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EXECUTIVE SUMMARY

This report presents the analysis of the anticipated traffic impacts of a proposed 11.6-acre mixed-use development (Lakes Parkway Mixed Use) in Gwinnett County, Georgia. This report is being prepared as part of a submittal requesting rezoning from Light Industrial (M-1) to a Mixed Use Overlay District (MUO). Because the proposed development will exceed 400,000 square feet, it is a Development of Regional Impact (DRI) and is subject to Georgia Regional Transportation Authority (GRTA) and Atlanta Regional Commission (ARC) review.

The proposed development is expected to consist of 648,408 square feet of office, 59,685 square feet of retail, 333 high rise residential units, and a 155 room hotel. The development is scheduled to be completed in one phase with full buildout by the year 2012.

Based on the existing 2008 conditions, none of the study area intersections currently operate below the acceptable Level of Service standard (LOS D).

The results of the detailed intersection analysis for the 2012 No-Build and 2012 Build conditions identified improvements that will be necessary in order to maintain the Level of Service standard (LOS D) within the study network. Per GRTA's Letter of Understanding, improvements were recommended at intersections until the Level of Service was elevated to an appropriate level. The summary of the recommended improvements are listed below:

2012 No-Build recommended improvements (includes background growth and the project traffic from one nearby DRI; but excludes the Lakes Parkway Mixed Use DRI development traffic):

Lakes Parkway @ Sugarloaf Parkway (Intersection #3)

- Install an additional southbound thru lane along Sugarloaf Parkway creating 3 through lanes.
- Install an additional northbound thru lane along Sugarloaf Parkway creating 3 through lanes.

2012 Build recommended improvements (2012 No-Build Conditions plus the traffic associated with the Lakes Parkway Mixed Use DRI development):

Lakes Parkway @ Sugarloaf Parkway (Intersection #3)

- Provide a westbound left-turn lane along Lakes Parkway creating dual left turns. Provide protected phasing for the dual left turn lanes.

Lakes Parkway @ Purcell Road / Driveway #1 (Intersection #4)

- Provide a northbound left-turn lane creating three egress lanes for the development; a left-turn lane, and shared left/thru lane, and a right-turn lane.
- Provide a traffic signal at the intersection.

Lakes Parkway @ Proposed RIRO Driveway #2 (Intersection #6)

- Provide a westbound right-turn lane along Lakes Parkway into the development.
- Provide one egress lane exiting the development (a right-turn lane).

1.0 PROJECT DESCRIPTION

1.1 Introduction

This report presents the analysis of the anticipated traffic impacts of a proposed 11.6-acre mixed-use development (Lakes Parkway Mixed Use) in Gwinnett County, Georgia. This report is being prepared as part of a submittal requesting rezoning from Light Industrial (M-1) to a Mixed Use Overlay District (MUO). Because the proposed development will exceed 400,000 square feet, it is a Development of Regional Impact (DRI) and is subject to Georgia Regional Transportation Authority (GRTA) and Atlanta Regional Commission (ARC) review.

The proposed development is expected to consist of 648,408 square feet of office, 59,685 square feet of retail, 333 high rise residential units, and a 155 room hotel. The development is scheduled to be completed in one phase with full buildout by the year 2012.

A summary of the proposed land-uses and densities can be found below in **Table 1.**

Table 1
Proposed Land Uses

Office	648,408 square feet
Retail	59,685 square feet
High Rise Residential	333 units
Hotel	155 rooms

Figure 1 and **Figure 2** provide a location map and an aerial photograph of the site.

1.2 Site Plan Review

The proposed site is located along the south side of Lakes Parkway near Purcell Road, just east of Sugarloaf Parkway and just north of SR 316, in Gwinnett County, Georgia. Most of the site is currently undeveloped with an existing 20,000 square foot office building located on the east side of the development. The office building will be demolished prior to the development of Lakes Parkway Mixed Use DRI.

Figure 3 is a small-scale copy of the site plan. A full-size site plan consistent with GRTA's Site Plan Guidelines is also being submitted as part of the Review Package.

1.3 Site Access

Access to the development is proposed at two locations along Lakes Parkway. The existing driveway that aligns with Purcell Road is proposed as the main full-movement driveway (Driveway #1) along Lakes Parkway. A right-in/right-out driveway (Driveway #2) is proposed along Lakes Parkway approximately 600 feet to the west of Purcell Road (far western portion of the site). Gwinnett County Department of Transportation is the permitting agency for all driveways along Lakes Parkway. Pedestrian access will be provided at all site driveways.

1.4 Bicycle and Pedestrian Facilities

Pedestrian/bicycle facilities currently do not exist along Lakes Parkway. The proposed development will provide pedestrian access in accordance with Gwinnett County development requirements.

1.5 Transit Facilities

GRTA Xpress 410 Route provides service from Discover Mills to Lindbergh Station.

GRTA Xpress 410 Route provides service from Discover Mills to Midtown and Downtown.

Gwinnett County Transit Route 40 runs along Sugarloaf Parkway and provides access to local destinations such as Gwinnett Place Mall, Discover Mills Mall, and the City of Lawrenceville. Additionally, Sugarloaf Parkway has a bike lane.

2.0 TRAFFIC ANALYSES METHODOLOGY AND ASSUMPTIONS

2.1 Growth Rate

Background traffic is defined as expected traffic on the roadway network in future year(s) absent the construction and opening of the proposed project. Historical traffic count data from the Georgia DOT was reviewed for the area surrounding the proposed development, and growth rates of 3.5% per year along all roadways were agreed upon during the methodology meeting with GRTA staff.

2.2 Traffic Data Collection

Vehicle turning movement counts were performed on May 13, 2008 from 7:00 AM until 9:00 AM and 4:00 PM until 6:00 PM at five intersections within the study network. The morning and afternoon peak hours varied between the five intersections and are listed below:

1. Sugarloaf Parkway @ SR 316 Eastbound Ramps
    - 7:30 – 8:30 AM Peak Hour, 4:30 – 5:30 PM Peak Hour
2. Sugarloaf Parkway @ SR 316 Westbound Ramps
    - 7:15 – 8:15 AM Peak Hour, 4:45 – 5:45 PM Peak Hour
3. Lakes Parkway @ Sugarloaf Parkway
    - 7:45 – 8:45 AM Peak Hour, 5:00 – 6:00 PM Peak Hour
4. Lakes Parkway @ Purcell Road
    - 7:30 – 8:30 AM Peak Hour, 4:30 – 5:30 PM Peak Hour
5. Lakes Parkway @ Riverside Parkway
    - 7:15 – 8:15 AM Peak Hour, 4:45 – 5:45 PM Peak Hour

All raw count data is included in the Appendix.

2.3 Detailed Intersection Analysis

Level-of-service (LOS) is used to describe the operating characteristics of a road segment or intersection in relation to its capacity. LOS is defined as a qualitative measure that describes operational conditions and motorists perceptions within a traffic stream. The Highway Capacity Manual defines six levels of service, LOS A through LOS F, with A being the best and F being the worst. Level of service analyses were conducted at all intersections within the study network using Synchro Professional, Version 6.0.

Levels of service for signalized intersections are reported for the intersection as a whole. One or more movements at an intersection may experience a low Level of service, while the intersection as a whole may operate acceptably.

Levels of service for unsignalized intersections, with stop control on the minor street only, are reported for the side street approaches. Low Levels of service for side street approaches are not uncommon, as vehicles may experience delay in turning onto a major roadway.

3.0 STUDY NETWORK

3.1 Gross Trip Generation

As stated earlier, the proposed development will consist of approximately 648,408 square feet of office, 59,685 square feet of retail, 333 high rise residential units, and a 155 room hotel. It should be noted that the 4,000 square foot health club shown on the site plan is an amenity to the office space and will not be open to the general public.

Traffic for these land uses was calculated using equations contained in the *Institute of Transportation Engineers' (ITE) Trip Generation Manual, Seventh Edition, 2003*. Average rates were used only when equations were not provided. Gross trips generated are displayed below in **Table 2**.

Table 2
Lakes Parkway Mixed Use DRI
Gross Trip Generation

Land Use	ITE Code	Daily Traffic		AM Peak Hour		PM Peak Hour	
		Enter	Exit	Enter	Exit	Enter	Exit
Build-Out (Year 2012)							
333 High-Rise Residential Condominium/Townhouse Units	*232*	740	740	24	101	80	49
155 Hotel Rooms	*310*	507	507	43	27	48	43
648,408 SF of General Office Building	*710*	2,813	2,813	737	100	137	668
59,685 SF Retail	*820*	1,281	1,281	37	24	108	116
Total		**5,341**	**5,341**	**841**	**252**	**373**	**876**

3.2 Trip Distribution

The directional distribution and assignment of new project trips was based on the project land uses, a review of land use densities in the area, a review of existing traffic patterns, combined with engineering judgment and discussions with GRTA staff at the Pre-Application meeting.

3.3 Level of Service Standards

For the purposes of this traffic analysis, a level of service standard of D was assumed for all intersections and segments within the study network. If, however, an intersection or segment currently operates at LOS E or LOS F during an existing peak period, the LOS standard for that peak period becomes LOS E, consistent with GRTA's Letter of Understanding.

3.4 Study Network Determination

A general study area was determined using the 7% rule. This rule recommends that all intersections and segments be analyzed which are impacted to the extent that the traffic from the proposed site is 7% or more of the Service Volume of the facility (at a previously established LOS standard) be considered for analysis. This general study area was refined during the methodology meeting, and includes the following intersections:

- Sugarloaf Parkway @ SR 316 Eastbound Ramps (signalized)
- Sugarloaf Parkway @ SR 316 Westbound Ramps (signalized)
- Lakes Parkway @ Sugarloaf Parkway (signalized)
- Lakes Parkway @ Purcell Road (unsignalized)
- Lakes Parkway @ Riverside Parkway (signalized)

Each of the above listed intersections was analyzed for the Existing 2008 Condition, the 2012 No-build Condition, and the 2012 Build Condition. The 2012 No-build condition represents the existing traffic volumes grown at 3.5% per year for four years. The 2012 Build condition adds the project trips associated with the Lakes Parkway Mixed Use DRI development to the 2012 No-Build condition. (NOTE: The additional proposed site access point listed below was only analyzed for the 2012 Build Condition):

- Lakes Parkway @ Driveway #2 (right-in/right-out)

This intersection was analyzed for the AM and PM peak periods.

3.5 Existing Facilities

Roads in the study network were inventoried to obtain geometric characteristics, posted speed limits, and the GDOT Functional Classifications.

Roadway	Number of Lanes	Posted Speed Limit (MPH)	GDOT Functional Classification
Lakes Parkway	4	45	Urban Collector Street
Purcell Road	2	40	Urban Local Street
Sugarloaf Parkway	4/6	45	Urban Minor Arterial
SR 120 (Duluth Highway)	4	50	Urban Minor Arterial
Riverside Parkway	4	45	Urban Collector Street

For the purposes of this traffic study, the following roads were considered to have a north-south orientation: Sugarloaf Parkway, Purcell Road, and Riverside Parkway. Lakes Parkway and SR 120 (Duluth Highway) were considered to have an east-west orientation.

4.0 TRIP GENERATION

As stated earlier, trips associated with the proposed development were estimated using the ITE *Trip Generation Manual*, Seventh Edition (2003), using equations in where available.

Mixed-use and pass-by reductions were taken according to the *ITE Trip Generation Handbook, 2004*. Mixed-Use reductions were taken and are expected to reduce the PM peak hour trips by 5.12% and daily new vehicle trips by 7.15%. The ITE pass-by reduction calculation of thirty-four percent of project trips was less than ten percent of the adjacent street volume, therefore the GRTA ten percent limit was not applied. Lakes Parkway does not have sidewalks connecting to Sugarloaf Parkway and therefore no alternate mode of transportation reduction were taken. The total trips generated and analyzed in the report are listed below in **Table 3**.

Table 3
Lakes Parkway Mixed Use DRI
Net Trip Generation

Land Use	Daily Traffic		AM Peak Hour		PM Peak Hour	
	Enter	Exit	Enter	Exit	Enter	Exit
Build-Out (Year 2012)						
Gross Trips	**5,341**	**5,341**	**841**	**252**	**373**	**876**
Internal Capture Reductions	*-382*	*-382*	-	-	*-32*	*-32*
Pass-by Reductions	*-377*	*-377*	-	-	*-33*	*-33*
New Trips	**4,582**	**4,582**	**841**	**252**	**308**	**811**

5.0 TRIP DISTRIBUTION AND ASSIGNMENT

New trips were distributed onto the roadway network using the percentages agreed to during the methodology meeting. **Figure 4** and **Figure 5** display the expected percentages for the development throughout the roadway network. These percentages were applied to the new trips generated by the development (see Table 3, above), and the volumes were assigned to the roadway network. The expected peak hour turning movements generated by the proposed development are shown in **Figure 6**.

6.0 TRAFFIC ANALYSIS

6.1 Existing Traffic

The existing 2008 traffic volumes and laneage are shown in **Figure 7**. These volumes were input in Synchro 6.0 and an Existing Conditions analysis was performed. The results are displayed below in **Table 4**.

Table 4
Lakes Parkway Mixed Use DRI
Existing 2008 Intersection Levels of Service
(delay in seconds)

	Intersection	Control	AM Peak Hour	PM Peak Hour
1	Sugarloaf Parkway @ SR 316 Eastbound Ramp	Signal	B (11.4)	B (13.0)
2	Sugarloaf Parkway @ 316 Westbound Ramp	Signal	B (16.2)	A (8.2)
3	Lakes Parkway @ Sugarloaf Parkway	Signal	C (24.4)	C (32.1)
4	Lakes Parkway @ Purcell Road	NB / SB Stop Controlled	NB: n/a SB: B (13.5)	NB: C (15.2) SB: B (14.8)
5	Lakes Parkway @ Riverside Parkway	Signal	C (21.1)	B (19.8)

As you can see in the table, no intersections currently operate below the acceptable Level of Service standard (LOS D). The Level of Service standard will be LOS D for the purpose of this study, in accordance to the Letter of Understanding issued by GRTA.

6.2 2012 No-Build Traffic

The existing traffic volumes were grown at 3.5% per year along all roadway links within the study network. The 2012 "No-Build" traffic volumes were input in Synchro 6.0, and analyses of the projected No-build conditions were performed. The results are displayed below in **Table 5.** The projected volumes, laneage, and recommended intersection control for the year 2012 No-Build condition are illustrated in **Figure 8.**

Table 5
Lakes Parkway Mixed Use DRI
No Build 2012 Intersection Levels of Service
(delay in seconds)

Intersection		Control	AM Peak Hour	PM Peak Hour
1	Sugarloaf Parkway @ SR 316 Eastbound Ramp	Signal	B (13.3)	B (15.7)
2	Sugarloaf Parkway @ 316 Westbound Ramp	Signal	C (20.8)	B (10.8)
3	Lakes Parkway @ Sugarloaf Parkway	Signal	D (42.9)	E (55.2)
4	Lakes Parkway @ Purcell Road	NB / SB Stop Controlled	NB: n/a SB: C (15.3)	NB: C (18.1) SB: C (17.9)
5	Lakes Parkway @ Riverside Parkway	Signal	C (23.5)	C (21.6)

As shown in **Table 5**, one intersection currently operates below the acceptable Level of Service standard (LOS D) for that intersection. Per GRTA's Letter of Understanding, improvements were recommended at the intersection until the Level of Service was elevated to the GRTA standard. It is recommended that an additional northbound through lane and an additional southbound through lane be installed at the intersection of Lakes Parkway and Sugarloaf Parkway, creating 3 through lanes in each direction. The intersection improvement is listed below. The 2012 No-Build with Improvement intersection Level of Service is displayed in **Table 6**.

Lakes Parkway @ Sugarloaf Parkway (Intersection #3)

- Install an additional southbound thru lane along Sugarloaf Parkway creating 3 through lanes.
- Install an additional northbound thru lane along Sugarloaf Parkway creating 3 through lanes.

Table 6
Lakes Parkway Mixed Use DRI
No-Build 2012 Intersection Levels of Service IMPROVED
(delay in seconds)

Intersection		Control	AM Peak Hour	PM Peak Hour
3	Lakes Parkway @ Sugarloaf Parkway	Signal	C (21.4)	C (31.2)

6.3 2012 Build Traffic

The traffic associated with the proposed development (Lakes Parkway Mixed Use) was added to the 2012 No-build volumes. These volumes were input into Synchro 6.0 and analyses of the projected 2012 Build conditions were performed. The results of the analyses are displayed below in **Table 7**. The projected volumes, laneage, and recommended intersection control for the year 2012 Build condition are illustrated in **Figure 9.**

Table 7
Lakes Parkway Mixed Use DRI
Build 2012 Intersection Levels of Service
(delay in seconds)

	Intersection	Control	AM Peak Hour	PM Peak Hour
1	Sugarloaf Parkway @ SR 316 Eastbound Ramp	Signal	B (18.9)	B (19.1)
2	Sugarloaf Parkway @ 316 Westbound Ramp	Signal	D (38.2)	B (10.6)
3	Lakes Parkway @ Sugarloaf Parkway	Signal	D (49.7)	E (74.2)
4	Lakes Parkway @ Purcell Road / Driveway #1	NB / SB Stop Controlled	NB: F * SB: F *	NB: F * SB: F *
5	Lakes Parkway @ Riverside Parkway	Signal	C (30.6)	C (25.8)
6	Lakes Parkway at Proposed RIRO Driveway #2	NB Stop Controlled	NB: B (10.5)	NB: B (10.8)

Note: * Long delays expected for side-street traffic.

As shown in **Table 7**, two of the intersections fail to meet the acceptable Level of Service standard. Per GRTA's Letter of Understanding, improvements were recommended at the intersections until the Level of Service was elevated to the GRTA standard. It is recommended that a westbound left-turn lane be installed at the intersection of Lakes Parkway and Sugarloaf Parkway, creating dual left turns. It is also recommended that a northbound left turn lane and a traffic signal be installed at the intersection of Lakes Parkway and Purcell Road / Driveway #1. The 2012 Build with Improvement intersections Level of Service are displayed in **Table 8.** The intersection improvements and recommended driveway configurations are discussed below in more detail.

Lakes Parkway @ Sugarloaf Parkway (Intersection #3)

- Provide a westbound left-turn lane along Lakes Parkway creating dual left turns. Provide protected phasing for the dual left turn lanes.

Lakes Parkway @ Purcell Road / Driveway #1 (Intersection #4)

- Provide a northbound left-turn lane creating three egress lanes for the development; a left-turn lane, and shared left/thru lane, and a right-turn lane.
- Provide a traffic signal at the intersection.

Lakes Parkway @ Proposed RIRO Driveway #2 (Intersection #6)

- Provide a westbound right-turn lane along Lakes Parkway into the development.
- Provide one egress lane exiting the development (a right-turn lane).

Table 8
Lakes Parkway Mixed Use DRI
Build 2012 Intersection Levels of Service IMPROVED
(delay in seconds)

Intersection		Control	AM Peak Hour	PM Peak Hour
3	Lakes Parkway @ Sugarloaf Parkway	Signal	D (45.6)	D (43.8)
4	Lakes Parkway @ Purcell Road / Driveway #1	Signal	C (23.9)	C (29.0)

Note: * Long delays expected for side-street traffic.

7.0 IDENTIFICATION OF PROGRAMMED PROJECTS

The *TIP, STIP, RTP, and GDOT's Construction Work Program* were searched for currently programmed transportation projects within the vicinity of the proposed development. Several projects are programmed for the area surrounding the study network. Information on the projects is included in the Appendix.

Project #	Build Out Year	Project Description
ARC# GW-088 GDOT# 121682	2008	Widening of Duluth Highway (SR 120) from 2 to 4 lanes from Sugarloaf Parkway to Riverside Parkway. Under Construction with an expected completion date in 2008.
ARC# GW-304 GDOT# 0006829	2009	Sugarloaf Parkway ATMS from SR 20 (Grayson Highway) to Peachtree Industrial Boulevard
ARC# GW-322 GDOT# 0005825	2008	Old Norcross Road ATMS from Breckinridge Boulevard to SR 120 (Pike Street in City of Lawrenceville)
ARC# AR-H-500 GDOT# 0003168	2015	Addition of two managed lanes in both directions for 5.1 miles between I-85 North and SR 20.

8.0 INGRESS/EGRESS ANALYSIS

Vehicular access to the development is proposed at two locations. The existing driveway that aligns with Purcell Road is proposed as the main full-movement driveway (Driveway #1) along Lakes Parkway. A right-in/right-out driveway (Driveway #2) is proposed along Lakes Parkway approximately 600 feet to the west of Purcell Road.

9.0 INTERNAL CIRCULATION ANALYSIS

The proposed development will generate trips between the residential and retail uses of the development. Using the *ITE Trip Generation Handbook, 2004* as a reference, 10.68% of the gross daily trips would be internal, 8.30% of the PM trips would be internal. Please refer to the appendix for the internal capture spreadsheet.

10.0 COMPLIANCE WITH COMPREHENSIVE PLAN ANALYSIS

The Gwinnett County Comprehensive Plan identifies the project site as both 'Commercial/Retail' and 'Office/Distribution/Technology'.

11.0 NON-EXPEDITED CRITERIA

11.1 Quality, Character, Convenience, and Flexibility of Transportation Options

Sugarloaf Parkway to the east of the site is accessible via vehicles, transit, walking or biking. The development along Lakes Parkway is approximately 1,000' east of Sugarloaf Parkway however, sidewalks do not currently exist along Lakes Parkway.

11.2 Vehicle Miles Traveled

The following table displays the reduction in traffic generation due to internal capture and pass-by trips.

	Build-out Total
Daily Gross Trip Generation:	12,976
(-)Mixed-use reductions (internal capture)	-1,386
(-)Pass-by trips	-1,428
(-)Alternative modes	-0
Net Trips:	10,162

11.3 Relationship Between Location of Proposed DRI and Regional Mobility

Additionally, the development is located within the ARC's Gwinnett County Livable Centers Initiative, in the Educator Sector. The ARC Envision6 'Atlanta Region Unified Growth Policy Map' identifies the site as 'Regional Center'. The development is located approximately 0.3 miles from SR 316 which provides direct access to I-85, allowing easy access to other parts of the Atlanta area..

11.4 Relationship Between Proposed DRI and Existing or Planned Transit Facilities

The development is GRTA Xpress 410 Route provides service from Discover Mills to Lindbergh Station.

GRTA Xpress 410 Route provides service from Discover Mills to Midtown and Downtown.

Gwinnett County Transit Route 40 runs along Sugarloaf Parkway and provides access to local destinations such as Gwinnett Place Mall, Discover Mills Mall, and the City of Lawrenceville. Additionally, Sugarloaf Parkway has a bike lane.

11.5 Transportation Management Area Designation

The proposed development is not located within an established TMA.

11.6 Offsite Trip Reduction and Trip Reduction Techniques

The proposed development will generate trips between the residential and retail uses of the development. Using the *ITE Trip Generation Handbook, 2004* as a reference, 10.68% of the gross daily trips would be internal, 8.30% of the PM trips would be internal.

Pass-by reductions were taken according to the *ITE Trip Generation Handbook, 2004* and GRTA guidelines for the retail portion of the development. The GRTA's 10% limit test was not applied for the weekday PM peak hour since the total pass-by trips were expected to be less than 10% of the adjacent street traffic.

11.7 Balance of Land Uses – Jobs/Housing Balance

Please refer to the Area of Influence Analysis, located in Section 12.0 of the report.

11.8 Relationship Between Proposed DRI and Existing Development and Infrastructure

The development is located in an area where the existing infrastructure is expected to be adequate to serve the needs of the development upon build-out (2012).

12.0 AREA OF INFLUENCE

The proposed development, Lakes Parkway, is expected to consist of 333 condominium units/townhomes, 155 hotel rooms, 648,408 SF of office space, and 59,685 SF of retail. Due to the nature of the development, it will be classified as "predominantly employment" for purposes of the AOI. The following section will describe the Area of Influence demographics, DRI average wage levels, expected AOI housing costs, and the opportunity for workers who are employed in the DRI to find housing within the AOI.

12.1 Criteria

As part of the non-expedited review process for a DRI, an Area of Influence Analysis must be performed to determine the impact of the proposed development on the balance of housing and jobs within the immediate area surrounding the development. For this proposed development classified as "predominantly employment," the non-expedited review criterion is as follows:

> The proposed DRI:
>
> > (b) Is located in an Area of Influence where the proposed DRI is reasonably anticipated to contribute to the balancing of land uses within the Area of Influence such that twenty-five percent (25%) of the persons that are reasonably anticipated to be employed in the proposed DRI have the opportunity to live within the Area of Influence;

12.2 Study Area Determination and Characteristics

The Area of Influence is comprised of the area within six road-miles of the proposed development. To determine the AOI, *TransCAD* was used to measure six road miles from the nearest intersection to the project (Lakes Parkway at Purcell Road). The population and housing statistics for the AOI were determined by taking the area outlined in *TransCAD*, creating a boundary in GIS format, and overlaying the boundary with a GIS layer containing census tract information. The Area of Influence (located entirely within Gwinnett County) can be seen in **Figure 10**.

The total population within the Area of Influence is 150,515, residing within 52,634 households (an average of 2.84 people per household). There are approximately 80,334 workers in the AOI for an average of 1.53 workers per household. The AOI area totals 45,844 acres.

12.3 DRI Employment and Salary Figures

The DRI is expected to employ approximately 2,420 workers in the following land uses: Hotel, General Office, and Shopping Center. For the hotel land use, the total number of workers is estimated at 140, based on an assumption of 0.9 workers per room from the *Institute of Transportation Engineers' (ITE) Trip Generation Manual, Seventh Edition, 2003*. The numbers of workers for the office and shopping center land uses are based on assumptions provided in the *Area of Influence (AOI) Guidebook for Non-Expedited Reviews, April 2003*. For the office land use, 1 employee per 300 SF yields 2,161 office employees. For the shopping center land use (general retail), 1 employee per 500 SF results in 119 shopping center employees.

For the hotel land use, it is assumed that employment will be comprised of the following occupations: lodging managers, bellhops, housekeepers, desk clerks, and food preparers and servers. For the office land use, employees are assumed to work in the following occupations: management, technical, office and administrative support, computers, and business and financial operations. The shopping center land use will include retail managers and retail salespersons.

Using the departmental and occupational guidelines provided by the client, along with the U.S. Department of Labor's *May 2007 Metropolitan Area Occupational Employment and Wage Estimates Atlanta-Sandy Springs-Marietta, GA*, salaries were approximated for each occupation. The following occupational codes were used for the above jobs:

11-0000	Management Occupations
11-9081	Lodging Managers
13-0000	Business and Financial Operations Occupations
15-0000	Computer and Mathematical Science Occupations
17-0000	Engineering and Architecture Occupations
35-0000	Food Preparation and Serving Related Occupations
37-2012	Maids and Housekeeping Cleaners
39-6011	Baggage Porters and Bellhops
41-1011	Managers of Retail Sales
41-2031	Retail Salespersons
43-0000	Office and Administrative Support Occupations
43-4081	Hotel, Motel, and Resort Desk Clerks
49-9042	Maintenance and Repair, General

Household salary was calculated based on the computed workers per household ratio of 1.53 multiplied by the salary in each bracket. It is assumed then that each household has 1.53 workers who contribute to the monthly household salary. The affordable housing payment is calculated as 30% of the monthly household salary, as based on GRTA's *Area of Influence (AOI) Guidebook for Non-Expedited Reviews*. **Table 9** displays the department positions, the numbers of employees in each occupation, the monthly employee and household salaries, and the respective affordable housing payments.

Table 9
Employment, Salary, and Affordable Housing Payment by Occupation

Land Use	Occupation	Employees	Monthly Employee Salary	Monthly Household Salary	Affordable Housing Payment
Hotel	Lodging Managers	28	$4,373	$6,690	$2,007
	Baggage Porters and Bellhops	7	$1,632	$2,496	$749
	Maids and Housekeeping Cleaners	35	$1,483	$2,270	$681
	Hotel, Motel, and Resort Desk Clerks	35	$1,590	$2,433	$730
	Maintenance and Repair, General	7	$2,860	$4,376	$1,313
	Food Preparation and Serving	28	$1,558	$2,383	$715
General Office	Management Occupations	432	$8,046	$12,310	$3,693
	Technical Occupations	540	$5,403	$8,267	$2,480
	Office and Administrative Support	217	$2,662	$4,072	$1,222
	Computer Occupations	432	$5,861	$8,967	$2,690
	Business and Financial Operations	540	$5,463	$8,358	$2,507
Shopping Center	Managers of Retail Sales	24	$2,955	$4,521	$1,356
	Retail Salespersons	95	$2,027	$3,101	$930
	Total Employees	**2,420**	-	-	-

Given the above calculated salaries, each household is eligible for a specific housing tier within the Area of Influence. **Table 10** below displays the number of households that fall into each tier based on the household salary.

Table 10
Number of Households in the DRI by Range of Monthly Income

Range of Monthly Income for Housing	Number of Households
$499 or less	0
$500 to $599	0
$600 to $699	35
$700 to $799	70
$800 to $899	0
$900 to $999	95
$1,000 to $1,249	217
$1,250 to $1,499	31
$1,500 to $1,999	0
$2,000 or more	1,972
Total	**2,420**

12.4 AOI Occupied Housing Figures

An analysis of existing occupied housing was conducted based on 2000 Census data for owner- and renter-occupied housing. A GIS analysis identified over 35,000 owner-occupied units and 16,000 renter-occupied units in the AOI. **Table 11** below displays the housing units in comparable price tiers as are shown in **Table 10**. Owner-occupied housing includes housing with and without a mortgage. Renter-occupied housing includes all rental units with the exception of those with no cash rent.

Table 11
Selected Monthly Costs for All Occupied Housing Units in the AOI

Monthly Dollar Range	Owner-Occupied Housing Units in the AOI	Renter-Occupied Housing Units in the AOI	Total Occupied Housing Units in the AOI
$499 or less	3,595	1,119	4,714
$500 to $599	510	1,519	2,029
$600 to $699	801	4,210	5,011
$700 to $799	1,307	4,486	5,793
$800 to $899	2,763	2,506	5,269
$900 to $999	3,272	1,444	4,716
$1,000 to $1,249	9,511	1,047	10,558
$1,250 to $1,499	6,541	210	6,751
$1,500 to $1,999	5,271	68	5,339
$2,000 or more	2,108	34	2,142
Total	**35,679**	**16,643**	**52,322**

Using the households in the DRI per price tier information in Table 10 and the renter / owner distribution of occupied housing in the AOI in Table 11 above, a comparison was done to analyze the available housing by price range within the AOI against the number of households per price tier expected within the proposed DRI. This comparison is shown below in Table 12.

Table 12
Comparison of Workers' Monthly Household Incomes in the DRI and Monthly Costs of Housing Units in the AOI

Monthly Dollar Range	Total Occupied Housing Units in the AOI	Number of DRI Households with One or More Workers Working in the DRI	Difference in Number of Housing Units in AOI and Number of Households with Workers in DRI
$499 or less	4,714	0	4,714
$500 to $599	2,029	0	2,029
$600 to $699	5,011	35	4,976
$700 to $799	5,793	70	5,723
$800 to $899	5,269	0	5,269
$900 to $999	4,716	95	4,621
$1,000 to $1,249	10,558	217	10,341
$1,250 to $1,499	6,751	31	6,720
$1,500 to $1,999	5,339	0	5,339
$2,000 or more	2,142	1,972	170
Total	**52,322**	**2,420**	**49,902**

As can be seen from **Table 12**, adequate housing opportunities exist for all wage-earning levels in the DRI for both owner and renter properties. Additionally, because the salaries of the employees are concentrated at the upper limits of the price tiers, considerable extra housing is available in lower price tiers if a household desires to choose a more conservative price range. Given this information, over 25% of the employees of the DRI have an opportunity to reside within the Area of Influence.

13.0 ARC'S AIR QUALITY BENCHMARK

The 11.6 acre proposed development is expected to consist of 648,408 square feet of office, 59,685 square feet of retail, 333 high rise residential units, and a 155 room hotel. ARC has established criteria that link reductions in vehicle miles traveled (VMT) to improvements in air quality. The following describes the various reductions this development will accrue.

For projects where retail or office is the dominant use: developments that have a floor area ratio greater than 0.8 will receive a 6% reduction. (Assuming Hotel is *NOT* included in the residential calculation)

A 4% reduction is applied because at least 10% of the gross area is residential. (Again assuming Hotel is *NOT* included in the residential calculations and assuming 1800 SF/unit)

Since the project is located within ¼ mile of a GCT bus stop, a 3% reduction is applied.

Since the development proposes sidewalks within the development, connecting the proposed buildings and a sidewalk parallel to the right of way connecting to adjoining uses, a 5% reduction is applied.

These reductions are displayed below in **Table 13**.

Table 13
ARC VMT Reductions

Mixed-Use where Office is the dominant use	
FAR greater than 0.8	-6%
The primary land use is office and at least 10% of the floor area is residential	-4%
Development is located within ¼ mile of a GCT bus stop	-3%
Pedestrian networks (sidewalks) in development that meet Density 'target' and connects to adjoining uses	-5%
Total Reductions	**18%**