Transportation Analysis

Proposed Talmadge Development of Regional Impact #3894 Panhandle Road Clayton County and Henry County, Georgia

June 21, 2023



MARC R. ACAMPORA, PE, LLC Traffic Engineering

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study prepared for:

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June 21, 2023





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Summary

This Transportation Analysis was prepared for the Talmadge Development of Regional Impact (DRI) #3894, in compliance with the requirements of the Georgia Regional Transportation Authority, as well as the Atlanta Regional Commission, Clayton County, Henry County, and the Georgia Department of Transportation. The following is a summary of the findings of this study:

- 1. The site is located along the east side of Panhandle Road across from the Clayton County Schools Transportation Facility.
- 2. The project is a mix of residential and commercial land uses, with 862 single-family homes, 336 townhomes, and 16,800 square feet of commercial/retail.
- 3. Three vehicular accesses will be provided to the project on Panhandle Road. The north full-movement access will align with the existing north access of the Clayton County Schools Transportation Facility. The south full-movement access will be located south of New Hope Drive. A right-out access will be provided at the northeast corner of the site.
- 4. The project will generate 729 new trips in the a.m. peak hour, 1,026 new trips in the p.m. peak hour, and 10,546 new daily trips.
- 5. The following mitigation is identified for the existing condition:

Intersection 3 – Panhandle Road at Eddie White Middle Academy North Access Station a police officer to control traffic during drop-off and possibly pick-up times.

Intersection 7 – Panhandle Road at Michelle Obama Elementary Academy North Access

Station a police officer to control traffic during drop-off and possibly pick-up times.

Intersection 8 – Panhandle Road at Lovejoy Road

Change control to a single lane roundabout.

Intersection 9 – US 19/41 at Lovejoy Road

Add an eastbound exclusive right turn lane and a westbound exclusive left turn lane on Lovejoy Road at US 19/41. A reduction in cycle length may be appropriate in this corridor.

Intersection 14 – US 19/41 at McDonough Road

Add a second eastbound and westbound through lane on McDonough Road.

Intersection 15 – McDonough Road at Hastings Bridge Road

Change control to a single lane roundabout.

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis

Intersection 17 – Tara Road at Panhandle Road

A signal warrant study should be performed to determine if and when the intersection satisfies warrants for signalization.

Intersection 18 – US 19/41 at Tara Road

The current widening on US 19/41 was incorporated as existing mitigation.

6. The following mitigation is identified for the no-build condition:

Intersection 3 – Panhandle Road at Eddie White Middle Academy North Access

No additional mitigation was identified for the no-build condition.

Intersection 4 – Panhandle Road at New Hope Drive

Change control to a single lane roundabout.

Intersection 6 – Panhandle Road at Michelle Obama Elementary Academy South Access

Station a police officer to control traffic during drop-off and possibly pick-up times.

Intersection 7 – Panhandle Road at Michelle Obama Elementary Academy North Access

No additional mitigation was identified for the no-build condition.

Intersection 8 – Panhandle Road at Lovejoy Road

Add a northbound to eastbound right turn lane and an eastbound to southbound right turn lane to the roundabout recommended in the existing analysis.

Intersection 9 – US 19/41 at Lovejoy Road

Add northbound and southbound dual left turn lanes on the US 19/41 approaches. Add a westbound right turn overlap phase on the signal which would operate concurrently with the southbound protected left turn phase. It is advised that a reduction in cycle length may be appropriate in this corridor.

Intersection 11 – McDonough Road at County Line Road / McElroy Road

Widen McDonough Road to four lanes and add southbound protected/permissive left turn phasing.

Intersection 12 – McDonough Road at New Hope Road

Add an eastbound right turn lane. A signal warrant study should be performed for this intersection to determine if and when signalization would be appropriate.

Intersection 14 – US 19/41 at McDonough Road

Add a third through lane in each direction on US 19/41, as is under construction to the north near Tara Road, and as identified above as needed at Lovejoy Road. In addition to the through lanes recommended in the existing analysis on McDonough Road, add dual left turn lanes on all approaches and optimize the signal phasing and timing.

Intersection 15 – McDonough Road at Hastings Bridge Road

No additional mitigation was identified for the no-build condition.

Intersection 18 – US 19/41 at Tara Road

No additional mitigation is recommended for the no-build condition.

7. The following mitigation is identified for the build condition:

Intersection 1 – Panhandle Road at New Hope Road

It is recommended that no change be made at this intersection.

Intersection 3 – Panhandle Road at Eddie White Middle Academy North Access

No additional mitigation is identified for the build condition.

Intersection 4 – Panhandle Road at New Hope Drive

No additional mitigation is needed for the build condition.

Intersection 5 – Panhandle Road at Clayton County Transportation / DRI North Access

See summary of Project Access Mitigation, below.

Intersections 6 and 7 – Panhandle Road at Michelle Obama Elementary Academy South Access and North Access

No additional mitigation is identified for the build condition.

Intersection 8 – Panhandle Road at Lovejoy Road

Add a westbound left turn lane in the previously recommended roundabout (from southwest-bound Panhandle Road to southbound Panhandle Road).

Intersection 9 – US 19/41 at Lovejoy Road

No additional mitigation is identified for the build condition.

Intersection 11 – McDonough Road at County Line Road / McElroy Road

No additional mitigation is identified for the build condition.

Intersection 12 – McDonough Road at New Hope Road

No additional mitigation is identified for the build condition.

Intersection 13 – McDonough Road at Panhandle Road

Add a northbound right turn lane on Panhandle Road, a southbound right turn lane on Panhandle Road, an eastbound right turn lane on McDonough Road, and northbound protected/permissive phasing.

Intersection 14 – US 19/41 at McDonough Road

No additional mitigation is identified for the build condition.

Intersection 15 – McDonough Road at Hastings Bridge Road

Add a southbound left turn lane (from southbound McDonough Road to eastbound McDonough Road) in the previously recommended roundabout. The Talmadge DRI will bear some modest contributory responsibility for the southbound left turn lane, but is not responsible for the change in control and/or construction of the roundabout.

Intersection 18 – US 19/41 at Tara Road

No additional mitigation is identified for the build condition.

- 8. The following mitigation is identified for the project accesses:
 - a. It is recommended that the two main project accesses be constructed as single lane roundabouts.
 - b. No mitigation is identified for the right-out access.
 - c. The project civil engineer should ensure that each access meets all applicable design standards including sight distances, access spacing with adjacent intersections, lane widths, tapers and storage lengths for auxiliary lanes, minimum distances to internal intersecting roadways, turn radii, grades, etc.

Tables A, B, and C summarize the locations with failing levels of service and the levels of service with the recommended mitigation, for the existing, no-build, and build conditions.

		A.M. Pea	ak Hour			ak Hour	ur		
Intersection / Approach	Without	Mitigation	With N	/litigation	Without Mitigation Wit			litigation	
	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	
3. Panhandle Rd at White MA north	D	29.0	С	27.6	A	2.0	С	21.1	
northbound left turn	F	210.1	В	15.1	С	21.4	А	9.3	
northbound right turn	С	17.7	С	32.1	В	12.0	С	27.2	
westbound left turn	A	9.1	С	28.2	A	8.4	В	16.7	
7. Panhandle Rd at Obama EA north	F	108.3	В	17.4	Α	0.6	А	3.0	
northbound left turn	Α	9.2	А	8.5	A	8.1	А	2.1	
eastbound left turn	F	*EX	В	14.5	С	19.5	А	1.7	
eastbound right turn	В	12.0	С	30.2	В	10.6	D	35.4	
8. Panhandle Rd at Lovejoy Rd	F	133.8	С	15.6	F	76.9	А	9.7	
northbound left turn	F	*EX	С	16.4	F	*EX	А	8.1	
northbound right turn	С	22.0	С	17.6	В	12.6	В	10.4	
westbound left turn	В	11.0	В	11.1	Α	9.9	В	10.4	
9. US 19/41 at Lovejoy Rd	С	30.5	С	30.2	D	40.2	С	34.1	
northbound approach	В	18.3	С	22.0	С	30.3	С	26.5	
southbound approach	В	19.9	С	23.9	С	34.9	С	29.3	
eastbound approach	E	70.7	Ε	62.7	E	74.2	Ε	70.7	
westbound approach	D	54.6	D	48.7	D	52.2	D	54.2	
14. US 19/41 at McDonough Rd	D	45.1	С	34.0	D	37.5	С	29.1	
northbound approach	D	36.2	С	24.4	C	29.4	С	20.0	
southbound approach	D	36.2	С	26.6	С	29.1	С	20.2	
eastbound approach	E	73.0	Ε	61.2	E	60.7	Ε	60.2	
westbound approach	F	81.6	Ε	69.8	E	68.0	Ε	62.2	
15. McDonough Rd at Hastings Bridge Rd	Α	6.5	А	6.5	A	6.6	А	7.0	
southbound left turn	A	9.5	А	8.7	A	9.9	А	9.9	
westbound left turn	F	50.8	А	8.3	F	59.8	А	8.8	
westbound right turn	В	12.5	А	0.1	В	14.8	А	0.1	
17. Tara Rd at Panhandle Rd	В	12.8	В	14.0	В	13.3	А	8.9	
northbound left turn	F	65.5	В	11.3	F	147.0	В	16.5	
northbound right turn	С	16.8	В	19.8	С	22.5	В	11.5	
westbound left turn	А	8.5	В	10.4	А	9.6	А	5.0	
18. US 19/41 at Tara Rd	С	21.2	В	18.3	С	21.1	В	16.8	
northbound approach	В	10.1	А	7.4	Α	7.7	А	6.7	
southbound approach	В	10.2	А	9.0	В	13.9	А	6.5	
eastbound approach	E	72.4	Е	66.5	E	75.3	Ε	72.1	

Table A – Existing Levels of Service at Failing Locations, Without and With Mitigation

*EX-limits of methodology exceeded

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis

		A.M. Pea	ak Hour		P.M. Peak Hour				
Intersection / Approach	Without	Mitigation	With M	litigation	Without	Mitigation	With M	litigation	
	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	
3. Panhandle Rd at White MA north	F	91.3	В	15.9	А	2.5	А	7.9	
northbound left turn	F	*EX	С	22.1	D	31.1	В	12.8	
northbound right turn	D	29.8	В	18.8	В	13.5	А	10.0	
westbound left turn	A	9.8	В	12.4	А	8.7	А	5.5	
4. Panhandle Rd at New Hope Dr	А	0.8	В	11.0	А	0.6	А	7.9	
northbound left turn	A	9.4	В	12.4	А	8.8	А	8.3	
eastbound approach	E	36.9	А	9.6	D	28.5	А	7.5	
6. Panhandle Rd at Obama EA south	A	0.1	А	6.8	А	0.1	А	5.5	
northbound left turn	A	9.2	А	4.8	А	0.0	А	3.5	
eastbound left turn	E	37.7	А	3.2	C	24.1	А	3.8	
eastbound right turn	А	0.0	А	6.3	В	11.4	А	2.9	
7. Panhandle Rd at Obama EA north	F	156.1	D	41.5	А	0.8	С	25.6	
northbound left turn	Α	9.9	В	18.8	А	8.4	А	5.7	
eastbound left turn	F	*EX	В	12.2	D	25.6	А	4.3	
eastbound right turn	В	11.0	С	21.4	В	11.2	А	7.0	
8. Panhandle Rd at Lovejoy Rd	E	36.3	С	22.1	В	14.1	В	13.7	
northbound approach	E	39.4	В	11.2	В	10.6	В	10.1	
eastbound approach	E	45.0	А	9.3	С	15.7	А	5.8	
westbound approach	С	17.8	А	8.6	С	15.6	А	7.4	
9. US 19/41 at Lovejoy Rd	D	52.1	С	17.8	F	148.7	С	15.6	
northbound approach	D	47.3	D	43.6	F	91.2	E	58.7	
southbound approach	D	45.8	D	41.3	F	162.6	Е	57.4	
eastbound approach	F	85.1	D	36.08	F	295.1	E	59.2	
westbound approach	D	43.8	Е	66.2	F	117.5	E	64.9	
11. McDonough Rd at County Line	В	20.0	D	45.9	Ε	69.2	D	49.6	
northbound approach	В	13.6	В	16.8	С	25.2	С	29.1	
southbound approach	В	18.4	В	18.1	E	70.2	С	32.5	
eastbound approach	С	23.2	А	9.3	F	116.0	В	19.2	
westbound approach	С	22.5	С	22.5	С	33.6	D	44.7	
12. McDonough Rd at New Hope Rd	A	3.9	В	16.4	A	2.0	С	23.1	
northbound approach	F	51.0	А	5.1	E	41.7	А	5.9	
westbound left turn	Α	8.7	В	14.7	В	10.3	В	12.9	
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Table B – 2033 No-Build Levels of Service at Failing Locations, Without and With Mitigation

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis

14. US 19/41 at McDonough Rd	F	130.8	D	35.2	F	183.0	D	46.1
northbound approach	F	136.8	С	33.6	F	124.7	D	37.4
southbound approach	F	87.5	С	29.4	F	225.8	D	43.6
eastbound approach	F	198.7	D	47.6	F	162.5	Ε	63.0
westbound approach	F	174.2	D	49.9	F	203.3	E	69.0
15. McDonough Rd at Hastings Br Rd	F	89.9	С	15.3	F	*EX	С	20.0
southbound left turn	В	1.47	D	25.7	С	15.2	D	31.8
westbound left turn	F	*EX	С	17.4	F	*EX	D	27.4
westbound right turn	С	17.0	А	0.6	E	47.2	А	1.3
18. US 19/41 at Tara Rd	С	20.5	С	20.5	С	29.2	С	29.2
northbound approach	В	12.0	В	12.0	В	17.6	В	17.6
southbound approach	В	13.2	В	13.2	С	29.3	С	29.3
eastbound approach	E	65.9	E	65.9	Ε	68.6	Ε	68.6

*EX-limits of methodology exceeded

Table C – 2033 Build Levels of Service at Failing Locations, Without and With Mitigation

	A.M. Peak Hour					P.M. Peak Hour				
Intersection / Approach	Without	Mitigation	With M	itigation	Without	Mitigation	With M	itigation		
	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)		
1. Panhandle Rd at New Hope Rd	A	6.7	А	6.7	А	2.6	А	2.6		
southbound approach	E	42.1	Ε	42.1	C	19.7	С	19.7		
eastbound left turn	Α	8.4	А	8.4	А	8.9	А	8.9		
3. Panhandle Rd at White MA north	F	101.5	В	15.6	А	2.7	А	8.1		
northbound left turn	F	*EX	С	23.0	E	38.0	В	13.8		
northbound right turn	D	33.1	В	18.3	В	14.6	В	10.3		
westbound left turn	A	9.9	В	12.0	А	8.9	А	5.5		
4. Panhandle Rd at New Hope Dr	A	5.1	С	19.0	В	11.9	В	14.6		
northbound left turn	А	10.0	С	24.6	В	10.5	В	14.2		
eastbound approach	F	138.5	В	12.3	F	204.0	С	15.5		
5. Panhandle Rd at Clayton Transp/DRI North	А	7.7	А	7.8	E	40.1	В	10.6		
northbound left turn	A	9.4	В	11.5	А	9.4	В	12.5		
southbound left turn (entering DRI)	В	10.3	В	12.7	В	11.0	В	12.2		
eastbound approach	A	0.0	В	10.7	F	174.8	В	14.2		
westbound left turn (exiting DRI)	F	221.7	А	0.0	F	*EX	А	6.5		
westbound right turn (exiting DRI)	С	24.2	А	9.3	C	19.3	А	8.0		

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6. Panhandle Rd at Obama EA south	Α	0.1	А	4.5	A	0.1	А	3.7
northbound left turn	A	9.7	А	4.1	Α	0.0	А	3.9
eastbound left turn	F	69.2	А	4.9	F	74.2	Α	3.3
eastbound right turn	A	0.0	D	48.1	С	17.7	D	51.3
7. Panhandle Rd at Obama EA north	F	*EX	С	28.9	A	2.1	Α	6.4
northbound left turn	В	10.6	С	31.4	В	10.2	A	4.5
eastbound left turn	F	*EX	В	17.3	F	123.4	A	7.6
eastbound right turn	В	12.8	D	44.3	С	17.5	С	22.9
8. Panhandle Rd at Lovejoy Rd	E	36.3	В	13.1	F	75.6	В	10.6
northbound approach	E	39.4	С	16.9	D	29.3	A	9.1
eastbound approach	E	45.0	В	12.3	F	54.1	А	9.8
westbound approach	С	17.8	В	10.5	F	126.3	В	12.3
9. US 19/41 at Lovejoy Rd	E	74.7	С	32.1	F	174.3	D	46.9
northbound approach	D	48.6	С	32.2	F	103.1	D	40.7
southbound approach	D	47.7	С	24.6	F	190.0	D	51.9
eastbound approach	F	208.5	D	45.3	F	305.6	D	52.6
westbound approach	D	46.9	С	28.3	F	261.4	С	32.4
11. McDonough Rd at County Line/McElroy Rd	С	21.7	В	17.1	F	82.2	С	31.5
northbound approach	В	15.1	В	18.6	С	26.0	D	36.3
southbound approach	С	21.4	А	9.8	F	84.0	С	23.1
eastbound approach	С	22.6	С	22.6	F	140.6	D	46.6
westbound approach	С	24.8	В	16.6	С	34.8	С	22.5
12. McDonough Rd at New Hope Rd	С	23.1	А	6.6	В	14.0	А	6.2
northbound approach	F	205.0	В	15.4	F	173.8	В	14.7
westbound left turn	A	8.8	А	4.1	В	10.8	А	6.1
13. McDonough Rd at Panhandle Rd	F	90.0	А	6.4	F	84.1	А	4.4
northbound approach	D	49.2	D	36.0	Ε	64.5	D	40.2
southbound approach	E	69.6	С	27.3	D	51.7	С	29.5
eastbound approach	F	141.9	D	38.6	F	145.7	D	51.5
westbound approach	F	102.1	D	38.3	Ε	55.2	D	45.6
14. US 19/41 at McDonough Rd	F	150.5	D	42.2	F	205.6	D	36.5
northbound approach	F	156.3	D	40.1	F	140.5	F	92.0
southbound approach	F	98.8	D	39.7	F	246.9	D	50.0
eastbound approach	F	217.2	С	32.4	F	236.3	F	146.9
westbound approach	F	201.5	D	53.5	F	211.8	D	39.3

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15. McDonough Rd at Hastings Bridge Rd	F	228.1	D	49.7	F	*EX	D	53.7
southbound left turn	С	17.3	В	12.8	С	16.3	В	11.9
westbound left turn	F	*EX	E	35.2	F	*EX	D	34.9
westbound right turn	С	18.4	A	8.6	F	75.7	A	9.0
18. US 19/41 at Tara Rd	С	23.2	A	0.6	С	32.9	A	1.1
northbound approach	В	14.8	В	17.5	В	19.9	С	27.1
southbound approach	В	15.8	В	12.6	D	35.4	В	15.8
eastbound approach	E	63.4	В	14.2	E	64.9	С	32.4
19. Panhandle Rd at DRI South Access	A	7.9	D	39.5	В	11.7	D	43.6
southbound left turn (entering DRI)	A	9.8	В	11.8	В	13.1	С	19.3
westbound left turn (exiting DRI)	F	70.2	В	11.0	F	*EX	D	27.1
westbound right turn (exiting DRI)	D	32.4	В	11.0	С	22.1	С	16.4
20. Panhandle Rd at DRI Right Out Access	А	4.5	А	4.5	А	1.8	A	1.8
northbound right turn (exiting DRI)	F	55.3	F	55.3	D	25.0	D	25.0

*EX-limits of methodology exceeded

Table D presents the project's added trips and their percentage of the overall total volumes for failing locations in the 2033 build condition.

	A	.M. Peak Hou	ır	P.M. Peak Hour			
Intersection / Approach	Project Trips	Total Build Volume	% Project Trips	Project Trips	Total Build Volume	% Project Trips	
1. Panhandle Rd at New Hope Rd							
southbound approach	0	97	0%	0	101	0%	
3. Panhandle Rd at White MA north							
northbound left turn	0	110	0%	0	32	0%	
4. Panhandle Rd at New Hope Dr							
eastbound approach	28	47	60%	82	103	80%	
5. Panhandle Rd at Clayton Transp/DRI North							
eastbound approach	0	0	0%	0	4	0%	
westbound left turn (exiting DRI)	41	41	100%	73	73	100%	
6. Panhandle Rd at Obama EA south							
eastbound left turn	0	1	0%	0	2	0%	
7. Panhandle Rd at Obama EA north							
eastbound left turn	0	298	0%	0	20	0%	

Table D – Talmadge DRI Project-Added Trips at Failing Locations

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8. Panhandle Rd at Lovejoy Rd						
northbound approach	55	717	8%	166	682	24%
eastbound approach	405	1,250	32%	304	819	37%
westbound approach	101	566	18%	311	961	32%
9. US 19/41 at Lovejoy Rd						
northbound approach	38	2,350	2%	117	2,140	5%
southbound approach	0	1,331	0%	0	2,950	0%
eastbound approach	106	683	16%	77	666	12%
westbound approach	2	757	0%	6	593	1%
11. McDonough Rd at County Line/McElroy Rd						
southbound approach	8	327	2%	23	962	2%
eastbound approach	22	392	6%	68	948	7%
12. McDonough Rd at New Hope Rd						
northbound approach	63	156	40%	51	98	52%
13. McDonough Rd at Panhandle Rd						
northbound approach	265	939	28%	196	685	29%
southbound approach	39	413	9%	120	489	25%
eastbound approach	8	659	1%	23	839	3%
westbound approach	54	887	6%	168	837	20%
14. US 19/41 at McDonough Rd						
northbound approach	0	2,965	0%	0	2,477	0%
southbound approach	19	1,776	1%	59	2,948	2%
eastbound approach	143	685	21%	105	686	15%
westbound approach	35	800	4%	109	1,000	11%
15. McDonough Rd at Hastings Bridge Rd						
westbound left turn	0	65	0%	0	159	0%
westbound right turn	30	447	7%	94	687	14%
18. US 19/41 at Tara Rd						
eastbound approach	101	807	13%	73	1,056	7%
19. Panhandle Rd at DRI South Access						
westbound left turn (exiting DRI)	34	34	100%	22	22	100%
20. Panhandle Rd at DRI Right Out Access						
northbound right turn (exiting DRI)	160	160	100%	116	116	100%

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1. Project Description

This Transportation Analysis was performed for the proposed Talmadge Development of Regional Impact (DRI) #3894 in Clayton County and Henry County, Georgia. The project is a mix of residential and commercial land uses, with 862 detached single family homes, 336 attached townhomes, and 16,800 square feet of commercial/retail. The site is located along the east side of Panhandle Road, with 363.71 acres in Clayton County and 39.41 acres in Henry County, as presented in Figure 1. The qualifying DRI threshold exceeded is 500 housing units in established suburbs, as set forth in the Rules of the Georgia Department of Community Affairs (DCA), Chapter 110-12-7-.05. This study was performed to meet the Georgia Regional Transportation Authority's (GRTA) Development of Regional Impact non-expedited review requirements, according to the GRTA DRI Review Package Technical Guidelines. The scope of the study was set forth in the Letter of Understanding (LOU) dated April 19, 2023.



Figure 1 – Location Map

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis

1.1 Project Phasing, Pods, and Land Uses

The subject site is 403.12 acres and is primarily undeveloped. The trigger that initiated DRI review was a rezoning request to Clayton County and Henry County. The project land uses and sizes are summarized in Table 1. The project will be developed in one phase with buildout anticipated in 10 years in 2033.

Land Use	Size
Single Family Detached Housing	862 homes
Townhomes	<u>336 homes</u>
Residential Total	1,198 homes
Commercial/Retail	16,800 ft ²

Table 1 – Talmadge DRI #3894 Proposed Land Uses and Sizes

1.2 Site Plan

The site plan is presented in Figure 2.

1.3 Site Vehicular Access

Vehicular access to the public roadways is proposed at two new full-movement driveways and one right-out driveway on the east side of Panhandle Road. The northern full-movement access will align with the existing northern access to the Clayton County Schools Panhandle Transportation Facility (Intersection 5). The southern access will be a new T-intersection located south of New Hope Drive (future Intersection 19). A right-out access will be located at the northeastern corner of the site (future Intersection 20). The site plan in Figure 2 shows the accesses labelled "5", "19", and "20".



Figure 2 – Talmadge DRI #3894 Site Plan

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis

1.4 On-Site Pedestrian and Bicycle Facilities

The site plan includes five foot wide sidewalks along internal roadways and a six foot wide walking trail through the wooded areas at the center of the site. An eight foot wide multi-use trail will be provided along the project frontage on Panhandle Road. A pedestrian crosswalk will be provided at the northern full-movement access to connect to the existing sidewalk on the west side of Panhandle Road connecting to Michelle Obama Elementary Academy. At the south end of the site frontage a connection will be provided from the multi-use trail to the existing sidewalk on the east side of Panhandle Road connecting to Eddie White Middle Academy. No separate bicycle lanes exist in the study area and none are proposed within the DRI site.

1.5 Transit Access

There is no regularly scheduled mass transit service in the vicinity of the subject site.

1.6 Parking

Parking will be provided as summarized in Table 2.

Land Use	Size	Parking Spaces Required	Parking Spaces Provided	
Single Family Detached Housing	862 homes	2 per house	All units have a 2 car garage	
Townhomos	226 homos	None in code. 0.25 per unit is typical	All units have a 2 car	
Townhomes	<u>556 nomes</u>	= 84 spaces	garage	
Residential Total	1,198 homes	1,808	2,396	
Amenity			52	
Overflow/Guest			139	
Commercial/Retail	16,800 ft ² *	1 per 250 ft ² useable = 64^*	64	
Totals		1,872	2,651	

Table 2 – On-Site Parking Summary

Parking data provided by project civil engineer.

*Commercial/retail square footage shown as gross, parking calculation based on "useable" or leasable.

2. Study Network

The study network for this project was agreed to with the reviewing agencies as specified in GRTA's Letter of Understanding (LOU) dated April 19, 2023. The network intersections are presented in Table 3 and shown in Figure 3.

#	Description	Control
1	Panhandle Road at New Hope Road	side street stop sign
2	Panhandle Road at Eddie White Middle Academy south access	side street stop sign
3	Panhandle Road at Eddie White Middle Academy north access	side street stop sign
4	Panhandle Road at New Hope Drive	side street stop sign
5	Panhandle Road at Clayton County Schools Panhandle Transportation Facility north access / project north access location	side street stop sign
6	Panhandle Road at Michelle Obama Elementary Academy south access	side street stop sign
7	Panhandle Road at Michelle Obama Elementary Academy north access	side street stop sign
8	Panhandle Road at Lovejoy Road	side street stop sign
9	US 19/41 at Lovejoy Road	signal
10	New Hope Road at New Hope Drive	side street stop sign
11	McDonough Road at County Line Road / McElroy Road	signal
12	McDonough Road at New Hope Road	side street stop sign
13	McDonough Road at Panhandle Road	signal
14	US 19/41 at McDonough Road	signal
15	McDonough Road at Hastings Bridge Road	side street stop sign
16	McDonough Road at East Lovejoy Road / Freeman Road	signal
17	Tara Road at Panhandle Road	side street stop sign
18	US 19/41 at Tara Road	signal

Table 3 –	Intersections	Included in	the Study	V Network
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Figure 3 – Traffic Volume Count Locations

2.1 Peak Time Periods and Analysis Conditions

All analyses are performed for the weekday a.m. peak hour (counted 7:00-9:00 a.m.) and the weekday p.m. peak hour (counted 4:00-6:00 p.m.). The existing 2023, 2033 no-build, and 2033 build conditions are evaluated.

2.2 Level of Service Standard

The level of service (LOS) standard is that level of service considered to be the minimum that provides acceptable operating conditions. A level of service standard of D (LOS D) is used for suburban and urban areas, and for this study a LOS D standard was applied to all facilities. In the facilities needs analysis, mitigation is developed with LOS D as the minimum goal. Appendix B includes a description of the methodology used for the intersection analysis.

3. Existing Transportation Facilities

This section provides a description of the existing transportation infrastructure that will serve the proposed Talmadge DRI. An inventory was performed of the lanes and method of control at the existing traffic facilities in the vicinity of the site. The availability of transit, bicycle, and pedestrian facilities adjacent to the site was also reviewed. Figure 7 in the Existing Traffic Analysis section of this report depicts the existing lanes and control for the intersections in the study network. The following is a brief description of the transportation facilities in the vicinity of the site.

3.1 Panhandle Road

Panhandle Road is a two lane road classified by Clayton County as a collector and by the Georgia DOT as an urban minor collector. The road begins at a side street stop sign controlled intersection at Tara Road, intersects McDonough Road at a signalized intersection, passes the subject site, and takes a winding path to the south, terminating at a side street stop sign controlled T-intersection at Woolsey Road. The terrain is gently rolling and the posted speed limit is 40 mph, with advisory speeds of 25 mph in nearby school zones. The road serves residential development, as well as two schools and a County Transportation Facility in the vicinity of the DRI site. In 2021 the Georgia DOT recorded and Annual Average Daily Traffic (AADT) volume of 7,390 vehicles per day (vpd) with 4% trucks on Panhandle Road south of New Hope Road (southwest of the DRI site). A 24-hour bidirectional traffic volume count collected on Panhandle Road at the northern DRI frontage recorded 5,172 vehicles northbound and 5,141 vehicles southbound, for a two way 24-hour volume of 10,313 vehicles. Note that the AADT and the 24 hour count for this study were collected at different locations, with two schools and the County Transportation Facility between them, so they are not directly comparable.

3.2 US 19/41

US 19/41 is a north/south urban principal arterial (Georgia DOT designation) that provides regional mobility. The road has two/three (depending on section and direction) through travel lanes per direction, the terrain is level to gently rolling, and the posted speed limit is 55 mph. In 2021 the Georgia DOT recorded an AADT of 27,000 vpd with 7% trucks on US 19/41 south of Lovejoy Road.

3.3 Lovejoy Road

Lovejoy Road is an east/west local two lane road that connects Panhandle Road to US 19/41 at a signalized intersection, then continues east of US 19/41. The terrain is very gently rolling and the posted speed limit is 40 mph. There are sidewalks along both sides of the road and the road serves residential developments, schools, and a large retail node closer to US 19/41.

3.4 McDonough Road

McDonough Road is an east/west two lane urban principal arterial (Georgia DOT designation) that begins at SR 54 to the west, has signalized intersections at County Line Road / McElroy Road, Panhandle Road, and US 19/41, then continues to the southeast, turns to the west at Hastings Bridge Road, has a signalized intersection at East Lovejoy Road / Freeman Road, then continues to the east, changes name to Jonesboro Road and has an interchange with Interstate 75, then continues to downtown McDonough. The terrain is gently rolling and the posted speed limit is 45 mph. In 2021 the Georgia DOT recorded an AADT of 11,100 vpd on McDonough Road west of Folsom Road (between New Hope Road and Panhandle Road).

3.5 Pedestrian and Bicycle Facilities

Panhandle Road has a rural cross section along most of the DRI frontage, with no sidewalks, curb and gutter, shoulders, or bicycle lanes. However, there is a section of new sidewalk on the west side of Panhandle Road along the frontages of the Clayton County Schools Transportation Facility and Michelle Obama Elementary Academy. There is also a section of sidewalk on the east side of Panhandle Road along the frontage of Eddie White Middle Academy. There are crosswalks and pedestrian signals at the signalized intersections in this study.

3.6 Transit Service

There is no regularly scheduled mass transit service in the vicinity of the subject DRI site.

4. Project Traffic Characteristics

This section describes the anticipated traffic characteristics of the proposed Talmadge DRI, including how much traffic the project will generate and where that traffic will travel.

4.1 Trip Generation

Trip generation is an estimate of the number of entering and exiting vehicular trips that will be generated by the proposed DRI. The trip generation was calculated using the standard equations and rates in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, *11th Edition*. The trip generation for the single family detached homes was calculated using ITE Land Use 210 – Single Family Detached Housing while the trips for the townhomes was based on ITE Land Use 215 – Single Family Attached Housing. The retail trips were based on ITE Land Use 822 – Strip Retail Plaza less than 40,000 square feet. Due to the modest size of the retail, the multi-use calculations yielded very low numbers, so that no multi-use adjustment was applied. Pass-by trips for the retail were calculated based on the average p.m. peak hour rate in the ITE *Trip Generation Handbook*, *3rd Edition*, for ITE Land Use 820 – Shopping Center. This is the most similar land use for which pass-by data is available. The average p.m. peak hour pass-by percentage is 34%, while 24% was assumed for the a.m. peak hour and 24-hour trips. Table 4 presents the project trip generation.

Land Lico	ITE	Sizo	A	AM Peak Hour			AM Peak Hour PM Peak Hour			24-Hour
	Code	5120	Enter	Exit	2-Way	Enter	Exit	2-Way	2-Way	
Single Family Detached	210	862 homes	138	391	529	474	279	753	7,322	
Single Family Attached	215	336 homes	<u>52</u>	<u>117</u>	<u>169</u>	<u>113</u>	<u>85</u>	<u>198</u>	<u>2,510</u>	
Total Residential Trips		1,198 homes	190	508	698	587	364	951	9,832	
Retail Trips	822	16,800 ft ²	24	17	41	56	57	113	940	
-pass-by		24%/34%/24%	<u>-6</u>	-4	<u>-10</u>	<u>-19</u>	<u>-19</u>	<u>-38</u>	-226	
Retail New Trips			18	13	31	37	38	75	714	
Total Project Raw Trips			214	525	739	643	421	1,064	10,772	
Total Project New Trips			208	521	729	624	402	1,026	10,546	

Table 4 – Talmadge DRI Trip Generation

The project will generate 729 new trips in the a.m. peak hour, 1,026 new trips in the p.m. peak hour, and 10,546 new daily trips.

4.2 Trip Distribution and Assignment

The trip distribution percentages indicate what proportion of the project's trips will travel to and from various directions. Two trip distributions were developed, one for the residential uses and one for the retail use. The trip

distribution for the residential was developed based on the locations and proximity of likely trip origins and destinations, including regional trip attractors and employment centers; local schools; retail and offices in the area; and the major routes of travel to those attractors. The distribution for the retail is based on population density in the area and the distances of those populations to the site. The trip distribution percentages for the residential are presented in Figure 4 while the distribution percentages for the retail are presented in Figure 5.



Figure 4 – Residential Trip Distribution Percentages



Figure 5 – Retail Trip Distribution Percentages

The DRI project trips, shown in Table 4, were assigned to the roadway network based on the distribution percentages shown in Figures 4 and 5. The a.m. and p.m. peak hour trips expected to be generated by the project are shown in Figure 6. Traffic volume worksheets for each intersection are found in Appendix A which show the project trips at each intersection, separately for the residential and retail land uses.

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Figure 6 – Weekday A.M. and P.M. Peak Hour Project-Generated Trips

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis

5. Existing Traffic Analysis

This chapter presents the results of the capacity analysis and facilities needs analysis for the existing condition.

5.1 Existing Lanes and Traffic Control

A description of the existing conditions was provided previously in this report. Figure 7 presents the existing lane configuration and method of traffic control at each study intersection.

5.2 Existing Traffic Volumes

Existing peak hour traffic volume count data was collected at each intersection from 7:00 a.m. to 9:00 a.m. and from 4:00 p.m. to 6:00 p.m. The counts at most of the intersections were collected on Tuesday, May 10, 2022, when area schools were in session. The counts at Intersections 11, 15, 16, 17, and 18 were counted on Thursday, May 4, 2023, also when area schools were in session. Intersection 14 - US 19/41 at McDonough Road was counted on both dates. In addition, a 24-hour by-directional count was collected on Panhandle Road just north of the Michelle Obama Elementary Academy north access, on both dates. From the collected two-hour traffic counts in each time period, the highest four consecutive 15-minute interval volumes at each intersection were determined. The summed results produce the peak hour volumes in each time period.

5.3 Adjustment from 2022 to 2023

The 2022 and 2023 counts collected at Intersection 14 and the 24-hour counts on Panhandle Road were compared in order to determine changes in volumes that have occurred between the older and newer counts. The Panhandle Road counts increased from 2022 to 2023 by 10.1% in the a.m. peak hour and 1.4% in the p.m. peak hour, while the 24-hour volume decreased by 1.4%. The counts at Intersection 14 increased by 1.5% in the a.m. peak hour and by 2.1% in the p.m. peak hour. Based on this comparison, the 2022 counts at the intersections along Panhandle Road were increased by 10.0% in the a.m. peak hour and 1.5% in the p.m. peak hour while the 2022 counts at the McDonough Road and US 19/41 intersections were increased by 1.5% in the a.m. peak hour and 2.0% in the p.m. peak hour. Those adjustments are shown at each intersection in the traffic volume worksheets in Appendix A. These counted and adjusted (where appropriate) volumes make up the 2023 weekday a.m. and p.m. peak hour traffic volumes at each intersection. The existing a.m. and p.m. peak hour turning movement volumes are shown in Figure 8. All intersection raw count data is found in Appendix A.

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Figure 7 – Existing Lane Configuration and Traffic Control

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis



Figure 8 – Existing A.M. and P.M. Peak Hour Volumes

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis

5.4 Existing Intersection Operations

An operational analysis was performed for each study intersection based on the counted and adjusted (as appropriate) 2023 traffic volumes, existing lane configurations, and existing method of traffic control. The results of the analysis are shown in Table 5. All locations that do not satisfy the Level of Service D standard are highlighted with bold text. The Synchro computer worksheets for the existing analysis are presented in Appendix C.

	A.M. Pe	ak Hour	P.M. Peak Hour		
Intersection / Approach	LOS	Delay (s/veh)	LOS	Delay (s/veh)	
1. Panhandle Rd at New Hope Rd (side street stop)	А	3.6	А	2.1	
southbound approach	С	20.8	В	14.0	
eastbound left turn	А	8.0	А	8.4	
2. Panhandle Rd at White MA south access (side street s	stop) A	1.5	А	1.6	
northbound left turn	С	18.3	С	18.0	
northbound right turn	В	11.3	В	11.0	
westbound left turn	A	8.4	А	8.2	
3. Panhandle Rd at White MA north access (side street s	top) D	29.0	А	2.0	
northbound left turn	F	210.1	С	21.4	
northbound right turn	С	17.7	В	12.0	
westbound left turn	А	9.1	А	8.4	
4. Panhandle Rd at New Hope Dr (side street stop)	A	0.5	А	0.4	
northbound left turn	A	8.9	А	8.5	
eastbound approach	С	23.9	С	20.9	
5. Panhandle Rd at Clayton Transportation (side street s	top) A	0.3	А	0.4	
northbound left turn	A	8.7	А	8.1	
eastbound left turn	А	0.0	С	16.9	
eastbound right turn	А	0.0	В	10.3	
6. Panhandle Rd at Obama EA south access (side street a	stop) A	0.1	А	0.1	
northbound left turn	A	8.8	А	0.0	
eastbound left turn	D	26.6	С	19.0	
eastbound right turn	А	0.0	В	10.7	
7. Panhandle Rd at Obama EA north access (side street s	stop) F	108.3	А	0.6	
northbound left turn	A	9.2	А	8.1	
eastbound left turn	F	*EX	С	19.5	
eastbound right turn	В	12.0	В	10.6	
table continue	ed on next page				

Table 5 – Existing Intersection Levels of Service

8. Panhandle Rd at Lovejoy Rd (side street stop)	F	133.8	F	76.9
northbound left turn	F	*EX	F	*EX
northbound right turn	С	22.0	В	12.6
westbound left turn	В	11.0	А	9.9
9. US 19/41 at Lovejoy Rd (signal)	С	30.5	D	40.2
northbound approach	В	18.3	С	30.3
southbound approach	В	19.9	С	34.9
eastbound approach	E	70.7	Ε	74.2
westbound approach	D	54.6	D	52.2
10. New Hope Rd at New Hope Dr (side street stop)	А	2.3	А	1.4
southbound left turn	А	7.5	А	7.4
westbound approach	А	8.4	А	8.3
11. McDonough Rd at County Line/McElroy Rd (signal)	В	15.2	С	32.4
northbound approach	А	9.9	В	18.7
southbound approach	В	11.8	С	33.0
eastbound approach	С	20.8	D	48.7
westbound approach	В	16.9	В	18.1
12. McDonough Rd at New Hope Rd (side street stop)	A	2.0	А	1.2
northbound approach	С	23.9	С	21.8
westbound left turn	А	8.3	А	9.3
13. McDonough Rd at Panhandle Rd (signal)	С	26.3	С	28.1
northbound approach	С	25.1	С	20.3
southbound approach	С	20.9	В	18.8
eastbound approach	С	34.3	D	47.9
westbound approach	С	23.1	В	15.5
14. US 19/41 at McDonough Rd (signal)	D	45.1	D	37.5
northbound approach	D	36.2	С	29.4
southbound approach	D	36.2	С	29.1
eastbound approach	E	73.0	Е	60.7
westbound approach	F	81.6	Ε	68.0
15. McDonough Rd at Hastings Bridge Rd (side street stop)	А	6.5	А	6.6
southbound left turn	A	9.5	А	9.9
westbound left turn	F	50.8	F	59.8
westbound right turn	В	12.5	В	14.8

table continued on next page

16. McDonough Rd at E Lovejoy/Freeman Rd (signal)	В	12.8	В	12.9
northbound approach	A	8.7	В	11.4
southbound approach	A	8.6	В	14.5
eastbound approach	В	14.0	В	11.2
westbound approach	В	14.5	В	13.6
17. Tara Rd at Panhandle Rd (side street stop)	В	12.8	В	13.3
northbound left turn	F	65.5	F	147.0
northbound right turn	С	16.8	С	22.5
westbound left turn	А	8.5	A	9.6
18. US 19/41 at Tara Rd (signal)	С	21.2	С	21.1
northbound approach	В	10.1	A	7.7
southbound approach	В	10.2	В	13.9
eastbound approach	Ε	72.4	Ε	75.3

*EX-limits of methodology exceeded

5.5 Existing Facilities Needs Analysis

The analysis of existing conditions reveals that most of the study intersections, approaches, and movements operate acceptably. However, there are several locations where the LOS D standard is not satisfied, which are summarized in Table 6.

	A.M. P	eak Hour	P.M. Peak Hour		
Intersection / Approach	LOS	Delay (s/veh)	LOS	Delay (s/veh)	
3. Panhandle Rd at White MA north access (side street stop)	D	29.0	А	2.0	
northbound left turn	F	210.1	С	21.4	
northbound right turn	С	17.7	В	12.0	
westbound left turn	А	9.1	А	8.4	
7. Panhandle Rd at Obama EA north access (side street stop)	F	108.3	А	0.6	
northbound left turn	А	9.2	А	8.1	
eastbound left turn	F	*EX	С	19.5	
eastbound right turn	В	12.0	В	10.6	
8. Panhandle Rd at Lovejoy Rd (side street stop)	F	133.8	F	76.9	
northbound left turn	F	*EX	F	*EX	
northbound right turn	С	22.0	В	12.6	
westbound left turn	В	11.0	А	9.9	
9. US 19/41 at Lovejoy Rd (signal)	С	30.5	D	40.2	
northbound approach	В	18.3	С	30.3	
southbound approach	В	19.9	С	34.9	
eastbound approach	E	70.7	Е	74.2	
westbound approach	D	54.6	D	52.2	
14. US 19/41 at McDonough Rd (signal)	D	45.1	D	37.5	
northbound approach	D	36.2	С	29.4	
southbound approach	D	36.2	С	29.1	
eastbound approach	E	73.0	Е	60.7	
westbound approach	F	81.6	Е	68.0	
15. McDonough Rd at Hastings Bridge Rd (side street stop)	Α	6.5	А	6.6	
southbound left turn	A	9.5	А	9.9	
westbound left turn	F	50.8	F	59.8	
westbound right turn	В	12.5	В	14.8	
17. Tara Rd at Panhandle Rd (side street stop)	В	12.8	В	13.3	
northbound left turn	F	65.5	F	147.0	
northbound right turn	C C	16.8	C	22.5	
westbound left turn	A	8.5	A	9.6	
18. US 19/41 at Tara Rd (signal)		21.2	C	21.1	
northbound approach	R	10.1	Δ	77	
southbound approach	B	10.1	В	13.9	
eastbound approach	E	72.4	Ε	75.3	

Table 6 – Existing Locations That Do Not Meet LOS D Standard

*EX-limits of methodology exceeded

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis

The following is a discussion of each failing location in the existing condition and recommendations for mitigation:

Intersection 3 – Panhandle Road at Eddie White Middle Academy North Access

This intersection incurs high delays for the northbound left turn exiting the school in the a.m. peak hour. This is the heavy exiting volume from the school after morning drop-off. This is not unusual on side street stop sign controlled approaches at busy roads such as Panhandle Road. The peaking is very acute and during times other than the school traffic peaks these volumes and delays are expected to be minimal. Mitigation could include stationing a police officer to control traffic during drop-off and possibly pick-up times. The results with mitigation, presented below, use a traffic signal to approximate the effect of the control of all movements at this intersection that would result from police officer control.

Intersection 7 – Panhandle Road at Michelle Obama Elementary Academy North Access

The same discussion and mitigation presented for Intersection 3, in the preceding paragraph, applies to this location, as well. Likewise, the mitigation assumes police officer control at this intersection.

Intersection 8 – Panhandle Road at Lovejoy Road

The northbound side street stop sign controlled left turn movement incurs heavy delays typical of this control condition. The volumes merit consideration of a change in control to a signal or a roundabout. Additionally, if the intersection remains side street stop controlled, the eastbound right turn volume justifies the addition of an exclusive right turn lane. The mitigation results presented below assume a single lane roundabout.

Intersection 9 – US 19/41 at Lovejoy Road

The overall intersection works acceptably, and only the side street approaches operate at LOS E. Contributing to this delay is signal timing that includes a very long cycle length and, appropriately, heavily favors the significantly heavier volumes on the US 19/41 approaches. Given that it is expected that the signal timing will always favor US 19/41, additional side street capacity would be beneficial to maximize the efficiency of the greentime allotted to the Lovejoy Road approaches. Therefore, it is recommended that an eastbound exclusive right turn lane and a westbound exclusive left turn lane be added on Lovejoy Road at US 19/41. However, the analysis reveals that, with the current cycle lengths, the eastbound approach will still not achieve the LOS D standard. The DRI analysis standards do not allow signal timing changes to be considered as mitigation and, therefore, the results in Table 7, below, maintain the current cycle length. However, it is advised that a reduction in cycle length may be appropriate in this corridor. With a reduced cycle length and the identified mitigation the LOS D standard would be satisfied on all approaches.

Intersection 14 – US 19/41 at McDonough Road

As with Intersection 9, this overall intersection works acceptably, with the McDonough Road side street approaches failing due to the signal timing that includes a very long cycle length and, appropriately, heavily favors the significantly heavier volumes on the US 19/41 approaches. The addition of a second eastbound and westbound through lane on McDonough Road would provide needed side street capacity and allow for acceptable operations, given the expectation that the signal timing will always favor US 19/41. However, it is recognized that adding these through lanes could entail the widening of a significant section of McDonough Road to a four lane section, which would merit a more comprehensive corridor study.

Intersection 15 – McDonough Road at Hastings Bridge Road

The failing movement is the side street stop sign controlled westbound left turn. However, this movement has minimal volume – eight (8) vehicles in the a.m. peak hour and six (6) vehicles in the p.m. peak hour. These volumes do not justify the change in control that would be needed to mitigate the failing LOS. However, the uncontrolled southbound left turn movement is substantial and would benefit from the addition of an exclusive left turn lane. Given both the need for the left turn lane and the failing side street left turns, converting this intersection to a roundabout would mitigate both conditions. Therefore, a change in control to a single lane roundabout is recommended.

Intersection 17 – Tara Road at Panhandle Road

This is another case where the side street stop sign controlled heavy left turn movement incurs high delays. A change in control to a signal or a roundabout is recommended. The results presented below assume signalization. A signal warrant study should be performed to determine if and when the intersection satisfies warrants for signalization.

Intersection 18 – US 19/41 at Tara Road

As with the US 19/41 Intersections 9 and 14, this overall intersection works acceptably, while the Tara Road approach operates at LOS E in both peak hours. The no-build analysis identifies the programmed widening of US 19/41 at this intersection to six through lanes and this widening is under construction at the time of this study. Therefore, this widening was incorporated as mitigation into the existing analysis results presented below. However, the analysis reveals that, with the current cycle lengths, the side street approach will still not achieve the LOS D standard. The DRI analysis standards do not allow signal timing changes to be considered as mitigation and, therefore, the results in Table 7 maintain the current signal timing. However, it is advised that, with the additional capacity under construction on US 19/41, a reduction in cycle length may be appropriate in this corridor. With a reduced cycle length, and the added capacity of the current US 19/41 widening, the LOS D standard would be satisfied on all approaches.
Figure 9 graphically presents the mitigation recommendations while Table 7 presents the operations at each intersection with the recommended mitigation.



Figure 9 – Existing Recommended Mitigation

	A.M. Peak Hour		P.M. Peak Hour	
Intersection / Approach	LOS	Delay (s/veh)	LOS	Delay (s/veh)
3. Panhandle Rd at White MS north access (police officer)	С	27.6	С	21.1
northbound approach	В	15.1	А	9.3
eastbound approach	С	32.1	С	27.2
westbound approach	С	28.2	В	16.7
7. Panhandle Rd at Obama EA north access (police officer)	В	17.4	A	3.0
northbound approach	А	8.5	А	2.1
southbound approach	В	14.5	А	1.7
eastbound approach	С	30.2	D	35.4
8. Panhandle Rd at Lovejoy Rd (roundabout)	С	15.6	А	9.7
northbound approach	С	16.4	А	8.1
eastbound approach	С	17.6	В	10.4
westbound approach	В	11.1	В	10.4
9. US 19/41 at Lovejoy Rd (signal)	С	30.2	С	34.1
northbound approach	С	22.0	С	26.5
southbound approach	С	23.9	С	29.3
eastbound approach	E	62.7	E	70.7
westbound approach	D	48.7	D	54.2
14. US 19/41 at McDonough Rd (signal)	С	34.0	С	29.1
northbound approach	С	24.4	С	20.0
southbound approach	С	26.6	С	20.2
eastbound approach	Ε	61.2	E	60.2
westbound approach	E	69.8	E	62.2
15. McDonough Rd at Hastings Bridge Rd (roundabout)	A	6.5	A	7.0
northbound approach	A	8.7	A	9.9
southbound approach	A	8.3	A	8.8
westbound approach	A	0.1	А	0.1
17. Tara Rd at Panhandle Rd (signal)	В	14.0	А	8.9
northbound approach	В	11.3	В	16.5
eastbound approach	В	19.8	В	11.5
westbound approach	В	10.4	Α	5.0
18. US 19/41 at Tara Rd (signal)	В	18.3	В	16.8
northbound approach	Α	7.4	Α	6.7
southbound approach	A	9.0	A	6.5
eastbound approach	E	66.5	E	72.1

Table 7 – Existing Levels of Service with Recommended Mitigation

GRTA DRI Review Procedures requires a queue length analysis for all intersection approaches with a failing LOS where the project is adding additional trips to that approach. Table 8 presents the queue lengths on the failing approaches, without and with the recommended mitigation.

	A.M. Pe	ak Hour	P.M. Pe	ak Hour
Intersection / Approach	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
	Max Queue (feet)	Max Queue (feet)	Max Queue (feet)	Max Queue (feet)
3. Panhandle Rd at White MS north access				
northbound left turn	202	50	12	19
northbound right turn	74	0	10	7
7. Panhandle Rd at Obama EA north access				
eastbound left turn	590	112	6	20
eastbound right turn	4	7	0	5
8. Panhandle Rd at Lovejoy Rd				
northbound left turn	598	120	356	40
northbound right turn	72	120	30	40
9. US 19/41 at Lovejoy Rd				
eastbound left turn	328	285	371	363
eastbound through/right	348	221	440	200
14. US 19/41 at McDonough Rd				
eastbound left turn	228	196	205	202
eastbound through	422	202	367	191
eastbound right turn	0	0	0	0
westbound left turn	146	145	214	211
westbound through	500	224	434	210
westbound right turn	111	78	87	72
15. McDonough Rd at Hastings Bridge Rd				
westbound left turn	6		6	
westbound right turn	36	0	52	0
17. Tara Rd at Panhandle Rd				
northbound left turn	116	82	116	84
northbound right turn	58	32	66	45
18. US 19/41 at Tara Rd				
eastbound left turn	333	332	334	342
eastbound right turn	32	28	91	172

Table 8 – Existing Queues at Locations That Do Not Meet LOS D Standard

6. No-Build Traffic Analysis

A no-build analysis condition was developed for the DRI's buildout year of 2033. The no-build analysis provides a reference by which to measure the traffic impact of the proposed Talmadge DRI.

6.1 Programmed Infrastructure Projects

Programmed transportation infrastructure projects in the vicinity of the DRI site were researched in the Clayton County Comprehensive Transportation Plan 2018, the Henry County Joint County / Cities Transportation Plan, the Georgia DOT Projects Website, and the ARC Transportation Improvement Program Interactive Map. The following projects were identified in the vicinity of the study network that could affect traffic patterns, volumes, or capacity:

GDOT ID#722030 – US 19/41 Widening – This project consists of the widening and reconstruction of 3.32 miles of the US 19/41/SR 3 existing 4-lane rural section into a 6-lane urban section. The project begins approximately 1,355 feet south of the Tara Road intersection just south of CR 504 and ends before the intersection of SR 54. The project lies entirely within Clayton County beginning approximately two miles north of Lovejoy and ending in Jonesboro. The project extends the existing 6-lane section from just south of SR 54 southward until Tara Road where the traffic volumes decrease by 15 percent. This project is currently under construction.

GDOT ID#17805 – McDonough Road Repaving – This project will repave McDonough Road from the Henry County Line to the Fayette County line. This project is under construction.

Clayton County Project 20B – Panhandle Road at Lovejoy Road Signal Warrant Analysis – This planned study reveals that the County is aware that this intersection requires mitigation. A change in control was identified as mitigation in the existing analysis in this report, presented earlier.

Clayton County Project 20C – Panhandle Road at Tara Road Signal Warrant Analysis - This planned study reveals that the County is aware that this intersection requires mitigation. A change in control was identified as mitigation here, as well, in the existing analysis.

6.2 No-Build Lanes and Traffic Control

The no-build analysis assumes the same lanes and traffic control as the existing condition at most intersections. The following changes are made:

1. At the intersections of Panhandle Road at the Clayton County Schools Transportation Facility (Intersection 5) and the Michelle Obama Elementary Academy south and north accesses (Intersections 6 and 7) exclusive left and right turn lanes are under construction at the time of this study on Panhandle Road at each intersection. These will be in place by the no-build condition.

- 2. At the Panhandle Road / Lovejoy Road intersection a single lane roundabout is assumed, consistent with the County's plan to change the control, as well as the recommendations in the existing analysis.
- 3. At the Tara Road / Panhandle Road intersection a signal is assumed, consistent with the County's plan to change the control, as well as the recommendations in the existing analysis.

The no-build lane configuration and traffic control are presented in Figure 10.



Figure 10 – No-Build Lane Configuration and Traffic Control

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis

6.3 No-Build Traffic Volumes

The no-build condition includes background increases in traffic volumes that will occur whether or not the Talmadge DRI is built. Georgia DOT historic traffic volume count data was collected at the Georgia DOT count stations closest to the subject development. The data was obtained for the five years 2017 through 2021 (the latest year data was available at the time of this study). This data was used to develop annual growth rates for each year, and overall growth percentages from 2017 to 2021. Table 9 presents this historic Georgia DOT data and the growth rates.

Year	Panhandle S of New Hope Rd	Annual Growth	US 19/41 S of Lovejoy Rd	Annual Growth	McDonough W of Folsom Rd	Annual Growth
Station ID	063-0379		063-00	063-0041		1
2017	5,500		27,300		13,200	
2018	6,740	22.5%	27,800	1.8%	11,900	-9.8%
2019	6,880	2.1%	28,000	0.7%	11,900	0.0%
2020	6,950	1.0%	25,800	-7.9%	10,200	-14.3%
2021	7,390	6.3%	27,000	4.7%	11,100	8.8%
Average Growth		6.1%		-0.2%		-3.4%

Table 9 – Historic Georgia DOT Traffic Volume Counts and Annual Growth Rates

Growth in the area has been positive and moderate. Two of the three count locations used in this study experienced a decrease in volumes between 2019 and 2020 volumes, which is considered an anomaly due to the COVID-19 pandemic. The growth from 2020 to 2021 is somewhat attributable to a partial return to pre-pandemic levels. Based on the growth trends identified in Table 9, and taking the pandemic into consideration, a 2.0% annual growth factor was applied to the existing volumes when projecting the future no-build volumes. The growth factor was applied for ten years to 2033, the year of full project buildout (a total of 21.9% growth). This is the growth that will occur while the proposed DRI is under construction. The existing traffic volumes were increased by the 21.9% growth factor to 2033.

In addition to the general growth in the area, the specific trips from two nearby DRIs – Garden Lakes Residential Development (DRI #3049) and The Grove Mixed Use Development (DRI #3974) – were also added. The trips from the Garden Lakes DRI were obtained from the traffic study prepared for that project by Wilburn Engineering, dated November 27, 2019. The trips from The Grove DRI were obtained from the traffic study prepared for that project by NV5, dated December 2, 2022. The locations of those DRIs are presented in Figure 11. It is noted that The Grove DRI is an exceptionally large project, with almost 13 million square feet of development, to be completed in five phases, with full buildout anticipated by 2048. The Transportation Analysis for that DRI is being adjusted to incorporate the trips from the Talmadge DRI. Therefore, in agreement with GRTA, the volumes for The Grove DRI were only added through Phase 2, with its anticipated buildout year of 2033, to the 2033 no-build analysis in this study.

The existing volumes, increased by the 21.9% background growth, plus the trips from the two identified DRIs, produces the 2033 no-build traffic volumes that will be on the roadway network at completion of the proposed Talmadge DRI, but excluding the Talmadge DRI's trips. Figure 12 shows the no-build weekday a.m. and p.m. peak hour traffic volumes at each study intersection. These volumes, including the growth factor and the specific trips from the other DRIs, are also shown in the intersection volume worksheets in Appendix A.



Figure 11 – Location Map of Other DRIs



Figure 12 - No-Build A.M. and P.M. Peak Hour Volumes

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis

6.4 No-Build Intersection Operations

Each study intersection was evaluated for the 2033 no-build condition. The no-build levels of service at each intersection are shown in Table 10. The Synchro computer printouts are found in Appendix D.

			A.M. Peak Hour		P.M. Peak Hour	
Inters	section / Approach	LOS	Delay (s/veh)	LOS	Delay (s/veh)	
1. P	anhandle Rd at New Hope Rd (side street stop)	A	5.9	А	2.6	
	southbound approach	D	34.9	С	17.5	
	eastbound left turn	A	8.3	А	8.7	
2. P	anhandle Rd at White MA south access (side street stop)	A	1.6	A	1.8	
	northbound left turn	С	23.5	С	23.6	
	northbound right turn	В	12.3	В	12.0	
	westbound left turn	A	8.7	А	8.4	
3. P	anhandle Rd at White MA north access (side street stop)	F	91.3	А	2.5	
	northbound left turn	F	*EX	D	31.1	
	northbound right turn	D	29.8	В	13.5	
	westbound left turn	А	9.8	А	8.7	
4. P	anhandle Rd at New Hope Dr (side street stop)	А	0.8	А	0.6	
	northbound left turn	А	9.4	А	8.8	
	eastbound approach	E	36.9	D	28.5	
5. P	anhandle Rd at Clayton Transportation (side street stop)	A	0.3	А	0.5	
	northbound left turn	A	9.1	А	8.4	
	eastbound approach	A	0.0	С	17.6	
6. P	anhandle Rd at Obama EA south access (side street stop)	A	0.1	A	0.1	
	northbound left turn	A	9.2	A	0.0	
	eastbound left turn	Ε	37.7	C	24.1	
	eastbound right turn	A	0.0	В	11.4	
7. P	anhandle Rd at Obama EA north access (side street stop)	F	156.1	A	0.8	
	northbound left turn	A	9.9	A	8.4	
	eastbound left turn	F	*EX	D	25.6	
	eastbound right turn	В	11.0	В	11.2	
8. P	anhandle Rd at Lovejoy Rd (roundabout)	E	36.3	В	14.1	
	northbound approach	E	39.4	В	10.6	
	eastbound approach	E	45.0	С	15.7	
	westbound approach	С	17.8	С	15.6	
	table continued on new	xt page		1		

Table 10 – No-Build Intersection Levels of Service

52.1 47.3 45.8 85.1 43.8 2.4 7.5 8.4 20.0 13.6 18.4	F F F A A A	148.7 91.2 162.6 295.1 117.5 1.4 7.5
47.3 45.8 85.1 43.8 2.4 7.5 8.4 20.0 13.6 18.4	F F F A A A A	91.2 162.6 295.1 117.5 1.4 7.5
45.8 85.1 43.8 2.4 7.5 8.4 20.0 13.6 18.4	F F A A A	162.6 295.1 117.5 1.4 7.5
85.1 43.8 2.4 7.5 8.4 20.0 13.6 18.4	F A A A A	295.1 117.5 1.4 7.5
43.8 2.4 7.5 8.4 20.0 13.6 18.4	F A A A	117.5 1.4 7.5
2.4 7.5 8.4 20.0 13.6 18.4	A A A	1.4 7.5
7.5 8.4 20.0 13.6 18.4	A	7.5
8.4 20.0 13.6 18.4	А	
20.0 13.6 18.4		8.3
13.6 18.4	Ε	69.2
18.4	С	25.2
	Ε	70.2
23.2	F	116.0
22.5	С	33.6
3.9	А	2.0
51.0	Ε	41.7
8.7	В	10.3
43.5	С	34.9
42.4	D	41.2
35.7	С	34.9
52.6	D	44.8
40.9	В	18.0
130.8	F	183.0
136.8	F	124.7
87.5	F	225.8
198.7	F	162.5
174.2	F	203.3
89.9	F	*EX
1.47	С	15.2
*EX	F	*EX
17.0	Ε	47.2
15.0	С	20.8
16.9	С	25.7
17.0	D	45.0
	В	11.2
15.6	В	17.8
	*EX 17.0 15.0 16.9 17.0 15.6 13.3	*EX F 17.0 E 15.0 C 16.9 C 17.0 D 15.6 B 13.3 B

17. Tara Rd at Panhandle Rd (signal)	A	10.0	В	10.5
northbound approach	В	17.3	С	26.2
eastbound approach	В	12.4	В	12.5
westbound approach	A	5.4	A	6.2
18. US 19/41 at Tara Rd (signal)	С	20.5	С	29.2
northbound approach	В	12.0	В	17.6
southbound approach	В	13.2	С	29.3
eastbound approach	Ε	65.9	Ε	68.6

*EX-limits of methodology exceeded

6.5 No-Build Facilities Needs Analysis

The no-build analysis reveals that most study intersections will experience some degree of failure by the 2033 no-build condition. Many of these locations carry through from the existing analysis, while several new locations are added in the no-build analysis. The locations that fail in the no-build condition are summarized in Table 11, with a discussion of mitigation at each location following.

A.M. Peak Hour		P.M. Peak Hour		
ntersection / Approach	LOS	Delay (s/veh)	LOS	Delay (s/veh
3. Panhandle Rd at White MA north access (side street stop)	F	91.3	А	2.5
northbound left turn	F	*EX	D	31.1
northbound right turn	D	29.8	В	13.5
westbound left turn	A	9.8	А	8.7
4. Panhandle Rd at New Hope Dr (side street stop)	А	0.8	А	0.6
northbound left turn	А	9.4	А	8.8
eastbound approach	E	36.9	D	28.5
6. Panhandle Rd at Obama EA south access (side street stop)	А	0.1	А	0.1
northbound left turn	А	9.2	А	0.0
eastbound left turn	E	37.7	С	24.1
eastbound right turn	A	0.0	В	11.4
7. Panhandle Rd at Obama EA north access (side street stop)	F	156.1	А	0.8
northbound left turn	A	9.9	А	8.4
eastbound left turn	F	*EX	D	25.6
eastbound right turn	В	11.0	В	11.2
8. Panhandle Rd at Lovejoy Rd (roundabout)	E	36.3	В	14.1
northbound approach	E	39.4	В	10.6
eastbound approach	E	45.0	С	15.7
westbound approach	С	17.8	С	15.6
9. US 19/41 at Lovejoy Rd (signal)	D	52.1	F	148.7
northbound approach	D	47.3	F	91.2
southbound approach	D	45.8	F	162.6
eastbound approach	F	85.1	F	295.1
westbound approach	D	43.8	F	117.5
11. McDonough Rd at County Line/McElroy Rd (signal)	В	20.0	Е	69.2
northbound approach	В	13.6	С	25.2
southbound approach	В	18.4	Е	70.2
eastbound approach	C	23.2	F	116.0
westbound approach	С	22.5	С	33.6
12. McDonough Rd at New Hope Rd (side street stop)	A	3.9	A	2.0
northbound approach	F	51.0	F	41.7
westbound left turn	Δ	87	 	10 3

Table 11 – No-Build Locations That Do Not Meet LOS D Standard

14. US 19/41 at McDonough Rd (signal)	F	130.8	F	183.0
northbound approach	F	136.8	F	124.7
southbound approach	F	87.5	F	225.8
eastbound approach	F	198.7	F	162.5
westbound approach	F	174.2	F	203.3
15. McDonough Rd at Hastings Bridge Rd (side street stop)	F	89.9	F	*EX
southbound left turn	В	1.47	С	15.2
westbound left turn	F	*EX	F	*EX
westbound right turn	С	17.0	Ε	47.2
18. US 19/41 at Tara Rd (signal)	С	20.5	С	29.2
northbound approach	В	12.0	В	17.6
southbound approach	В	13.2	С	29.3
eastbound approach	E	65.9	Ε	68.6

*EX-limits of methodology exceeded

The following is a discussion of each failing location in the no-build condition and recommendations for mitigation:

Intersection 3 – Panhandle Road at Eddie White Middle Academy North Access

As with the existing condition, this intersection incurs high delays for the northbound left turn exiting the school in the a.m. peak hour. As identified in the existing analysis, mitigation could include stationing a police officer to control traffic during drop-off and possibly pick-up times. The results with mitigation, presented below, use a traffic signal to approximate the effect of the control of all movements at this intersection that would result from police officer control.

Intersection 4 – Panhandle Road at New Hope Drive

Operations will generally still remain acceptable at this intersection. However, in the a.m. peak hour, the eastbound approach will just drop to LOS E. It is noted that the volumes incurring this low LOS E are very low (19 vehicles). Adding an eastbound right turn lane is not justified by the volumes and will still leave the left turn at LOS E. A change in control to a signal or a roundabout is necessary to fully eliminate the LOS E. The results with mitigation, presented below, assume a single lane roundabout at this intersection.

Intersection 6 – Panhandle Road at Michelle Obama Elementary Academy South Access

This intersection will begin to incur high delays for the eastbound left turn exiting the school in the a.m. peak hour. Mitigation could include stationing a police officer to control traffic during drop-off and possibly pick-up times. The results with mitigation, presented below, use a traffic signal to approximate the effect of the control of all movements at this intersection that would result from police officer control.

Intersection 7 – Panhandle Road at Michelle Obama Elementary Academy North Access

The same discussion and mitigation presented for Intersection 6, above and in the existing analysis, also applies to this intersection in the no-build condition. The mitigation assumes police officer control.

Intersection 8 – Panhandle Road at Lovejoy Road

The no-build analysis assumed a single lane roundabout at this intersection, based on the existing analysis identifying that as a working control solution, coupled with a programmed intersection upgrade at this intersection. However, by the no-build, the eastbound and northbound approaches of the single lane roundabout will operate at LOS E. For the no-build volumes, a northbound to eastbound right turn lane and an eastbound to southbound right turn lane should be added.

Intersection 9 – US 19/41 at Lovejoy Road

In the no-build, in addition to the side street approaches failing, the northbound and southbound approaches on US 19/41 will also fail. The northbound approach on US 19/41 already has three through lanes at this intersection but the southbound approach only has two. By the no-build, a third southbound through lane, consistent with the cross-section currently under construction to the north on US 19/41 at Tara Road, will be needed. The eastbound exclusive right turn lane and exclusive westbound left turn lane recommended on Lovejoy Road at US 19/41, identified in the existing analysis, will continue to be appropriate. Additionally, by the no-build, the westbound right turn volume on Lovejoy Road will benefit from the addition of a right turn overlap phase on the signal which would operate concurrently with the southbound protected left turn phase. Finally, northbound and southbound dual left turn lanes will be needed on the US 19/41 approaches. However, the analysis reveals that, with the current cycle lengths, the eastbound approach on Lovejoy Road will not achieve the LOS D standard. The DRI analysis standards do not allow signal timing changes to be considered as mitigation and, therefore, the results in Table 12, below, maintain the current cycle length. However, it is advised that a reduction in cycle length may be appropriate in this corridor. With a reduced cycle length and the identified mitigation the LOS D standard would be satisfied on all approaches.

Intersection 11 – McDonough Road at County Line Road / McElroy Road

This intersection operates acceptably in the existing, but will begin to fail in the no-build p.m. The southbound left turn volumes (183 and 504 in the a.m. and p.m., respectively) justify replacing the green ball with southbound protected/permissive phasing. A second southbound left turn lane would be beneficial in the p.m. peak hour; however, McDonough Road would require a second receiving lane. Ultimately, the no-build volumes at this intersection will justify the widening of McDonough Road to four lanes and that is the mitigation identified in this analysis (plus the addition of the southbound protected/permissive phasing, while maintaining the single southbound left turn lane).

Intersection 12 – McDonough Road at New Hope Road

By the no-build, the northbound side-street stop sign controlled approach at this intersection will fail and a change in control will be needed. An eastbound right turn lane would also be beneficial. A signal warrant study should be performed for this intersection to determine if and when signalization would be appropriate. The analysis with mitigation results presented below assumes signalization as well as the addition of an eastbound right turn lane.

Intersection 14 – US 19/41 at McDonough Road

The existing analysis identified the addition of a second eastbound and westbound through lane on McDonough Road, given the expectation that the signal timing will always favor US 19/41. However, by the no-build, this will not be sufficient. A third through lane in each direction on US 19/41, as is under construction to the north near Tara Road, and identified above as needed at Lovejoy Road, will also be appropriate at McDonough Road. This additional capacity will still not fully achieve the LOS D standard for all approaches. Testing the intersection with three through lanes in each direction on US 19/41, two through lanes in each direction on McDonough Road, and dual left turn lanes on all approaches, plus optimization of the signal phasing and timing, brought the overall intersection and the US 19/41 approaches to LOS D, while the McDonough Road approaches will operate at LOS E in the p.m. This is the mitigation assumed in the results presented below. It is concluded that this intersection will require the maximum feasible capacity but the volumes projected for 2033 will ultimately result in some degree of failure to achieve the LOS D standard.

Intersection 15 – McDonough Road at Hastings Bridge Road

The existing analysis recommended a change in control to a single lane roundabout. This mitigation will continue to provide acceptable operations in the no-build condition and no additional mitigation is identified.

Intersection 18 – US 19/41 at Tara Road

As in the existing analysis, it is advised that, with the additional capacity that is currently under construction on US 19/41, a reduction in cycle length may be appropriate in this corridor. With a reduced cycle length, and the added capacity from the current US 19/41 widening, the LOS D standard would be satisfied on all approaches for the no-build. The DRI analysis standards do not allow signal timing changes to be considered as mitigation and, therefore, the results in Table 12, below, maintain the current cycle length. However, it is advised that a reduction in cycle length may be appropriate in this corridor. With a reduced cycle length and the identified mitigation the LOS D standard would be satisfied on all approaches. No additional mitigation is recommended for the no-build condition.

Figure 13 graphically summarizes the existing and no-build mitigation and Table 12 presents the levels of service at the failing locations, with the recommended mitigation.



Figure 13 – Existing and No-Build Recommended Mitigation

	A.M. Peak Hour		P.M. Peak Hour	
Intersection / Approach	LOS	Delay (s/veh)	LOS	Delay (s/veh)
3. Panhandle Rd at White MA north access (police officer)	В	15.9	А	7.9
northbound approach	С	22.1	В	12.8
eastbound approach	В	18.8	А	10.0
westbound approach	В	12.4	А	5.5
4. Panhandle Rd at New Hope Dr (roundabout)	В	11.0	А	7.9
northbound approach	В	12.4	А	8.3
southbound approach	А	9.6	А	7.5
eastbound approach	А	6.8	А	5.5
6. Panhandle Rd at Obama EA south access (police officer)	A	4.8	А	3.5
northbound approach	A	3.2	А	3.8
southbound approach	Α	6.3	А	2.9
eastbound approach	D	41.5	С	25.6
7. Panhandle Rd at Obama EA north access (police officer)	В	18.8	А	5.7
northbound approach	В	12.2	А	4.3
southbound approach	С	21.4	А	7.0
eastbound approach	С	22.1	В	13.7
8. Panhandle Rd at Lovejoy Rd (roundabout)	В	11.2	В	10.1
northbound approach	A	9.3	А	5.8
eastbound approach	A	8.6	А	7.4
westbound approach	С	17.8	С	15.6
9. US 19/41 at Lovejoy Rd (signal)	D	43.6	E	58.7
northbound approach	D	41.3	F	57.4
southbound approach	D	36.08	E	59.2
eastbound approach	E	66.2	F	64.9
westbound approach	D	45.9	 D	49.6
11. McDonough Rd at County Line/McElroy Rd (signal)	B	16.8		29.1
northbound approach	B	18.1	С С	32.5
southbound approach	Δ	93	B	19.2
easthound approach		22.5	D	10.2
westhound approach	B	16.4		22.1
12 McDonough Rd at New Hone Rd (signal)	Λ	5 1	<u>ر</u>	50
northbound approach	R	14.7	R	12 9
eastbound approach	A	3.4	A	6.2
westbound approach	A	5.1	A	4.4
table continued on ne	ext page			

Table 12 – No-Build Intersection Levels of Service with Recommended Mitigation

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis

14. US 19/41 at McDonough Rd (signal)	D	35.2	D	46.1
northbound approach	С	33.6	D	37.4
southbound approach	С	29.4	D	43.6
eastbound approach	D	47.6	Ε	63.0
westbound approach	D	49.9	Ε	69.0
15. McDonough Rd at Hastings Bridge Rd (roundabout)	С	15.3	С	20.0
northbound approach	D	25.7	D	31.8
southbound approach	С	17.4	D	27.4
westbound approach	А	0.6	A	1.3
18. US 19/41 at Tara Rd (signal)	С	20.5	С	29.2
northbound approach	В	12.0	В	17.6
southbound approach	В	13.2	С	29.3
eastbound approach	Ε	65.9	Ε	68.6

As required by the GRTA DRI Technical Guidelines, Table 13 presents the queues at the locations that do not meet the LOS D standards in the no-build condition, without and with the recommended mitigation.

A.M. Peak Hour		ak Hour	P.M. Peak Hour	
Intersection / Approach	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
	Max Queue (feet)	Max Queue (feet)	Max Queue (feet)	Max Queue (feet)
3. Panhandle Rd at White MA north access				
northbound left turn	384	71	24	24
northbound right turn	148	0	14	9
4. Panhandle Rd at New Hope Dr				
eastbound approach	16	0	10	20
6. Panhandle Rd at Obama EA south access				
eastbound left turn	2	3	0	6
eastbound right turn	0	4	0	3
7. Panhandle Rd at Obama EA north access				
eastbound left turn	818	137	12	18
eastbound right turn	4	7	0	5
8. Panhandle Rd at Lovejoy Rd				
northbound approach	280	60	80	20
eastbound approach	380	60	100	20
table cont	tinued on next p	age		

Table 13 – No-Build Queues at Locations That Do Not Meet LOS D Standard

9. US 19/41 at Lovejoy Rd				
northbound left turn	277	184	676	298
northbound through	911	960	846	776
northbound right turn	0	0	0	0
southbound left turn	341	262	880	403
southbound through	690	405	1,928	1,008
southbound right turn	34	32	98	76
eastbound left turn	479	188	519	447
eastbound through/right	462	283	590	225
westbound left/through	317	303	416	305
westbound right turn	673	704	317	261
11. McDonough Rd at County Line/McElroy Rd				
southbound left turn	147	89	763	351
southbound through	59	57	355	222
southbound right turn	0	0	0	0
eastbound left turn	8	9	28	25
eastbound through	190	94	1,013	333
eastbound right turn	0	0	71	36
12. McDonough Rd at New Hope Rd				
northbound approach	68	73	18	34
14. US 19/41 at McDonough Rd				
northbound left turn	424	186	656	247
northbound through	1,524	645	1,268	547
northbound right turn	86	98	167	74
southbound left turn	716	226	768	249
southbound through	747	312	1,891	869
southbound right turn	34	5	19	25
eastbound left turn	321	108	309	115
eastbound through	624	150	601	184
eastbound right turn	7	0	65	60
westbound left turn	377	129	754	284
westbound through	645	159	577	197
westbound right turn	160	62	127	67
15. McDonough Rd at Hastings Bridge Rd				
westbound left turn	186	0	434	20
westbound right turn	78		256	
18. US 19/41 at Tara Rd				
eastbound left turn	398	398	429	429
eastbound right turn	51	51	239	239

7. Future (Build) Traffic Analysis

The analysis of the 2033 future build condition identifies the traffic impact of the proposed Talmadge DRI at full buildout. This future condition includes all traffic volumes from the 2033 no-build scenario plus the traffic that will be added by the Talmadge DRI.

7.1 Build Lanes and Traffic Control

All intersections were modeled with the same lane configuration and control as the no-build condition. Lane configuration and control at the DRI accesses will be discussed in the Project Access Traffic Analysis section of this report.

7.2 Build Traffic Volumes

The no-build volumes, shown previously in Figure 12, were combined with the project-generated trips, shown previously in Figure 6. This produces the 2033 build traffic volumes at each study intersection after the Talmadge DRI is constructed and operational. These volumes are presented in Figure 14 and are also shown in the intersection volume worksheets in Appendix A.

A HEAL						No. 12 No.					
						24 hr		17	★—(349)445 —(25)373	188 (545)-	
				12		2.2		(421) 774 <i>→</i> (208) 315 –√	(172) 100	(702) 706 <u></u> ^ (105) 351 ⊕	(153) 236 — ^ (2304) 1835 — >
[^] (23) 16 [^] (113) 419 [↓] (191) 527 [↓]	^ (382) 313 <— (709) 544 ु= (86) 91	12	(772) 493 (24) 31	• (79) 43 ← (236) 356 • (-(236) 356	[†] (85) 66 ← (577) 428 ↓ (225) 343	14 ← (115) 142 < (1276) 240 ↓ (385) 405	↑ (219) 178 <—(392) 439 ,,—(189) 383	 < (305) 364 ↓ (780) 709 	^t — (447) 687 √— (65) 159	 (13) 24 (13) 24 (13) 284 (14) 59 	$ \begin{array}{c} & (76) \ 71 \\ \leftarrow & (500) \ 847 \\ & \sqrt{-} \ (126) \ 249 \end{array} $
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(28) 35 <u></u> ^ (451) 474 <u></u> →		(492) 479 → (31) 14 →	(3) 33 (28) 57	(380) 519 <i>—→</i> (111) 12 ¬√	ر(110) 32 س ^خ (246) 56 س _ا	(24) 57 ↑ (23) 46 —	(49) 33 _∱ (760) 640>		(520) 477 → (12) 38 ∿		(988) 691

Figure 14 – Build A.M. and P.M. Peak Hour Volumes

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis

7.3 Build Intersection Operations

Each study intersection was re-evaluated for the 2033 build condition. The build levels of service at each intersection are shown in Table 14. The Synchro computer printouts are located in Appendix E.

	A.M. P	eak Hour	P.M. P	eak Hour
Intersection / Approach	LOS	Delay (s/veh)	LOS	Delay (s/veh)
1. Panhandle Rd at New Hope Rd (side street stop)	A	6.7	А	2.6
southbound approach	E	42.1	С	19.7
eastbound left turn	A	8.4	А	8.9
2. Panhandle Rd at White MA south access (side street stop)	A	1.5	A	1.9
northbound left turn	D	25.2	D	27.9
northbound right turn	В	12.5	В	12.8
westbound left turn	A	8.8	А	8.6
3. Panhandle Rd at White MA north access (side street stop)	F	101.5	А	2.7
northbound left turn	F	*EX	E	38.0
northbound right turn	D	33.1	В	14.6
westbound left turn	A	9.9	A	8.9
4. Panhandle Rd at New Hope Dr (side street stop)	A	3.8	А	9.4
northbound left turn	A	10.0	В	10.5
eastbound approach	F	92.1	F	153.6
5. Panhandle Rd at Clayton Transportation / DRI North Access (side street stop)	, A	5.4	D	33.3
northbound left turn	A	9.4	A	9.4
southbound left turn (entering DRI)	A	9.8	В	10.4
eastbound approach	A	0.0	F	107.7
westbound left turn (exiting DRI)	F	154.3	F	*EX
westbound right turn (exiting DRI)	С	16.8	С	15.2
6. Panhandle Rd at Obama EA south access (side street stop)	A	0.1	A	0.1
northbound left turn	A	9.7	A	0.0
eastbound left turn	F	53.0	F	59.5
eastbound right turn	A	0.0	С	17.7
7. Panhandle Rd at Obama EA north access (side street stop)	F	*EX	Α	1.6
northbound left turn	B	10.6	В	10.2
eastbound left turn	F	*EX	F	85.2
eastbound right turn	В	12.8	C	17.5
table continued on r	ext page	L	1	L

Table 14 – Build Int	ersection Level	s of Service
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Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis

8. Panhandle Rd at Lovejoy Rd (roundabout)	E	36.3	F	75.6
northbound approach	Ε	39.4	D	29.3
eastbound approach	Ε	45.0	F	54.1
westbound approach	С	17.8	F	126.3
9. US 19/41 at Lovejoy Rd (signal)	E	74.7	F	174.3
northbound approach	D	48.6	F	103.1
southbound approach	D	47.7	F	190.0
eastbound approach	F	208.5	F	305.6
westbound approach	D	46.9	F	261.4
10. New Hope Rd at New Hope Dr (side street stop)	А	4.7	А	4.1
southbound left turn	А	7.6	А	7.7
westbound approach	А	9.3	А	9.1
11. McDonough Rd at County Line/McElroy Rd (signal)	С	21.7	F	82.2
northbound approach	В	15.1	С	26.0
southbound approach	С	21.4	F	84.0
eastbound approach	С	22.6	F	140.6
westbound approach	С	24.8	С	34.8
12. McDonough Rd at New Hope Rd (side street stop)	С	23.1	В	14.0
northbound approach	F	205.0	F	173.8
westbound left turn	А	8.8	В	10.8
13. McDonough Rd at Panhandle Rd (signal)	F	90.0	F	84.1
northbound approach	D	49.2	Ε	64.5
southbound approach	E	69.6	D	51.7
eastbound approach	F	141.9	F	145.7
westbound approach	F	102.1	Ε	55.2
14. US 19/41 at McDonough Rd (signal)	F	150.5	F	205.6
northbound approach	F	156.3	F	140.5
southbound approach	F	98.8	F	246.9
eastbound approach	F	217.2	F	236.3
westbound approach	F	201.5	F	211.8
15. McDonough Rd at Hastings Bridge Rd (side street stop)	F	228.1	F	*EX
southbound left turn	С	17.3	С	16.3
westbound left turn	F	*EX	F	*EX
westbound right turn	С	18.4	F	75.7

table continued on next page

16. McDonough Rd at E Lovejoy/Freeman Rd (signal)	В	17.9	С	25.7
northbound approach	В	17.0	С	30.9
southbound approach	В	17.3	D	52.5
eastbound approach	С	20.3	В	13.8
westbound approach	В	15.1	С	24.0
17. Tara Rd at Panhandle Rd (signal)	В	10.1	В	12.5
northbound approach	В	17.7	С	29.3
eastbound approach	В	12.7	В	14.3
westbound approach	А	5.6	А	8.8
18. US 19/41 at Tara Rd (signal)	С	23.2	С	32.9
northbound approach	В	14.8	В	19.9
southbound approach	В	15.8	D	35.4
eastbound approach	Ε	63.4	Ε	64.9
19. Panhandle Rd at DRI South Access (side street stop)	А	7.9	В	11.7
southbound left turn (entering DRI)	А	9.8	В	13.1
westbound left turn (exiting DRI)	F	70.2	F	*EX
westbound right turn (exiting DRI)	D	32.4	С	22.1
20. Panhandle Rd at DRI Right Out Access (side street stop)	A	4.5	A	1.8
northbound right turn (exiting DRI)	F	55.3	D	25.0

*EX-limits of methodology exceeded

7.4 Build Facilities Needs Analysis

The build analysis reveals that most intersections will not satisfy the LOS D standard. Most of these failed in the no-build condition. The build failing locations are presented in Table 15, with a discussion of each following.

		eak Hour	P.M. Peak Hour	
Intersection / Approach	LOS	Delay (s/veh)	LOS	Delay (s/veh)
1. Panhandle Rd at New Hope Rd (side street stop)	А	6.7	А	2.6
southbound approach	E	42.1	С	19.7
eastbound left turn	А	8.4	А	8.9
3. Panhandle Rd at White MA north access (side street stop)	F	101.5	A	2.7
northbound left turn	F	*EX	Ε	38.0
northbound right turn	D	33.1	В	14.6
westbound left turn	А	9.9	A	8.9
4. Panhandle Rd at New Hope Dr (side street stop)	А	5.1	В	11.9
northbound left turn	А	10.0	В	10.5
eastbound approach	F	138.5	F	204.0
table continued on nex	t page			

Table 15 – Build Locations that Do Not Meet LOS D Standard

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis

5. Panhandle Rd at Clayton Transportation / DRI North Access (side street stop)	А	7.7	E	40.1
northbound left turn	А	9.4	А	9.4
southbound left turn (entering DRI)	В	10.3	В	11.0
eastbound approach	А	0.0	F	174.8
westbound left turn (exiting DRI)	F	221.7	F	*EX
westbound right turn (exiting DRI)	С	24.2	С	19.3
6. Panhandle Rd at Obama EA south access (side street stop)	А	0.1	A	0.1
northbound left turn	А	9.7	A	0.0
eastbound left turn	F	69.2	F	74.2
eastbound right turn	А	0.0	С	17.7
7. Panhandle Rd at Obama EA north access (side street stop)	F	*EX	A	2.1
northbound left turn	В	10.6	В	10.2
eastbound left turn	F	*EX	F	123.4
eastbound right turn	В	12.8	С	17.5
8. Panhandle Rd at Lovejoy Rd (roundabout)	Е	36.3	F	75.6
northbound approach	Е	39.4	D	29.3
eastbound approach	Е	45.0	F	54.1
westbound approach	С	17.8	F	126.3
9. US 19/41 at Lovejoy Rd (signal)	Е	74.7	F	174.3
northbound approach	D	48.6	F	103.1
southbound approach	D	47.7	F	190.0
eastbound approach	F	208.5	F	305.6
westbound approach	D	46.9	F	261.4
11. McDonough Rd at County Line/McElroy Rd (signal)	С	21.7	F	82.2
northbound approach	В	15.1	С	26.0
southbound approach	С	21.4	F	84.0
eastbound approach	С	22.6	F	140.6
westbound approach	С	24.8	С	34.8
12. McDonough Rd at New Hope Rd (side street stop)	С	23.1	В	14.0
northbound approach	F	205.0	F	173.8
westbound left turn	А	8.8	В	10.8
13. McDonough Rd at Panhandle Rd (signal)	F	90.0	F	84.1
northbound approach	D	49.2	Ε	64.5
southbound approach	Ε	69.6	D	51.7
eastbound approach	F	141.9	F	145.7
westbound approach	F	102.1	E	55.2
table continued on nex	t page			

14. US 19/41 at McDonough Rd (signal)	F	150.5	F	205.6
northbound approach	F	156.3	F	140.5
southbound approach	F	98.8	F	246.9
eastbound approach	F	217.2	F	236.3
westbound approach	F	201.5	F	211.8
15. McDonough Rd at Hastings Bridge Rd (side street stop)	F	228.1	F	*EX
southbound left turn	С	17.3	С	16.3
westbound left turn	F	*EX	F	*EX
westbound right turn	С	18.4	F	75.7
18. US 19/41 at Tara Rd (signal)	С	23.2	С	32.9
northbound approach	В	14.8	В	19.9
southbound approach	В	15.8	D	35.4
eastbound approach	E	63.4	Ε	64.9
19. Panhandle Rd at DRI South Access (side street stop)	А	7.9	В	11.7
southbound left turn (entering DRI)	А	9.8	В	13.1
westbound left turn (exiting DRI)	F	70.2	F	*EX
westbound right turn (exiting DRI)	D	32.4	С	22.1
20. Panhandle Rd at DRI Right Out Access (side street stop)	А	4.5	А	1.8
northbound right turn (exiting DRI)	F	55.3	D	25.0

*EX-limits of methodology exceeded

The following is a discussion of each failing location in the build condition and recommendations for mitigation:

Intersection 1 – Panhandle Road at New Hope Road

In the build condition, the stop sign controlled side street approach of New Hope Road will drop to LOS E in the a.m. peak hour. Mitigation would require a change in control to a signal or roundabout, which would introduce new delays to Panhandle Road in all time periods. Given that the failure is only LOS E (not LOS F) for only the side street approach in just one peak hour, at full project buildout, and all other movements operate well, it is recommended that no change be made at this intersection.

Intersection 3 – Panhandle Road at Eddie White Middle Academy North Access

As identified in the existing and no-build analyses, mitigation could include stationing a police officer to control traffic during drop-off and possibly pick-up times. The results with mitigation, presented below, use a traffic signal to approximate the effect of the control of all movements at this intersection that would result from police officer control. No additional mitigation is identified for the build condition.

Intersection 4 – Panhandle Road at New Hope Drive

The side street approach will drop from LOS E in the no-build to LOS F in the build. A change in control to a single lane roundabout was identified as mitigation for the no-build and this recommendation continues to be appropriate. No additional mitigation is needed for the build condition.

Intersection 5 – Panhandle Road at Clayton County Transportation / DRI North Access

See discussion in the Project Access Analysis section of this report.

Intersections 6 and 7 – Panhandle Road at Michelle Obama Elementary Academy South Access and North Access

The same discussion and mitigation discussed at Intersection 3, above and in the existing and no-build analyses, also applies to these two intersections in the build condition. The mitigation assumes police officer control at both intersections. No additional mitigation is identified for the build condition.

Intersection 8 – Panhandle Road at Lovejoy Road

Mitigation previously identified includes changing control to a roundabout that includes a northbound to eastbound right turn lane and an eastbound to southbound right turn lane. This control and lane configuration will continue to allow all movements to operate acceptably in the build a.m. However, the additional trips from the Talmadge DRI will necessitate the addition of a westbound left turn lane in the roundabout (from southwest-bound Panhandle Road to southbound Panhandle Road) and this is the recommended mitigation.

Intersection 9 – US 19/41 at Lovejoy Road

Previously identified mitigation includes adding a third southbound through lane, consistent with the crosssection currently under construction to the north on US 19/41 at Tara Road, an eastbound exclusive right turn lane and an exclusive westbound left turn lane on Lovejoy Road at US 19/41, adding northbound and southbound dual left turn lanes on the US 19/41 approaches, and adding a westbound right turn overlap phase on Lovejoy Road. However, as with the no-build analysis, the build analysis reveals that, with the current cycle lengths, the eastbound approach will not achieve the LOS D standard. The DRI analysis standards do not allow signal timing changes to be considered as mitigation. However, it is advised that a reduction in cycle length may be appropriate in this corridor. With a reduced cycle length and the identified mitigation, the LOS D standard would be satisfied on all approaches. The no-build mitigation results maintained the existing cycle length. For comparison, the build results with mitigation presented in Table 16, below, show the build operations with a modest reduction in cycle length. No additional mitigation is identified for the build condition.

Intersection 11 – McDonough Road at County Line Road / McElroy Road

Previously identified mitigation includes the widening of McDonough Road to four lanes and replacing the southbound green ball with protected/permissive phasing. This mitigation will continue to provide acceptable operations in the build condition and, therefore, no additional mitigation is identified.

Intersection 12 – McDonough Road at New Hope Road

It has been previously recommended that an eastbound right turn lane should be added and that a signal warrant study should be performed for this intersection to determine if and when signalization would be appropriate. With signalization and the right turn lane, this intersection will continue to operate acceptably in the build condition and, therefore, no additional mitigation is identified.

Intersection 13 – McDonough Road at Panhandle Road

This intersection will fail in the build condition. Mitigation includes the addition of a northbound right turn lane on Panhandle Road, a southbound right turn lane on Panhandle Road, an eastbound right turn lane on McDonough Road, and northbound protected/permissive phasing. These improvements will allow this intersection to operate acceptably in the build condition.

Intersection 14 – US 19/41 at McDonough Road

Previously identified mitigation effectively maximized the lanes at this intersection, including the addition of a third through lane on the northbound and southbound approaches of US 19/41, adding a second eastbound and westbound through lane on McDonough Road, and dual left turn lanes on all approaches. The identified lanes plus optimization of the signal phasing and timing, brought the overall intersection and the US 19/41 approaches to LOS D, while the McDonough Road approaches will operate at LOS E in the p.m. This is the mitigation assumed in the results presented below. It is concluded that this intersection will require the maximum feasible capacity but the volumes projected for 2033 will ultimately result in some degree of failure to achieve the LOS D standard. No additional mitigation is considered feasible for the build condition.

Intersection 15 – McDonough Road at Hastings Bridge Road

It was previously recommended to change control to a single lane roundabout. With the addition of the Talmadge DRI, the northbound approach at this roundabout will just drop to LOS E in the a.m., while the southbound approach will just drop to LOS E in the p.m. Mitigation for the a.m. northbound LOS E would consist of adding a northbound right turn lane from Hastings Bridge Road to eastbound McDonough Road. Mitigation for the p.m. southbound LOS E would consist of adding a separate southbound to eastbound McDonough Road left turn lane through the roundabout. With additional development anticipated in this area, most notably the full buildout of The Grove DRI, the northbound to eastbound right turn lane and southbound to eastbound left turn lane may ultimately prove to be the logical design. However, given 1) the Talmadge DRI adds no trips to the northbound

right turn movement and 2) the a.m. failure is only LOS E (not LOS F) by just a few tenths of a second on only one approach, it is concluded that the northbound right turn lane should not be considered the responsibility of the Talmadge DRI. The Talmadge DRI does contribute trips on the southbound approach and the southbound left turn lane is a more beneficial improvement to the overall roundabout. Therefore, this lane is the recommended mitigation, with it advised that the southbound left turn volume is substantial without the Talmadge DRI trips and the roundabout has already been identified as mitigation for the existing and no build conditions. Therefore, it is reasonable to conclude that the Talmadge DRI will bear some modest contributory responsibility for the southbound left turn lane, but is not responsible for the change in control and/or construction of the roundabout. This additional mitigation is identified as recommended for the build analysis with this understanding and the results in Table 16 include the southbound left turn lane at the previously recommended roundabout.

Intersection 18 – US 19/41 at Tara Road

It was previously advised that a reduced cycle length, plus the added capacity from the current US 19/41 widening, would achieve the LOS D standard on all approaches for the no-build and this will continue to be true for the build. The no-build mitigation results maintained the existing cycle length. For comparison, the build results with mitigation presented in Table 16, below, show the build operations with a modest reduction in cycle length. No additional mitigation is identified for the build condition.

Intersection 19 – Panhandle Road at DRI North Access

See discussion in the Project Access Analysis section of this report.

Intersection 20 – Panhandle Road at DRI Right Out Access

See discussion in the Project Access Analysis section of this report.

Figure 15 graphically summarizes the existing, no-build, and build mitigation, not including the project accesses, which are addressed in the Project Access Analysis section of this report.



Figure 15 – Existing, No-Build, and Build Recommended Mitigation

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis Table 16 presents the build intersection levels of service with the mitigation that has been previously identified plus the added build condition mitigation.

	A.M. Pe	ak Hour	P.M. Pe	ak Hour
Intersection / Approach	LOS	Delay (s/veh)	LOS	Delay (s/veh)
1. Panhandle Rd at New Hope Rd (side street stop)*	А	6.7	А	2.6
southbound approach	Ε	42.1	C	19.7
eastbound left turn	А	8.4	А	8.9
3. Panhandle Rd at White MS north access (police officer)	В	15.6	А	8.1
northbound approach	С	23.0	В	13.8
eastbound approach	В	18.3	В	10.3
westbound approach	В	12.0	А	5.5
4. Panhandle Rd at New Hope Dr (roundabout)	С	19.0	В	14.6
northbound approach	С	24.6	В	14.2
southbound approach	В	12.3	С	15.5
eastbound approach	А	7.8	В	10.6
5. Panhandle Rd at Clayton Transportation / DRI North Access (roundabout)	В	11.5	В	12.5
northbound approach	В	12.7	В	12.2
southbound approach	В	10.7	В	14.2
eastbound approach	А	0.0	А	6.5
westbound approach (exiting DRI)	А	9.3	А	8.0
6. Panhandle Rd at Obama EA south access (police officer)	A	4.5	A	3.7
northbound approach	A	4.1	A	3.9
southbound approach	A	4.9	A	3.3
eastbound approach	D	48.1	D	51.3
7. Panhandle Rd at Obama EA north access (police officer)	С	28.9	А	6.4
northbound approach	С	31.4	А	4.5
southbound approach	В	17.3	А	7.6
eastbound approach	D	44.3	С	22.9
8. Panhandle Rd at Lovejoy Rd (roundabout)	В	13.1	В	10.6
northbound approach	С	16.9	А	9.1
eastbound approach	В	12.3	A	9.8
westbound approach	В	10.5	В	12.3

Table 16 – Build Intersection Levels of Service with Previously-Recommended Mitigation and New Mitigation

table continued on next page

9. US 19/41 at Lovejoy Rd (signal)	C	32.1	D	46.9
northbound approach	C	32.2	D	40.7
southbound approach	С	24.6	D	51.9
eastbound approach	D	45.3	D	52.6
westbound approach	С	28.3	С	32.4
11. McDonough Rd at County Line/McElroy Rd (signal)	В	17.1	С	31.5
northbound approach	В	18.6	D	36.3
southbound approach	A	9.8	С	23.1
eastbound approach	С	22.6	D	46.6
westbound approach	В	16.6	С	22.5
12. McDonough Rd at New Hope Rd (signal)	А	6.6	А	6.2
northbound approach	В	15.4	В	14.7
eastbound approach	А	4.1	A	6.1
westbound approach	А	6.4	A	4.4
13. McDonough Rd at Panhandle Rd (signal)	D	36.0	D	40.2
northbound approach	С	27.3	С	29.5
southbound approach	D	38.6	D	51.5
eastbound approach	D	38.3	D	45.6
westbound approach	D	42.2	D	36.5
14. US 19/41 at McDonough Rd (signal)	D	40.1	F	92.0
northbound approach	D	39.7	D	50.0
southbound approach	С	32.4	F	146.9
eastbound approach	D	53.5	D	39.3
westbound approach	D	49.7	D	53.7
15. McDonough Rd at Hastings Bridge Rd (roundabout)**	В	12.8	В	11.9
northbound approach	E	35.2	D	34.9
southbound approach	Α	8.6	А	9.0
westbound approach	А	0.6	А	1.1
18. US 19/41 at Tara Rd (signal)	В	17.5	С	27.1
northbound approach	В	12.6	В	15.8
southbound approach	В	14.2	С	32.4
eastbound approach	D	39.5	D	43.6
19. Panhandle Rd at DRI South Access (roundabout)	В	11.8	С	19.3
northbound approach	В	11.0	D	27.1
southbound approach	В	11.0	С	16.4
westbound approach (exiting DRI)	С	15.2	В	11.4
20. Panhandle Rd at DRI Right Out Access (side street stop)*	A	4.5	А	1.8
northbound right turn (exiting DRI)	F	55.3	D	25.0

*No mitigation is recommended, see text

** Talmadge DRI only partially responsible for additional mitigation

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis

As required by the GRTA DRI Technical Guidelines, Table 17 presents the queues at the locations that do not meet the LOS D standards in the build conditions, without and with the recommended mitigation.

		A.M. Peak Hour		P.M. Peak Hour	
Inte	ersection / Approach	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
		Max Queue (feet)	Max Queue (feet)	Max Queue (feet)	Max Queue (feet)
1.	Panhandle Rd at New Hope Rd				
	southbound approach	94	94	40	40
3.	Panhandle Rd at White MS north access				
	northbound left turn	402	76	28	24
	northbound right turn	162	0	16	8
4.	Panhandle Rd at New Hope Dr				
	eastbound approach	88	0	148	20
5.	Panhandle Rd at Clayton Transportation / DRI North Access				
	eastbound approach	0	0	16	0
	westbound left turn (exiting DRI)	76	20	200	10
	westbound right turn (exiting DRI)	50	20	38	40
6.	Panhandle Rd at Obama EA south access				
	eastbound left turn	4	3	4	8
	eastbound right turn	0	0	0	3
7.	Panhandle Rd at Obama EA north access				
	eastbound left turn	1,126	200	44	28
	eastbound right turn	6	8	4	10
8.	Panhandle Rd at Lovejoy Rd				
	northbound approach	660	100	220	60
	eastbound approach	1,200	100	360	60
	westbound approach	220	80	680	100
9.	US 19/41 at Lovejoy Rd				
	northbound left turn	376	130	919	255
	northbound through	911	613	812	440
	northbound right turn	0	0	0	0
	southbound left turn	342	92	884	272
	southbound through	726	246	1,988	670
	southbound right turn	38	26	109	37
	eastbound left turn	480	323	514	302
	eastbound through/right	646	184	788	150
	westbound left/through	345	194	582	206
	westbound right turn	673	440	336	245
	table continued on ne	ext page			

Table 17 – Build Queues at Locations That Do Not Meet LOS D Standard

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis

11. McDonough Rd at County Line/McElroy Rd				
southbound left turn	162	95	806	399
southbound through	60	57	357	226
southbound right turn	0	0	0	0
eastbound left turn	8	9	26	23
eastbound through	202	101	1,115	362
eastbound right turn	0	0	72	34
12. McDonough Rd at New Hope Rd				
northbound approach	218	91	160	60
13. McDonough Rd at Panhandle Rd				
northbound left turn	309	229	207	151
northbound through/right	859	295	443	225
southbound left turn	227	103	144	93
southbound through/right	259	207	290	375
eastbound left turn	98	44	27	31
eastbound through/right	896	450	753	571
westbound left	380	221	332	339
westbound through/right	927	600	293	321
14. US 19/41 at McDonough Rd (signal)				
northbound left turn	675	186	656	167
northbound through	1,684	651	1,304	802
northbound right turn	166	98	180	92
southbound left turn	727	226	768	203
southbound through	777	315	1,927	1,205
southbound right turn	40	16	61	28
eastbound left turn	423	138	438	85
eastbound through	783	191	718	170
eastbound right turn	7	0	63	62
westbound left turn	389	125	758	201
westbound through	715	176	762	201
westbound right turn	173	62	148	105
15. McDonough Rd at Hastings Bridge Rd				
westbound left turn	202	0	442	20
westbound right turn	92	0	372	20
18. US 19/41 at Tara Rd				
eastbound left turn	442	287	492	351
eastbound right turn	47	38	271	211
19. Panhandle Rd at DRI South Access				
westbound left turn (exiting DRI)	34		66	
westbound right turn (exiting DRI)	122	80	70	40
20. Panhandle Rd at DRI Right Out Access (side street stop)				
northbound right turn (eviting DPI)	110	110	<u> </u>	Δ.Δ
	110	110	44	44

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis

8. Project Access Traffic Analysis

This section provides an analysis of the three proposed Talmadge DRI access locations in the future build condition. The following includes a discussion of the results and mitigation at existing Intersection 5, which will become the north full-movement access for the DRI, new Intersection 19, which will be the south access for the DRI, and Intersection 20, which will be the right-out access at the northeast corner of the site.

8.1 Project Access Lanes and Traffic Control

The three proposed accesses are located along the east side of Panhandle Road, which is classified by Clayton County as a collector and by the Georgia DOT as an urban minor collector. Clayton County's *Land Disturbance and Right-of-Way Construction Guidelines*, approved June 5, 2007, were evaluated at the three project accesses for the need for auxiliary left and right turn lanes. The County's Guidelines Table 8 – Minimum Requirements for Left Turn Deceleration Lane is reproduced below as Table 18, while the County's Guidelines Table 6 – Minimum Right Turn Deceleration Lane Requirements is reproduced below as Table 19.

Posted Speed	2 Lane Roads		More than 2 Lanes on Main Road	
	ADT		ADT	11.000
	<6,000	>=6,000	<10,000	>=10,000
35 mph of Less	300 LTV per Day	200 LTV per Day	400 LTV per Day	300 LTV per Day
40 to 50 mph	250 LTV per Day	175 LTV per Day	325 LTV per Day	250 LTV per Day
>= 55 mph	200 LTV per Day	150 LTV per Day	250 LTV per Day	200 LTV per Day

Table 18 – Clayton County's Left Turn Lane Requirements Table 8. Minimum Requirements for Left Turn Deceleration Lane

Table 19 – Clayton County's Right Turn Lane Requirements

Main Road		Site	Result	
Posted Speed	ADT	Trip Generation		
< 40 mph	<3000 VPD	<400 VPD	No Right Turn Lane Required	
< 40 mph	<3000 VPD	>400 VPD	Right Turn Lane Required	
< 40 mph	>3000 VPD	NA	Right Turn Lane Required	
40 mph and over	NA	NA	Right Turn Lane Required	

Table 6. Minimum Right Turn Deceleration Lane Requirements

The auxiliary turn lane requirements at the DRI's accesses on Panhandle Road were assessed as follows:

On a two lane road with greater than 6,000 vehicles per day and a posted speed limit of 40 mph, the left turn volume threshold above which a left turn lane is required is 175 left turn vehicles (LTV) per day. The calculated southbound LTV volume at the north full-movement access is 1,573 vpd. At the south access, the calculated southbound LTV is 2,941 vpd. Both left turn volumes are well above the 175 LTV threshold and, therefore, a southbound left turn lane is required on Panhandle Road at Intersections 5 and 19. Intersection 20 will be restricted to exiting right turns – no entering movements will be permitted and, therefore, no left turn lane (or right turn lane) is needed on Panhandle Road at Intersection 20.
On a two lane road with a posted speed limit greater than 40 mph, a right turn lane is required in all circumstances. Therefore, a northbound right turn lane is required on Panhandle Road at Intersections 5 and 19. As previously stated, no right turn lane is necessary at Intersection 20 because no entering movements will be permitted.

An analysis was performed for each access with the lanes required by the County Code, as just presented. The analysis determined that all three accesses will fail on the side street approaches exiting the DRI with side street stop sign control. Therefore this study recommends that the southern two accesses be designed as roundabouts. There will be a significant demand to make exiting right turns at the right-out access at Intersection 20. However, given three options to exit the site to travel to the north on Panhandle Road, the right turn volumes at the three accesses will balance to some degree, moderating delays. Figure 16 presents the recommended lane configuration and control at each access.



Figure 16 – Recommended Access Lane Configuration and Traffic Control

8.2 Project Access Traffic Volumes

The volumes projected at each project access in the future build condition are presented in Figure 17 and are also shown in the intersection volume worksheets in Appendix A.



Figure 17 – Project Access A.M. and P.M. Peak Hour Volumes

8.3 Project Access Intersection Operations

Each project access was evaluated for the 2033 build condition. Table 20 presents the operational analysis at each project access with the lane requirements presented above and side street stop sign control. Due to the high delays expected for westbound left turns exiting at Intersections 5 and 19, a change in control to a signal or a roundabout would be needed in order to achieve the LOS D standard. Table 21 presents the intersection operations at those intersections with a roundabout. No change in control from side street stop sign at the right out access is recommended. The Synchro computer printouts are located in Appendix F.

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis

Intersection / Approach		A.M. Peak Hour		P.M. Peak Hour	
		Delay (s/veh)	LOS	Delay (s/veh)	
5. Panhandle Rd at Clayton Transportation / DRI North Access (side street stop)	А	7.7	Ε	40.1	
northbound left turn	А	9.4	А	9.4	
southbound left turn (entering DRI)		10.3	В	11.0	
eastbound approach		0.0	F	174.8	
westbound left turn (exiting DRI)		221.7	F	*EX	
westbound right turn (exiting DRI)		24.2	С	19.3	
19. Panhandle Rd at DRI South Access (side street stop)		7.9	В	11.7	
southbound left turn (entering DRI)		9.8	В	13.1	
westbound left turn (exiting DRI)		70.2	F	*EX	
westbound right turn (exiting DRI)		32.4	С	22.1	
20. Panhandle Rd at DRI Right Out Access (side street stop)		4.5	А	1.8	
northbound right turn (exiting DRI)		55.3	D	25.0	

Table 20 – Project Access Intersection Levels of Service – Side Street Stop Control

*EX-limits of methodology exceeded

Intersection / Approach		A.M. Peak Hour		P.M. Peak Hour	
		Delay (s/veh)	LOS	Delay (s/veh)	
5. Panhandle Rd at Clayton Transportation / DRI North Access (roundabout)	В	14.3	С	18.3	
northbound approach		15.8	С	19.6	
southbound approach		12.7	С	18.7	
eastbound approach		0.0	А	6.5	
westbound approach (exiting DRI)		13.8	В	13.0	
19. Panhandle Rd at DRI South Access (roundabout)		11.8	С	19.3	
northbound approach		11.0	D	27.1	
southbound approach		11.0	С	16.4	
westbound approach (exiting DRI)		15.2	В	11.4	

Table 21 – Project Access Intersection Levels of Service – Roundabouts

*No change in control is recommended at the right-out access at Intersection 20.

The analysis of the project accesses reveals that the two main, full-movement project accesses will meet the LOS D standard and will operate well with roundabouts.

9. Summary of Recommended Mitigation

The following is a summary of the mitigation recommended in this study.

9.1 Summary of Existing Mitigation

Intersection 3 – Panhandle Road at Eddie White Middle Academy North Access

Station a police officer to control traffic during drop-off and possibly pick-up times.

Intersection 7 – Panhandle Road at Michelle Obama Elementary Academy North Access

Station a police officer to control traffic during drop-off and possibly pick-up times.

Intersection 8 – Panhandle Road at Lovejoy Road

Change control to a single lane roundabout.

Intersection 9 – US 19/41 at Lovejoy Road

Add an eastbound exclusive right turn lane and a westbound exclusive left turn lane on Lovejoy Road at US 19/41. A reduction in cycle length may be appropriate in this corridor.

Intersection 14 – US 19/41 at McDonough Road

Add a second eastbound and westbound through lane on McDonough Road.

Intersection 15 – McDonough Road at Hastings Bridge Road

Change control to a single lane roundabout.

Intersection 17 – Tara Road at Panhandle Road

A signal warrant study should be performed to determine if and when the intersection satisfies warrants for signalization.

Intersection 18 – US 19/41 at Tara Road

The current widening was incorporated as existing mitigation.

9.2 Summary of No-Build Mitigation

Intersection 3 – Panhandle Road at Eddie White Middle Academy North Access

No additional mitigation was identified for the no-build condition.

Intersection 4 – Panhandle Road at New Hope Drive

Change control to a single lane roundabout.

Intersection 6 – Panhandle Road at Michelle Obama Elementary Academy South Access

Station a police officer to control traffic during drop-off and possibly pick-up times.

Intersection 7 – Panhandle Road at Michelle Obama Elementary Academy North Access

No additional mitigation was identified for the no-build condition.

Intersection 8 – Panhandle Road at Lovejoy Road

Add a northbound to eastbound right turn lane and an eastbound to southbound right turn lane to the roundabout recommended in the existing analysis.

Intersection 9 – US 19/41 at Lovejoy Road

Add a westbound right turn overlap phase on the signal which would operate concurrently with the southbound protected left turn phase. Add northbound and southbound dual left turn lanes on the US 19/41 approaches. It is advised that a reduction in cycle length may be appropriate in this corridor.

Intersection 11 – McDonough Road at County Line Road / McElroy Road

Widen McDonough Road to four lanes and add southbound protected/permissive left turn phasing.

Intersection 12 – McDonough Road at New Hope Road

Add an eastbound right turn lane. A signal warrant study should be performed for this intersection to determine if and when signalization would be appropriate.

Intersection 14 – US 19/41 at McDonough Road

Add a third through lane in each direction on US 19/41, as is under construction to the north near Tara Road, and as identified above as needed at Lovejoy Road. In addition to the through lanes recommended in the existing

analysis on McDonough Road, add dual left turn lanes on all approaches and optimize the signal phasing and timing.

Intersection 15 – McDonough Road at Hastings Bridge Road

No additional mitigation was identified for the no-build condition.

Intersection 18 – US 19/41 at Tara Road

No additional mitigation is recommended for the no-build condition.

9.3 Summary of Build Mitigation

Intersection 1 – Panhandle Road at New Hope Road

It is recommended that no change be made at this intersection.

Intersection 3 – Panhandle Road at Eddie White Middle Academy North Access

No additional mitigation is identified for the build condition.

Intersection 4 – Panhandle Road at New Hope Drive

No additional mitigation is needed for the build condition.

Intersection 5 – Panhandle Road at Clayton County Transportation / DRI North Access

See summary of Project Access Mitigation, below.

Intersections 6 and 7 – Panhandle Road at Michelle Obama Elementary Academy South Access and North Access

No additional mitigation is identified for the build condition.

Intersection 8 – Panhandle Road at Lovejoy Road

Add a westbound left turn lane in the previously recommended roundabout (from southwest-bound Panhandle Road).

Intersection 9 – US 19/41 at Lovejoy Road

No additional mitigation is identified for the build condition.

Intersection 11 – McDonough Road at County Line Road / McElroy Road

No additional mitigation is identified for the build condition.

Intersection 12 – McDonough Road at New Hope Road

No additional mitigation is identified for the build condition.

Intersection 13 – McDonough Road at Panhandle Road

Add a northbound right turn lane on Panhandle Road, a southbound right turn lane on Panhandle Road, an eastbound right turn lane on McDonough Road, and northbound protected/permissive phasing.

Intersection 14 – US 19/41 at McDonough Road

No additional mitigation is identified for the build condition.

Intersection 15 – McDonough Road at Hastings Bridge Road

Add a southbound left turn lane (from southbound McDonough Road to eastbound McDonough Road) in the previously recommended roundabout. The Talmadge DRI will bear some modest contributory responsibility for the southbound left turn lane, but is not responsible for the change in control and/or construction of the roundabout.

Intersection 18 – US 19/41 at Tara Road

No additional mitigation is identified for the build condition.

9.4 Summary of Project Access Mitigation

It is recommended that the two full-movement project accesses be constructed as single lane roundabouts. No mitigation is identified for the right-out access.

10. Site Internal Circulation and Connectivity

The Talmadge DRI is accessed at three locations on Panhandle Road with an internal grid of streets that provides flexibility in the use of each access. The layout of the grid is constrained somewhat by undevelopable land. The north full-movement access (Intersection 5) serves the retail at the Panhandle frontage with an immediate connection into the townhomes. The south access (Intersection 19) provides a connection to the townhomes, then terminates at a roundabout that connects to the single-family portions of the project. The right-out access (Intersection 20) provides an exiting alternative in the direction of highest travel demand from the project – to the northeast.

Five foot wide sidewalks will be built along internal roadways and a six foot wide walking trail will be provided through the wooded areas at the center of the site. An eight foot wide multi-use path will be built along the project frontage on Panhandle Road. Crosswalks are planned at the internal intersections. A crosswalk is planned at the northern roundabout (Intersection 5) to the existing sidewalk along the frontage of the County Transportation Facility and Michelle Obama Elementary Academy. A connection will also be made on Panhandle Road to the existing sidewalk fronting Eddie White Middle Academy. It is recommended that a pedestrian connection be made at the northeast corner of the project which would serve as a route to other nearby schools and the retail node along Lovejoy Road. There are no external alternative mode facilities for transit or bicycle with which to connect. No separate bicycle lanes exist in the study area and none are proposed within the DRI site.

11. Compliance with GRTA Criteria

This section addresses the compliance of the Talmadge DRI #3894 with the five criteria presented in Section 3-101 – General Criteria Applicable to All Proposed DRIs, and the three criteria presented in Section 3-103 – Criteria for GRTA DRI Non-Expedited Review, both found in *Procedures and Principles for GRTA Development of Regional Impact Review*, effective February 13, 2013.

11.1 General Criteria Applicable to All Proposed DRIs

A. Accessibility – The proposed DRI is designed to provide safe, quality, and convenient access and provides the flexibility of non-vehicular transportation options from the proposed development to existing or planned pedestrian, bicycle, or transit facilities such that there is a likelihood of significant use by residents, employees, and visitors to the proposed DRI.

The Talmadge DRI will be served by three safe, quality vehicular accesses which the preceding analysis shows will generally operate well. Pedestrian connections to nearby schools and a retail node a bit further will provide flexibility for non-vehicular trips. Lack of transit and bicycle lanes will preclude the potential for use of those modes, through no deficiency of the proposed DRI.

B. Connectivity – The proposed DRI is likely to promote improved regional mobility in terms of new vehicular connections, on-site vehicular movements, and alternate routes that are likely to operate in a safe and efficient manner, increase the public roadway network, and avoid delays during peak periods.

There is good vehicular connectivity between the various residential tracts and the residential and retail portions of the site. All internal routes and connections to the public roadways are expected to operate in a safe and efficient manner. However, the project will not increase the public roadway network for regional mobility purposes.

C. Access Management – The proposed DRI is designed so that vehicular ingress and egress to any on-site parking facilities and all access points to adjacent public roads are likely to operate in a safe and efficient manner and are not reasonably anticipated to result in peak hour ingress and egress congestion on adjacent roads and at nearby intersections, referred to as an Access Analysis.

The analysis of the site accesses reveals that acceptable operations can be achieved at the two full-movement access locations. Some exiting delays can be expected at the right-out exit. Internal connections to parking areas are anticipated to operate safely and efficiently.

D. Regional Policies and Adopted Plans – The proposed DRI is likely to promote improved regional mobility because it is located in a center or corridor identified in the Regional Development Plan (RDP) designated by an RC; or the DRI has included in the proposed site plan components which will assist in the implementation of a transportation project currently in the Regional Transportation Plan (RTP) or Transportation Improvement Program (TIP), or other adopted regional plan designated by an RC.

The Talmadge DRI is compatible with land use plans for this portion of Clayton and Henry Counties. While the project does not specifically assist in the implementation of any planned transportation project (none were identified adjacent to the property), it is not anticipated to preclude any such improvements or plans.

E. Local Standards Supporting Regional Policies – The proposed DRI is located within a local jurisdiction, or other jurisdictional agencies, with adopted codes that support regionally adopted policies, or the development codes and standards do not prohibit or impede the proposed DRI from meeting the GRTA DRI review criteria stated in Sections 3-101, 3-102, and 3-103.

The Talmadge DRI is located in Clayton County and Henry County. Each County controls land development patterns and uses through a comprehensive code of zoning ordinances, a comprehensive land use plan, and a transportation plan. No applicable code or standard of either County has been identified through this transportation study that would impede or prohibit the Talmadge DRI from meeting regional goals.

11.2 Criteria for GRTA DRI Non-Expedited Review

1. Vehicle Miles of Travel – The proposed DRI is likely to promote improved regional mobility and regional air quality by reducing vehicle miles of travel, and is designed to encourage the use of alternative transportation modes, or is located within an area with, or is proposing, a mixture of complimentary land uses. Offsite trip generation from the proposed DRI is reduced by at least fifteen percent (15%), or, in the event that a proposed DRI is unable to satisfy the trip reduction standard established in this subsection because of conditions which are beyond the control of the developer or the affected local government, the proposed DRI implements all available trip reduction techniques which are reasonably practical.

There will be a modest degree of interaction between the residential and commercial/retail components of this project which would replace external trips with internal trips, reducing the number of additional vehicle miles that could be generated. However, due to the small size of the retail, to be conservative, no trip reductions were applied in this study to account for this interaction. The project will encourage walking to the nearby schools as an alternative mode of travel.

2. Transportation and Traffic Analysis – The proposed DRI is reasonably anticipated to comply with planned or programmed improvements, maintain performance measures for preserving regional mobility, provide safe and efficient operations, and minimizes congestion when the proposed development or phase of development is complete. The quality of the proposed and existing infrastructure in the transportation network operates in a safe manner and adequately serves new trips generated by the proposed DRI in the build-out year. The proposed DRI identifies impacts on existing or programmed infrastructure, and proposes mitigation that is feasible and within the control of the applicant or appropriate agencies to implement.

The proposed DRI does not conflict with or preclude any planned or programmed improvements (none were identified adjacent to the property). This study identifies mitigation that will allow the infrastructure in the study network to operate in a safe and efficient manner. The mitigation identified in this report is feasible and is expected to be within the control of the appropriate agencies or the applicant.

3. Relationship to Existing Development and Infrastructure – The proposed DRI is not located in any area where the existing level of development and availability of infrastructure is such that the proposed DRI is reasonably anticipated to result in unplanned and poorly served development which would not otherwise occur until well-planned growth and development and adequate public facilities are available.

The Talmadge DRI represents planned growth and development that is appropriate and anticipated for this area. This DRI does not preclude any known, planned development or infrastructure potential.

Appendix A

Traffic Count Data and Volume Worksheets

Appendix B

Intersection Analysis Methodology

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis

Intersection Analysis Methodology

The methodology used for evaluating traffic operations at intersections is presented in the Transportation Research Board's *Highway Capacity Manual*, 2016 edition (HCM 6). Synchro 10 software, which emulates the HCM 6 methodology, was used for all analyses. The following is an overview of the methodology employed for the analysis of signalized intersections and roundabouts and stop-sign controlled (unsignalized) intersections. Levels of service (LOS) are assigned letters A through F. LOS A indicates operations with very low control delay while LOS F describes operations with high control delay. LOS F is considered to be unacceptable by most drivers, while LOS E is typically considered to be the limit of acceptable delay.

Signalized Intersections and Roundabouts – Level of service for a signalized intersection and a roundabout is defined in terms of control delay per vehicle. For signalized intersections and roundabouts, a composite intersection level of service is determined. The thresholds for each level of service are higher for signalized intersections and roundabouts than for unsignalized intersections. This is attributable to a variety of factors including expectation and acceptance of higher delays at signals/roundabouts, and the fact that drivers can relax when waiting at a signal as opposed to having to remain attentive as they proceed through the unsignalized intersection. The level of service criteria for signalized intersections and roundabouts are shown in Table A.

Table A – Level of Servi	ce Criteria for Signalized	l Intersections and	Roundabouts
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Control Delay (s/veh)	LOS
≤ 10	А
$>$ 10 and \leq 20	В
$>$ 20 and \leq 35	С
$>$ 35 and \leq 55	D
$>$ 55 and \leq 80	E
> 80	F

Source: Highway Capacity Manual 6

Unsignalized Intersections – Level of service for an unsignalized intersection is defined in terms of control delay per vehicle. Control delay is that portion of delay attributable to the control device and includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The delays at unsignalized intersections are based on gap acceptance theory, factoring in availability of gaps, usefulness of the gaps, and the priority of right-of-way given to each traffic stream. The level of service criteria for unsignalized intersections are presented in Table B.

Table B – Lev	el of Service	Criteria for	Unsignalized	Intersections
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Control Delay (s/veh)	LOS
0-10	A
$>$ 10 and \leq 15	В
$>$ 15 and \leq 25	С
$>$ 25 and \leq 35	D
$>$ 35 and \leq 50	E
> 50	F

Source: Highway Capacity Manual 6

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis

Appendix C

Existing Intersection Operational Analysis

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis

Appendix D

No-Build Intersection Operational Analysis

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis

Appendix E

Future Intersection Operational Analysis

Appendix F

Project Access Operational Analysis

Talmadge DRI #3894, Clayton and Henry Counties Transportation Analysis