are made. A primary concern is whether the proposed project would cause LOS to degrade to undesirable levels at locations beyond the project termini or outside the project corridor, thus creating a need for improvements where none previously existed. This can occur when the project would draw extra traffic to the project corridor, some of which spills over beyond the termini and onto other intersecting arterials.

The traffic analysis for this project predicts that latent demand for increased travel on I-75 would exist in the open and design year and that, by accommodating some of this demand, the managed lanes would draw additional traffic to the corridor. Some of this additional traffic is expected to spill over onto I-75 and I-675 beyond the termini and onto the arterials that have interchanges with I-75, thus creating the potential for traffic operations to degrade to the point that improvements may be needed.

Annual average daily traffic (AADT) volumes for freeway segments are shown in Table 9. Build condition AADT in 2035 ranges from 2.1% higher to 23.1% higher than the No Build condition AADT, reflecting the additional traffic that would be generated by the project. Focusing on the segments beyond the termini, it can be seen that north of the northern terminus (SR 138), the project would add 5,820 vehicles per day (vpd) to I-75 in 2035 and 3,420 vehicles per day to I-675 north of SR 138. On the southern end, the managed lanes would generate an additional 2,420 vpd south of SR 155 in 2035.

Table 9. Annual Average Daily Traffic (AADT) Summary

Segment	Existing 2010	No-Build 2015	Build (GP) 2015	Build (ML) 2015	No-Build 2035	Build (GP) 2035	Build (ML) 2035	No-Build to Build 2035
I-75 SB towards SR 138	62,160	65,370	70,680	-	78,240	81,150	-	3.7%
I-75 SB SR 138 to I-675 *	52,920	55,460	62,410	7,340	65,650	72,280	8,550	23.1%
I-75 SB I-675 to Hudson Bridge Rd **	73,940	78,110	77,500	10,490	94,800	91,790	12,390	9.9%
I-75 SB Hudson Bridge Rd to Jodeco Rd	72,100	74,820	74,340	10,490	85,690	83,320	12,390	11.7%
I-75 SB Jodeco Rd to Jonesboro Rd	70,530	72,860	72,480	10,490	82,170	80,280	12,390	12.8%
I-75 SB Jonesboro to SR 20	63,030	65,810	69,420	2,630	76,940	79,550	3,180	7.5%
I-75 SB SR 20 to SR 155	52,030	54,790	56,080	2,630	65,840	65,830	3,180	4.8%
I-75 SB beyond SR 155	41,430	44,770	47,010	-	58,130	59,340	-	2.1%
I-675 SB North of SR 138	27,220	28,990	31,620	-	36,050	37,760	-	4.7%
I-675 SB South of SR 138 After GP/ML Split	21,020	22,650	22,430	3,150	29,150	28,060	3,840	9.4%

Source: Traffic Study: I-75 Managed Lanes from SR 138 to SR 155, GDOT, July 2012.
Notes: * Before the merge with I-675 general purpose lanes and the diverge to the managed lane for comparison to the Build condition. The managed lane diverge volumes are shown for the Build condition.
** Managed lane volumes shown reflect the total after merge with managed lane traffic from I-675.

At both the I-75 termini, the proposed facility connects to existing lanes capable of receiving or delivering the traffic from the new lanes, and therefore the project would not cause LOS at locations beyond the termini to degrade to undesirable levels (Table 10). On I-675, however, the project would cause LOS on the freeway segment north of SR 138 to degrade in the afternoon peak hour direction (southbound) from LOS D to LOS E in 2015 and from LOS E to LOS F in 2035 (Table 10). This is due to diversion from other routes, not latent demand within the transportation network. In the afternoon peak hour southbound, there are over 500 additional vehicles on this segment in 2015, and over 300 in 2035 when compared to the No-Build. To improve these LOS grades, additional improvements could potentially include a full-length auxiliary lane along I-675 at least up to the ramps of the SR 42 interchange (the next interchange north of SR 138) or the widening of the I-675 bridges over SR 138. However, neither of these improvements is included in *Plan 2040* or ARC's Unfunded Aspirations Plan Vision (Plan 2041+).

Table 10. LOS Analysis of Freeway Segments Beyond Limits of Managed Lanes

Location	Year, Scenario, Direction	AM		PM	
		Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
I-675 Southbound Freeway Segment North of SR 138	2010 Existing	12.3	B	29.0	D
	2015 No-Build	11.3	B	29.6	D
	2015 Build	11.3	B	38.1	E
	2035 No-Build	13.1	B	38.9	E
	2035 Build	13.3	B	***	F
I-675 Northbound Freeway Segment North of SR 138	2010 Existing	23.3	C	12.5	B
	2015 No-Build	22.7	C	11.6	B
	2015 Build	28.0	C	11.7	B
	2035 No-Build	29.0	D	14.4	B
	2035 Build	33.8	D	14.5	B
I-75 Southbound Freeway Segment Between Mt. Zion Rd and SR 138	2010 Existing	10.6	A	17.8	B
	2015 No-Build	10.1	A	17.5	B
	2015 Build	10.1	A	23.0	C
	2035 No-Build	11.7	B	22.3	C
	2035 Build	11.9	B	25.6	C
I-75 Northbound Freeway Segment Between SR 138 and Mt. Zion Rd	2010 Existing	17.9	B	11.9	B
	2015 No-Build	17.6	B	11.6	B
	2015 Build	22.4	C	11.6	B
	2035 No-Build	23.1	C	14.7	B
	2035 Build	26.5	D	14.6	B
I-75 Southbound Freeway Segment South of SR 155	2010 Existing	11.4	B	15.7	B
	2015 No-Build	11.1	B	15.3	B
	2015 Build	11.1	B	17.7	B
	2035 No-Build	15.0	B	20.7	C
	2035 Build	14.9	B	22.5	C
I-75 Northbound Freeway Segment South of SR 155	2010 Existing	17.3	B	14.2	B
	2015 No-Build	16.8	B	14.0	B
	2015 Build	16.4	B	13.9	B
	2035 No-Build	21.9	C	19.4	C
	2035 Build	19.6	C	19.0	C

Source: Traffic Study: I-75 Managed Lanes from SR 138 to SR 155, GDOT, July 2012.

Notes: This data also appears in Tables 2-7, and 10-11.

*** Freeway capacity is exceeded.

For basic freeway segments, LOS A=0-11 pc/mi/ln; LOS B=11-18 pc/mi/ln; LOS C=18-26 pc/mi/ln; LOS D=26-36 pc/mi/ln; LOS E=36-45 pc/mi/ln; LOS F= >45 pc/mi/ln. Yellow shading indicates LOS E, orange is LOS F.

A capacity analysis was also performed for arterials that have interchanges with the project corridor to determine whether the additional traffic being drawn to these facilities would create a need for improvements. The capacity analysis was conducted at the arterial interchanges along the project corridor and at the first intersection on either side of the interchanges. It was found that the project would cause operations to degrade on the southbound ramp at the I-75 interchange with SR 20 and at two arterial intersections: Industrial Boulevard at SR 20 (approximately 500 feet from the SR 20/SR 81 interchange with I-75) and Industrial Boulevard at SR 155 (approximately 1,000 feet from the SR 155 interchange with I-75) (Table 11). Improvements to these intersections would include:

- Re-striping of the intersection of SR 20/81 and the I-75 southbound ramp to provide a continuous right turn off the ramp.
- A dedicated 150-foot right-turn lane along the southbound leg of Industrial Boulevard at SR 20 to reduce the overall delay at the intersection; and
- Addition of a 150-foot right-turn lane along the southbound approach of Industrial Boulevard at its intersection with SR 155. This would reduce the overall delay at the intersection.

These intersection improvements will be constructed as a part of the project.

Table 11. Intersection Delay Time and Level of Service

Location	Year, Scenario	AM		PM	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
SR 20 at Industrial Boulevard	2010 Existing	140.8	F	66.0	E
	2015 No-Build	156.4	F	85.1	F
	2015 Build	199.7	F	122.6	F
	2015 Build with Intersection Improvements	126.0	F	96.0	F
	2035 No-Build	103.6	F	111.2	F
	2035 Build	141.1	F	105.7	F
	2035 Build with Intersection Improvements	87.8	F	75.4	E
SR 20 at I-75 Southbound Ramp	2010 Existing	52.0	D	50.1	D
	2015 No-Build	49.9	D	57.5	E
	2015 Build	72.0	E	114.1	F
	2015 Build with Intersection Improvements	29.4	D	48.0	D
	2035 No-Build	103.5	F	138.3	F
	2035 Build	132.5	F	181.3	F
	2035 Build with Intersection Improvements	55.0	D	99.0	F
SR 155 at Industrial Boulevard/King Mill Road	2010 Existing	48.2	D	46.0	D
	2015 No-Build	77.3	E	68.2	E
	2015 Build	137.1	F	88.0	F
	2015 Build with Intersection Improvements	106.4	F	65.6	E
	2035 No-Build	100.0	F	74.4	E
	2035 Build	119.2	F	69.6	E
	2035 Build with Intersection Improvements	84.9	F	59.6	E

Source: Traffic Study: I-75 Managed Lanes from SR 138 to SR 155, GDOT, July 2012.
Note: The intersections were analyzed for level of service, which is measured differently than LOS for roadway segments. For intersections, LOS is measured in seconds of delay per vehicle. The intersections were analyzed for both the No-Build and Build conditions, as well as the Build including the proposed improvements.

Finally, it should be noted that even without full implementation of the entire managed lanes network, this project could function with independent utility as a viable transportation facility, under the Build Condition, as demonstrated in Table 10. This is examined in more detail in Section II.D.1. Alternative 1, The Preferred Alternative. The proposed facility individually contributes to alleviation of identified traffic problems and does not irretrievably commit future

resources to other potential transportation improvements or limit alternatives available to transportation agencies.

(3) Not restrict consideration of alternatives for other reasonably foreseeable transportation improvements. As described in Section 1. Consistency with Regional Transportation Planning Initiatives, in accordance with the MLSP, managed lanes are being implemented throughout the Atlanta region in several tiers or stages. The Tier 1 projects in the implementation plan include the section of I-75 between the termini established for this project. The long-range regional transportation plan for the Atlanta region recognizes the same termini. Advancement of this project is consistent with the overall MLSP, but does not force or preclude the design or implementation of other elements of the system.

The proposed project does not preclude consideration of any alternatives of other projects ongoing in the project corridor. An auxiliary lane on I-75 between Eagles Landing Parkway/Hudson Bridge Road and I-675 is currently under construction. The location of the managed lanes has not constrained possible avoidance alternatives for the auxiliary lane project. The Jodeco Road interchange with I-75 is under construction. The location of the managed lanes has not constrained possible avoidance alternatives for the Jodeco Road interchange project.

Although there are some concerns about southbound traffic operations on I-675, the project has logical termini and independent utility. In addition, the project can function on its own if no other improvements are made, and does not restrict consideration of alternatives for any other reasonably foreseeable transportation improvements.

E. Summary and Conclusions

The proposed project is consistent with both regional and local planning efforts. Data on travel time and level of service indicate that travel times have become unpredictable and congestion occurs now and would worsen in the future. The general purpose lanes are currently the only travel choice for users of I-75, including express buses and vanpools/carpools. Higher reliability of travel times could provide inducements to greater usage of these alternative modes of travel. The implementation of a tolled project would ensure free flow of travel on the managed lanes as well as expedite its construction based on the limited transportation funding available in the foreseeable future. Henry and Clayton Counties have experienced considerable population and employment growth, both of which generate pressure on the transportation network. The proposed project would address these needs.

II. DESCRIPTION OF ALTERNATIVES

A. Introduction

This section describes the alternatives considered and identifies the Preferred Alternative, Alternative 1. Alternative 1 includes construction of reversible, barrier-separated, express toll lanes (ETL) within the median of existing I-75 in Henry County and Clayton County. Alternative 2 includes construction of reversible, barrier-separated, High Occupancy Toll (HOT) lanes within the median of existing I-75 in Henry County and Clayton County. The no action or No-Build Alternative is also discussed as it serves as a baseline for comparison to the Build Alternatives. In addition, Section E. Alternatives No Longer Under Consideration, describes other alternatives that were evaluated during the concept development phase but have been eliminated from further consideration.

B. Alternatives Development

Alternatives were developed and evaluated to address the need and purpose of the proposed project. To meet need and purpose, potential alternatives should:

1. Be consistent with regional transportation planning initiatives, as expressed in state and regional policy statements and regional transportation planning documents;
2. Provide reliable travel times and mobility;
3. Improve travel choices;
4. Consider construction financing implications;
5. Reduce congestion; and
6. Accommodate regional growth and accessibility.

Additional factors considered in development of alternatives included design criteria for interstate highways and managed lane facilities, as well as environmental features along the corridor. Using aerial photography, topographic maps, wetland inventory maps, soil survey maps, floodplain maps, and other available data and field surveys, potentially sensitive ecological, cultural, and human resources were identified. In developing the proposed alignments, every attempt was made to avoid environmentally sensitive areas, and in the event that avoidance was not possible, every attempt was made to minimize harm to such resources. The location of the project mostly within the existing right-of-way not only minimizes impacts but also constrains the design of the project. Exceptions to highway design guidelines have also been considered as a part of the alternatives development in order to minimize additional construction activities, right-of-way acquisition, and potential impacts.

The No-Build and Build Alternatives include the existing roadway network. In addition, *Plan 2040* CLRTP and the FY2012-2017 TIP, as adopted by the ARC on August 17, 2012, contain committed projects funded for construction in the region. These were assumed to be in place by the design year (2035) and were included in the road network for traffic forecasting efforts of the future No-Build and Build conditions for this project. Several of these projects connect with I-75 or I-675 in the project corridor and include the following:

- AR-431-CWP 0006333: I-75 South Advanced Traffic Management System (ATMS)/ Comm./Surveillance from SR 155 to Hudson Bridge Road/Eagles Landing Parkway (right-of-way acquisition N/A, construction long range);
- HE-AR-216 – 312160: I-75 South at Jodeco Road Interchange Improvement, GDOT Project No. 312160 (under construction);
- HE-161A: Rock Quarry Road from Eagles Landing Parkway to Red Oak Road, GDOT Project No. N/A, (right-of-way acquisition 2014, construction 2015);
- HE-020-A: SR 20/81 from East of I-75 South to Phillips Drive, GDOT Project No. 321520, (right-of-way acquisition 2015, construction 2017);
- HE-920B: Metro Arterial Connector – SR 920 (McDonough Road/Jonesboro Road) from US 19/41 (Tara Boulevard) in Clayton County to I-75 South in Henry County, GDOT Project No. 342970, (right-of-way acquisition 2016, construction 2018-2030);
- HE-132C: Eagles Landing Parkway from Eagles Pointe Parkway to US 23, GDOT Project No. N/A, (right-of-way acquisition 2031-2040, construction 2031-2040);
- HE-165B: Patrick Henry Parkway from Jodeco Road to Eagles Landing Parkway, GDOT Project No. N/A, (right-of-way acquisition 2031-2040, construction 2031-2040);
- HE-113: SR 155 from I-75 South to U.S. 23, GDOT project No. 0007856, (right-of-way acquisition 2018-2030, construction 2018-2030); and
- AR-949: I-75 South Auxiliary Lane (northbound direction) from Hudson Bridge Road/Eagles Landing Parkway to Walt Stephens Road, GDOT project No. 0010126 (right-of-way acquisition N/A, under construction).

C. Alternatives Carried Forward

1. Alternative 1 - The Preferred Alternative

Description. Alternative 1 includes the construction of reversible, barrier-separated, express toll lanes (ETL) and ITS infrastructure along I-75 in Henry County and Clayton Counties. The ITS component of the project begins and ends approximately two miles on either side of the proposed express toll lanes. In Henry County, the ITS improvements begin 2.1 miles south of the I-75 bridge over SR 155 and continue north along both I-75 and I-675 into Clayton County, as shown in Figure 1. Along I-75, the ITS component of the project ends 2.1 miles north of the I-75 southbound off-ramp to SR 138 (Stockbridge Highway) and along I-675, it ends 2.1 miles north of SR 138.

The express toll lanes begin in Henry County at the I-75 bridge over SR 155 and end in Clayton County approximately 600 feet south of the I-75 southbound on-ramp from SR 138 and at SR 138 on I-675, for a total length of 12.24 miles. From SR 155 to approximately one mile south of Mt. Carmel Road, a single express toll lane would be constructed (Figure 2). The single lane would then transition to two reversible lanes, which would continue to the northern terminus of the facility, where they would diverge, providing access to the I-75 general purpose lanes and a direct single-lane connection to the median of I-675, where the lane would then connect to the I-675 general purpose lanes (Figure 3). The total project length including the ITS component is 17.94 miles.

Figure 2. Typical One-Lane Cross-Section

[From SR 155 to approximately one mile south of Mt. Carmel Road bridge; Source: Parsons.]

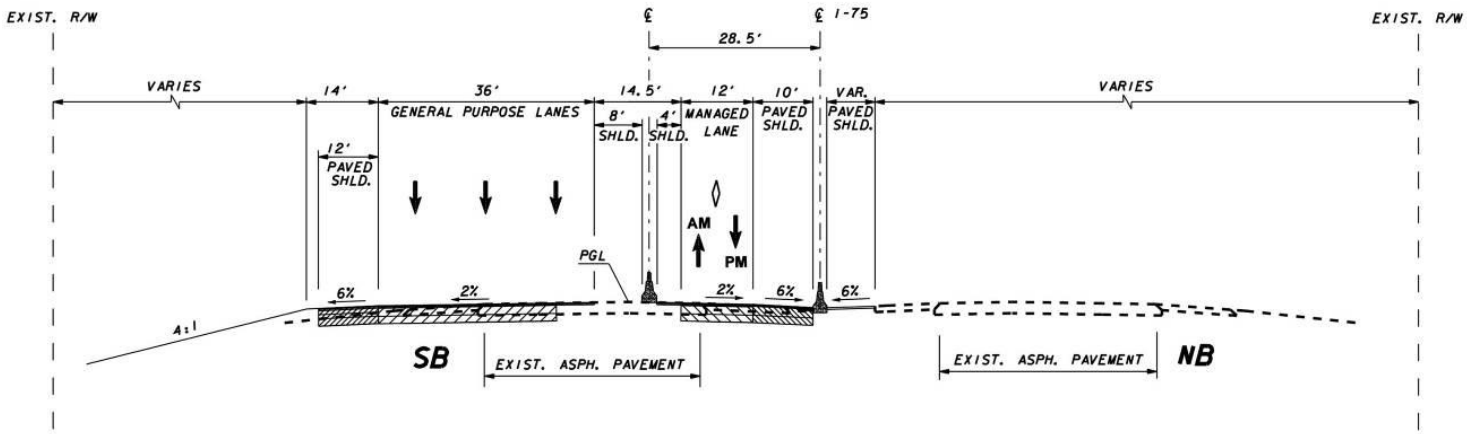
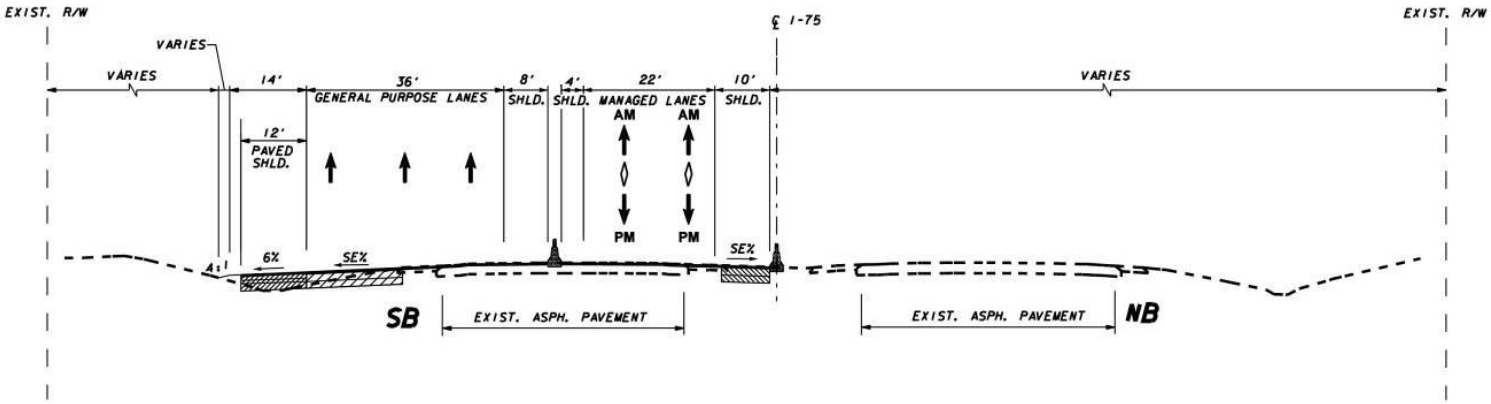


Figure 3. Typical Two-Lane Cross-Section

[From approximately one mile south of Mt. Carmel Road to I-675 bridge; Source: Parsons.]



To accommodate the new lanes within the median of I-75, the southbound general purpose lanes would be shifted approximately 19 to 31 feet to the west. The new lanes would match existing asphalt and concrete sections of the corridor and provide paved inside and outside shoulders. The proposed widening would occur within existing right-of-way, and retaining walls would be constructed along southbound I-75 to minimize right-of-way impacts. Existing guardrail and overhead signs along the corridor would be removed and replaced as necessary along with construction of noise barriers as determined by noise studies. The project would be constructed with minimal impact to the traveling public; no detours are anticipated on I-75 and it is expected that a minimum of three lanes of traffic would be maintained during peak hours.

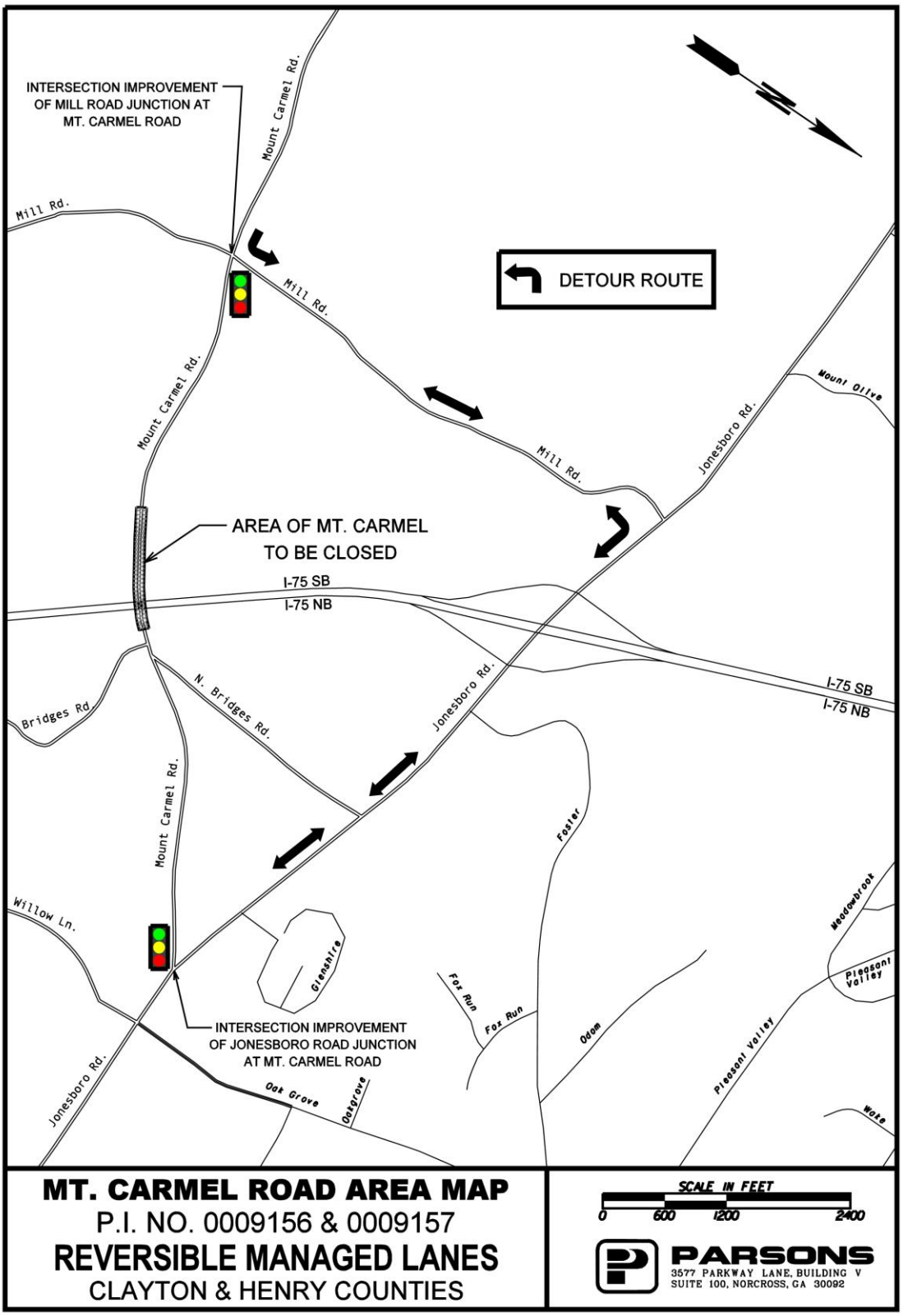
The following additional improvements are also proposed as part of the project:

- Replacement of existing Mt. Carmel Road bridge with a new two-lane, two-span bridge to accommodate the reversible-lanes typical section and the widening of the general-purpose lanes along I-75;
- A dedicated access ramp that would allow connection to the express toll lanes from Jonesboro Road at Foster Drive, just east of the Jonesboro interchange with I-75. The ramp would require partial acquisition of three parcels for right-of-way;
- Installation of a traffic signal and a left-turn turn lane along the northbound leg of the intersection of Mt. Carmel Road and Jonesboro Road to meet future demand;
- Widening of the existing I-75 overpass bridge at Flippen Road to accommodate the reversible-lanes typical section;
- Addition of a new single span I-675 bridge over the I-75 northbound lanes to provide a dedicated connection to I-675;
- A dedicated 150-foot right-turn lane along the southbound leg of Industrial Boulevard at SR 20 to reduce the overall delay at the intersection;
- Modification of the southbound right turn movement at the intersection of SR 20 and I-75 southbound ramp to a free flow movement in order to reduce delay at the intersection and improve the overall LOS of the intersection. The existing right-turn lane along westbound SR 20 could be restriped and used as the third receiving lane. This third lane would then become exclusive right-turn lane at the intersection of SR 20 and NEC Drive;
- Addition of a 150-foot right-turn lane along the southbound approach of Industrial Boulevard at its intersection with SR 155. This would reduce the overall delay at the intersection.

Mt. Carmel Road would be closed between Avondale Drive and Bridges Road for approximately nine months during construction. Mill Road would be used as an off-site detour during this period (Figure 4).

Operations. As described in Section I. Need and Purpose, GDOT would implement tolls on the facility under Section 129(a)(1)(B) of the Moving Ahead for Progress in the 21st Century Act (MAP-21) because "the facility has the same number of toll-free lanes after construction as it did before (excluding HOV lanes and auxiliary lanes)". All vehicles would pay a toll, except for emergency vehicles, maintenance vehicles, military vehicles, registered transit vehicles, and school buses. Registered transit vehicles include both buses operated by a public transportation agency within the ARC and registered with the State Road and Tollway Authority (SRTA) and vanpools certified by a public transportation agency within the ARC and registered with SRTA.

Figure 4. Mt. Carmel Road Detour Area Map



By providing free access for regionally-based transit vehicles and vanpools, both Build Alternatives address the need for more reliable travel times, greater mobility, and improved travel choices, particularly during peak period operations for commuters using transit and vanpools within the region.

Toll rates for the lanes vary according to traffic conditions to regulate demand for the lanes and keep them congestion-free, even during peak hour periods. When traffic volume increases, tolls increase with demand. When traffic volume decreases, tolls similarly decrease. A specific dollar range of tolls has not yet been determined. In other states on similar facilities, tolls typically range from less than a dollar to $4, with a maximum in some cases of $8. Nevertheless, the toll amounts need to consider not only the costs of the project (both capital and operating and maintenance expenditures) but also the regulation of travel demand. The lowest minimum speed of 45 mph would be maintained on the facility in order to regulate demand so that free flow of traffic is preserved for those that have chosen the express toll lanes. This would also provide more reliable travel times and greater mobility.

Fully electronic tolling allows customers to pay tolls automatically, eliminating the need for toll booths. Electronic signs display toll rates to help drivers decide whether to access the lanes. Drivers lock in their toll rate when they enter the ETL system. Under provisions of 23 USC 166(d), annual certification must be made that operational performance monitoring programs and enforcement programs are in place to ensure that the performance of the facility is not degraded and that the facility is operated in accordance with the restrictions and requirements of 23 USC 166.

The weekday operation of the express toll lanes are proposed to operate northbound in the morning peak period and southbound in the afternoon peak period. The reversible facility is expected to be closed for 1½ to 2 hours to allow for the reversal of the direction of travel. Following typical operational patterns, it would be expected that the reversible lanes would likely operate in a northbound direction from very early in the morning to about mid-day. The operational flow would change to southbound and continue from mid-day through to the early hours of the morning. As such, the reversible lanes would be operational all day (with the exception of the two periods each day when the direction of operation of the lanes is switched), not just during the peak periods. The direction of travel in the express toll lanes on weekends, holidays, and special events would be adjusted as needed to maximize the use of the reversible lanes. GDOT would remain flexible in determining the time of managed lane reversal based on actual use, traffic patterns, special events, and best management practices from other states with similar facilities. A concept of operations would be developed and updated as the project design, operations, and maintenance responsibilities between GDOT and SRTA are finalized.

Contra-flow traffic, i.e., morning southbound traffic and evening northbound traffic, would not be able to use the proposed reversible-lane system. The contra-flow traffic would have to use existing highway general purpose lanes or alternate arterial roadways. Mechanical arms and/or barriers would prevent contra-flow traffic from accessing the managed lane system. These barriers would be raised and lowered manually and would be observable through real-time video cameras.

Incident management on barrier-separated managed lanes differs from incident management on general purpose lanes due to the limited entrances and exits to the facility. In order to preserve travel time savings, it is essential to have timely and effective clearing of incidents and

breakdowns on a barrier-separated facility. GDOT currently operates the Highway Emergency Response Operator, or HERO, program on the interstate system to manage incidents. This program would continue to operate on the general purpose lanes and it is expected that it would be expanded to include the managed lanes.

2. Alternative 2

Alternative 2, High Occupancy Toll-3+ (HOT-3+) lanes, includes the same lane configuration and physical footprint as the express toll lanes in Alternative 1. The key difference between HOT-3+ lanes (Alternative 2) and ETL (Alternative 1) is the toll policy and physical operations of the toll collection due to the occupancy requirements of HOT lanes. Those vehicles that contain three or more passengers are designated as a high occupancy vehicle (HOV-3+) and are exempt from paying the toll. Single occupant vehicles and HOV-2 vehicles would be required to pay a toll. Therefore, Alternative 2 is defined as HOT-3+. The typical sections displayed in Figures 2 and 3 are the same for HOT-3+ as for ETL. Both the ITS components and the actual lanes begin and end in the same locations as Alternative 1. Because the lane configuration is the same under Alternatives 1 and 2, the additional improvements proposed for Alternative 1 are also proposed for Alternative 2. The replacement of the Mt. Carmel Road bridge over I-75 would still occur and a detour would still be required (Figure 4).

Operations. As described in Section I. Need and Purpose, GDOT would implement tolls on the facility under Section 129(a)(1)(B) of the Moving Ahead for Progress in the 21st Century Act (MAP-21) because "the facility has the same number of toll-free lanes after construction as it did before (excluding HOV lanes and auxiliary lanes)". All vehicles that are designated as HOV-3 are exempt from paying a toll, as well as emergency vehicles, maintenance vehicles, military vehicles, registered transit vehicles (as detailed under Alternative 1), and school buses. Toll rates for the single occupant vehicles and HOV-2 vehicles would vary according to traffic conditions to regulate demand for the lanes and keep them congestion-free, even during peak hour periods. When traffic volume increases, tolls increase with demand. When traffic volume decreases, tolls similarly decrease. Therefore, the daily operations are relatively similar to those described under Alternative 1.

Implementing an HOT system requires more complex system operations than an ETL system. The transponder mode under the ETL system is universal, except for specifically designated vehicles, such as transit vehicles, registered vanpools, and emergency vehicles. Transponder mode under the HOT system is not universal, therefore, the public education for transponder use for HOT lanes can be more complicated. The drivers must make a choice in declaring their transponder mode, i.e. switching the mode as to whether a driver is using it as an SOV or HOV. An HOT-3+ system is already in place in the Atlanta region on I-85 north of Atlanta. The toll operations have already been established through the Peach Pass system. The toll mode is either non-toll (if in a 3+ carpool) or toll (if in a 2+ carpool or driving alone). The toll mode can be changed on-line at the Peach Pass homepage or using a free application for smart phones. All changes take at least 15 minutes to process before the customer is able to use the roadway. As with Alternative 1, the tolling is fully electronic, eliminating the need for toll booths. Electronic signs display toll rates to help drivers decide whether to access the lanes. Drivers lock in their toll rate when they enter the managed lanes. Under provisions of 23 USC 166(d), annual certification must be made that operational performance monitoring programs and enforcement

programs are in place to ensure that the performance of the facility is not degraded and that the facility is operated in accordance with the restrictions and requirements of 23 USC 166.

In addition to driver education, this alternative requires additional enforcement, since occupancy must be monitored to ensure that the transponder mode of individual vehicles is accurate. In other words, drivers could declare their transponder mode as HOV-3+ but have only one or two occupants in the vehicle. Therefore, violation rates are likely to be higher on an HOT system than an ETL system, where all must pay regardless of occupancy. There is added capital and operation and maintenance costs with HOT lanes versus ETL lanes due to additional signs and enforcement.

3. Alternative 3

The no action or No-Build Alternative provides a baseline of conditions against which to compare the Build Alternatives. Under the No-Build Alternative, the proposed managed lanes are not constructed and I-75 remains in its present configuration with three basic through lanes in each direction from SR 155 in Henry County to SR 138 in Clayton County plus auxiliary lanes between the I-675 interchange and Eagles Landing Parkway/Hudson Bridge Road. As noted previously, the No-Build also includes committed projects funded for construction in the region as contained in the FY2012-2017 TIP.

D. Ability to Meet Needs

1. Alternative 1

The Preferred Alternative satisfies the need and purpose for the following reasons.

Consistency with regional transportation planning initiatives. The proposed express toll lanes are managed lanes, which is consistent with policies adopted by the Georgia State Transportation Board and the ARC. The Preferred Alternative also is consistent with the regional *Managed Lane System Plan*, the *Plan 2040* CLRTP, and the FY2012-2017 TIP. The *MLSP Final Report* states that HOT-3+ is "the recommended eligibility policy for the managed lane system" (GDOT, 2010b, p. 12). However, the report also notes that there is a need "to refine the analysis [for all of the projects] for the purposes of individual project delivery and financing" (GDOT, 2010b, p. 30). A refined analysis was completed for this project and incorporated into a Technical Memorandum in November, 2011. Based on the findings reported in that memorandum, the Georgia State Transportation Board Chairman and Board Representatives from the GDOT Districts in which the project is located formally recommended that ETL (the toll policy of Alternative 1) be selected as the toll policy for this project on February 15, 2012. The project is also consistent with the Joint Henry County/Cities Comprehensive Transportation Plan (CTP). Henry County recognizes I-75 as "a vital transportation asset and high transportation priority". A primary goal of the CTP is to enhance mobility in the county and towns. An objective to reach this goal is to continue to collaborate and coordinate with GDOT regarding improvements to I-75.

Improvements to reliability of travel times and mobility. To measure the effectiveness of the Alternative 1 for providing reliable travel times, Build condition LOS analysis was conducted for the managed lanes, managed lane ramp merges and diverges, and the general purpose lanes for the opening and design years (2015 and 2035). The results were then compared to the standards of the LOS grade scale and to the LOS results for the No-Build Alternative. As will be discussed

further when Alternative 2 is reviewed, the traffic analysis is applicable to both Build Alternatives; therefore, the term managed lanes is used instead of ETL or HOT-3+.

The Build condition LOS grades for freeway segments are displayed in Tables 12 and 13. No-Build condition LOS grades from Tables 3 and 4 are displayed next to the Build condition grades for the peak hour direction to facilitate a comparison of Build and No-Build conditions.

Table 12. Freeway Capacity Analysis Summary: Build 2015 (No-Build 2015)

Location		AM		PM	
From	**To**	**Density (pc/mi/ln)**	**LOS**	**Density (pc/mi/ln)**	**LOS**
I-75 southbound (SB) General Purpose Lanes					
Mt. Zion Rd.	***SR 138****	***10.1***	***A***	***(17.5) 23.0***	***(B) C***
SR 138	I-675	18.0	B	(16.5) 26.4	(B) C
I-675	Hudson Bridge Rd./Eagles Landing Pkwy.	14.3	B	(21.6) 22.3	(C) C
Hudson Bridge Rd./Eagles Landing Pkwy.	Jodeco Rd.	18.0	B	(33.6) 32.2	(D) D
Jodeco Rd.	Jonesboro Rd.	18.4	C	(31.7) 30.6	(D) D
Jonesboro Rd.	SR 20/SR 81	17.0	B	(26.5) -	(D) -
Jonesboro Rd.	Slip Ramp	-	-	(-) 25.7	(-) C
Slip Ramp	SR 20/SR 81	-	-	(-) 34.0	(-) D
SR 20/SR 81	SR 155	13.8	B	(19.7) 21.4	(C) C
SR 155	***South of SR 155****	***11.1***	***B***	***(15.3) 17.7***	***(B) B***
I-75 SB Managed Lanes					
SR 138	I-675	-	-	(-) 11.5	(-) A
I-675	Off-Ramp to Jonesboro Rd.	-	-	(-) 16.1	(-) B
Off-Ramp to Jonesboro Rd.	Slip Ramp to General-Purpose Lanes	-	-	(-) 16.1	(-) B
Slip Ramp	SR 155	-	-	(-) 7.4	(-) A
I-675 SB General Purpose Lanes					
North of SR 138	***SR 138****	***11.3***	***B***	***(29.6) 38.1***	***(D) E*****
SR 138	South of SR 138	10.1	B	(19.4) 24.5	(C) C
I-75 northbound (NB) General Purpose Lanes					
South of SR 155	***SR 155****	***(16.8) 19.5***	***(B) C***	***13.9***	***B***
SR 155	SR 20/SR 81	(19.3) 21.1	(C) C	14.9	B
SR 20/SR 81	Jonesboro Rd.	(22.5) -	(C) -	18.2	C
SR 20/SR 81	Slip Ramp	(-) 28.3	(-) D	-	-
Slip Ramp	Jonesboro Rd.	(-) 22.0	(-) C	-	-
Jonesboro Rd.	Jodeco Rd.	(26.1) 25.4	(D) C	20.6	C
Jodeco Rd.	Hudson Bridge Rd./Eagles Landing Pkwy.	(30.6) 29.9	(D) D	20.3	C
Hudson Bridge Rd./Eagles Landing Pkwy.	I-675	(23.2) 22.8	(C) C	15.5	B
I-675	SR 138	(16.8) 24.9	(B) C**	13.6	B
SR 138	***Mt. Zion Rd.****	***(17.6) 22.5***	***(B) C***	***11.6***	***B***
I-75 NB Managed Lanes					
SR 155	Slip Ramp	(-) 7.8	(-) A	-	-
Slip Ramp from General-Purpose Lanes	On-Ramp from Jonesboro Rd	(-) 6.0	(-) A	-	-
On-Ramp from Jonesboro Rd	I-675	(-) 13.8	(-) B	-	-
I-675	SR 138	(-) 9.4	(-) A	-	-
I-675 NB General Purpose Lanes					
South of SR 138	SR 138	(19.2) 24.5	(C) C	10.5	A
SR 138	***North of SR 138****	***(22.7) 28.1***	***(C) C***	***11.7***	***B***

Source: Traffic Study: I-75 Managed Lanes from SR 138 to SR 155, GDOT, July 2012.

Notes: (XX) indicates No-Build. Not Applicable due to direction of reversible lanes. ***Beyond project termini.** **The project degrades LOS on this segment due to volume increases along the corridor under the Build Condition. For basic freeway segments, LOS D=26-36 pc/mi/ln, LOS E=36-45 pc/mi/ln; LOS F= >45 pc/mi/ln. Yellow shading indicates LOS E.

Table 13. Freeway Capacity Analysis Summary: Build 2035 (No-Build 2035)

Location		AM		PM	
From	**To**	**Density (pc/mi/ln)**	**LOS**	**Density (pc/mi/ln)**	**LOS**
I-75 southbound (SB) General Purpose Lanes					
Mt. Zion Rd.	***SR 138****	***11.9***	***B***	***(22.3) 25.6***	***(C) C***
SR 138	I-675	14.4	B	(22.5) 34.6	(C) D
I-675	Hudson Bridge Rd./Eagles Landing Pkwy.	17.0	B	(34.6) 28.7	(D) D
Hudson Bridge Rd./Eagles Landing Pkwy.	Jodeco Rd.	21.4	C	(47.4) 38.3	(F) E
Jodeco Rd.	Jonesboro Rd.	21.8	C	(39.9) 33.4	(E) D
Jonesboro Rd.	SR 20/SR 81	20.4	C	(36.0) -	(E) -
Jonesboro Rd.	Slip Ramp	-	-	(-) 30.9	(-) D
Slip Ramp	SR 20/SR 81	-	-	(-) 43.7	(-) E
SR 20/SR 81	SR 155	17.0	B	(25.0) 25.4	(C) C
SR 155	***South of SR 155****	***14.9***	***B***	***(20.7) 22.5***	***(C) C***
I-75 SB Managed Lanes					
SR 138	I-675	-	-	(-) 13.2	(-) B
I-675	Off-Ramp to Jonesboro Rd	-	-	(-) 19.1	(-) C
Off-Ramp to Jonesboro Rd	Slip Ramp to GP Lanes	-	-	(-) 11.9	(-) B
Slip Ramp	SR 155	-	-	(-) 8.8	(-) A
I-675 SB General Purpose Lanes					
North of SR 138	***SR 138****	***13.3***	***B***	***(38.9) ******	***(E) F*****
SR 138	South of SR 138	12.1	B	(27.3) 32.8	(D) D
I-75 northbound (NB) General Purpose Lanes					
South of SR 155	***SR 155****	***(21.9) 23.8***	***(C) C***	***19.0***	***C***
SR 155	SR 20/SR 81	(24.8) 24.6	(C) C	18.8	C
SR 20/SR 81	Jonesboro Rd.	(30.0) -	(D) --	22.4	C
SR 20/SR 81	Slip Ramp	(-) 35.4	(-) E	-	-
Slip Ramp	Jonesboro Rd.	(-) 26.2	(-) D	-	-
Jonesboro Rd.	Jodeco Rd.	(33.2) 28.6	(D) D	24.4	C
Jodeco Rd.	Hudson Bridge Rd./Eagles Landing Pkwy.	(41.5) 36.2	(E) E	24.7	C
Hudson Bridge Rd./Eagles Landing Pkwy.	I-675	(33.2) 29.6	(D) D	19.9	C
I-675	SR 138	(22.9) 33.1	(C) D**	17.0	B
SR 138	***Mt. Zion Rd.****	***(23.1) 26.6***	***(C) D***	***14.6***	***B***
I-75 NB Managed Lanes					
SR 155	Slip Ramp	(-) 9.1	(-) A	-	-
Slip Ramp from GP Lanes	On-Ramp from Jonesboro Rd	(-) 11.5	(-) B	-	-
On-Ramp from Jonesboro Rd	I-675	(-) 16.8	(-) B	-	-
I-675	SR 138	(-) 22.9	(-) C	-	-
I-675 NB General Purpose Lanes					
South of SR 138	SR 138	(24.7) 32.8	(C) D	13.3	B
SR 138	***North of SR 138****	***(29.0) 33.8***	***(D) D***	***14.5***	***B***

Source: Traffic Study: I-75 Managed Lanes from SR 138 to SR 155, GDOT, July 2012.

Notes: (XX) indicates No-Build. Not Applicable due to direction of reversible lanes. ***Beyond project termini.** **The project degrades LOS on this segment due to volume increases along the corridor under the Build Condition. *** Freeway capacity exceeded. Yellow shading indicates LOS E, orange is LOS F.

Tables 12 and 13 are similar to Tables 2 and 3, with one difference: the project corridor is broken down into eight as opposed to seven segments. This difference is due to the addition of the slip ramp to and from the managed lanes in the peak direction between the Jonesboro Road interchange and the SR 20/SR 81 interchange. The addition of the slip ramp divides the Jonesboro Road to SR 20/ SR 80 segment into two segments for purposes of measuring Build condition LOS in the peak direction. One of two segments extends from Jonesboro Road to the slip ramp and the other from the slip ramp to SR 20/SR 81. It should be noted that in the No-Build condition, peak direction LOS continues to be measured for the whole Jonesboro Road to SR 20/SR 81 segment. This makes a direct comparison of Build and No-Build condition LOS for the Jonesboro Road to SR 20/ SR 80 segment complicated.

When considering reliability, it must be remembered that reliable trip times can be guaranteed only for users of the managed lanes. Therefore, the reliability analysis necessarily focuses on the managed lanes, and does not compare general purpose lane performance under the Build and No-Build conditions. The general purpose lane comparison will be made later in the document when measuring the project's effectiveness for achieving congestion relief.

One way to determine the reliability of travel in the managed lane is to compare managed lane LOS against the standards prescribed by the LOS scale. Based on this comparison, managed lane trips would be highly reliable; under both Build Alternatives, the lanes operate at desirable levels (LOS C or better) in both 2015 and 2035. The *MLSP Final Report* states that the targeted speed for the managed lanes is 45 mph and does not designate a particular LOS (GDOT, 2010b, p. 12). As shown in Tables 12 and 13, the managed lanes would tend to operate at the high end of the desirable grade range in both the opening and design years, with approximately two-thirds of the managed lane segments functioning at LOS A or B rather than at LOS C.

Reliability can also be measured by contrasting managed lane LOS to general purpose lane LOS in the peak hour direction. Whereas the managed lanes grades are primarily LOS A and B in both the opening and design years, the general purpose lane grades are decidedly worse. Under both the Build and No-Build Alternatives, general purpose lane LOS in the peak hour direction is concentrated between LOS C and D in the opening year and LOS D and E in the design year (Tables 12 and 13). Thus, in the design year, general purpose lane LOS in the peak direction would be desirable and undesirable, as contrasted with the desirable grades offered by the managed lanes.

In addition to the LOS grade comparison, the reliability of the managed lanes can be measured by comparing managed lane travel times to general purpose lane travel times. The results of this analysis are displayed in Table 14. Focusing on the design year results, it can be seen that the managed lanes would save between 9.3 minutes (51%) in the am and 12.2 minutes (58%) in the pm over the general purpose lanes under the No-Build Condition. In the Build condition, the managed lanes travel time lane savings over the general purpose lanes would be somewhat less: 5.8 minutes (40% percent) in the am and 8.8 minutes (49%) in the pm.

Table 14. Travel Times: No-Build and Build Conditions

Segment	2015 No-Build (min)	2015 Build (min)	2035 No-Build (min)	2035 Build (min)
I-75 Northbound AM Peak				
I-75 General Purpose lanes (beginning of managed lane to end of managed lane) (10.33 miles)	15.3	12.5	18.1	14.3
I-75 Managed Lane (10.33 miles)	N/A	8.7	N/A	8.8
I-75/I-675 from managed lane split towards I-675 to I-675 NB/ SR 138 (1.36 miles)	2.3	1.4	2.4	1.4
I-75 at I-675 to I-675 NB/ SR 138 (Managed lane) (1.39 miles)	N/A	1.2	N/A	1.2
I-75 NB from I-675 (end of managed lane) to SR 138 (1.92 miles)	3.0	2.0	2.9	2.1
I-75 Travel Time Savings (Build GP lanes vs. No-Build GP lanes)	2.8 (18%)		3.8 (21%)	
I-75 Travel Time Savings (Build Managed lanes vs. No-Build GP lanes)	6.6 (43%)		9.3 (51%)	
I-75 Travel Time Savings (Build Managed lanes vs. Build GP lanes)	3.8 (30%)		5.5 (38%)	
I-75 Southbound PM Peak				
I-75 from SR 138 to I-675 (1.73 miles)	2.3	1.7	6.5	1.8
I-675 SB SR 138 to I-75 (1.19 miles)	1.5	1.2	7.6	3.5
I-675 SB SR 138 to I-75 (Managed lane equivalent) (1.11 miles)	N/A	0.9	N/A	0.9
I-75 GP lanes (beginning of managed lane to end of managed lane) (10.65 miles)	17.4	14.4	21.2	17.8
I-75 Managed Lane (10.65 miles)	N/A	8.6	N/A	9.0
I-75 Travel Time Savings (Build GP lanes vs. No-Build GP lanes)	3.0 (17%)		3.4 (16%)	
I-75 Travel Time Savings (Build Managed lanes vs. No-Build GP lanes)	8.8 (51%)		12.2 (58%)	
I-75 Travel Time Savings (Build Managed lanes vs. Build GP lanes)	5.8 (40%)		8.8 (49%)	
I-675 Travel Time Savings (Build GP lanes vs. No-Build GP lanes)	0.3 (20%)		4.5 (59%)	
I-675 Travel Time Savings (Build Managed lanes vs. No-Build GP lanes)	0.6 (40%)		6.7 (88%)	
I-675 Travel Time Savings (Build Managed lanes vs. Build GP lanes)	0.3 (25%)		2.2 (71%)	

Source: Traffic Study: I-75 Managed Lanes from SR 138 to SR 155, GDOT, July 2012.

Note: The speed limits used for analysis are the same for all alternatives, 65 miles per hour; however, the vehicle speeds are based on vehicle density. These times differ from the travel times presented in Table 1 due to the length of the analyzed segments. Table 14 analyzes only the length of the actual managed lanes for comparison purposes between the No-Build and Build conditions. Table 1 analyzes I-75/I-675 from SR 138 to SR 155. The comparable segments in Table 14 are the beginning to end of the managed lanes plus the I-75 or I-75/I-675 segments to SR 138.

Ramp merge and diverge capacity analysis was also completed for the managed lanes of the Build Alternatives to measure reliability (Tables 15 and 16). Most of the managed lane ramps would operate at a desirable LOS. In 2015, one ramp operates at undesirable LOS E in the pm, southbound, and one operates at LOS E in the am, northbound. By 2035, two operate at undesirable LOS in the pm, southbound, and one operates at undesirable LOS in the am northbound. In general, there is a geographic correspondence between the locations of undesirable LOS freeway segments and undesirable LOS ramp locations based on high traffic demands. The freeway segments in these locations are operating at undesirable LOS E. This is due to the fact that these are major merge areas for the managed lanes.

Table 15. Managed Lanes Ramp Merge and Diverge Capacity Analysis
Build Condition 2015

Type	Location	AM		PM	
		Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
I-75 southbound (SB)					
Off-Ramp	To the beginning of the Managed Lanes	-	-	6.7	A
On-Ramp	From the Managed Lanes (Slip ramp East of Mt. Carmel Overpass)	-	-	36.7	(--) E
On-Ramp	From the end of the Managed Lanes	-	-	19.3	B
I-75 SB Managed Lanes					
On-Ramp	From I-675	-	-	15.1	B
Off-Ramp	To Jonesboro Rd. connector	-	-	17.7	B
Off-Ramp	To General-Purpose Lanes (Slip ramp East of Mt. Carmel Overpass)	-	-	12.8	B
I-675 SB					
Off-Ramp	To the Managed Lanes	-	-	30.4	(--) D
I-75 northbound (NB)					
Off-Ramp	To the beginning of the Managed Lanes	25.1	C	-	-
Off-Ramp	To the Managed Lanes (Slip ramp East of Mt. Carmel Overpass)	38.9	(--) E	-	-
On-Ramp	From the end of the Managed Lanes	0.35**	-	-	-
I-75 NB Managed Lanes					
On-Ramp	From General-Purpose Lanes (Slip ramp East of Mt. Carmel Overpass)	13.3	B	-	-
On-Ramp	From Jonesboro Rd. connector	16.3	B	-	-
Off-Ramp	To I-675	8.6	A	-	-
I-675 NB					
On-Ramp	From the Managed Lanes	21.5	C	-	-

Source: Traffic Study: I-75 Managed Lanes from SR 138 to SR 155, GDOT, July 2012.
Notes: ** Major merge area; capacity check performed up and downstream freeway and ramp. Yellow shading indicates LOS E.

Table 16. Managed Lanes Ramp Merge and Diverge Capacity Analysis
Build Condition 2035

Type	Location	AM		PM	
		Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
I-75 southbound (SB)					
Off-Ramp	To the beginning of the Managed Lanes	-	-	11.2	B
On-Ramp	From the Managed Lanes (Slip ramp East of Mt. Carmel Overpass)	-	-	42.0	(--) E
On-Ramp	From the end of the Managed Lanes	-	-	22.8	C
I-75 SB Managed Lanes					
On-Ramp	From I-675	-	-	18.1	B
Off-Ramp	To Jonesboro Rd. connector	-	-	21.1	C
Off-Ramp	To General-Purpose Lanes (Slip ramp East of Mt. Carmel Overpass)	-	-	12.8	B
I-675 SB					
Off-Ramp	To the Managed Lanes	-	-	36.0	E
I-75 northbound (NB)					
Off-Ramp	To the beginning of the Managed Lanes	27.5	C	-	-
Off-Ramp	To the Managed Lanes (Slip ramp East of Mt. Carmel Overpass)	44.3	(--) E	-	-
On-Ramp	From the end of the Managed Lanes	0.17**	-	-	-
I-75 NB Managed Lanes					
On-Ramp	From General-Purpose Lanes (Slip ramp East of Mt. Carmel Overpass)	15.1	B	-	-
On-Ramp	From Jonesboro Rd. connector	19.6	B	-	-
Off-Ramp	To I-675	12.3	B	-	-
I-675 NB					
On-Ramp	From the Managed Lanes	28.4	(--) D	-	-

Source: Traffic Study: I-75 Managed Lanes from SR 138 to SR 155, GDOT, July 2012.
Notes: ** Major merge area; capacity check performed up and downstream freeway and ramp. Yellow shading indicates LOS E.

Expands travel choices. The Preferred Alternative offers choices to users: to pay a fee (toll) to achieve more reliable travel times commensurate with the value of time savings; carpooling to share the toll; to avoid a toll by traveling in the general purpose lanes at no additional charge; or switching to transit services. Transit and commuting use are discussed in more detail in Section III.C.6.d. Transit and Commuting Options. The Preferred Alternative would enhance the desirability of these travel choices. Currently, there are three park and ride lots near the I-75 corridor within the project limits and three express bus routes are provided in the area by the Georgia Regional Transportation Authority.

Tolling for Financing. The Preferred Alternative provides toll funding for capital, operating, and maintenance costs. Without this additional source of funding, the project is not financially feasible at this time based on presently expected levels of federal and state funding. The capital costs and operation and maintenance costs of managed lanes can vary based on the type of managed lanes (HOT, ETL, HOV), the location of managed lanes (concurrent or reversible), the use of tolls (HOV or HOT), and enforcement of occupancy requirements (HOV/HOT or ETL). The project construction estimate is $150,000,000. A financial plan for the project would be

completed in the future with additional information on funding source information, including tolls.

Reduce Congestion by Adding Transportation Capacity. By adding transportation capacity to the I-75 project corridor, the proposed managed lanes would reduce congestion in the general purpose lanes. In addition, although the proposed project is not necessarily intended to relieve congestion at ramp merges and diverges, the addition of the managed lanes would have the effect of improving operations at many of the ramps by improving through movement along the mainline of I-75. Since mainline traffic in the general purpose lanes flows more smoothly, the traffic coming off the ramps or getting onto the ramps can make an easier merge or diverge due to relatively less weaving.

The LOS data that was used to measure the reliability of travel times in the managed lanes can also be used to measure the project's effectiveness for relieving general purpose lane congestion (Tables 12, 13, 15, and 16). In 2015, Build condition grades are desirable for all of the peak hour direction movements (Table 12). One undesirable (E) occurs beyond the project termini. By 2035 along the I-75 corridor, 13 of the 18 peak direction movements fall in the desirable range (LOS A-D), while five are undesirable (LOS E/F) (Table 13). Therefore, the project would leave the general purpose lanes somewhat congested in the design year when judged by standards of the LOS grade scale. As was true of the No-Build condition, this congestion would be most severe in the peak hour directions. From Tables 12 and 13, it can be observed that the density and level of service along the corridor is similar in both No-Build and Build conditions. There are several sections along the corridor where the Build condition LOS is better than No-Build and at a few locations beyond the project limits. At the new slip ramps to managed lanes, the LOS is slightly lower in the Build condition. However, the overall corridor performance is better in the Build compared to No-Build condition.

Alternatives for improving operations in the general purpose lanes where LOS is undesirable have been considered. The four undesirable grades are all LOS E, and they occur along two segments in both the am and pm peak direction: the Hudson Bridge Road to Jodeco Road segment and the segment between SR 20/SR 81 and the slip ramp. Although a capacity analysis for a general purpose lane alternative has not been conducted, it is likely that the only alternative that could increase capacity enough to provide desirable LOS throughout the project corridor would be the addition of multiple general purpose lanes.

It should be noted, however, that the relationship between adding general purpose lanes and reducing congestion is by no means a perfect one. First, experience shows that new general purpose lanes simply tend to fill up over time; hence, the congestion relief offered by adding general purpose lanes might be short-term. Moreover, studies and reports like FHWA's Managed Lanes Primer and Freeway Management and Operations Handbook indicate that there is a limit on how many general purpose lanes can be added to an interstate without reaching a point of diminishing returns. When a facility reaches five lanes, the operational benefits of adding capacity can be partially offset by weaving problems. These qualifications aside, a general purpose lane alternative (Alternative 4) has been considered and has been ruled out because it would not adequately address the other needs and purposes of the project. The deficiencies of the general purpose lane alternative with respect to the various needs and purposes is discussed in more detail in Section II.E.

Alternatives that do not involve adding multiple general purpose lanes have been identified for the I-75 segment between the slip ramp and SR 20/SR 81. In the northbound direction, the existing acceleration lane for the SR 20 on-ramp could be extended such that the end of the acceleration lane is past the slip ramp to the managed lanes. The lengthening would be approximately 3,500 feet. In the southbound direction, the existing deceleration lane to SR 20 could be extended northwards, past the slip ramp from the managed lanes. The advantage of doing such is that most traffic exiting at SR 20 is general purpose lanes traffic. If they were in the deceleration lane prior to the slip ramp, then this would reduce per lane volume in the area which the slip ramp traffic is merging. Furthermore, a two lane off-ramp could be constructed to improve diverge operations with the high volume exiting at this location. The lengthening would be approximately 3,000 feet.

Since none of the above improvements are included in *Plan 2040* or the *Unfunded Aspirations Plan Vision (Plan 2041+)*, they are not reasonable to pursue at this time.

The effectiveness of a project for providing congestion relief can also be measured by comparing Build and No-Build condition LOS. Such a comparison is somewhat less stringent than comparing Build condition grades to the standards of the LOS grade scale in that a Build condition grade that is undesirable may nevertheless represent improvement over the No-Build alternative. The LOS data in Table 13 shows that the project would offer some improvement in general purpose lane LOS relative to the No-Build alternative on two segments in the design year. The improvement occurs in the afternoon peak hour direction between Hudson Bridge Road/Eagles Landing Pkwy and Jodeco Road and between Jodeco Road and Jonesboro Road. In the former case, LOS would improve from F to E while in the latter instance it would improve from E to D.

The LOS results that have just been examined measure congestion relief for particular freeway segments. A measure of congestion relief for the entire corridor has been obtained by comparing Build and No-Build condition travel times. As shown in Table 14, the project would improve general purpose lane travel times along the length of the corridor by 3.4 to 3.8 minutes or 16% to 21% compared to the No-Build condition (Table 14). It should be noted that buffer times have not been considered in the calculation of travel times. Users who expect to use either Build Alternative if they encounter congestion in the general purpose lanes do not have to allow for buffer times, which saves them travel time. The travel time savings afforded by using either Build Alternative could therefore be even greater than shown in Table 14 depending on the buffer time a particular user typically used when traveling in the ETL was not an option.

Although ramp merges and diverges were not a primary focus of the need and purpose, concept development did anticipate that congestion relief in the general purpose lanes would assist with merging and diverging movements. The LOS data in Tables 15 and 16 show this to be the case. Although the Build condition grades in the peak hour direction generally remain in the low range of desirable LOS, they are frequently one or two grades better when compared to the No-Build alternative. For example, in 2035, five movements improve from LOS F to LOS D under the Build condition, and one movement improves from LOS F to LOS E.

Alternatives for improving LOS have been considered at ramps where the project would cause merge or diverge LOS to degrade to LOS E in the opening year and/or to LOS F in the design year. This would occur at the off ramp to SR 20/US 81 in the afternoon peak hour (Tables 15 and 16). As discussed under independent utility, additional improvements have been included at

this ramp. Although these improvements would not eliminate the LOS grade of F, they would reduce seconds of delay at the ramp by 66.1 seconds in 2015 and by 82.3 seconds in 2035.

Accommodate Regional Growth and Accessibility. The Preferred Alternative, by providing additional capacity, accommodates growing traffic volumes associated with continuing population and employment growth. The tolling feature of the project provides a means to maintain optimal usage and reliable travel time and therefore better mobility and accessibility in the corridor.

During analysis of a transportation network, traffic fluctuates between roadway facilities within the analyzed network. One reason for such fluctuations is that congestion relief on one route frequently causes traffic to divert from other parallel routes that may be more congested and/or which may offer less direct access between origins and destinations. In the case of this project, the analysis found that traffic diverts to I-75 from parallel facilities such as US 19, SR 42, and SR 155. Build condition volumes increase over No-Build volumes due to traffic diversion by 5 to 25% in 2015 and from 2 to 23% in 2035. The difference between Build condition and No-Build condition volumes for particular freeway segments is shown in Table 11.

While the diversion of traffic is an imperfect indicator of the project's ability to accommodate regional growth and development, it does provide evidence that congestion on I-75 has become so severe that motorists are choosing alternate routes. It is reasonable to assume that by allowing some motorists to return to a more direct and less time consuming route, this project should accommodate the growth and development that has already occurred. A more detailed discussion of land use and development appears in Section III.C.1.

2. Alternative 2

Alternative 2 satisfies the need and purpose for the following reasons.

Consistency with regional transportation planning initiatives. The proposed HOT-3+ lanes are managed lanes, which is consistent with policies adopted by the Georgia State Transportation Board and the ARC. Alternative 2 is also consistent with the regional *Managed Lane System Plan*, the *PLAN 2040* CLRTP, and the FY2012-2017 TIP. The *MLSP Final Report* states that HOT-3+ is "the recommended eligibility policy for the managed lane system" (GDOT, 2010b, p. 12). However, the report also notes that there is a need "to refine the analysis [for all of the projects] for the purposes of individual project delivery and financing" (GDOT, 2010b, p. 30). Alternative 2 is also consistent with the Joint Henry County/Cities Comprehensive Transportation Plan (CTP). Henry County recognizes I-75 as "a vital transportation asset and high transportation priority". A primary goal of the CTP is to enhance mobility in the county and towns. An objective to reach the goal is to continue to collaborate and coordinate with GDOT regarding improvements to I-75. Finally, the presence of an HOT-3+ system is already in place in the Atlanta region on I-85 north of Atlanta.

Improvements to reliability of travel times and mobility. The ARC travel demand model 2040 was run for both Alternatives. The projected total traffic volumes for both Alternatives are the same. There is a small difference in projected traffic volumes between the managed lanes and general purpose lanes of each Build Alternative. Alternative 1 is projected to have between 0.1% and 0.25% less traffic in the express toll lanes than the HOT lanes in Alternative 2 and therefore, 0.1-0.25% more traffic on the general purpose lanes than the general purpose lanes in Alternative 2. However, this difference is not enough to affect the capacity analysis, the Level of

Service analysis, and travel times for the managed lanes, general purpose lanes, and the ramp merges and diverges for Alternative 2 as for Alternative 1 (Tables 12, 13, 15, and 16). Therefore, Alternative 2 and Alternative 1 are equally effective for providing reliable travel times and mobility.

Expands travel choices. As with Alternative 1, Alternative 2 would enhance travel choices by allowing transit to use the toll lanes for free and by allowing SOV and HOV-2 to use the lanes by paying a toll. However, Alternative 2 would further enhance travel choices by allowing HOV-3 to use the toll lanes for free.

Tolling for Financing. As with Alternative 1, Alternative 2 provides toll funding for capital, operating, and maintenance costs. Without this additional source of funding, Alternative 2 is not financially feasible at this time based on presently expected levels of public transportation funding. The capital costs and operation and maintenance costs of managed lanes can vary based on the type of managed lanes (HOT, ETL, HOV), the location of managed lanes (concurrent or reversible), the use of tolls (HOV or HOT), and enforcement of occupancy requirements (HOV/HOT or ETL). The project construction estimate is $150,000,000. A financial plan for the project would be completed in the future with additional information on funding source information, including tolls.

According to GDOT's *I-75 Express Lanes Level 2 Traffic and Revenue Study* (August 2011), fifty-year accumulated gross revenues for Alternative 2, with trucks prohibited from the managed lanes, are projected to be $556 million in 2011 dollars. Alternative 1 would generate over $585 million, a 5% increase over Alternative 2, because all vehicles using the ETL must pay. In spite of these significant projected amounts for fifty-year accumulated gross revenue, ongoing infrastructure maintenance expenses and customer service center costs are projected to erode the revenue stream such that net receipts are forecast to be on the order of 40% of these values. In addition, out-year revenues are heavily discounted, such that the bonding capacity of the revenue stream is less than the capital cost of the project, leaving a gap to be covered by other funding sources. The additional revenue and reduced toll collection costs associated with Alternative 1 help to minimize this funding gap.

Reduce Congestion by Adding Transportation Capacity. The quantitative data for both Build Alternatives has been presented in Tables 12-16 and discussed under Alternative 1. The ability of Alternative 2 to relieve congestion is the same as for Alternative 1, and the LOS gains and travel time savings for the two alternatives have been presented in Section II.D.1., Alternative 1. In summary, the Build Alternatives would offer some improvement in general purpose lane LOS in the design year. This improvement would occur in the pm peak hour for interstate segments between Hudson Bridge Road and Jonesboro Road. Travel times in the general purpose lanes would be reduced across the length of the corridor by 16 to 21 percent in the design year. Finally, the number of freeway segments and ramp merge and diverge areas that would operate at LOS F is expected to decrease from 8 to 1 in the build condition compared to the No-Build condition.

Accommodate Regional Growth and Accessibility. As with Alternative 1, Alternative 2, by providing additional capacity, accommodates growing traffic volumes associated with continuing population and employment growth. The tolling feature of the project provides a means to maintain optimal usage and reliable travel time and therefore better mobility and accessibility in the corridor.

3. Alternative 3

The no action or No-Build Alternative is not consistent with regional transportation planning, does not improve reliability of travel times, does not expand travel choices, does not require tolling for financing, does not reduce congestion, and does not accommodate regional growth and accessibility.

E. Alternatives No Longer Under Consideration

The following alternatives were evaluated during the concept development phase, but they were subsequently dropped from further consideration. These alternatives are briefly described below, along with the rationale for elimination.

Before turning attention to the alternatives considered but eliminated, it is important to recognize that a transit alternative was not evaluated as part of this project. The Atlanta region has an ambitious transit concept, commonly known as "Concept 3", by the ARC. This transformational strategy includes expansion of fixed-guideway transit in many urban and suburban locations in the region. However, the PLAN 2040 document indicates that more assertive policies are needed to support the establishment of transit centers in the region which are not in place currently in spite of heavy investment in livable centers and economic centers development (ARC, 2011).

Alternative 4 – Provide two additional **general purpose lanes** within the existing right-of-way of I-75. This alternative was eliminated because it is not consistent with local and regional planning, does not provide reliable travel times in the long-term, does not expand travel choices, does not provide any form of financing for its construction, does not reduce congestion by adding capacity, and does not accommodate regional growth and accessibility.

A general purpose lanes alternative is not consistent with state, regional, and local planning, including the current CLRTP (*Plan 2040*), and state and ARC managed lanes policies (MLSP).

General purpose lanes would not provide reliable travel times. As traffic flows increase and density intensifies in general purpose lanes, there would be no other option to obtain reliable travel times. In addition, there is a value that people place on the ability to reach their destination in a reliable manner; therefore, implementing a system of managed lanes better provides the means to meet transportation consumers' demand for reliable travel time, either through paying a toll, utilizing transit services that travel on the managed lanes, or by participating in ridesharing.

A general purpose lane alternative would not expand travel choice to the public. Users already have the choice of general purpose lanes; additional lanes of the same type do not expand travel choice.

There is a lack of funding for traditional capacity expansion, and a general purpose lanes alternative would not be implemented for an indefinite period.

Finally, general purpose lanes allow for more vehicle throughput. Even though a traffic analysis for this alternative was not conducted, it would be expected to pulls more trips from other roadway facilities to I-75, and therefore not greatly relieve congestion.

Alternative 5 – Provide two **HOV reversible lanes** within the existing right-of-way of I-75. This alternative was eliminated because it is not consistent with regional planning, does not provide reliable travel times in the long-term, does not provide any form of financing for its

construction, does not reduce congestion by adding capacity, and does not accommodate regional growth and accessibility. This alternative does expand travel choices, but to a limited degree. These points are expanded upon in the following paragraphs.

An HOV alternative is a managed lane, as defined in the MLSP. However, the MLSP does note that there is a desire for system continuity in the Atlanta region and driver expectation on the roadway network (GDOT, 2010a, pp. 12, 18). Even though the corridors throughout the region are somewhat unique in their capacity availability, implementing different scenarios within the overall system (e.g., changing from HOV-only to HOT or varying vehicle occupancy rates on different sections [I-20, I-75, I-675, I-85, I-285] of the regional system) could be difficult to operate and to enforce and confusing and burdensome to users. For example, if different types of managed lanes were implemented on different facilities or even different segments of a facility, a particular user could have to exit a managed lane because of occupancy requirements. An HOT-3+ system has already been implemented on I-85 north of Atlanta. An HOV system on I-75 could cause driver confusion and enforcement issues.

HOV-only lanes would improve mobility by reducing travel time and increasing reliability, but only for those travelers willing and able to participate in ridesharing either by carpooling or by utilizing transit services. For those drivers that do not participate in carpooling, extra time for travel during more congested conditions must be considered to ensure that arrival at a destination is on time. This additional "buffer time" is not captured in the measurements and forecasts of average travel times on a section of roadway. Implementation of tolls to permit the entry of non-HOV traffic would be a more efficient use of the lanes.

Implementing the new lanes as HOV-only expands travel choices in the corridor by providing a reliable free-flowing facility to only those electing to participate in ridesharing, vanpools, or transit. However, travelers for whom ridesharing is not available or convenient would have only the general purpose lanes or alternate local routes available on which to complete their trips. A tolling feature extends additional choice to those willing to pay a premium for greater reliability in travel times without the restriction of occupancy requirements. In addition, registered transit and vanpools are permitted to use the managed lanes, are exempt from tolls, and benefit from the reliable travel time provided by the additional managed lane capacity.

HOV-only lanes would not provide tolling for financing the project. Tolling provides two vital benefits, revenue generation and reducing the costs of operations. The revenue generation that tolling provides makes the I-75 Express Lanes project financially feasible, by providing a funding source to enable the capital improvements, and fund operation and maintenance costs. Without the tolling component, the project would not be implemented, therefore not providing the critical congestion relief needed in the corridor. As with an HOT system, HOV-only lanes require higher costs of operations due to additional enforcement. Occupancy must be monitored to ensure that only authorized users (HOV) are utilizing the facility. Violation rates are likely to be higher on an HOV system than even a HOT or ETL system. Under an HOT or ETL system, all vehicles must have a transponder to enter the system. Under an HOV system, transponders are not used, therefore HOV that do not meet the required threshold and SOV can enter the system in violation of the policy. There is added capital and operation and maintenance costs with HOV lanes due to additional signs and enforcement.

HOV-only lanes would reduce congestion by adding capacity, but not as efficiently as Alternatives 1 and 2. As a part of the MLSP, the *Corridor Evaluation and Final*

Recommendations Report included an analysis to determine capacity on a managed lanes system when using different managed lane scenarios. The analysis found that implementing managed lanes with an HOV-2+ tolling policy eventually results in the lanes being unable to meet capacity. On the other hand, by increasing occupancy to HOV-3+, the lanes are severely under-utilized, potentially leading to a perception by the traveling public of empty or wasted lanes.

A more detailed capacity analysis was conducted for HOV lanes for this project corridor to address their ability to provide reliable travel times, reducing congestion, and accommodating regional growth. Based on the sketch planning approach presented in National Cooperative Highway Research Program (NCHRP) Report 414, *HOV Systems Manual*, the maximum capacity for HOV-2+ in the design year was set at 1,200-1,500 vehicles per hour per lane (vphpl). HOV-2+ traffic for the I-75 corridor in the design year was estimated to range from 1,450 to 1,950 vehicles per hour (vph) with an average of 1,700 vph. Therefore, one HOV-2+ lane would not be able to accommodate the HOV traffic, while two HOV-2+ lanes would suffer from severe underutilization.

The HOV-3+ analysis assumed a maximum capacity of 400-800 vphpl based on the recommendation of the NCHRP Report. The difference between the vphpl capacity between HOV-2 and HOV-3 is primarily due to the number of lanes on the facility and the ability to form carpools. In the case of the latter, it is easier to form two person carpools than three. The HOV traffic demand on I-75 for the peak direction would range from 450 to 950 vph with an average of 700 vph, which is just at the minimum threshold of 400-800 vphpl, so one HOV-3+ lane would not be used efficiently. Therefore, one HOV lane would not be able to accommodate the HOV traffic, and two HOV lanes would be needed. However, with two HOV lanes, the capacity would be much higher than the demand and would not be fully used.

Given the difficulty of balancing capacity and demand in an HOV-only alternative, the implementation of tolls to permit the entry of non-HOV traffic in the managed lanes would be a more efficient use of the lanes. With tolling, the HOV lane(s) capacity not being used by HOV traffic could be used by SOV traffic. Dynamic pricing of the tolls then could be used to regulate the maximum number of vehicles in the lanes so the optimum capacity would be used while also maintaining continuous high-speed flow.

Alternative 6 – Provide **concurrent managed lanes** from the I-75 bridge over SR 155 to approximately 600 feet north of the I-75 southbound off ramp to SR 138 at the Henry/Clayton County Line, for a total length of 12.24 miles. This alternative includes the construction of two new managed lanes, one in each direction separated by a barrier, within the existing I-75 median and right-of-way. This alternative was eliminated because it is not as effective as Alternatives 1 and 2 for providing reliable travel times, reducing congestion, tolling for financing, and accommodating regional growth and accessibility.

Alternative 6 was eliminated without a capacity analysis or a time savings analysis being conducted. These quantitative studies were omitted because the directional traffic split along the corridor clearly indicated that a concurrent lane alternative would not be as effective as a reversible lane alternative for providing reliable travel times and congestion relief. Due to commuter traffic utilizing the I-75 corridor as one of the main routes into and out of Atlanta, congestion is more prevalent on I-75 northbound in the morning peak and I-75 southbound in the afternoon peak. As described in Section I. Need and Purpose, the traffic directional split during the AM peak hour is 65% NB/35% SB and during the PM peak hour is 53% SB /47% NB.

These split percentages are for the length of the entire project; some of the sections have a greater directional split causing more intense congestion. As a result of this directional split, No-Build condition LOS is substantially worse in the peak direction of travel than in the non-peak direction, and this holds true in the existing, opening, and design years (Tables 2-4).

Given the directional split in traffic along this corridor, concurrent managed lanes would not be as effective for providing reliable travel times and mobility as reversible lanes. The non-peak direction lane would tend to suffer under-demand and under utilization. Meanwhile, the peak direction lane would face very high demand, which, in turn, would require setting the toll higher to control usage and maintain free flow conditions. Hence, compared to reversible managed lanes, concurrent lanes would offer reliable travel times to fewer users and at a higher cost.

Concurrent managed lanes would also be less effective than reversible lanes for relieving congestion in the general purpose lanes. Given the congestion that occurs in the peak direction, the addition of two managed lanes in the peak direction still leaves most general purpose lane segments operating at the low range of desirable or undesirable LOS in the design year (Table 13). Redirecting one of the two lanes to the non-peak direction would essentially cut the added capacity in the peak direction in half, thereby making peak direction LOS in the general purpose lanes even worse.

Problems with enforcement would make concurrent lanes less effective than the reversible lane alternatives with respect to financing the project. Enforcement is not as burdensome on a reversible facility because any violators are within the facility's barrier and easily identified as violators. During severe congestion and/or accidents on general purpose lanes adjacent to concurrent lanes, violations increase and overwhelm enforcement personnel. Reversible-barrier systems, because of their separation from the general purpose lanes, are generally not affected by daily or accident-related congestion on the general purpose lanes. Another concern of concurrent systems is that violators weave in and out of the managed lane to avoid the automated toll collection point. This is both a safety and enforcement issue. In addition, potential valid users could be less likely to use the facility if they feel they are not likely to enjoy the benefits of paying the toll. Because a reversible system has less ingress and egress points, it tends to have higher levels of compliance. In regards to cost, reversible facilities are in general less expensive than bi-directional concurrent facilities because the former entail the cost of construction of one facility instead of two separate facilities. In summary, increases in violations and potential loss of valid users both decrease the amount of funding for the project. In addition, there would only be one lane being used to capacity while the non-peak lane would be severely under-utilized, providing less paying customers.

Concurrent lanes do provide additional capacity, which could accommodate growing traffic volumes associated with continuing population and employment growth. However, they do not provide as much capacity as Alternatives 1 and 2.

The concurrent managed lane alternative was therefore dropped in favor of a reversible system because a reversible system offers the following advantages: better serves existing and projected peak directional travel demand, more efficient system operation, less required enforcement, and lower operation and maintenance costs.

Alternative 7 – Shift northbound I-75 (instead of southbound I-75, as currently proposed in the Preferred Alternative) to make adequate space for the managed lanes facility. This option was eliminated due to intersection sight distance issues at Flippen Road and Dustin Drive just north

of the existing I-75 bridge over Flippen Road.

Alternative 8 – Construct the Preferred Alternative with dedicated access to the managed lanes via Mt. Carmel Road instead of via Jonesboro Road. This alternative meets the purpose and need of the project. However, it was eliminated because of potential community cohesion impacts. Due to the need to re-construct the Mt. Carmel Road bridge over I-75, it was decided to include, as part of the re-construction, direct access to only the express lanes via ramps from the new bridge. This would provide an additional point of access to the managed lanes from McDonough via Jonesboro Road and from suburbs to the west of I-75. However, due to projected increased traffic on Mill Road and Mt. Carmel Road, this alternative necessitates potential improvements at the intersections of Mt. Carmel Road and Mill Road, and Mt. Carmel Road and Jonesboro Road. The traffic effects could cause potential community cohesion impacts.

Table 17 summarizes how the Alternatives individually address purpose and need.

Table 17. Comparison of Alternatives' Ability to Meet Project Need

Need and Purpose Criteria	Alternative 1 Reversible ETL with Jonesboro Access	Alternative 2 Reversible HOT-3+ Lanes with Jonesboro Access	Alternative 3 No-Build	Alternative 4 General Purpose Lanes	Alternative 5 HOV Lanes	Alternative 6 Concurrent ETL or HOT-3+ Lanes	Alternative 7 Alignment Shift to the East	Alternative 8 ETL or HOT-3+ Lanes with Mt. Carmel Access
Consistency with Regional Transportation Planning	Yes, the MLSP adopted an HOT3+ policy with the ability to implement ETL based upon funding needs.	Yes, the *MLSP* adopted an HOT3+ policy with the ability to implement ETL based upon funding needs.	No.	No.	No, HOT policies have been implemented in the region.	Yes, but the MLSP recommended further study to determine effectiveness.	Yes.	Yes, the MLSP adopted an HOT3+ policy with the ability to implement ETL based upon funding needs.
Unreliable Travel Times and Impaired Mobility	Yes, maximizes travel time savings and moblity for directional peak hour traffic (northbound in am, southbound in pm).	Yes.	No.	No.	Yes, for carpools and transit.	Yes, but two ETL or HOT-3+ lanes in a reversible facility would better address peak directional congestion.	Yes, but causes safety issues on other areas of roadway network.	Yes, maximizes travel time savings and moblity for directional peak hour traffic (northbound in am, southbound in pm) and has potential community impacts.
Lack of Travel Choices	Yes. Transit, vanpools, and emergency vehicles use toll lanes for free; others have option of paying toll.	Yes. Transit, vanpools, emergency vehicles, and HOV-3+ use lanes for free. SOV and HOV-2 vehicles have option of paying toll.	No.	No.	Yes. Transit, vanpools, emergency vehicles, and HOV-2+ use lanes for free. SOVs cannot use facility.	Yes, provides an additional choice to users in both directions.	Yes.	Yes. Transit, vanpools, and emergency vehicles use toll lanes for free; others have option of paying toll. Has potential community impacts

Need and Purpose Criteria	Alternative 1 Reversible ETL with Jonesboro Access	Alternative 2 Reversible HOT-3+ Lanes with Jonesboro Access	Alternative 3 No-Build	Alternative 4 General Purpose Lanes	Alternative 5 HOV Lanes	Alternative 6 Concurrent ETL or HOT-3+ Lanes	Alternative 7 Alignment Shift to the East	Alternative 8 ETL or HOT-3+ Lanes with Mt. Carmel Access
Tolling for Financing	Yes. Five percent increase of revenue over HOT-3+.	Yes. Five percent less revenue than ETL and enforcement of occupancy status adds to all costs.	Not Applicable.	No.	No.	Yes, but due to extra demand, the toll rate would potentially have to be higher to keep a single peak managed lane functioning at free flow.	Yes.	Yes, but has potential community impacts.
Reduce Congestion by Adding Transportation Capacity	Yes.	Yes.	No.	Yes, in the short-term; traffic analysis was not completed due to lack of funding for construction of non-tolled projects.	Yes, but the additional capacity would not be efficiently utilized. HOV-3+ would exceed demand while HOV-2+ would not meet demand.	Yes. This reduces some congestion in both directions, but not to the extent of two ETL or HOT-3+ lanes in a reversible facility that can better address peak directional traffic.	Yes.	Yes, but has potential community impacts.
Accommodate Regional Growth and Accessibility	Yes.	Yes.	No.	Yes, in the short-term; traffic analysis was not completed due to lack of funding for construction of non-tolled projects.	Yes, but not to same extent as managed lanes due to HOV lane capacity either exceeding or falling short of demand.	Yes, but potentially not to the same extent as reversible managed lanes.	Yes.	Yes, but has potential commnity impacts.

III. ENVIRONMENTAL CONSEQUENCES

A. Types Of Effects: Direct, Indirect, and Cumulative Effects

The Council on Environmental Quality's (CEQ) *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR 1500-1508) require that not only direct impacts, but indirect and cumulative impacts (ICI) also be evaluated. Direct, indirect, and cumulative effects are defined as follows:

Direct effects are caused by, and coincide in time and place with, the action. Alternatives 1 and 2 have the same lane configuration and physical footprints. Therefore, the direct effects on the Physical Environment, particularly air and noise, are the same for both Build Alternatives.

Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

Cumulative effects are the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Because they are not environmental resources, indirect and cumulative effects analyses have not been included for the following sections: Section 4(f) Applicability; Invasive Species Survey; U.S. Coast Guard/U.S. Army Corps of Engineers Applicability; Relocations; Construction; and USTs/Hazardous Waste.

B. Effects of the No-Build Alternative

The No-Build Alternative (Alternative 3) would have no direct, indirect, or cumulative environmental effects. Therefore, only the environmental effects of Alternative 1 and Alternative 2 are discussed in the following sections.

C. Effects on the Social Environment

1. Land Use Changes

The dominant land use/land cover type within the proposed project corridor is existing maintained transportation and utility right-of-way, which accounts for almost all of the project area. The transportation corridors include I-75, I-675, and roadways that cross I-75. This land use type also includes adjacent open areas within the rights-of-way of these corridors, along with maintained utility rights-of-way. Existing land uses adjacent to the I-75 corridor include medium density, medium-high density, and high density residential uses, mixed uses, industrial uses, commercial uses, recreational uses, and forested lands (Figure 5).

Future land use within the project corridor will continue to be maintained transportation and utility right-of-way. Future land use adjacent to the project corridor is projected to include medium to high density residential uses, mixed uses, commercial uses, and industrial uses as detailed in the maps of future land use for Clayton County and in the *Henry County/Cities Joint 2030 Comprehensive Plan* (Clayton County, 2009; Henry County, 2009). Further land use changes and development are therefore already expected for the corridor (Figure 6).

Figure 5. Existing Land Use

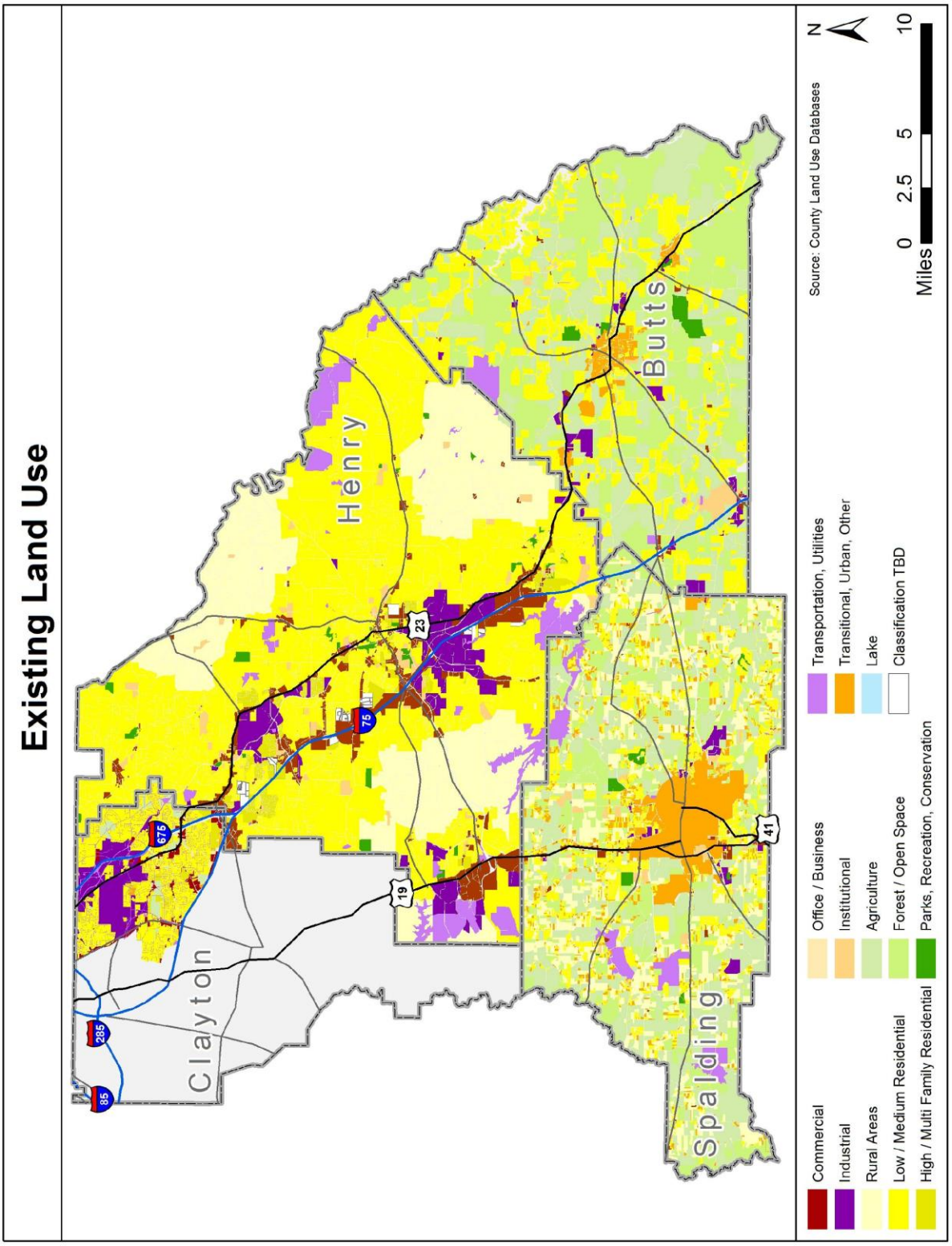
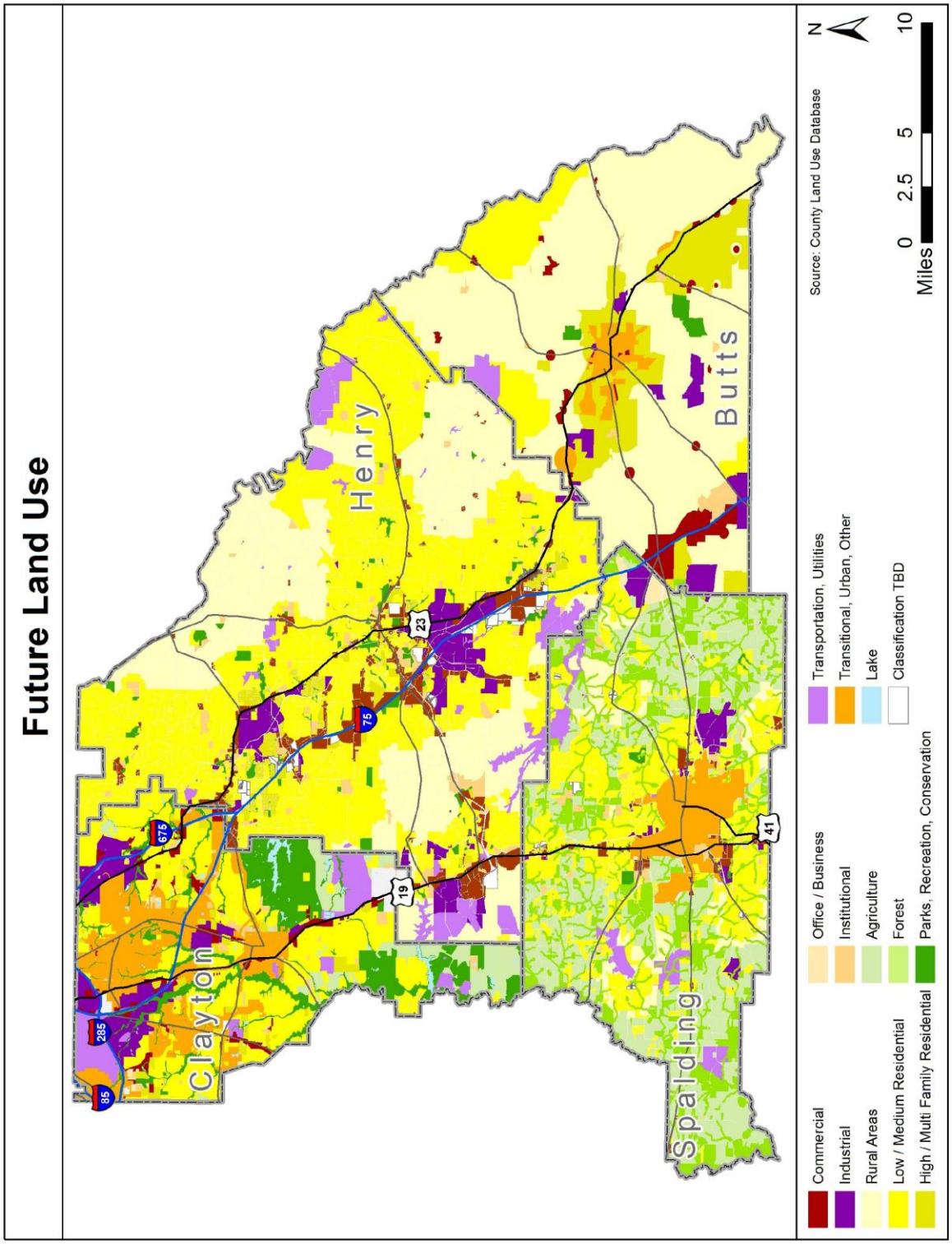


Figure 6. Future Land Use



Direct Effects. Both Alternative 1 and 2 are to be added within the existing right-of-way for I-75 and I-675. Additional minor amounts of right-of-way (7 acres) are required for improvements needed as a result of this project. Portions of three parcels required for the Jonesboro Road access are undeveloped but zoned for commercial use. The transition of this land use to transportation use is a direct effect of the project but is an extension of the existing adjacent transportation land use and is not out of character with the area.

Indirect Effects. For purposes of analyzing potential indirect land use impacts, planners with Clayton and Henry Counties were contacted to determine whether the proposed managed lanes are likely to cause substantial land use changes in their areas. Butts and Spalding County planners were also included in the survey because development in these counties could be stimulated by the provision of more reliable trip times to and from Atlanta. All phone memoranda with planners appear in Appendix A (pp. A-1-A-4).

This project occurs in an area where medium and high density development already exist and are projected to continue by both Clayton and Henry County. Induced development demand is regulated and controlled by the individual jurisdictions through their zoning and land use and comprehensive plans. Even though the proposed project would add capacity to an interstate, and therefore could cause land use changes and additional development, the effects on land use would not be significant.

The project extends approximately 1,500 feet into Clayton County, to the I-675 interchange with SR 138. This interchange is currently developed and in commercial use along SR 138 and high density residential use off of SR 138. The County plans for the land use in the area to remain commercial and high density residential uses. According to the County, additional development in the vicinity of I-675 interchange with SR 138 is not expected, even with construction of the I-75 express lanes.

In Henry County, the existing and future land use varies throughout the corridor. A large portion of the land use in the county is low to medium density residential uses with higher density residential, commercial, and industrial uses occurring along I-75 and the interchanges with I-75. According to the Henry County Planning Department, future land use along the corridor is projected to be the same as existing, with additional mixed use development and suburban/ regional activity centers most prevalent. The regional activity center identified in the current comprehensive plan near the Jonesboro Road interchange with I-75 is being re-defined by the county as part of a suburban employment center stretching from Jonesboro Road north to Hudson Bridge Road and is being planned for corporate office space, high density residential development, and commercial/retail uses. It is planned as a regional destination that offers employment, shopping, cultural, and recreational opportunities. These are primarily intensive land uses. According to the County, any additional development at the interchanges, particularly the new Jonesboro Road express lanes access to I-75, is already anticipated and planned for by the county and is expected regardless of whether the I-75 express lanes are constructed.

Butts County has already begun to experience development pressures from both the Atlanta and Macon regions due to the location of I-75 and the county's proximity to both of these urban centers. I-75 is in the extreme southwest corner of the county, and in fact, some of the most significant growth has not occurred near I-75 but along US 23, which connects Locust Grove in Henry County to Jenkinsburg in Butts County. Existing land use along the I-75 corridor is agricultural, residential, vacant, or institutional (Georgia State Prison). Two large areas slated

for development are the I-75 interchanges with SR 16 and SR 36. The county has classified both of these interchanges as Highway Activity Center character areas in its Community Plan (2007). The other character areas along I-75 are rural with expected suburban growth pressure. The county expects that additional growth and development, particularly suburban development, will include more demands for services and coordination of land use. According to the County, any additional development at the I-75 interchanges with SR 16 and SR 36 is already anticipated and planned for by the county, and is expected regardless of whether the I-75 express lanes are constructed.

I-75 traverses a very small portion of the extreme eastern portion of Spalding County. The I-75 interchange with SR 16 provides access to Griffin, which is where the most intensive development occurs in the county. Access to the Atlanta region from Griffin is also available via US 19/US 41. The county has experienced slower growth than those counties closer to Atlanta in the north, which has prepared it for potential future growth. Land use changes in the county are expected surrounding Griffin, as well as between Griffin and the Henry County line. In addition, some changes near I-75, including shifts to residential and industrial uses are planned by the county. According to the County, any additional development in the eastern portion of the county is already anticipated and planned for by the county. The County does not expect any induced land use changes from the I-75 managed lanes, only from a proposed interchange at Jenkinsburg Road with I-75 that has been previously proposed in the County and is not in *Plan 2040*.

Indirect effects of the project could include the effects of congestion relief on I-75 on commuters in the region. More efficient and reliable travel could influence development in the corridor but not beyond what is already planned for by the counties. An examination of the assessment of other congestion pricing projects and their environmental impacts (including land use) has already been completed by the FHWA (*Synthesis of Congestion Pricing-Related Environmental Impact Analyses: Final Report*, 2010). The assessment identifies a dynamic where development pressures could shift away from the project corridor. In the short-term, an individual driver may choose to pay a toll, but in the long-term may choose to move closer to his/her place of work, telecommute, or switch modes of transportation. In the case of this project, if enough people choose the option of moving closer to work, development or redevelopment pressures would be felt in the urban core rather than in outlying southern counties such as Henry and Butts.

The above scenario underscores the difficulty of predicting how a transportation project may affect land use. In this case, however, planning officials have indicated that future change in land uses and development, including intensive land development in some cases, is already planned in the counties and is expected to occur without the proposed project. The implementation of this project is therefore not expected to induce significant land use changes beyond what is already planned for by any of the counties.

Cumulative Effects. The project is almost exclusively occurring within the right-of-way and only converting a minor amount of land (7 acres) at Jonesboro Road to a new land use as a direct effect. The existing built environment has already caused indirect effects to the social, natural, and physical resources within the project corridor. Because the proposed project would not have significant direct or indirect effects on land use, it would not contribute significantly to cumulative land use impacts. As noted however, intensive land use impacts due to development

have occurred, are occurring, and are expected to continue to occur in Henry and Clayton Counties, as well as the counties south of the project.

2. Economics

Direct Effects. Due to minor right-of-way acquisition in the area of Jonesboro Road and Mt. Carmel Road (7 acres) by both Alternative 1 and 2, small losses in property tax revenue would occur, affecting Henry County tax revenues. No business relocations are required to implement either Alternative. Therefore, no businesses would be affected by the project. Additional employment to physically operate the managed lanes would be minimal, but would occur. Temporary construction jobs as a part of construction of the project would positively affect the local economy. For every $92,000 of government investment, one job is created for one year (Executive Office of the President, 2009). With an estimated project construction estimate of $150,000,000, this equates to 1,630 jobs. Alternatives 1 and 2 would have a positive effect on employment.

Indirect Effects. No indirect effects on economics are expected as a result of this project.

Cumulative Effects. Even though there are potential direct impacts to economics, they would be minimal contributions to past, present, or reasonably foreseeable future actions that could result in cumulative effects.

3. Relocations

Direct Effects. No relocations are expected as a part of either Alternative 1 or 2 because both are located almost exclusively within the right-of-way. Additional minor amounts of right-of-way (7 acres) are required for this project. Portions of three parcels totaling seven acres are needed to construct a dedicated access ramp to the express lanes from Jonesboro Road just south of the existing Jonesboro Road interchange with I-75.

4. Community Cohesion

I-75 is a major connecting corridor for communities south of Atlanta. As a limited-access roadway, I-75 connects to these communities through designated interchanges. Businesses and commercial properties have primary access to the local roadway network via these interchanges, while residential areas have secondary access via connecting roads. Heaviest use of the interstate and the local transportation network occurs during the peak hour. The communities adjacent to the I-75 corridor have developed and grown around the existing transportation network.

Direct Effects. Alternatives 1 and 2 would have no relocations and would occur almost exclusively within the existing right-of-way of the interstate. The project therefore would not have any direct effects to communities living adjacent to the I-75 corridor or its interchanges.

Indirect Effects. Increases in average daily traffic on Jonesboro Road would occur due to traffic accessing the new managed lane interchange. In the design year, the increase would amount to 3,320 vehicles per day (vpd) west of the interchange (from 43,800 vpd to 47,100 vpd) and 1,580 vpd east of the interchange (from 37,820 vpd to 39,400 vpd). These are increases of 7 and 4 percent, respectively. This is due to traffic diverting from other routes to access the managed lanes. This increase is not expected to affect the nearby communities because of the minimal increase in traffic and the presence of commercial land uses along Jonesboro Road. Within one mile west of the interchange, land uses adjacent to Jonesboro Road are all commercial. Within

one mile east of the interchange, there is a mixture of commercial development and undeveloped land targeted for additional commercial development along Jonesboro Road. All the intersections with Jonesboro Road, as well as Jonesboro Road itself, perform at acceptable levels of service in the future Build and No-Build conditions, as well with the newly added ramp from the managed lanes. The only improvement to Jonesboro Road with the addition of managed lanes would be at the intersection of the ramp with Jonesboro Road at Foster Drive. The intersection is currently a three-legged signalized intersection. A fourth leg (managed lane access ramp) would be added to this intersection and the signal would be upgraded to accommodate the fourth leg.

In the residential areas southwest of the Jonesboro Road interchange with I-75, there are extremely minor increases in traffic. On Mt. Carmel Road, there is an increase of 500 vpd in 2015 and an increase of almost 2,000 vpd in 2035. No improvements to these roadways are required to address the increased traffic. Indirect effects to community cohesion are not expected.

Cumulative Effects. There are no direct or indirect effects to community cohesion. Therefore, there are no contributions by this project to past, present, or reasonably foreseeable future actions that would result in cumulative effects.

5. Churches and Institutions

There are churches, schools, and community service entities located throughout the communities on either side of the I-75 corridor.

Direct Effects. Alternatives 1 and 2 are located almost exclusively within the right-of-way. No impacts to churches or any public institution, either through change of access or effects on activities would occur.

Indirect Effects. No indirect effects on churches or institutions are expected as a result of this project.

Cumulative Effects. There are no direct or indirect impacts to churches and institutions. Therefore, there are no contributions by this project to past, present, or reasonably foreseeable future actions that would result in cumulative effects.

6. Community Impacts/Environmental Justice

This section assesses potential direct, indirect, and cumulative effects on populations and communities. Because the project would be utilized by commuters living south of the project corridor, the study area has been geographically extended southward to include Butts and Spalding counties. This corresponds to the directional split of traffic identified in Section I.B.2. Due to commuter traffic utilizing the I-75 corridor as one of the main routes into and out of Atlanta, congestion is more prevalent on I-75 northbound in the morning peak from counties south of Atlanta and the return southbound on I-75 in the afternoon peak. The study area was not extended beyond the northern termini, SR 138, because commuters in this area would not use the managed lanes regularly, due to its direction of northbound in the morning and southbound in the afternoon. Because tolling has been controversial in Georgia and across the nation, the focus is not only on geographically identifiable communities, but also on the general population of potential commuters. Finally, because tolling is widely perceived to raise equity issues for low-

income groups, special emphasis is given to the impact of tolling on low-income commuters as part of the Environmental Justice analysis.

a. Methods

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations", states that each Federal agency "shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations". Minority persons include citizens or lawful permanent residents of the U.S. who are African-American, Hispanic or Latino, Asian-American, American Indian, or Native Alaskan. Low-income persons are defined as those whose median household income is below the U.S. Department of Health and Human Services (HHS) poverty guidelines.

Two other acts are important for mandating equitable treatment and participation of environmental justice populations in federal actions. Title VI of the Civil Rights Act of 1964 states that "No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." Title VI bars intentional discrimination as well as disparate impact discrimination (i.e., a neutral policy or practice that has an unequal impact on protected groups).

Executive Order 13166 "Improving Access to Services for Persons with Limited English Proficiency" directs federal agencies to "examine the services they provide, identify any need for services to those with limited English proficiency (LEP), and develop and implement a system to provide those services so LEP persons can have meaningful access to them". As a part of EO 13166, the Department of Justice issued guidance on implementing the LEP regulations because of the inherent connection between Title VI barring of discrimination based on national origin and EO 13166. Through the use of the FHWA Technical Advisory T6640.8A, State Departments of Transportation had already been complying with Title VI.

The U.S. Department of Transportation's most recent order on implementing environmental justice requirements (DOT Order 5610.2a, issued March 3, 2012) states that "it is the policy of DOT to promote the principles of environmental justice (as embodied in the Executive Order) through the incorporation of those principles in all DOT programs, policies, and activities. This will be done by fully considering environmental justice principles throughout planning and decision-making processes in the development of programs, policies, and activities, using the principles of the National Environmental Policy Act of 1969 (NEPA), Title VI of the Civil Rights Act of 1964 (Title VI), the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, (URA), the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (Public Law 109-59; SAFETEA-LU) and other DOT statutes, regulations and guidance that address or affect infrastructure planning and decision-making."

The FHWA implemented the DOT order via FHWA Order 6640.23A, "FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" (June 14, 2012). The order provides methods to comply with existing applicable regulations and requirements as well as administering FHWA's "governing statues so as to identify and avoid

discrimination and disproportionately high and adverse effects on minority populations and low-income populations by:

1. identifying and evaluating environmental, public health, and interrelated social and economic effects of FHWA programs, policies, and activities;
2. proposing measures to avoid, minimize, and/or mitigate disproportionately high and adverse environmental or public health effects and interrelated social and economic effects, and providing offsetting benefits and opportunities to enhance communities, neighborhoods, and individuals affected by FHWA programs, policies, and activities, where permitted by law and consistent with EO 12898;
3. considering alternatives to proposed programs, policies, and activities where such alternatives would result in avoiding and/or minimizing disproportionately high and adverse human health or environmental impacts, where permitted by law and consistent with EO 12898; and
4. providing public involvement opportunities and considering the results thereof, including providing meaningful access to public information concerning the human health or environmental impacts and soliciting input from affected minority populations and low-income populations in considering alternatives during the planning and development of alternatives and decisions."

FHWA guidance provides the above four-step approach to environmental justice analysis. As a part of step 1, this analysis determines whether minority and low-income populations and communities reside in the area of the project's potential effects and as a part of step 2, if such populations and communities are identified, ensuring that the project would avoid disproportionately high and adverse effects on them.

The identification of specific environmental justice communities can be accomplished through a windshield survey. This effort addresses "small clusters or dispersed populations" in addition to the "localized census tract data" as identified in FHWA's Memorandum, *Guidance on Environmental Justice and NEPA* (FHWA, 2011). In the case of this project, the APE was so geographically large that a windshield survey was limited to the project corridor (SR 138 to SR 155). No determinate distance was traveled on either side of I-75. Neighborhoods on adjacent north-south roadways and neighborhoods surrounding each interchange were assessed. These neighborhoods are identified under Public Involvement.

b. Identification of Environmental Justice Populations and Communities

<u>Identification of Environmental Justice Populations</u>

Three tools were used to identify minority and low-income populations that could be affected by the project: an analysis of census data, windshield surveys, and public involvement. Public involvement first targeted areas identified as potential locations of environmental justice populations and then expanded to address additional geographic areas identified during the outreach process, including individual community groups. In addition, minority communities were identified in the area of the managed lane interchange proposed on Mt. Carmel Road under Alternative 8.

Analysis of Census Data

In accordance with FHWA guidance, census data was analyzed to identify minority and low-income populations in the project's area of potential effects. Because the proposed managed lanes would be used by commuters who live south of the project corridor, the area of potential effects (APE) was extended to include not only the 12 census tracts that would be partly traversed by the project but also six tracts south of the southern terminus. Three of these tracts are in southern Henry County, one in Butts County, and two in Spalding County. All have direct connections with I-75. Tracts located in counties further south, such as Lamar and Monroe counties were not included in the census analysis because they are beyond the ARC region. Their omission from the analysis does not raise great concern since the number of drivers commuting to Atlanta should steadily decline as one moves southward from the project corridor. Proximity to the I-75 corridor is an influence on the choice of using I-75 by commuters. This is confirmed by analysis of traffic volumes compared to income levels as presented in the *Environmental Justice Technical Memorandum* on file with GDOT's Office of Environmental Services.

The analysis used total population and minority population data from the 2010 decennial US Census. The 2006-2010 American Community Survey (ACS) was used for detailed income data because this data product no longer appears in the decennial census. For the purposes of identifying minority populations, the definition found in FHWA Order 6640.23A was used and includes:

1. Black: a person having origins in any of the black racial groups of Africa;
2. Hispanic or Latino: a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race;
3. Asian American: a person having origins in any of the original peoples of the Far East, Southeast Asia or the Indian subcontinent;
4. American Indian and Alaskan Native: a person having origins in any of the original people of North America, South America (including Central America), and who maintains cultural identification through tribal affiliation or community recognition; or
5. Native Hawaiian and Other Pacific Islander: a person having origins in any of the original peoples of Hawaii, Guam, Samoa or other Pacific Islands.

For purposes of identifying low-income populations, a household income below $19,090 was categorized as low-income (HHS, 2012). This is the 2012 HHS poverty guideline for a family/household of 3. A family/household size of three persons was used because the average household size in the study area counties ranged from 2.67 to 2.89 in 2010 (US Census 2010, SF1). In order to have comparable geographic areas for income and race data (US census tracts), the poverty threshold for the US Census was compared to the HHS poverty guideline. The 2010 US Census poverty threshold for a family of three including one child was $17,552, less than the HHS poverty guideline (http://www.census.gov/hhes/www/poverty/data/threshld/index.html). Therefore, by using the ACS poverty data, the analysis is over-estimating the number of persons in poverty. In addition, according to the HHS guidance regarding low-income data, the Census "thresholds are used mainly for statistical purposes - for instance, preparing estimates of the number of Americans in poverty each year. (In other words, all official poverty population figures are calculated using the poverty thresholds, not the guidelines.)" (http://aspe.hhs.gov/poverty/11poverty.shtml). In addition, the USDOT defines a low-income

population as "any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed DOT program, policy or activity" (DOT Order 5610.2a). By using census tract data, the environmental justice analysis is using data for a "readily identifiable group of low-income persons who live in geographic proximity" (DOT Order 5610.2a).

For this analysis, the entire APE consists of the 18 census tracts that touch I-75. Twelve of the tracts are in Henry County, three in Clayton County, two in Spalding County, and one in Butts County. Since the APE is geographically large, it was determined that low-income and minority populations would be identified at the level of the individual census tract. Tracts were identified as the locus of minority and/or low-income populations if the percentages of their populations that are minority and/or low-income exceed the aggregate percentages of a multi-county comparison area. Two comparison areas were identified. The first is the four counties that comprise the APE (Butts, Clayton, Henry, and Spalding). The second is Butts, Henry, and Spalding counties, with Clayton County excluded. The reason for designating a comparison area that excludes Clayton County is that the percentage of minorities in Clayton County is significantly higher than in the other counties and the low-income percentage is relatively high as well. This means that including Clayton County inflates the percentage for the comparison area which, in turn, has the effect of excluding four tracts from being designated "minority" and four tracts from being designated "low-income". This may not be justifiable in that the project extends only 0.7 mile into Clayton County. Demographics for the four counties in the APE and the two comparison study areas are shown in Table 18.

Table 18. Minority and Low-Income Data for Counties in the Project's Area of Potential Effects

Location	Total Population	Minorities	Low-Income
Clayton County	259,424	222,814 (85.89%)	42,408 (16.74%)
Henry County	203,922	96,839 (47.49%)	15,898 (8.28%)
Butts County	23,655	7,455 (31.52%)	2,610 (12.36%)
Spalding County	64,073	25,087 (39.15%)	13,224 (21.17%)
Comparison Study Area with Clayton County	551,074	352,195 (63.91%)	74,140 (14.01%)
Comparison Study Area without Clayton County	291,650	129,381 (44.36%)	31,732 (11.51%)

Sources: U.S. Census, 2010 Decennial Census, SF1; U.S. Census, ACS, 2006-2010.
Note: Race data universe = 100 Percent Data. Income data universe = Population for whom poverty is determined.

Table 19 presents the results of the census tracts comparison. Minority and low-income percentages are listed for the comparison study area with and without Clayton County and for each of the 18 census tracts. Tract percentages that exceed the comparison area percentage including Clayton County, thus indicating the presence of a minority or low-income population, are in bold and italicized font and highlighted green. Additional tracts with percentages that exceed the comparison area percentage without Clayton County are highlighted in yellow. For the comparison study area with Clayton County, tracts in Clayton County, the tracts along I-75 in the northern part of the Henry County, and one tract west of McDonough are the primary

locations of minority populations. There are two tracts with low-income populations, south and west of McDonough. It should be noted that Tract 1503 in Butts County contains the Georgia Diagnostic and Classification State Prison and the institutionalized population in this tract was 2,014 persons in 2010 (US Census, SF1). The institutionalized population is not a part of the population for whom poverty is determined. The tract west of McDonough is the location of both minority and low-income populations. The geographic location of these tracts within the APE is shown on Figure 7.

In the comparison study area without Clayton County in the totals, census tracts with minority populations are along most of the corridor. There are six tracts with low-income populations: two in Clayton County, two south and west of McDonough and one each in Butts and Spalding Counties. The geographic location of these tracts within the APE is shown on Figure 8.

Table 19. Census Data for APE Compared to Study Area

Geographic Area	Total Population	Total Minorities	Low-Income
Study Area	551,074	352,195 (63.91%)	74,140 (14.01%)
Study Area without Clayton County	291,650	129,381 (44.36%)	31,732 (11.51%)
Clayton County	259,424	222,814 (85.89%)	42,408 (16.74%)
Tract 406.15	1,954	***1,625 (83.16%)***	282 (12.69%)
Tract 406.16	8,429	***7,351 (87.21%)***	784 (9.81%)
Tract 406.17	1,557	***1,184 (76.04%)***	198 (12.76%)
Henry County	203,922	96,839 (47.49%)	15,898 (8.28%)
Tract 701.04	13,049	***9,136 (70.01%)***	639 (5.75%)
Tract 701.11	8,083	***6,187 (76.54%)***	662 (9.22%)
Tract 701.14	5,043	***3,397 (67.36%)***	246 (4.75%)
Tract 703.04	11,025	6,877 (62.38%)	***1,526 (15.72%)***
Tract 703.05	7,928	3,557 (44.87%)	506 (6.74%)
Tract 703.06	9,124	4,873 (53.41%)	853 (10.36%)
Tract 703.09	7,318	4,627 (63.23%)	266 (3.71%)
Tract 703.10	4,382	1,303 (29.74%)	259 (5.34%)
Tract 703.11	10,718	***7,696 (71.80%)***	***1,534 (14.53%)***
Tract 704.03	10,136	2,312 (22.81%)	571 (5.79%)
Tract 704.04	6,898	2,783 (40.35%)	612 (9.84%)
Tract 705.02	14,656	6,283 (42.87%)	816 (6.46%)
Butts County	23,655	7,455 (31.52%)	2,610 (12.36%)
Tract 1503*	7,470	2,732 (36.57%)	649 (12.06%)
Spalding County	64,073	25,087 (39.15%)	13,224 (21.17%)
Tract 1602	5,973	1,231 (20.61%)	737 (13.92%)
Tract 1610	5,549	973 (17.53%)	614 (11.25%)

Sources: U.S. Census, 2010 Decennial Census, SF1; U.S. Census, ACS, 2006-2010.
Note: *The institutionalized population in this tract was 2,014 persons in 2010. Tracts higher than total comparison study area. Tracts higher than comparison study area without Clayton County in the total.

Figure 7. Potential Environmental Justice Populations Comparison Study Area with Clayton County

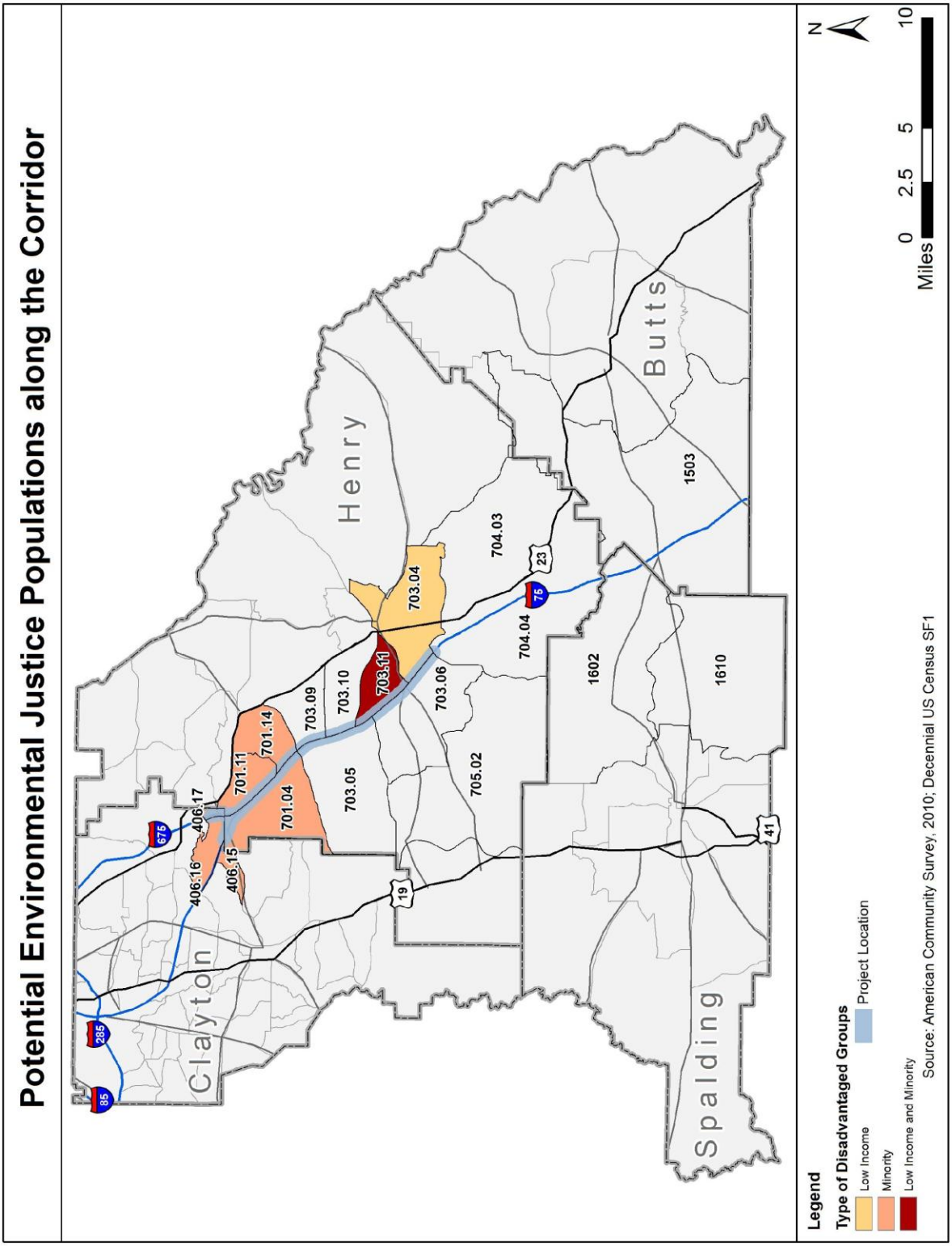
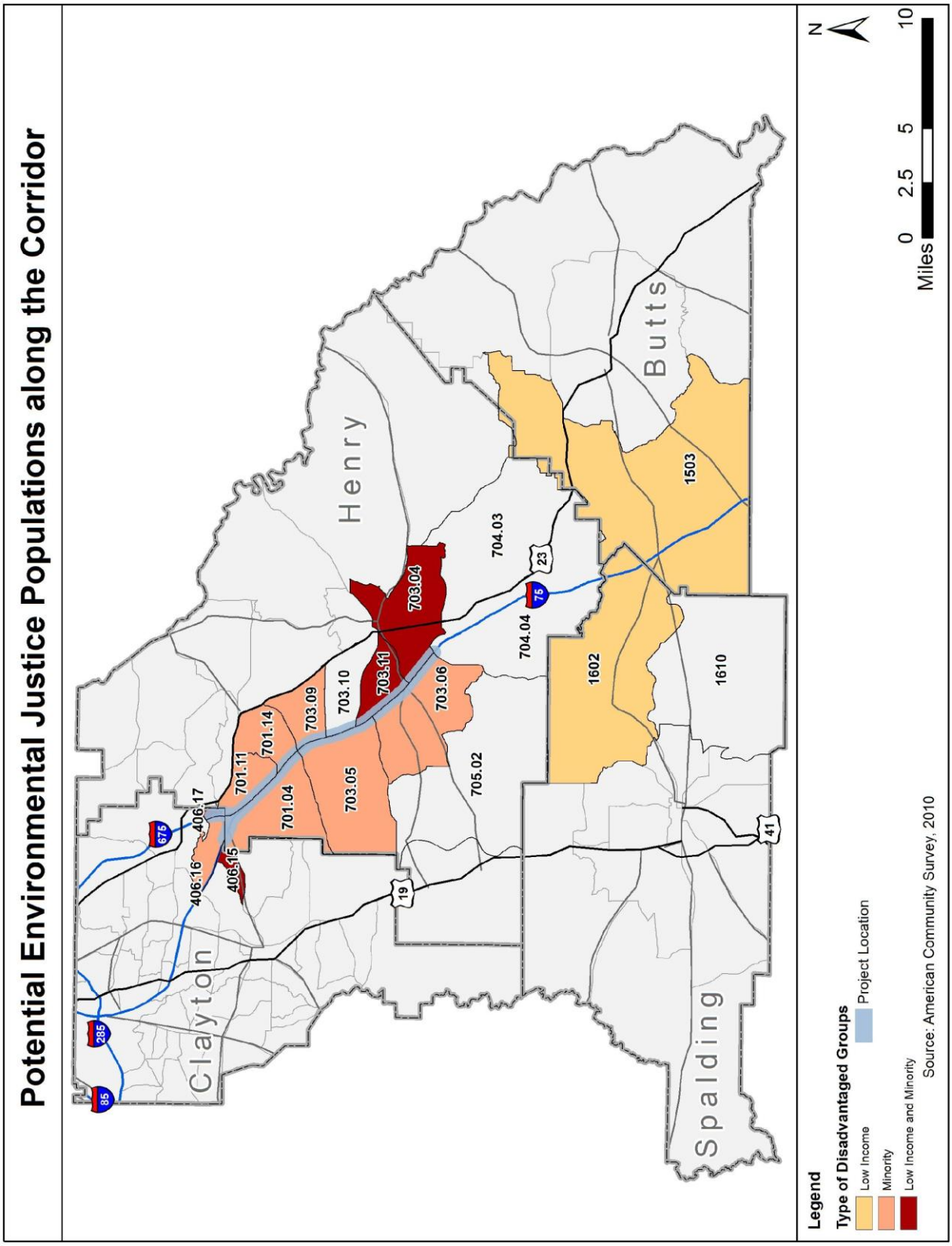


Figure 8. Potential Environmental Justice Populations
Comparison Study Area without Clayton County



It is difficult to draw firm conclusions from census tract data, but it is possible to make several broad observations:

1. There are minority and low-income populations at the northern end of the corridor that would not use the corridor to commute between home and downtown Atlanta.
2. Two minority/low-income tracts - 703.04 and 703.11 - are at or south of Jonesboro Road, where the new managed lane interchange would be located. Hence, these populations would have relatively convenient access to the managed lanes, should they choose to use them.
3. As will be discussed below, public outreach, which included surveys to assess all potential users' views of tolling, occurred along the project corridor itself, in Henry County and Clayton County, which is where these populations are primarily located. The preliminary conclusion could be that other low-income populations, in Spalding and Butts Counties, could have been somewhat under-represented in the survey results. However, the overall public outreach efforts have been extensive in the entire comparison study area and surveys were returned from respondents in these counties through the public involvement process.

Public Involvement

The public involvement for the project was concentrated in Henry and Clayton counties and included extensive outreach into the community and surrounding project area. This outreach was initiated not only to involve the general public but also to involve environmental justice populations. A centerpiece of the environmental justice outreach was to solicit the opinion of minority and low-income persons on the perceived impact of tolling.

Through windshield surveys, low-income and minority communities were found in Clayton County, Henry County, and the City of McDonough. These included the Villas at Overlook off Bridges Road, City Square off Racetrack Road, Creekwood Station off Hampton Street, the Villages of Regency Park off Hampton Street, and Audubon Estates off Willow Lane. The environmental justice outreach efforts, detailed in the following paragraphs, were concentrated in these areas. The public outreach efforts and dissemination of the public outreach survey have been extensive, as summarized below. In fact, the public surveys disseminated during both the targeted environmental justice outreach and the public information open houses were returned from zip codes throughout Butts, Clayton, Henry, and Spalding counties, and from counties northwest of the corridor, such as Fulton. Therefore, the public involvement did reach communities outside of Clayton and Henry County.

Data collection to determine the presence of persons with LEP and public involvement that includes a process for seeking out and considering the needs of the LEP population has also occurred as a part of this project.

Communicating and coordinating with groups who work directly with environmental justice populations is key in the successful dissemination of information and coordination of public events. Project staff worked with government agencies and social services organizations to identify environmental justice populations and to publicize information on the project. While public involvement served a variety of broad purposes, including making environmental justice populations aware of the project and soliciting their input in project development through the survey, a common thread running through all of the public involvement activities was an effort to

measure the opinions of minority and low-income groups toward the project and, in particular, to determine whether and to what extent these groups perceived tolling as having adverse impacts.

Public involvement activities are detailed in Section V, this section summarizes outreach events specifically targeted to areas with minority and low-income populations. As noted, a survey was developed to solicit input on a variety of issues relating to the project, in particular, the tolling component. This survey was distributed at all outreach events.

Unstaffed kiosks, which involved a project display with a map and brief explanation of the project, were placed at seven government agencies and social service providers throughout the study area. The display included a place to distribute and collect surveys. These kiosks were in place the week of July 11th-18th, 2011. Twenty-six surveys were collected through this effort.

Three additional events were staffed for the entire time in order to encourage engagement in the public involvement process and solicit public input. Twenty-nine surveys were collected through this effort.

In areas identified as low-income populations through a demographic analysis of ARC data, project staff went door to door to solicit input on the project in general and the tolling aspect in particular. Neighborhoods selected for this effort had residential properties listed on the market for $50,000 or less. According to various lending calculators and anecdotal information from a local mortgage broker, a person can qualify for a mortgage of up to 2.5 times their annual income. As such, these neighborhoods can be generalized as low-income because of the 2010 HHS poverty guideline for a family of 3 of $18,310. Staff assigned to this task worked in pairs, briefly introduced the project and asked residents to fill out a short project survey. Fifty surveys were completed. Additionally, a project information sheet was left at the residences where no one answered the door; 55 were distributed.

In total, 112 surveys were completed. A full report on the survey results can be found in Appendix A, pp. A-5-A-12. Because opinions on the equity of tolling are particularly important for evaluating environmental justice impacts, the results for the survey question on tolling are summarized in the following discussion.

The opinion of tolls by users was tabulated by self-identified race/ethnicity and income level (Table 20). Respondents were given a choice of seven opinions on the tolls to choose from:

- A. Even if I don't choose to use the lanes, the additional capacity might benefit me by taking some cars off of the existing lanes.
- B. I support toll lanes.
- C. I am opposed to toll lanes.
- D. I like having a choice for a reliable trip time.
- E. I like the increased reliability for transit trips provided by the toll lanes.
- F. I support any improvement that addresses congestion and mobility in this corridor.
- G. I think tolls are unfair.

Table 20. Public Survey Responses

Question	Income	
	Greater Than $25,000	Less Than $25,000
A. Even if I don't choose to use the lanes, the additional capacity might benefit me by taking some cars off of the existing lanes.	42% (27)	23% (10)
B. I support toll lanes.	23% (16)	30% (13)
C. I am opposed to toll lanes.	23% (16)	18% (8)
D. I like having a choice for a reliable trip time.	37% (25)	16% (7)
E. I like the increased reliability for transit trips provided by the toll lanes.	16% (11)	1% (4)
F. I support any improvement that addresses congestion and mobility in this corridor.	26% (18)	19% (15)
G. I think tolls are unfair.	<1% (4)	18% (8)

Source: I-75 Express EJ Outreach Summary, July 2011.

Totals do not add up to 100 because respondents could choose more than one response. It is acknowledged that the pool of respondents could be greater. Additional data would be included in the Final EA after further public information open houses.

Of African-Americans (or mixed heritage), 37% support reducing congestion by adding capacity, 35% support better travel choice, 9% like the increased reliability for transit, and 19% oppose tolls or deem them unfair. Of Latinos (or mixed heritage), 33% support reducing congestion by adding capacity, 50% support better travel choice, and 17% like the increased reliability for transit.

Mt. Carmel Outreach

In addition to public outreach efforts to low-income communities, a series of meetings was held with minority communities in the vicinity of Mt. Carmel Road. A community open house was held on July 12, 2011 at the Southside Christian Fellowship, on Mt. Carmel Road in McDonough to address concerns regarding the managed lanes-only access point proposed at the Mt. Carmel Road bridge over I-75 as a part of Alternative 8. In order to publicize the open house, a database was developed of neighborhood residents along Mt. Carmel Road and Mill Road. The database included over 350 residences, and flyers announcing the open house were mailed to the database. In addition, yard signs announcing the open house were placed at the entrance and exits of each subdivision along Mt. Carmel Road and Mill Road.

Seventy-eight individuals attended the open house and twenty five comment forms were submitted. Of those in attendance, 8% were in favor of a new Mt. Carmel interchange with I-75, 80% were opposed, 8% offered conditional support, and 4% were uncommitted.

Public involvement surveys were distributed at a community open house at the Higher Living Christian Church, 2455 Mt. Carmel Road in Hampton. Thirty-three surveys were completed. Twenty-eight of the respondents support or conditionally support the proposed improvements.

A community open house was also held on September 26, 2011 with the Rowanshyre Homeowners Association (HOA). The Rowanshyre HOA is made up of residents of the Legends of Rowanshyre located north and west of the intersection of Mill Road and Mt. Carmel Road, the Gates of Rowanshyre south of Mt. Carmel Road and west of I-75, and the Villages of

Rowanshyre, north of Mt. Carmel Road and west of I-75. A general description of the project was presented by the project team, including need and purpose, the federal environmental process, and public outreach. The Mt. Carmel interchange with I-75 and improvements to the intersections of Mill Road and Mt. Carmel Road, and Jonesboro Road and Mt. Carmel Road were also discussed. The discussion included: operation of the express lanes, other alternatives for the interchange, and pedestrian safety.

An additional meeting was held on October 17, 2011 with residents of the Rowanshyre community. The Rowanshyre residents listed their main concerns as: air quality/pollution/ environmental studies; property devaluation; increased traffic volumes; increased crime; steps to minimize accidents along Mt. Carmel Road; and concerns over the possible widening of Mt. Carmel Road. The individual concerns were discussed as well as ideas from the Rowanshyre residents for possible mitigation to these concerns.

Due to the concerns of the communities surrounding Mt. Carmel Road and the results of the December PIOH meetings (detailed in Section V, Coordination and Comments), Alternative 8, the project with access at Mt. Carmel Road, was eliminated from further consideration.

c. Examination of Regional and National Tolling

In order to assess potential impacts to the population, studies and reports of managed lane facilities in the Atlanta region and the US were reviewed, as well as other regional commuting options.

Research and the experience of other states shows that low-income persons do use managed lanes, but at rates that are lower than for higher income persons. Since the increasing implementation of congestion pricing strategies, including tolls and managed lanes, on limited-access roadways throughout the United States, there has been new research and analysis on the effects of all forms of congestion pricing on environmental justice populations. The FHWA has developed a series of seven primers on congestion pricing in order to explain the rationale behind congestion pricing and discuss key aspects of it. One primer specifically addresses the issue of equity in congestion pricing (*Income-Based Equity Impacts of Congestion Pricing*, FHWA, 2008). Equity issues are examined and their potential impacts discussed, including: general issues; implementation options; and public outreach. The primer references independent research and articles on multiple projects throughout the United States. The following discussion is a summary of that primer as it relates to both Alternatives 1 and 2.

The FHWA primer notes that funding transportation infrastructure through "regressive taxes, such as car-registration fees, sales taxes, and the gas tax" is in fact inequitable. Lower-income users tend to drive older cars that are less fuel efficient and are therefore buying more fuel. The car registration fees and sales taxes are also inequitable because they are not differentiated based on income. Using tolls on a managed lanes facility directly charges all of the users of the facility, regardless of income level or any other socio-economic factor. In order to address any inequity, some toll facilities have turned over surplus toll revenues for transit or travel demand management improvements. For this project, net revenues, after outlays for project operation and maintenance and rehabilitation and replacement expenditures, will be used in accordance with the flow of funds described in the GDOT-SRTA Intergovernmental Agreement. As described in the primer, public opinion polls in some states (Washington) have shown that a higher portion of lower-income users are in favor of tolls versus taxes. The reverse was true for higher-income users, who favored taxes over tolls.

An overview of projects throughout the country is included in the FHWA primer. Data on users of the SR-91 express toll lanes in Orange County, California show that users are from all income levels. In fact, use of the toll lanes by all income groups increased over time (FHWA, 2008). Users have a wide range of income and use can vary between income sectors. Studies indicate that approximately half of the users only use managed lanes once per week or less (FHWA, 2008). Use is not just dependent on income but also on adjustments to personal schedules and availability of alternate routes.

Studies of projects with some form of congestion pricing currently operating in nine other states show that there has been some reluctance on the part of the public to fully embrace the congestion pricing concept at the outset, but that within the first year, the perception of the new facility shifts.

In San Diego, equity concerns were raised when the I-15 HOT lanes were implemented. After implementation, drivers felt that tolling was fair and had reduced congestion (FHWA, 2008). In Denver, no critical concerns from the public arose either before or after the implementation of the I-25/US 36 HOT lanes (FHWA, 2008). In Minneapolis, HOT lanes were proposed for I-394 in 1997 and were not implemented due to public opposition. However, by 2005, increased congestion and decreased transportation funding led to re-examination of the HOT lane concept. After implementation, survey data by users of I-394 revealed that tolls were priced appropriately based on the amount of travel time saved (GDOT, 2010c, pp. 3-7). The benefit of reduced travel time and reliable travel time for all income groups was also key to the implementation of the project (FHWA, 2008). Surveys conducted of users after the implementation of a managed lane project in Washington state revealed that the majority of users reported decreased congestion, increased safety, a higher likelihood of carpooling, and better travel times (WSDOT, 2011).

Priced managed lanes have recently been implemented in the Atlanta region and other managed lanes projects are in the planning process. The first project to be completed in the Atlanta region is the I-85 HOV to HOT Conversion project, which opened October 1, 2011. The opening of this project has begun to provide information on users' willingness to pay for travel time savings and on the socio-economic characteristics of managed lane users. Public outreach occurs throughout the transportation project development process. The public has been introduced to the concept of managed lanes on I-85 northeast of Atlanta. It should be noted that Alternative 1, the Preferred Alternative, differs from the I-85 conversion project because it is an ETL facility and because it is new construction, not a conversion from one type of managed lane to another type.

The most important conclusions from other successfully implemented projects appear to be to establish a determined effort to gather data, to conduct polls/surveys of users, and to disseminate this information back to the public. This has also proved true in the Atlanta region. The conversion of HOV lanes to HOT lanes on I-85 has not been without concerns raised by the public. Usage was low at the outset and public concerns resulted in the maximum toll rate being reduced. However, GDOT and SRTA have already begun the data gathering and information management process for the I-85 HOT lanes, with data such as monthly and daily registered trips and monthly and daily average trip toll available on the SRTA web site (http://www.georgiatolls.com/programs/i-85-travel-data). For example, the most recent data on usage, September 2012, shows over 17,000 average weekday trips occurring and average fares of $1.47.

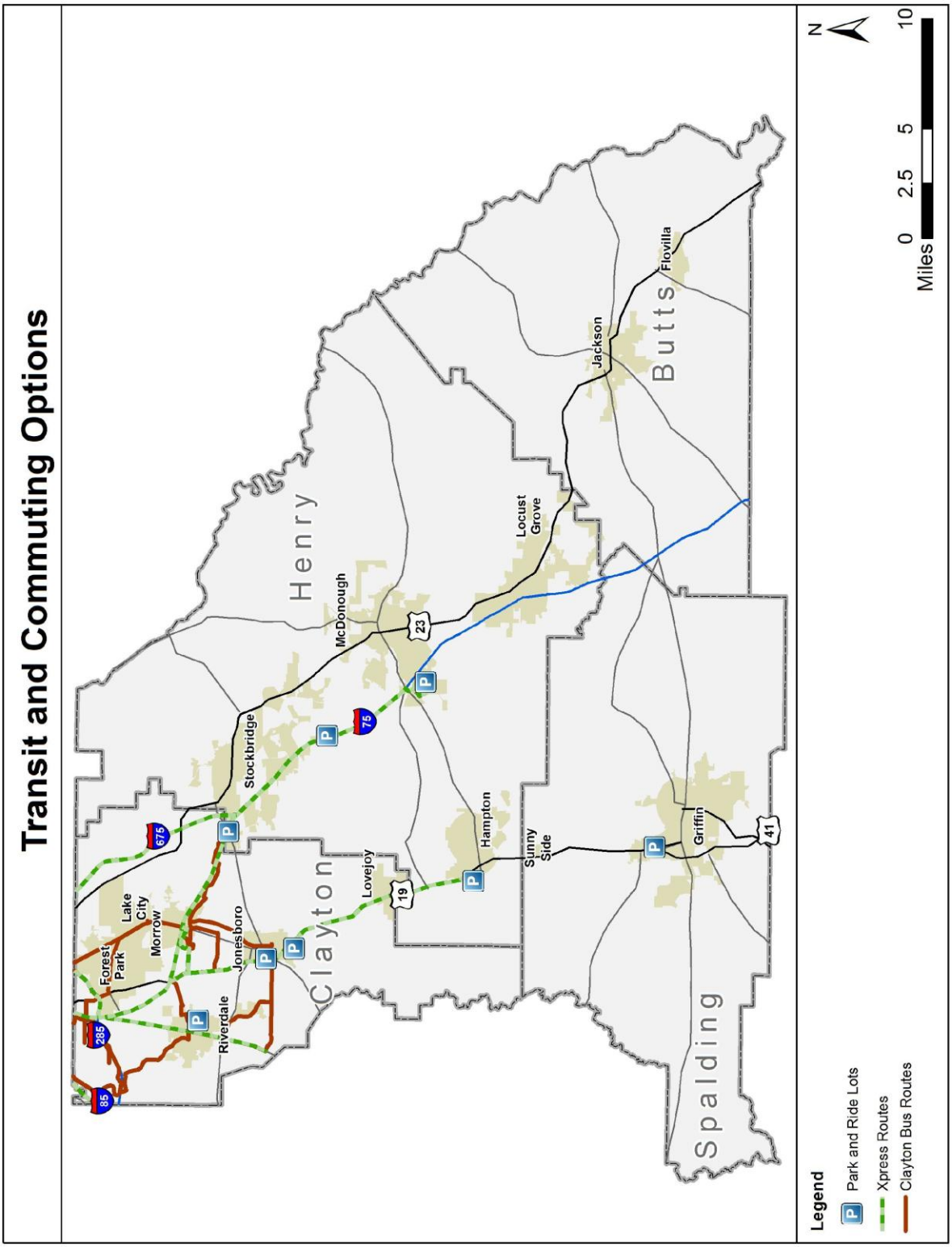
Transit and commuting options along and surrounding the I-75 corridor are available but are limited by the lack of rapid rail service; the Metropolitan Atlanta Rapid Transit Authority (MARTA) rail service does not extend into the project corridor. The commuting options currently available are park and ride lots and express bus routes. Three park and ride lots are near the I-75 corridor within the project limits (Figure 9). The Stockbridge park and ride lot is located on SR 138 in the northeast quadrant of the I-75 and SR 138 interchange. It contains 337 parking spots. This is at the northern terminus of the project and riders that use this lot would not be expected to use the managed lanes. The McDonough park and ride lot is located just west of the SR 20 interchange with I-75 and has 250 parking spots. The Jodeco park and ride lot is just east of the northbound I-75 on-ramp on Holloway Road. It currently only has 15 official parking spots, although additional cars have been observed in the location. Plans to expand this park and ride lot are currently underway; there is not a date of completion available, due to GRTA funding issues. There is an additional park and ride lot which does facilitate commuting into Atlanta, but is not located along I-75. The Atlanta Motor Speedway Park and Ride Lot is located on Tara Boulevard (US 19), just north of SR 20. It contains 100 parking spots. Commuters using this lot would access the project using the I-75 and SR 20 interchange. There are other additional park and ride lots in Clayton and Spalding counties but commuters using these lots may not be using the I-75 corridor based on the locations of the lots west of I-75 (Figure 9).

Express bus routes are provided in the region by the Georgia Regional Transportation Authority. Three routes serve the project study area (Figure 9). Xpress Routes 431 and 432 access the Stockbridge park and ride lot at the I-75 and SR 138 interchange and travel to central Atlanta. These are not expected to use the managed lanes. Xpress Route 430 is the McDonough Express Route and accesses the McDonough Park and Ride and also travels to central Atlanta. Xpress Route 430 would access the managed lanes at the slip ramps north of SR 20.

There are no park and ride lots in Butts County, nor express bus routes that access Butts County. Therefore, for a user of I-75 that resides in this County, the nearest park and ride lot is the McDonough lot in Henry County, which would also provide access to Xpress Route 430. For these users, the travel time savings would not be as great as those in Henry County, because they would still have to travel in their vehicles to the park and ride lot for a greater distance than those in Henry County.

In addition, there are currently six GRTA vanpools in Henry County along the project corridor that access major employment destinations in the greater Atlanta region: Lockheed, Delta, and the State Capitol. Two additional GRTA vanpools in Henry County are south of the project but would utilize I-75 based on their origins and destinations. Five GRTA vanpools in Spalding County, south of Henry County, would also utilize I-75 based on their reported origins and destinations. All of these vanpools would most likely use managed lanes if available because they would be able to ride for free under both Build Alternatives, and decrease their travel time. VPSI Inc. and Enterprise Inc. both operate private vanpools throughout the region as well. The origins and destinations of these vanpools are not publicly available but in 2009 they made up 77% of all vanpools throughout the entire Atlanta region, while GRTA operated 10% of all vanpools (GRTA, 2010). Because the origins and destinations of all vanpools are not publicly available, vanpools do not appear on Figure 9. As detailed in Section II.C.1., all vehicles would pay a toll, except for emergency vehicles, maintenance vehicles, military vehicles, registered transit vehicles, and school buses. Registered transit vehicles includes both buses operated by a

Figure 9. Transit and Commuting Options.



public transportation agency within the ARC and registered with the SRTA and vanpools certified by a public transportation agency within the ARC and registered with SRTA.

d. Potential Effects on Environmental Justice Populations

Direct Effects. No direct physical effects on communities or environmental justice populations are expected as a result of either Alternative 1 or 2. There are no direct right-of-way impacts to any particular segment of the total population.

Indirect Effects. Potential indirect effects on environmental justice populations are centered on the effects of tolling on low-income populations. Because of income differences, it appears that use of a toll facility by higher-income users may be more prevalent than by lower-income users. Expending federal tax dollars on a facility that appears to benefit one group over another can be perceived to be inequitable. Tolling all users at the same rate can also appear to be a regressive tax that would take a larger percentage of disposal income from a low-income user than from a higher-income user.

In fact, it is anticipated that all trips in the corridor would benefit from added capacity, including those in the managed lanes, those in the general purpose lanes, and even those along parallel facilities as a result of additional transportation network capacity. As shown in Table 14 (Section II.C Alternatives Carried Forward), there is a travel time savings in the general purpose lanes of the Build condition when compared to the general purpose lanes of the No-Build condition of between 2.8 and 4.5 minutes. Because of the projected benefits to all users, tolling has the potential for adverse but not disproportionately high effects on low-income users.

Drivers on I-75 would still have a choice to remain in the general purpose lanes, join a carpool to decrease the cost, use the GRTA express bus services, or in the case of Alternative 2, form an HOV-3 carpool and pay nothing. The crux of managed lane usage is a driver's willingness to pay. The FHWA primer notes that congestion pricing "places responsibility for travel choices squarely in the hands of the individual traveler, where it can best be decided and managed" (FHWA, 2008). This is a function of the value of using the managed lanes relative to the available alternatives. When the value of time savings for a potential user exceeds the toll charge, that user is benefited by taking the priced alternative. The managed lanes would experience less congestion and therefore would provide a more reliable travel time for both vehicles and express buses (Sections I and II). These results benefit all users regardless of income level because they provide better access and mobility. The actual use would depend on the availability of adjustments to other personal choices within a particular commute, such as joining a carpool and/or "flexibility of time" (working hours or other commitments, such as child care) (FHWA, 2008). Some users may choose not to pay for managed lane access every day, but "all income groups value the choice of a reliable trip travel time that is available to them" (FHWA, 2008). The decision to use a managed lane alternative is based on the value of time at the point of sale, when the driver must choose between the free or priced alternative, because "all income groups value the 'insurance' of a reliable trip time when they absolutely need it" (FHWA, 2008).

To help evaluate the equity issues associated with usage of the managed lanes on this project, an analysis was conducted using ARC's travel demand model to determine whether low-income populations living in Henry, Clayton, and Spalding counties can be expected to use the proposed managed lanes less frequently than higher-income populations. The analysis focused on 178 Traffic Analysis Zones (TAZs). Butts County was excluded because it is not in the ARC model.

The analysis found evidence that users from low-income areas are projected to access the express lanes at rates that are statistically equivalent to those from high-income areas. This finding was true of both Alternative 1 (ETL) and Alternative 2 (HOT 3+). The *Environmental Justice Technical Memorandum* presenting this research is on file at the GDOT Office of Environmental Services.

The equity concerns associated with tolling are also ameliorated by the fact that toll lanes tend to enhance transit and other commuting choices. Under Alternative 1, low-income commuters can use express transit or registered vanpools, or share the cost of the toll through carpools, which are all viable options to either riding alone in the ETL and paying a toll, or remaining in the general purpose lanes. Alternative 2 offers all of these choices, plus the additional choice of establishing an HOV-3+ carpool to avoid the toll altogether. Nevertheless, establishing or joining a carpool or vanpool still depends on the availability of adjustments to other personal commitments and choices within the user's individual commute, regardless of income level. National and metropolitan area data shows that as income increases, carpool mode share decreases (MIT, 2009). This is not necessarily the case of the I-75 corridor. Based on ACS data for the APE, carpooling is not inversely related to income. Some of the tracts with the highest proportion of low-income persons have low proportions of carpoolers and some with low proportions of low-income persons have high proportions of carpoolers.

Specific express transit and vanpool options available near the I-75 corridor are detailed in Section III.C.6.c. The existing GRTA express transit routes only go as far south as the SR 20 interchange with I-75. Therefore, these options are not currently available as choices to users in Butts or Spalding County, unless they commute into Henry County and then switch to transit. In the case of Spalding County, these users could use either the I-75 corridor or the US 19 corridor express transit service.

Equity concerns can be mitigated by providing alternatives to the use of cashless technology. Credit cards or bank accounts have traditionally been the primary sources of funds to set up and use a transponder toll device. However, these forms of payment may not always be used by lower-income users. Transponders for either Build Alternative would be the same as those used throughout the region, the Peach Pass, which can be opened with cash currently at SRTA in downtown Atlanta and Department of Driver Services locations in Norcross and Lawrenceville. They are also available on-line and via telephone service centers with other forms of payment.

Based on the direct and indirect effects discussed above, the Build Alternatives would not cause disproportionately high and adverse effects on any minority populations, but is anticipated to cause adverse, but not disproportionately high effects to low-income populations in accordance with the provisions of E.O. 12898 and FHWA Order 6640.23A.

Cumulative Effects. Cumulative effects are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions… [and] can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7). The Council on Environmental Quality has written guidance documents for identifying and assessing these impacts, particularly through an eleven step analytical process (CEQ, 1997). The understanding of what are past, present, and reasonably foreseeable future actions is key to the assessment of these impacts. The affected environment or existing conditions in the study area is the collected impacts of all past actions, e.g., the location of I-75, the growth of Atlanta as a major

metropolitan area, and the expansion of the metropolitan area into the surrounding counties. Reasonably foreseeable future actions are other planned and programmed projects and other planned development that is likely to occur in the immediate area. These impacts are important to this assessment if they impact the same resources as those affected by this project.

In the case of environmental justice, particularly low-income users of either Alternative 1 or 2, I-75 serves them as a means of access to all aspects of life: work, school, recreation. The communities have grown and matured around the I-75 corridor. The existing general purpose lanes offered one choice to all users, until express transit and park and ride lots began to serve the area. The No-Build Alternative gives all users these same choices. Alternatives 1 and 2 both offer additional choices to access the transportation network and enhances the existing choice of express transit. Alternatives 1 and 2 both have the potential to promote commuting options. There are currently no plans to extend express transit further south along I-75 or construct additional park and ride lots south of the corridor. However, expansion of commuting options would enhance the choices available to all I-75 users, regardless of income.

Based on research of other facilities, the low-income population may not use the facility as frequently as the higher-income population but they are still expected to use it to obtain a reliable travel time. In addition, the travel time in the general purpose lanes under the Build Alternatives is an improvement over the travel time in the general purpose lanes under the No-Build Alternative.

e. Commitment Measures

In order to address potential indirect effects to low-income users, SRTA is currently implementing more convenient opportunities to purchase and replenish Peach Passes for cash-based customers. Pre-paid toll cards and "top-up" (replenishment) cards will be available for purchase and immediate use in common retail merchant locations by the end of 2013 throughout the region. The SRTA's current business model distributes the Peach Pass sticker transponders free to all users (credit card and cash-based). There is no charge to reload customer accounts if the account is backed by a credit card. There is no charge to reload customer accounts in person at customer service walk-up facilities operated by SRTA for the cash user. Finally, additional information on use of the managed lanes, including total volumes and surveys of users, would be gathered and published. Dissemination of this information to the general public and to all interested persons would occur.

D. Effects on the Cultural Environment

1. Cultural Resources

In compliance with Section 106 of the National Historic Preservation Act of 1966 and amendments thereto, the proposed project has been surveyed for archaeological and historic resources, especially those on or eligible for inclusion in the National Register of Historic Places (NRHP). The purpose of the survey was to locate, identify, and evaluate the significance of any historic and archaeological resources within the project corridor. The survey boundary and methodology were established using *GDOT/FHWA Cultural Resource Survey Guidelines*. These guidelines were established as a result of past interaction with the Georgia State Historic Preservation Officer (GASHPO) and his staff and were agreed upon by FHWA and the GASHPO.

The Area of Potential Effect (APE), as defined in 36 CFR 800.16(d), is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. Based on this definition, the nature and the scope of the undertaking, the guidance in the *GDOT/FHWA Cultural Resources Survey Guidelines*, and past experience with similar projects, the APE was defined, in consultation with the GASHPO, as the area within the existing and proposed right-of-way, within which all construction and ground disturbing activity would be confined, and would include all properties within the viewshed of the proposed project. The APE for both Alternatives 1 and 2 is the same.

As a result of research efforts, one historic and no archaeological resources considered eligible NRHP were identified within the proposed project's area of potential effect (Figure 10). The GASHPO has concurred with a determination of no adverse effect for the historic resource, Horseshoe Farm, in a letter dated August 24, 2011 (Appendix A, p. A-27). In 2012, an addendum to the Historic Resources Survey Report was prepared to assess the proposed Jonesboro Road access ramp. Two additional NRHP eligible resources were identified within the project's APE: the Brannan Farm and the Rowan House. The GASHPO concurred with the findings of the Historic Resources Survey Report Addendum on February 27, 2012 (Appendix A, p. A-31). Subsequently, the APE for the proposed project was revised, and it was determined that the Brannan Farm and the Rowan House were no longer within the APE of the proposed project. These findings were coordinated with the SHPO in a Reevaluation Memo dated April 25, 2012 (Appendix A, p. A-32). Finally, the proposed project was later revised to include intersection improvements at SR 20 and I-75 southbound ramp, SR 20 and Industrial Boulevard, and SR 155 and Industrial Boulevard. No additional historic resources were found within the APE, and the findings of the original AOE related to the Horseshoe Farm did not change. These findings were coordinated with the SHPO in a Reevaluation Memo dated August 16, 2012 (Appendix A, p. A-33).

2. Historic Resources

The Department of Natural Resource's Henry County and Clayton County surveys for historic resources was consulted in preliminary identification of historic resources. Lists of current and pending NRHP properties were checked and aerial photographs along the length of the proposed project were consulted. In addition to the SHPO, other potential consulting parties were identified based on the nature of the undertaking and the guidance in the *GDOT/FHWA Cultural Resource Survey Guidelines*. The other potential consulting parties invited to participate in the Section 106 process were the Atlanta Regional Commission; the Clayton County DOT, the Clayton County Board of Commissioners, the Henry County Board of Commissioners, McDonough Historic Preservation Commission, Historical Jonesboro/Clayton County, Inc.; and the following tribal governments: Alabama-Coushatta Tribe of Texas, Muscogee (Creek) Nation, Muscogee (Creek) National Council, Poarch Band of Creek Indians, Seminole Nation of Florida, Thlopthlocco Tribal Town, and the United Keetoowah Band of Indians. No correspondence was received from any tribal governments.

In accordance with 36 CFR 800.2, these consulting parties were informed of the efforts to locate previously identified historic properties and the results of those efforts and were asked to provide information on any unidentified National Register listed or potentially eligible historic properties located within the APE by a Notification dated January 20, 2010 (Appendix A, pp. A-13-A-15).

Figure 10. Construction Limits in the Area of Horseshoe Farm

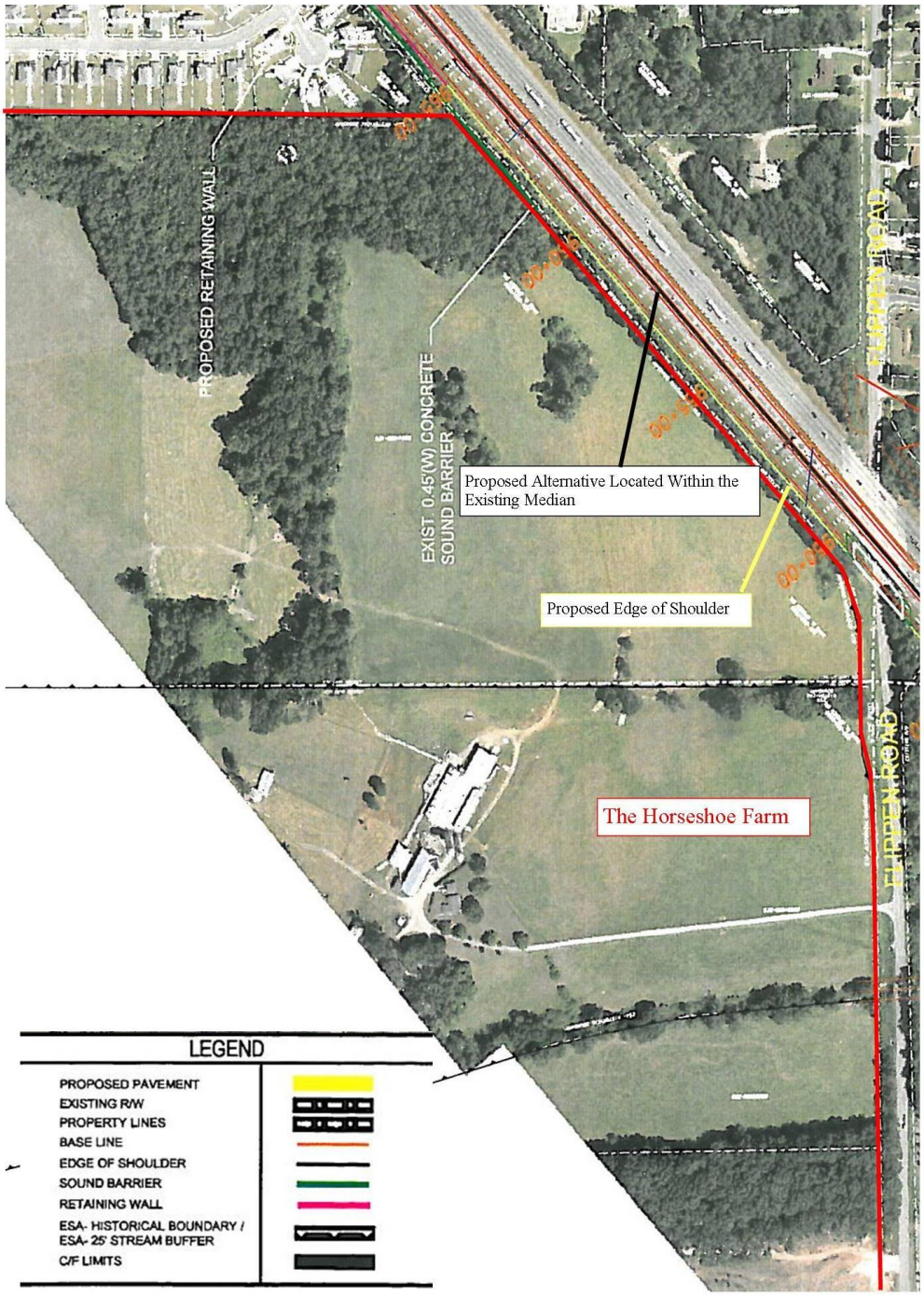


Figure 10
Construction Limits in the Area of the Horseshoe Farm for the Reversible Lane Alternative

NOT TO SCALE

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A response was received from the GASHPO by a memorandum dated January 27, 2010 (Appendix A, p. A-16). During the project development process, the project was modified slightly, which modified the study area. This necessitated a change in the APE, which was expanded, and therefore required a new notification letter to be sent to the GASHPO on March 17, 2011 (Appendix A, pp. A-21-A-25). A response was received from the GASHPO by a memorandum dated March 23, 2011 (Appendix A, p. A-26).

The review of existing information on previously identified historic properties revealed that no National Register listed properties, proposed National Register nominations, National Historic Landmarks, or bridges determined eligible for inclusion in the National Register in the updated Georgia Historic Bridge Survey (GHBS) were identified within the proposed project's APE.

After reviewing any additional information received from consulting parties, field surveys and background research were conducted within the APE of the proposed project to identify any historic properties or archaeological sites eligible for listing in the National Register. The results of the field surveys and background research were summarized in a Historic Resources Survey Report and an Archaeological Assessment. Those reports were provided to consulting parties participating in the Section 106 process for review and comment.

One eligible historic property was identified within the APE of the project: Horseshoe Farm. The Historic Resources Survey Report was submitted to the GASHPO and FHWA on September 22, 2010 (Appendix A, p. A-17). The Archaeological Assessment was submitted to the GASHPO and FHWA on October 20, 2010 (Appendix A, pp. A-18-A-20). In accordance with 36 CFR 800.4(c)(2), the Horseshoe Farm was determined eligible for listing in the National Register by the GASHPO on September 24, 2010, (Appendix A, p. A-17).

Pursuant to 23 CFR 771.111 and 36 CFR 800, public involvement efforts have been undertaken by GDOT from the earliest stages of project planning. These public involvement efforts include the following activities: Section 106 Notification letters dated January 20, 2010 and March 17, 2011, and NEPA notification dated March 31, 2009, as well as Public Information Open Houses April 26 and 28, 2011, and December 13 and 15, 2011.

a. Description of Historic Resources

The Horseshoe Farm is a former dairy farm. Two residences are associated with the resource. The first is a side-gabled house of an unrecognized type or style of frame construction with six-over-six double-hung sash windows, weatherboard siding, one interior-ridge brick chimney, a gable-roofed front porch with decorative-metal support posts, a gable-roofed side stoop with decorative-metal support posts and a concrete-block foundation. Four outbuildings are associated with this residence. The first is a shed-roofed storage shed of frame construction with wood plank, corrugated metal and plywood siding, exposed rafters, and metal roofing. The second is a gable-roofed garage of concrete-block construction with metal roofing and exposed rafters. The third is a gable-roofed outbuilding of frame construction with metal roofing and metal siding. A small, metal silo is located next to the outbuilding. The fourth is a gable-roofed outbuilding of concrete-block construction with a four-light fixed window and exposed rafters.

The second residence is a side-gabled house of an unrecognized type or style of concrete block construction with six-over-six double-hung sash windows, asbestos siding over the gable ends, one exterior-end brick chimney, and a concrete-block foundation. Two gabled-wings covered with brick veneer with multi-paned picture windows flanked by six-over-six double-hung sash

windows have been added to the south side of the resource. The front entrance has been moved to the wing on the west side of the house and has a shed-roofed front porch with decorative-metal support posts. A non-historic, gable-roofed car shelter is associated with this residence.

The rest of the dairy farm consists of agricultural fields and large, gable-roofed stables and barns of wood and concrete-block construction for housing and milking the cows. Large, metal silos are located next to the stables. The dairy farm closed in the 1980s but the owner still keeps cows on the property.

The Horseshoe Farm was evaluated under Criterion A in the area of agriculture and determined to possess all three of the three criteria identified in *Tilling the Earth: Georgia's Historic Agricultural Heritage – A Context*. The property retains its original historic houses and outbuildings, the original stables, barns and silos and the historic landscape associated with the dairy farm remains intact and is still used for agricultural purposes. For these reasons, the property is considered eligible for inclusion in the National Register under Criterion A in the area of agriculture. The Horseshoe Farm was also found eligible under Criterion C and appears to possess a local level of significance in the area of architecture for its collection of historic barns, stables, and silos.

The eligible National Register boundary of the Horseshoe Farm corresponds to the legal property boundary of parcel nos. 031-02017000 (89.72 acres), 032-02010000 (73.83 acres), and 032-02009000 (6.65 acres) for a total of 170.2 acres. The boundary contains all National Register qualifying characteristics and features of the property and includes two houses, associated outbuildings, associated agricultural buildings, and the surrounding fields.

b. Direct Effects

The GASHPO has concurred that there is no adverse effect on Horseshoe Farm (February 27, 2012). In the area of the resource, project implementation would consist of the addition of two managed lanes within the existing right-of-way of I-75 in Henry County. To accommodate the managed lanes, the southbound general purpose lanes would be shifted approximately 38 feet towards the Horseshoe Farm. In the area of the resource, all construction and ground disturbing activity would occur within existing right-of-way and outside the historic boundary.

Physical destruction of or damage to all or part of the property would not occur. No construction or ground disturbing activity would occur within the eligible historic boundary. All work would be conducted within existing right-of-way. Therefore, no physical destruction or damage to the property would occur.

Project implementation would not result in a change in the character of the property's use. There are no direct or indirect effects anticipated to the Horseshoe Farm that would alter the character of the continued residential and agricultural use of the property. The existing six lane interstate located in front of the property would be widened from six to eight lanes utilizing the existing right-of-way. This action would not affect the future desirability of the property for residential or agricultural use. I-75 would still be approximately 1,082 feet from the buildings and structures of the Horseshoe Farm. All work would be done within existing right-of-way. Therefore, project implementation would not result in a change in the character of the property's use.

Project implementation would not result in a change in the character of the property's physical features within the property's setting that contribute to its historic significance. The existing

roadway would be widened, but this widening would occur within the existing right-of-way and all construction and ground breaking activity would occur within the existing right-of-way and outside the eligible historic boundary. I-75 would still be approximately 1,082 feet from the buildings and structures of the Horseshoe Farm. The proposed edge-of-pavement of I-75 along the Horseshoe Farm boundary would be approximately 38 feet closer to the resource but would still be approximately 40 feet northeast of the eligible boundary of the Horseshoe Farm. Although sections of I-75 are visible from the buildings and structures of the Horseshoe Farm, it is elevated and approximately 1,120 feet away from the buildings and structures and partially screened by trees on the property. Therefore, project implementation would not result in a change in the character of the property's physical features within the property's setting.

Project implementation would not result in the introduction of visual elements that diminish the integrity of the property's significant historic characteristics or features. The existing transportation facility has been and would continue to be an element of the visual character of the property. The enlargement of the existing transportation facility would not further compromise the visual character of the property. The visual character of the surrounding area of the resource has been compromised by modern commercial and residential development. The enlargement of the existing transportation facility would not further compromise the visual character of the property.

Project implementation would not result in the introduction of atmospheric elements that diminish the integrity of the property's significant historic characteristics or features. This project was evaluated for its consistency with state and federal air quality goals, including CO, Ozone, $PM_{2.5}$ (fine particulate matter), and Mobile Source Air Toxic Analysis (MSAT) as part of this assessment. Results indicated that the project is consistent with the State Implementation Plan for the attainment of clean air quality in Georgia and is in compliance with both state and federal air quality standards.

Project implementation would not audibly affect the Horseshoe Farm. The residences located on the farm are sited side-by-side and approximately 1,345 feet from the edge-of-pavement for I-75 and are well beyond limits for typical noise modeling. At this distance, it is unlikely that the proposed project would cause effect to the historic resource because the resource receptor is located well beyond the traffic noise source. In accordance with GDOT Noise Policy (July 2011), 800 feet is the maximum distance in which FHWA has validated acoustically soft sites. Noise studies will not be completed beyond 800 feet until it has been shown that an approved noise model has validation beyond 800 feet for all common acoustic situations. Therefore, it is not possible to model the effect of the either alternative because the receptor is located beyond the limits of the noise model.

c. Indirect and Cumulative Effects

Project implementation would not indirectly affect the Horseshoe Farm. No change in traffic patterns in its vicinity would result from project implementation. No additional access to the existing transportation facility would be provided and no existing access to the facility would be removed. The proposed project would only increase the capacity of the existing roadway to meet current and anticipated future demand. Since there are no direct or indirect impacts to Horseshoe Farm, there are no contributions by this project to past, present, or reasonably foreseeable future actions that could result in cumulative effects on this resource.

3. Archaeological Resources

An archaeological survey was conducted within the APE in accordance with GDOT Archaeological Survey Guidelines developed by the GDOT Staff Archaeologists in consultation with Georgia Department of Natural Resources (DNR) Historic Preservation Section Staff and concurred with by the FHWA and GASHPO. These guidelines provide general survey boundaries and methodological approaches to archaeological surveys based on the type/scope of proposed highway projects and are followed during the initial identification of archaeological resources. A Phase I survey is typically performed which is primarily an effort to locate and register sites. Research on known or potential sites is conducted, as well as evaluation of individual parcels with the potential for containing archaeological sites.

There have been six previous surveys within the APE. A Phase I and addendum were conducted under P.I. No. 312150 in 2000. A Phase I was conducted under P.I. No. 312160 in 2003. A *Phase I Archaeological Survey of I-75 Auxiliary Lane Project, Henry County, Georgia* was conducted under P.I. No. 0003167 in 2006.

The current project was originally surveyed under P.I. Nos. 0003167 and 0003436. The *Phase I Archaeological Survey of the I-75/SR 401 Widening from SR 155 to SR 138, Henry County, Georgia* was conducted in 2009. An *Addendum* that included changes to Walt Stephens Road and Flippen Road was conducted under the same P.I. numbers. After approval of that addendum, the project was given revised P.I. numbers and was resubmitted as *Phase I Survey of the Proposed Improvements to I-75 from SR 155 to SR 138, Henry County, Georgia*, P.I. Nos. 0009156 and 0009157. Three addenda were prepared to supplement the current Phase I survey due to modifications to the proposed project. All addenda were Short Forms of Negative Findings (October 26, 2010, January 4, 2012, and September 28, 2012 – Appendix A, pp. A-18-A-20, A-28-A-30, A-34-A-36).

The proposed project includes construction of two new lanes, within the existing I-75 right-of-way to be operated as managed lanes. The project formerly extended farther west and required minimal right-of-way acquisition. After these changes, an archaeological addendum for the project was necessary. The project includes minimal changes within the previously surveyed areas and no additional work was required. These previous surveys were conducted under the previous P.I. numbers above. The three addenda to the current survey investigated improvements to Walt Stephens Road and Flippen Road, an access ramp at Jonesboro Road, ITS infrastructure along I-75 and I-675, and various intersection improvements as described previously in Section II.C. Alternatives Carried Forward.

There are ten previously recorded archaeological sites within a one kilometer radius of the project area. One site, Site 9HY261, was recommended eligible for the NRHP. It is a prehistoric artifact scatter and a historic cemetery (*Addendum to Phase I Survey of the Proposed Improvements to I-75 from SR 155 to SR 138, Henry County, Georgia* on file at GDOT Office of Environmental Services). It does not lie within the APE. Three previously recorded sites are located within a one-kilometer radius of the Jonesboro Road access to the managed lanes and 22 previously recorded sites are located within a one-kilometer radius of the ITS portions. No sites are located in the survey corridor. Three previously unrecorded sites, 9HY501, 9HY502, and 9HY504, were identified in the Mt. Carmel Road portion of the project area. None of the sites would be affected by the project as presently designed. The GDOT Archaeological Short Form for Negative Findings is provided in Appendix A (pp. A-34-A-36).

Direct, Indirect, and Cumulative Effects. No archaeological resources were located within the project APE. Therefore, Alternatives 1 and 2 would not affect archaeological resources on or eligible for inclusion on the NRHP.

4. Parklands/Recreation Areas/Wildlife Refuges

No parklands, recreation areas, or wildlife refuges are affected by either Alternative 1 or 2 due to their location almost exclusively within the existing right-of-way of I-75.

5. Section 4(f) Applicability

Section 4(f) refers to the temporary and/or permanent use and constructive use of land from a significant publicly owned public park, recreation area, or wildlife and waterfowl refuge, or any significant historic site. Investigation of the project corridor has identified no use of such lands or sites; therefore, the project would not impact any Section 4(f) resources.

E. Effects on the Natural Environment

1. Water Quality

Direct Effects. For determination of effects, Alternatives 1 and 2 have the same physical footprint and configuration. The proposed project area is located in the Ocmulgee River Basin. The United States Geological Survey (USGS) Hydrologic Unit Code (HUC) is 03070103. There are no known water intakes in the vicinity of the proposed project. Streams 21, 23, and 27l are the only waters in the project area that are listed on the draft 2012 Georgia 305(b)/303(d) list. Further information on these streams is presented in Section III.E.2. No significant impacts to the water quality in the project area are expected to occur as a result of the proposed project. The impacts to water quality would be the same regardless of the alternative selected because the footprint for Alternative 1 and Alternative 2 are the same.

Provisions in the construction contract would require the contractor to exercise every reasonable precaution during construction to prevent the pollution of streams in the project vicinity. Where possible, early re-vegetation of disturbed areas would be accomplished to hold soil movement to a minimum. Dumping of chemicals, fuels, lubricants, bitumen, raw sewage, or other harmful wastes into or alongside of streams or impoundments, or natural or manmade channels leading thereto, would be prohibited.

Additional contract provisions would require the use of temporary erosion control measures as shown on the construction plans or as deemed necessary during construction. These temporary measures may include the use of berms, dikes, dams, sediment basins, fiber mats, netting, gravel, mulches, grasses, slope drains, and other erosion control devices or methods, as applicable. These provisions are to be coordinated with the permanent erosion control features insofar as practical to assure economical, effective, and continuous erosion control throughout the construction and post-construction periods and are in accordance with the 23 CFR 650, Subpart B. The project is also providing stormwater treatment per the EPA's Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s) requirements.

Indirect Effects. The proposed project would increase the amount of impervious surfaces by approximately 118 acres and therefore the potential to increase roadway runoff in the future. This increase in runoff could result in adverse effects to the water quality of the Ocmulgee River Basin. As discussed in Section III.C.1., future changes in land use and development, including intensive land development in some cases, is already planned in the counties and is expected to

occur without the proposed project. The implementation of this project is not expected to induce significant land use changes beyond what is already planned for by any of the counties. Nevertheless, any additional development of land could result in an increase in impervious surfaces, leading to an increase in the amount of stormwater runoff and associated non-point source pollution. Area development would be required to comply with the Georgia Department of Natural Resources Environmental Protection Division (GAEPD) programs to protect water quality, including the Georgia Erosion and Sedimentation Control Act, which requires a 25-foot buffer along all streams to minimize soil erosion reaching waterways. Although these protective measures are in place, the direct and indirect increase in impervious surfaces would contribute to the cumulative impacts to water quality within the Ocmulgee River Basin.

Cumulative Effects. Cumulative effects to water quality are probable. The named and un-named streams and their tributaries discussed in Section III.E.2. are in a highly developed suburban area of the southern Atlanta metropolitan region. Generally, residential, commercial, and industrial development - past, present, and future – have affected and will continue to affect the water quality of these streams and their tributaries through runoff from impervious surfaces as well as nutrient loading from residential lawn runoff.

a. Jurisdictional Waters of the U.S.

Jurisdictional waters of the U.S. are defined by 33 CFR Part 328.3(b) and are protected by Section 404 of the Clean Water Act (33 USC 1344), which is administered and enforced by the U.S. Army Corps of Engineers (USACE). An assessment of jurisdictional waters of the U.S. that would be impacted by the proposed project was performed using USGS topographic maps, National Wetland Inventory maps, county soil survey maps, and then refined during field investigations. Wetland locations were determined using the *1987 Corps of Engineers Wetlands Delineation Manual*. The multi-parameter approach requires positive evidence of three criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. For determination of effects, Alternatives 1 and 2 have the same physical footprint and configuration.

Areas were considered jurisdictional wetlands if they exhibited evidence of all three of the above wetland parameters. Areas were considered jurisdictional intermittent or perennial streams if they exhibited a definite channel, wrested vegetation, and showed evidence of water flow at times other than major storm events. Additional information is in the *Interstate 75 Managed Lanes Ecology Resource Survey and Assessment of Effects Report* and Addenda dated March 2011, July 2011, April 2012, and October 2012 on file at the GDOT Office of Environmental Services.

b. Non-Jurisdictional Waters

Sites were considered ephemeral streams if they exhibited wrested vegetation and evidence of flow only during and immediately after storm events. In addition, ephemeral streams do not have hydric soils or base flow as in intermittent and perennial streams. Therefore, ephemeral streams are non-jurisdictional waters. Ephemeral streams were considered to be non-jurisdictional if they did not provide a significant nexus between two separate Waters of the U.S. Additional information is in the *Interstate 75 Managed Lanes Ecology Resource Survey and Assessment of Effects Report* and Addenda dated March 2011, July 2011, April 2012, and October 2012 on file at the GDOT Office of Environmental Services.

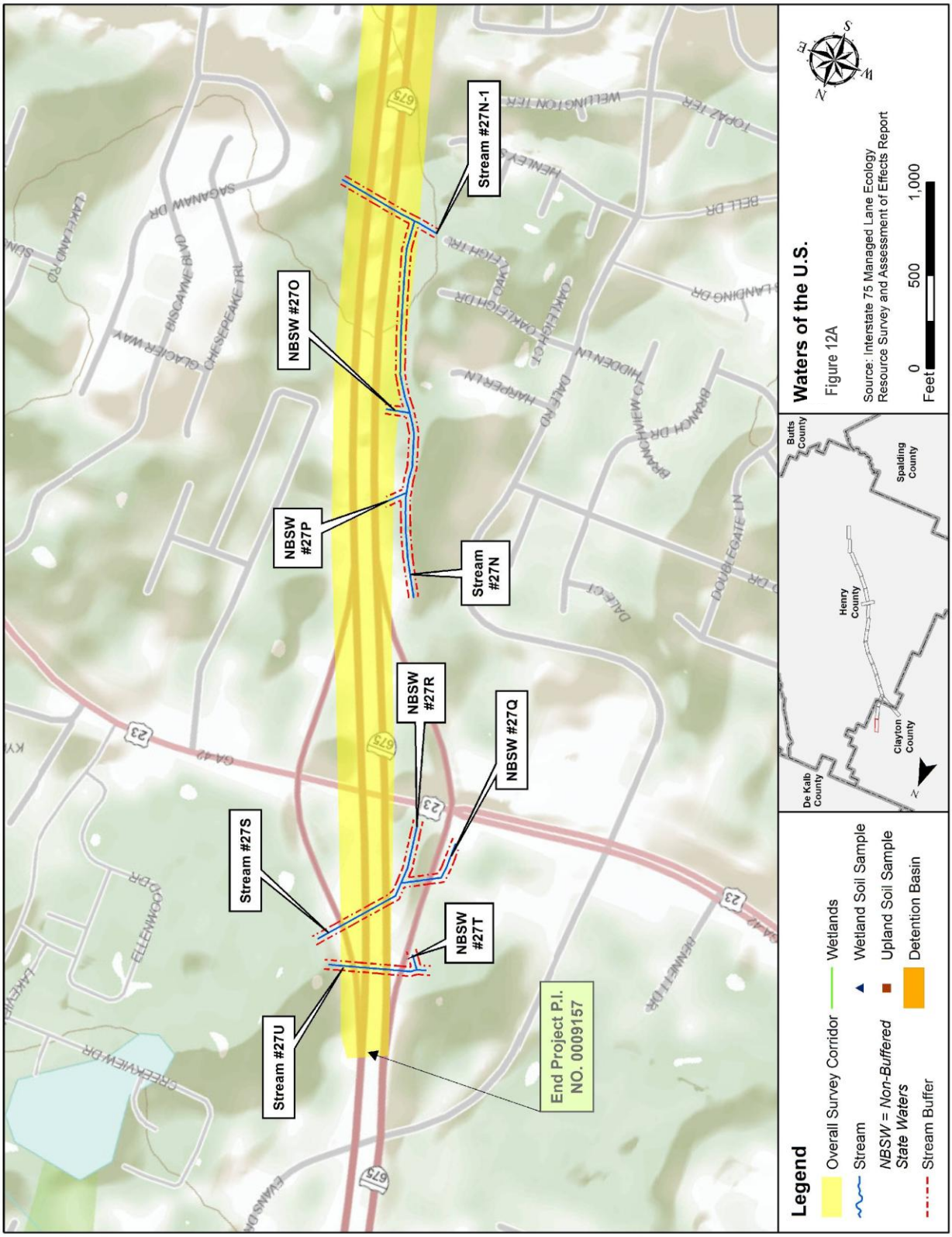
Direct Effects. For determination of effects, Alternatives 1 and 2 have the same physical footprint and configuration. During field surveys, fourteen jurisdictional perennial streams, twenty-four jurisdictional intermittent streams, ten jurisdictional wetlands, one jurisdictional open water (detention basin), one jurisdictional ephemeral stream, and eighteen non-jurisdictional, non-buffered state waters (NBSW) were observed within the project corridor (Figure 11). Of these, nine jurisdictional perennial streams, two jurisdictional intermittent streams, five jurisdictional wetlands, and three NBSW would be impacted by both Alternatives 1 and 2 (Tables 21 and 22). Both Alternatives would impact 525 linear feet (0.171 acre) of jurisdictional streams, 0.877 acres of jurisdictional wetlands, and 110 linear feet (0.013 acre) of NBSWs. No jurisdictional open waters would be impacted by either Build Alternative.

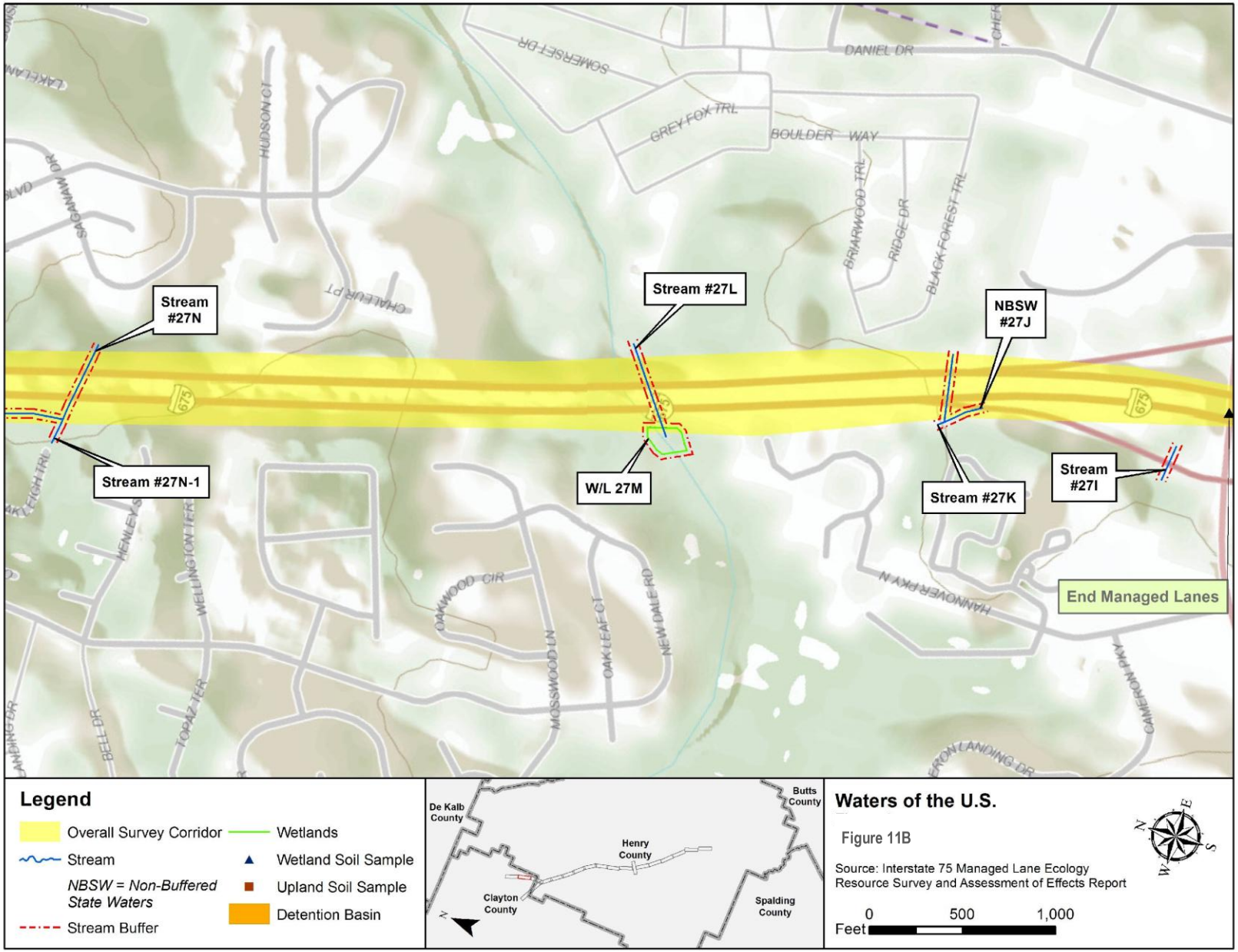
Table 21. Impacted Streams within the Project Corridor

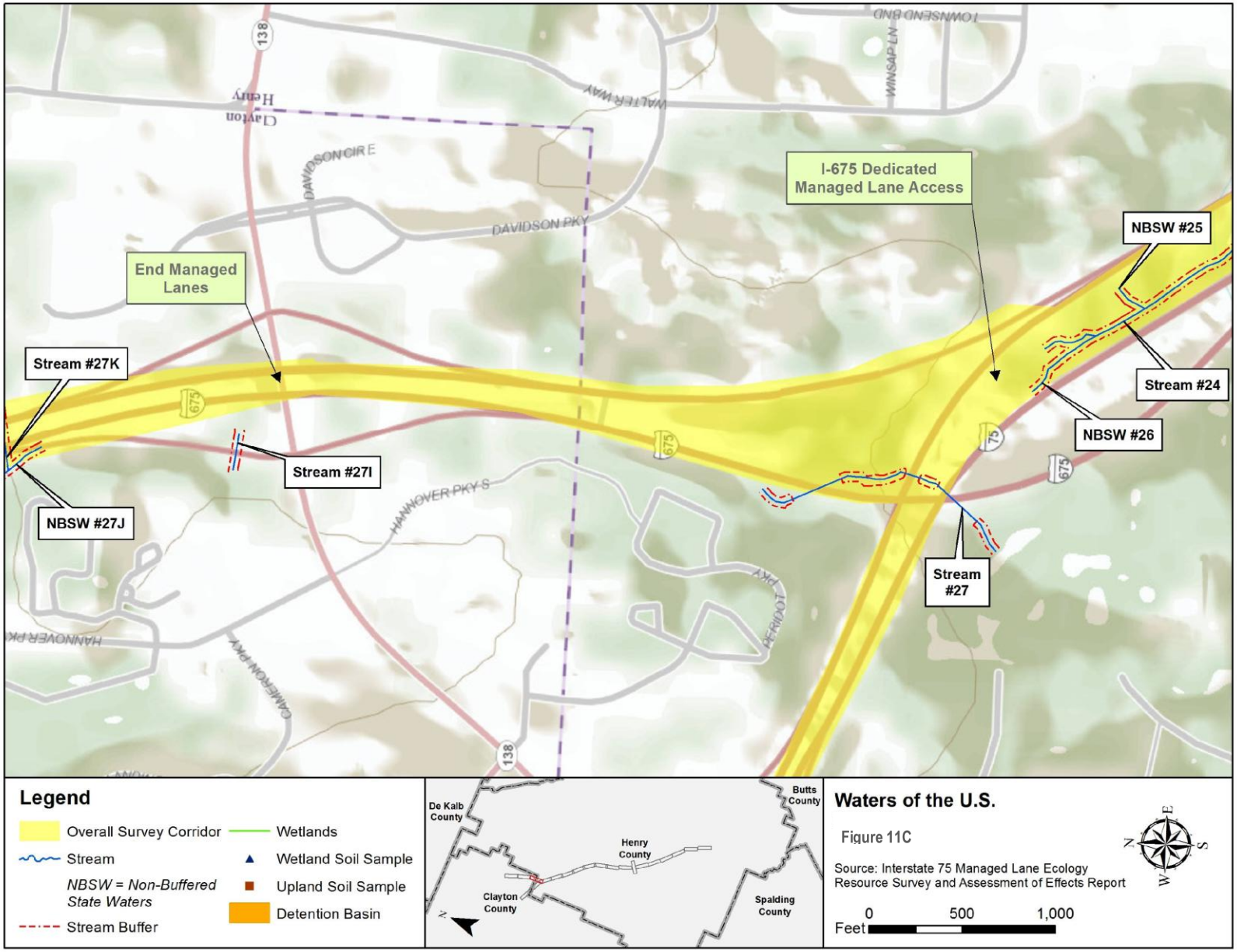
Stream # (Name)	303(d) Status	Existing Condition	Stream Type	Stream Buffer Variance Required	Stream Impact Type	Stream Impacts (Linear Feet)	Stream Impacts (Acre)
Stream 1 (Camp Creek)	None	Somewhat Impaired	Perennial	No	Culvert Extension	25	0.009
Stream 2 (Birch Creek)	None	Somewhat Impaired	Perennial	No	Culvert Extension	50	0.017
Stream 3 (Unnamed tributary of Birch Creek)	None	Somewhat Impaired	Perennial	No	Culvert Extension	50	0.02
Stream 8 (Unnamed tributary of Crittle Creek)	None	Somewhat Impaired	Intermittent	No	Culvert Extension	25	0.002
Stream 12 (Crittle Creek)	None	Somewhat Impaired	Perennial	No	Culvert Extension	50	0.02
Stream 12g (Crittle Creek)	None	Fully Impaired	Perennial	No	New Culvert	130	0.036
Stream 13 (Walnut Creek)	None	Somewhat Impaired	Perennial	No	Culvert Extension	30	0.006
Stream 15 (Unnamed tributary of Pates Creek)	None	Somewhat Impaired	Perennial	No	Culvert Extension	20	0.006
Stream 16 (Pates Creek)	None	Somewhat Impaired	Perennial	No	Culvert Extension	20	0.02
Stream 23 (Reeves Creek)	Listed	Somewhat Impaired	Perennial	No	Culvert Extension	75	0.03
Stream 24 (Unnamed tributary of Reeves Creek)	None	Fully Impaired	Intermittent	Yes	New Culvert	50	0.005
Total Perennial and Intermittent Streams Impacts						525	0.171

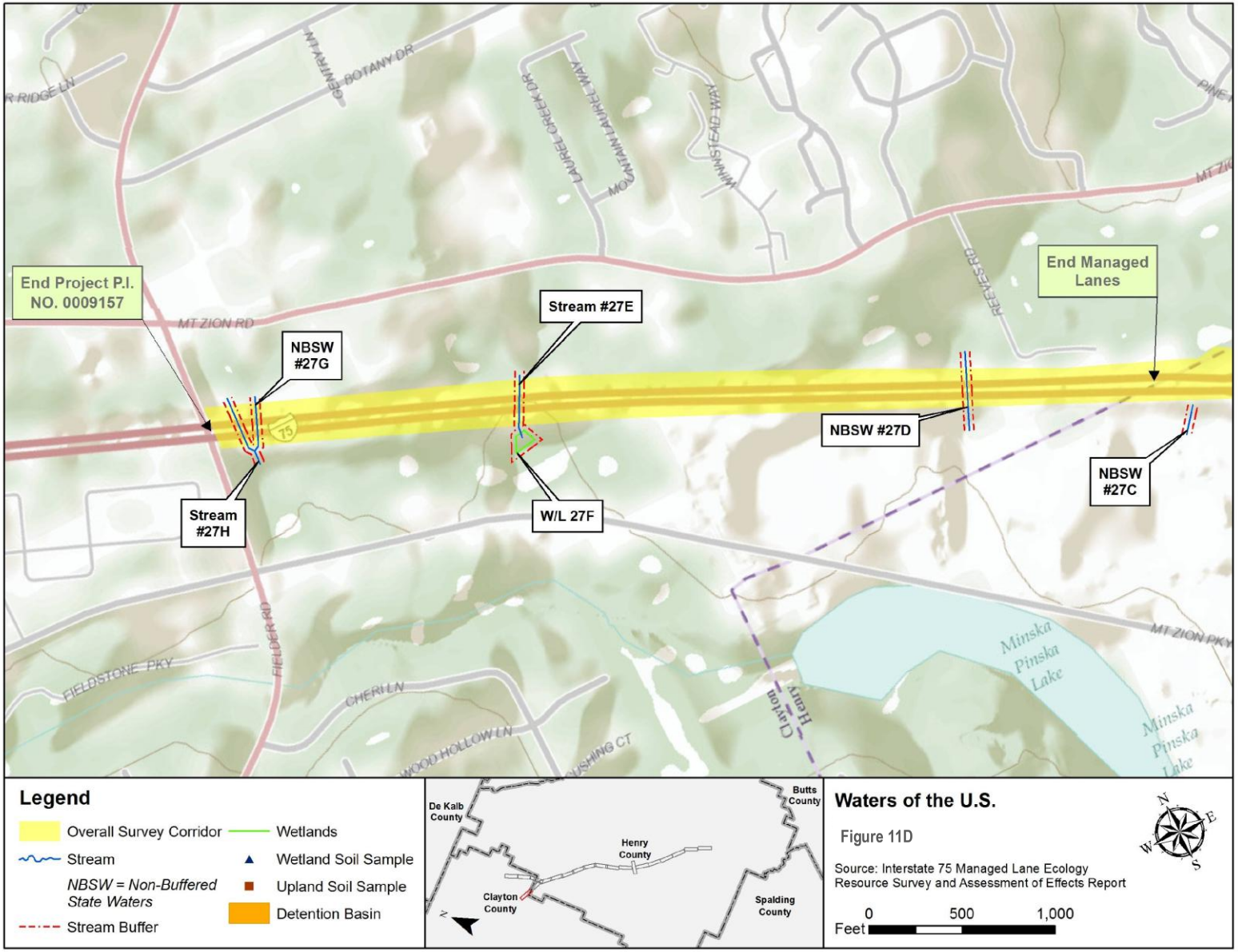
Source: Addendum to Approved Ecology Resource Survey and Assessment of Effects Report and Subsequent Addenda, GDOT Project CSNHS-0009-00(156)(157) Henry and Clayton Counties; I-75 Managed Lanes, October 2012.

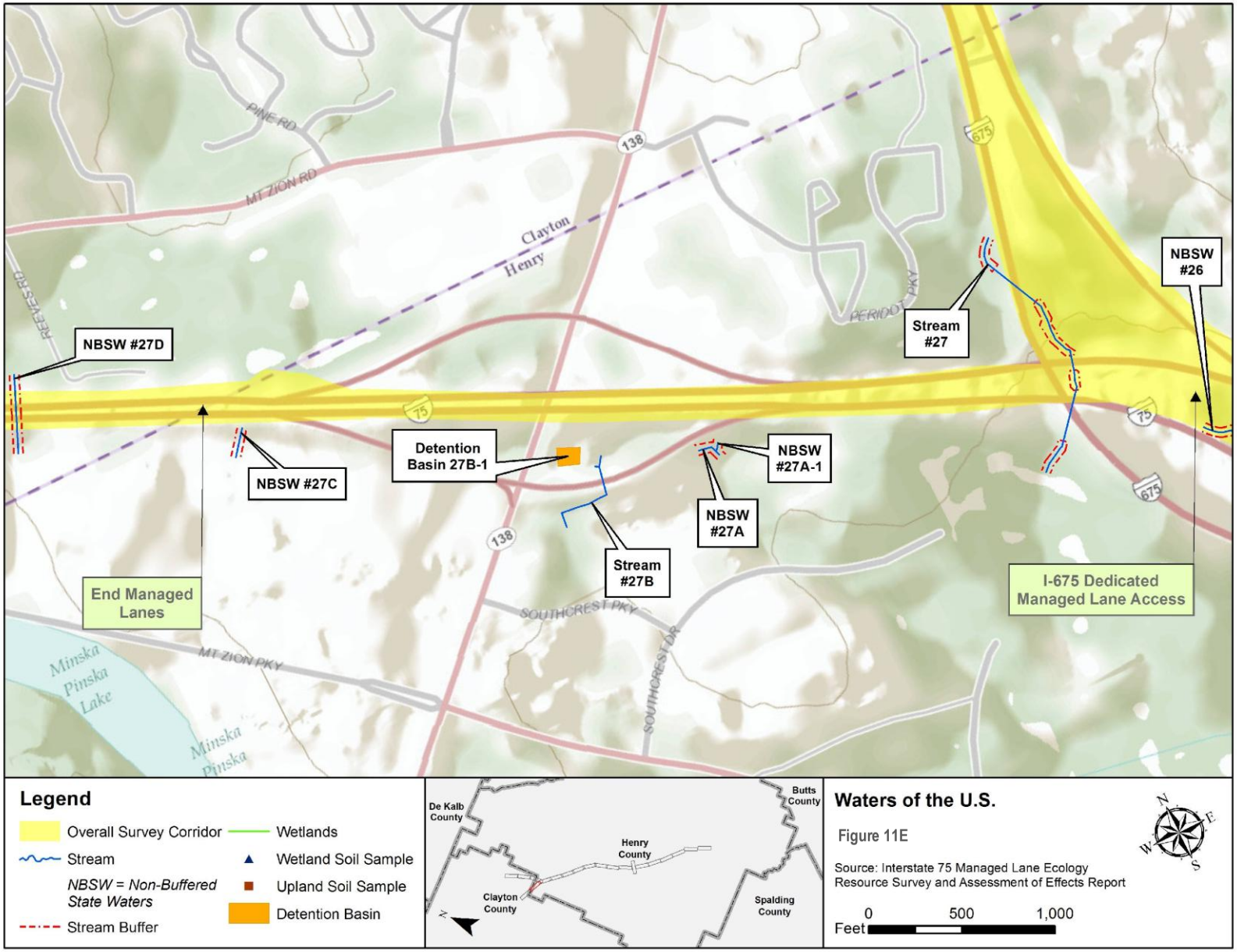
Figure 11. Waters of the US

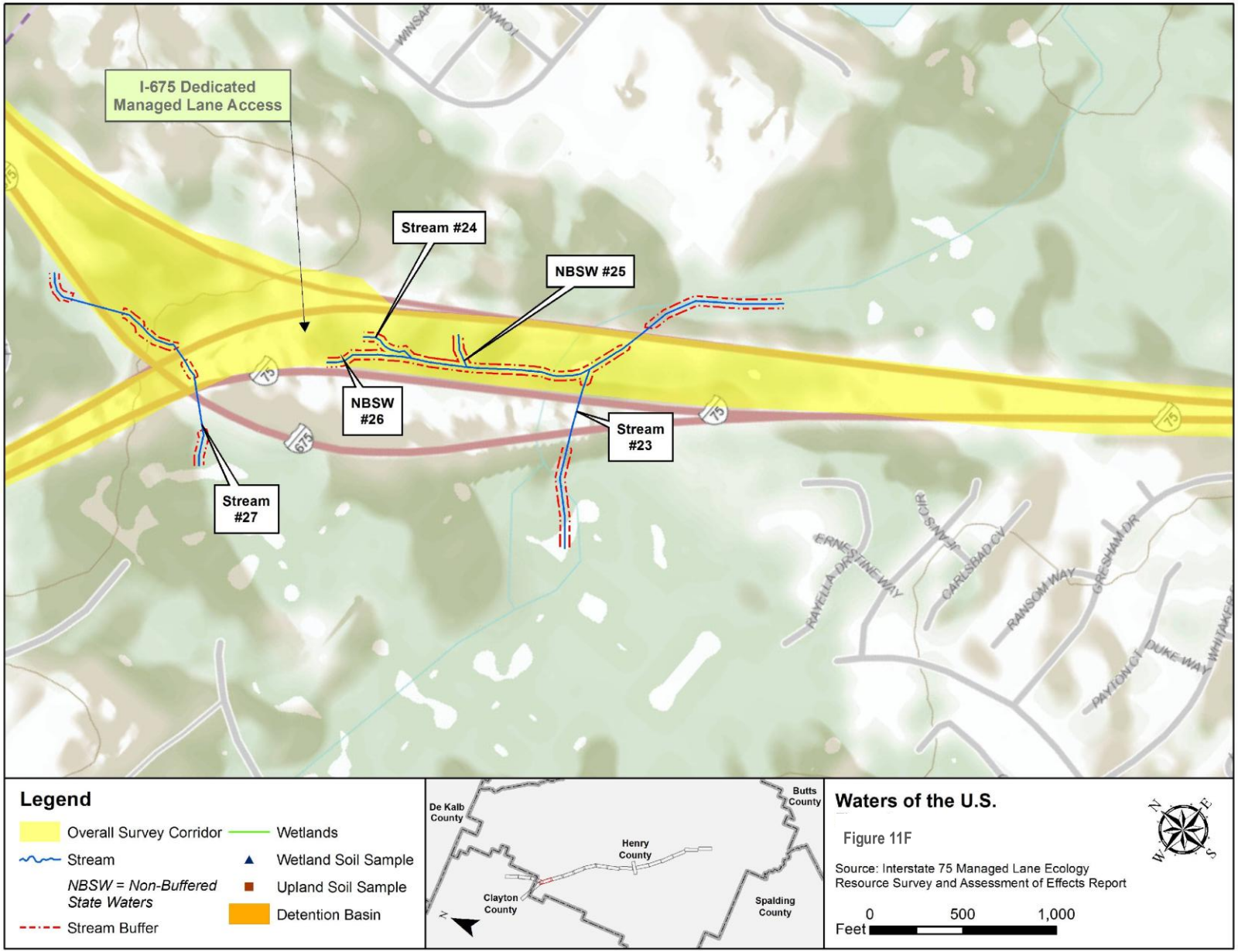


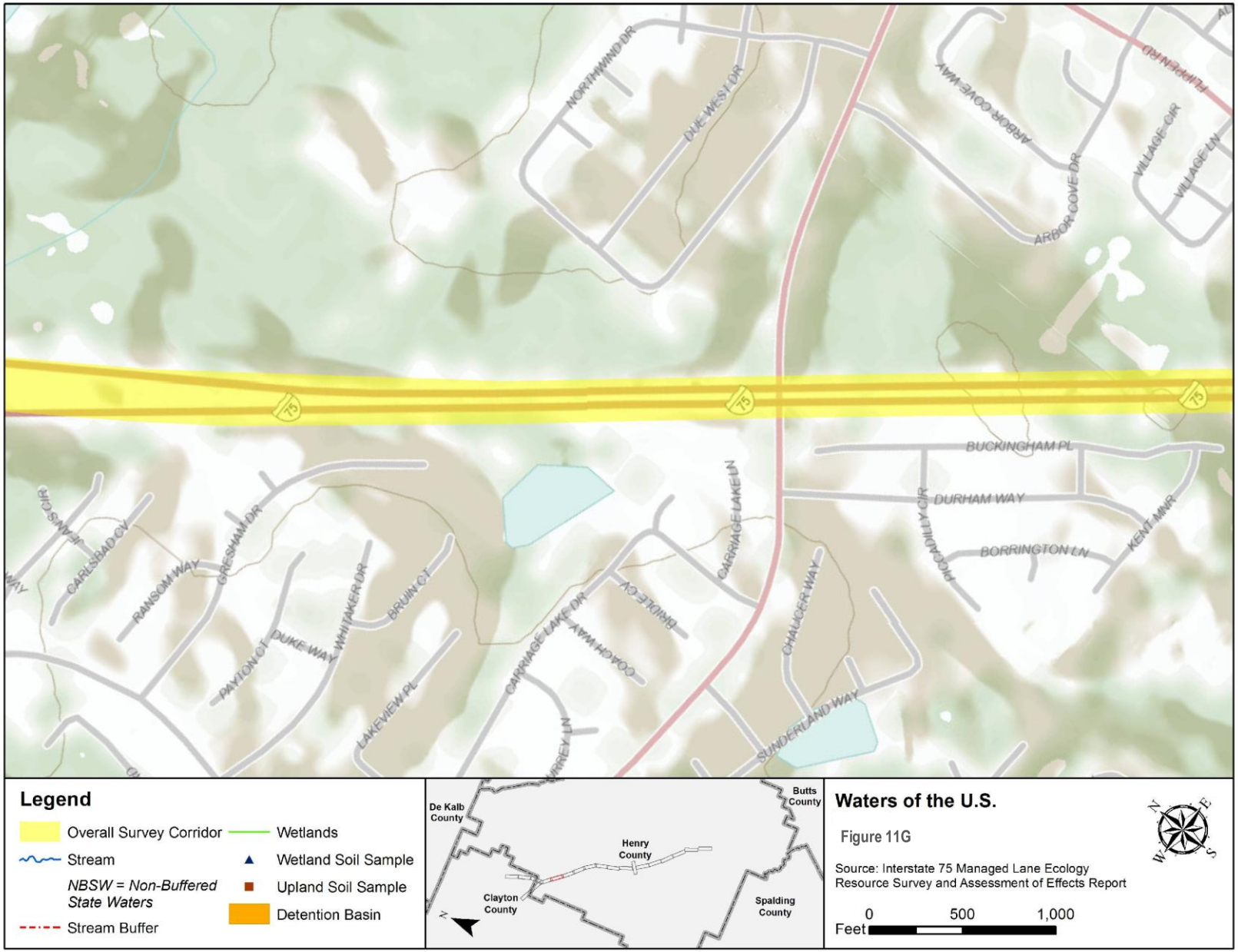

Stream #27N
Stream #27N-1
Stream #27L
W/L 27M
NBSW #27J
Stream #27K
Stream #27I
End Managed Lanes
SOMERSET DR
DANIEL DR
GREY FOX TRL
BOULDER WAY
BRIARWOOD TRL
RIDGE DR
BLACK FOREST TRL
HUDSON CT
CHALLUR PT
SAGAMAVA RD
WEMLEY S
WELLINGTON TER
OAKWOOD CIR
MOSSWOOD LN
OAK LEAF CT
NEW DALE RD
HANNOVER PKY N
CAMERON PKY
BELL DR
TOPAZ TER
675
Legend
Overall Survey Corridor
Stream
NBSW = Non-Buffered State Waters
Stream Buffer
Wetlands
Wetland Soil Sample
Upland Soil Sample
Detention Basin
De Kalb County
Butts County
Henry County
Clayton County
Spalding County
Waters of the U.S.
Figure 11B
Source: Interstate 75 Managed Lane Ecology Resource Survey and Assessment of Effects Report
0
500
1,000
Feet

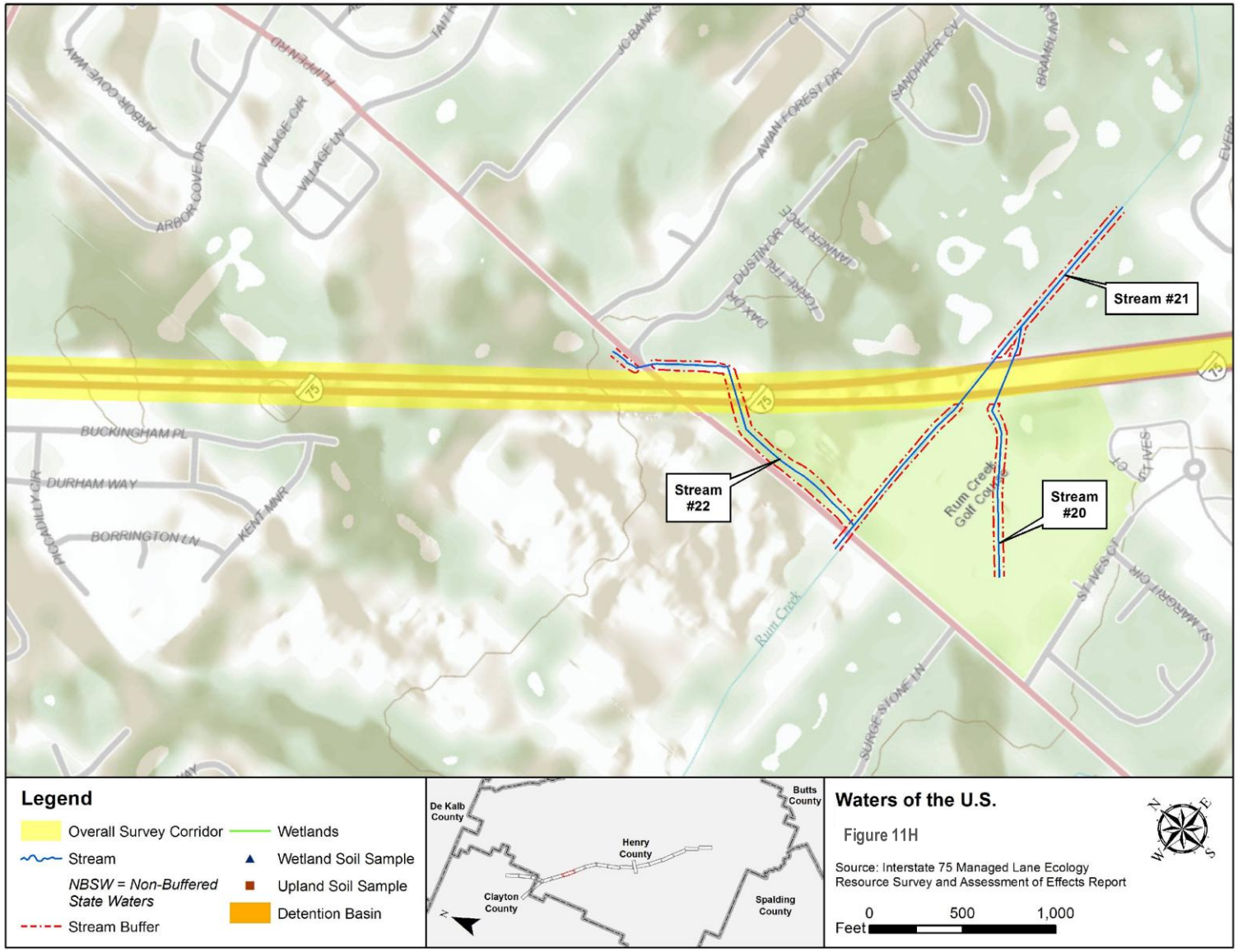

I-675 Dedicated Managed Lane Access
End Managed Lanes
NBSW #25
Stream #24
NBSW #26
Stream #27
Stream #27K
NBSW #27J
Stream #27I
DAVIDSON PKY
DAVIDSON CIR E
HANNOVER PKY S
Legend
Overall Survey Corridor
Stream
NBSW = Non-Buffered State Waters
Stream Buffer
Wetlands
Wetland Soil Sample
Upland Soil Sample
Detention Basin
De Kalb County
Butts County
Henry County
Clayton County
Spalding County
Waters of the U.S.
Figure 11C
Source: Interstate 75 Managed Lane Ecology Resource Survey and Assessment of Effects Report
0
500
1,000
Feet

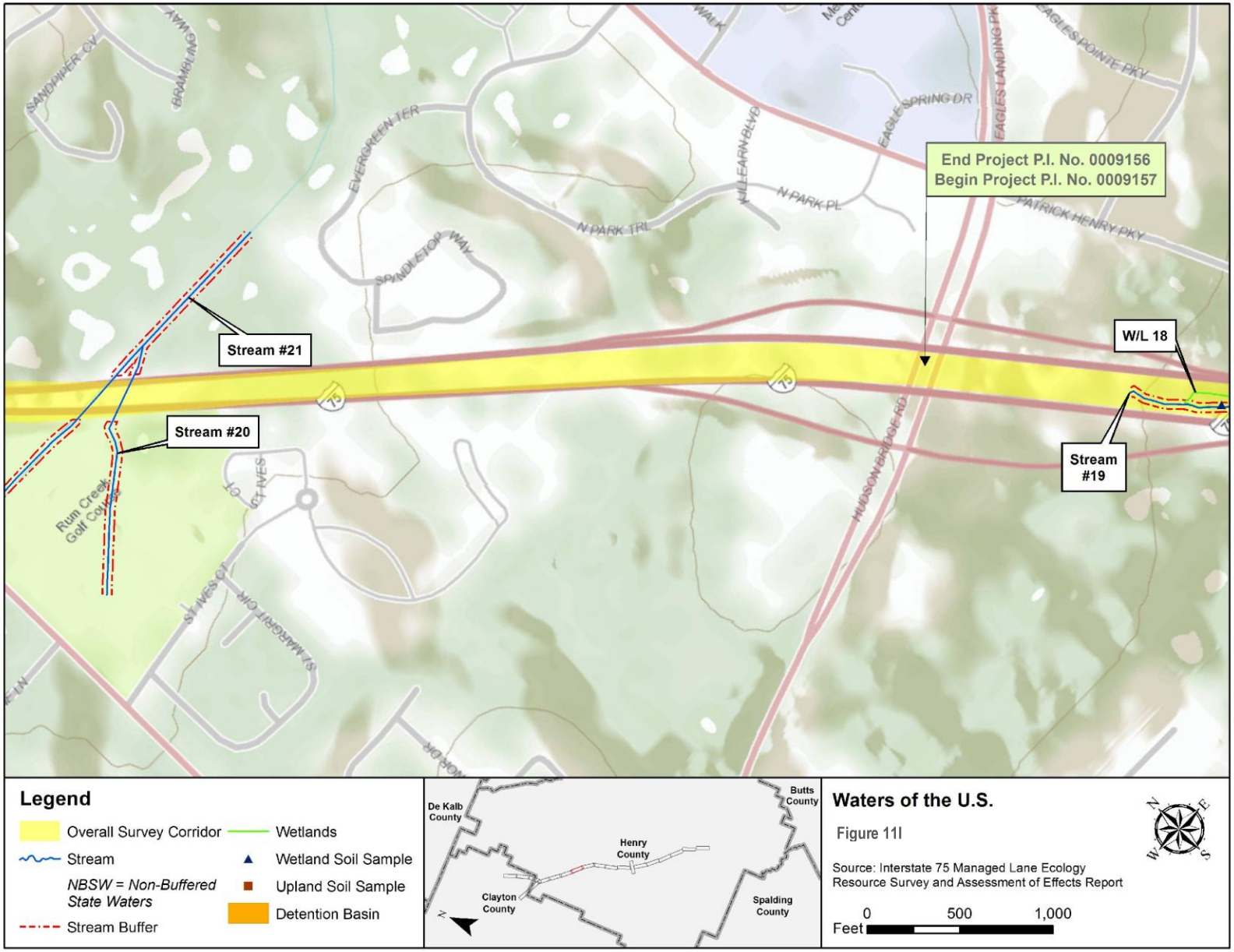

End Project P.I.
NO. 0009157
NBSW
#27G
Stream
#27H
Stream #27E
W/L 27F
NBSW #27D
NBSW
#27C
End Managed
Lanes
MT ZION RD
MT ZION PKY
FIELDSTONE PKY
FIELDER RD
CHERI LN
WOOD HOLLOW LN
CUSHING CT
LAUREL CREEK DR
MOUNTAIN LAUREL WAY
MINNISTEAD WAY
REEVES RD
CLAYTON HWY
Minska
Pinska
Lake
75
Legend
Overall Survey Corridor
Stream
NBSW = Non-Buffered
State Waters
Stream Buffer
Wetlands
Wetland Soil Sample
Upland Soil Sample
Detention Basin
De Kalb
County
Butts
County
Henry
County
Clayton
County
Spalding
County
N
Waters of the U.S.
Figure 11D
Source: Interstate 75 Managed Lane Ecology
Resource Survey and Assessment of Effects Report
0
500
1,000
Feet
N
E
S
W

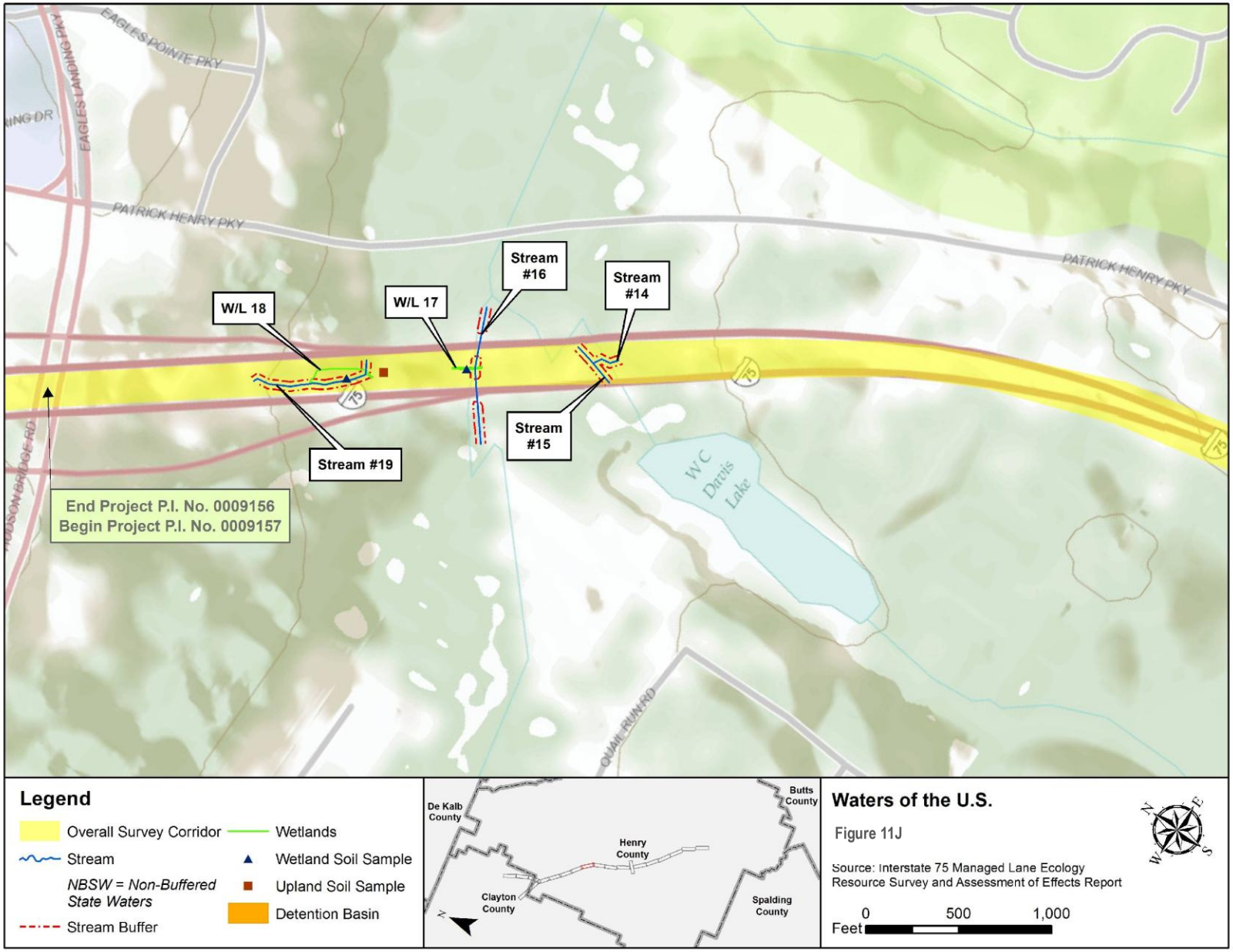

NBSW #27D
NBSW #27C
Detention Basin 27B-1
NBSW #27A-1
NBSW #27A
Stream #27B
Stream #27
NBSW #26
End Managed Lanes
I-675 Dedicated Managed Lane Access
PINE RD
MT ZION RD
Clayton
Henry
REEVES RD
PERIDOT PKY
SOUTHCREST PKY
SOUTHCREST DR
MT ZION PKY
Minska Pinska Lake
Minska Pinska
138
75
675
Legend
Overall Survey Corridor
Stream
NBSW = Non-Buffered State Waters
Stream Buffer
Wetlands
Wetland Soil Sample
Upland Soil Sample
Detention Basin
De Kalb County
Butts County
Henry County
Clayton County
Spalding County
N
Waters of the U.S.
Figure 11E
Source: Interstate 75 Managed Lane Ecology Resource Survey and Assessment of Effects Report
0
500
1,000
Feet
N
E
S
W

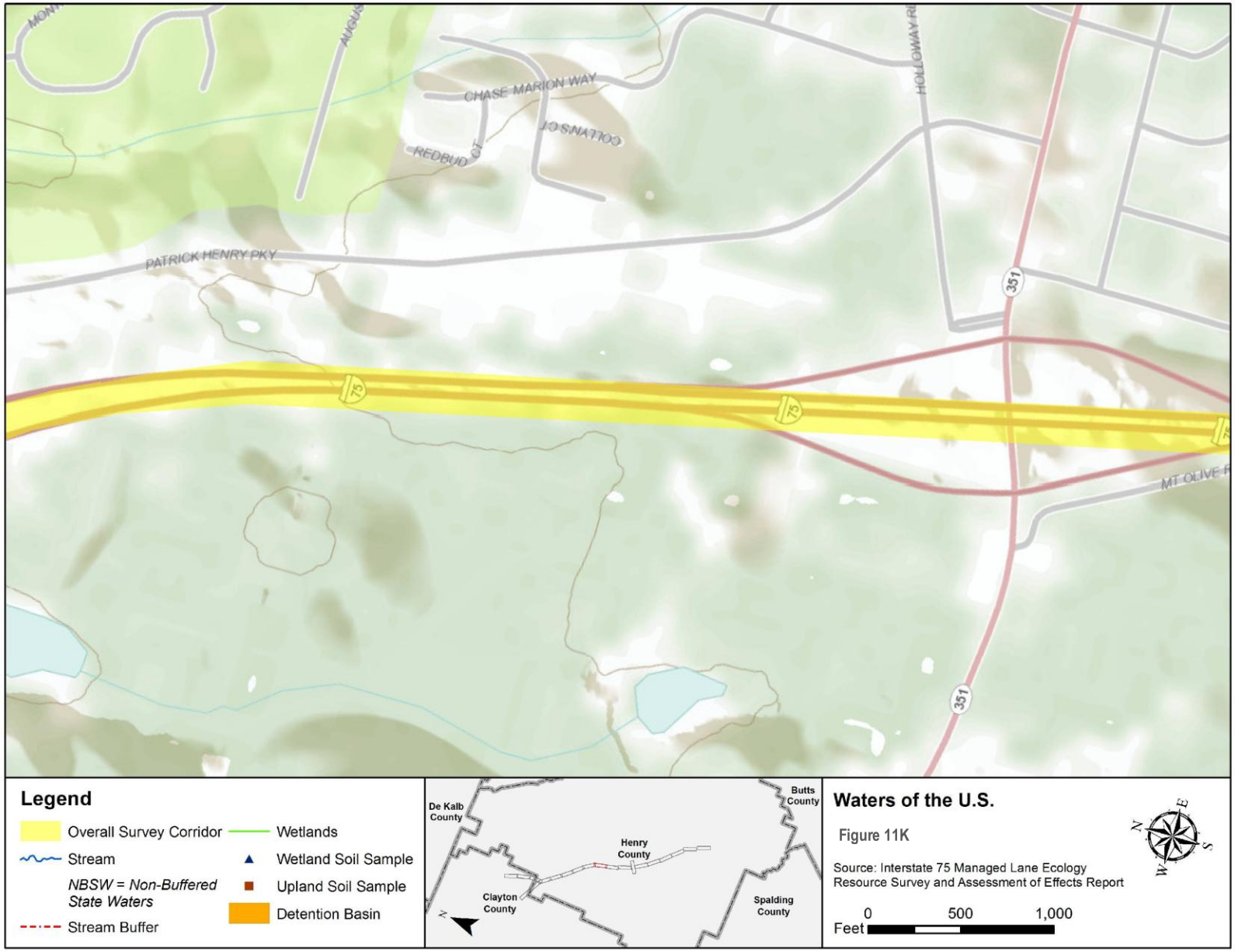

I-675 Dedicated Managed Lane Access
Stream #24
NBSW #25
NBSW #26
Stream #23
Stream #27
75
675
Legend
Overall Survey Corridor
Stream
NBSW = Non-Buffered State Waters
Stream Buffer
Wetlands
Wetland Soil Sample
Upland Soil Sample
Detention Basin
De Kalb County
Butts County
Henry County
Clayton County
Spalding County
N
Waters of the U.S.
Figure 11F
Source: Interstate 75 Managed Lane Ecology Resource Survey and Assessment of Effects Report
0
500
1,000
Feet

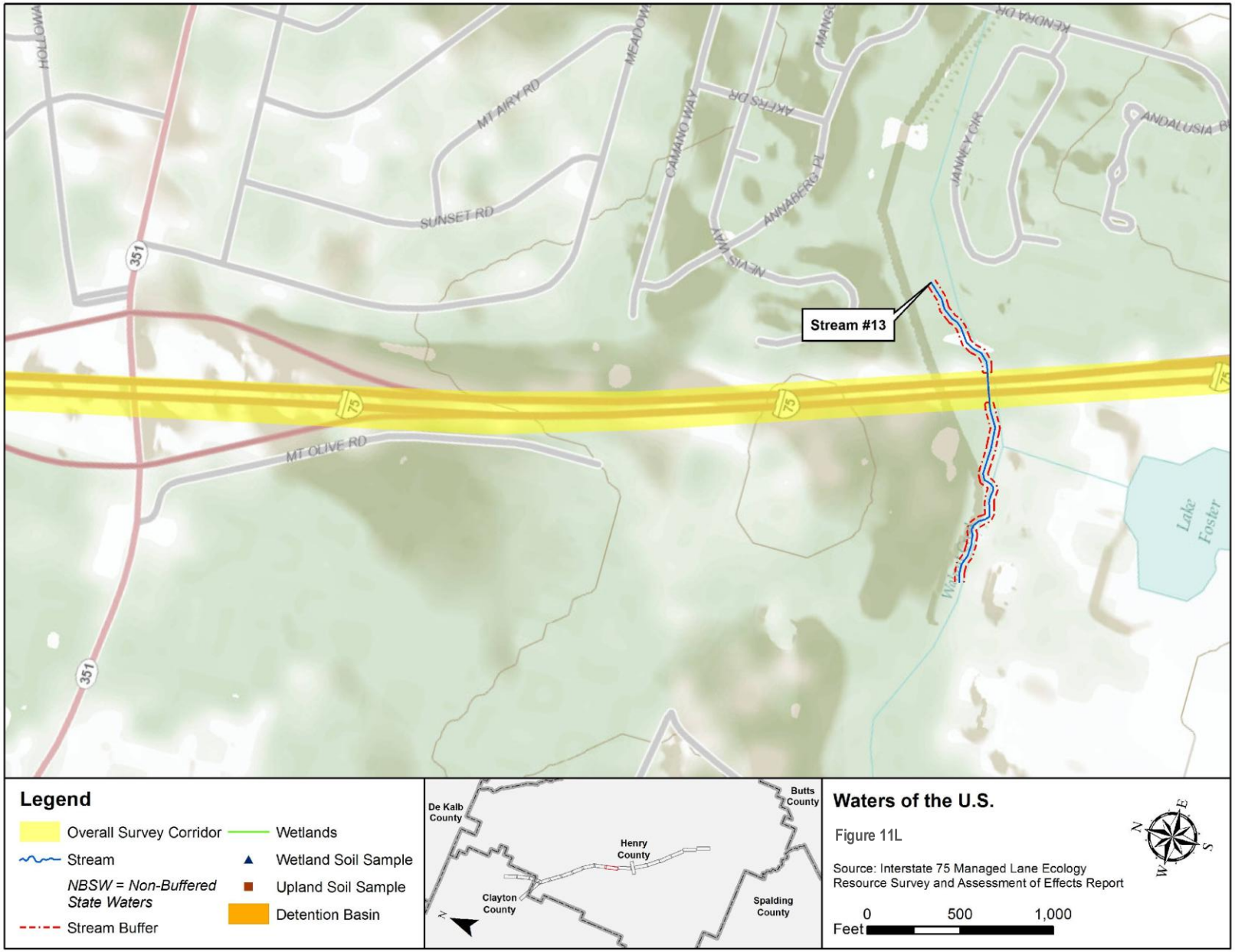

NORTHWIND DR
DUE WEST DR
ARBOR COVE WAY
ARBOR COVE DR
VILLAGE CIR
VILLAGE LN
FLIPPEN RD
75
BUCKINGHAM PL
DURHAM WAY
BORRINGTON LN
KENT MNR
PICCADILLY CIR
CARRIAGE LAKE LN
CHAUCER WAY
SUNDERLAND WAY
CARLSBAD CV
RANSOM WAY
GRESHAM DR
WHITAKER DR
BRUIN CT
PAYTON CT
DUKE WAY
LAKEVIEW PL
CARRIAGE LAKE DR
COACH WAY
BAILEY CT
ARREY LN
Legend
Overall Survey Corridor
Stream
NBSW = Non-Buffered State Waters
Stream Buffer
Wetlands
Wetland Soil Sample
Upland Soil Sample
Detention Basin
De Kalb County
Butts County
Henry County
Clayton County
Spalding County
N
Waters of the U.S.
Figure 11G
Source: Interstate 75 Managed Lane Ecology Resource Survey and Assessment of Effects Report
0
500
1,000
Feet
N
E
S
W

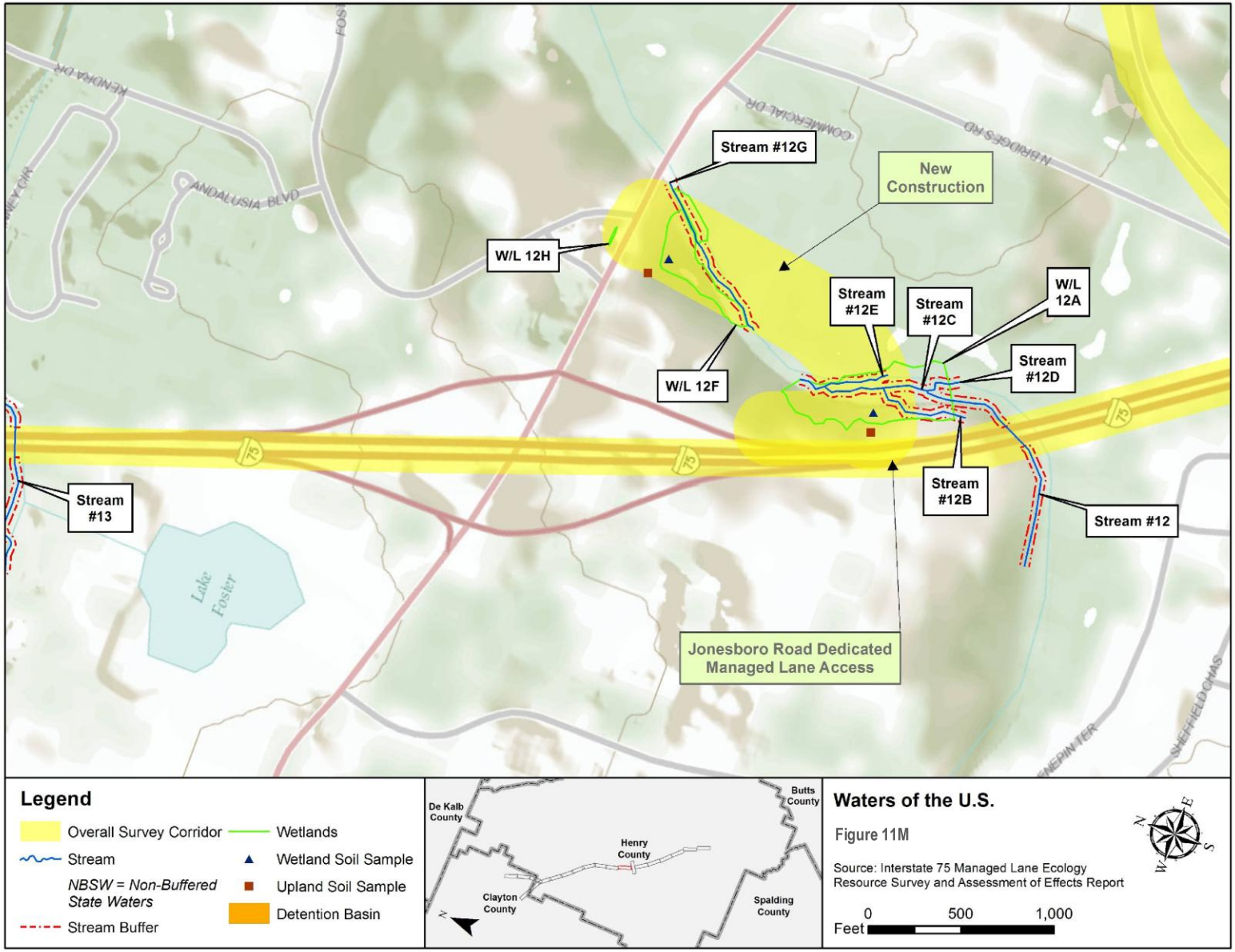

Stream #21
Stream #20
Stream #22
Rum Creek Golf Course
Rum Creek
ARBOR COVE WAY
ARBOR COVE DR
VILLAGE CIR
VILLAGE LN
ELIPHEN RD
AVIAN FOREST DR
SANDPIPER CT
BRAMBLING
DUSTIN DR
BUCKINGHAM PL
DURHAM WAY
BORRINGTON LN
KENT MNR
MCCADILLY CIR
SURGESTONE LN
ST IVES CT
ST MARGARET CIR
75
Legend
Overall Survey Corridor
Stream
NBSW = Non-Buffered State Waters
Stream Buffer
Wetlands
Wetland Soil Sample
Upland Soil Sample
Detention Basin
De Kalb County
Butts County
Henry County
Clayton County
Spalding County
N
Waters of the U.S.
Figure 11H
Source: Interstate 75 Managed Lane Ecology Resource Survey and Assessment of Effects Report
0
500
1,000
Feet
N
E
S
W

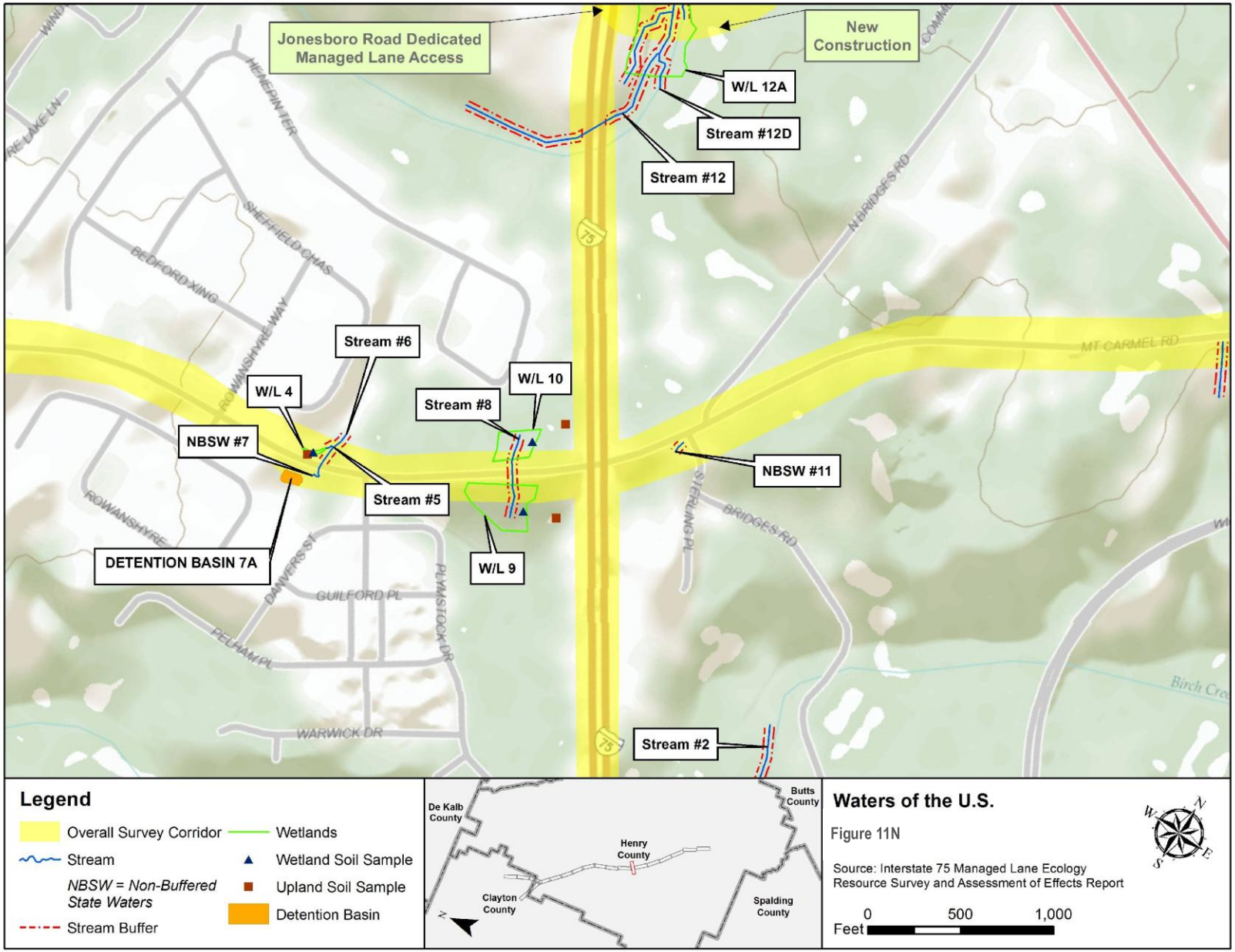

End Project P.I. No. 0009156
Begin Project P.I. No. 0009157
Stream #21
Stream #20
Stream #19
W/L 18
Rum Creek Golf Course
SANDPIPER CT
BRAMBLING WAY
EVERGREEN TER
SPINDLETOP WAY
N PARK TRL
KILLEARN BLVD
N PARK PL
EAGLE SPRING DR
EAGLES LANDING PK
EAGLES POINTE PKY
PATRICK HENRY PKY
HUDSON BRIDGE RD
ST IVES CT
ST MARGARET CIR
75
Legend
Overall Survey Corridor
Stream
NBSW = Non-Buffered State Waters
Stream Buffer
Wetlands
Wetland Soil Sample
Upland Soil Sample
Detention Basin
De Kalb County
Butts County
Henry County
Clayton County
Spalding County
N
Waters of the U.S.
Figure 11I
Source: Interstate 75 Managed Lane Ecology Resource Survey and Assessment of Effects Report
0
500
1,000
Feet
N
E
S
W

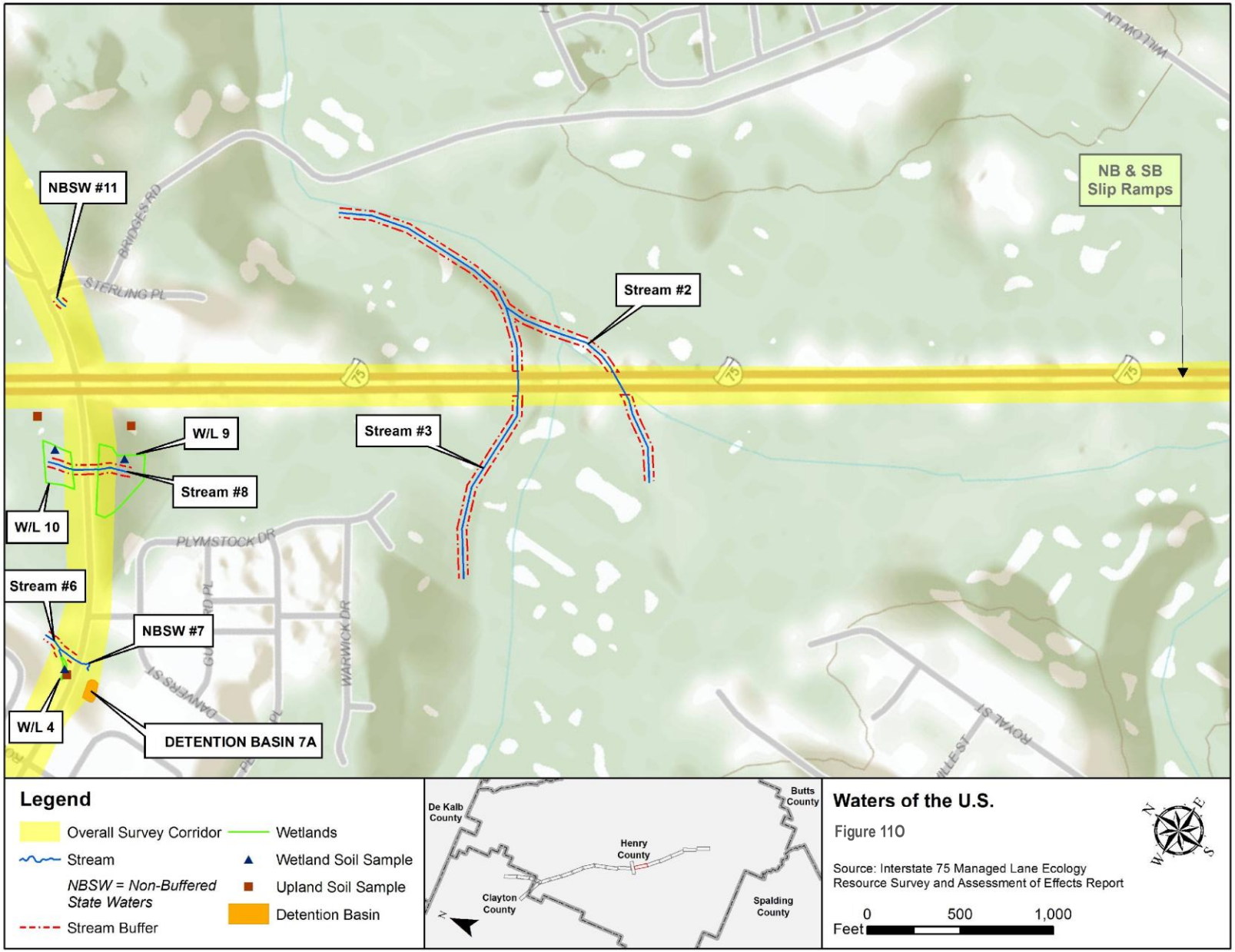

EAGLES POINTE PKY
EAGLES LANDING PKY
PATRICK HENRY PKY
PATRICK HENRY PKY
HUDSON BRIDGE RD
QUAIL RUN RD
W/L 18
W/L 17
Stream #16
Stream #14
Stream #15
Stream #19
End Project P.I. No. 0009156
Begin Project P.I. No. 0009157
W C Davis Lake
75
Legend
Overall Survey Corridor
Stream
NBSW = Non-Buffered State Waters
Stream Buffer
Wetlands
Wetland Soil Sample
Upland Soil Sample
Detention Basin
De Kalb County
Butts County
Henry County
Clayton County
Spalding County
N
Waters of the U.S.
Figure 11J
Source: Interstate 75 Managed Lane Ecology Resource Survey and Assessment of Effects Report
0
500
1,000
Feet
N
E
S
W

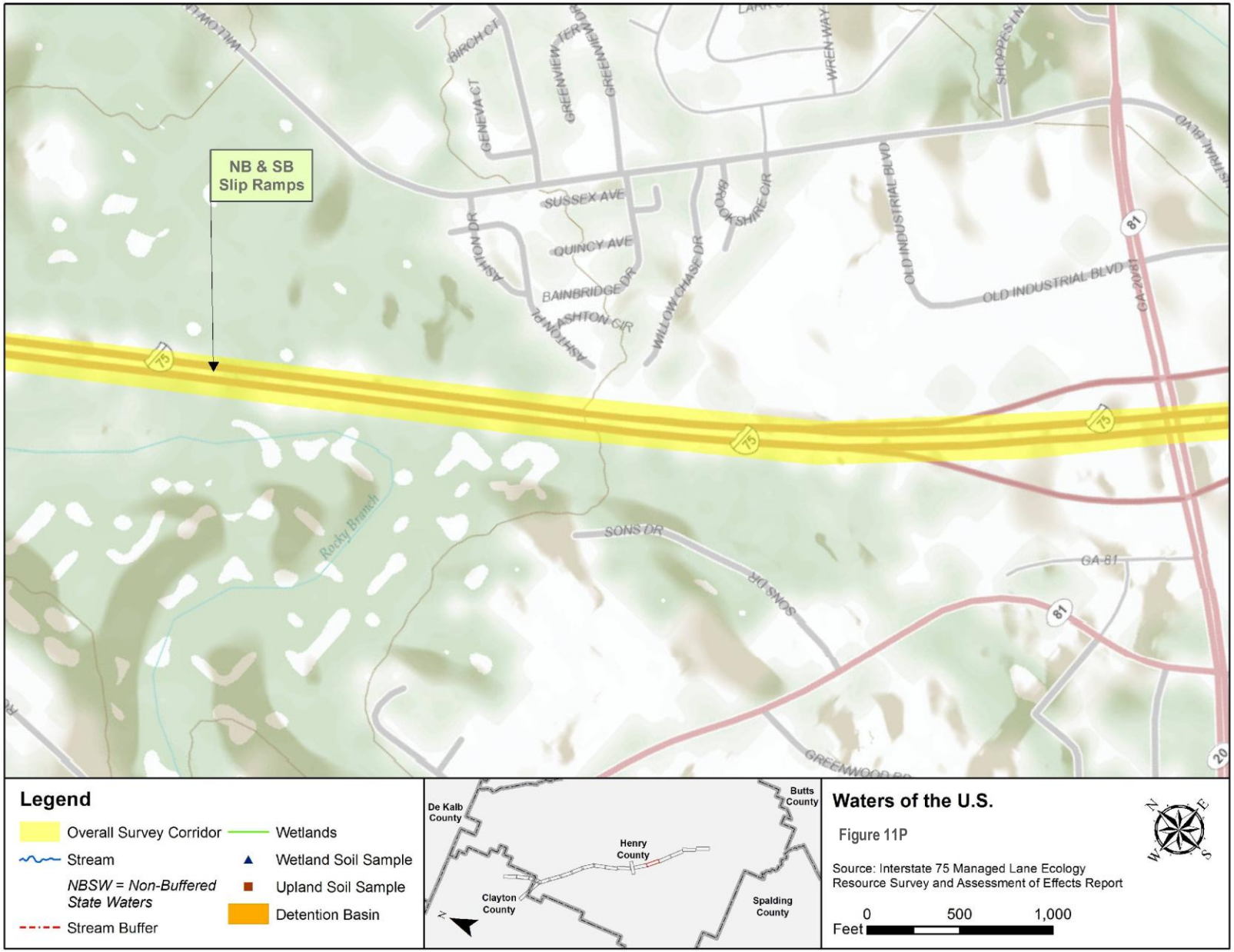

CHASE MARION WAY
REDBUD CT
COLLINS CT
HOLLOWAY RD
PATRICK HENRY PKY
351
75
MT OLIVE R
Legend
Overall Survey Corridor
Stream
NBSW = Non-Buffered State Waters
Stream Buffer
Wetlands
Wetland Soil Sample
Upland Soil Sample
Detention Basin
De Kalb County
Butts County
Henry County
Clayton County
Spalding County
N
Waters of the U.S.
Figure 11K
Source: Interstate 75 Managed Lane Ecology Resource Survey and Assessment of Effects Report
0
500
1,000
Feet
N
E
S
W

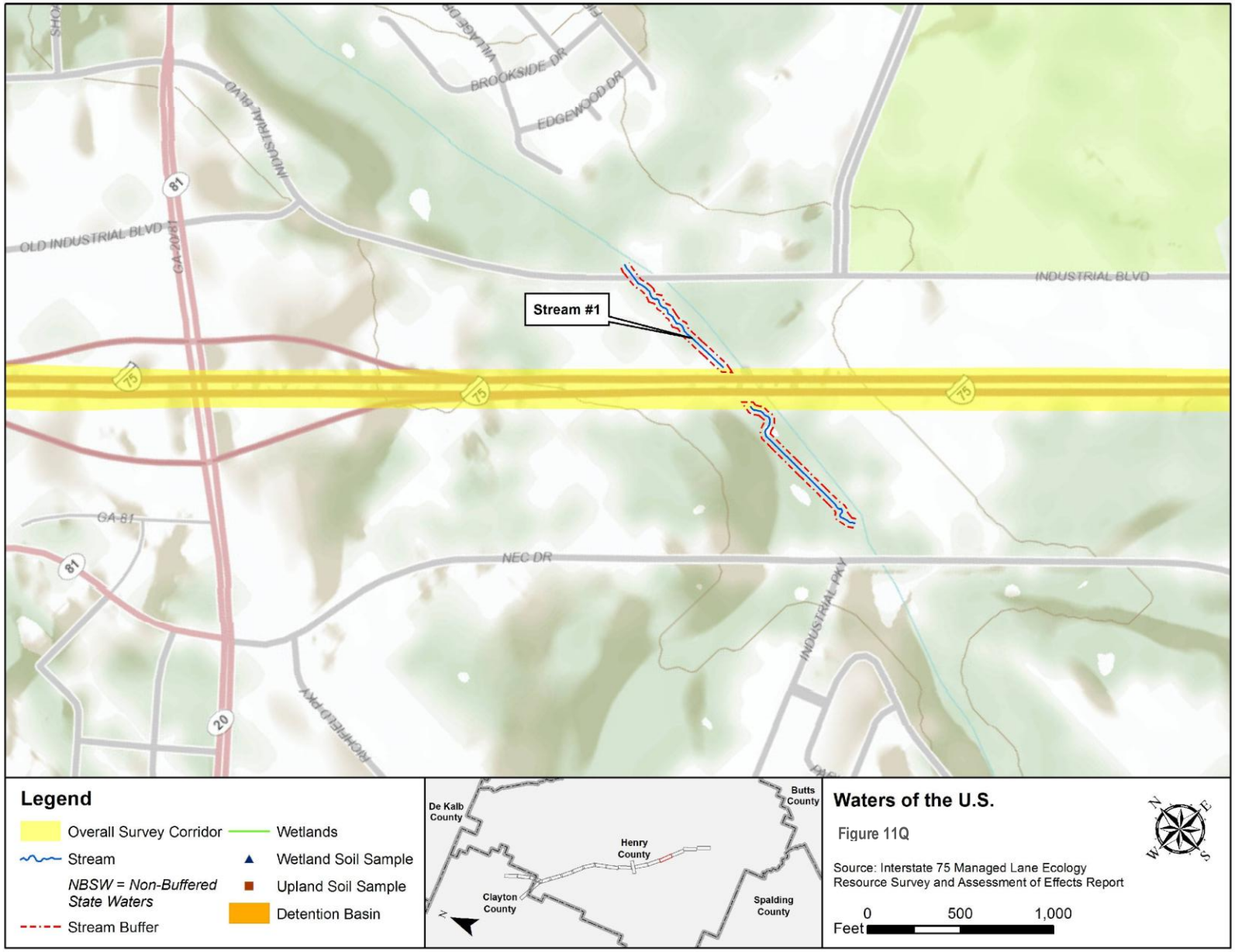

Stream #13
MT AIRY RD
SUNSET RD
MT OLIVE RD
MEADOW
CAMANO WAY
AKERS DR
NEVIS WAY
ANNABERG PL
JANNEY CIR
KENDRA DR
ANDALUSIA
Lake Fosker
351
75
Legend
Overall Survey Corridor
Stream
NBSW = Non-Buffered State Waters
Stream Buffer
Wetlands
Wetland Soil Sample
Upland Soil Sample
Detention Basin
De Kalb County
Butts County
Henry County
Clayton County
Spalding County
N
Waters of the U.S.
Figure 11L
Source: Interstate 75 Managed Lane Ecology Resource Survey and Assessment of Effects Report
0
500
1,000
Feet
N
E
S
W

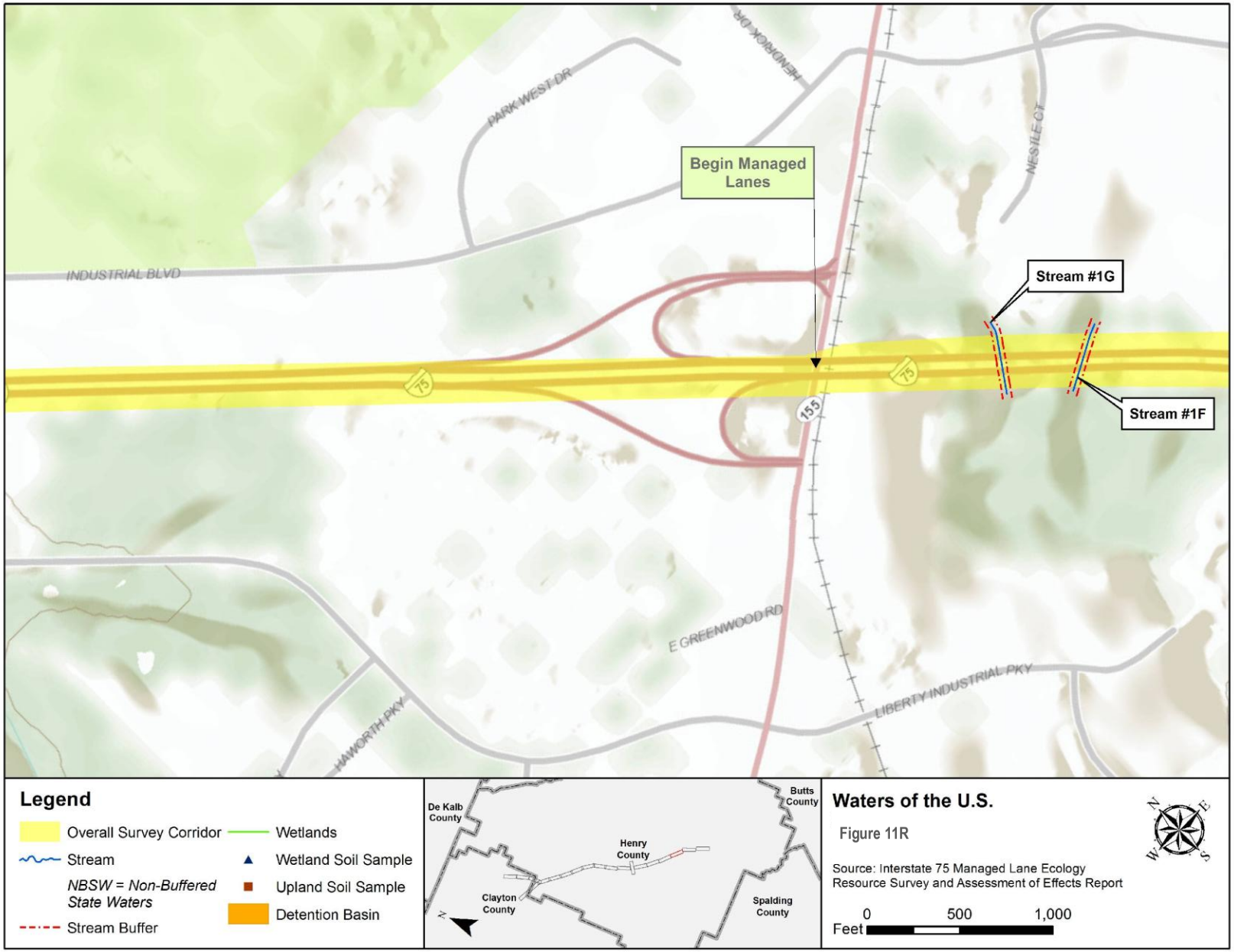

Stream #12G
New Construction
W/L 12H
Stream #12E
Stream #12C
W/L 12A
Stream #12D
W/L 12F
Stream #13
Stream #12B
Stream #12
Lake Foster
Jonesboro Road Dedicated Managed Lane Access
ANDALUSIA BLVD
KENDRA DR
COMMERCIAL DR
N BRIDGES RD
SHEFFIELD CHAS
Legend
Overall Survey Corridor
Stream
NBSW = Non-Buffered State Waters
Stream Buffer
Wetlands
Wetland Soil Sample
Upland Soil Sample
Detention Basin
De Kalb County
Butts County
Henry County
Clayton County
Spalding County
Waters of the U.S.
Figure 11M
Source: Interstate 75 Managed Lane Ecology Resource Survey and Assessment of Effects Report
0
500
1,000
Feet

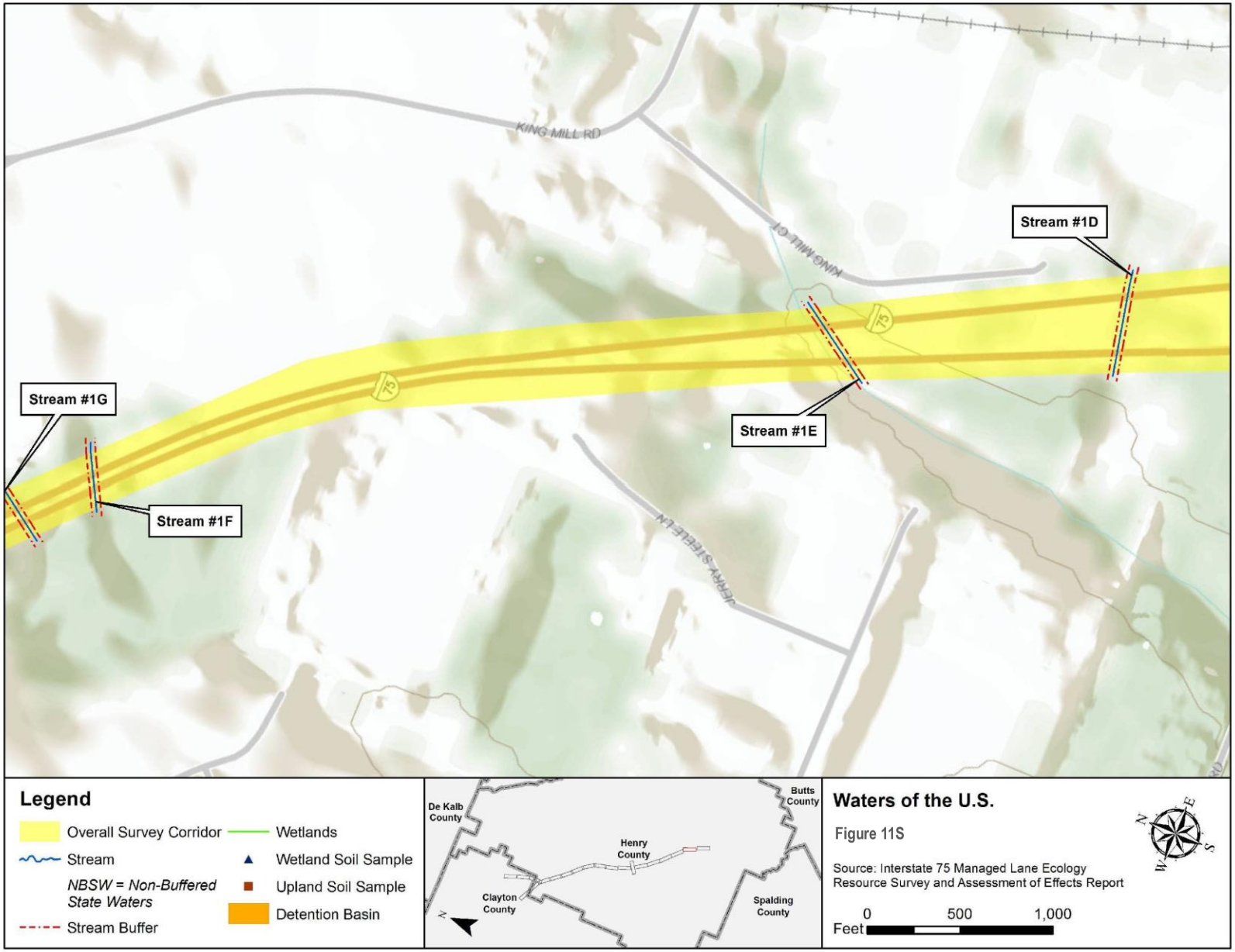

Jonesboro Road Dedicated Managed Lane Access
New Construction
W/L 12A
Stream #12D
Stream #12
Stream #6
W/L 4
NBSW #7
Stream #5
DETENTION BASIN 7A
W/L 10
Stream #8
W/L 9
NBSW #11
Stream #2
HENEPIN TER
SHEFFIELD CHAS
BEDFORD XING
ROWANSHYRE WAY
ROWANSHYRE
DANVERS ST
GUILFORD PL
PELHAM PL
PLYMSTOCK DR
WARWICK DR
N BRIDGES RD
MT CARMEL RD
STERLING PL
BRIDGES RD
75
Legend
Overall Survey Corridor
Stream
NBSW = Non-Buffered State Waters
Stream Buffer
Wetlands
Wetland Soil Sample
Upland Soil Sample
Detention Basin
De Kalb County
Butts County
Henry County
Clayton County
Spalding County
Waters of the U.S.
Figure 11N
Source: Interstate 75 Managed Lane Ecology Resource Survey and Assessment of Effects Report
0
500
1,000
Feet


NBSW #11
BRIDGES RD
STERLING PL
Stream #2
NB & SB
Slip Ramps
75
W/L 9
Stream #3
Stream #8
W/L 10
PLYMSTOCK DR
Stream #6
NBSW #7
WARWICK DR
DANVERS ST
W/L 4
DETENTION BASIN 7A
ROYAL ST
Legend
Overall Survey Corridor
Stream
NBSW = Non-Buffered State Waters
Stream Buffer
Wetlands
Wetland Soil Sample
Upland Soil Sample
Detention Basin
De Kalb County
Butts County
Henry County
Clayton County
Spalding County
N
Waters of the U.S.
Figure 11O
Source: Interstate 75 Managed Lane Ecology Resource Survey and Assessment of Effects Report
0
500
1,000
Feet
N
E
S
W


NB & SB
Slip Ramps
SUSSEX AVE
QUINCY AVE
BAINBRIDGE DR
ASHTON CIR
ASHTON DR
WILLOW CHASE DR
OLD INDUSTRIAL BLVD
OLD INDUSTRIAL BLVD
GA-81
SONS DR
SONS DR
GREENWOOD RD
Rocky Branch
75
81
20
Legend
Overall Survey Corridor
Stream
NBSW = Non-Buffered State Waters
Stream Buffer
Wetlands
Wetland Soil Sample
Upland Soil Sample
Detention Basin
De Kalb County
Butts County
Henry County
Clayton County
Spalding County
Waters of the U.S.
Figure 11P
Source: Interstate 75 Managed Lane Ecology Resource Survey and Assessment of Effects Report
0
500
1,000
Feet

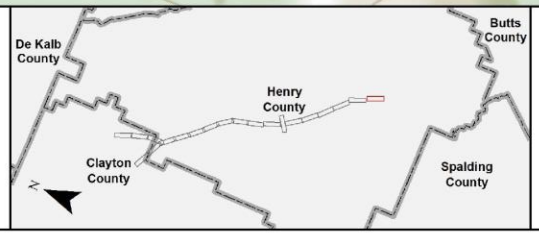

Stream #1
OLD INDUSTRIAL BLVD
INDUSTRIAL BLVD
BROOKSIDE DR
EDGEWOOD DR
NEC DR
GA-81
INDUSTRIAL PKY
Legend
Overall Survey Corridor
Stream
NBSW = Non-Buffered State Waters
Stream Buffer
Wetlands
Wetland Soil Sample
Upland Soil Sample
Detention Basin
De Kalb County
Butts County
Henry County
Clayton County
Spalding County
Waters of the U.S.
Figure 11Q
Source: Interstate 75 Managed Lane Ecology Resource Survey and Assessment of Effects Report
0
500
1,000
Feet


Begin Managed Lanes
Stream #1G
Stream #1F
INDUSTRIAL BLVD
PARK WEST DR
HENDRICK DR
NESTLE CT
E GREENWOOD RD
LIBERTY INDUSTRIAL PKY
HAWORTH PKY
75
155
Legend
Overall Survey Corridor
Stream
NBSW = Non-Buffered State Waters
Stream Buffer
Wetlands
Wetland Soil Sample
Upland Soil Sample
Detention Basin
De Kalb County
Butts County
Henry County
Clayton County
Spalding County
N
Waters of the U.S.
Figure 11R
Source: Interstate 75 Managed Lane Ecology Resource Survey and Assessment of Effects Report
0
500
1,000
Feet


KING MILL RD
KING MILL CT
JERRY STEELE LN
75
Stream #1D
Stream #1E
Stream #1F
Stream #1G
Legend
Overall Survey Corridor
Stream
NBSW = Non-Buffered State Waters
Stream Buffer
Wetlands
Wetland Soil Sample
Upland Soil Sample
Detention Basin
De Kalb County
Butts County
Henry County
Clayton County
Spalding County
N
Waters of the U.S.
Figure 11S
Source: Interstate 75 Managed Lane Ecology Resource Survey and Assessment of Effects Report
0
500
1,000
Feet
N
E
S
W

Legend

- Overall Survey Corridor
- Stream
- *NBSW = Non-Buffered State Waters*
- Stream Buffer
- Wetlands
- Wetland Soil Sample
- Upland Soil Sample
- Detention Basin



Waters of the U.S.

Figure 11T

Source: Interstate 75 Managed Lane Ecology Resource Survey and Assessment of Effects Report

0 500 1,000
Feet

Five jurisdictional wetlands would be impacted by both Alternatives: Wetland 9, Wetland 12a, Wetland 12f, Wetland 17, and Wetland 18 (Table 22). The estimated wetland acreage impacts are 0.877 acre. None of the wetlands provide a habitat for protected species. No jurisdictional open waters would be impacted by either Alternative.

Table 22. Impacted Wetlands within the Project Corridor

Wetland # (HUC)	Cowardin Class	Water Regime	Existing Condition	Wetland/Open Water Value	Estimated Wetland Area Impacted (Acreage)	
					Permanent Fill/Clear	Temporary Clear
Wetland 9 (03070103)	PFO1C	Seasonally Flooded	Class 3	Medium	0.115	0
Wetland 12a (03070103)	PFO1J	Intermittently Flooded	Class 2	Medium	0.256	0
Wetland 12f (03070103)	PFO1J	Intermittently Flooded	Class 2	Medium	0.315	0
Wetland 17 (03070103)	PFO1J	Intermittently Flooded	Class 3	Medium	0.023	0
Wetland 18 (03070103)	PFO1J	Intermittently Flooded	Class 3	Medium	0.168	0
Total Jurisdictional Wetlands Impacts					0.877	0

Source: Addendum to Approved Ecology Resource Survey and Assessment of Effects Report and Subsequent Addenda, GDOT Project CSNHS-0009-00(156)(157) Henry and Clayton Counties; I-75 Managed Lanes, October 2012.

c. State Waters of Georgia

The Georgia Erosion and Sedimentation Control Rules, 391-3-7, promulgated under the Georgia Erosion and Sedimentation Act (O.C.G.A. 12-7) defines state waters as "any and all rivers, streams, creeks, branches, lakes, reservoirs, ponds, drainage systems, springs, wells and other bodies of surface or subsurface water, natural or artificial, lying within or forming a part of the boundaries of the State, which are not entirely confined and retained completely upon the property of a single individual, partnership, or corporation." These include jurisdictional and non-jurisdictional waters. The difference is that even though ephemeral streams are state waters, they do not have a protective buffer requirement. Warm-water intermittent and perennial streams are given a 25-foot state buffer on either side of the channel from the point of wrested vegetation. Open waters that have inflow or outflow also receive a 25-foot buffer from the point of wrested vegetation. Any impacts to the state mandated vegetative buffer may be regulated by the Georgia Department of Environmental Protection Division (GAEPD) and may require a state stream buffer variance.

The proposed project is not located within a designated trout watershed. No land within 25 feet of an open water would be encroached upon by either Alternative. The project would encroach upon the 25-foot vegetated buffer of one stream not included within the exemption area allowed for roadway drainage structures: Stream 24. The total amount of disturbed buffer would be approximately 550 linear feet and 0.631 acre (27,500 square feet). Therefore, based on the requirements outlined in 391-3-7.05 under the GADNR Environmental Protection Division, Erosion and Sedimentation Control Branch, a buffer variance would be required for project

construction. The basis under which the variance shall be considered is criterion 2a in 391-3-7.05 (2) of the O.C.G.A.

d. Avoidance and Minimization

In accordance with Section 404(b)(1) guidelines, alternatives were considered in order to avoid and minimize wetland and stream impacts; however, NEPA and other regulations require that a number of environmental factors be taken into account during project planning. During the development phase of the project concept, basic data on the proposed project corridor were gathered and studied. Data for this project included, at a minimum, USGS topographic maps, aerial photography, traffic data (existing and projected), previous studies, National Wetland Inventory (NWI) maps, soil survey maps, floodplain maps, and Georgia Department of Natural Resources historic resource survey maps.

Using these data and information gathered on field surveys of the project corridor, any existing wetland areas, floodplains, parks and recreational facilities, known or suspected historical and archaeological sites, rights-of-way, possible underground storage tank (UST)/landfill/hazardous waste sites, and areas of possible endangered species habitat were identified. Also noted were other constraints such as homes, churches, cemeteries, schools, hospitals, and other sensitive sites.

<u>Measures Taken During Planning</u>

Permanent walls (concrete or mechanically stabilized earth) would be implemented to minimize or avoid impacts to wetlands and streams. Proposed impacts to the following resources would be either minimized or avoided by the construction of walls: Stream 14, Stream 24, Ephemeral Stream 25, Ephemeral Stream 26, and Ephemeral Stream 27.

Ephemeral Streams 25, 26, and 27 are non-jurisdictional and therefore do not require avoidance alternatives. Streams 1, 2, 3, 8, 12, 12g, 13, 15, 16, and 23 are linear resources that cross the proposed alignment perpendicularly and therefore have no avoidance alternatives.

Wetland 9 is located southeast of Mt. Carmel Road and west of I-75. Approximately 0.115 acres of Wetland 9 would be permanently impacted due to the placement of fill material by the proposed project. The placement of fill material is necessary for the re-construction of the Mt. Carmel Road bridge. The proposed impacts to Wetland 9 could be avoided by shifting the proposed construction along Mt. Carmel Road to the northwest. However, shifting the proposed construction along Mt. Carmel Road to the northwest would result in an equivalent impact to Wetland 10. Shifting the proposed construction along Mt. Carmel Road to the northwest could also introduce dangerous horizontal road curvature. The currently proposed alignment minimizes impacts to all resources considered (jurisdictional wetlands and public safety).

Wetland 12a is located south of Jonesboro Road and east of I-75. Approximately 0.256 acres of Wetland 12a would be permanently impacted due to the required clearing of forest vegetation to allow for bridge construction. This type of clearing represents a morphological change from a forested wetland to a scrub-shrub wetland and is considered to be a permanent impact. A bridge is being utilized to prevent impacts to Streams 12c and 12e, as well as fill related impacts to Wetland 12a. The proposed impacts to Wetland 12a could not be avoided by shifting the proposed construction to the north, due to the linear nature of the wetland along the streams and a potential connection with Wetland 12f. A shift to the north would also be constrained by the existing I-75 northbound off-ramp location. A shift substantially to the south may avoid impacts

to Wetland 12a; however, a substantial increase in the new location roadway would be required (increasing the length of the on-ramp at Jonesboro Road from approximately 1,820 linear feet to greater than 2,600 linear feet). This would increase construction cost to a minimum of one million dollars. The currently proposed alignment minimizes impacts to all resources considered (jurisdictional wetlands, cost, right-of-way, and public safety).

Streams 12c and 12e are located south of Jonesboro Road and east of I-75. Impacts to these resources would be avoided due to the use of a clear-span bridge.

Wetland 12f is located south of Jonesboro Road and east of I-75. Approximately 0.315 acres of Wetland 12f would be permanently impacted due to the placement of fill material by the proposed project. The placement of fill material is necessary for the construction of a new location ramp providing access to the managed lanes from SR 920/Jonesboro Road. The proposed impacts to Wetland 12f could be avoided by shifting the new location alignment and tie in location further east and away from Foster Drive. However, shifting the proposed construction further east would potentially create an off-set intersection at SR 920/Jonesboro Road, with safety issues, and would require an increase in project length for both Build Alternatives to accommodate a shift. Shifting the proposed construction to the west could also potentially avoid impacts to Wetland 12f; however, it would similarly introduce safety issues at the tie-in to SR 920/Jonesboro Road. The currently proposed alignment minimizes impacts to all resources considered (jurisdictional wetlands and public safety).

Wetland 17 is located entirely within the vegetated median of I-75. Approximately 0.023 acres of Wetland 17 would be permanently impacted due to the placement of fill material by the proposed project. The placement of fill material is necessary for construction of the managed lane to the inside, rather than to the outside, of the existing travel lanes. No avoidance alternative exists for either Alternative in the vicinity of Wetland 17. Constructing the project to the outside of the existing I-75 northbound alignment, along the east side of the highway, is not possible because of the proximity of Wetland 17 to the I-75 northbound off ramp for Eagles Landing Parkway. Constructing the project to the outside of the existing I-75 northbound alignment at this location would require the redesign and relocation of the existing Eagles Landing exit ramp, causing additional impacts to developed property and possible safety issues that may result from locating the faster moving managed lane traffic in close proximity to the slower moving traffic trying to exit the interstate. The currently proposed alignment minimizes impacts to all resources considered (jurisdictional wetlands, design constraints, and public safety).

Wetland 18 is located entirely within the vegetated median of I-75. Approximately 0.168 acres of Wetland 18 would be permanently impacted due to the placement of fill material by the proposed project. The placement of fill material is necessary for construction. No avoidance alternative exists for either Alternative in the vicinity of Wetland 18. Constructing the project to the outside of the existing I-75 northbound alignment, along the east side of the highway, is not possible because of the proximity of Wetland 18 to the I-75 northbound off ramp for Eagles Landing Parkway. Constructing the project to the outside of the existing I-75 northbound alignment at this location would result in unsafe weaving and merging conditions. The currently proposed alignment minimizes impacts to all resources considered (jurisdictional wetlands, design constraints, and public safety).

Stream 24 is located entirely within the vegetated median of I-75. The vegetated buffer along the right downstream bank of Stream 24 would be encroached upon by Alternatives 1 and 2, and a section of Stream 24 in the vicinity of Stream 23 (Reeves Creek) would be piped. No avoidance alternative exists for either Build Alternative in the vicinity of Stream 24. Constructing the project to the outside of the existing I-75 southbound alignment, along the west side of the highway, is not possible because of the proximity of Stream 24 to the I-75 southbound on ramp from I-675. Constructing the project to the outside of the existing I-75 southbound alignment at this location would result in unsafe weaving and merging conditions. The currently proposed alignment minimizes impacts to all resources considered (jurisdictional intermittent streams, vegetated stream buffers, design constraints, and public safety).

As required under the Fish and Wildlife Coordination Act (FWCA), consultation with the U.S. Fish and Wildlife Service (USFWS) has been completed in regard to the proposed impacts to Streams 12g and 24. Stream 12g would be impacted as a result of 130 linear feet of permanent impact (0.036 acre) from the addition of a culvert. The culvert would be required to be embedded a minimum of 20 percent of the diameter of the culvert to accommodate fish passage. Stream 24 would be permanently impacted as a result of an open reach of the stream into a new culvert (50 linear feet, 0.005 acre). The proposed work would temporarily impact approximately 550 linear feet (0.631 acre or 27,500 square feet) of vegetative buffer along the left and right downstream bank of Stream 24. Based on the requirements outlined in 391-3-7.05 under the GADNR Environmental Protection Division, Erosion and Sedimentation Control Branch, a buffer variance for Stream 24 would be required for project construction. The basis under which the variance shall be considered is criterion 2a in 391-3-7.05 (2) of the O.C.G.A. The USFWS has concurred with the determination that impacts to streams are unavoidable and necessary to implement the proposed project (see correspondence dated July 1, 2011 and June 15, 2012 in Appendix A, pp. A-41, A-64). The mitigation proposal satisfies the GDOT's responsibilities under the FWCA for Streams 12g and 24.

Measures Taken During Construction

This project would be expected to produce some increased siltation within the wetland and stream crossings during the construction phase. Standard construction erosion and sedimentation control devices would minimize environmental harm. Measures to minimize harm to wetlands, water quality, wildlife, and fish and game habitat include:

- Preservation of roadside vegetation beyond the limits of construction where possible;
- Early re-vegetation of disturbed areas to hold soil movement to a minimum;
- The use of oversized drains, detention/retention structures, surface, subsurface and cross drains designed as appropriate or needed so that discharge would occur in locations and in such a manner that surface and subsurface water quality would not be affected, the outlets may require aprons, bank protection, silt basins and energy dissipaters;
- Inclusion of features for the control of predicted erosion and water pollution in the construction plans, specifications and contract pay items (Georgia Standard Specifications-1993, Sections 161 through 171 and 700 through 715 identify the pollution control measures which may be used);

- The dumping of chemicals, fuels, lubricants, bitumen, raw sewage, or other harmful waste into or alongside of streams or impoundments, or into natural or manmade channels leading thereto, would be prohibited; and
- Compliance with terms of the National Pollutant Discharge Elimination system (NPDES) permit for construction activities to include preparation and submittal of project Notice Of Intent (NOI) and Notice of Termination (NOT). The NPDES permit also requires preparation and implementation of an Erosion, Sedimentation, and Pollution Control Plan (ESPCP) and a Comprehensive Monitoring Program. Best management practices outlined in the ESPCP must be consistent with, and no less stringent than, practices set forth in the *Manual for Erosion and Sedimentation Control in Georgia*.

e. Compensatory Mitigation

Wetland, Open Water, and Ephemeral Stream Mitigation

No open waters or jurisdictional ephemeral streams would be impacted as a result of the either Alternative 1 or 2. Approximately 0.877 acres of five jurisdictional wetlands would be impacted by both Alternatives. There would be no temporary impacts to jurisdictional wetlands. The total amount of compensatory wetland mitigation that would be required for construction of the proposed project is 6.3 credits (Appendix B). Mitigation credits would be purchased from a USACE-approved commercial mitigation bank servicing HUC 03070103.

Perennial and Intermittent Stream Mitigation

Approximately 450 linear feet (0.164 acre) of nine perennial streams would be impacted by both Alternatives 1 and 2. Approximately 75 linear feet (0.007 acre) of two intermittent streams would be impacted by both Alternatives. The total amount of impacts to perennial and intermittent streams along the proposed project corridor would be approximately 525 linear feet (0.171 acre). The total amount of compensatory perennial and intermittent stream mitigation that would be required for construction of the proposed project is 1,972 credits (Appendix B). Mitigation credits would be purchased from a USACE-approved commercial mitigation bank servicing HUC 03070103.

Indirect Effects. In addition to the direct effects of the project on wetlands and streams, this project would result in new impervious surfaces to the environment, thus increasing stormwater run-off. Approximately 119 acres of new impervious surface would be associated with proposed project. This increase in runoff could result in indirect adverse effects to water quality. Erosion control practices would be used during construction and vegetation would be re-established in disturbed areas. Erosion control devices would be used and then inspected and maintained until vegetation re-stabilizes the soil. Avoidance, minimization of impacts, and mitigation have all been considered as a part of the project process. Finally, because the implementation of this project is not expected to induce significant land use changes, additional indirect effects to water resources from land use changes would not occur.

Cumulative Effects. Even though there is the potential for indirect effects on water quality due to an increase in impervious surface, these are not expected to contribute significantly to past, present, or reasonably foreseeable future actions that could result in cumulative effects.

2. Floodplains

Direct Effects. A survey of the project corridor for floodplains as required by the provisions of Executive Order 11988 has identified no crossings of the 100-year floodplain and therefore no impacts to floodplains.

Indirect Effects. No indirect effects on floodplains are expected as a result of the project.

Cumulative Effects. Since there are no impacts to floodplains, there are no contributions by this project to past, present, or reasonably foreseeable future actions that could result in cumulative effects.

3. Farmlands

Direct Effects. Early coordination with the Natural Resources Conservation Service (NRCS) determined that the project is exempt from the Farmland Protection Policy Act (7 CFR Part 658) process because it does not convert farmland to another use (Appendix A, pp. A-37-A-38). In addition, there are no NRCS watershed dams downstream or in the vicinity of the project. Finally, there are no Wetland Reserve Program or Farm and Ranch Land Protection Program easements within the vicinity of the proposed project that would be impacted.

Indirect Effects. No indirect effects on farmlands are expected as a result of the project.

Cumulative Effects. Since there are no impacts to farmlands, there are no contributions by this project to past, present, or reasonably foreseeable future actions that could result in cumulative effects.

4. Federal and State Protected Species

The US Fish and Wildlife Service (USFWS) is responsible for listing, protecting, and managing federally listed Threatened and Endangered Species under the *Endangered Species Act of 1973*, as amended. The USFWS defines an endangered species as one that is in danger of extinction throughout all or in a significant portion of its range. A threatened species is one that is likely to become endangered in the foreseeable future. For purposes of this report, the phrase "federally protected" refers to all species listed by the USFWS for protection under the Endangered Species Act; candidate species are included, if applicable. The phrase "state protected" refers to all species listed by the Georgia Department of Natural Resources (GADNR) for protection under state laws.

Correspondence with the GADNR - Nongame Conservation Section (NCS) confirmed that according to GADNR's records, there are no Natural Heritage Database occurrences within a three-mile radius of the proposed project site (Appendix A, pp. A-67-A-68). Additional information is in the *Interstate 75 Managed Lanes Ecology Resource Survey and Assessment of Effects Report* and Addenda dated March 2011, July 2011, April 2012, and October 2012 on file at the GDOT Office of Environmental Services.

Background information regarding known occurrences and potential occurrences of federal and state protected species was obtained from both the USFWS and the GADNR-NCS websites. The project is located in the McDonough, GA SE, McDonough, GA SW, McDonough, GA NW, Stockbridge, GA SW, and Jonesboro, GA SE quarter quadrangles. The GADNR Nongame Conservation Section website listed no known occurrences of state or federally listed species for these quadrangles. The websites listed the following federally threatened, endangered, or

candidate species in Henry and Clayton Counties (Table 23). Early coordination with USFWS and GADNR-NCS confirmed that there are no records for federally protected species nor occurrence records within three miles of Alternatives 1 and 2. The project is within the predicted range of the federally endangered Michaux's sumac (*Rhus michauxii*), although there are no nearby records for the species.

Table 23. Protected Species Known to Occur in Henry and Clayton Counties

Scientific Name	Common Name	Federal Status	State Status	Project Effect on Species
Mycteria americana	Wood Stork	Endangered	Endangered	No effect.
Pleurobema pyriforme	Oval pigtoe mussel	Endangered	Endangered	No effect.
Rhus michauxii	Michaux's sumac	Endangered	Endangered	No effect.
Amphianthus pusillus	Pool Sprite	Threatened	Threatened	No effect.
Isoetes melanspora	Black-spored quillwort	Endangered	Endangered	No effect
Trillium reliquum	Relict trillium	Endangered	Endangered	No effect
Moxostoma robustum	Robust redhorse	--	Endangered	No effect.
Cyprinella xaenura	Altamaha shiner	--	Threatened	No effect.
Haliaeetus leucocephalus	Bald Eagle	--	Threatened	No effect.
Etheostoma pravipinne	Goldstripe Darter	--	Rare	No effect.

Source: Addendum to Approved Ecology Resource Survey and Assessment of Effects Report and Subsequent Addenda, GDOT Project CSNHS-0009-00(156)(157) Henry and Clayton Counties; I-75 Managed Lanes, October 2012.

a. Wood Stork – Federally Endangered and State Endangered

The wood stork (*Mycteria americana*) is a large, long-legged wading bird about 33-44 inches tall with a wingspan of 59-65 inches, and a large bill. The plumage is mostly white, but the wing-tips, trailing edge of the wings, and tail are black with a greenish sheen. The neck is not feathered and the skin is black with a scale-like appearance; the bill color is grayish black. The wood stork inhabits forested wetlands (swamps) in the coastal plain in Georgia usually nesting in cypress swamps and feeding in shallow freshwater or brackish isolated pools. Wood storks inhabit both inland and coastal regions of Georgia throughout the year and are known to travel great distances (60-70 miles) to forage. The birds are colonial nesters (10-500+ nests per colony), with several nests commonly occupying the same tree. Nests are usually constructed in trees located on small islands or in trees whose bases are submerged by standing or slow moving water.

The range of the wood stork extends from southern Georgia and the coastal plain to South Carolina and North Carolina south to southern Florida. According to GADNR records, the closest known occurrence of the wood stork is approximately 124 miles south of the proposed project site in the Acree, Georgia (NW) quarter-quadrangle (Worth County).

The proposed project was surveyed on August 31, 2010, January 20, 2011, January 24, 2011, and February 2, 2011 for the wood stork and associated habitat. No wood storks were observed during the field survey, and no potential habitat for this species exists along the project corridor. There were a few forested wetland areas with shallow standing and slowly moving water observed along the proposed project alignment. However, these areas were located either within the median of I-75 or adjacent to I-75 in the vicinity of Mt. Carmel Road. All of the forested wetland areas are small in size and noisy due to habitat fragmentation and proximity to the highway. In addition, the wetlands found along the proposed alignment have dense, closed canopies. Wood storks are not likely to be found foraging or nesting in these conditions. Due to the lack of potential habitat along the proposed alignment, the proposed project would have no effect on the wood stork.

b. Oval Pigtoe – Federally Endangered and State Endangered

The oval pigtoe mussel (*Pleurobema pyriforme*) is highly variable, but shell size usually measures 3.3 – 5.5 centimeters (1.3 – 2.2 inches) in length. Individuals range from having a compressed shell, low umbo, and yellow periostracum, to having an inflated shell, higher umbo, and dark periostracum. Young individuals may have faint green rays. There is usually a prominent posterior ridge on the shell surface. The nacre ranges in color from white to salmon. This species inhabits medium-sized creeks to small rivers with slow to moderate current. It is found in sand, silty sand, gravel, clay and rock substrates.

The oval pigtoe was originally described from a specimen collected in the Chattahoochee River near Columbus, Georgia. The species had a range that included the Chattahoochee, Flint, and Ochlockonee Rivers in Georgia. The species also occurred in the rivers of the Florida panhandle and southeast Alabama. Present distribution is limited to the Flint River and lower Chattahoochee River systems (mostly tributaries) in Georgia, the Ochlockonee River in Georgia and Florida, and the Chipola and Santa Fe Rivers in Florida. According to GADNR records, the closest known occurrence of the oval pigtoe is approximately 15 miles southwest of the proposed project site in the Brooks, Georgia (SE) quarter-quadrangle (Fayette County).

The proposed project was surveyed on August 31, 2010, January 20, 2011, January 24, 2011, and February 2, 2011 for potential oval pigtoe habitat. No oval pigtoe mussels were observed during the general ecology survey, and no potential habitat for this species exists along the project corridor. The proposed project is located in the Ocmulgee River drainage, while the oval pigtoe is limited to the Flint River, Ochlockonee River, and lower Chattahoochee River systems in Georgia. Due to the proposed project alignment being located in the Ocmulgee River drainage, the proposed project would have no effect on the oval pigtoe.

c. Michaux's (dwarf) Sumac – Federally Endangered and State Endangered

The Michaux's (dwarf) sumac (*Rhus michauxii*) is a state and federally endangered colonial shrub with erect stems growing from one to three feet tall. The best time to search for this species is during the growing season, since leaves are essential for identification. This species is readily distinguished by the combination of densely hairy twigs and leaves, coarsely and evenly toothed margins of leaflets, and dwarf stature. The dwarf sumac is found on the Piedmont Plateau of Georgia, South Carolina (where possible extirpated), North Carolina, and adjacent Virginia, in rocky open woods, especially in soils high in magnesium, perhaps also on sandhills of the Inner Coastal Plain. The dwarf sumac is rare throughout its range and has sustained significant habitat loss, at least in part due to fire suppression.

Habitat within the survey corridor was predominantly maintained transportation and utility right-of-way, mixed pine and hardwood forestland, hardwood forestland, or residential properties, which would not be suitable habitat for dwarf sumac. No suitable habitat for dwarf sumac was observed, and no individual dwarf sumac plants were found during field surveys. Due to the lack of potential habitat along the proposed alignment, the proposed project would have no effect on dwarf sumac.

d. Pool Sprite – Federally Threatened and State Threatened

The pool sprite (*Amphianthus pusillus*), commonly known as snorklewort, is an annual herb. It has both floating and submerged leaves. The floating leaves are paired, ovate, 0.16 to 0.32 inch long, 0.12 to 0.2 inch wide, and attached to the submerged plant base by threadlike stems. The submerged leaves are clustered atop a short (0.24 inch or less) stem, lanceolate, and less than 0.4 inch long. The flowers are small, inconspicuous, white to pale violet, and found both among the submerged leaves and between the floating surface leaves. The best time to search for these plants is during flowering and fruiting production, from March to May. The habitat is restricted to shallow, flat-bottomed depressions on granitic outcrops, where water collects after a rain. These depressions are less than one foot in depth, are entirely rock-rimmed, and usually contain soil at least one inch deep. The depressions may be dry much of the summer, except during rainy periods.

The pool sprite range is in the Piedmont Plateau from Alabama to South Carolina. It is recorded in seventeen counties in Georgia. The closest known occurrence of the pool sprite is in the Stockbridge, GA NE quarter-quadrangle, approximately 5 miles northeast of the proposed project site. The proposed project was surveyed on August 31, 2010, January 20, 2011, January 24, 2011, and February 2, 2011 for the pool sprite and associated habitat. No pool sprites were observed during the field survey, and no potential habitat for this species exists along the project corridor. No shallow, flat-bottomed depressions on granitic outcrops, where water collects after a rain, were observed within or directly adjacent to the proposed project limits. Due to the lack of potential habitat along the proposed alignment, the proposed project would have no effect on the pool sprite.

e. Black-spored Quillwort – Federally Endangered and State Endangered

Suitable habitat for the black-spored quillwort (*Isoetes melanspora*) is restricted to shallow, flat-bottomed depressions on granite outcrops, where water collects after a rain. These depressions are less than one foot in depth, and are entirely rock-rimmed, and usually contain soil at least 1 inch deep. They may be dry much of the summer, except during rainy periods. The range of the species is in the Piedmont Physiographic Region of Georgia. It has been recorded in six counties in Georgia. The best time to search for these plants is during spore production, early May to June.

Habitat within the survey corridor was predominantly maintained transportation and utility right-of-way, mixed pine and hardwood forestland, hardwood forestland, or residential properties, which would not be suitable habitat for black-spored quillwort. No suitable habitat for black-spored quillwort was observed, and no individual black-spored quillwort plants were found during field surveys. Due to the lack of potential habitat along the proposed alignment, the proposed project would have no effect on the black-spored quillwort.

f. Relict Trillium – Federally Endangered and State Endangered

Relict trillium (*Trillium reliquum*) occurs primarily in hardwood forests along the Coastal Plain/Piedmont Fall Line. In the Coastal Plain, these forests often have boulders or ledges with soft limestone; in the Piedmont, they are found in hardwood forests with deep loamy soils in rich ravines or adjacent alluvial terraces with other spring flowering herbs. The range of the relict trillium includes the coastal plain of southeastern Alabama and adjacent southwestern Georgia; near the Fall Line on both the Coastal Plain and the Piedmont Plateau in west central Georgia; and disjunct just above the Fall Line along the Savannah River in Georgia and adjacent South Carolina. The relict trillium can be identified only during flowering, from March to April, since features of the flower are needed for positive identification.

Habitat within the survey corridor was predominantly maintained transportation and utility right-of-way, mixed pine and hardwood forestland, hardwood forestland, or residential properties, which would not be suitable habitat for relict trillium. No suitable habitat for relict trillium was observed, and no individual relict trillium plants were found during field surveys. Due to the lack of potential habitat along the proposed alignment, the proposed project would have no effect on the relict trillium.

g. Robust Redhorse – State Endangered

The robust redhorse (*Moxostoma robustum*) is a large, heavy bodied sucker, with a total length exceeding 70 centimeters (30 inches). It is recognized by large molar-like pharyngeal teeth; bronze coloration on its back and sides, and adults will also have faint stripes along the sides. Juveniles will have intense red coloration in the caudal fin. During breeding season adult males will develop large prominent tubercles on the snout, head, anal and caudal fins. Historically the robust redhorse occurred in southeastern Atlantic slope river drainages, from the Altamaha in Georgia northward to the Pee Dee of North and South Carolina. Presently the largest population occurs in a 55-mile stretch of the Oconee River from Milledgeville south to above Dublin, Georgia and a small population occurs in the Augusta Shoals of the Savannah River. Monitoring studies are being conducted to follow the success of the re-introduction of the robust redhorse into the Broad River system, a tributary of the Savannah River, and the Ogeechee River. Robust redhorse feed on Asian clams, and a variety of aquatic insects. Adults in the Oconee have been found around tree snags, often in deeper water. Spawning occurs from late April through early June, in both shallow and deep waters over coarse gravel. The species is only listed within the Ocmulgee River upper watershed (HUC: 03070103). A perennial stream, Crittle Creek, was surveyed on November 24, 2011 for the robust redhorse and associated habitat. The field surveys revealed that the habitat within Crittle Creek was not suitable for the robust redhorse due to heavy sedimentation, stagnant flow, and stream size. The proposed project would have no effect on the robust redhorse.

h. Altamaha Shiner – State Threatened

The Altamaha shiner (*Cyprinella xaenura*) has a pointed snout and a terminal to subterminal mouth. This species of shiner reaches a maximum length of 11 centimeters (4.3 inches). Coloration characteristics include dusky olive coloration dorsally, a dark dorsal stripe, and a lateral stripe on the posterior half of the body that can expand to form a spot at the base of the caudal fin. Breeding males are recognizable by a blue coloration on the sides and yellow to orange dorsal, caudal, and anal fins. Altamaha shiners inhabit small tributaries and rivers. They are most often found in small pools with rocky to sandy substrate. Their diet consists of aquatic

insects and terrestrial insects captured from stream drift. Altamaha shiners are endemic to the upper Altamaha River watershed of north central Georgia. Specimens have been collected from the North Oconee, Middle Oconee, Oconee, Ocmulgee, Altamaha, Apalachee, and Little River systems. The GADNR (2010a) lists this species as occurring in Henry County and in the Ocmulgee River upper watershed (HUC: 03070103). A perennial stream, Crittle Creek, was surveyed on November 24, 2011 for Altamaha shiner and associated habitat. The field surveys revealed that the habitat within Crittle Creek was not suitable for the Altamaha shiner due to heavy sedimentation, stagnant flow, and stream size. The proposed project would have no effect on the Altamaha shiner.

i. Goldstripe Darter – State Rare

The goldstripe darter (Etheostoma parvipinne) reaches a maximum length of 7.5 centimeters (3.0 inches) and is characterized by a light-colored stripe along the lateral line. Two to four small black spots vertically align the base of the caudal fin and a dark suborbital teardrop is present on the head. The goldstripe darter spawns from March to May. The goldstripe darter generally inhabits small streams and spring seeps in areas with slow current and is often associated with aquatic vegetation or woody debris. This fish species extends from the Brazos River in Texas to Altamaha River watershed in Georgia. In Georgia, this species has a spotty distribution and is known only below the Fall Line in the Chattahoochee, Flint, Ocmulgee, and Oconee Rivers. The species is only listed within the Ocmulgee River upper watershed (HUC: 03070103). A perennial stream, Crittle Creek, was surveyed on November 24, 2011 for the goldstripe darter and associated habitat. The field surveys revealed that the habitat within Crittle Creek was not suitable for the goldstripe darter due to heavy sedimentation, stagnant flow, and stream size. The proposed project would have no effect on the goldstripe darter.

Direct Effects. For determination of effects, Alternatives 1 and 2 have the same physical footprint and configuration. The protected species survey included an assessment of constraints to the presence of the above listed species including Crittle Creek. An aquatic survey was performed for this perennial stream for federally and state protected fish in the vicinity of the proposed project (300 feet upstream and 900 feet downstream of each crossing). Over 200 fish (4 species) were collected in Crittle Creek. The fish diversity collected within Crittle Creek was poor and species collected during the survey were comprised of tolerant species. No federally or state protected fish were collected during the survey. No suitable habitat was present in Crittle Creek for the Altamaha shiner, goldstripe darter, and robust redhorse due to the heavy sedimentation, stagnant flow, and stream size.

No federally listed species or state listed species were observed within the project corridor, and no potentially suitable habitat for federally protected species was identified during the terrestrial and aquatic surveys. The proposed project would have no effect on federally or state protected species. FHWA determined that the proposed action would have no effect on federally listed threatened or endangered species for Clayton and Henry Counties on November 5, 2012 (Appendix A, page A-71).

Indirect Effects. Protected species and their associated habitats were not found within the project corridor. Therefore, no indirect effects on protected species are expected as a result of the project. In addition, because the implementation of this project is not expected to induce substantial land use changes, additional indirect effects to federal and state protected species from land use changes would not occur.

Cumulative Effects. Since there are no impacts to protected species or their suitable habitats, there are no contributions by this project to past, present, or reasonably foreseeable future actions that could result in cumulative effects.

5. Wildlife and Habitat

As directed under Executive Order 13186, actions must be taken to avoid or minimize impacts to migratory bird resources and to prevent or abate the detrimental alteration of the environment for the benefit of migratory birds, as practicable. GDOT assesses potential impacts to migratory birds that may result from conversion of habitat that is considered suitable for nesting. GDOT conducts surveys under bridges and within large culverts that would be reconstructed or removed as a part of a proposed project. Demolition or reconstruction of any bridge or culvert that is considered to be suitable nesting habitat for migratory birds, such as the barn swallow (*Hirundo rustica*), cliff swallow (*Hirundo pyrrhonota*), or Eastern Phoebe (*Sayornis phoebe*), would be scheduled to take place at a time outside the breeding season of migratory birds. Additional information is in the *Interstate 75 Managed Lanes Ecology Resource Survey and Assessment of Effects Report* and Addenda dated March 2011, July 2011, April 2012 and October 2012 on file at the GDOT Office of Environmental Services.

Direct Effects. For determination of effects, Alternatives 1 and 2 have the same physical footprint and configuration. Alternatives 1 and 2 are located in an area of significant suburban development. The landscape has been greatly fragmented by road building activities and residential and commercial development. The project would not significantly alter the composition of the communities adjacent to the proposed work. The narrow forested corridors located within the highway median provide suitable, low quality foraging and nesting habitat for neotropical/migratory bird species. The proposed project would impact these forested areas, but the effects to these areas would be kept to a minimum by constructing the proposed managed lanes as close to the existing cleared and maintained right-of-way as possible without compromising the safety of motorists.

The project would not have a significant effect on migratory bird species utilizing the communities surrounding the project corridor due to the limited quantity of land that would be impacted and the existing disturbance to the adjacent communities. Soil disturbance and the slight disturbance to the vegetation communities adjacent to I-75, I-675, and SR 920/Jonesboro Road could attract predators, nest parasites, and invasive plant species into areas adjacent to the project limits. Invasive plant species have already become established in some areas of the proposed project corridor. The Jonesboro Road connection of both Build Alternatives would bisect a relatively large (approximately 85 acres) contiguous forested area which could potentially provide habitat for interior dwelling neotropical/migratory bird species. The predominant impacts from the implementation of the proposed project would likely be to edge dwelling neotropical/migratory bird species, due to the significant amount of this habitat available along the length of the project corridor.

Field activities included surveying for nesting bird habitat beneath existing bridges and inside existing culvert structures. No migratory birds or migratory bird nests were observed to be associated with the I-75 overpasses and underpasses at SR 155 (McDonough Road), SR 20/SR 81 (Hampton Road), Mt. Carmel Road, Jonesboro Road, SR 351 (Jodeco Road), Hudson Bridge Road/Eagles Landing Parkway, Flippen Road, Walt Stephens Road, I-675 (SR 413), SR 138, and Fielder Road. No migratory birds or migratory bird nests were observed to be associated with

the I-75 and I-675 overpasses and underpasses at SR 138 (Stockbridge Highway) and US 23/SR 42 (Macon Highway). Migratory bird nests were observed within the box culverts where Camp Creek (Stream 1), Birch Creek (Stream 2), Crittle Creek (Stream 12), Walnut Creek (Stream 13), Pates Creek (Stream 16), Rum Creek (Stream 21), Reeves Creek (Stream 23), and Panther Creek (Stream 27l) cross the project corridor. Construction of the project would result in culvert extensions for all of these structures except for the culvert at Rum Creek (Stream 13), Crittle Creek (Stream 12g), and Panther Creek (Stream 27l). During the construction phase of the proposed project, GDOT would implement Special Provision 107.23G (Appendix C). The culvert extensions would be restricted to a period outside of the nesting season (April 1st through August 31st). Construction of the proposed project would have minimal effect on neotropical/ migratory bird species.

Indirect Effects. No indirect effects on neotropical/migratory bird species are expected as a result of the project. In addition, because the implementation of this project is not expected to induce significant land use changes, additional indirect effects to wildlife and habitat from land use changes would not occur.

Cumulative Effects. Since the proposed project would have minimal direct effects and no indirect effects on neotropical/migratory bird species, the proposed project would contribute to past, present, or reasonably foreseeable future actions that could result in cumulative effects. However, when put in the context of the disturbance that has already occurred over the entire corridor due to past activities, the contribution to cumulative effects would be minimal.

6. Invasive Species

In accordance with Executive Order 13112, a survey for populations of invasive species that may be spread during construction was conducted for this project. The invasive species for which the survey was conducted are those which have been identified by GDOT as having the highest priority due to environmental and economic impacts. Both the selected species and the management practices would be re-evaluated and revised as more information is obtained.

Six invasive plant species were found within the project's right-of-way: Japanese honeysuckle, sericea lespedeza, English ivy, mimosa, kudzu, and Chinese privet. These species were found scattered throughout the survey corridor, usually occurring in disturbed areas and at the edges of plant communities.

During the construction process, GDOT would take measures to prevent or minimize the spread of these species as appropriate for the time of the year. These measures would include removal and disposal of vegetative parts in the soil that may reproduce by root raking, burning on site any such parts and aboveground parts that bear fruit, controlling or eradicating infestations prior to construction, and cleaning of vehicles and other equipment prior to leaving the infested site. The measures used would be those which are appropriate for the particular species and the specific site conditions which exist on the project, as described in Georgia Standard Specifications Section 201, Clearing and Grubbing of Right-Of-Way.

F. Effects on the Physical Environment

1. Noise

a. Introduction

In compliance with 23 USC 109 (h) and (i), the FHWA established guidelines for the assessment of highway traffic-generated noise. These guidelines, published as part of 23 CFR 772, provide procedures to be followed in conducting noise analyses that would protect the public health and welfare. Based upon guidance provided in the GDOT Noise Abatement Policy, effective July 13, 2011, a Noise Impact Assessment was prepared in compliance with 23 CFR 772 and is summarized here. Additional information is in the *Noise Technical Report: I-75 Managed Lanes* dated December, 2012, on file at the GDOT Office of Environmental Services. The noise analysis has been completed in order to:

1. Provide baseline noise levels that would be used in determining project impact;
2. Predict the effects that the proposed project would have on the noise environment;
3. Identify impacted locations where noise abatement is feasible and reasonable and likely to be included in the project and locations where impacts would occur and abatement is not feasible and reasonable.

The proposed project would be a Type I project as defined by "Highway Traffic Noise Policy and Guidance" as re-issued by FHWA in July 2010 (revised January 2011) because it includes the addition of a through traffic-lane. Type I projects are defined as:

1. The construction of a highway on new location; or,
2. the physical alteration of an existing highway where there is either:
    a. Substantial Horizontal Alteration. A project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future build condition; or,
    b. Substantial Vertical Alteration. A project that removes shielding therefore exposing the line-of-sight between the receptor and the traffic noise source. This is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor; or,
3. the addition of a through-traffic lane(s). This includes the addition of a through-traffic lane that functions as an high occupancy vehicle (HOV) lane, High-Occupancy Toll (HOT) lane, bus lane, or truck climbing lane; or,
4. the addition of an auxiliary lane, except for when the auxiliary lane is a turn lane; or,
5. the addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange; or,
6. restriping existing pavement for the purpose of adding a through-traffic or an auxiliary lane, except for when the auxiliary lane is a turn lane; or,
7. the addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot, or toll plaza.

b. Existing Noise Environment

Noise considerations are part of the planning, design, and construction of all Federal-aid projects. Based upon guidance provided in the GDOT Noise Abatement Policy, effective July 13, 2011, a Noise Impact Assessment was prepared in compliance with 23 CFR 772 and is summarized here.

As defined in 23 CFR 772, traffic noise impacts "occur when the future predicted traffic noise levels approach or exceed the Noise Abatement Criteria (NAC), or when the future predicted traffic noise levels substantially exceed the existing noise levels." The NAC are defined in 23 CFR 772 for various activity categories (Table 24).

The model used to calculate existing noise levels and predict future noise levels for this project was the FHWA Traffic Noise Model version 2.5 (TNM) (released April, 2004). Hourly A-weighted equivalent sound levels (L_{eq}) were used to predict noise levels for this project, and are identified here as dBA (e.g., 50 dBA).

A ***receiver*** is a discrete point modeled in the TNM program where as a ***receptor*** is a defined as a representative location of a noise sensitive area for various land uses. In areas where there is a common noise environment, one modeled TNM receiver can be considered representative of many receptors. This occurs in places such as multi-family buildings where noise level estimates at one modeled TNM receiver on a given floor may be representative of noise conditions for all the receptors on that floor. For this project, 708 receivers, representing 2,343 receptors, were modeled.

The FHWA has developed regulations for the mitigation of highway traffic noise in federally aided highway projects. The regulation contains traffic noise-level criteria for various land use activities. The FHWA regulations contain NAC, which if approached or exceeded on Type I roadway improvement projects require consideration for noise abatement. In addition to these absolute limits, noise impacts can occur if there is a substantial increase in future build noise levels over comparable existing noise levels. The GDOT defines a substantial noise level increase as 15 dBA or greater. The regulations do not require that the NAC be met in every instance. Rather, the regulations require noise abatement where impacts occur and abatement is determined feasible and reasonable in accordance with 23 CFR Part 772.13 and the GDOT noise policy.

Table 24 provides a summary of the FHWA traffic NAC for each type of land use activity category based on the noisiest hourly L_{eq} value. The GDOT defines a noise impact as occurring when design-year build noise levels approach or exceed the NAC thresholds listed in Table 24 or when predicted design-year build noise levels result in a substantial noise level increase over existing noise levels. The GDOT considers approach levels as 1 dBA less than the noise levels shown in Table 24 and defines a substantial noise level increase as being 15 dBA or greater. For example, the approach noise level for Category B land use activities is 66 dBA. The approach noise levels for all NAC categories represent absolute noise impact thresholds, which exceeded constitutes an impact. For example, for NAC land use Category B, a noise level of 65.9 dBA at residential property is not considered an impact, but a noise level of 66.0 dBA or greater is considered a noise impact.

Table 24. FHWA NAC Hourly A-Weighted Sound Level (dBA)

Activity Category	L_{eq} (hour)	Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	Residential.
C	67 (Exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or non-profit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 (Interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or non-profit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A-D or F.
F	--	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	--	Undeveloped lands that are not permitted.

Source: 23 CFR 772.

For purposes of noise analysis modeling, study area noise receptors were assigned one of seven different land use or activity category identified in Table 24 and described as follows.

Activity Category A: This category includes exterior activities and relates to lands, as stated in 23 CFR Part 772, "on which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential for the area to continue to serve its intended purpose." Some examples of land uses designated as Activity Category A include the Tomb of the Unknown Soldier, a monastery, and an amphitheater. There are no receivers of this activity category located within the study area.

Activity Category B: This category includes exterior activities for single-family and multi-family residences. Consistent with regulatory guidance, the TNM modeling completed for residential properties assumed the following:

1. A single-family residence was generally considered a single TNM receiver. As previously explained, a receiver is a discrete point modeled in the TNM program where as a receptor is a defined as a representative location of a noise sensitive area for any of the land uses listed in Table 24.
2. A single TNM modeling receiver can represent many equivalent receptors or dwellings. For example, each floor of a multi-family building was modeled using one TNM receiver

point per floor, but each floor consisted of multiple receptors. Each residential unit of a multi-family dwelling (e.g., apartment building, condo) was considered a single receptor. Noise impacts identified at the one TNM modeling receiver point were assumed to occur at all receptors on that floor that shared a common noise environment.

3. It was assumed that each floor of the multi-family dwelling facing the proposed roadway improvements share a common noise environment. Therefore, one TNM receiver would be representative of future noise conditions of multiple receptors. A common noise environment consists of receptors that front the same roadway exposures.
4. In the case of multi-family buildings, exterior balconies of these dwellings were considered the primary noise sensitive area.

There are 534 receivers, representing 1,167 receptors, of this activity category located within the study area.

Activity Category C: This category includes exterior activities for non-residential public and private facilities that tolerate less noise (e.g., recording studios, amphitheaters, libraries) than Activity Category E (see below). Each structure generally was considered one receptor site for discrete areas of frequent human use such as hospitals, libraries, and public meeting rooms.

For cemeteries, parks, and other expansive Category C activities, the number of required receptors shall be determined as follows: 1) determine the typical linear highway frontage of residences in the surrounding community; and 2) divide the proposed highway frontage length of the Category C site by the amount determined in step 1 above with any remainder counting as an additional receptor. One Activity Category C Receiver, Receiver 303, is a common outdoor space that represents a common shared noise environment for the guests of an RV park. Using the method outlined above, it was determined that Receiver 303 represented a total of 50 receptors.

There are three receivers, representing 52 receptors, of this activity category located within the study area.

Activity Category D: This category includes interior impacts for Activity Category C facilities that may have a noise-sensitive interior use. An indoor analysis is typically done only after exhausting all outdoor analysis options. In situations where no exterior activities would be affected by the traffic noise, or where the exterior activities are far from or physically shielded from the roadway in a manner that prevents an impact on exterior activities, Activity Category D is typically used as the basis of determining noise impacts. As a result of the detailed analysis provided in the *Noise Technical Report: I-75 Managed Lanes*, it was determined that there are no receivers of this activity category associated with this project.

Activity Category E: This category includes exterior activities for certain commercial and developed lands (e.g., restaurants, offices, and hotels) that are less sensitive to highway noise. Each structure generally was considered one receptor for the purpose of disclosure. For receptors in this category that contain residential units (e.g., hotels), each room where sleep occurs that has a balcony or ground-level patio was considered one receptor. Multiple receivers for each floor were placed around the hotels to accurately assess noise levels as the receiver distance from the roadway varied. It was assumed each hotel room on each floor of the hotel shares a common noise environment. In the case of hotels or motels, exterior balconies of rented

rooms were considered the primary noise sensitive area. There are 116 receivers, representing 1,069 receptors, of this activity category located within the study area.

Activity Category F: This category includes land use activities that are generally not sensitive to highway noise. No noise analysis is required for this activity category. There are 55 receivers, representing 55 receptors, of this activity category located within the study area. Sound level results for these receiver locations were provided for disclosure to the property owners.

Activity Category G: This category addresses future noise levels on undeveloped lands without a building permit and undeveloped lands with a building permit. For permitted, undeveloped land, the site would be evaluated based on the Activity Category that is consistent with the permitted land. A review of available on-line Geographic Information System (GIS) databases provided by the Clayton and Henry County Planning and Zoning Departments was undertaken to identify any parcels within the corridor that are currently vacant/undeveloped but permitted for future development. The review of GIS databases confirmed that no permitted developments are located along the project corridor's vacant/undeveloped parcels. Additionally, coordination with the Henry County Environmental Compliance and Plan Review Office confirmed that no parcels within the corridor are permitted for future development. Therefore, none of the receivers analyzed for this assessment represent vacant/undeveloped parcels that are permitted for development.

For undeveloped lands without a building permit, noise contours were developed on vacant lands using the TNM. In accordance with 23 CFR Part 772 (772.17) and as outlined in the GDOT Noise Abatement Policy, information is to be provided to local officials "that can help them to be aware of incompatible land uses near state highways." Large undeveloped lands without permitted/anticipated future development along the project corridor were modeled at 50-foot intervals from the nearest edge of pavement.

Seven large undeveloped sites (Study Area A through Study Area G) where noise conditions are anticipated to change were identified along the corridor. The detailed results of this analysis are provided in the *Noise Technical Report: I-75 Managed Lanes*.

Existing noise levels were calculated using TNM for the major roadways located within the proposed project area. Field measurements were collected on October 10, 2012 from five locations within the study area. These noise monitoring sites are along the entire length of the project corridor and are depicted on Figure 12. Noise measurement sites included residential dwellings, a church, and hotels. They were considered representative of typical land uses within the study area and were selected based on a review of the proposed transportation improvements. Copies of the field measurement data sheets are provided in the *Noise Technical Report: I-75 Managed Lanes* on file at GDOT Office of Environmental Services. These field measurements were recorded to determine ambient noise levels and confirm the applicability of the noise model for this analysis. In accordance with 23 CFR 772.9(d), the use of traffic characteristics that would yield the worst traffic noise impact for the design year is required. The noise analysis uses LOS C traffic conditions for the purpose of satisfying this requirement. This represents a scenario where high volumes of traffic are able to freely flow at or above posted speeds. There is no standard for LOS C traffic volumes for intersections; therefore, peak hour traffic data was input into the model at these locations.

Figure 12. Noise Wall Locations and Impacted Receivers.

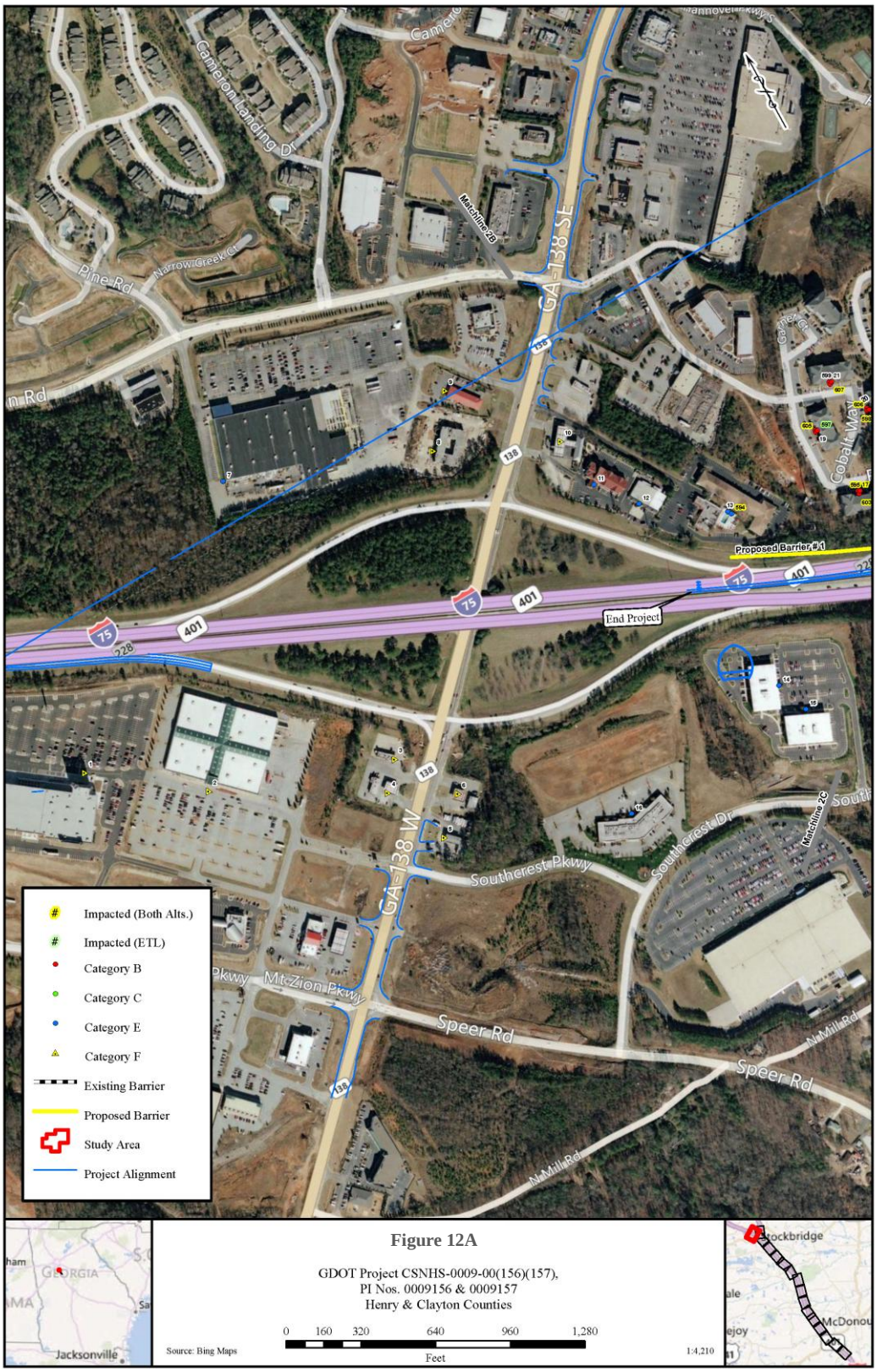


Figure 12B

GDOT Project CSNHS-0009-00(156)(157),
PI Nos. 0009156 & 0009157
Henry & Clayton Counties

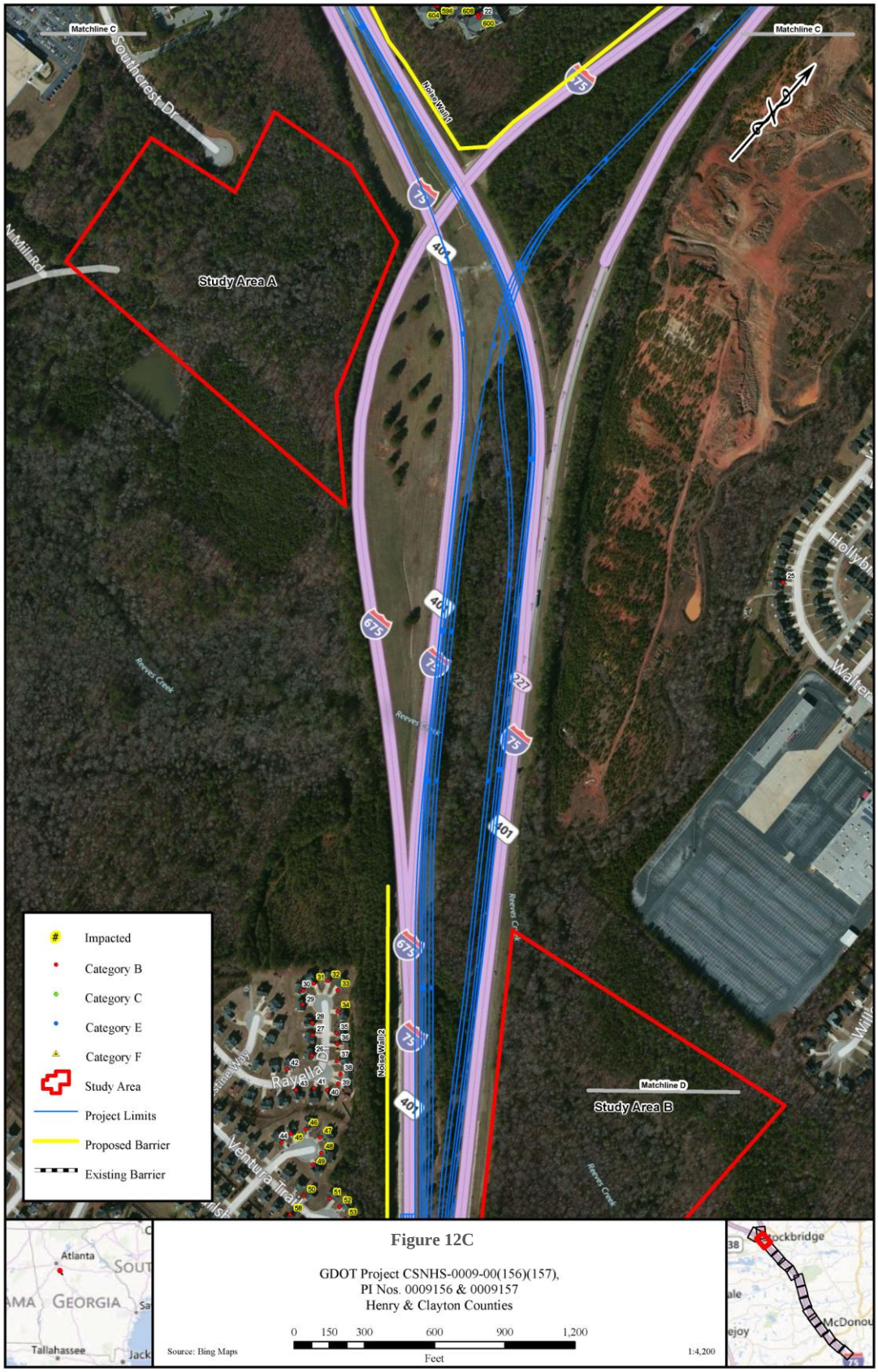


Figure 12C

GDOT Project CSNHS-0009-00(156)(157),
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Henry & Clayton Counties

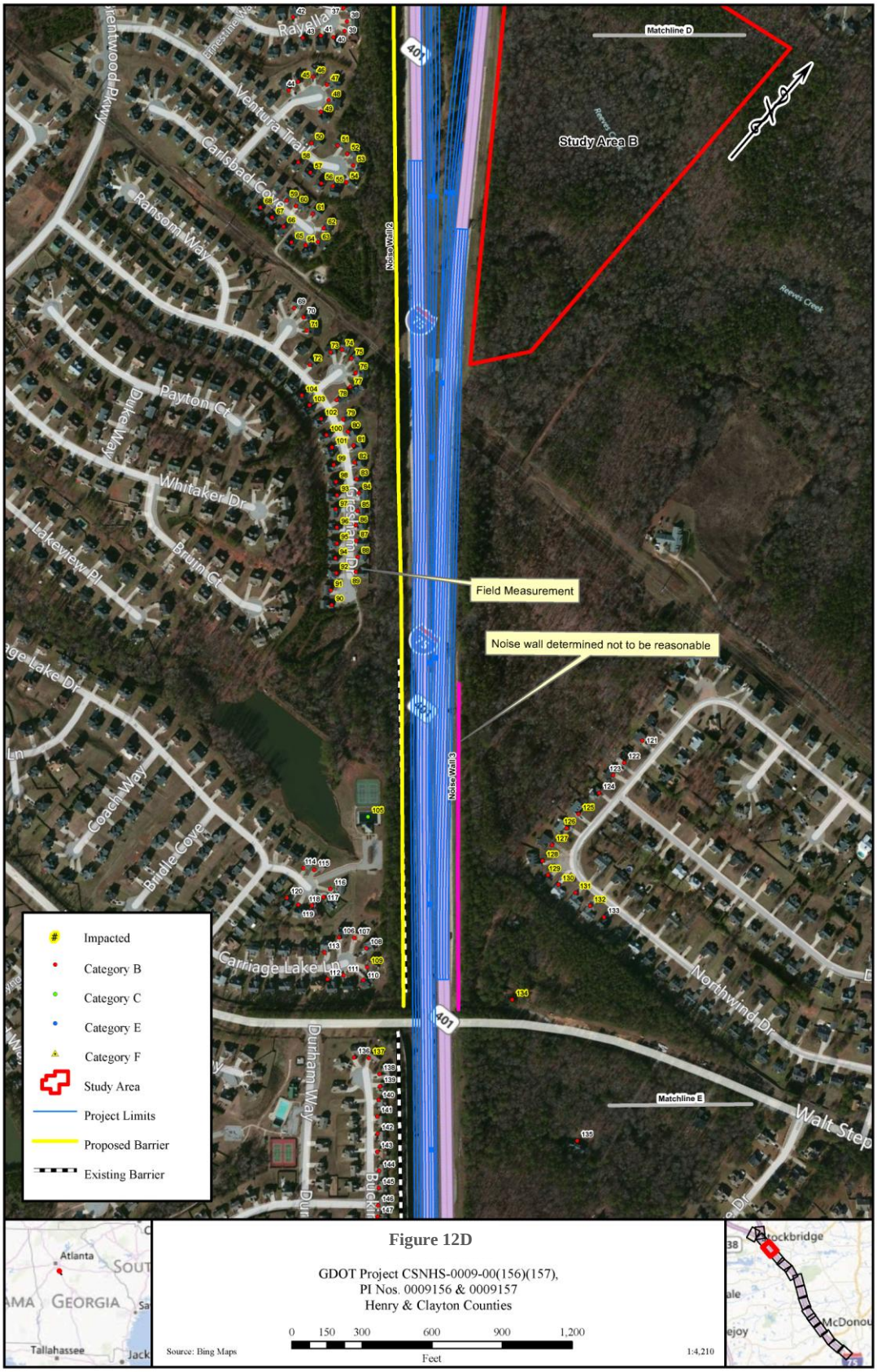


Figure 12D

GDOT Project CSNHS-0009-00(156)(157),
PI Nos. 0009156 & 0009157
Henry & Clayton Counties

Figure 12E

GDOT Project CSNHS-0009-00(156)(157),
PI Nos. 0009156 & 0009157
Henry & Clayton Counties

Figure 12F

GDOT Project CSNHS-0009-00(156)(157),
PI Nos. 0009156 & 0009157
Henry & Clayton Counties

Figure 12G

GDOT Project CSNHS-0009-00(156)(157),
PI Nos. 0009156 & 0009157
Henry & Clayton Counties

Figure 12H

GDOT Project CSNHS-0009-00(156)(157),
PI Nos. 0009156 & 0009157
Henry & Clayton Counties

Figure 12I

GDOT Project CSNHS-0009-00(156)(157),
PI Nos. 0009156 & 0009157
Henry & Clayton Counties

0 150 300 600 900 1,200
Feet

Source: Bing Maps

1:4,210

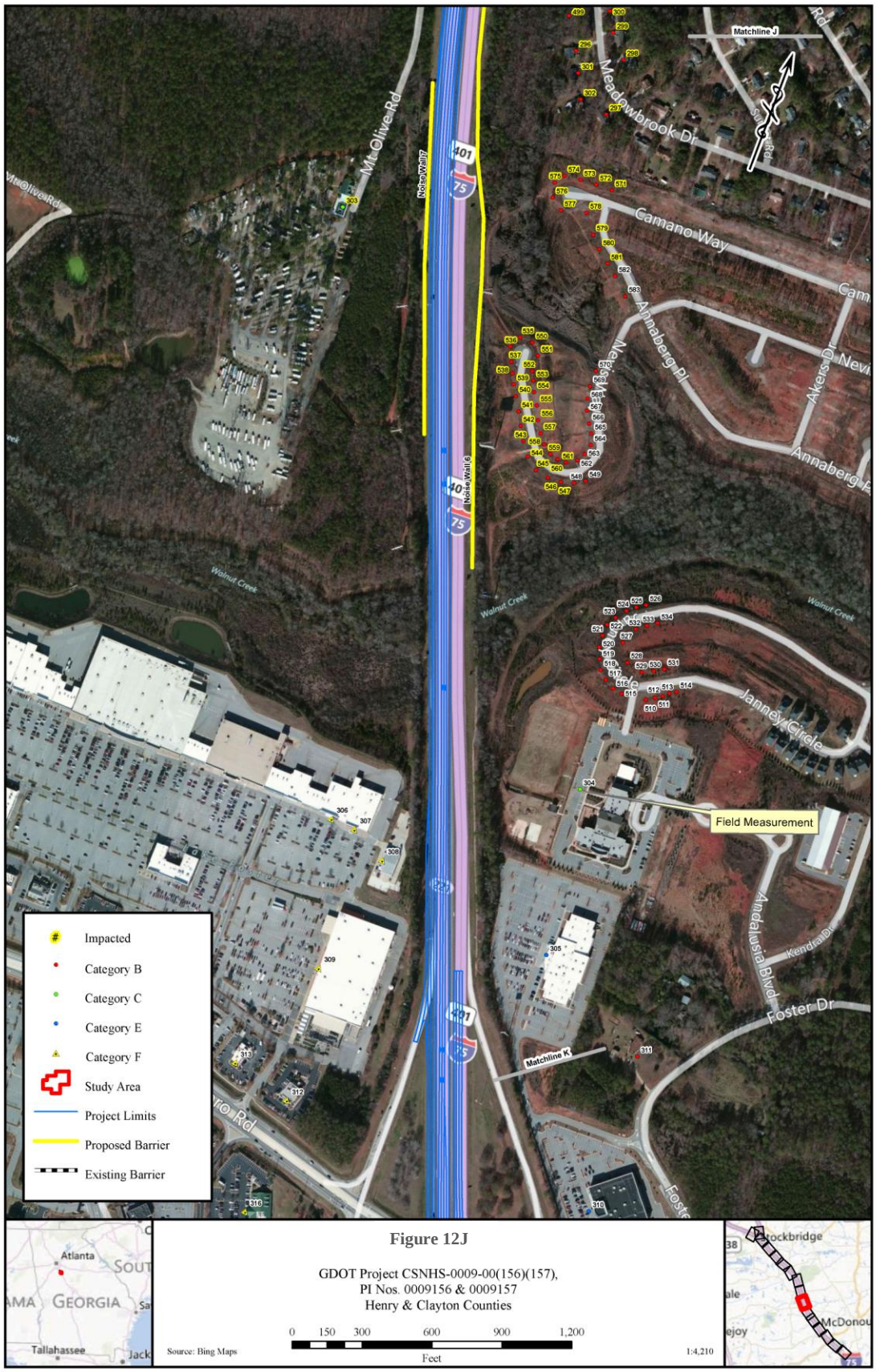


Figure 12J

GDOT Project CSNHS-0009-00(156)(157),
PI Nos. 0009156 & 0009157
Henry & Clayton Counties

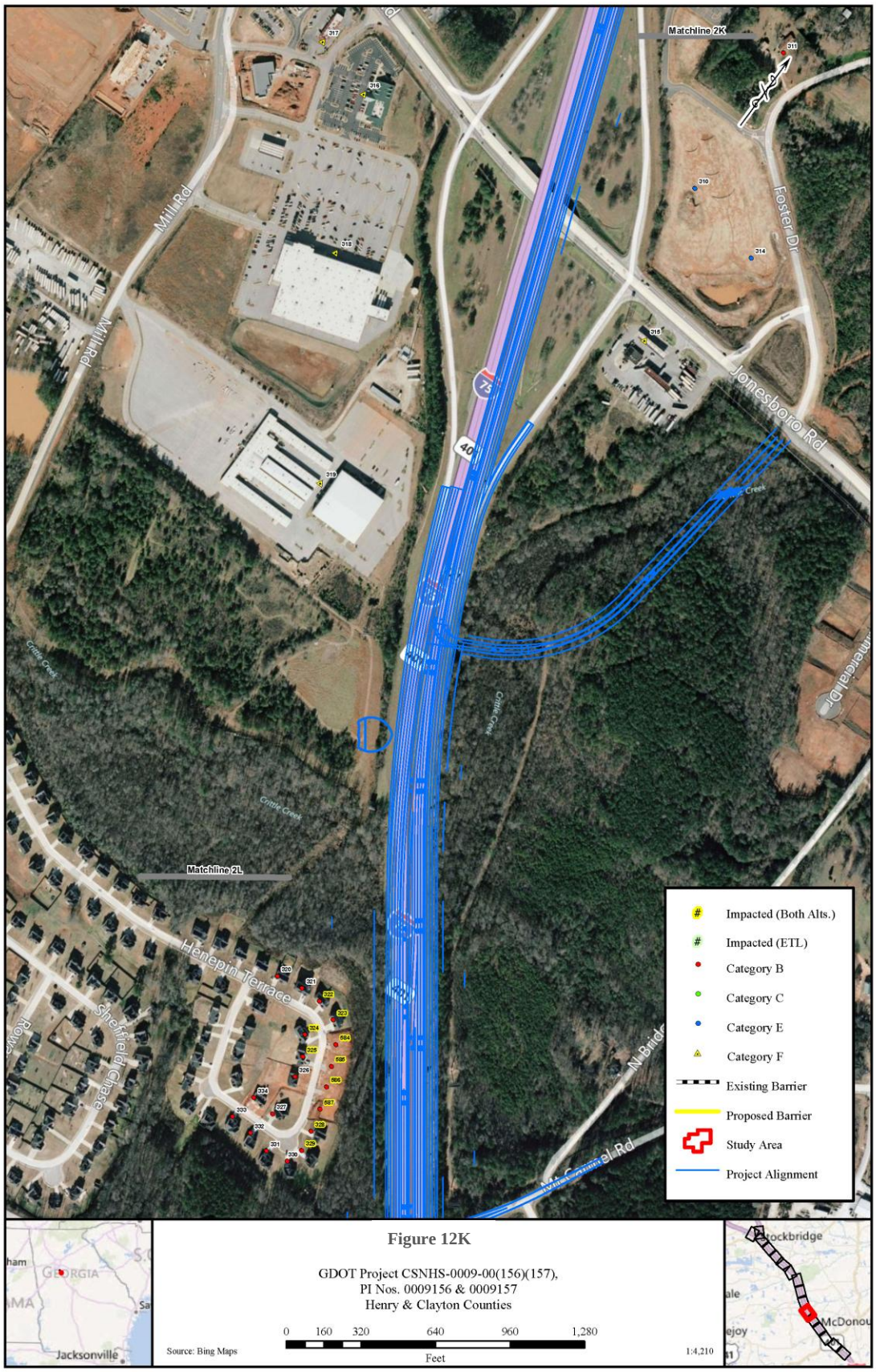


Figure 12K

GDOT Project CSNHS-0009-00(156)(157),
PI Nos. 0009156 & 0009157
Henry & Clayton Counties

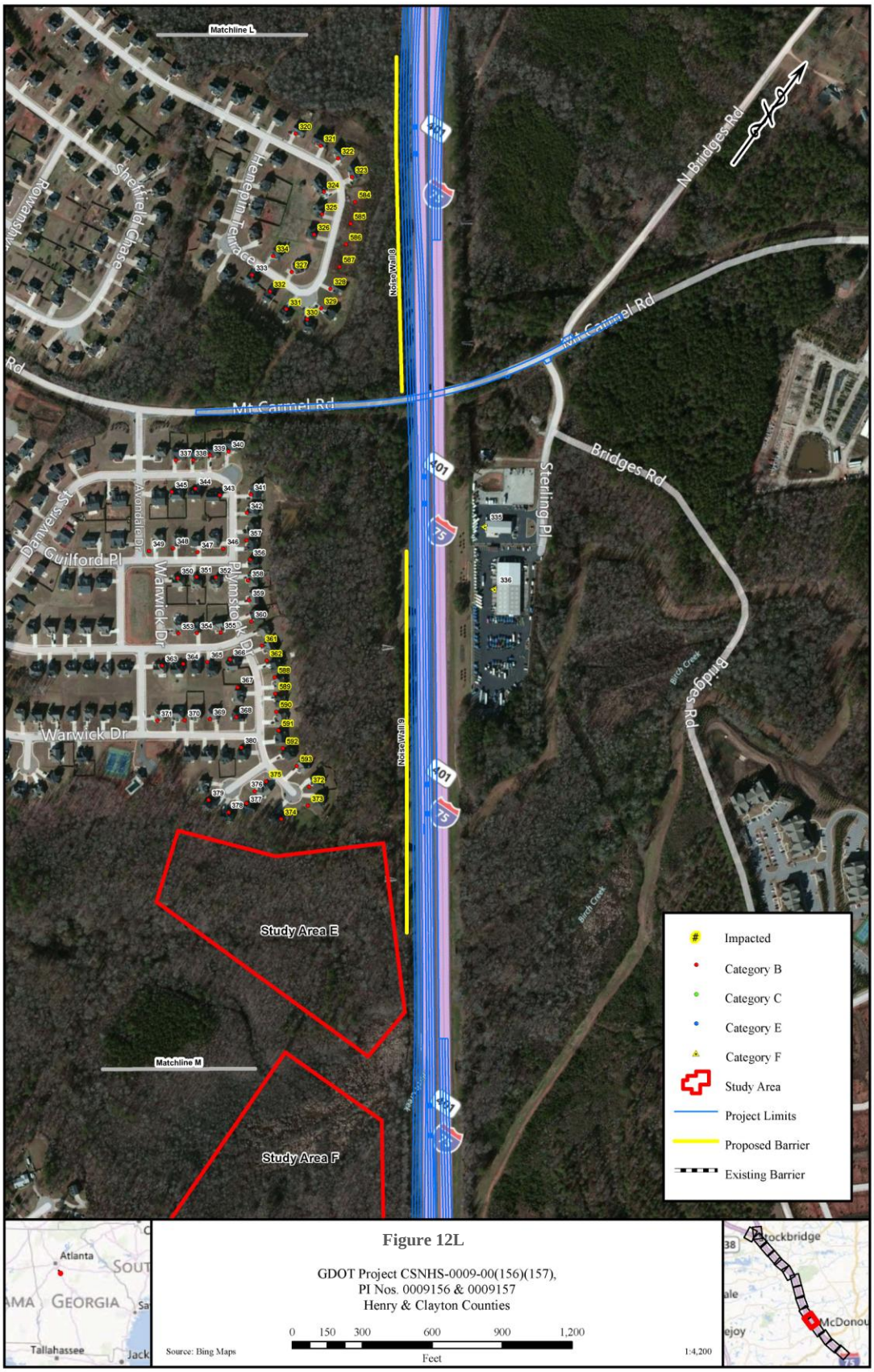


Figure 12L

GDOT Project CSNHS-0009-00(156)(157),
PI Nos. 0009156 & 0009157
Henry & Clayton Counties

Figure 12M

GDOT Project CSNHS-0009-00(156)(157),
PI Nos. 0009156 & 0009157
Henry & Clayton Counties

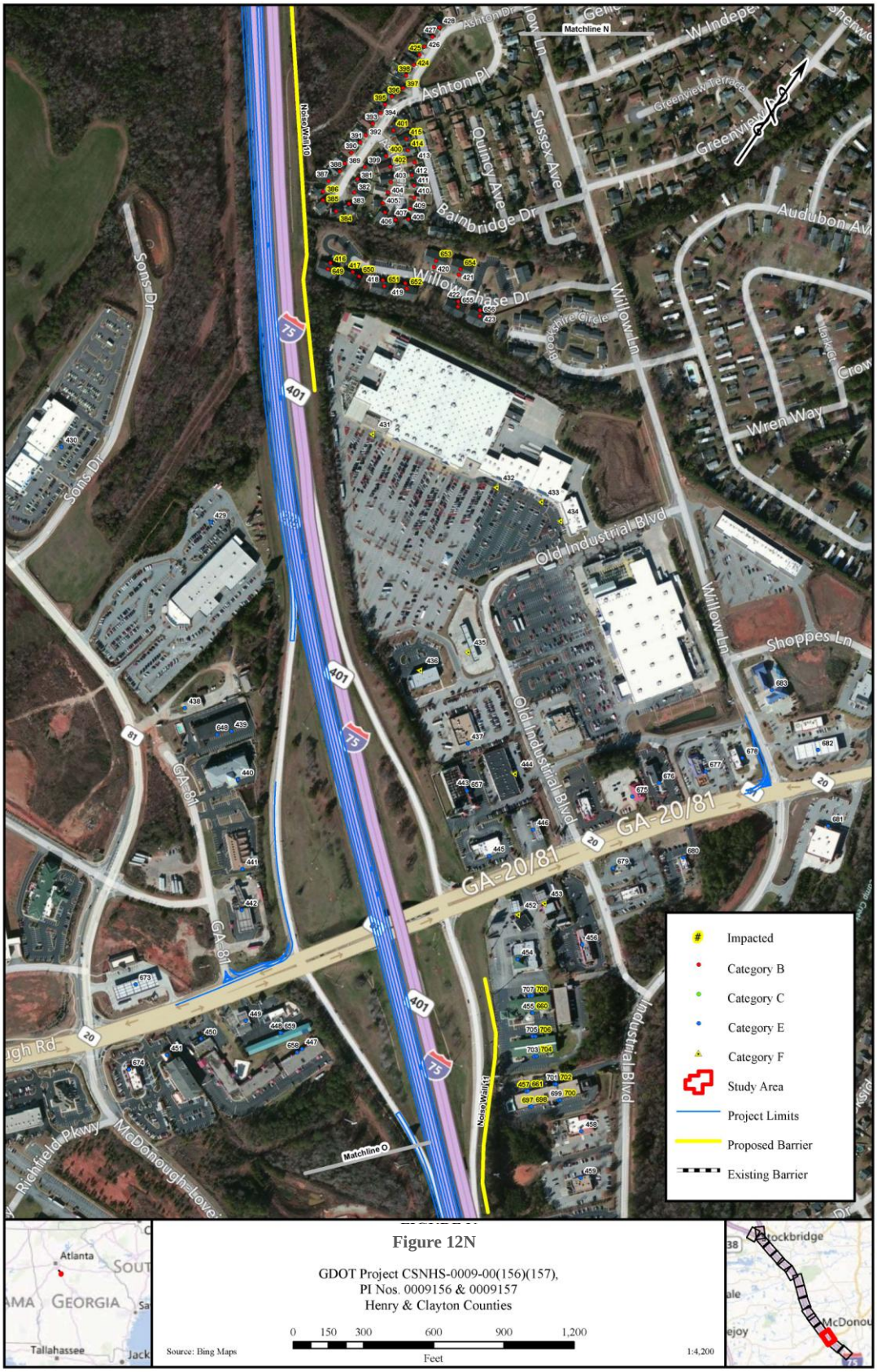


Figure 12N

GDOT Project CSNHS-0009-00(156)(157),
PI Nos. 0009156 & 0009157
Henry & Clayton Counties

0 150 300 600 900 1,200
Feet

Source: Bing Maps

1:4,200

Figure 12O

GDOT Project CSNHS-0009-00(156)(157),
PI Nos. 0009156 & 0009157
Henry & Clayton Counties

Figure 12P

GDOT Project CSNHS-0009-00(156)(157),
PI Nos. 0009156 & 0009157
Henry & Clayton Counties

Noise measurements for each site were performed in accordance with procedures described in Measurement of Highway-Related Noise (FHWA, 1996). The measurements were recorded using a laboratory calibrated Bruel & Kjaer Model 2238 sound level meter. All measurements were performed under acceptable weather and street surface conditions consistent with GDOT policy guidelines. These measurements were taken for 15 minutes at each location. Field measurements indicate existing noise levels between 55.9 and 68.9 dBA. The locations of field measurements and the observed sound levels are provided in Table 25.

Table 25. FHWA NAC Hourly A-Weighted Sound Level (dBA)

Field Receiver Location	Figure Location	Field Measurement	TNM Measurement	Difference
Receiver 89 (Single-family residence)	12D	68.9	68.8	0.1
Receiver 300 (Single-family residence)	12I	63.1	65.3	2.2
Receiver 304 (Church)	12J	68.0	65.3	2.7
Receiver 460 (Hotel)	12O	67.6	70.5	2.9
Receiver 482 (Hotel)	12P	55.9	58.9	3.0

Source: Noise Technical Report: I-75 Managed Lanes, December 2012.

Field measurements were compared with TNM-modeled noise levels to confirm the applicability of the model for this analysis. Traffic counts were taken along the project corridor during each field measurement using video recording. Total traffic counts were then gathered from the video and input to TNM to validate the model. The comparisons of field measurements to modeled levels are shown in Table 25. The TNM modeled results for the field measurements indicated existing noise levels between 58.9 and 70.5 dBA.

A difference of approximately three decibels is generally considered acceptable. Because each of the field measurements were within the accepted three-decibel range of the model, the modeled results are considered applicable for use in analysis of noise levels within the study area. Therefore, existing noise levels for the receivers within the study area were calculated with TNM for comparison with the Build and No-Build alternatives.

In accordance with 23 CFR 772.9(d), the use of traffic characteristics that would yield the worst traffic noise impact for the design year is required. This analysis uses LOS C traffic conditions for the purpose of satisfying this requirement. This represents a scenario where high volumes of traffic are able to freely flow at or above posted speeds. There is no standard for LOS C traffic volumes for intersections; therefore, peak hour traffic data was input into the model at these locations. Truck percentages (%) were based on traffic provided in the *Traffic Study: I-75 Managed Lanes from SR 138 to SR 155*. As a result, existing truck percentages of 9% (3% medium truck, 6% heavy truck) were used along I-75. The distribution of this truck percentage for medium and heavy trucks was based on field reconnaissance of the project corridor.

c. Noise Impact Assessment Methods

Because the roadway footprint would be identical for each Build Alternative, the findings associated with the Build Alternative are applicable to both Alternative 1 and Alternative 2. The methodology for predicting future noise levels used the FHWA TNM Version 2.5. The TNM model incorporates sound emission and sound propagation algorithms for each vehicle type

category that are based on well-established theory and accepted international standards. In general, sound propagation beyond the travel lanes takes place over acoustically "soft" ground conditions, such as a lawn or other types of vegetation surfaces. For the purposes of this study, the type of ground surface used throughout the study area was lawn. The model also addresses ground terrain physical features, roadway geometry, receptor distance, vehicle volumes, and vehicle operating speeds.

Major roadways and sensitive receivers were modeled in TNM by importing roadway design files into GIS files and then importing the roadway and receiver data into the TNM program. Each travel lane within the project corridor was modeled as an individual roadway. Inside and outside shoulders were also individually modeled as roadways with no traffic. Elevations for the TNM model runs were established from Henry County's digital elevation model. Lastly, the number of automobiles, medium trucks, and heavy trucks and their associated travel speeds for each modeled roadway segment were input into the model. Vehicles permitted in the managed lanes include cars, emergency vehicles, maintenance vehicles, military vehicles, registered transit vehicles – including vanpools, and school buses. In accordance with 23 CFR 772.9(d), the use of traffic characteristics that would yield the worst traffic noise impact for the design year is required. This analysis uses LOS C traffic conditions for the purpose of satisfying this requirement. This represents a scenario where high volumes of traffic are able to freely flow at or above posted speeds. There is no standard for LOS C traffic volumes for intersections; therefore, peak hour traffic data was input into the model at these locations. Truck percentages (%) were based on traffic provided in the *Traffic Study: I-75 Managed Lanes from SR 138 to SR 155*. As a result, future condition truck percentages were modeled at 10% (3% medium truck, 7% heavy truck).

At three locations within the corridor, two TNM modeling runs were prepared for the same location. These two runs were prepared to account for variation in the AM and PM peak traffic operations in close proximity to adjacent receivers. For example, at the proposed interchange of the project with I-675 and I-75, the managed lane would contain a split that provides access to the northbound or southbound general purpose lanes, depending on the time of day. LOS C traffic was placed on the northbound ramp to reflect AM peak operating conditions to accurately reflect the sound levels at this location. Conversely, LOS C traffic was placed on the travel lanes of the southbound ramp to reflect travel conditions during the PM peak. At locations that would be affected by these conditions, the higher of the two noise results (the "worst case" condition) was presented as the Build Alternative result. Similar modeling was employed at the project's access ramp to Jonesboro Road and at the southern terminus where vehicles access/exit the managed lane system.

Four noise walls currently exist along the project corridor. Three of these noise walls would remain under either Build Alternative. One of the walls that would remain is located along the west side of I-75 just south of the Walt Stephens Road overpass. The other two walls are located directly across from each other, just north of the Eagles Landing Parkway/Hudson Bridge interchange. All existing walls are shown on Figure 12.

All four existing walls were included in the TNM models to evaluate their effectiveness; however, the existing noise wall located north of Walt Stephens Road on the west side of I-75 would be removed to provide adequate space for the managed lanes. Therefore, this noise wall

was removed from the modeling associated with the Build Alternatives. Noise wall #2 is proposed to replace this noise wall.

Three of the existing noise walls were constructed as abatement measures for previously completed GDOT projects. The fourth wall, located along the east side of I-75 just north of the Eagles Landing Parkway/Hudson Bridge interchange, was constructed by a private developer. As detailed in a further section, this wall does not provide sufficient abatement to the receivers located behind it. Noise wall #6 is proposed to provide abatement to these receivers.

Additionally, GDOT Project PI 0010126, which consists of the addition of a northbound auxiliary lane between Eagles Landing Parkway/Hudson Bridge and Walt Stephens Road, is scheduled to be completed by April 2013. Noise modeling for this project has resulted in construction of a noise wall located along the east side of I-75 at Flippen Road. Because this noise wall is currently under construction, the dimensions of this wall have been included as an existing noise wall in both the build and no build TNM modeling.

d. Noise Impact Assessment

The FHWA regulations identify NAC levels at which noise impact occurs and abatement must be considered for feasibility and reasonableness. Under these regulations, the proposed project would result in noise impacts if the future noise levels approach or exceed the NAC thresholds for the appropriate Activity Category (Table 25).

Furthermore, FHWA regulations indicate that, "noise impacts occur when the predicted traffic noise levels approach or exceed the NAC levels, or when the predicted design year traffic noise levels substantially exceed the existing noise levels." As such, GDOT has determined that substantial noise level increases (15 dBA or more) constitute noise impacts of equal weight as those impacts identified from NAC exceedances. For example, a residential property with existing peak-hour noise levels of 50 dBA projected to increase by 15 dBA is considered impacted, even though the absolute predicted build noise level of 65 dBA is below 66 dBA NAC.

At locations where noise impacts were identified, GDOT traffic noise policy guidelines were used to evaluate and determine the feasibility and reasonableness of noise mitigation measures.

Noise levels in the No-Build Alternative would be higher than the Build Alternatives at some receiver locations. The reversible lanes would be constructed along the existing southbound travel lanes in some locations and along the existing northbound travel lanes at others. Therefore, the proposed project would move some traffic away from receiver locations in the Build Alternatives, which would result in decreased noise levels. Predicted future noise levels for the No-Build Alternative range from 55.9 dBA to 75.4 dBA. Predicted future noise levels for both Build Alternatives range from 55.3 dBA to 75.5 dBA.

There are 237 receivers, representing 606 receptors, along the project corridor predicted to be impacted by the Build Alternative based on the NAC established by 23 CFR Part 772. The receivers that would experience such impacts are identified in Table 26 and highlighted in yellow on Figure 12.

Direct Effects. For determination of effects, Alternatives 1 and 2 have the same physical footprint and configuration. For the Build Alternatives, there are 237 receivers, representing 606

receptors, along the project corridor predicted to be impacted based on the NAC established by 23 CFR 772 (Table 26).

For Alternative 3, the No-Build Alternative, there are 193 receivers, representing 452 receptors, along the project corridor predicted to exceed the NAC established by 23 CFR 772 (Table 26). Receptors are identified with an asterisk in Table 26 if the No-Build noise level exceeds that of the Build Alternatives.

Receptors identified in bold for each of the Alternatives experience noise levels that exceed or approach the NAC.

No sites along the project corridor would experience noise level increases of greater than 15 dBA. Therefore, no sites are considered impacted by the Build Alternatives based on the substantial increase criteria.

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
1*	12A	1	Commercial/71	F	55.9	----	56.2	0.3	----	55.3	-0.6	----
2*	12A	1	Commercial/71	F	62.0	----	62.3	0.3	----	59.8	-2.2	----
3*	12A	1	Commercial/71	F	60.7	----	61.0	0.3	----	59.7	-1.0	----
4*	12A	1	Commercial/71	F	59.0	----	59.4	0.4	----	58.4	-0.6	----
5*	12A	1	Commercial/71	F	57.1	----	57.4	0.3	----	56.3	-0.8	----
6*	12A	1	Commercial/71	F	58.6	----	58.9	0.3	----	57.9	-0.7	----
7	12A	1	Hotel/71	E	60.2	----	60.5	0.3	----	61.0	0.8	----
8	12A	1	Commercial/71	F	61.9	----	62.2	0.3	----	62.2	0.3	----
9*	12A	1	Commercial/71	F	59.0	----	59.4	0.4	----	59.1	0.1	----
10	12A	1	Commercial/71	F	61.9	----	62.0	0.1	----	62.1	0.2	----
11*	12A	1	Hotel/71	E	66.5	----	66.7	0.2	----	66.4	-0.1	----
12*	12A	1	Commercial/71	E	68.9	----	69.1	0.2	----	68.2	-0.7	----
13*	**12A**	**15**	**Hotel/71**	**E**	**71.9**	**Sound Level**	**72.2**	**0.3**	**Sound Level**	**71.7**	**-0.2**	**Sound Level**
14*	12A	1	Commercial/71	E	66.3	----	66.6	0.3	----	65.2	-1.1	----
15	12A	1	Commercial/71	E	62.2	----	62.6	0.4	----	62.6	0.4	----
16*	12A	1	Single Family/67	E	57.2	----	57.5	0.3	----	57.2	0.0	----
17	**12B**	**5**	**Multi Family/67**	**B**	**70.3**	**Sound Level**	**70.5**	**0.2**	**Sound Level**	**70.8**	**0.5**	**Sound Level**
18	**12B**	**4**	**Multi Family/67**	**B**	**71.9**	**Sound Level**	**72.1**	**0.2**	**Sound Level**	**72.8**	**0.9**	**Sound Level**
19*	12A	5	Multi Family/67	B	64.8	----	65.1	0.3	----	65.0	0.2	----
20	12B	5	Multi Family/67	B	63.8	----	64.1	0.3	----	64.1	0.3	----
21*	12A	5	Multi Family/67	B	60.6	----	60.9	0.3	----	60.5	-0.1	----
22	12B	5	Multi Family/67	B	65.4	----	65.6	0.2	----	65.8	0.4	----
23	12B	4	Multi Family/67	B	62.1	----	62.4	0.3	----	62.5	0.4	----
24	12B	4	Multi Family/67	B	60.7	----	61.0	0.3	----	61.0	0.3	----
25	12C	1	Single Family/67	B	59.6	----	59.9	0.3	----	61.4	1.8	----
26	12C	1	Single Family/67	B	60.3	----	60.4	0.1	----	61.7	1.4	----
27	12C	1	Single Family/67	B	61.0	----	61.2	0.2	----	63.1	2.1	----
28	12C	1	Single Family/67	B	62.0	----	62.2	0.2	----	64.5	2.5	----
29	12C	1	Single Family/67	B	62.1	----	62.6	0.5	----	64.0	1.9	----
30	12C	1	Single Family/67	B	63.6	----	63.9	0.3	----	65.7	2.1	----

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
31	**12C**	**1**	**Single Family/67**	**B**	**64.5**	**----**	**64.8**	**0.3**	**----**	**66.4**	**1.9**	**Sound Level**
32	**12C**	**1**	**Single Family/67**	**B**	**65.7**	**----**	**66.0**	**0.3**	**Sound Level**	**68.1**	**2.4**	**Sound Level**
33	**12C**	**1**	**Single Family/67**	**B**	**67.4**	**Sound Level**	**67.7**	**0.3**	**Sound Level**	**71.3**	**3.9**	**Sound Level**
34	**12C**	**1**	**Single Family/67**	**B**	**66.5**	**Sound Level**	**66.8**	**0.3**	**Sound Level**	**68.6**	**2.1**	**Sound Level**
35	12C	1	Single Family/67	B	57.4	----	57.8	0.4	----	58.5	1.1	----
36	12C	1	Single Family/67	B	55.8	----	56.2	0.4	----	56.8	1.0	----
37	12C	1	Single Family/67	B	57.7	----	57.8	0.1	----	58.2	0.5	----
38	12C	1	Single Family/67	B	61.8	----	62.1	0.3	----	62.9	1.1	----
39	12C	1	Single Family/67	B	63.4	----	63.7	0.3	----	64.5	1.1	----
40	12D	1	Single Family/67	B	62.6	----	62.9	0.3	----	63.4	0.8	----
41	12D	1	Single Family/67	B	61.1	----	61.3	0.2	----	61.8	0.7	----
42	12C	1	Single Family/67	B	59.7	----	60.0	0.3	----	61.0	1.3	----
43	12D	1	Single Family/67	B	60.9	----	61.1	0.2	----	62.1	1.2	----
44	12D	1	Single Family/67	B	63.6	----	63.9	0.3	----	65.8	2.2	----
45	**12D**	**1**	**Single Family/67**	**B**	**64.1**	**----**	**64.4**	**0.3**	**----**	**66.1**	**2.0**	**Sound Level**
46	**12D**	**1**	**Single Family/67**	**B**	**64.4**	**----**	**64.7**	**0.3**	**----**	**66.3**	**1.9**	**Sound Level**
47	**12D**	**1**	**Single Family/67**	**B**	**65.2**	**----**	**65.5**	**0.3**	**----**	**67.3**	**2.1**	**Sound Level**
48	**12D**	**1**	**Single Family/67**	**B**	**67.0**	**Sound Level**	**67.3**	**0.3**	**Sound Level**	**69.5**	**2.5**	**Sound Level**
49	**12D**	**1**	**Single Family/67**	**B**	**67.8**	**Sound Level**	**68.2**	**0.4**	**Sound Level**	**69.9**	**2.1**	**Sound Level**
50	**12D**	**1**	**Single Family/67**	**B**	**68.6**	**Sound Level**	**68.9**	**0.3**	**Sound Level**	**70.0**	**1.4**	**Sound Level**
51	**12D**	**1**	**Single Family/67**	**B**	**70.6**	**Sound Level**	**70.8**	**0.2**	**Sound Level**	**72.5**	**1.9**	**Sound Level**

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
52	12D	1	Single Family/67	B	71.2	Sound Level	71.4	0.2	Sound Level	73.1	1.9	Sound Level
53	12D	1	Single Family/67	B	71.6	Sound Level	71.9	0.3	Sound Level	73.5	1.9	Sound Level
54	12D	1	Single Family/67	B	71.3	Sound Level	71.4	0.1	Sound Level	72.9	1.6	Sound Level
55	12D	1	Single Family/67	B	71.1	Sound Level	71.3	0.2	Sound Level	72.2	1.1	Sound Level
56	12D	1	Single Family/67	B	70.5	Sound Level	70.8	0.3	Sound Level	71.6	1.1	Sound Level
57	12D	1	Single Family/67	B	69.5	Sound Level	69.8	0.3	Sound Level	70.7	1.2	Sound Level
58	12D	1	Single Family/67	B	68.1	Sound Level	68.4	0.3	Sound Level	69.4	1.3	Sound Level
59	12D	1	Single Family/67	B	68.4	Sound Level	68.6	0.2	Sound Level	69.3	0.9	Sound Level
60	12D	1	Single Family/67	B	69.2	Sound Level	69.6	0.4	Sound Level	70.2	1.0	Sound Level
61	12D	1	Single Family/67	B	70.6	Sound Level	70.9	0.3	Sound Level	71.4	0.8	Sound Level
62	12D	1	Single Family/67	B	71.2	Sound Level	71.6	0.4	Sound Level	72.0	0.8	Sound Level
63	12D	1	Single Family/67	B	70.3	Sound Level	70.5	0.2	Sound Level	71.0	0.7	Sound Level
64	12D	1	Single Family/67	B	68.6	Sound Level	68.8	0.2	Sound Level	69.5	0.9	Sound Level
65	12D	1	Single Family/67	B	66.8	Sound Level	67.1	0.3	Sound Level	67.9	1.1	Sound Level
66	12D	1	Single Family/67	B	67.0	Sound Level	67.3	0.3	Sound Level	68.1	1.1	Sound Level
67	12D	1	Single Family/67	B	65.9	----	66.2	0.3	Sound Level	67.1	1.2	Sound Level

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
68	**12D**	**1**	**Single Family/67**	**B**	**64.8**	**----**	**65.1**	**0.3**	**----**	**66.2**	**1.4**	**Sound Level**
69	12D	1	Single Family/67	B	62.9	----	63.3	0.4	----	64.6	1.7	----
70	12D	1	Single Family/67	B	64.6	----	65.0	0.4	----	65.9	1.3	----
71	**12D**	**1**	**Single Family/67**	**B**	**66.3**	**Sound Level**	**66.6**	**0.3**	**Sound Level**	**67.2**	**0.9**	**Sound Level**
72	**12D**	**1**	**Single Family/67**	**B**	**68.7**	**Sound Level**	**68.9**	**0.2**	**Sound Level**	**69.1**	**0.4**	**Sound Level**
73*	**12D**	**1**	**Single Family/67**	**B**	**70.3**	**Sound Level**	**70.5**	**0.2**	**Sound Level**	**70.4**	**0.1**	**Sound Level**
74*	**12D**	**1**	**Single Family/67**	**B**	**71.3**	**Sound Level**	**71.5**	**0.2**	**Sound Level**	**71.4**	**0.1**	**Sound Level**
75*	**12D**	**1**	**Single Family/67**	**B**	**72.4**	**Sound Level**	**72.7**	**0.3**	**Sound Level**	**72.5**	**0.1**	**Sound Level**
76*	**12D**	**1**	**Single Family/67**	**B**	**73.2**	**Sound Level**	**73.4**	**0.2**	**Sound Level**	**73.1**	**-0.1**	**Sound Level**
77*	**12D**	**1**	**Single Family/67**	**B**	**72.8**	**Sound Level**	**73.1**	**0.3**	**Sound Level**	**72.8**	**0.0**	**Sound Level**
78	**12D**	**1**	**Single Family/67**	**B**	**71.7**	**Sound Level**	**72.0**	**0.3**	**Sound Level**	**72.1**	**0.4**	**Sound Level**
79	**12D**	**1**	**Single Family/67**	**B**	**70.6**	**Sound Level**	**70.8**	**0.2**	**Sound Level**	**70.9**	**0.3**	**Sound Level**
80	**12D**	**1**	**Single Family/67**	**B**	**69.4**	**Sound Level**	**69.7**	**0.3**	**Sound Level**	**69.9**	**0.5**	**Sound Level**
81	**12D**	**1**	**Single Family/67**	**B**	**68.0**	**Sound Level**	**68.3**	**0.3**	**Sound Level**	**68.4**	**0.4**	**Sound Level**
82	**12D**	**1**	**Single Family/67**	**B**	**67.4**	**Sound Level**	**67.7**	**0.3**	**Sound Level**	**68.1**	**0.7**	**Sound Level**
83	**12D**	**1**	**Single Family/67**	**B**	**69.3**	**Sound Level**	**69.5**	**0.2**	**Sound Level**	**70.0**	**0.7**	**Sound Level**
84	**12D**	**1**	**Single Family/67**	**B**	**69.7**	**Sound Level**	**69.9**	**0.2**	**Sound Level**	**70.7**	**1.0**	**Sound Level**

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
85	12D	1	Single Family/67	B	69.6	Sound Level	69.8	0.2	Sound Level	70.6	1.0	Sound Level
86	12D	1	Single Family/67	B	69.3	Sound Level	69.6	0.3	Sound Level	70.5	1.2	Sound Level
87	12D	1	Single Family/67	B	69.0	Sound Level	69.3	0.3	Sound Level	70.2	1.2	Sound Level
88	12D	1	Single Family/67	B	68.9	Sound Level	69.2	0.3	Sound Level	70.1	1.2	Sound Level
89	12D	1	Single Family/67	B	70.1	Sound Level	70.4	0.3	Sound Level	71.4	1.3	Sound Level
90	12D	1	Single Family/67	B	69.7	Sound Level	70.0	0.3	Sound Level	70.9	1.2	Sound Level
91	12D	1	Single Family/67	B	70.4	Sound Level	70.6	0.2	Sound Level	71.3	0.9	Sound Level
92	12D	1	Single Family/67	B	71.7	Sound Level	71.9	0.2	Sound Level	72.5	0.8	Sound Level
93	12D	1	Single Family/67	B	72.0	Sound Level	72.1	0.1	Sound Level	72.5	0.5	Sound Level
94	12D	1	Single Family/67	B	72.0	Sound Level	72.1	0.1	Sound Level	72.8	0.8	Sound Level
95	12D	1	Single Family/67	B	72.2	Sound Level	72.3	0.1	Sound Level	73.0	0.8	Sound Level
96	12D	1	Single Family/67	B	72.3	Sound Level	72.5	0.2	Sound Level	73.2	0.9	Sound Level
97	12D	1	Single Family/67	B	72.0	Sound Level	72.2	0.2	Sound Level	73.0	1.0	Sound Level
98	12D	1	Single Family/67	B	71.1	Sound Level	71.4	0.3	Sound Level	71.8	0.7	Sound Level
99	12D	1	Single Family/67	B	69.2	Sound Level	69.4	0.2	Sound Level	70.1	0.9	Sound Level
100	12D	1	Single Family/67	B	69.6	Sound Level	69.8	0.2	Sound Level	70.2	0.6	Sound Level

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
101	**12D**	**1**	**Single Family/67**	**B**	**68.1**	**Sound Level**	**68.4**	**0.3**	**Sound Level**	**68.8**	**0.7**	**Sound Level**
102	**12D**	**1**	**Single Family/67**	**B**	**70.5**	**Sound Level**	**70.6**	**0.1**	**Sound Level**	**71.0**	**0.5**	**Sound Level**
103	**12D**	**1**	**Single Family/67**	**B**	**69.6**	**Sound Level**	**69.8**	**0.2**	**Sound Level**	**70.2**	**0.6**	**Sound Level**
104	**12D**	**1**	**Single Family/67**	**B**	**68.8**	**Sound Level**	**69.1**	**0.3**	**Sound Level**	**69.2**	**0.4**	**Sound Level**
105	**12D**	**1**	**Recreation Area/67**	**C**	**65.9**	**----**	**66.1**	**0.2**	**Sound Level**	**73.6**	**7.7**	**Sound Level**
106	12D	1	Single Family/67	B	59.5	----	59.9	0.4	----	63.6	4.1	----
107	12D	1	Single Family/67	B	60.1	----	60.5	0.4	----	64.4	4.3	----
108	12D	1	Single Family/67	B	62.1	----	62.6	0.5	----	65.8	3.7	----
109	**12D**	**1**	**Single Family/67**	**B**	**62.7**	**----**	**63.3**	**0.6**	**----**	**66.8**	**4.1**	**Sound Level**
110	12D	1	Single Family/67	B	61.7	----	62.3	0.6	----	65.5	3.8	----
111	12D	1	Single Family/67	B	59.8	----	60.3	0.5	----	63.3	3.5	----
112	12D	1	Single Family/67	B	59.3	----	59.7	0.4	----	62.5	3.2	----
113	12D	1	Single Family/67	B	59.4	----	59.9	0.5	----	62.9	3.5	----
114	12D	1	Single Family/67	B	61.1	----	61.4	0.3	----	65.1	4.0	----
115	12D	1	Single Family/67	B	61.3	----	61.6	0.3	----	65.6	4.3	----
116	12D	1	Single Family/67	B	60.9	----	61.2	0.3	----	65.8	4.9	----
117	12D	1	Single Family/67	B	60.9	----	61.2	0.3	----	65.1	4.2	----
118	12D	1	Single Family/67	B	60.6	----	61.0	0.4	----	64.5	3.9	----
119	12D	1	Single Family/67	B	60.4	----	60.8	0.4	----	64.2	3.8	----
120	12D	1	Single Family/67	B	60.1	----	60.4	0.3	----	63.9	3.8	----
121	12D	1	Single Family/67	B	63.1	----	63.3	0.2	----	64.0	0.9	----
122	12D	1	Single Family/67	B	63.2	----	63.9	0.7	----	64.3	1.1	----
123	12D	1	Single Family/67	B	63.8	----	64.2	0.4	----	64.7	0.9	----
124	12D	1	Single Family/67	B	64.3	----	64.9	0.6	----	65.5	1.2	----
125	**12D**	**1**	**Single Family/67**	**B**	**65.8**	**----**	**66.5**	**0.7**	**Sound Level**	**67.2**	**1.4**	**Sound Level**

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
126	**12D**	**1**	**Single Family/67**	**B**	**66.8**	**Sound Level**	**67.3**	**0.5**	**Sound Level**	**68.2**	**1.4**	**Sound Level**
127	**12D**	**1**	**Single Family/67**	**B**	**67.8**	**Sound Level**	**68.5**	**0.7**	**Sound Level**	**69.4**	**1.6**	**Sound Level**
128	**12D**	**1**	**Single Family/67**	**B**	**68.5**	**Sound Level**	**69.3**	**0.8**	**Sound Level**	**70.3**	**1.8**	**Sound Level**
129	**12D**	**1**	**Single Family/67**	**B**	**68.3**	**Sound Level**	**69.1**	**0.8**	**Sound Level**	**70.0**	**1.7**	**Sound Level**
130	**12D**	**1**	**Single Family/67**	**B**	**67.7**	**Sound Level**	**68.3**	**0.6**	**Sound Level**	**69.4**	**1.7**	**Sound Level**
131	**12D**	**1**	**Single Family/67**	**B**	**66.6**	**Sound Level**	**67.2**	**0.6**	**Sound Level**	**68.0**	**1.4**	**Sound Level**
132	**12D**	**1**	**Single Family/67**	**B**	**65.5**	**----**	**66.2**	**0.7**	**Sound Level**	**66.9**	**1.4**	**Sound Level**
133	12D	1	Single Family/67	B	64.5	----	65.1	0.6	----	65.8	1.3	----
134	**12D**	**1**	**Single Family/67**	**B**	**70.9**	**Sound Level**	**72.3**	**1.4**	**Sound Level**	**72.9**	**2.0**	**Sound Level**
135*	12E	1	Single Family/67	B	62.1	----	63.6	1.5	----	63.2	1.1	----
136	12D	1	Single Family/67	B	61.8	----	62.3	0.5	----	65.5	3.7	----
137	**12D**	**1**	**Single Family/67**	**B**	**61.3**	**----**	**62.0**	**0.7**	**----**	**66.8**	**5.5**	**Sound Level**
138	12D	1	Single Family/67	B	61.4	----	62.0	0.6	----	65.3	3.9	----
139	12D	1	Single Family/67	B	61.1	----	61.8	0.7	----	63.8	2.7	----
140	12D	1	Single Family/67	B	60.8	----	61.4	0.6	----	63.0	2.2	----
141	12E	1	Single Family/67	B	60.4	----	61.1	0.7	----	62.2	1.8	----
142	12E	1	Single Family/67	B	60.2	----	60.9	0.7	----	61.7	1.5	----
143	12E	1	Single Family/67	B	60.0	----	60.7	0.7	----	61.4	1.4	----
144	12E	1	Single Family/67	B	60.1	----	60.8	0.7	----	61.5	1.4	----
145	12E	1	Single Family/67	B	59.9	----	60.5	0.6	----	61.3	1.4	----
146	12E	1	Single Family/67	B	59.8	----	60.5	0.7	----	61.3	1.5	----
147	12E	1	Single Family/67	B	59.8	----	60.5	0.7	----	61.3	1.5	----
148	12E	1	Single Family/67	B	60.3	----	61.0	0.7	----	61.8	1.5	----
149	12E	1	Single Family/67	B	60.7	----	61.4	0.7	----	62.2	1.5	----

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
150	12E	1	Single Family/67	B	61.3	----	62.0	0.7	----	62.7	1.4	----
151	12E	1	Single Family/67	B	61.5	----	62.2	0.7	----	62.9	1.4	----
152	12E	1	Single Family/67	B	62.0	----	62.7	0.7	----	63.4	1.4	----
153	12E	1	Single Family/67	B	62.1	----	62.8	0.7	----	63.5	1.4	----
154	12E	1	Single Family/67	B	61.9	----	62.6	0.7	----	63.3	1.4	----
155	12E	1	Single Family/67	B	61.6	----	62.3	0.7	----	63.2	1.6	----
156	12E	1	Single Family/67	B	61.2	----	61.9	0.7	----	62.6	1.4	----
157	12E	1	Single Family/67	B	60.8	----	61.5	0.7	----	62.3	1.5	----
158	12E	1	Single Family/67	B	60.2	----	60.9	0.7	----	61.8	1.6	----
159	12E	1	Single Family/67	B	59.9	----	60.6	0.7	----	61.4	1.5	----
160	12E	1	Single Family/67	B	59.7	----	60.4	0.7	----	61.3	1.6	----
161	12E	1	Single Family/67	B	59.6	----	60.3	0.7	----	61.3	1.7	----
162	12E	1	Single Family/67	B	59.7	----	60.4	0.7	----	61.4	1.7	----
163	12E	1	Single Family/67	B	59.8	----	60.4	0.6	----	61.7	1.9	----
164	12E	1	Single Family/67	B	59.8	----	60.5	0.7	----	62.2	2.4	----
165	12E	1	Single Family/67	B	60.3	----	61.0	0.7	----	62.3	2.0	----
166	12E	1	Single Family/67	B	60.7	----	61.4	0.7	----	62.7	2.0	----
167	12E	1	Single Family/67	B	60.9	----	61.6	0.7	----	63.0	2.1	----
168	12E	1	Single Family/67	B	61.1	----	61.8	0.7	----	63.3	2.2	----
169	12E	1	Single Family/67	B	61.1	----	61.8	0.7	----	63.3	2.2	----
170	12E	1	Single Family/67	B	60.9	----	61.6	0.7	----	63.1	2.2	----
171	12E	1	Single Family/67	B	60.5	----	61.2	0.7	----	62.9	2.4	----
172	12E	1	Single Family/67	B	60.4	----	61.0	0.6	----	62.2	1.8	----
173	12E	1	Single Family/67	B	60.7	----	61.2	0.5	----	62.3	1.6	----
174	12E	1	Single Family/67	B	60.2	----	60.7	0.5	----	61.6	1.4	----
175	12E	1	Single Family/67	B	58.7	----	59.5	0.8	----	60.3	1.6	----
176	12E	1	Single Family/67	B	60.6	----	61.0	0.4	----	62.8	2.2	----
177	12E	1	Single Family/67	B	61.1	----	61.7	0.6	----	63.5	2.4	----
178	12E	1	Single Family/67	B	60.8	----	61.4	0.6	----	63.1	2.3	----
179	12E	1	Single Family/67	B	60.1	----	60.7	0.6	----	62.3	2.2	----
180	**12E**	**1**	**Single Family/67**	**B**	**65.9**	**----**	**67.4**	**1.5**	**Sound Level**	**69.3**	**3.4**	**Sound Level**

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
181	**12E**	**1**	**Single Family/67**	**B**	**64.4**	**----**	**65.5**	**1.1**	**----**	**68.0**	**3.6**	**Sound Level**
182	**12E**	**1**	**Single Family/67**	**B**	**62.8**	**----**	**63.7**	**0.9**	**----**	**66.3**	**3.5**	**Sound Level**
183	**12E**	**1**	**Single Family/67**	**B**	**67.9**	**Sound Level**	**69.6**	**1.7**	**Sound Level**	**73.0**	**5.1**	**Sound Level**
184	**12E**	**1**	**Single Family/67**	**B**	**66.0**	**Sound Level**	**67.0**	**1.0**	**Sound Level**	**70.2**	**4.2**	**Sound Level**
185	**12E**	**1**	**Single Family/67**	**B**	**65.4**	**----**	**65.8**	**0.4**	**----**	**68.9**	**3.5**	**Sound Level**
186	12E	1	Single Family/67	B	61.6	----	61.6	0.0	----	64.0	2.4	----
187	**12E**	**1**	**Single Family/67**	**B**	**67.6**	**Sound Level**	**68.2**	**0.6**	**Sound Level**	**68.8**	**1.2**	**Sound Level**
188	**12E**	**1**	**Single Family/67**	**B**	**65.0**	**----**	**65.5**	**0.5**	**----**	**66.1**	**1.1**	**Sound Level**
189	12E	1	Single Family/67	B	65.0	----	63.8	-1.2	----	65.4	0.4	----
190	12E	1	Single Family/67	B	64.5	----	62.9	-1.6	----	64.7	0.2	----
191	12E	1	Single Family/67	B	65.9	----	64.2	-1.7	----	65.8	-0.1	----
192	12E	1	Single Family/67	B	65.4	----	63.4	-2.0	----	65.1	-0.3	----
193	12E	1	Single Family/67	B	64.7	----	62.6	-2.1	----	64.6	-0.1	----
194	12E	1	Single Family/67	B	64.3	----	62.2	-2.1	----	64.1	-0.2	----
195	12E	1	Single Family/67	B	63.7	----	61.7	-2.0	----	63.6	-0.1	----
196	12F	1	Single Family/67	B	63.2	----	61.2	-2.0	----	63.2	0.0	----
197	12E	1	Single Family/67	B	66.7	Sound Level	63.3	-3.4	----	64.8	-1.9	----
198	12F	1	Single Family/67	B	65.9	----	62.8	-3.1	----	64.4	-1.5	----
199	12F	1	Single Family/67	B	65.3	----	62.2	-3.1	----	64.0	-1.3	----
200	12F	1	Single Family/67	B	64.9	----	61.9	-3.0	----	63.9	-1.0	----
201	12F	1	Single Family/67	B	64.2	----	61.5	-2.7	----	63.3	-0.9	----
202	12F	1	Single Family/67	B	63.8	----	61.3	-2.5	----	63.1	-0.7	----
203	12F	1	Single Family/67	B	63.4	----	60.9	-2.5	----	62.8	-0.6	----
204	12F	1	Single Family/67	B	63.0	----	60.7	-2.3	----	62.6	-0.4	----
205	12F	1	Single Family/67	B	62.5	----	60.3	-2.2	----	62.1	-0.4	----

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
206	12F	1	Single Family/67	B	62.1	----	60.1	-2.0	----	61.9	-0.2	----
207	**12E**	**1**	**Single Family/67**	**B**	**71.9**	**Sound Level**	**68.1**	**-3.8**	**Sound Level**	**68.6**	**-3.3**	**Sound Level**
208	12F	1	Single Family/67	B	68.5	Sound Level	64.1	-4.4	----	65.3	-3.2	----
209	12F	1	Single Family/67	B	66.9	Sound Level	62.9	-4.0	----	64.6	-2.3	----
210	12F	1	Single Family/67	B	67.4	Sound Level	62.7	-4.7	----	64.4	-3.0	----
211	12F	1	Single Family/67	B	68.1	Sound Level	62.9	-5.2	----	64.3	-3.8	----
212	12F	1	Single Family/67	B	69.7	Sound Level	63.2	-6.5	----	64.5	-5.2	----
213	12F	1	Single Family/67	B	71.0	Sound Level	63.9	-7.1	----	65.2	-5.8	----
214	12F	1	Single Family/67	B	71.1	Sound Level	63.9	-7.2	----	65.3	-5.8	----
215	12F	1	Single Family/67	B	68.7	Sound Level	63.1	-5.6	----	64.3	-4.4	----
216	12F	1	Single Family/67	B	67.6	Sound Level	62.6	-5.0	----	64.2	-3.4	----
217	12F	1	Single Family/67	B	67.1	Sound Level	63.1	-4.0	----	64.1	-3.0	----
218	12F	1	Single Family/67	B	66.3	Sound Level	62.4	-3.9	----	64.0	-2.3	----
219	12F	1	Single Family/67	B	65.4	----	62.0	-3.4	----	63.9	-1.5	----
220	12F	1	Single Family/67	B	64.2	----	61.3	-2.9	----	63.2	-1.0	----
221	12F	1	Single Family/67	B	64.6	----	61.5	-3.1	----	63.2	-1.4	----
222	12F	1	Single Family/67	B	65.1	----	61.6	-3.5	----	63.3	-1.8	----
223	12F	1	Single Family/67	B	65.6	----	61.9	-3.7	----	63.5	-2.1	----
224	12F	1	Single Family/67	B	66.1	Sound Level	62.1	-4.0	----	63.8	-2.3	----

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
225	12F	1	Single Family/67	B	67.4	Sound Level	62.7	-4.7	----	64.1	-3.3	----
226	12F	1	Single Family/67	B	69.1	Sound Level	62.8	-6.3	----	64.0	-5.1	----
227	12F	1	Single Family/67	B	68.8	Sound Level	62.9	-5.9	----	64.1	-4.7	----
228	12F	1	Single Family/67	B	67.8	Sound Level	62.5	-5.3	----	64.2	-3.6	----
229	12F	1	Single Family/67	B	66.6	Sound Level	62.2	-4.4	----	63.8	-2.8	----
230	12F	1	Single Family/67	B	66.8	Sound Level	62.7	-4.1	----	64.1	-2.7	----
231	12F	1	Single Family/67	B	67.2	Sound Level	62.9	-4.3	----	64.6	-2.6	----
232	12F	1	Single Family/67	B	66.6	Sound Level	62.9	-3.7	----	64.3	-2.3	----
233	12F	1	Single Family/67	B	65.7	----	62.2	-3.5	----	63.8	-1.9	----
234	12F	1	Single Family/67	B	64.9	----	62.0	-2.9	----	63.4	-1.5	----
235	12F	1	Single Family/67	B	64.6	----	61.5	-3.1	----	63.2	-1.4	----
236	12F	1	Single Family/67	B	64.1	----	61.2	-2.9	----	63.1	-1.0	----
237	12F	1	Single Family/67	B	63.3	----	60.8	-2.5	----	62.7	-0.6	----
238	12F	1	Single Family/67	B	65.4	----	62.8	-2.6	----	64.5	-0.9	----
239	12F	1	Single Family/67	B	65.3	----	62.6	-2.7	----	64.3	-1.0	----
240	12F	1	Single Family/67	B	61.9	----	60.0	-1.9	----	61.8	-0.1	----
241	12F	8	Multi Family/67	B	59.1	----	59.7	0.6	----	61.0	1.9	----
242	12F	8	Multi Family/67	B	59.5	----	60.1	0.6	----	61.7	2.2	----
243	12F	8	Multi Family/67	B	61.3	----	61.9	0.6	----	63.1	1.8	----
244	12F	8	Multi Family/67	B	60.1	----	60.7	0.6	----	61.4	1.3	----
245	12F	8	Multi Family/67	B	59.4	----	59.9	0.5	----	60.7	1.3	----
246	12F	12	Multi Family/67	B	61.9	----	61.6	-0.3	----	64.8	2.9	----
247	12F	12	Multi Family/67	B	61.4	----	61.1	-0.3	----	63.7	2.3	----
248	12F	12	Multi Family/67	B	60.0	----	59.8	-0.2	----	62.5	2.5	----
249	12F	12	Multi Family/67	B	60.2	----	60.1	-0.1	----	61.9	1.7	----

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
250	12F	12	Multi Family/67	B	61.0	----	61.0	0.0	----	62.2	1.2	----
251	12F	12	Multi Family/67	B	60.8	----	60.8	0.0	----	62.0	1.2	----
252	12F	12	Multi Family/67	B	60.6	----	60.6	0.0	----	62.1	1.5	----
253	12F	12	Multi Family/67	B	60.5	----	60.6	0.1	----	61.9	1.4	----
254	12F	8	Multi Family/67	B	57.6	----	58.3	0.7	----	59.2	1.6	----
255	12F	8	Multi Family/67	B	58.8	----	59.2	0.4	----	60.3	1.5	----
256	12F	8	Multi Family/67	B	57.3	----	57.9	0.6	----	59.0	1.7	----
257	12F	8	Multi Family/67	B	59.8	----	60.2	0.4	----	61.4	1.6	----
258	12F	8	Multi Family/67	B	58.2	----	58.7	0.5	----	60.1	1.9	----
259	12F	1	Commercial/71	E	61.4	----	61.6	0.2	----	62.0	0.6	----
260	12G	1	Commercial/71	E	63.9	----	64.2	0.3	----	64.8	0.9	----
261	12G	1	Hotel/71	E	66.8	----	67.0	0.2	----	68.0	1.2	----
262	12G	1	Commercial/71	F	58.6	----	59.1	0.5	----	60.4	1.8	----
263	12G	1	Commercial/71	F	67.0	----	67.2	0.2	----	68.4	1.4	----
264	12G	1	Commercial/71	F	63.5	----	63.7	0.2	----	64.0	0.5	----
265	12G	1	Commercial/71	F	59.9	----	60.2	0.3	----	60.7	0.8	----
266	12G	1	Commercial/71	F	64.2	----	64.4	0.2	----	65.5	1.3	----
267	12G	1	Commercial/71	F	66.0	----	66.3	0.3	----	67.4	1.4	----
268	12G	23	Hotel/71	E	58.8	----	59.2	0.4	----	59.8	1.0	----
269	12G	1	Commercial/71	E	55.5	----	55.9	0.4	----	57.2	1.7	----
270	12G	1	Commercial/71	F	64.6	----	64.8	0.2	----	65.9	1.3	----
271	12H	1	Single Family/67	B	59.9	----	60.2	0.3	----	61.4	1.5	----
272	12H	1	Commercial/71	E	57.2	----	57.5	0.3	----	59.3	2.1	----
273	12H	1	Commercial/71	E	59.8	----	60.1	0.3	----	61.6	1.8	----
274*	12H	1	Commercial/71	E	60.0	----	60.3	0.3	----	59.3	-0.7	----
275*	12H	1	Commercial/71	E	59.9	----	60.1	0.2	----	59.1	-0.8	----
276	12I	1	Commercial/71	F	60.2	----	60.5	0.3	----	62.7	2.5	----
277	12I	1	Commercial/71	F	59.4	----	59.7	0.3	----	61.6	2.2	----
278	12I	1	Commercial/71	F	64.2	----	64.5	0.3	----	65.7	1.5	----
279	12I	1	Commercial/71	F	61.8	----	62.1	0.3	----	63.5	1.7	----
280	12I	1	Commercial/71	F	60.0	----	60.2	0.2	----	62.0	2.0	----
281	12I	1	Single Family/67	B	64.2	----	64.4	0.2	----	65.1	0.9	----
282	12I	1	Single Family/67	B	64.9	----	65.2	0.3	----	65.8	0.9	----

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
283	**12I**	**1**	**Single Family/67**	**B**	**65.8**	**----**	**66.1**	**0.3**	**Sound Level**	**66.6**	**0.8**	**Sound Level**
284	**12I**	**1**	**Single Family/67**	**B**	**66.7**	**Sound Level**	**66.9**	**0.2**	**Sound Level**	**67.6**	**0.9**	**Sound Level**
285	**12I**	**1**	**Single Family/67**	**B**	**66.9**	**Sound Level**	**67.1**	**0.2**	**Sound Level**	**67.4**	**0.5**	**Sound Level**
286	**12I**	**1**	**Single Family/67**	**B**	**67.4**	**Sound Level**	**67.6**	**0.2**	**Sound Level**	**67.7**	**0.3**	**Sound Level**
287	**12I**	**1**	**Single Family/67**	**B**	**67.6**	**Sound Level**	**67.8**	**0.2**	**Sound Level**	**68.0**	**0.4**	**Sound Level**
288	**12I**	**1**	**Single Family/67**	**B**	**68.0**	**Sound Level**	**68.2**	**0.2**	**Sound Level**	**68.2**	**0.2**	**Sound Level**
289	12I	1	Single Family/67	B	63.9	----	64.1	0.2	----	65.0	1.1	----
290	12I	1	Single Family/67	B	63.0	----	63.2	0.2	----	64.2	1.2	----
291	12I	1	Single Family/67	B	62.8	----	63.0	0.2	----	64.0	1.2	----
292	**12I**	**1**	**Single Family/67**	**B**	**66.3**	**Sound Level**	**66.5**	**0.2**	**Sound Level**	**67.1**	**0.8**	**Sound Level**
293	**12I**	**1**	**Single Family/67**	**B**	**66.6**	**Sound Level**	**66.8**	**0.2**	**Sound Level**	**67.3**	**0.7**	**Sound Level**
294	**12I**	**1**	**Single Family/67**	**B**	**66.4**	**Sound Level**	**66.6**	**0.2**	**Sound Level**	**67.4**	**1.0**	**Sound Level**
295	**12I**	**1**	**Single Family/67**	**B**	**66.4**	**Sound Level**	**66.7**	**0.3**	**Sound Level**	**67.6**	**1.2**	**Sound Level**
296	**12J**	**1**	**Single Family/67**	**B**	**66.8**	**Sound Level**	**67.1**	**0.3**	**Sound Level**	**68.7**	**1.9**	**Sound Level**
297	**12J**	**1**	**Single Family/67**	**B**	**64.5**	**----**	**64.8**	**0.3**	**----**	**67.0**	**2.5**	**Sound Level**
298	**12J**	**1**	**Single Family/67**	**B**	**64.1**	**----**	**64.3**	**0.2**	**----**	**66.3**	**2.2**	**Sound Level**
299	**12I**	**1**	**Single Family/67**	**B**	**64.7**	**----**	**65.0**	**0.3**	**----**	**66.8**	**2.1**	**Sound Level**
300	**12I**	**1**	**Single Family/67**	**B**	**65.2**	**----**	**65.4**	**0.2**	**----**	**66.9**	**1.7**	**Sound Level**

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
301	**12J**	**1**	**Single Family/67**	**B**	**66.4**	**Sound Level**	**66.7**	**0.3**	**Sound Level**	**68.5**	**2.1**	**Sound Level**
302	**12J**	**1**	**Single Family/67**	**B**	**65.9**	**----**	**66.2**	**0.3**	**Sound Level**	**68.3**	**2.4**	**Sound Level**
303	**12J**	**50**	**Recreation Area/67**	**C**	**65.3**	**----**	**65.6**	**0.3**	**----**	**67.9**	**2.6**	**Sound Level**
304	12J	1	Church/67	C	64.4	----	64.7	0.3	----	65.7	1.3	----
305*	12J	1	Commercial/71	E	67.5	----	67.8	0.3	----	67.7	0.2	----
306	12J	1	Commercial/71	F	65.9	----	66.2	0.3	----	67.6	1.7	----
307	12J	1	Commercial/71	F	68.2	----	68.5	0.3	----	70.0	1.8	----
308	12J	1	Commercial/71	F	71.2	----	71.4	0.2	----	73.5	2.3	----
309	12J	1	Commercial/71	F	63.0	----	63.3	0.3	----	65.6	2.6	----
310	12K	1	Commercial/71	E	60.4	----	60.7	0.3	----	61.6	1.2	----
311	12K	1	Single Family/67	B	61.6	----	61.9	0.3	----	62.5	0.9	----
312	12J	1	Commercial/71	F	60.0	----	60.4	0.4	----	62.2	2.2	----
313	12J	1	Commercial/71	F	58.8	----	59.1	0.3	----	60.4	1.6	----
314	12K	1	Commercial/71	E	58.2	----	58.5	0.3	----	59.0	0.8	----
315	12K	1	Commercial/71	F	64.6	----	64.8	0.2	----	65.0	0.4	----
316	12K	1	Commercial/71	F	59.2	----	59.6	0.4	----	61.4	2.2	----
317	12K	1	Commercial/71	F	57.6	----	58.0	0.4	----	59.2	1.6	----
318	12K	1	Commercial/71	F	60.1	----	60.4	0.3	----	62.1	2.0	----
319	12K	1	Commercial/71	F	62.6	----	62.9	0.3	----	64.3	1.7	----
320	**12L**	**1**	**Single Family/67**	**B**	**65.8**	**----**	**66.1**	**0.3**	**Sound Level**	**67.4**	**1.6**	**Sound Level**
321	**12L**	**1**	**Single Family/67**	**B**	**67.6**	**Sound Level**	**67.9**	**0.3**	**Sound Level**	**69.4**	**1.8**	**Sound Level**
322	**12L**	**1**	**Single Family/67**	**B**	**69.0**	**Sound Level**	**69.3**	**0.3**	**Sound Level**	**71.2**	**2.2**	**Sound Level**
323	**12L**	**1**	**Single Family/67**	**B**	**70.6**	**Sound Level**	**71.0**	**0.4**	**Sound Level**	**73.0**	**2.4**	**Sound Level**
324	**12L**	**1**	**Single Family/67**	**B**	**68.4**	**Sound Level**	**68.6**	**0.2**	**Sound Level**	**70.0**	**1.6**	**Sound Level**

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
325	**12L**	**1**	**Single Family/67**	**B**	**68.4**	**Sound Level**	**68.7**	**0.3**	**Sound Level**	**70.2**	**1.8**	**Sound Level**
326	**12L**	**1**	**Single Family/67**	**B**	**68.0**	**Sound Level**	**68.3**	**0.3**	**Sound Level**	**69.8**	**1.8**	**Sound Level**
327	**12L**	**1**	**Single Family/67**	**B**	**66.5**	**Sound Level**	**66.9**	**0.4**	**Sound Level**	**68.2**	**1.7**	**Sound Level**
328	**12L**	**1**	**Single Family/67**	**B**	**69.0**	**Sound Level**	**69.2**	**0.2**	**Sound Level**	**70.6**	**1.6**	**Sound Level**
329	**12L**	**1**	**Single Family/67**	**B**	**68.1**	**Sound Level**	**68.3**	**0.2**	**Sound Level**	**69.7**	**1.6**	**Sound Level**
330	**12L**	**1**	**Single Family/67**	**B**	**67.0**	**Sound Level**	**67.2**	**0.2**	**Sound Level**	**68.6**	**1.6**	**Sound Level**
331	**12L**	**1**	**Single Family/67**	**B**	**65.9**	**----**	**66.2**	**0.3**	**Sound Level**	**67.7**	**1.8**	**Sound Level**
332	**12L**	**1**	**Single Family/67**	**B**	**65.1**	**----**	**65.4**	**0.3**	**----**	**66.7**	**1.6**	**Sound Level**
333	12L	1	Single Family/67	B	64.0	----	64.2	0.2	----	65.5	1.5	----
334	**12L**	**1**	**Single Family/67**	**B**	**65.4**	**----**	**65.7**	**0.3**	**----**	**67.1**	**1.7**	**Sound Level**
335	12L	1	Commercial/71	F	73.9	----	74.1	0.2	----	75.5	1.6	----
336	12L	1	Commercial/71	F	72.4	----	72.6	0.2	----	74.2	1.8	----
337	12L	1	Single Family/67	B	60.3	----	60.5	0.2	----	62.3	2.0	----
338	12L	1	Single Family/67	B	60.9	----	61.2	0.3	----	63.0	2.1	----
339	12L	1	Single Family/67	B	61.6	----	61.9	0.3	----	63.6	2.0	----
340	12L	1	Single Family/67	B	62.3	----	62.5	0.2	----	64.4	2.1	----
341	12L	1	Single Family/67	B	63.5	----	63.8	0.3	----	65.7	2.2	----
342	12L	1	Single Family/67	B	63.3	----	63.6	0.3	----	65.7	2.4	----
343	12L	1	Single Family/67	B	62.1	----	62.4	0.3	----	64.3	2.2	----
344	12L	1	Single Family/67	B	61.1	----	61.3	0.2	----	63.3	2.2	----
345	12L	1	Single Family/67	B	60.1	----	60.4	0.3	----	62.3	2.2	----
346	12L	1	Single Family/67	B	62.5	----	62.6	0.1	----	64.6	2.1	----
347	12L	1	Single Family/67	B	61.3	----	61.6	0.3	----	63.6	2.3	----
348	12L	1	Single Family/67	B	60.3	----	60.6	0.3	----	62.6	2.3	----

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
349	12L	1	Single Family/67	B	59.6	----	59.9	0.3	----	61.8	2.2	----
350	12L	1	Single Family/67	B	60.6	----	60.9	0.3	----	62.8	2.2	----
351	12L	1	Single Family/67	B	61.3	----	61.6	0.3	----	63.5	2.2	----
352	12L	1	Single Family/67	B	62.1	----	62.4	0.3	----	64.3	2.2	----
353	12L	1	Single Family/67	B	60.5	----	60.7	0.2	----	62.7	2.2	----
354	12L	1	Single Family/67	B	61.2	----	61.5	0.3	----	63.4	2.2	----
355	12L	1	Single Family/67	B	62.2	----	62.5	0.3	----	64.4	2.2	----
356	12L	1	Single Family/67	B	63.5	----	63.7	0.2	----	65.9	2.4	----
357	12L	1	Single Family/67	B	63.3	----	63.6	0.3	----	65.7	2.4	----
358	12L	1	Single Family/67	B	63.4	----	63.6	0.2	----	65.8	2.4	----
359	12L	1	Single Fami12Ly/67	B	63.4	----	63.6	0.2	----	65.8	2.4	----
360	12L	1	Single Family/67	B	63.3	----	63.6	0.3	----	65.9	2.6	----
361	**12L**	**1**	**Single Family/67**	**B**	**63.8**	**----**	**64.1**	**0.3**	**----**	**66.3**	**2.5**	**Sound Level**
362	**12L**	**1**	**Single Family/67**	**B**	**64.1**	**----**	**64.4**	**0.3**	**----**	**66.6**	**2.5**	**Sound Level**
363	12L	1	Single Family/67	B	59.8	----	60.0	0.2	----	62.0	2.2	----
364	12L	1	Single Family/67	B	60.6	----	60.9	0.3	----	62.8	2.2	----
365	12L	1	Single Family/67	B	61.6	----	61.9	0.3	----	63.7	2.1	----
366	12L	1	Single Family/67	B	62.4	----	62.7	0.3	----	64.7	2.3	----
367	12L	1	Single Family/67	B	62.6	----	62.9	0.3	----	65.0	2.4	----
368	12L	1	Single Family/67	B	62.4	----	62.7	0.3	----	64.8	2.4	----
369	12L	1	Single Family/67	B	61.3	----	61.7	0.4	----	63.7	2.4	----
370	12L	1	Single Family/67	B	60.4	----	60.6	0.2	----	62.6	2.2	----
371	12L	1	Single Family/67	B	59.2	----	59.5	0.3	----	61.5	2.3	----
372	**12L**	**1**	**Single Family/67**	**B**	**66.7**	**Sound Level**	**66.9**	**0.2**	**Sound Level**	**68.8**	**2.1**	**Sound Level**
373	**12L**	**1**	**Single Family/67**	**B**	**66.4**	**Sound Level**	**66.7**	**0.3**	**Sound Level**	**68.7**	**2.3**	**Sound Level**
374	**12L**	**1**	**Single Family/67**	**B**	**64.3**	**----**	**64.5**	**0.2**	**----**	**66.8**	**2.5**	**Sound Level**
375	**12L**	**1**	**Single Family/67**	**B**	**63.7**	**----**	**64.0**	**0.3**	**----**	**66.2**	**2.5**	**Sound Level**

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
376	12L	1	Single Family/67	B	62.9	----	63.2	0.3	----	65.6	2.7	----
377	12L	1	Single Family/67	B	62.3	----	62.6	0.3	----	64.9	2.6	----
378	12L	1	Single Family/67	B	61.4	----	61.7	0.3	----	64.0	2.6	----
379	12L	1	Single Family/67	B	60.5	----	60.9	0.4	----	63.1	2.6	----
380	12L	1	Single Family/67	B	62.6	----	62.9	0.3	----	64.9	2.3	----
381*	11N	1	Single Family/67	B	62.0	----	62.4	0.4	----	62.2	0.2	----
382*	11N	1	Single Family/67	B	63.9	----	64.3	0.4	----	64.1	0.2	----
383*	11N	1	Single Family/67	B	65.6	----	66.0	0.4	Sound Level	65.9	0.3	----
384	**11N**	**1**	**Single Family/67**	**B**	**67.9**	**Sound Level**	**68.2**	**0.3**	**Sound Level**	**68.4**	**0.5**	**Sound Level**
385	**11N**	**1**	**Single Family/67**	**B**	**69.5**	**Sound Level**	**69.9**	**0.4**	**Sound Level**	**70.0**	**0.5**	**Sound Level**
386	**11N**	**1**	**Single Family/67**	**B**	**67.4**	**Sound Level**	**67.7**	**0.3**	**Sound Level**	**68.2**	**0.8**	**Sound Level**
387*	11N	1	Single Family/67	B	63.8	----	64.2	0.4	----	63.9	0.1	----
388*	11N	1	Single Family/67	B	61.4	----	61.6	0.2	----	60.9	-0.5	----
389*	11N	1	Single Family/67	B	59.9	----	60.3	0.4	----	59.5	-0.4	----
390*	12M	1	Single Family/67	B	59.0	----	59.4	0.4	----	58.8	-0.2	----
391	12M	1	Single Family/67	B	59.1	----	59.4	0.3	----	60.0	0.9	----
392	12M	1	Single Family/67	B	61.0	----	61.4	0.4	----	61.6	0.6	----
393*	12M	1	Single Family/67	B	63.8	----	64.2	0.4	----	64.0	0.2	----
394	12M	1	Single Family/67	B	65.3	----	65.7	0.4	----	65.7	0.4	----
395*	**12M**	**1**	**Single Family/67**	**B**	**66.6**	**Sound Level**	**66.9**	**0.3**	**Sound Level**	**66.7**	**0.1**	**Sound Level**
396*	**12M**	**1**	**Single Family/67**	**B**	**68.6**	**Sound Level**	**68.8**	**0.2**	**Sound Level**	**68.6**	**0.0**	**Sound Level**
397*	**12M**	**1**	**Single Family/67**	**B**	**67.8**	**Sound Level**	**68.1**	**0.3**	**Sound Level**	**67.8**	**0.0**	**Sound Level**
398*	**12M**	**1**	**Single Family/67**	**B**	**67.8**	**Sound Level**	**68.1**	**0.3**	**Sound Level**	**67.7**	**-0.1**	**Sound Level**
399*	12N	1	Single Family/67	B	61.5	----	61.9	0.4	----	61.7	0.2	----

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
400	**12N**	**1**	**Single Family/67**	**B**	**66.3**	**Sound Level**	**66.5**	**0.2**	**Sound Level**	**66.7**	**0.4**	**Sound Level**
401*	**12M**	**1**	**Single Family/67**	**B**	**67.3**	**Sound Level**	**67.5**	**0.2**	**Sound Level**	**67.4**	**0.1**	**Sound Level**
402	**12N**	**1**	**Single Family/67**	**B**	**66.2**	**Sound Level**	**66.4**	**0.2**	**Sound Level**	**66.5**	**0.3**	**Sound Level**
403*	12N	1	Single Family/67	B	65.7	----	66.0	0.3	Sound Level	65.8	0.1	----
404	12N	1	Single Family/67	B	65.1	----	65.5	0.4	----	65.6	0.5	----
405	12N	1	Single Family/67	B	64.6	----	64.9	0.3	----	64.9	0.3	----
406	12N	1	Single Family/67	B	64.4	----	64.8	0.4	----	64.9	0.5	----
407	12N	1	Single Family/67	B	64.0	----	64.4	0.4	----	64.7	0.7	----
408*	12N	1	Single Family/67	B	63.9	----	64.2	0.3	----	64.0	0.1	----
409*	12N	1	Single Family/67	B	64.3	----	64.5	0.2	----	64.3	0.0	----
410	12N	1	Single Family/67	B	64.3	----	64.6	0.3	----	64.6	0.3	----
411	12N	1	Single Family/67	B	64.5	----	64.7	0.2	----	64.9	0.4	----
412*	12N	1	Single Family/67	B	65.1	----	65.3	0.2	----	65.2	0.1	----
413*	12N	1	Single Family/67	B	65.2	----	65.5	0.3	----	65.4	0.2	----
414*	**12M**	**1**	**Single Family/67**	**B**	**65.8**	**----**	**66.1**	**0.3**	**Sound Level**	**66.0**	**0.2**	**Sound Level**
415*	**12M**	**1**	**Single Family/67**	**B**	**66.1**	**Sound Level**	**66.4**	**0.3**	**Sound Level**	**66.2**	**0.1**	**Sound Level**
416	**12N**	**4**	**Multi Family/67**	**B**	**70.5**	**Sound Level**	**70.8**	**0.3**	**Sound Level**	**71.4**	**0.9**	**Sound Level**
417	**12N**	**4**	**Multi Family/67**	**B**	**67.1**	**Sound Level**	**67.5**	**0.4**	**Sound Level**	**68.2**	**1.1**	**Sound Level**
418	12N	4	Multi Family/67	B	64.1	----	64.4	0.3	----	65.0	0.9	----
419	12N	4	Multi Family/67	B	62.2	----	62.6	0.4	----	63.2	1.0	----
420	12N	4	Multi Family/67	B	61.2	----	61.6	0.4	----	61.9	0.7	----
421	12N	4	Multi Family/67	B	61.7	----	62.0	0.3	----	62.0	0.3	----
422*	12N	4	Multi Family/67	B	61.4	----	61.7	0.3	----	61.6	0.2	----
423	12N	4	Multi Family/67	B	60.9	----	61.2	0.3	----	61.4	0.5	----

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
424*	**12M**	**1**	**Single Family/67**	**B**	**67.1**	**Sound Level**	**67.4**	**0.3**	**Sound Level**	**67.2**	**0.1**	**Sound Level**
425*	**12M**	**1**	**Single Family/67**	**B**	**66.5**	**Sound Level**	**66.8**	**0.3**	**Sound Level**	**66.6**	**0.1**	**Sound Level**
426	12M	1	Single Family/67	B	64.1	----	64.4	0.3	----	64.4	0.3	----
427	12M	1	Single Family/67	B	61.4	----	61.8	0.4	----	61.8	0.4	----
428	12M	1	Single Family/67	B	59.9	----	60.2	0.3	----	60.6	0.7	----
429	12N	1	Commercial/71	E	67.0	----	67.3	0.3	----	68.5	1.5	----
430	12N	1	Commercial/71	E	59.5	----	59.8	0.3	----	60.4	0.9	----
431	12N	1	Commercial/71	F	69.2	----	69.4	0.2	----	70.1	0.9	----
432	12N	1	Commercial/71	F	61.2	----	61.5	0.3	----	62.6	1.4	----
433	12N	1	Commercial/71	F	59.7	----	60.0	0.3	----	60.9	1.2	----
434	12N	1	Commercial/71	F	59.2	----	59.5	0.3	----	60.3	1.1	----
435	12N	1	Commercial/71	F	64.8	----	65.0	0.2	----	65.9	1.1	----
436	12N	1	Commercial/71	F	68.3	----	68.6	0.3	----	69.8	1.5	----
437	12N	1	Commercial/71	E	65.2	----	65.7	0.5	----	66.0	0.8	----
438	12N	1	Commercial/71	E	63.1	----	63.5	0.4	----	63.9	0.8	----
439	12N	30	Hotel/71	E	66.5	----	66.9	0.4	----	67.5	1.0	----
440	12N	1	Hotel/71	E	69.0	----	69.5	0.5	----	70.1	1.1	----
441	12N	1	Commercial/71	E	67.8	----	68.4	0.6	----	69.2	1.4	----
442	12N	1	Commercial/71	E	67.9	----	68.6	0.7	----	69.2	1.3	----
443	12N	24	Hotel/71	E	65.8	----	66.1	0.3	----	66.6	0.8	----
444	12N	1	Commercial/71	F	62.8	----	63.3	0.5	----	63.3	0.5	----
445	12N	1	Commercial/71	E	67.9	----	68.3	0.4	----	68.9	1.0	----
446	12N	1	Commercial/71	E	63.9	----	64.3	0.4	----	64.7	0.8	----
447	12N	60	Hotel/71	E	66.6	----	67.1	0.5	----	67.9	1.3	----
448	12N	20	Hotel/71	E	66.6	----	67.4	0.8	----	67.9	1.3	----
449	12N	1	Commercial/71	E	69.0	----	70.3	1.3	----	70.5	1.5	----
450	12N	1	Commercial/71	E	67.4	----	69.2	1.8	----	69.4	2.0	----
451	12N	1	Hotel/71	E	65.6	----	67.5	1.9	----	67.7	2.1	----
452	12N	1	Commercial/71	F	66.2	----	66.6	0.4	----	67.9	1.7	----
453	12N	1	Commercial/71	F	63.4	----	63.9	0.5	----	65.4	2.0	----
454	12N	1	Commercial/71	E	68.2	----	68.7	0.5	----	68.9	0.7	----

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
455	12N	11	Hotel/71	E	68.8	----	69.2	0.4	----	69.5	0.7	----
456	12N	1	Commercial/71	E	62.4	----	62.8	0.4	----	63.3	0.9	----
457	**12N**	**9**	**Hotel/71**	**E**	**71.4**	**Sound Level**	**71.8**	**0.4**	**Sound Level**	**71.8**	**0.4**	**Sound Level**
458	12O	1	Commercial/71	E	67.5	----	67.7	0.2	----	68.1	0.6	----
459	12O	1	Commercial/71	E	67.6	----	67.7	0.1	----	67.7	0.1	----
460*	12O	1	Hotel/71	B	70.5	----	70.8	0.3	----	69.3	-1.2	----
461*	12O	1	Commercial/71	E	65.8	----	66.2	0.4	----	65.6	-0.2	----
462*	12O	1	Commercial/71	E	70.3	----	70.5	0.2	----	70.3	0.0	----
463	12O	1	Commercial/71	E	70.5	----	70.7	0.2	----	70.7	0.2	----
464	12O	1	Single Family/67	B	62.9	----	63.3	0.4	----	64.3	1.4	----
465	12O	1	Commercial/71	F	69.7	----	70.0	0.3	----	71.1	1.4	----
466	12O	1	Commercial/71	E	67.7	----	68.0	0.3	----	68.1	0.4	----
467	12O	1	Commercial/71	F	67.0	----	67.5	0.5	----	68.2	1.2	----
468	12O	1	Commercial/71	F	68.3	----	68.4	0.1	----	68.4	0.1	----
469	12O	1	Commercial/71	E	67.8	----	68.1	0.3	----	68.2	0.4	----
470*	12O	1	Commercial/71	F	67.9	----	68.3	0.4	----	67.8	-0.1	----
471	12O	1	Commercial/71	E	68.0	----	68.2	0.2	----	68.2	0.2	----
472*	12O	1	Commercial/71	E	67.3	----	67.6	0.3	----	67.1	-0.2	----
473	12P	1	Commercial/71	E	68.9	----	69.1	0.2	----	70.2	1.3	----
474*	12P	1	Commercial/71	E	63.3	----	63.5	0.2	----	62.9	-0.4	----
475*	12P	1	Commercial/71	E	61.5	----	61.9	0.4	----	61.4	-0.1	----
476*	12P	20	Hotel/71	E	63.2	----	63.9	0.7	----	62.8	-0.4	----
477*	12P	1	Commercial/71	F	63.7	----	64.3	0.6	----	63.0	-0.7	----
478*	12P	30	Hotel/71	E	62.2	----	63.6	1.4	----	63.3	1.1	----
479*	12P	1	Commercial/71	F	62.5	----	63.7	1.2	----	63.2	0.7	----
480*	12P	1	Commercial/71	F	69.4	----	69.6	0.2	----	67.9	-1.5	----
481*	12P	1	Commercial/71	F	61.8	----	62.0	0.2	----	60.9	-0.9	----
482*	12P	45	Hotel/71	E	58.7	----	59.0	0.3	----	58.4	-0.3	----
483*	12P	1	Commercial/71	E	56.7	----	57.0	0.3	----	55.4	-1.3	----
484*	12P	1	Commercial/71	E	59.0	----	59.4	0.4	----	56.1	-2.9	----
485*	12B	5	Multi Family/67	B	58.8	----	59.1	0.3	----	58.8	0.0	----
486*	12B	5	Multi Family/67	B	59.2	----	59.6	0.4	----	59.4	0.2	----

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
487*	12B	44	Hotel/71	E	63.4	----	63.8	0.4	----	63.6	0.2	----
488*	12B	1	Hotel/71	E	63.0	----	63.4	0.4	----	63.2	0.2	----
489*	12B	1	Commercial/71	E	58.6	----	58.9	0.3	----	58.6	0.0	----
490*	12B	1	Commercial/71	F	61.6	----	61.9	0.3	----	61.4	-0.2	----
491*	12B	1	Commercial/71	F	59.2	----	59.4	0.2	----	58.7	-0.5	----
492*	12B	1	Commercial/71	F	60.4	----	60.8	0.4	----	59.1	-1.3	----
493	12B	1	Commercial/71	E	65.0	----	65.3	0.3	----	66.1	1.1	----
494	12B	1	Commercial/71	E	64.4	----	64.7	0.3	----	65.2	0.8	----
495	12B	1	Commercial/71	E	63.8	----	64.0	0.2	----	64.0	0.2	----
496*	12B	1	Commercial/71	F	58.2	----	58.5	0.3	----	57.2	-1.0	----
497*	12B	1	Commercial/71	E	61.8	----	62.1	0.3	----	61.7	-0.1	----
498	12B	6	Hotel/71	E	62.9	----	63.1	0.2	----	63.1	0.2	----
499	**12I**	**1**	**Single Family/67**	**B**	**67.5**	**Sound Level**	**67.7**	**0.2**	**Sound Level**	**69.2**	**1.7**	**Sound Level**
500	**12I**	**1**	**Single Family/67**	**B**	**68.3**	**Sound Level**	**68.5**	**0.2**	**Sound Level**	**69.6**	**1.3**	**Sound Level**
501	**12I**	**1**	**Single Family/67**	**B**	**68.6**	**Sound Level**	**68.8**	**0.2**	**Sound Level**	**69.5**	**0.9**	**Sound Level**
502	**12I**	**1**	**Single Family/67**	**B**	**68.5**	**Sound Level**	**68.8**	**0.3**	**Sound Level**	**69.1**	**0.6**	**Sound Level**
503	**12I**	**1**	**Single Family/67**	**B**	**68.0**	**Sound Level**	**68.3**	**0.3**	**Sound Level**	**68.5**	**0.5**	**Sound Level**
504	**12I**	**1**	**Single Family/67**	**B**	**66.3**	**Sound Level**	**66.5**	**0.2**	**Sound Level**	**67.6**	**1.3**	**Sound Level**
505	**12I**	**1**	**Single Family/67**	**B**	**66.0**	**Sound Level**	**66.3**	**0.3**	**Sound Level**	**67.3**	**1.3**	**Sound Level**
506	**12I**	**1**	**Single Family/67**	**B**	**65.6**	**----**	**65.9**	**0.3**	**----**	**67.2**	**1.6**	**Sound Level**
507	**12I**	**1**	**Single Family/67**	**B**	**66.1**	**Sound Level**	**66.3**	**0.2**	**Sound Level**	**66.9**	**0.8**	**Sound Level**
508	**12I**	**1**	**Single Family/67**	**B**	**66.4**	**Sound Level**	**66.5**	**0.1**	**Sound Level**	**67.0**	**0.6**	**Sound Level**

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
509	**12I**	**1**	**Single Family/67**	**B**	**65.9**	**----**	**66.2**	**0.3**	**Sound Level**	**66.7**	**0.8**	**Sound Level**
510	12J	1	Single Family/67	B	61.4	----	61.7	0.3	----	63.2	1.8	----
511	12J	1	Single Family/67	B	61.1	----	61.4	0.3	----	62.7	1.6	----
512	12J	1	Single Family/67	B	60.6	----	60.9	0.3	----	62.3	1.7	----
513	12J	1	Single Family/67	B	60.1	----	60.4	0.3	----	62.0	1.9	----
514	12J	1	Single Family/67	B	60.0	----	60.3	0.3	----	61.7	1.7	----
515	12J	1	Single Family/67	B	62.6	----	62.9	0.3	----	64.4	1.8	----
516	12J	1	Single Family/67	B	63.0	----	63.3	0.3	----	64.7	1.7	----
517	12J	1	Single Family/67	B	63.4	----	63.7	0.3	----	65.0	1.6	----
518	12J	1	Single Family/67	B	64.0	----	64.1	0.1	----	65.5	1.5	----
519	12J	1	Single Family/67	B	64.1	----	64.4	0.3	----	65.6	1.5	----
520	12J	1	Single Family/67	B	63.7	----	64.0	0.3	----	65.6	1.9	----
521	12J	1	Single Family/67	B	63.2	----	63.5	0.3	----	65.1	1.9	----
522	12J	1	Single Family/67	B	62.5	----	62.8	0.3	----	64.5	2.0	----
523	12J	1	Single Family/67	B	61.9	----	62.1	0.2	----	63.9	2.0	----
524	12J	1	Single Family/67	B	61.0	----	61.3	0.3	----	63.3	2.3	----
525	12J	1	Single Family/67	B	60.5	----	60.9	0.4	----	62.7	2.2	----
526	12J	1	Single Family/67	B	60.0	----	60.3	0.3	----	62.2	2.2	----
527	12J	1	Single Family/67	B	62.4	----	62.7	0.3	----	64.2	1.8	----
528	12J	1	Single Family/67	B	62.4	----	62.7	0.3	----	63.9	1.5	----
529	12J	1	Single Family/67	B	61.5	----	61.9	0.4	----	63.2	1.7	----
530	12J	1	Single Family/67	B	60.9	----	61.2	0.3	----	62.7	1.8	----
531	12J	1	Single Family/67	B	60.4	----	60.6	0.2	----	62.2	1.8	----
532	12J	1	Single Family/67	B	60.9	----	61.3	0.4	----	62.9	2.0	----
533	12J	1	Single Family/67	B	60.1	----	60.4	0.3	----	62.3	2.2	----
534	12J	1	Single Family/67	B	59.5	----	59.8	0.3	----	61.8	2.3	----
535	**12J**	**1**	**Single Family/67**	**B**	**69.9**	**Sound Level**	**70.2**	**0.3**	**Sound Level**	**71.2**	**1.3**	**Sound Level**
536*	**12J**	**1**	**Single Family/67**	**B**	**72.4**	**Sound Level**	**72.7**	**0.3**	**Sound Level**	**72.6**	**0.2**	**Sound Level**
537	**12J**	**1**	**Single Family/67**	**B**	**72.6**	**Sound Level**	**72.7**	**0.1**	**Sound Level**	**72.8**	**0.2**	**Sound Level**

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
538	12J	1	Single Family/67	B	72.6	Sound Level	72.7	0.1	Sound Level	72.7	0.1	Sound Level
539*	12J	1	Single Family/67	B	72.5	Sound Level	72.7	0.2	Sound Level	72.6	0.1	Sound Level
540	12J	1	Single Family/67	B	72.1	Sound Level	72.3	0.2	Sound Level	72.4	0.3	Sound Level
541	12J	1	Single Family/67	B	71.6	Sound Level	71.8	0.2	Sound Level	72.1	0.5	Sound Level
542	12J	1	Single Family/67	B	71.4	Sound Level	71.6	0.2	Sound Level	71.8	0.4	Sound Level
543	12J	1	Single Family/67	B	71.1	Sound Level	71.3	0.2	Sound Level	71.7	0.6	Sound Level
544	12J	1	Single Family/67	B	70.5	Sound Level	70.7	0.2	Sound Level	70.9	0.4	Sound Level
545	12J	1	Single Family/67	B	68.1	Sound Level	68.3	0.2	Sound Level	69.2	1.1	Sound Level
546	12J	1	Single Family/67	B	66.4	Sound Level	66.7	0.3	Sound Level	67.6	1.2	Sound Level
547	12J	1	Single Family/67	B	65.3	----	65.5	0.2	----	66.6	1.3	Sound Level
548	12J	1	Single Family/67	B	64.1	----	64.4	0.3	----	65.8	1.7	----
549	12J	1	Single Family/67	B	63.1	----	63.4	0.3	----	65.1	2.0	----
550	12J	1	Single Family/67	B	68.3	Sound Level	68.5	0.2	Sound Level	69.5	1.2	Sound Level
551	12J	1	Single Family/67	B	67.9	Sound Level	68.1	0.2	Sound Level	68.9	1.0	Sound Level
552	12J	1	Single Family/67	B	69.5	Sound Level	69.7	0.2	Sound Level	70.0	0.5	Sound Level
553	12J	1	Single Family/67	B	69.5	Sound Level	69.7	0.2	Sound Level	70.1	0.6	Sound Level
554	12J	1	Single Family/67	B	69.5	Sound Level	69.8	0.3	Sound Level	70.0	0.5	Sound Level

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
555	**12J**	**1**	**Single Family/67**	**B**	**69.3**	**Sound Level**	**69.6**	**0.3**	**Sound Level**	**69.9**	**0.6**	**Sound Level**
556	**12J**	**1**	**Single Family/67**	**B**	**69.2**	**Sound Level**	**69.4**	**0.2**	**Sound Level**	**69.9**	**0.7**	**Sound Level**
557	**12J**	**1**	**Single Family/67**	**B**	**68.5**	**Sound Level**	**68.8**	**0.3**	**Sound Level**	**69.3**	**0.8**	**Sound Level**
558	**12J**	**1**	**Single Family/67**	**B**	**67.7**	**Sound Level**	**67.9**	**0.2**	**Sound Level**	**68.8**	**1.1**	**Sound Level**
559	**12J**	**1**	**Single Family/67**	**B**	**66.6**	**Sound Level**	**66.8**	**0.2**	**Sound Level**	**67.8**	**1.2**	**Sound Level**
560	**12J**	**1**	**Single Family/67**	**B**	**65.8**	**----**	**66.0**	**0.2**	**Sound Level**	**67.1**	**1.3**	**Sound Level**
561	**12J**	**1**	**Single Family/67**	**B**	**65.0**	**----**	**65.3**	**0.3**	**----**	**66.4**	**1.4**	**Sound Level**
562	12J	1	Single Family/67	B	64.0	----	64.4	0.4	----	65.6	1.6	----
563	12J	1	Single Family/67	B	63.3	----	63.6	0.3	----	65.1	1.8	----
564	12J	1	Single Family/67	B	63.1	----	63.4	0.3	----	64.6	1.5	----
565	12J	1	Single Family/67	B	63.0	----	63.3	0.3	----	64.5	1.5	----
566	12J	1	Single Family/67	B	63.1	----	63.4	0.3	----	64.7	1.6	----
567	12J	1	Single Family/67	B	63.3	----	63.6	0.3	----	65.0	1.7	----
568	12J	1	Single Family/67	B	63.2	----	63.5	0.3	----	64.9	1.7	----
569	12J	1	Single Family/67	B	62.7	----	63.1	0.4	----	64.3	1.6	----
570	12J	1	Single Family/67	B	61.9	----	62.3	0.4	----	63.6	1.7	----
571	**12J**	**1**	**Single Family/67**	**B**	**64.1**	**----**	**64.4**	**0.3**	**----**	**66.8**	**2.7**	**Sound Level**
572	**12J**	**1**	**Single Family/67**	**B**	**64.8**	**----**	**65.1**	**0.3**	**----**	**67.4**	**2.6**	**Sound Level**
573	**12J**	**1**	**Single Family/67**	**B**	**65.3**	**----**	**65.6**	**0.3**	**----**	**68.0**	**2.7**	**Sound Level**
574	**12J**	**1**	**Single Family/67**	**B**	**65.6**	**----**	**65.9**	**0.3**	**----**	**68.1**	**2.5**	**Sound Level**
575	**12J**	**1**	**Single Family/67**	**B**	**65.8**	**----**	**66.2**	**0.4**	**Sound Level**	**68.1**	**2.3**	**Sound Level**

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
576	12J	1	Single Family/67	B	65.6	----	66.0	0.4	Sound Level	68.1	2.5	Sound Level
577	12J	1	Single Family/67	B	65.1	----	65.5	0.4	----	67.4	2.3	Sound Level
578	12J	1	Single Family/67	B	65.0	----	65.3	0.3	----	67.9	2.9	Sound Level
579	12J	1	Single Family/67	B	64.7	----	65.0	0.3	----	67.4	2.7	Sound Level
580	12J	1	Single Family/67	B	64.2	----	64.5	0.3	----	66.9	2.7	Sound Level
581	12J	1	Single Family/67	B	63.5	----	63.8	0.3	----	66.3	2.8	Sound Level
582	12J	1	Single Family/67	B	62.9	----	63.2	0.3	----	65.7	2.8	----
583	12J	1	Single Family/67	B	61.8	----	62.1	0.3	----	64.5	2.7	----
584	12L	1	Single Family/67	B	71.0	Sound Level	71.2	0.2	Sound Level	73.1	2.1	Sound Level
585	12L	1	Single Family/67	B	70.6	Sound Level	71.0	0.4	Sound Level	72.5	1.9	Sound Level
586	12L	1	Single Family/67	B	70.2	Sound Level	70.4	0.2	Sound Level	71.9	1.7	Sound Level
587	12L	1	Single Family/67	B	69.7	Sound Level	69.9	0.2	Sound Level	71.4	1.7	Sound Level
588	12L	1	Single Family/67	B	64.5	----	64.8	0.3	----	66.9	2.4	Sound Level
589	12L	1	Single Family/67	B	64.4	----	64.7	0.3	----	66.9	2.5	Sound Level
590	12L	1	Single Family/67	B	64.5	----	64.8	0.3	----	66.9	2.4	Sound Level
591	12L	1	Single Family/67	B	64.7	----	65.0	0.3	----	67.1	2.4	Sound Level
592	12L	1	Single Family/67	B	65.0	----	65.3	0.3	----	67.3	2.3	Sound Level

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
593	**12L**	**1**	**Single Family/67**	**B**	**65.7**	**----**	**66.0**	**0.3**	**Sound Level**	**68.1**	**2.4**	**Sound Level**
594*	**12A**	**15**	**Hotel/71 (2nd Floor)**	**E**	**73.3**	**Sound Level**	**73.5**	**0.2**	**Sound Level**	**73.2**	**-0.1**	**Sound Level**
595	**12B**	**5**	**Multi Family/67 (2nd Floor)**	**B**	**72.3**	**Sound Level**	**72.5**	**0.2**	**Sound Level**	**73.0**	**0.7**	**Sound Level**
596	**12B**	**4**	**Multi Family/67 (2nd Floor)**	**B**	**73.1**	**Sound Level**	**73.3**	**0.2**	**Sound Level**	**74.2**	**1.1**	**Sound Level**
597	**12A**	**5**	**Multi Family/67 (2nd Floor)**	**B**	**67.6**	**Sound Level**	**67.9**	**0.3**	**Sound Level**	**68.1**	**0.5**	**Sound Level**
598	**12B**	**5**	**Multi Family/67 (2nd Floor)**	**B**	**67.2**	**Sound Level**	**67.5**	**0.3**	**Sound Level**	**67.7**	**0.5**	**Sound Level**
599	12A	5	Multi Family/67 (2nd Floor)	B	64.1	----	64.4	0.3	----	64.5	0.4	----
600	**12B**	**5**	**Multi Family/67 (2nd Floor)**	**B**	**68.7**	**Sound Level**	**68.9**	**0.2**	**Sound Level**	**69.7**	**1.0**	**Sound Level**
601	12B	4	Multi Family/67 (2nd Floor)	B	65.2	----	65.5	0.3	----	65.6	0.4	----
602	12B	4	Multi Family/67 (2nd Floor)	B	63.3	----	63.6	0.3	----	63.8	0.5	----
603	**12B**	**5**	**Multi Family/67 (3rd Floor)**	**B**	**73.2**	**Sound Level**	**73.3**	**0.1**	**Sound Level**	**73.8**	**0.6**	**Sound Level**
604	**12B**	**4**	**Multi Family/67 (3rd Floor)**	**B**	**74.1**	**Sound Level**	**74.2**	**0.1**	**Sound Level**	**74.9**	**0.8**	**Sound Level**
605	**12A**	**5**	**Multi Family/67 (3rd Floor)**	**B**	**69.3**	**Sound Level**	**69.5**	**0.2**	**Sound Level**	**69.7**	**0.4**	**Sound Level**
606	**12B**	**5**	**Multi Family/67 (3rd Floor)**	**B**	**69.1**	**Sound Level**	**69.3**	**0.2**	**Sound Level**	**69.6**	**0.5**	**Sound Level**
607	**12A**	**5**	**Multi Family/67 (3rd Floor)**	**B**	**66.3**	**Sound Level**	**66.5**	**0.2**	**Sound Level**	**66.6**	**0.3**	**Sound Level**
608	**12B**	**5**	**Multi Family/67 (3rd Floor)**	**B**	**70.9**	**Sound Level**	**71.1**	**0.2**	**Sound Level**	**71.7**	**0.8**	**Sound Level**

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
609	**12B**	**4**	**Multi Family/67 (3rd Floor)**	**B**	**69.5**	**Sound Level**	**69.8**	**0.3**	**Sound Level**	**70.2**	**0.7**	**Sound Level**
610	**12B**	**4**	**Multi Family/67 (3rd Floor)**	**B**	**66.8**	**Sound Level**	**67.0**	**0.2**	**Sound Level**	**67.4**	**0.6**	**Sound Level**
611	12F	8	Multi Family/67 (2nd Floor)	B	62.0	----	62.6	0.6	----	63.5	1.5	----
612	12F	8	Multi Family/67 (2nd Floor)	B	62.8	----	63.3	0.5	----	64.4	1.6	----
613	12F	8	Multi Family/67 (2nd Floor)	B	63.6	----	64.1	0.5	----	65.3	1.7	----
614	12F	8	Multi Family/67 (2nd Floor)	B	62.0	----	62.5	0.5	----	63.4	1.4	----
615	12F	8	Multi Family/67 (2nd Floor)	B	61.1	----	61.6	0.5	----	62.5	1.4	----
616	**12F**	**12**	**Multi Family/67 (2nd Floor)**	**B**	**64.5**	**----**	**64.6**	**0.1**	**----**	**67.7**	**3.2**	**Sound Level**
617	12F	12	Multi Family/67 (2nd Floor)	B	63.7	----	63.2	-0.5	----	65.5	1.8	----
618	12F	12	Multi Family/67 (2nd Floor)	B	62.5	----	62.4	-0.1	----	65.0	2.5	----
619	12F	12	Multi Family/67 (2nd Floor)	B	62.0	----	61.9	-0.1	----	63.7	1.7	----
620	12F	12	Multi Family/67 (2nd Floor)	B	63.5	----	63.5	0.0	----	64.8	1.3	----
621	12F	12	Multi Family/67 (2nd Floor)	B	63.4	----	63.6	0.2	----	64.6	1.2	----
622	12F	12	Multi Family/67 (2nd Floor)	B	62.8	----	62.8	0.0	----	64.2	1.4	----
623	12F	12	Multi Family/67 (2nd Floor)	B	62.8	----	62.9	0.1	----	64.2	1.4	----
624	12F	8	Multi Family/67 (2nd Floor)	B	60.1	----	60.6	0.5	----	61.4	1.3	----

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
625	12F	8	Multi Family/67 (2nd Floor)	B	60.4	----	60.8	0.4	----	62.3	1.9	----
626	12F	8	Multi Family/67 (2nd Floor)	B	59.4	----	59.9	0.5	----	62.0	2.6	----
627	12F	8	Multi Family/67 (2nd Floor)	B	62.1	----	62.6	0.5	----	65.0	2.9	----
628	12F	8	Multi Family/67 (2nd Floor)	B	60.4	----	60.8	0.4	----	63.2	2.8	----
629	12F	8	Multi Family/67 (3rd Floor)	B	63.0	----	63.5	0.5	----	64.4	1.4	----
630	12F	8	Multi Family/67 (3rd Floor)	B	63.6	----	64.1	0.5	----	65.2	1.6	----
631	12F	8	Multi Family/67 (3rd Floor)	B	64.4	----	64.9	0.5	----	65.9	1.5	----
632	12F	8	Multi Family/67 (3rd Floor)	B	63.1	----	63.6	0.5	----	64.3	1.2	----
633	12F	8	Multi Family/67 (3rd Floor)	B	62.3	----	62.8	0.5	----	63.5	1.2	----
634	**12F**	**12**	**Multi Family/67 (3rd Floor)**	**B**	**66.2**	**Sound Level**	**66.2**	**0.0**	**Sound Level**	**68.9**	**2.7**	**Sound Level**
635	**12F**	**12**	**Multi Family/67 (3rd Floor)**	**B**	**66.5**	**Sound Level**	**66.3**	**-0.2**	**Sound Level**	**68.0**	**1.5**	**Sound Level**
636	**12F**	**12**	**Multi Family/67 (3rd Floor)**	**B**	**64.2**	**----**	**64.1**	**-0.1**	**----**	**66.3**	**2.1**	**Sound Level**
637	12F	12	Multi Family/67 (3rd Floor)	B	64.2	----	64.1	-0.1	----	65.7	1.5	----
638	**12F**	**12**	**Multi Family/67 (3rd Floor)**	**B**	**66.7**	**Sound Level**	**66.8**	**0.1**	**Sound Level**	**68.0**	**1.3**	**Sound Level**
639	**12F**	**12**	**Multi Family/67 (3rd Floor)**	**B**	**65.7**	**----**	**65.9**	**0.2**	**----**	**67.0**	**1.3**	**Sound Level**
640	**12F**	**12**	**Multi Family/67 (3rd Floor)**	**B**	**64.7**	**----**	**64.8**	**0.1**	**----**	**66.1**	**1.4**	**Sound Level**

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
641	12F	12	Multi Family/67 (3rd Floor)	B	64.9	----	65.0	0.1	----	65.9	1.0	----
642	12F	8	Multi Family/67 (3rd Floor)	B	61.2	----	61.7	0.5	----	62.5	1.3	----
643	12F	8	Multi Family/67 (3rd Floor)	B	61.8	----	62.2	0.4	----	63.4	1.6	----
644	12F	8	Multi Family/67 (3rd Floor)	B	61.0	----	61.4	0.4	----	62.8	1.8	----
645	12F	8	Multi Family/67 (3rd Floor)	B	64.2	----	64.6	0.4	----	65.8	1.6	----
646	12F	8	Multi Family/67 (3rd Floor)	B	62.0	----	62.3	0.3	----	64.6	2.6	----
647*	12G	23	Hotel/71	E	62.6	----	62.9	0.3	----	62.6	0.0	----
648	12N	30	Hotel/71	E	69.7	----	70.0	0.3	----	70.6	0.9	----
649*	**12N**	**4**	**Multi Family/67 (2nd Floor)**	**B**	**75.2**	**Sound Level**	**75.4**	**0.2**	**Sound Level**	**75.3**	**0.1**	**Sound Level**
650	**12N**	**4**	**Multi Family/67 (2nd Floor)**	**B**	**71.7**	**Sound Level**	**71.9**	**0.2**	**Sound Level**	**72.0**	**0.3**	**Sound Level**
651	**12N**	**4**	**Multi Family/67 (2nd Floor)**	**B**	**69.3**	**Sound Level**	**69.6**	**0.3**	**Sound Level**	**69.7**	**0.4**	**Sound Level**
652	**12N**	**4**	**Multi Family/67 (2nd Floor)**	**B**	**66.7**	**Sound Level**	**67.1**	**0.4**	**Sound Level**	**67.4**	**0.7**	**Sound Level**
653*	**12N**	**4**	**Multi Family/67 (2nd Floor)**	**B**	**65.9**	**----**	**66.1**	**0.2**	**Sound Level**	**66.0**	**0.1**	**Sound Level**
654	**12N**	**4**	**Multi Family/67 (2nd Floor)**	**B**	**65.7**	**----**	**65.9**	**0.2**	**----**	**66.1**	**0.4**	**Sound Level**
655	12N	4	Multi Family/67 (2nd Floor)	B	65.5	----	65.8	0.3	----	65.9	0.4	----
656	12N	4	Multi Family/67 (2nd Floor)	B	64.6	----	64.9	0.3	----	65.3	0.7	----
657	12N	24	Hotel/71	E	69.9	----	70.1	0.2	----	70.8	0.9	----
658*	12N	60	Hotel/71	E	70.1	----	70.6	0.5	----	70.4	0.3	----
659	12N	20	Hotel/71	E	70.0	----	70.9	0.9	----	70.9	0.9	----

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
660	**12N**	**11**	**Hotel/71**	**E**	**70.8**	**----**	**71.0**	**0.2**	**Sound Level**	**71.4**	**0.6**	**Sound Level**
661	**12N**	**9**	**Hotel/71**	**E**	**72.5**	**Sound Level**	**72.8**	**0.3**	**Sound Level**	**73.1**	**0.6**	**Sound Level**
662*	12P	20	Hotel/71	E	67.0	----	67.5	0.5	----	66.7	-0.3	----
663*	12P	30	Hotel/71	E	64.8	----	66.1	1.3	----	65.7	0.9	----
664*	12P	45	Hotel/71	E	62.9	----	63.0	0.1	----	61.9	-1.0	----
665	**12B**	**5**	**Multi Family/67 (2nd Floor)**	**B**	**65.7**	**----**	**66.0**	**0.3**	**Sound Level**	**66.4**	**0.7**	**Sound Level**
666	12B	5	Multi Family/67 (2nd Floor)	B	63.9	----	64.3	0.4	----	64.7	0.8	----
667	12B	44	Hotel/71	E	67.3	----	67.5	0.2	----	67.5	0.2	----
668	12B	5	Multi Family/67 (3rd Floor)	B	68.8	----	69.0	0.2	----	69.6	0.8	----
669	12B	5	Multi Family/67 (3rd Floor)	B	66.5	----	66.7	0.2	----	67.2	0.7	----
670	12B	44	Hotel/71	E	68.9	----	69.0	0.1	----	69.5	0.6	----
671*	12B	10	Hotel/71	E	67.6	----	67.9	0.3	----	67.4	-0.2	----
672*	12B	10	Hotel/71	E	68.6	----	68.8	0.2	----	68.7	0.1	----
673	12N	1	Commercial/71	E	64.8	----	66.5	1.7	----	66.8	2.0	----
674	12N	1	Commercial/71	E	63.7	----	65.5	1.8	----	65.6	1.9	----
675	12N	1	Commercial/71	E	62.5	----	64.2	1.7	----	64.2	1.7	----
676	12N	1	Commercial/71	E	63.5	----	65.5	2.0	----	65.6	2.1	----
677	12N	1	Commercial/71	E	65.5	----	67.7	2.2	----	67.8	2.3	----
678	12N	1	Commercial/71	E	67.7	----	69.9	2.2	----	69.9	2.2	----
679	12N	1	Commercial/71	E	61.2	----	62.3	1.1	----	62.7	1.5	----
680	12N	1	Commercial/71	E	63.0	----	65.0	2.0	----	65.1	2.1	----
681	12N	1	Commercial/71	E	63.5	----	65.7	2.2	----	65.8	2.3	----
682	12N	1	Commercial/71	E	65.6	----	68.0	2.4	----	68.0	2.4	----
683	12N	1	Commercial/71	E	61.7	----	63.9	2.2	----	63.9	2.2	----
684*	12P	1	Hotel/71	E	67.4	----	69.9	2.5	----	69.8	2.4	----
685*	12P	29	Commercial/71	E	67.5	----	69.9	2.4	----	69.8	2.3	----
686	12P	1	Commercial/71	E	67.2	----	69.8	2.6	----	69.8	2.6	----

Table 26. Noise Impact Assessment Results by Receiver Location

Receiver ID# (*=No Build >Build)	Figure	Number of Dwelling Units	Land Use/NAC	Existing (2010)			No Build (2035)			Build Alternative (2035)		
				NAC Category	Leq dBA	Noise Impact (Type)	Leq dBA	Difference from existing	Noise Impact (Type)	Leq dBA	Difference from Existing	Noise Impact (Type)
687	12P	1	Commercial/71	E	65.1	----	67.3	2.2	----	67.3	2.2	----
688*	12P	1	Commercial/71	E	63.2	----	65.1	1.9	----	65.0	1.8	----
689*	12P	1	Commercial/71	E	61.4	----	63.1	1.7	----	62.9	1.5	----
690	**12P**	**30**	**Hotel/71 (2nd Floor)**	**E**	**69.0**	**----**	**71.4**	**2.4**	**Sound Level**	**71.4**	**2.4**	**Sound Level**
691*	12A	14	Hotel/71	E	68.8	----	69.0	0.2	----	68.2	-0.6	----
692*	12A	14	Hotel/71 (2nd Floor)	E	70.8	----	71.0	0.2	Sound Level	69.9	-0.9	----
693*	12A	14	Hotel/71	E	67.0	----	67.3	0.3	----	66.6	-0.4	----
694*	12A	14	Hotel/71 (2nd Floor)	E	69.6	----	69.9	0.3	----	69.1	-0.5	----
695*	12A	14	Hotel/71	E	69.3	----	69.6	0.3	----	69.3	0.0	----
696*	**12A**	**14**	**Hotel/71 (2nd Floor)**	**E**	**71.7**	**Sound Level**	**71.9**	**0.2**	**Sound Level**	**71.4**	**-0.3**	**Sound Level**
697	**12N**	**8**	**Hotel/71**	**E**	**71.2**	**Sound Level**	**71.4**	**0.2**	**Sound Level**	**71.5**	**0.3**	**Sound Level**
698	**12N**	**8**	**Hotel/71 (2nd Floor)**	**E**	**72.6**	**Sound Level**	**72.7**	**0.1**	**Sound Level**	**72.9**	**0.3**	**Sound Level**
699	12N	8	Hotel/71	E	69.1	----	69.3	0.2	----	69.5	0.4	----
700	**12N**	**8**	**Hotel/71 (2nd Floor)**	**E**	**70.6**	**----**	**70.9**	**0.3**	**----**	**71.1**	**0.5**	**Sound Level**
701	12N	8	Hotel/71	E	69.2	----	69.6	0.4	----	70.0	0.8	----
702	**12N**	**8**	**Hotel/71 (2nd Floor)**	**E**	**70.6**	**----**	**70.9**	**0.3**	**----**	**71.4**	**0.8**	**Sound Level**
703	12N	13	Hotel/71	E	69.9	----	70.1	0.2	----	70.2	0.3	----
704	**12N**	**13**	**Hotel/71 (2nd Floor)**	**E**	**71.4**	**Sound Level**	**71.5**	**0.1**	**Sound Level**	**71.6**	**0.2**	**Sound Level**
705	12N	13	Hotel/71	E	69.4	----	69.5	0.1	----	70.1	0.7	----
706*	**12N**	**13**	**Hotel/71 (2nd Floor)**	**E**	**71.2**	**Sound Level**	**71.4**	**0.2**	**Sound Level**	**71.3**	**0.1**	**Sound Level**
707	12N	13	Hotel/71	E	68.1	----	68.4	0.3	----	68.9	0.8	----
708	**12N**	**13**	**Hotel/71 (2nd Floor)**	**E**	**70.3**	**----**	**70.7**	**0.4**	**----**	**71.2**	**0.9**	**Sound Level**

Source: Noise Technical Report: I-75 Managed Lanes, December, 2012. Notes: * No-Build noise level exceeds Build noise level. **Receptors in bold exceed or approach the NAC.**

e. Noise Abatement

Based on the analysis in the previous section and in accordance with GDOT and FHWA Noise Policy, it is anticipated that construction of the proposed project would result in traffic-related noise impacts to 237 receivers, representing 606 receptors, all predicted to be impacted based on the NAC established by 23 CFR Part 772. Therefore, in accordance with 23 CFR Part 772, noise abatement measures must be considered for reducing or eliminating noise impacts to the impacted receiver locations. The following narrative details the abatement options considered.

Land Use and Zoning.

One noise abatement measure is the application of land use controls to minimize impacts to future development. In particular, land use controls can be used to create buffer zones. Although GDOT is typically not able to acquire land to create buffer zones, it is sometimes possible to relocate an impacted property outside of the potential noise impact zone. This approach is sometimes applied to mobile home parks where relocation of the homes to a location outside the impact zone is possible. Typically, this approach would be made in consultation with the owner of the mobile home. However, none of the receivers to be impacted are of the type that such relocation is practical. Therefore, such action is not appropriate for consideration for this project.

Traffic Management.

Traffic management techniques such as the restriction of truck traffic, use by only certain types of vehicles, restricting use to certain times of the day, traffic calming devices, and reduction in operating speeds were considered for noise abatement measures to the impacted receivers. Given that the noise source is I-75, traffic control devices and prohibition of certain types of vehicles would not be consistent with the interstate system's intended purpose.

Alignment Alternatives.

A change in alignment was considered to reduce noise impacts. Based on the level of development along I-75, an alignment shift to reduce impacts to these receivers would likely result in additional impacts to other receivers. In addition, a shift significant enough to achieve a required reduction level in noise impacts could result in displacements. The proposed alignment utilizes the existing right-of-way along the inside shoulder of I-75 in order to avoid displacements necessary to construct the improvements. Therefore, a shift in alignment is not considered a reasonable noise abatement measure.

Structural Barriers.

The use of structural barriers (freestanding walls) was considered for impacted receivers. The optimum situation for the use of freestanding noise wall exists when a dense concentration of impacted sites is located directly adjacent to (and parallel with) the highway right-of-way. In these instances, one wall can protect many residences at a relatively low cost per impacted site. Guidelines adopted by GDOT to ensure that the maximum number of persons benefit from each dollar spent on noise abatement limit the cost of barriers to $55,000 per benefited receptor based on a $20 per square foot construction cost. A benefited receptor is defined as the recipient of an abatement measure that receives a noise reduction at or above the minimum threshold of 5 dBA. Where cost per unit for an effective noise barrier (one that would reduce noise levels by at least seven decibels) would exceed this amount, the wall is not considered a reasonable use of public

funds and no abatement is proposed. For impacted receiver 690, driveway access to SR 155 would reduce barrier effectiveness. Noise walls are not considered feasible for receptors where driveway access must be maintained. Therefore, a noise wall would not be a feasible abatement measure at this location.

A study for the remaining impacted receivers based on the standard evaluation criteria for feasibility and reasonableness described in GDOT Noise Policy has been completed. The results of this study are provided below.

Feasibility

The first step for evaluating the benefit of a noise wall is feasibility. The criteria below are considered for each noise abatement measure to evaluate feasibility:

1. Noise reduction: a calculated noise reduction of at least 5 dBA must be achievable for a minimum of one impacted receptor. Each noise receptor which receives a 5 dBA reduction (whether classified as impacted or not) is considered to be a benefited receptor,
2. Constructability: a noise abatement measure must be able to be constructed using reliable and common engineering practices,
3. Safety and maintainability: an exterior noise abatement measure should conform to the AASHTO Green Book and Roadside Design Guide and should be accessible to maintenance personnel and not prevent access to other highway appurtenances (e.g., drainage structures). The maximum barrier height that can feasibly be maintained is 30 feet, and
4. Access: an abatement measure must allow sufficient access to adjacent properties.

Table 27 includes information related to wall design, the location of impacted receivers protected by the wall, and a feasibility determination. Locations of these walls appear on Figure 12. Each noise wall location would achieve a noise reduction of at least 5 dBA for a minimum of one impacted receptor. No walls would exceed the maximum barrier height of 30 feet, and the walls could be constructed using reliable and common engineering practices.

Table 27. Build Alternative Noise Barrier Design

Wall ID #	Figure Location	Impacted Receivers	Wall Length (feet)	Wall Height (feet)	Decibel Reduction (Maximum)	Feasibility
1	12B	13, 17, 18, 594-598, 600, 603-610, 665,696	3,204	18 to 30	9.5	Yes
2	12D	31-34, 45-68, 71-105, 109, 137	5,010	18 to 28	11.9	Yes
3	12D	125-132, 134	1,392	30	6.9	Yes
4	12E	180-185, 187, 188, 207	2,069	12 to 28	9.6	Yes
5	12F	616, 634-636, 638-640	1,783	18 to 30	7.0	Yes
6	12I, 12J	283-288, 292-302, 499-509, 536-561, 571-581	4,198	16 to 28	9.2	Yes
7	12J	303	1,451	12 to 18	7.0	Yes
8	12K	320-332, 334, 584-587	1,423	22 to 28	10.6	Yes
9	12L	361, 362, 372-375, 588-593	1,795	16 to 20	7.2	Yes
10	12N	384-386, 395-398, 400-402, 414-417, 424, 425, 649-654	2,193	20 to 30	13.5	Yes
11	12N	457, 660, 661, 697, 698, 700, 702, 704, 706, 708	1,003	20 to 30	7.8	Yes

Source: I-75 Managed Lanes Noise Impact Assessment, December 2012.

Reasonableness

A reasonableness study is performed for any noise abatement measure considered to be feasible. Based on the feasibility criteria above, eleven noise walls should be assessed for reasonableness using the criteria below. The first two must be satisfied before contacting property owners and residents.

1. Noise reduction: at least one benefited receptor must receive a minimum noise level reduction of 7 dBA – i.e., the noise reduction design goal,
2. Cost effectiveness: using a $20 per square foot cost for the required noise wall, the total cost must not exceed a $55,000 average allowance per benefited receptor, and
3. Property owners and residents: the decision to provide abatement would be made in collaboration with the property owner and tenants of a benefited receptor. The outreach strategy would be customized for maximum effectiveness on each project. The minimum outreach method shall be a certified letter survey provided to both property owners and tenants whose facility or home is identified as a benefited receptor. A noise wall would only be constructed if at a minimum 50% plus one of the respondents vote in favor of noise abatement. Both property owners and dwellers get a vote and their vote must be returned within 30 days to receive consideration. Property owners would receive one vote per unit owned and an additional vote if they reside in the unit, and tenants would receive one vote for the benefited unit they occupy. For some projects, individual

meetings, community meetings or other outreach efforts may also be utilized to determine a majority consensus.

The final abatement measures cannot be determined until the design plans have sufficiently progressed to a point where the wall analysis can be conducted; after which, the outreach above can be completed. GDOT would strive for a decision on abatement as soon as possible after this information is available, but no later than the final environmental document that is required for construction authorization.

As shown in Table 28, a total of 10 wall locations would achieve a noise reduction goal of at least 7 dBA for a minimum of one receptor. The noise reduction goal was not satisfied for any receptor in the area of noise wall #3. The required access break associated with the Walt Stephens Bridge over I-75 limits extending the wall further south. In attempting to attain a 7 dBA reduction, the maximum wall height allowed by GDOT Noise Policy was used (30 feet). Finally, extending wall #3 further north than the current length would increase the overall wall cost (currently $835,348), which with the current design significantly exceeds the reasonable cost ($330,000). Therefore, 10 proposed noise wall locations would satisfy the noise reduction criterion for reasonableness.

The second criterion for reasonableness, cost-effectiveness, is based on the number of dwelling units receiving a minimum 5 dBA reduction multiplied by $55,000, beyond which the wall is not considered a reasonable use of public funds. Table 28 presents the cost-effectiveness summary.

Table 28. Build Alternatives Cost Effectiveness Summary

Wall ID #	Number of Benefited Receptors	Reasonableness Cost	Construction Cost	Reasonable
1	155	$8,525,000	$1,801,634	Yes
2	77	$4,235,000	$2,442,256	Yes
3	6	$330,000	$835,348	No
4	10	$550,000	$948,823	No
5	48	$2,640,000	$976,669	Yes
6	71	$3,905,000	$1,860,954	Yes
7	50	$2,750,000	$486,621	Yes
8	15	$825,000	$715,467	Yes
9	16	$880,000	$700,137	Yes
10	74	$4,070,000	$1,214,082	Yes
11	166	$9,130,000	$526,507	Yes

Source: I-75 Managed Lanes Noise Impact Assessment, December 2012.

Based on the results, nine noise walls would be reasonable and feasible to construct under each alternative. Their locations are shown on Figure 12.

f. Statement of Likelihood

Four barrier walls currently exist along the project corridor. Three of these walls would remain under the Build Alternatives. One of the walls that would remain is located along the western side of I-75 just south of the Walt Stephens Road. The other two walls are located directly across from each other just north of the Eagles Landing Parkway/Hudson Bridge interchange.. The wall, located north of Walt Stephens Road on the west side of I-75, would be removed to provide adequate space for the managed lanes; therefore this noise wall was removed from the

Build condition. This wall would be replaced by proposed noise wall #2. Additionally, the barrier wall associated with GDOT Project P.I. 0010126, scheduled to be completed in 2013, was included in the 2035 Build and No-Build scenarios. No sites along the project corridor would experience noise level increases of greater than 15 dBA. Therefore, no sites are considered impacted by the Build Alternatives based on the substantial increase criteria.

Noise abatement for the impacted receiver sites was considered. Based on the results of the abatement analysis, noise walls would be considered a feasible and reasonable abatement measures. The locations of these walls include:

1. Proposed noise wall #1 would be constructed in the northwest quadrant of the I-75 and I-675 merge. The wall would follow the existing tree line and the location would range between 14 and 44 feet from the existing edge of pavement. The wall would be approximately 3,204 feet in length,
2. Proposed noise wall #2 would begin at the Walt Stephens Road overpass and extend north along the western side of I-75 for approximately 5,010 feet. The wall placement would range between 20 and 53 feet from the edge of pavement,
3. Proposed noise wall #5 would begin approximately 2,100 feet north of the Eagles Landing Parkway/Hudson Bridge Road overpass and continue north along the eastern side of I-75 for approximately 1,783 feet. The wall placement would range between 22 and 35 feet from the edge of pavement,
4. Proposed noise wall #6 would begin approximately 4,450 feet south of the Jodeco Road overpass and extend north along the eastern side of I-75 and up the I-75 northbound off-ramp to Jodeco Road for a total length of approximately 4,198 feet. The wall placement would range between 12 and 57 feet from the edge of pavement,
5. Proposed noise wall #7 would begin approximately 1,630 feet south of the Jodeco Road overpass and extend south along the western side of I-75 for approximately 1,451 feet. The wall placement would range between 8 and 12 feet from the edge of pavement,
6. Proposed noise wall #8 would begin approximately 60 feet north of the Mt. Carmel Road overpass and continue north along the western side of I-75 for approximately 1,423 feet. The wall placement would be approximately 8 feet from the edge of pavement.
7. Proposed noise wall #9 would begin approximately 540 feet south of the Mt. Carmel Road overpass and continue south along the western side of I-75 for approximately 1,795 feet. The wall placement would range between 6 and 15 feet from the edge of pavement.
8. Proposed noise wall #10 would begin approximately 2,250 feet north of the SR 20 overpass and continue north along the eastern side of I-75 for approximately 2,193 feet. The wall placement would range between 50 and 80 feet from the edge of pavement.
9. Proposed noise wall #11 would begin approximately 1,250 feet south of the SR 20 overpass and continue north along the eastern side of I-75 and up the I-75 northbound off-ramp to SR 20 for a total length of approximately 1,003 feet. The wall placement would range between 20 and 50 feet from the edge of pavement.

Two locations were evaluated for noise abatement but determined not to be reasonable. Noise wall #3 was evaluated for impacted receivers 125-132, and 134 along the eastern side of I-75 just

north of the Walt Stephens Road overpass. The required noise reduction goal of 7 dBA was not satisfied for any receiver located in the vicinity of noise wall #3. Noise wall #4 was evaluated for impacted receivers 180-185, 187, and 207 along the eastern side of I-75 just north of the I-75 bridge over Flippen Road. The construction cost of noise wall #4 would exceed the cost per benefited receptor. Therefore, no noise wall is proposed at these locations. For impacted receiver 690, driveway access to SR 155 would reduce noise wall effectiveness and, therefore, a noise wall would not be a feasible abatement measure.

A re-evaluation of the noise analysis may occur during final design, if changes to the project warrant a re-evaluation. If, during final design, it has been determined that conditions have changed such that noise abatement is not feasible and reasonable, the abatement measures might not be provided. The final decision on the installation of any abatement measures(s) would be made upon completion of the project's final design and the public involvement processes.

Indirect Effects. There are noise impacts to receptors; these would be mitigated by the proposed noise walls. With the implementation of managed lanes, traffic volumes are expected to increase slightly, 0.3% (Section E.2.d.). For the Build Alternatives, there are 237 receivers, representing 606 receptors, along the project corridor predicted to be impacted based on the NAC established by 23 CFR 772. For Alternative 3, the No-Build Alternative, there are 193 receivers, representing 452 receptors, along the project corridor predicted to exceed the NAC established by 23 CFR 772. This project is not expected to induce any new development that is not already planned for by the counties causing more noise impacts. Therefore, there are no indirect effects as a result of this project.

Cumulative Effects. The noise impacts to the receptors are mitigated by the proposed noise walls. Even with the slight increase in traffic volumes, this project presents little to no contributions to past, present, or reasonably foreseeable future actions that could result in cumulative effects.

2. Air

The Clean Air Act Amendments (CAAA) of 1990 and the Final Conformity Rule (40 CFR Parts 51 and 93) direct the United States Environmental Protection Agency (EPA) to implement environmental policies and regulations that will ensure acceptable levels of air quality. These regulations apply to proposed transportation projects. Title 1, Section 176(c)2 of the CAAA states " No federal agency may approve, accept, or fund any transportation plan, program, or project unless such plan, program, or project has been found to conform to any applicable State Implementation Plan (SIP) in effect under this act."

The Final Conformity Rule defines conformity as consistency with the SIP's purpose to eliminate or reduce the severity and number of violations of the National Ambient Air Quality Standards (NAAQS) and to achieve expeditious attainment of such standards. Conformity to the SIP means that transportation activities will not cause or contribute to any new violations of the NAAQS, increase the frequency or severity of any existing violation of any NAAQS, or delay timely attainment of any NAAQS or any required interim emission reductions or other milestones in any area. In complying with these guidelines, GDOT has completed an analysis on the effects of the proposed project on air quality.

a. National and State Ambient Air Quality Standards

The NAAQS have been established for air pollutants that have been identified by the EPA as being of concern nationwide. These air pollutants, referred to as criteria pollutants, are carbon monoxide, lead, nitrogen dioxide, particulate matter, ozone, and sulfur dioxide (Table 29). The sources of these pollutants, effects on human health and the nation's welfare, and occurrence in the atmosphere vary considerably.

The NAAQS protect the public health and welfare. The primary NAAQS are established at levels intended to protect public health, including sensitive population groups, with an adequate margin of safety. Secondary NAAQS are set at levels designed to protect the public by accounting for the effects of air pollution on vegetation, soil, materials, and elements of the environment that affect general welfare. The standards presented in Table 29 represent the official ambient air quality standards for the state of Georgia. Within Georgia, EPA has designated nonattainment areas for the pollutants ozone and particulate matter ($PM_{2.5}$). Henry and Clayton counties are located within the designated nonattainment areas for ozone and $PM_{2.5}$. A discussion of these criteria pollutants and project-related carbon monoxide (CO) and Mobile Source Air Toxins (MSAT) is presented below.

b. Ozone

The project is in an area that is in non-attainment for ozone. This project is located in an area where the SIP contains transportation control measures. The CAA requires Transportation Plans and Transportation Improvement Programs (TIP) in areas not meeting the NAAQS to conform to the emissions budget of the SIP for air quality. The FY 2012-2017 TIP is the current adopted plan for the Atlanta region showing the region's highest transportation priorities. It was adopted by the ARC board on July 27, 2011 and was approved by the USDOT on September 6, 2011. This project is identified in the FY 2012-2017 TIP, AR-ML-630 and AR-ML-640.

c. Particulate Matter ($PM_{2.5}$)

On March 10, 2006, EPA issued a final rule regarding the localized or "hot-spot" analysis of $PM_{2.5}$ (40 CFR Part 93). This rule requires that $PM_{2.5}$ hotspot analysis be performed for transportation projects with significant diesel traffic in areas not meeting $PM_{2.5}$ air quality standards

The EPA designated a 24-county metro Atlanta non-attainment area for $PM_{2.5}$. Metropolitan $PM_{2.5}$ non-attainment areas are required to have a TIP and long-range transportation plan (LRTP) that conforms to the $PM_{2.5}$ standard.

The proposed project will be evaluated by an interagency group consisting of FHWA, EPA, the Environmental Protection Division (GAEPD) of the Air Protection Branch of the Georgia Department of Natural Resources (DNR), and the ARC prior to the final approval of the environmental document. The findings of this evaluation will be provided in the subsequent environmental document.

Table 29. National Ambient Air Quality Standards

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	Averaging Time
Carbon Monoxide	9 ppm (10 mg/m^3)	8-hour[1]	None	
	35 ppm (40 mg/m^3)	1-hour [1]		
Lead	0.15 μg/m^3 [(2)]	Rolling 3-Month Average	Same as Primary	
	1.5 μg/m^3	Quarterly Average	Same as Primary	
Nitrogen Dioxide	0.053 ppm (100 μg/m^3)	Annual (Arithmetic Mean)	Same as Primary	
	0.100 ppm	1-hour [3]	0.053 ppm (100 μg/m^3)	Annual (Arithmetic Mean)
Particulate Matter (PM_{10})	150 μg/m^3	24-hour [4]	Same as Primary	
Particulate Matter ($PM_{2.5}$)	15.0 μg/m^3	Annual[5] (Arithmetic Mean)	Same as Primary	
	35 μg/m^3	24-hour [6]	Same as Primary	
Ozone	0.075 ppm (2008 std)	8-hour [7]	Same as Primary	
	0.08 ppm (1997 std)	8-hour [8]	Same as Primary	
	0.12 ppm	1-hour [9]	Same as Primary	
Sulfur Dioxide	0.03 ppm	Annual (Arithmetic Mean)	0.5 ppm (1300 μg/m^3)	3-hour [1]

Source: EPA, 2011.

Notes: 1. Not to be exceeded more than once per year.

2. Final rule signed October 15, 2008.

3. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010).

4. Not to be exceeded more than once per year on average over 3 years.

5. To attain this standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 μg/m^3.

6. To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population oriented monitor within an area must not exceed 35 μg/m^3 (effective December 17, 2006).

7. To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. (effective May 27, 2008).

8. (a) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

(b) The 1997 standard, and the implementation rules for that standard, will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.

(c) EPA is in the process of reconsidering these standards (set in March 2008).

9. (a) EPA revoked the 1-hour ozone standard in all areas, although some areas have continuing obligations under that standard ("anti-backsliding").

(b) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is < 1.

Abbreviations: ppm = parts per million, μg/m^3 = micrograms per cubic meter.

d. Mobile Source Air Toxics

Source of Emissions

Pollutants that can be traced principally to motor vehicles are relevant to the evaluation of the project impacts. The potential Mobile Source Air Toxics (MSAT) impacts are both regional and local. Through the issuance of EPA's Final Rule regarding emission control of Hazardous Air Pollutants from Mobile Sources (66 FR 17229), it was determined that many existing and newly promulgated mobile source emission control programs would result in a reduction of MSAT. The EPA examined the impacts of existing and newly promulgated mobile source control programs, including its reformulated gasoline program, its national low-emission vehicle standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy-duty engine and vehicle standards and on-highway diesel fuel requirements. Future emissions likely would be lower than present levels as a result of the EPA's national control programs that are projected to reduce MSAT emissions by 72 percent from 1999 to 2050 even if vehicle miles traveled (VMT) increases by 145 percent.

On February 9, 2007 and under authority of CAA Section 202(l), EPA signed a Final Rule, Control of Hazardous Air Pollutants from Mobile Sources, which sets standards to control MSAT from motor vehicles. Under this rule, EPA is setting standards on fuel composition, vehicle exhaust emissions, and evaporative losses from portable containers. The new standards are estimated to reduce total emissions of MSAT by 330,000 tons in 2030, including 61,000 tons of benzene. Concurrently, total emissions of volatile organic compounds (VOC) will be reduced by over 1.1 million tons in 2030 as a result of adopting these standards.

On February 3, 2006, the FHWA released "*Interim Guidance on Air Toxic Analysis in NEPA Documents*." This guidance was superseded on December 6, 2012 by FHWA's "Interim Guidance Update on Air Toxic Analysis in NEPA Documents." The purpose of FHWA's guidance is to advise on when and how to analyze MSAT in the NEPA process for highways. This guidance is interim because MSAT science is still evolving. As the science progresses, FHWA will update the guidance.

A qualitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented here is derived in part from a study conducted by the FHWA entitled "A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives", found at: http://www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/methodology/methodology00.cfm.

The FHWA's Interim Guidance groups projects into the following tier categories: no analysis for projects with no potential for meaningful MSAT effects; qualitative analysis for projects with low potential MSAT effects; and quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

Based on FHWA's recommended tiering approach, the project falls within the Tier 3 approach (i.e., for projects with higher potential for MSAT effects). In accordance with FHWA's recommendation, the FHWA Easy Mobile Inventory Tool (EMIT) model was used to calculate annual average MSAT pollutant emission rates for each study year. The EMIT model incorporates EPA's MOBILE6.2 emission factor algorithm (*User's Guide to MOBILE6.2, Mobile Source Emission Factor Model, Ann Arbor, Michigan, EPA420-R-02-028, October 2002*)

along with components for forecasting congested vehicle speeds and entering vehicle miles of travel as a function of area and road type. The EMIT model does not have the capability to estimate all of the MSAT under study, and therefore the MOBILE6.2 program was used directly for some pollutants. The new model to calculate MSAT pollution emission rates, MOVES, was not used in this analysis, because the analysis for this project was begun prior to December 20, 2012, the date after which use of the model is required (*Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA, December 6, 2012:* http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance). In accordance with FHWA's recommendations, all roadway links within the study area that demonstrated a five percent or more change in traffic volume under the Build Alternatives, as compared to the No-Build Alternative, were included in the MSAT modeling analysis. MOBILE6.2 input parameters recommended by the DNR and FHWA were used along with traffic volumes, speeds, and travel characteristics forecasted with the ARC travel demand model.

Summer and winter parameters were input into the MOBILE 6.2 portion of EMIT to obtain an accurate annual pollutant burden estimate. The current version of EMIT has not yet been updated to reflect all the MSAT of concern listed in EPA's February 2007 rule. For the air toxics not evaluated within EMIT (Naphthalene and Polycyclic Organic Matter [POM]), MOBILE6.2 was run directly for each roadway functional class and associated speed. The calculated emission rates were then multiplied by the VMT, resulting in the emission burden. The POM is not one single MSAT but rather a broad class of compounds (listed below) for which air toxics emission rates were independently calculated with MOBILE6.2 and combined:

- Acenaphthene,
- Acenaphthylene,
- Anthracene,
- Benzo(a)anthracene,
- Benzo(a)pyrene,
- Benzo(b)fluoranthene,
- Benzo(ghi)perylene,
- Benzo(k)fluoranthene,
- Chrysene,
- Dibenz(ah)anthracene,
- Fluoranthene,
- Fluorene,
- Indeno(123cd)pyrene,
- Napthalene,
- Phenanthrene, and
- Pyrene.

Assessment

The emission rates calculated with EMIT and MOBILE6.2 were applied to the forecasted vehicular traffic on the affected network of the project. The basic tool used for the analysis is the Atlanta region's travel demand model that was developed and is maintained by the ARC. The model was coded to include projects within the financially constrained long-range transportation plan (for the No-Build) and then with improvements to reflect the Build scenario (either Alternative 1 or Alternative 2).

Comparisons between the No-Build and Build scenarios (either Alternative 1 or 2 scenario) were made for all links in the ARC model and links where daily traffic volumes differed between the two scenarios by five percent or more were flagged (the five percent threshold is suggested by the FHWA as a general guideline in defining the affected network). The percent difference provides a relatively easy metric, but one consequence of using percentages is that, on low volume roadway links, small differences in actual traffic volumes can result in a link being flagged. Figure 13 highlights all of the links in the ARC network where daily traffic volumes are projected to change by +/- 5 percent between the No-Build and Build scenario. The wide scatter of links highlights the sensitivity of the model and the cascading effect that changes to key links such as regional freeways can have on traffic assignments (i.e., the improvement shifts traffic from one link to another which frees up capacity on links that is then available to traffic on other links). Some of these secondary shifts show up on links where the volume is low so the resultant threshold to the five percent mark is also quite low. Additional detail related to the MSAT Affected Network can be found in the *Air Quality Analysis Report: I-75 Managed Lanes* on file at the GDOT Office of Environmental Services.

All future calculated MSAT emission burdens, as shown in Table 30 are predicted to decrease as compared to the existing scenario, even with increases in VMT. The Build Alternatives, in both 2015 and 2035, is predicted to demonstrate similar VMT to the No-Build Alternative, and consequently there would be no significant difference in the MSAT burdens between these alternatives.

Figure 13. MSAT Affected Network.

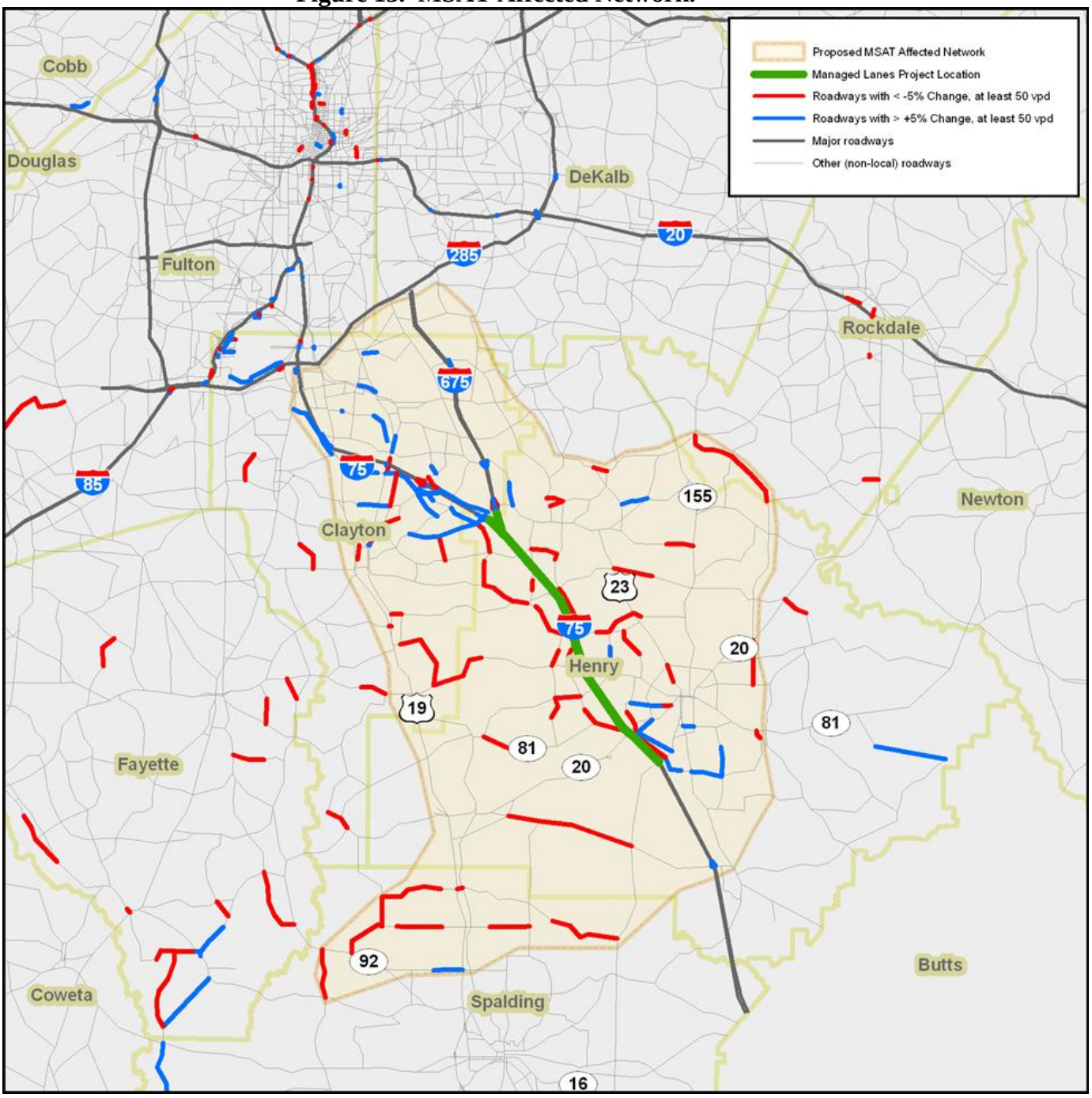


Table 30. Projected Annual Production of MSAT on Affected Network

Scenario			Daily VMT*	Acrolein	Benzene	1,3-butadiene	Diesel PM	Formaldehyde	Naphthalene	Polycyclic OM**	Totals***
Existing	**2010**	Totals	8,533,000	1.07	88.21	7.60	44.50	21.32	2.23	2.46	165.16
Alt. 1 ETL Build	**2015**	Totals	9,735,000	0.96	68.94	6.25	19.68	19.63	2.02	2.24	117.70
		vs. Existing	*+14.1%*	*-10.3%*	*-21.8%*	*-17.8%*	*-55.8%*	*-7.9%*	*-9.4%*	*-8.9%*	*-28.7%*
		vs. 2015 No Build	*+1.5%*	*+1.1%*	*+0.8%*	*+1.0%*	*+1.5%*	*+0.6%*	*+1.0%*	*+0.9%*	*+0.9%*
	2035	Totals	12,850,000	0.84	50.89	4.89	6.39	17.95	2.19	2.45	83.41
		vs. Existing	*+50.6%*	*-21.5%*	*-42.3%*	*-35.7%*	*-85.6%*	*-15.8%*	*-1.8%*	*-0.4%*	*-49.5%*
		vs. 2035 No Build	*+1.5%*	*0.0%*	*+0.8%*	*+0.8%*	*+1.4%*	*+0.6%*	*+1.4%*	*+1.2%*	*+0.8%*
Alt. 2 HOT 3+ Build	**2015**	Totals	9,744,000	0.96	68.99	6.25	19.70	19.64	2.02	2.25	117.79
		vs. Existing	*+14.2%*	*-10.3%*	*-21.8%*	*-17.8%*	*-55.7%*	*-7.9%*	*-9.4%*	*-8.5%*	*-28.7%*
		vs. 2015 No Build	*+1.6%*	*+1.1%*	*+0.9%*	*+1.0%*	*+1.6%*	*+0.7%*	*+1.0%*	*+1.4%*	*+1.0%*
	2035	Totals	12,863,000	0.84	50.93	4.90	6.40	17.95	2.19	2.45	83.47
		vs. Existing	*+50.7%*	*-21.5%*	*-42.3%*	*-35.5%*	*-85.6%*	*-15.8%*	*-1.8%*	*-0.4%*	*-49.5%*
		vs. 2035 No Build	*+1.6%*	*0.0%*	*+0.9%*	*+1.0%*	*+1.6%*	*+0.6%*	*+1.4%*	*+1.2%*	*+0.9%*
Alt. 3 No-Build	**2015**	Totals	9,593,000	0.95	68.36	6.19	19.39	19.51	2.00	2.22	116.62
		vs. Existing	*+12.4%*	*-11.2%*	*-22.5%*	*-18.6%*	*-56.4%*	*-8.5%*	*-10.3%*	*-9.8%*	*-29.4%*
	2035	Totals	12,663,000	0.84	50.49	4.85	6.30	17.84	2.16	2.42	82.74
		vs. Existing	*+48.4%*	*-21.5%*	*-42.8%*	*-36.2%*	*-85.8%*	*-16.3%*	*-3.1%*	*-1.6%*	*-49.9%*

Source: I-75 Managed Lanes Air Impact Assessment, January 2013.

Note: *VMT = volume multiplied by distance for each link in the affected network (grouped by speed). **Polycyclic organic matter is a group of pollutants which includes: Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(ghi)perylene, Benzo(k)fluoranthene, Chrysene, Dibenz(ah)anthracene, Fluoranthene, Fluorene, Indeno(123cd)pyrene, Napthalene, Phenanthrene and Pyrene. *** The total pollutant output excludes the value shown for Naphthalene since it is already included as one of the components of polycyclic organic matter.

In summary, it is projected that there would be no appreciable changes in MSAT emissions in the immediate area of the project under either Build Alternative, relative to the No-Build Alternative, as a result of the VMT changes associated with the project. The MSAT levels could be higher in some locations than others, such as the I-75 mainline, but current tools and science are not adequate to quantify them. Regardless, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

Incomplete or Unavailable Information for Project-Specific MSAT Health Impacts Analysis

In the FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the CAA and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA http://www.epa.gov/ncea/iris). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations or in the future as vehicle emissions substantially decrease. More details on these studies appear in the *Air Quality Analysis Report: I-75 Managed Lanes* on file at GDOT's Office of Environmental Services.

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts - each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable. The results produced by the EPA's MOBILE6.2 model, the California EPA's Emfac2007 model, and the EPA's DraftMOVES2009 model in forecasting MSAT emissions are highly inconsistent. Indications from the development of the MOVES model are that MOBILE6.2 significantly underestimates diesel particulate matter emissions and significantly overestimates benzene emissions.

Regarding air dispersion modeling, an extensive evaluation of EPA's guideline CAL3QHC model was conducted in an National Cooperative Highway Research Program (NCHRP) study, which documents poor model performance at ten sites across the country - three where intensive monitoring was conducted plus an additional seven with less intensive monitoring (www.epa.gov/scram001/dispersion_alt.htm#hyroad). The study indicates a bias of the CAL3QHC model to overestimate concentrations near highly congested intersections and underestimate concentrations near uncongested intersections. The consequence of this is a tendency to overstate the air quality benefits of mitigating congestion at intersections. Such poor model performance is less difficult to manage for demonstrating compliance with NAAQS for relatively short time frames than it is for forecasting individual exposure over an entire lifetime, especially given that some information needed for estimating 70-year lifetime exposure is unavailable. It is particularly difficult to reliably forecast MSAT exposure near roadways, and to determine the portion of time that people are actually exposed at a specific location.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (http://pubs.healtheffects.org/view.php?id=282). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA and the HEI have not established a basis for quantitative risk assessment of diesel PM in ambient settings (http://www.epa.gov/risk/basicinformation.htm#g and http://pubs.healtheffects.org/getfile.php?u=395).

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the CAA to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine a "safe" or "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than one in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than one in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two-step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than safe or acceptable.

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

e. Microscale Carbon Monoxide (CO) Air Quality

One separate "hot-spot" analysis was conducted for each of the Build Alternatives and also included the proposed interchange at Jonesboro Road. Results from this interchange location are considered representative for each alternative.

The microscale model used to assess CO levels was CAL3QHC, developed by the California Department of Transportation. CAL3QHC combines the California Line Source Model (CALINE3) developed by the California Department of Transportation with an algorithm for estimating queue lengths at signalized intersections. Software used to run the models was CALQVIEW2®, a Windows-based software that incorporates CAL3QHC. This model is accepted by the EPA and FHWA as a technique for assessing the air quality impact resulting from the operation of highways. Inputs into the model were such that it would provide a worst-case analysis. CO concentrations predicted by these models are then compared to the NAAQS.

Microscale Model Input Parameters

The emission factors used in the model were calculated using MOBILE6. Meteorological inputs into the model were those that would provide the worst-case CO concentrations. The wind angle to the roadway was placed at 10°, with a wind speed of one meter per second. A stability Class D was used as the worst-case stability condition for the one-hour analysis. A mixing cell height of 1,000 meters and a surface roughness factor of 108 centimeters were used. Through an agreement with the EPD, background CO concentration is considered to be only a small portion of the total input to the microscale analysis. A background of 1.0 part per million (ppm) was input in the model.

The existing interchange of Jonesboro Road and I-75 was modeled in the existing (2010) condition and the proposed managed lane ramp was added in the build (2015 and 2035) conditions. Free flow speed limits were modeled as 45 miles per hour (mph) on Jonesboro Road and 65 mph on I-75. Traffic data was provided by GDOT's Office of Planning and its consultants. Morning and afternoon (AM/PM) peak hour volumes were provided. Afternoon peak hour volumes were used for all three years modeled.

Receptors were placed at the existing and proposed right-of-way limits. Twenty receptors were used for the existing (2010) condition as well as the 2015 Build (first year of operation) and 2035 Build (design year) conditions. The locations of receptors for each year modeled are shown in Figures 14 and 15. Input and output data, as well as roadway geometry, are provided in *Air Quality Analysis Report: I-75 Managed Lanes from SR 155 to SR 138* on file at the GDOT OES.

Figure 14
CO Receptor Locations, Existing

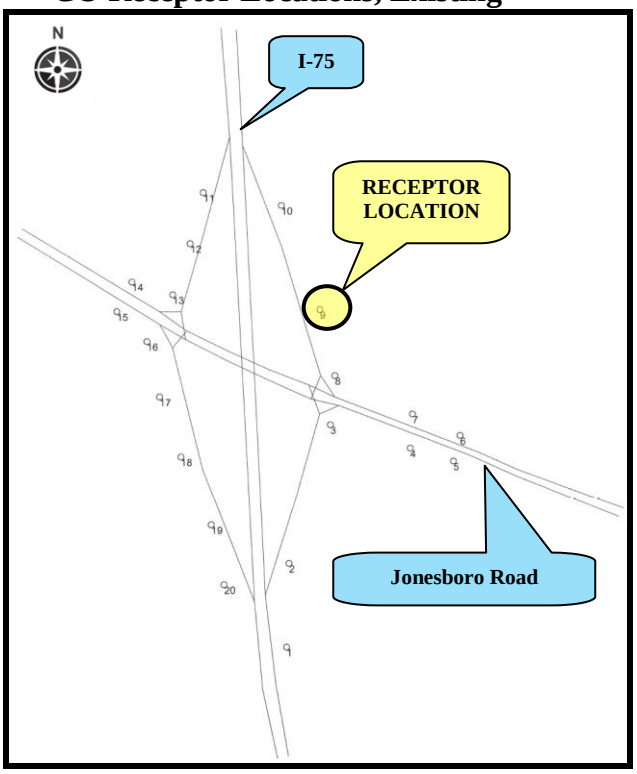
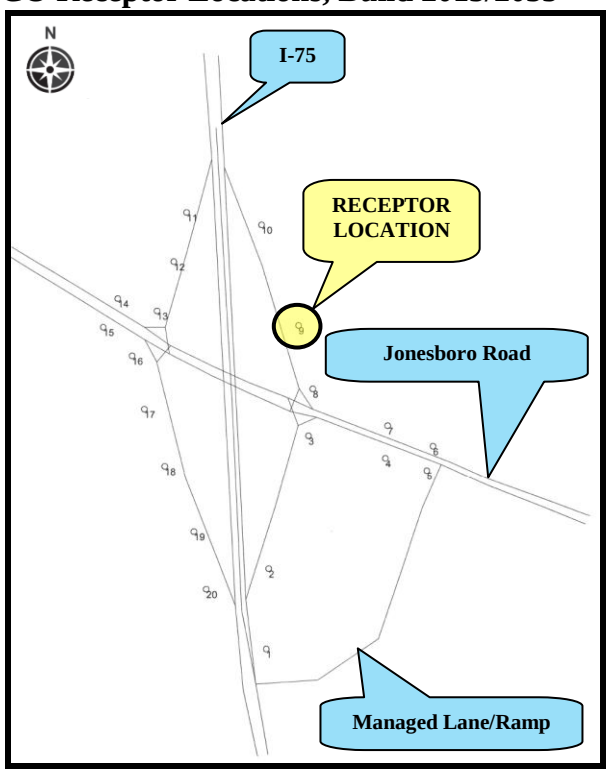


Figure 15
CO Receptor Locations, Build 2015/2035



Source: I-75 Managed Lanes Air Impact Assessment, January 2013.

Model Results

The State of Georgia and the federal government set the maximum acceptable CO concentration at 9 ppm averaged over a continuous eight-hour period, or 35 ppm for a maximum one-hour averaging time. The maximum one-hour concentration under the existing condition (2010) was 2.1 ppm. The maximum one-hour concentration for the first year of operation (2015) was 2.0 ppm and for the design year (2035) was 2.0 ppm. These results are in compliance with state and federal standards.

Sensitive Receptors

Sensitive receptors, defined as hospitals, nursing homes, schools and institutional facilities, were not identified within the project area.

f. Greenhouse Gas Emissions

To date, no national standards have been established regarding greenhouse gases (GHG), nor has the EPA established criteria or thresholds for GHG emissions. On April 2, 2007, the Supreme Court issued a decision in Massachusetts et al v. Environmental Protection Agency et al that the EPA does have authority under the CAA to establish motor vehicle emissions standards for CO_2 emissions. The EPA is currently determining the implications to national policies and programs as a result of the Supreme Court decision. However, the Court's decision did not have any direct implications on requirements for developing transportation projects.

Recognizing these concerns, FHWA is working with other modal administrations through the Department of Transportation Center for Climate Change and Environmental Forecasting to develop strategies to reduce transportation's contribution to greenhouse gases – particularly CO_2 emissions – and to assess the risks to transportation systems and services from climate changes.

Because climate change is a global issue and the emissions changes due to project alternatives are very small compared to global totals, GHG emissions were not calculated for the Build Alternatives. However, because GHGs are directly related to energy use, the changes in GHG would be similar to the changes in energy consumption. Therefore, an analysis of energy consumption associated with the proposed project was conducted.

Energy is commonly measured in terms of British thermal units, or Btus. A Btu is defined as the amount of heat required to raise the temperature of one pound of water by one degree Fahrenheit. For transportation projects, energy usage is predominantly influenced by the amount of fuel used. The average Btu content of fuels is the heat value (or energy content) per quantity of fuel as determined from tests of fuel samples.

Transportation accounts for a major portion of the energy consumed in the United States. Transportation is the second largest source of energy consumption in the United States. In Georgia, the transportation sector is the largest source of energy consumption. Georgia is ranked as the ninth highest state in terms of transportation energy consumption in the United States.

Transportation energy is generally discussed in terms of direct and indirect energy. Direct energy involves all energy consumed by vehicle propulsion. This energy is a function of traffic characteristics such as volume, speed, distance traveled, vehicle mix, and thermal value of the fuel being used. Indirect energy consumption involves the non-recoverable, one-time energy expenditure involved in constructing the physical infrastructure associated with the project. At this stage of analysis, detailed construction information is currently unavailable; therefore, an analysis of indirect energy has not been conducted. However, direct energy estimates were calculated based on energy consumption rates for transportation modes developed by the US Department of Energy, published in the *Transportation Energy Data Book, Edition 29* (US Department of Energy, June 2010).

An analysis, based on VMT estimates of the affected network, was conducted for the No-Build and Build Alternatives. The Build Alternatives are expected to increase direct energy requirements by 1.5 to 1.6 percent. Such differences would result in no measurable impact on energy demands. As such, the Build Alternatives are predicted to have a minimal effect on regional energy requirements.

g. Construction

All phases of construction operations would temporarily contribute to air pollution. Particulates would increase slightly in the corridor as fugitive dust from construction collects in the air surrounding the project. The construction equipment would also produce slight amounts of exhaust emissions. The Rules and Regulations for Air Quality Control outlined in Chapter 391-3-1, Rules of GAEPD, would be followed during the construction of the project. These include covering earth-moving trucks to keep dust levels down, watering haul roads, and refraining from open burning, except as may be permitted by local regulations.

Direct Effects. For determination of effects, Alternatives 1 and 2 have the same physical footprint and configuration. This project was evaluated for its consistency with state and federal

air quality goals, including ozone, $PM_{2.5}$, and CO as part of this assessment. Results indicated that the project is consistent with the SIP for the attainment of clean air quality in Georgia and is in compliance with both state and federal air quality standards.

This project is listed in the FY 2012-2017 TIP. As such, the project is part of an approved, conforming TIP, and the regional effects of the project have already been considered. However, the project may increase localized pollutant concentrations and microscale analyses were conducted that demonstrate that it would not cause or exacerbate a violation of the NAAQS.

The area is classified as a nonattainment area for $PM_{2.5}$ and a $PM_{2.5}$ analysis has been conducted. The project has undergone interagency coordination to determine if it is a project of air quality concern. This interagency coordination group consisting of representatives from USEPA, FHWA, EPD, and ARC have determined the project is not of air quality concern.

The quantitative analysis of MSAT emissions determined that the project is not anticipated to have an appreciable impact on regional MSAT levels. Also, it is estimated that over the next 20 years all levels of MSAT will be going down regardless of the alternative chosen. It is acknowledged that the project may result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain, and because of this uncertainty, the health effects from these emissions cannot be reliably determined.

A microscale CO analysis was conducted to determine if the project has the potential to cause or exacerbate a violation of the applicable CO standards. Following USEPA's Guideline for Modeling Carbon Monoxide from Roadway Intersections (USEPA, 1992a), the project is not predicted to cause or exacerbate a violation of the NAAQS for CO.

Construction-related effects of the project would be limited to short-term localized increased fugitive dust and mobile-source emissions during construction. State and local regulations regarding dust control and other air quality emission reduction controls shall be followed.

Therefore, based on the analyses summarized above, there are no significant direct effects by this project to air quality.

Indirect and Cumulative Effects. Traffic volumes along I-75 are expected to increase slightly, 0.3% (Section E.2.d.). Even with this slight increase in traffic volume, there are little to no contributions by this project to past, present, or reasonably foreseeable future actions that could result in cumulative effects.

3. Energy/Mineral Resources

The construction of the proposed project would consume energy and mineral resources that once used are no longer available for other uses. Energy is required for the construction of the project itself as well as the fabrication of materials used as part of the construction and for equipment used in construction. Natural gas, gasoline, and electricity would be used in these processes, and it is the use of non-renewable energy sources such as fossil fuels that cause the greatest concern. Once expended for this project, these resources cannot be used for something else. However, the implementation of this project is expected to save energy in the long-term by decreasing congestion and by providing incentives to drivers to change to a higher-occupancy vehicle.

4. Construction/Utilities

Construction of the proposed project would create unavoidable inconveniences to motorists, but construction activities would be conducted in a manner that would maintain access and minimize conflicts with traffic. The safety and convenience of the general public and residents of the area would be provided for at all times.

The replacement of the Mt. Carmel Road bridge over I-75 would occur as a part of both Alternatives 1 and 2. Mt. Carmel Road would be closed between Avondale Drive and Bridges Road for approximately nine months. A temporary detour would allow motorists to continue to access Mt. Carmel Road on either side of I-75 (Figure 4). The detour would utilize Mill Road between Mt. Carmel and Jonesboro Road and Jonesboro Road between Mill Road and Mt. Carmel Road. Bridges Road would continue to provide access between Mt. Carmel Road and Jonesboro Road.

Any necessary relocation of utilities, e.g. water, sewer, telephone, would be accomplished with no long term interruption of services. All other required construction functions would be accomplished in a timely and orderly fashion to keep disruptions minimal, for short duration and to not compromise safety.

5. USTs/Hazardous Waste Sites

Direct Effects. A survey for sites which may contain hazardous materials, including soil and/or water contaminated by leaking underground storage tanks, has been conducted for this project. No sites were found.

G. Permits/Variances

1. Section 404

The placement of fill material in waters of the U.S. requires a permit from the USACE under Section 404 of the Clean Water Act (33 USC 1344). There are three levels of this permit, and the determination of the appropriate one is based primarily on the type of fill activity and the amount and location of fill involved.

The proposed project would permanently impact approximately 525 linear feet (0.171 acre) of jurisdictional streams and permanently impact approximately 0.877 acre of jurisdictional wetlands. A Nationwide Permit would be required for impacts associated with the proposed projects.

2. Stream Buffer Variance

The project would encroach upon the 25-foot vegetated buffer of one stream: Stream 24. The total amount of disturbed buffer would be approximately 550 linear feet and 0.631 acre (27,500 square feet). Therefore, based on the requirements outlined in 391-3-7.05 under the GADNR Environmental Protection Division, Erosion and Sedimentation Control Branch, a buffer variance would be required for project construction. The basis under which the variance shall be considered is criterion 2a in 391-3-7.05 (2) of the O.C.G.A.

H. Summary of Environmental Consequences

The environmental consequences of the alternatives carried forward, as detailed in this document, have been summarized in Table 31. As can be seen, Alternatives 1 and 2 would have

the same environmental impacts. Alternative 3, the No-Build, provides a baseline to which the Build Alternatives can be compared.

Table 31. Summary of Impacts

Impact Category	Alternative 1 (ETL)	Alternative 2 (HOT-3+)	Alternative 3 No-Build
Land Use Changes	7 acres of right-of-way acquisition	7 acres of right-of-way acquisition	0
Economics/Potential Business Relocations	0	0	0
Potential Residential Relocations	0	0	0
Community Cohesion	0	0	0
Churches and Institutions Affected	0	0	0
Community Impacts/Environmental Justice	No Disproportionate Adverse Effects*	No Disproportionate Adverse Effects*	0
Historic Resources within APE	1 – No Adverse Effect	1 – No Adverse Effect	0
Archaeological Resources within APE	0	0	0
Parkslands/Recreations Areas/Wildlife Refuges/Section 4(f)/Section 6(f)	0	0	0
Water Quality	No Significant Impacts	No Significant Impacts	No Significant Impacts
Stream Impacts: Length (linear feet) Acres	525 0.171	525 0.171	0
Wetland Impacts (acres)	0.877	0.877	0
Floodplains	0	0	0
Farmlands	0	0	0
Federal and State Protected Species Affected	0	0	0
Wildlife and Habitat	Minimal Effects	Minimal Effects	No Effects
Number of Impacted Receivers Number of Impacted Receptors	237 606	237 606	193 452
Number of Noise Walls Feasible and Reasonable	9	9	0
Violations of National Ambient Air Quality Standards	0	0	0
USTs/Hazardous Waste Sites	0	0	0

Note: Summary from Environmental Assessment. *Alternative 2 would have the advantage of allowing low-income persons to use the managed lanes toll-free by carpooling. As noted in the EA, however, there is no research to suggest that low-income persons necessarily carpool at higher rates than the general population.

Based on analysis showing that Alternative 1 would be more effective for meeting the project's need and purpose, Alternative 1 has been identified as the Preferred Alternative.

IV. SECTION 4(f) EVALUATION

Section 4(f) of the U.S. Department of Transportation Act of 1966, codified as 49 USC 303 (c), applies to use of public parks, recreation areas, pubic wildlife or waterfowl refuges, and

properties that are on or eligible for listing on the NRHP. The proposed project would not impact any 4(f) resources.

V. COORDINATION AND COMMENTS

The public involvement for the I-75 managed lanes project in Henry and Clayton counties included extensive outreach into the community and surrounding project area. During the early project development, a number of agencies, including local governments and local planning agencies, were contacted to request comments on the proposed action. Copies of comments received from the responding agencies are included in Appendix A. A variety of outreach events were planned to introduce the project to the public, solicit input from the public regarding alternatives, and solicit input from the public regarding the environmental assessment.

A. Public Open Houses

Public information open house (PIOH) meetings were held on the following dates at the given locations to introduce the project to the public:

- Tuesday, April 26, 2011, Eagles Landing High School Commons (Cafeteria), 301 Tunis Road, McDonough, GA 30253, from 5-8 pm, and
- Thursday, April 28, 2011, Quality Inn & Suites Conference Center, 930 Highway 155 South, McDonough, GA 30253, from 4-7 pm.

The public was notified of the PIOH meetings through legal advertisements in the local newspapers as well as flyers, e-mails, and the GDOT project website. Displays at the meetings showed the major design features of the project on aerial-photo base mapping. A continuously running video described the project and the study process. Informational brochures and comment sheets were distributed to all attendees. The information provided at the PIOH was also posted on the project website. Attendance at the April 26, 2011meeting was 120 and at the April 28, 2011meeting was 46.

The comments received at these meetings can be grouped into the following categories:

- Nine comments were related to the number and locations of access points in Henry County,
- Twelve comments were related to the tolling and operations aspects of the project,
- Three comments did not think the project would work, or was too expensive,
- Two comments wanted the project lengthened,
- One comment was concerned about delay during construction,
- One comment wanted to see mobility improved in the corridor, and
- One comment was concerned that the project did not appear to address tractor trailers.

When asked if they supported the project, 53% of respondents were supportive, 16% offered conditional support, 8% were uncommitted, and 23% were in opposition to the project. Full responses to the comments can be found in Appendix A, pp. A-73-A-76.

A virtual PIOH on the GDOT web site has been available since the face-to-face PIOH detailed above. The proposed project has its own web site (http://www.dot.state.ga.us/

travelingingeorgia/expresslanes/I75expresslanes), where materials are available including: the PIOH materials, a video presenting a virtual tour of the proposed project, the project schedule, the need and purpose, and general information on the project and managed lanes. Comments can be submitted in electronic or hard copy format, and the opportunity to join the project mailing list is also made available. The project is also accessible via the social media outlets Facebook and Twitter. Twenty-six comments have been submitted through the project website. Over half of these were requests to be included on the project mailing list.

Two PIOHs were held on December 13 and 15, 2011 in order to present a new alternative for direct access to the managed lanes. Again, the public was notified of the PIOH meetings through legal advertisements in the local newspapers as well as flyers, e-mails, and the GDOT project website. Displays at the meetings showed both the direct access via the Mt. Carmel Road bridge and access ramps from Jonesboro Road, just east of the Jonesboro Road interchange with I-75. Informational brochures and comment sheets were distributed to all attendees. The information provided at the PIOH also was posted on the project website.

The total attendance of the two meetings was 118. Fifty formal comments were submitted during the comment period. Of the comments received two-thirds of the respondents use I-75 daily and one-quarter weekly. When asked if they supported the project, 35% of respondents were supportive, 43% offered conditional support, 4% were uncommitted, and 18% were in opposition to the project. In regards to the additional direct access, 69% of the respondents preferred access from Jonesboro Road, 19% preferred direct access via the Mt. Carmel Road bridge over I-75, 6% had no preference, and 6% were uncommitted. The comments received at these meetings can be grouped into the following categories (several respondents had more than one comment):

- Thirty-eight related to access to the managed lanes, with an additional seven supporting access via Mt. Carmel Road,
- Six comments related to operations on managed lane facilities including this project and I-85 north of Atlanta,
- Five comments directly supported the project, one particularly because of the value,
- Four comments were directly against the project or that it wasn't needed,
- Five were concerned with improvements to other roadways or other improvements to I-75, and
- Two were concerned with construction impacts and noise impacts.

Full responses to these comments can be found in Appendix A, p. A-76-A-80.

B. Community Outreach

Unstaffed kiosks, which included a project board with a map and brief explanation of the project, were placed at government agencies and social service providers throughout the study area. The display included a place to distribute and collect surveys. These kiosks were placed in the following locations the week of July 11th -18th, 2011:

- Heritage Senior Center, 1050 Florence McGarity Blvd, McDonough, GA 30252

- Hidden Valley Senior Center, 600 Spraggins Memorial Parkway, Stockbridge, GA 30281
- The United Way, 107 Westbridge Industrial Boulevard, McDonough, GA 30253
- McDonough Public Library, 1001 Florence McGarity Blvd, McDonough, GA 30252
- Clayton County Community Service Center, 1000 Main Street, Forest Park, GA 30297
- Shiloh Education and Community Service Center, 261 Macon Street, McDonough, GA
- Higher Living Christian Church, Mt. Carmel Road, Hampton, GA

Fifty-nine surveys were collected through this effort.

Three additional events were staffed for the entire time in order to encourage engagement in the public involvement process and solicit public input:

- Friday, July 1, 2011 Howell Sunshine Laundromat, Griffin, GA 9 a.m. – 11:00 am
- Friday, July 8, 2011 Soap & Suds Laundromat, Stockbridge, GA 9 am – 11:00 am
- Saturday, July 16, 2011 SouthLake Mall, Morrow, GA 12:00 noon – 4 pm

Twenty-nine surveys were collected through this effort.

In areas identified as low-income populations through a demographic analysis of ARC data, project staff went door to door to solicit input on the project in general and the tolling aspect in particular. Neighborhoods selected for this effort had residential properties listed on the market for $50,000 or less. According to various lending calculators and anecdotal information from a local mortgage broker, a person can qualify for a mortgage of up to 2.5 times their annual income. As such, these neighborhoods can be generalized as low-income because of the 2010 HHS poverty guideline for a family of 3 of $18,310. Staff assigned to this task worked in pairs, briefly introduced the project and asked residents to fill out a short project survey. Fifty surveys were completed. Additionally, a project information sheet was left at the residences where no one answered the door; 55 were completed. Door to door surveys were conducted in the neighborhoods previously listed:

- Friday, July 15th McDonough, Georgia 5 – 7 pm
- Saturday, July 16th McDonough, Georgia 12 – 7 pm
- Sunday, July 17th McDonough, Georgia 12 – 6 pm

Six community outreach events have also been held as requested by stakeholder groups. They are detailed individually in the following paragraphs.

A community open house was held on July 12, 2011 at the Southside Christian Fellowship, 750 S. Mt. Carmel Road in McDonough to address concerns regarding the managed lanes-only access point proposed at the Mt. Carmel Road bridge over I-75 as a part of Alternative 8. In order to publicize the open house, a database was developed of neighborhood residents along Mt. Carmel Road and Mill Road. The database included over 350 residences and flyers announcing the open house were mailed to the database. In addition, yard signs announcing the open house were placed at the entrance and exits of each subdivision along Mt. Carmel Road and Mill Road.

Seventy-eight individuals attended the open house and twenty five comment forms were submitted. Of those in attendance, 8% were in favor of a new Mt. Carmel interchange with I-75, 80% were opposed, 8% offered conditional support, and 4% were uncommitted. The majority of comments from this meeting include: concerns regarding traffic impacts on entering and exiting neighborhoods, negative impacts on quality of life, negative impacts of property values, safety - specifically related to accessing the community (Crown Manor) clubhouse, and potential for increased crime.

Public involvement surveys were distributed at a community open house at the Higher Living Christian Church, 2455 Mt. Carmel Road in Hampton. Thirty-three surveys were completed. Twenty-eight of the respondents support or conditionally support the proposed improvements. When combined with the previous Mt. Carmel outreach survey results, over two-thirds of the respondents live in Henry County and travel on I-75 daily. Two-thirds also support or conditionally support the proposed improvements.

A meeting was held with local community leaders on September 9, 2011. Residents of the Crown Manor Homeowners Association were also in attendance at this meeting. Crown Manor is located south of Mt. Carmel Road and west of I-75.

A meeting was held with the pastors of the Southside Christian Fellowship Church, 750 Mt. Carmel Road in McDonough Georgia, on September 19, 2011. The church is located at the intersection of Mt. Carmel Road and Mill Road. A Henry County representative was also in attendance. A general description of the project was presented by the project team. Other items of discussion included: additional outreach activities in the area, changes in traffic, the project process, toll rates, and similar projects in the state.

A community open house was also held on September 26, 2011 with the Rowanshyre Homeowners Association (HOA). The Rowanshyre HOA is comprised of residents of the Legends of Rowanshyre located north and west of the intersection of Mill Road and Mt. Carmel Road, the Gates of Rowanshyre south of Mt. Carmel Road and west of I-75, and the Villages of Rowanshyre, north of Mt. Carmel Road and west of I-75. A general description of the project was presented by the project team, including need and purpose, the federal environmental process, and public outreach. The Mt. Carmel interchange with I-75 and improvements to the intersections of Mill Road and Mt. Carmel Road, and Jonesboro Road and Mt. Carmel Road were also discussed. The discussion included: operation of the express lanes, other alternatives for the interchange, and pedestrian safety.

An additional meeting was held on October 17, 2011 with residents of the Rowanshyre community. The Rowanshyre residents listed their main concerns as: air quality/pollution/ environmental studies; property devaluation; increased traffic volumes; increased crime; steps to minimize accidents along Mt. Carmel Road; and concerns over the possible widening of Mt. Carmel Road. The individual concerns were discussed as well as ideas from the Rowanshyre residents for possible mitigation to these concerns.

Due to the concerns of the communities surrounding Mt. Carmel Road and the general results of the December PIOH meetings, Alternative 8, the project with access at Mt. Carmel Road, was eliminated from further consideration.

C. Other Stakeholder Outreach

A coordination meeting was held with incident management stakeholders and first responders on March 30, 2012. The purpose was to introduce the project and to discuss potential emergency access to the reversible lanes. Several emergency access locations are under consideration and were discussed in detail with the first responders. Comments from the stakeholders included:

- Access to the hospital complex on Eagles Landing Parkway east of I-75 should be considered;
- Incident management within the reversible lanes is only feasible from within the lanes themselves;
- No Parking signs could be added in the shoulders;
- Local fire departments can provide emergency access radii requirements;
- Mechanical gates at emergency access locations should be easy to activate/operate;
- Accident investigation sites should be considered in the areas with a wide shoulder;
- Additional emergency access locations should be considered between SR 155 and Jodeco Road;
- Wider shoulders could be considered for emergency vehicles;
- Accident data should be examined to determine locations with most frequent accidents; and
- Water supply for fire suppression should be considered.

Six emergency access locations to the managed lanes have been added as a result of discussions from the incident management meeting. The emergency access will be available by use of automatic sliding barrier gates.

VI. FUTURE ACTIONS AND IDENTIFICATION OF THE PREFERRED ALTERNATIVE

After approval of the Draft EA by FHWA, GDOT will conduct public hearings open houses (PHOHs). The purpose of these hearings is to present the preliminary project design, present the findings of this EA, provide a discussion forum between the public and project team, and obtain input and comments from the community to be used in selecting an alternative. All comments received during the public hearing and public comment period will be considered, and all substantive comments will be addressed in subsequent NEPA documentation and in reaching a decision on the project.

Based on the alternatives' abilities to meet the need and purpose of the project and the assessment of environmental impacts, Alternative 1 has been chosen as the Preferred Alternative and will be designated as such at the PHOHs. However, the decision of which of the three alternatives under consideration to select will not be made until after the PHOHs are held and all comments are reviewed and taken into consideration. The final decision will be documented in a Final EA.

VII. STATUTE OF LIMITATIONS

Pursuant to Section 1308 of the Moving Ahead for Progress in the 21st Century Act (MAP-21) and 23 USC Section 139 (I), the FHWA to publish a notice in the Federal Register following publication of the NEPA document for the proposed I-75 Express Lanes. This notice would indicate that the agency has taken final action with respect to compliance with NEPA for the I-75 Express Lanes. If such a notice is published, claims seeking judicial review of this federal action will be barred unless such claims are filed within 150 days after the publication date of the Federal Register notice. If no notice is published in the Federal Register, then the period of time that otherwise is provided by the federal laws governing such claims would apply. At minimum, the period of time may only be limited by the Administrative Procedures Act of 1946 (5 USC Section 706 et seq.)], which allows claims to be filed up to six years after the federal action.

In addition, pursuant to MAP-21 and 23 USC Section 139 (I), the FHWA intends to publish a notice in the Federal Register once the U.S. Army Corps of Engineers has taken final agency action by issuing permits and approvals for the I-75 Express Lanes. If such a notice is published, claims seeking judicial review of this additional federal action also will be barred unless such claims are filed within 150 days after the publication date of the Federal Register notice. The period of time for filing such claims may be limited to a shorter time period as allowed by law. If no notice is published, then the period of time that otherwise is provided by federal laws governing such claims would be up to six years after the federal action pursuant to the Administrative Procedures Act of 1946 (5 USC Section 706 et seq.).

Any comments concerning this environmental assessment should be addressed to the following:

Mr. Glenn Bowman, P.E. *or*	Mr. Rodney N. Barry, P.E.
State Environmental Administrator	Division Administrator
Georgia Department of Transportation	Federal Highway Administration
600 West Peachtree Street	Atlanta Federal Center
16th Floor	61 Forsyth Street, S.W., Suite 17 T100
Atlanta, GA 30308	Atlanta, GA 30303-3104

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Appendices under Separate Cover