Table 4: Review of Bicycle Facilities by Parcel

Parcel	Land Use	Amount (square feet, no. of units)	Zoning & DC Law Requirements	Proposed Supply	Gorove/Slade Thoughts/Recommendations
Parcel 1					
1	Health Care Office	860,000	83-94 spaces (depends on final vehicular parking count)	In garage: At minimum, equal to or greater than required by the Zoning Regulations and the DC Zoning Regulations and Bicycle Commuter and Parking Expansion Act of 2007 Outdoors: 4 bike racks, plus one adjacent to Parcel 2	Prior the hearing the Applicant will supplement the PUD plans with drawings showing more detail on the location of bike spaces, including tabulations per parcel. The Applicant is proposing secure, enclosed parking for employees in the first level of the garage with at least 200 spaces, and oudoor racks with at least 20 spaces. The Applicant also plans to include shower facilites for employee use with at least 4 showers and 50 lockers provided. In addition, if the health care facilities employee vehicular valet parking, this report recommends they also allow for bicycle valet parking.
1	Retail	15,000	1 space		
Parcel 2 - TBD at Stage 2 PUD Process					
Parcel 3 - TBD at Stage 2 PUD Process					
Parcel 4					
4	Residential	278	93 spaces	In garage: At minimum, equal to or greater than required by the Zoning Regulations and the DC Zoning Regulations and Bicycle Commuter and Parking Expansion Act of 2007 Outdoors: 2 bike racks	Prior the hearing the Applicant will supplement the PUD plans with drawings showing more detail on the location of bike spaces, including tabulations per parcel. The Applicant is proposing secure, enclosed parking for resiiddents and employees in the garage with at least 101 spaces, and outdoor racks with at least 20 spaces. The Applicant also plans to include shower facilites for employee use with at least 2 showers and 20 lockers provided.
4	Retail	52,920	8 spaces		
Parcel 5					
5	Residential	146	49 spaces	In garages: Dependant on use by residents Outdoors: 2 bike racks on northern side of South Service Court	Practically, row house residents will park bicycles in their individual garages, thus meeting both practical and zoning requirements. Visitors to the row houses can use the racks throughout the PUD. This report recommends the proejct design team investigate if they can add some U-racks between trees onEvarts Street to help supplement visitor parking supply.
Parcel 6					
6	Community Center	17,500	1 space	Outdoors: 2 bike racks on northern side of South Service Court	Multiple racks are available to community center and park patrons. These racks will include a minimum of 24 spaces. Since the racks are located on the northern side of the park, this report recommends the project design team consider adding U-racks at the corners of Channing Street with First street and North Capitol Street.

SITE TRANSPORTATION DEMAND

This section outlines the transportation demand of the proposed McMillan PUD. It summarizes the projected trip generation of the site by mode, which forms the basis for the chapters that follow.

WEEKDAY TRIP GENERATION

Traditionally, weekday peak hour trip generation for a proposed PUD is calculated based on the methodology outlined in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 9th Edition. For the weekday trip generation, the methodology was supplemented to account for the urban nature of the site (the *Trip Generation Manual* provides data for non-urban, low transit use sites) and to generate trips for multiple modes.

Figure 12 and Figure 13 summarize the methodology used for the weekday trip generation. Trip generation was projected for the weekday morning and afternoon commuter peak hours only. Table 6 shows the total number of weekday peak hour trips generated by the McMillan PUD. Detailed trip generation information is contained in the Technical Attachments.

SATURDAY TRIP GENERATION

Traditionally, Saturday peak hour trip generation for a proposed PUD is calculated based on the methodology outlined in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 9th Edition. However, the *Trip Generation Manual* provides peak hour trip generation projections based on the peak hour of the generator only. The individual peak hours per land use were not used because they do not occur at the same time and would greatly overestimate the number of Saturday peak hour trips generated.

For the Saturday trip projection, the total number of Saturday trips were generated based on the methodology in the *Trip Generation Manual*. The daily trips were then distributed throughout the day to determine the combined Saturday peak hour of the site. Similar to the weekday peak hour trip generation, the methodology was supplemented to account for the urban nature of the site (the *Trip Generation Manual* provides data for non-urban, low transit use sites) and to generate trips for multiple modes.

Figure 14, Figure 15, and Figure 16 summarize the methodology used for the Saturday trip generation. Table 7 shows the total number of Saturday peak hour and daily trips generated by the McMillan PUD. Detailed trip generation information is contained in the Technical Attachments.

TRIP GENERATION COMPARISON

As stated previously, the ITE *Trip Generation Manual* projects trip generation for non-urban sites with low transit usage. The calculations employed for the McMillan PUD, based on the methodology outlined in the *Trip Generation Manual*, project the trip generation of the site, while accounting for the urban nature of the site and to generate trips for multiple modes.

Table 5 shows a comparison of the projected vehicular trip generation of the McMillan PUD versus the trip generation of a comparable site located in a suburban area. As shown in the table, the proposed McMillan PUD will generate approximately 35% less vehicular trips than a comparable site located in a suburban area.

Table 5: Trip Generation Comparison

Site	Time Period		
	AM Peak	*PM Peak*	*Saturday Peak*
Surburban Site (based on ITE trip generation)	2,971	3,231	1,432
McMillan Development (Urban Site)	1,895	2,061	897
Percent Difference	**36.2%**	**36.2%**	**37.4%**

Weekday Peak Hour Trip Generation

Step 1:

Base weekday transportation demand was calculated using ITE's *Trip Generation Manual*, 9th Edition. *Trip Generation* provides estimates of travel demand with little to no use of non-vehicular modes of travel and is presented in vehicular trips.

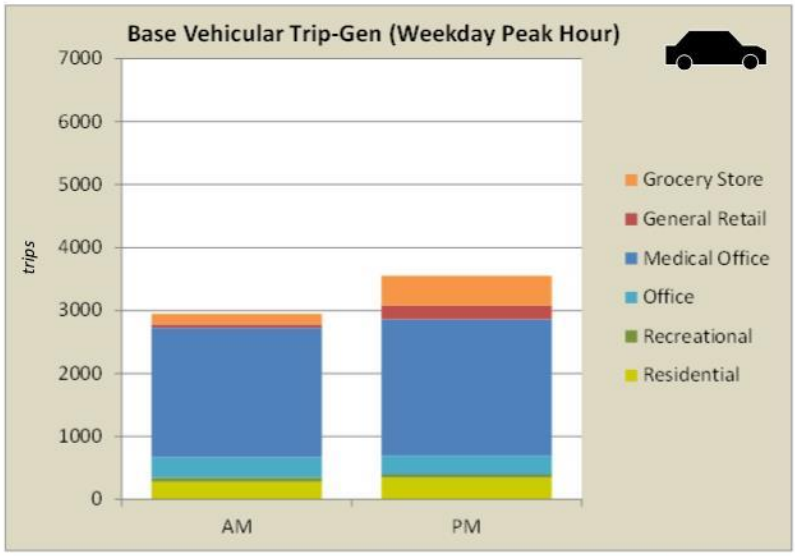
For the weekday AM and PM peak hours, *Trip Generation* provides data on the amount of traffic generated for each land use during the associated commuter peak hours.

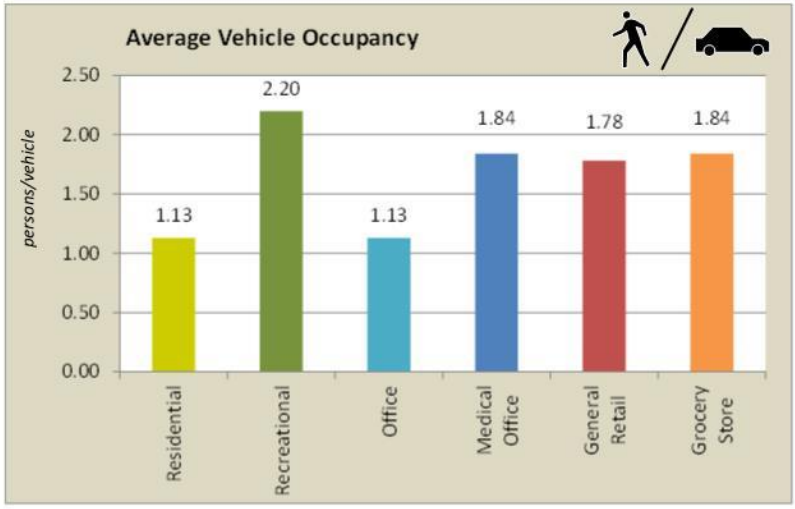
Step 2:

Before splitting the base vehicular trip generation into other modes of travel, the vehicle-trips were converted to person-trips. This calculation accounts for how, on average, more than one person occupies each car on the road (without this step, the amount of demand for non-auto modes would be underestimated). Different land uses have a different average occupancy rates per vehicle.

The average vehicle occupancy assumptions used in this analyses were obtained from the Federal Highway Administration's Sum*mary of Travel Trends: 2009 National Household Travel Survey*.

The vehicle-trips were multiplied by the average vehicle occupancy assumptions to determine the base person-trips generated by the project per land use.





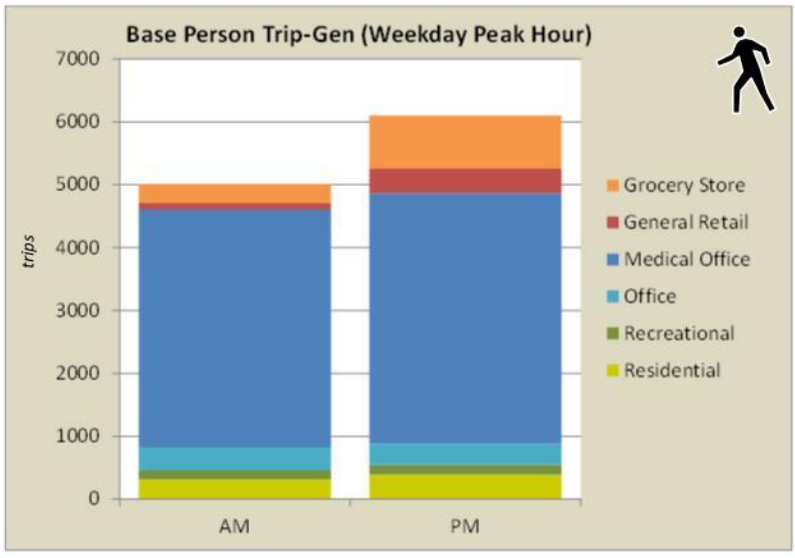


Figure 12: Weekday Trip Generation Summary, Page 1 of 2

Step 3:
Mode split assumptions for each land use were assembled using data from several sources:

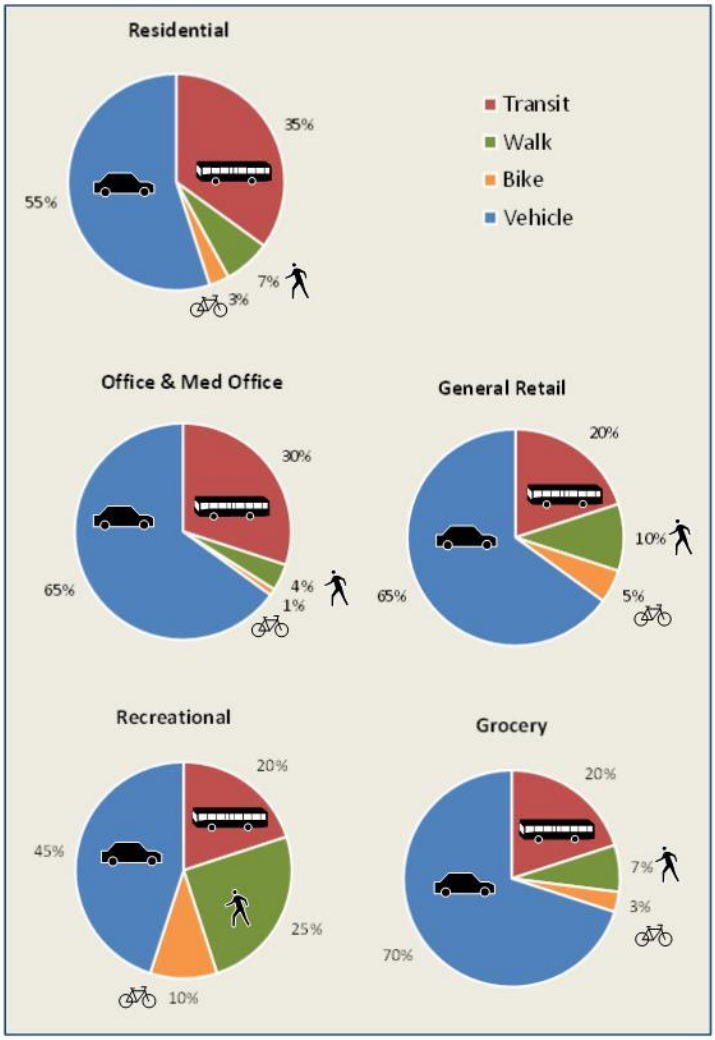
- WMATA's *2005 Development-Related Ridership Survey*
- The US Census Bureau's *2007-2011 American Community Survey*
- MWCOG's *2010 State of the Commute Survey Report*

The mode split assumptions were double-checked against the parking supply provided per mode to ensure that it's feasible to reach the trip generation estimates calculated using the source materials.

In addition, pass-by assumptions were made for the retail land uses during the weekday PM peak. Pass-by trips represent vehicular trips that were already on the roadway for another purpose (i.e. office commuters stopping by the grocery store on their way home).

Of note, no internal capture or synergy reductions were assumed. This is because the mode split surveys used inherently account for internal capture/synergy within the 'walking/pedestrian' answer on the survey.

Step 4:
The mode split assumptions were used to determine the number of person-trips by mode. For the vehicular trips, the person-trips were divided by the average vehicle occupancy assumptions (shown in Step 2) to convert them back to vehicle-trips.



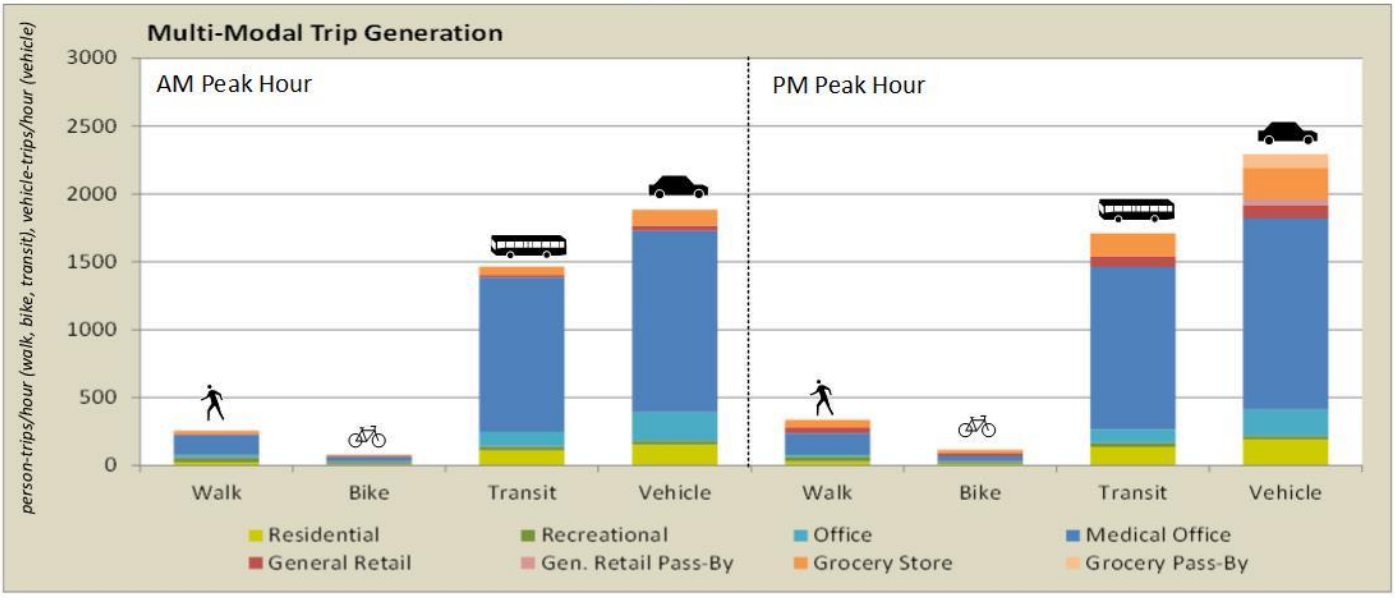


Figure 13: Weekday Trip Generation Summary, Page 2 of 2

Table 6: Weekday Peak Hour Trip Generation

Parcel	Land Use	Size		Weekday Trip Generation					
				AM Peak Hour			*PM Peak Hour*		
				In	Out	Total	In	Out	Total
Transit Trips									
1	Medical Office	*860,000*	*Square Feet*	896	238	1,134	312	804	1,116
	Ground Floor Retail	*15,000*	*Square Feet*	3	2	5	10	10	20
2	Multi-Family Residential	*258*	*Dwelling Units*	10	41	51	41	22	63
	Ground Floor Retail	*23,250*	*Square Feet*	5	3	8	15	16	31
3	General Office	*170,000*	*Square Feet*	88	11	99	16	75	91
	Ground Floor Retail	*3,000*	*Square Feet*	1	0	1	2	2	4
4	Multi-Family Residential	*278*	*Dwelling Units*	11	44	55	44	24	68
	Grocery Store	*52,920*	*Square Feet*	41	25	66	94	91	185
5	Townhomes	*146*	*Dwelling Units*	5	23	28	22	11	33
6	Community Center	*17,500*	*Square Feet*	18	10	28	16	15	31
	Public Park	*6.2*	*Acres*						
Total New Transit Trips				**1,078**	**397**	**1,475**	**572**	**1,070**	**1,642**
Walk Trips									
1	Medical Office	*860,000*	*Square Feet*	119	32	151	42	107	149
	Ground Floor Retail	*15,000*	*Square Feet*	2	1	3	5	5	10
2	Multi-Family Residential	*258*	*Dwelling Units*	2	8	10	8	5	13
	Ground Floor Retail	*23,250*	*Square Feet*	3	1	4	7	8	15
3	General Office	*170,000*	*Square Feet*	12	1	13	2	10	12
	Ground Floor Retail	*3,000*	*Square Feet*	0	1	1	1	1	2
4	Multi-Family Residential	*278*	*Dwelling Units*	2	9	11	9	5	14
	Grocery Store	*52,920*	*Square Feet*	14	9	23	33	32	65
5	Townhomes	*146*	*Dwelling Units*	1	5	6	4	3	7
6	Community Center	*17,500*	*Square Feet*	22	13	35	20	19	39
	Public Park	*6.2*	*Acres*						
Total New Walking Trips				**177**	**80**	**257**	**131**	**195**	**326**
Bicycle Trips									
1	Medical Office	*860,000*	*Square Feet*	30	8	38	10	27	37
	Ground Floor Retail	*15,000*	*Square Feet*	1	0	1	2	3	5
2	Multi-Family Residential	*258*	*Dwelling Units*	1	3	4	4	1	5
	Ground Floor Retail	*23,250*	*Square Feet*	1	1	2	4	4	8
3	General Office	*170,000*	*Square Feet*	3	0	3	1	2	3
	Ground Floor Retail	*3,000*	*Square Feet*	0	0	0	0	1	1
4	Multi-Family Residential	*278*	*Dwelling Units*	1	4	5	4	2	6
	Grocery Store	*52,920*	*Square Feet*	6	4	10	14	14	28
5	Townhomes	*146*	*Dwelling Units*	0	2	2	2	1	3
6	Community Center	*17,500*	*Square Feet*	9	5	14	8	7	15
	Public Park	*6.2*	*Acres*						
Total New Bicycle Trips				**52**	**27**	**79**	**49**	**62**	**111**
Vehicle Trips									
1	Medical Office	*860,000*	*Square Feet*	1,055	281	1,336	368	946	1,314
	Ground Floor Retail	*15,000*	*Square Feet*	6	3	9	12	14	26
	Retail Pass-By Trips	*30*	*%*	--	--	--	*5*	*6*	*11*
2	Multi-Family Residential	*258*	*Dwelling Units*	14	59	73	58	30	88
	Ground Floor Retail	*23,250*	*Square Feet*	9	5	14	18	21	39
	Retail Pass-By Trips	*30*	*%*	--	--	--	*8*	*9*	*17*
3	General Office	*170,000*	*Square Feet*	167	24	191	29	146	175
	Ground Floor Retail	*3,000*	*Square Feet*	2	0	2	2	3	5
	Retail Pass-By Trips	*30*	*%*	--	--	--	*1*	*1*	*2*
4	Multi-Family Residential	*278*	*Dwelling Units*	16	61	77	60	33	93
	Grocery Store	*52,920*	*Square Feet*	79	47	126	125	121	246
	Groceery Pass-By Trips	*30*	*%*	--	--	--	*54*	*51*	*105*
5	Townhomes	*146*	*Dwelling Units*	7	31	38	30	14	44
6	Community Center	*17,500*	*Square Feet*	18	11	29	17	14	31
	Public Park	*6.2*	*Acres*						
Total Pass-By Trips				*--*	*--*	*--*	*68*	*67*	*135*
Total New Vehicular Trips				**1,373**	**522**	**1,895**	**719**	**1,342**	**2,061**

Saturday Peak Hour Trip Generation

Step 1:

Base Saturday transportation demand was calculated using ITE's *Trip Generation Manual*, 9th Edition. *Trip Generation* provides estimates of travel demand with little to no use of non-vehicular modes of travel and is presented in vehicular trips.

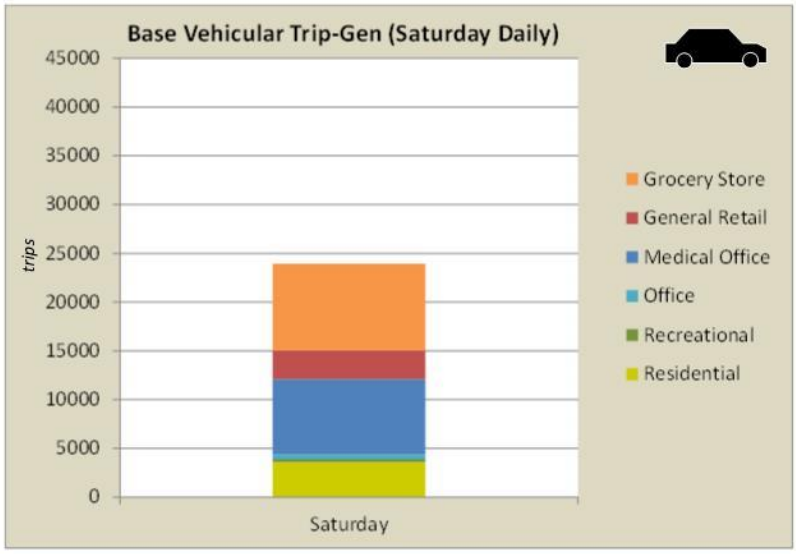
For Saturdays, ITE provides data for each land use during it's individual peak hour and for the entire day. For this analysis, the total daily trips were used to generate base demand. The individual peak hours per land use were not used since the peak hours do not occur at the same time and would greatly overestimate the number of peak hour Saturday trips generated. The combined peak hour of the entire site is calculated in Step 6.

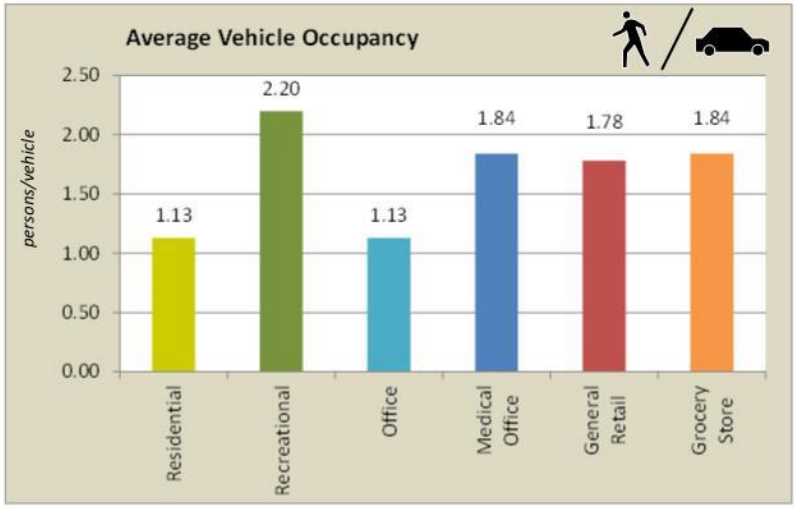
Step 2:

Before splitting the base vehicular trip generation into other modes of travel, the vehicle-trips were converted to person-trips. This calculation accounts for how, on average, more than one person occupies each car on the road (without this step, the amount of demand for non-auto modes would be underestimated). Different land uses have a different average occupancy rates per vehicle.

The average vehicle occupancy assumptions used in this analyses were obtained from the Federal Highway Administration's Sum*mary of Travel Trends: 2009 National Household Travel Survey*.

The vehicle-trips were multiplied by the average vehicle occupancy assumptions to determine the base person-trips generated by the project per land use.





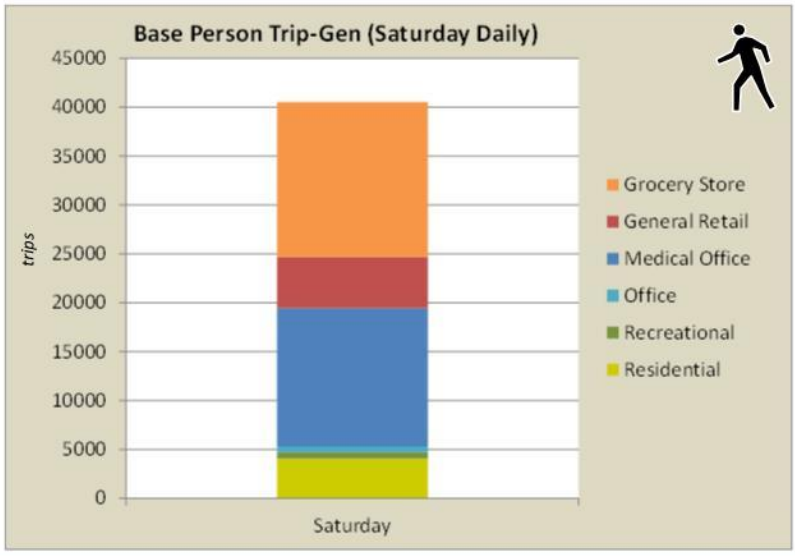


Figure 14: Saturday Trip Generation Summary, Page 1 of 3

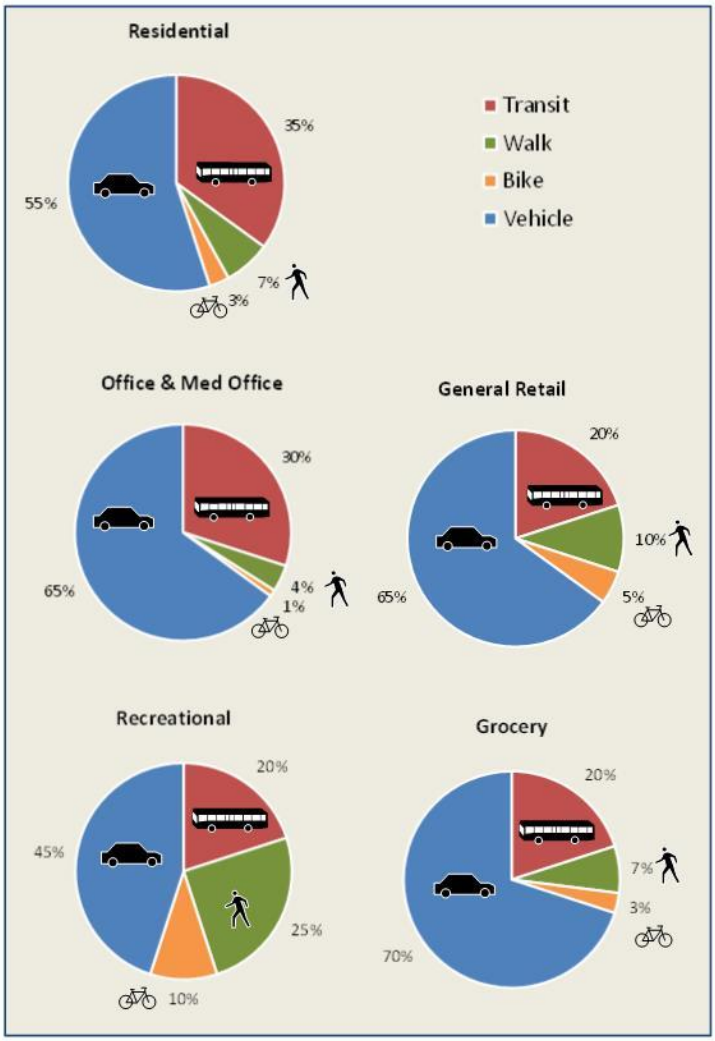
Step 3:
Mode split assumptions for each land use were assembled using data from several sources:

- WMATA's *2005 Development-Related Ridership Survey*
- The US Census Bureau's *2007-2011 American Community Survey*
- MWCOG's *2010 State of the Commute Survey Report*

The mode split assumptions were double-checked against the parking supply provided per mode to ensure that it's feasible to reach the trip generation estimates calculated using the source materials.

In addition, pass-by assumptions were made for the retail land uses. Pass-by trips represent vehicular trips that were already on the roadway for another purpose (i.e. office commuters stopping by the grocery store on their way home).

Of note, no internal capture or synergy reductions were assumed. This is because the mode split surveys used inherently account for internal capture/synergy within the 'walking/pedestrian' answer on the survey.



Step 4:
The mode split assumptions were used to determine the number of person-trips by mode. For the vehicular trips, the person-trips were divided by the average vehicle occupancy assumptions (shown in Step 2) to convert them back to vehicle-trips.

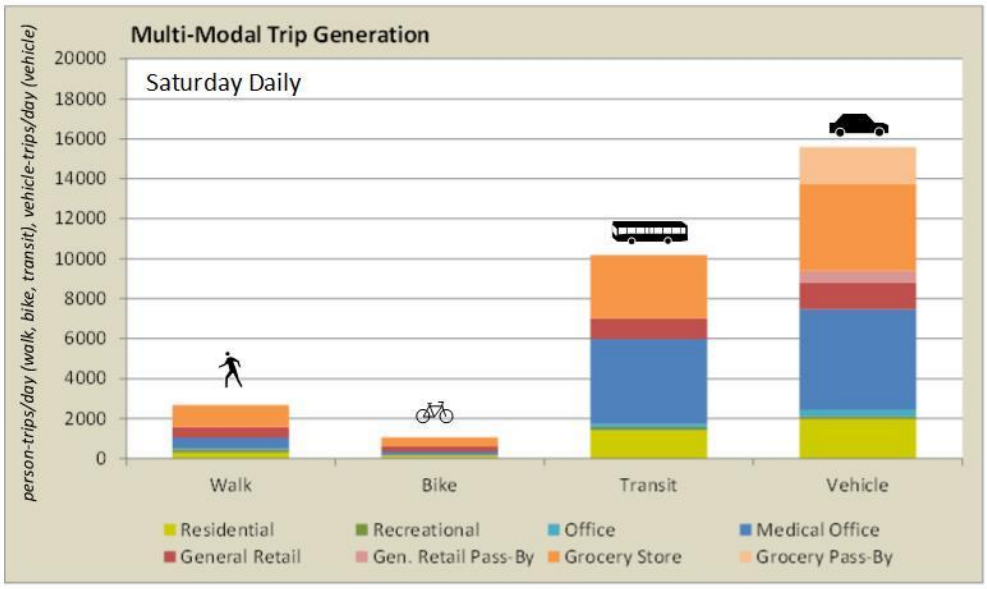
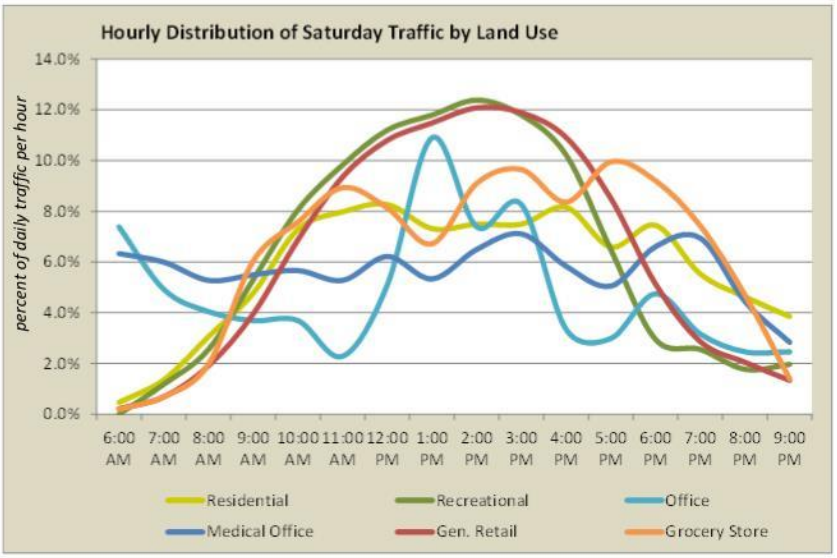


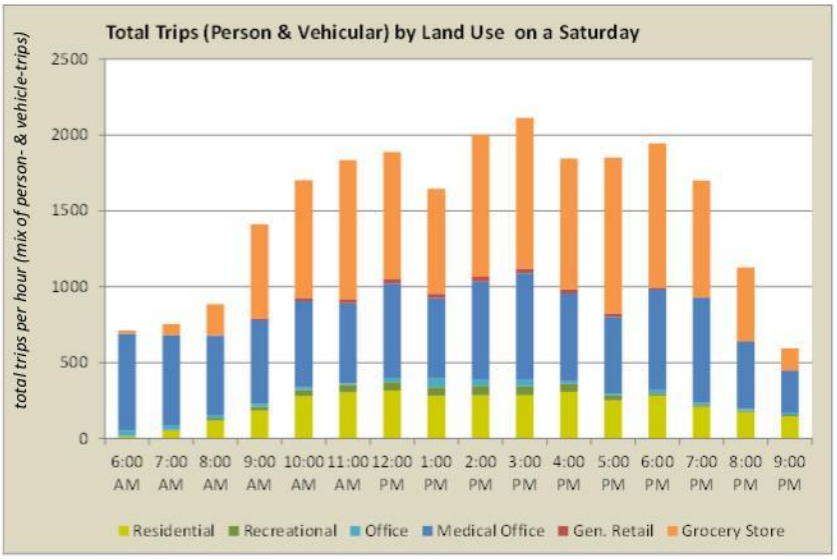
Figure 15: Saturday Trip Generation Summary, Page 2 of 3

Step 5:
The Saturday hourly trip distribution assumptions were compiled using (1) daily Saturday traffic volume counts on roadways leading in and out of developments of similar land uses from the libraries of Gorove/Slade and (2) hourly distribution data from the ITE *Trip Generation Manual*, 9th Edition.



Step 6:
To determine the hourly travel demand (inbound and outbound), the daily trips were distributed over the course of a day between the hours of 6:00 AM and 9:00 PM.

The daily trips were distributed by land use, and the total trips were summed to determine the highest Saturday hourly demand, which was 3:00 PM to 4:00 PM.



Step 7:
The Saturday peak hour trips were broken down by mode and summarized.

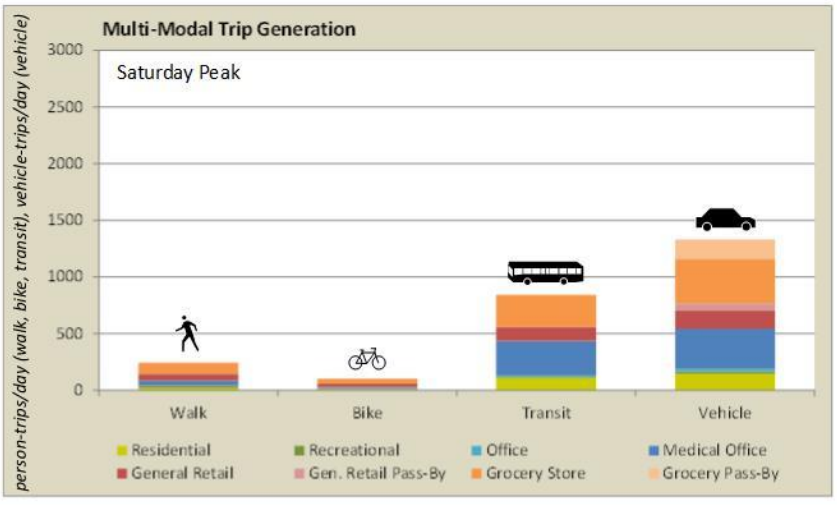


Figure 16: Saturday Trip Generation Summary, Page 3 of 3

Table 7: Saturday Trip Generation

Parcel	Land Use	Size	Saturday Trip Generation			
			Peak Hour			Total
			In	Out	Total	
		Transit Trips				
1	Medical Office	*860,000 Square Feet*	108	193	301	4,254
	Ground Floor Retail	*15,000 Square Feet*	14	16	30	268
2	Multi-Family Residential	*258 Dwelling Units*	28	24	52	700
	Ground Floor Retail	*23,250 Square Feet*	22	26	48	414
3	General Office	*170,000 Square Feet*	5	7	12	144
	Ground Floor Retail	*3,000 Square Feet*	3	4	7	54
4	Multi-Family Residential	*278 Dwelling Units*	31	25	57	763
	Grocery Store	*52,920 Square Feet*	78	71	149	1,640
5	Townhomes	*146 Dwelling Units*	17	12	28	379
6	Community Center	*17,500 Square Feet*	7	8	15	134
	Public Park	*6.2 Acres*				
Total New Transit Trips			**313**	**386**	**699**	**8,750**
		Walk Trips				
1	Medical Office	*860,000 Square Feet*	14	26	40	568
	Ground Floor Retail	*15,000 Square Feet*	8	8	16	134
2	Multi-Family Residential	*258 Dwelling Units*	6	4	10	140
	Ground Floor Retail	*23,250 Square Feet*	12	12	24	208
3	General Office	*170,000 Square Feet*	1	1	2	20
	Ground Floor Retail	*3,000 Square Feet*	0	3	3	26
4	Multi-Family Residential	*278 Dwelling Units*	6	5	11	153
	Grocery Store	*52,920 Square Feet*	27	25	52	574
5	Townhomes	*146 Dwelling Units*	3	3	6	77
6	Community Center	*17,500 Square Feet*	9	11	20	168
	Public Park	*6.2 Acres*				
Total New Walking Trips			**86**	**98**	**184**	**2,068**
		Bicycle Trips				
1	Medical Office	*860,000 Square Feet*	4	6	10	142
	Ground Floor Retail	*15,000 Square Feet*	4	4	8	66
2	Multi-Family Residential	*258 Dwelling Units*	2	2	4	60
	Ground Floor Retail	*23,250 Square Feet*	6	6	12	104
3	General Office	*170,000 Square Feet*	0	0	0	6
	Ground Floor Retail	*3,000 Square Feet*	0	2	2	14
4	Multi-Family Residential	*278 Dwelling Units*	3	2	5	65
	Grocery Store	*52,920 Square Feet*	12	11	23	246
5	Townhomes	*146 Dwelling Units*	2	1	3	33
6	Community Center	*17,500 Square Feet*	4	4	8	68
	Public Park	*6.2 Acres*				
Total New Bicycle Trips			**37**	**38**	**78**	**804**
		Vehicle Trips				
1	Medical Office	*860,000 Square Feet*	127	227	354	5,010
	Ground Floor Retail	*15,000 Square Feet*	18	22	40	342
	Retail Pass-By Trips	*30 %*	*8*	*9*	*17*	*146*
2	Multi-Family Residential	*258 Dwelling Units*	40	32	72	974
	Ground Floor Retail	*23,250 Square Feet*	28	34	62	528
	Retail Pass-By Trips	*30 %*	*12*	*14*	*26*	*227*
3	General Office	*170,000 Square Feet*	10	12	22	272
	Ground Floor Retail	*3,000 Square Feet*	4	3	7	68
	Retail Pass-By Trips	*30 %*	*2*	*2*	*4*	*29*
4	Multi-Family Residential	*278 Dwelling Units*	44	35	79	1,060
	Grocery Store	*52,920 Square Feet*	107	98	205	2,256
	Groceery Pass-By Trips	*30 %*	*46*	*42*	*88*	*968*
5	Townhomes	*146 Dwelling Units*	22	18	40	526
6	Community Center	*17,500 Square Feet*	7	9	16	136
	Public Park	*6.2 Acres*				
Total Pass-By Trips			***68***	***67***	***135***	***1,370***
Total New Vehicular Trips			**407**	**490**	**897**	**11,172**

ROADWAY AND VEHICULAR IMPACTS

This section provides a summary of the existing roadway facilities, as well as an analysis of the existing and future roadway capacity in the study area. This section also analyses the vehicular impacts of the proposed PUD and makes recommendations for improvements and mitigation measures to minimize the project impacts.

The purpose of this analysis is to:

- Determine the existing capacity of the study area roadways;
- Determine the overall impact of the McMillan PUD on the study area roadways;
- Discuss potential improvements and mitigation measures to accommodate the additional vehicular trips; and
- Evaluate the proposed roadway network (on-site and bordering the site) to determine if adequate capacity is provided in the future.

This analysis was accomplished by determining the traffic volumes and roadway capacity for the following scenarios:

- 2013 Existing Conditions
- 2025 Background Conditions (without the McMillan PUD)
- 2025 Total Future Conditions (with the McMillan PUD)

The capacity analysis focuses on the morning and afternoon commuter peak hours, as well as the Saturday afternoon peak hour, as determined by the existing traffic volumes in the study area.

ROADWAYS

As outlined previously, the McMillan PUD has ample access to many Interstate and US highways, including I-395, I-695, I-295, US-50 (New York Avenue), US-1 (Rhode Island Avenue), and US-29 (Georgia Avenue), which all connect to the Capital Beltway (I-495) that surrounds Washington, DC and its inner suburbs. All of these roadways bring vehicular traffic within two miles of the site, at which point major arterials can be used to access the site directly. Overall the site is well served by regional roadways, making it convenient to travel between the site and destinations within the District, Virginia, and Maryland.

The site is served by several primary and minor arterials, including North Capitol Street, Irving Street NE/NW, Michigan Avenue NE/NW, and Franklin Street NE. In addition, there is a network of connector and local roadways that provide access to the site, particularly in the neighborhoods south and west of the site. The immediate study area of the proposed PUD has several key local access roads, including First Street NW and Bryant Street NW. Figure 17 shows the roadway network hierarchy for the roadways in the vicinity of the proposed PUD.

STUDY AREA

Typically, the study area includes intersections where site impacts are most likely to occur, including:

- All site access points;
- Adjacent streets/intersections at the boundary of the site; and
- The nearest intersection(s) with an arterial street.

Additional intersections may be appropriate given the projected trip generation of the project. Traditionally, intersections where the site is projected to generate over 10% of future traffic are included.

In order to determine the study area intersections, Gorove/Slade assembled a “Driveshed Analysis”, which shows the commuter and retail drivesheds and approach distributions. For office and residential trips (commute-trips), a 30- to 40-minute driveshed was established around the site, based on the average commute time for the census tracts within the driveshed. The driveshed was then split into different sections based on what roadways would most likely be used to travel to and from the site. The percentage of office trips assigned to each roadway was calculated by summing the labor force within each census tract assigned to that roadway for office uses. For the residential uses, the amount of trips on each roadway was based on the total number of jobs in zip codes within the drivesheds. For the retail trips, the drivesheds were based on a shorter drive time due to nearby full-service grocers and other competing retail centers. The trip distribution was based on the number of dwelling units per Census tract contained within each driveshed. Figure 18 and Figure 19 show a summary of the Driveshed Analysis.

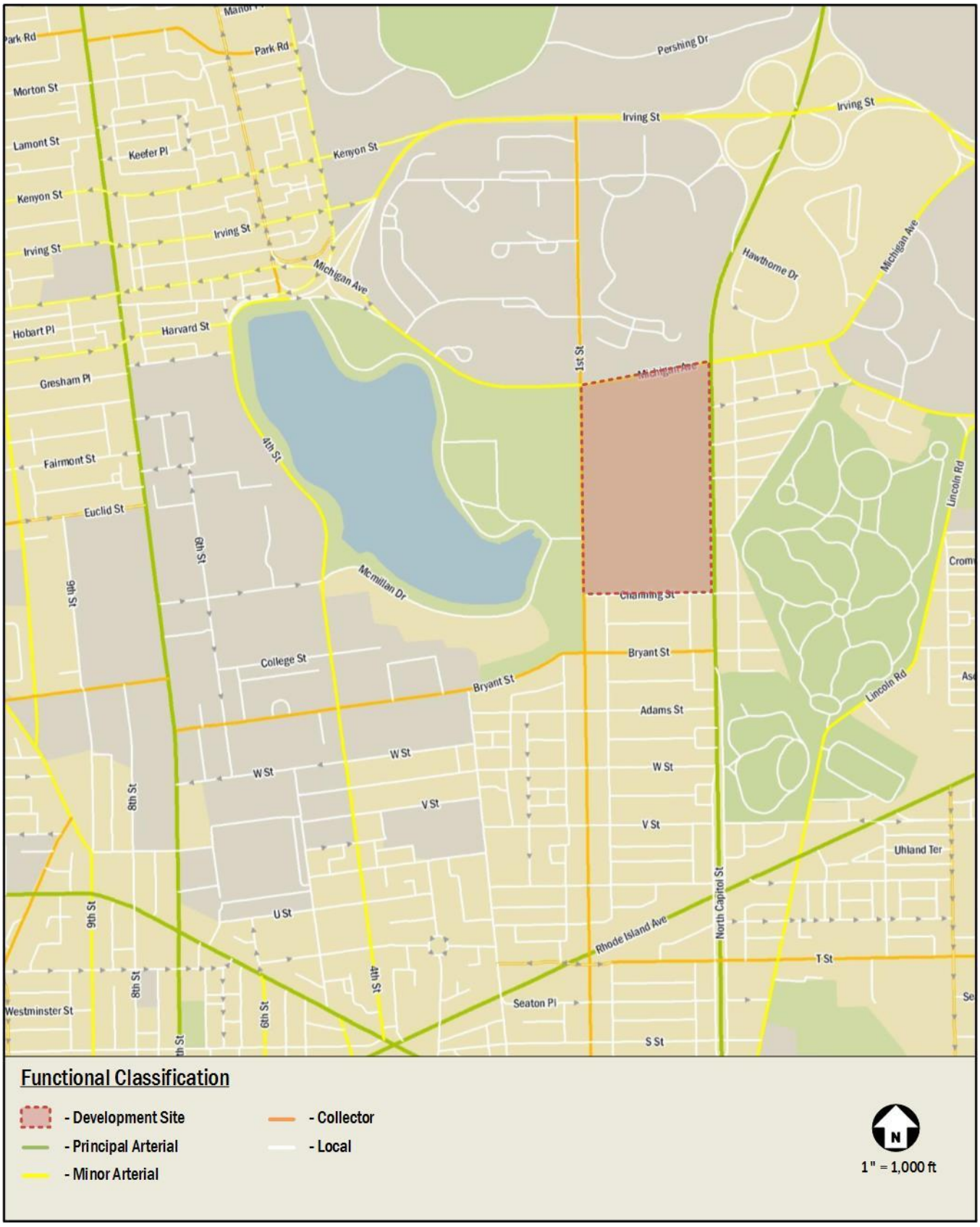


Figure 17: Existing Roadway Functional Classification

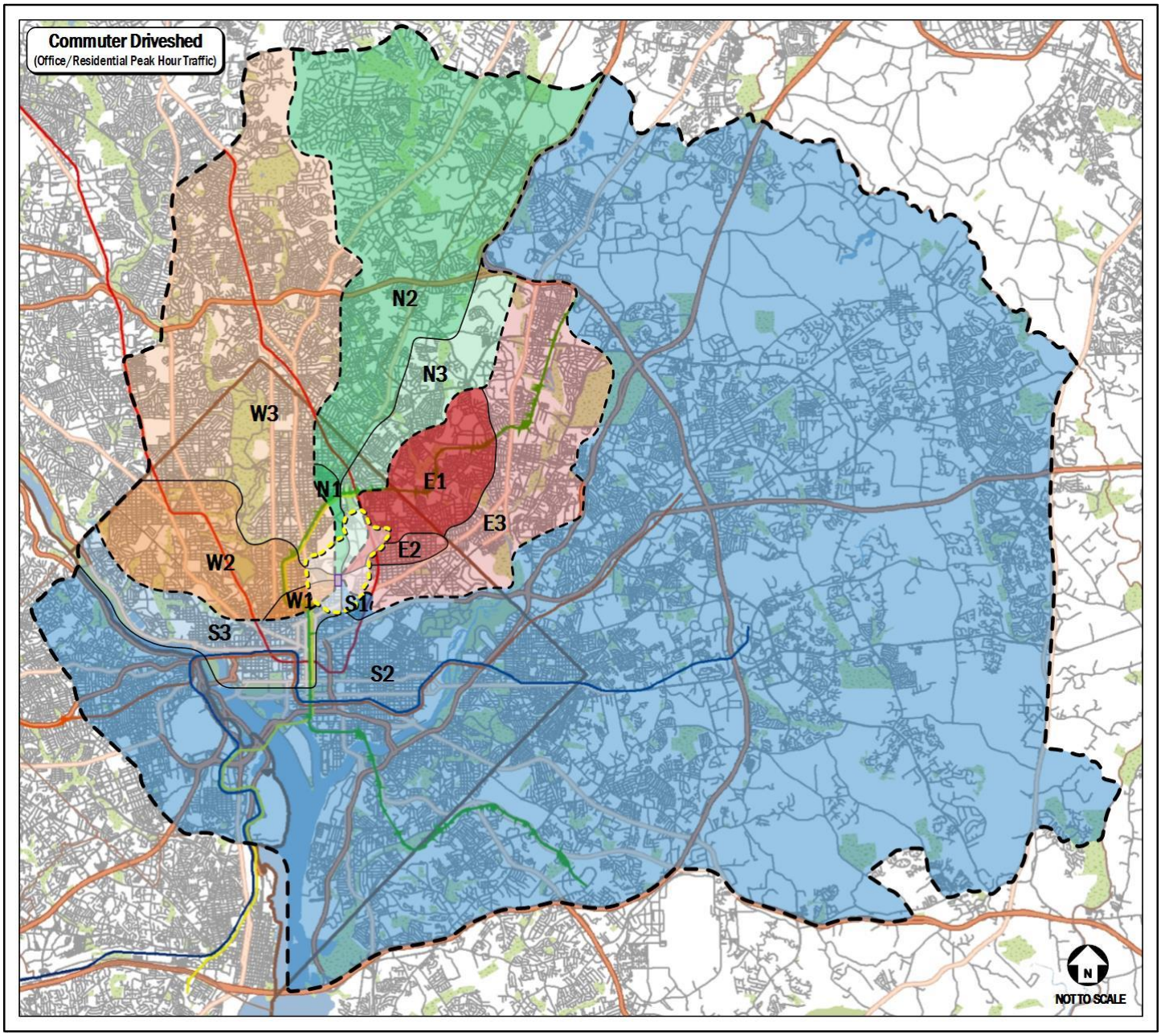
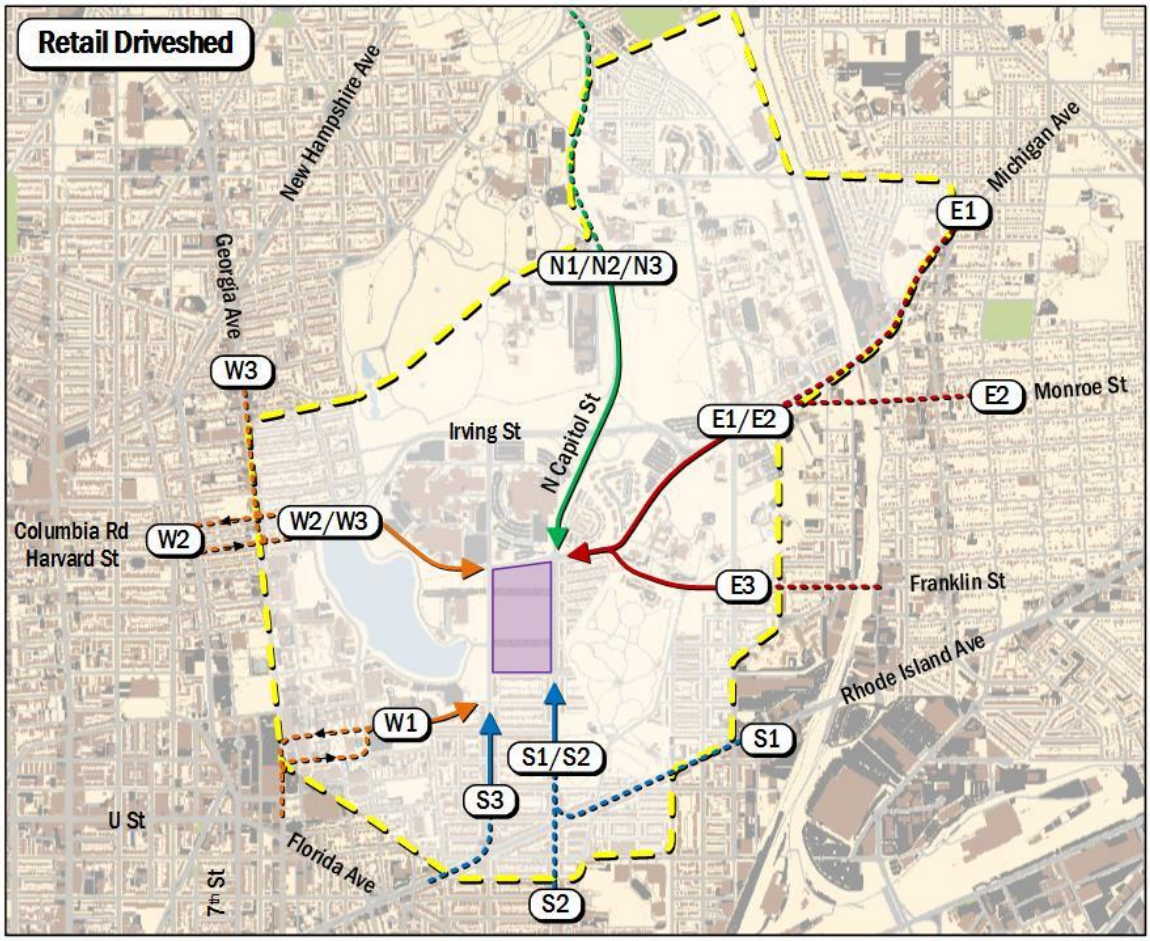


Figure 18: Driveshed Analysis for Site-Generated Trips (1 of 2)



McMillan Site Driveshed and Approach Distributions

McMillian Site

Commuter Driveshed (30-40 min, depending on the average commute time of the outlying census tract)

Retail Driveshed (area of capture of McMillan determined by nearby full-service grocers and other retail centers)

Approach Distribution (based on Census data for populations within each driveshed: OFFICE - employment status of census tract residents, RESIDENTIAL - full time jobs available per zip code, RETAIL - dwelling units in the originating census tract)

			Direction of Approach		
			Commuter Traffic		Retail
Catchment Area		Approach	*Office*	*Residential*	Traffic
N1	Missouri Ave	via N Capitol St	1%	0%	13%
N2	Blair Rd	via N Capitol St	10%	4%	
N3	Riggs Rd	via N Capitol St	4%	1%	
E1	Michigan Ave	via Michigan Ave	3%	1%	18%
E2	Monroe St	via Michigan Ave	0%	0%	
E3	Franklin St	via Michigan Ave	5%	2%	20%
S1	Brentwood	via N Capitol St	0%	1%	13%
S2	Capitol	via N Capitol St	48%	44%	
S3	Shaw	via N Capitol St	5%	27%	14%
W1	U Street	via Bryant St	2%	4%	7%
W2	Georgia Ave	via Michigan Ave	8%	6%	14%
W3	Columbia Heights	via Michigan Ave	13%	9%	

Figure 19: Driveshed Analysis for Site-Generated Trips (2 of 2)

Based on the Driveshed Analysis, the following intersections were selected for the weekday morning and afternoon peak hour analyses, as shown in Figure 20:

1. First Street NW & Irving Street NW
2. First Street NW & Michigan Avenue NW
3. North Capitol Street & Michigan Avenue NE/NW
4. Michigan Avenue NE & Franklin Street NE
5. North Capitol Street & Girard Street NE
6. North Capitol Street & Franklin Street NE
7. North Capitol Street & Evarts Street NE
8. First Street NW & McMillan Street NW
9. North Capitol Street & Douglas Street NE
10. First Street NW & Channing Street NW
11. North Capitol Street & Channing Street NE/NW
12. First Street NW & Bryant Street NW
13. First Street NW & Rhode Island Avenue NW
14. North Capitol Street & Rhode Island Avenue NE/NW
15. Georgia Avenue NW & Columbia Road NW
16. Georgia Avenue NW & Harvard Street NW
17. Georgia Avenue NW & Bryant Street NW
18. Georgia Avenue NW & W Street NW
19. All site access points

In addition, the following intersections were selected for the Saturday afternoon peak hour analysis (based on the retail driveshed), as shown in Figure 21:

1. First Street NW & Michigan Avenue NW
2. North Capitol Street & Michigan Avenue NE/NW
3. Michigan Avenue NE & Franklin Street NE
4. North Capitol Street & Girard Street NE
5. North Capitol Street & Franklin Street NE
6. North Capitol Street & Evarts Street NE
7. First Street NW & McMillan Street NW
8. North Capitol Street & Douglas Street NE
9. First Street NW & Channing Street NW
10. North Capitol Street & Channing Street NE/NW
11. First Street NW & Bryant Street NW
12. All site access points

Capacity Analysis

The following section outlines the capacity analyses performed for the McMillan PUD. This includes a review of the traffic volume assumptions, geometry and operations assumptions, analysis methodology, and analysis results, as summarized in Table 8.

Traffic Volume Assumptions

The following section reviews the traffic volume assumptions and methodologies used in the roadway capacity analyses, summarized in Table 8. A summary of the traffic volumes is shown on Figure 23 and Figure 24 for the morning peak hour, Figure 25 and Figure 26 for the afternoon peak hour, and Figure 27 for the Saturday peak hour. Detailed traffic volume graphics are included in the Technical Attachments.

Existing Conditions

The overall purpose of this study is to determine the impact the proposed McMillan PUD will have on the transportation system in the study area. The existing conditions in and around the site are characterized in order to provide a foundation for assessing the transportation implications of the proposed PUD. This is determined by examining the peak traffic hours, which are directly associated with the peaking characteristics of the site and the adjacent transportation system. These peaking characteristics are found through analysis of existing count data.

Existing traffic counts were collected by Gorove/Slade at the weekday study intersections between the hours of 6:30 AM and 9:30 AM for the morning peak period and between 4:00 PM and 7:00 PM for the afternoon peak period. Additional counts were obtained from the WASA Clean Rivers Project for several study area intersections. The results of the traffic counts are included in the Technical Attachments.

The morning and afternoon peak hours for the system of intersections being studied occurred from 7:45 AM to 8:45 AM and from 4:45 PM to 5:45 PM, respectively. However, for this analysis, the corridor peak hours along North Capitol Street (7:30 AM to 8:30 AM and 4:45 PM to 5:45 PM) were used. For other intersections in the study area, the individual intersections peaks were used to provide a conservative analysis.

In addition to the weekday morning and afternoon peak hours, this report includes an analysis of the Saturday afternoon peak hour. Traffic counts were collected by Gorove/Slade at the Saturday study intersections between the hours of 4:00 PM and 7:00 PM.

The Saturday peak hour of the system of intersections being studied occurred from 4:00 PM to 5:00 PM. However, in order to be conservative, the analysis focuses on the individual intersection peaks at the study area intersections.

Figure 20: Study Intersections for Weekday AM/PM Peak Period Analysis

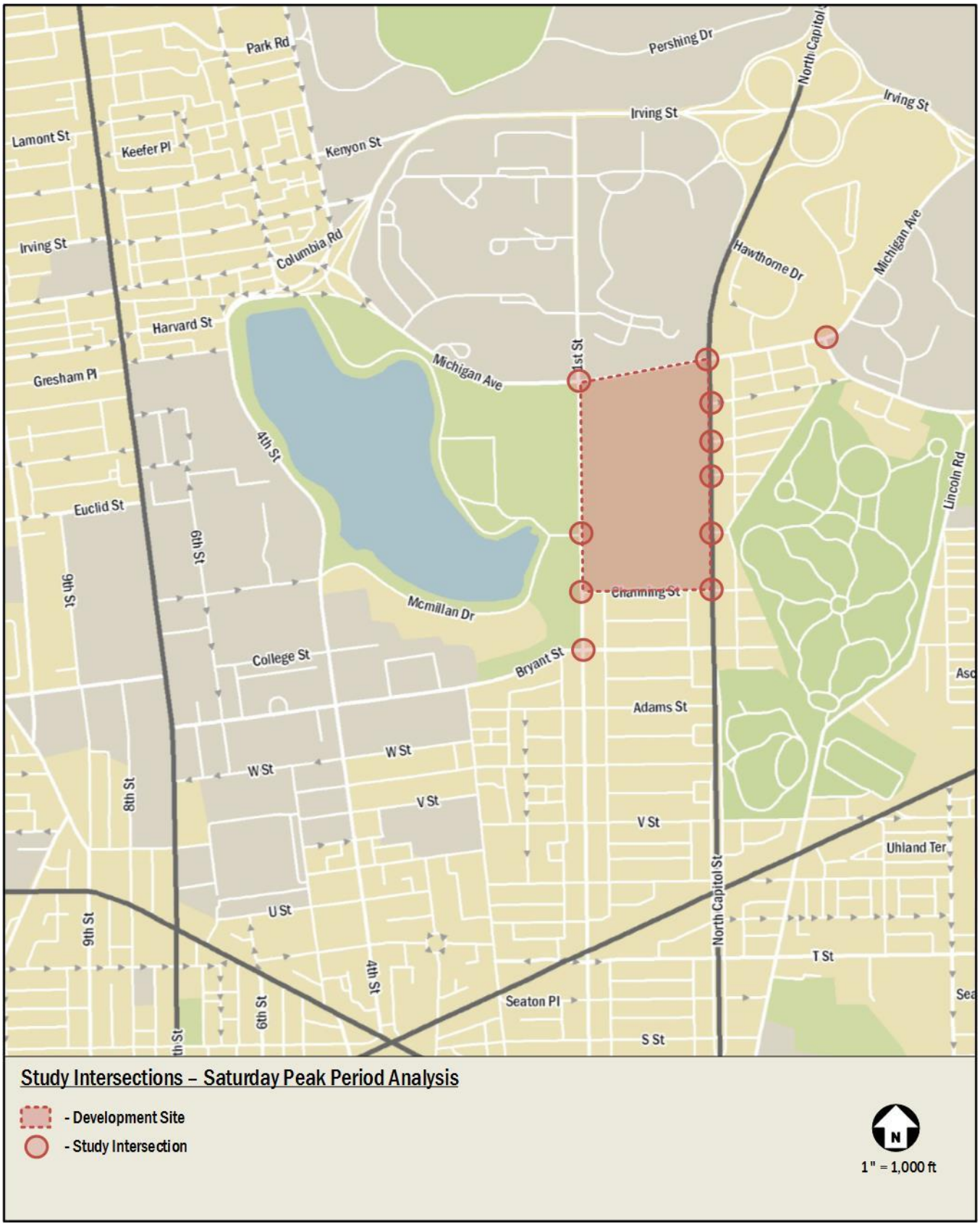


Figure 21: Study Intersections for Weekday AM/PM Peak Period Analysis

Table 8: Summary of Analysis Assumptions

Existing Conditions
▪ Dates of data collection: ▫ Wednesday, April 24, 2013 ▫ Thursday, April 25, 2013 ▫ Saturday, April 27, 2013 ▫ Saturday, May 4, 2013
▪ Additional data obtained from WASA Clean Rivers Project ▫ Wednesday, February 15, 2012 ▫ Thursday, February 23, 2012 ▫ Wednesday, January 23, 2013 ▫ Thursday, January 24, 2013 ▫ Tuesday, January 29, 2013 ▫ Wednesday, Janauary 30, 2013 ▫ Tuesday, February 5, 2013
▪ Weekday peak hour counts taken from 6:30 - 9:30 AM and from 4:00 - 7:00 PM ▫ Weekday system peak: 7:45 - 8:45 AM, 4:45 - 5:45 PM ▫ Weekday North Capitol Street corridor peak: 7:30 - 8:30 AM, 4:45 - 5:45 PM ▫ Individual intersection peaks used at all other intersections
▪ Saturday peak hour counts taken from 4:00 - 7:00 PM ▫ Saturday system peak: 4:00 - 5:00 PM ▫ Individual intersection peaks used at all intersections
▪ Traffic volume graphics and raw count data included in Techinical Attachments
▪ Geometries and lane configuration based on existing conditions
▪ Signal timings/phasings/offsets provided by DDOT
Future Background Conditions (2025)
▪ Background developments: ▫ VA Medical Center (VAMC) Master Plan ▫ Armed Forces Retirement Home (AFRH) - Zone A ▫ Howard Univeristy Campus Master Plan (HUCMP)
▪ Vehicular Trips Added: ▫ AM Peak Hour: 2,189 inbound and 1,136 outbound ▫ PM Peak Hour: 1,675 inbound and 2,622 outbound ▫ Saturday Peak Hour: 955 inbound and 1,019 outbound
▪ Background growth percentage: ▫ Minimum "COG growth" calculated based on traffic volume projections for 2013 and 2040 obtained from MWCOG ▫ "Base future" traffic volumes projected (including background developments and McMillian PUD) and compared to COG growth ▫ "Inherent growth" rate computed for any roadways where the minimum COG growth not met, to account for other traffic ▫ AM Peak Hour: 1%/year applied to Georgia Ave NB/SB, 1 %/year applied to Rhode Island Ave EB ▫ PM Peak Hour: 0.7%/year applied to Georgia Ave SB, 0.25%/year applied to Rhode Island Ave EB, 0.5%/year applied to Rhode Island Ave WB ▫ Saturday peak hour: No growth rates applied
▪ Roadway improvements due to background developments: ▫ Irving St NW & First St NW: construct SB leg as left-turn lane and shared through/right-turn lane, construct EB lef-turn lane, restripe NB left-turn lane as shared left-turn/through lane, optimize signal timings (constructed by AFRH) ▫ Construct new signalized intersection at AFRH West Gate along Irving St NW to include left- and right-turn lanes on SB approach and left-turn lane on EB approach (constructed by AFRH) ▫ Construct new right-in/right-out, unsignalized intersection at AFRH East Gate along Irving St NW to include right-turn lane on SB approach (constructed by AFRH) ▫ Bryant St NW & Georgia Ave NW: construct EB leg as shared left-turn/through/right-turn lane (constructed by HUCMP) ▫ W St NW & Georgia Ave NW: construct EB leg as shared left-turn/through/right-turn lane (constructed by HUCMP)
Total Future Conditions (2025)
▪ Site trip generation and mode split assumptions detailed in "Site Transportation Demand" section
▪ Vehicular Trips Added: ▫ AM Peak Hour: 1,895 trips (1,373 inbound and 522 outbound) ▫ PM Peak Hour: 2,061 trips (719 inbound and 1,342 outbound) and 135 pass-by trips (68 inbound and 67 outbound) ▫ Saturday Peak Hour: 897 trips (407 inbound and 490 outbound) and 135 pass-by trips (68 inbound and 67 outbound)
▪ Trip distribution based on Driveshed Analysis
▪ Roadway improvements included in PUD: ▫ Michigan Ave NW & Half St NW: install traffic signal, construct WB left-turn lane ▫ Michigan Ave NE/NW & North Capitol St: extend EB left-turn lane ▫ North Service Ct & North Capitol St: install traffic signal ▫ Evarts St NW & North Capitol St: install traffic signal, construct NB left-turn lane ▫ Widen First St NW between Michigan Ave NW and the Parcel 1 employee driveway to extend NB left-turn lane

Future Background Conditions (without McMillan PUD)

The McMillan PUD is anticipated to be fully constructed in 2025. The traffic projections for the future background conditions consist of the traffic generated by background developments with planned completion by 2025 and the inherent growth on the roadway added to the existing traffic volumes.

As outlined previously, there are several background developments located in the vicinity of the site. However, only those studies that are located within the study area, are fully funded, and are planned to be completed by the study year (2025) are included in the future background scenario. Table 9 shows a review of the background developments. Additional details are contained in the Technical Attachments.

Based on these criteria, the following developments are included in capacity analysis:

- VAMC Master Plan;
- Armed Forces Retirement Home – Zone A; and
- Howard University Campus Master Plan.

For the VA Medical Center Master Plan (VAMC), new growth from the VAMC is incorporated based on the existing Master Plan and associated traffic study, as well as comments made by the VAMC staff. According to the VAMC staff, the hospital plans to expand employment from the current number of approximately 2,400 to 3,000 employees, and the amount of patient activity is expected to grow by approximately 20% over the next 10 years.

Therefore, the trip generation and assignment assumptions are based on those contained in the DC VAMC Master Plan *Transportation Management Program* assembled by AMT in April of 2010. The trip generation was calculated based on the methodology outlined in the ITE *Trip Generation Manual*, 9th Edition, with an alternate mode reduction of 25%, as outlined in the *Transportation Management Program*.

Table 10 shows the total number of trips generated by the VAMC development for the weekday morning and afternoon peak hours. The trip generation projections were also extrapolated to determine the Saturday peak hour trip generation, as shown in Table 11.

For the Armed Forces Retirement Home – Zone A (AFRH) development, traffic projections from the Master Plan and associated traffic study and transportation management program are incorporated in to the future background volumes. The Master Plan shows completion of Phases 1 through 4 by the year 2021, so it is assumed that these phases would be complete by the background study year of 2025.

Therefore, the trip generation and assignment assumptions are based on those contained in the AFRH Master Plan *Transportation Management Program* assembled by Michael Baker Jr., Inc. in July 2008.

Table 9: Review of Background Developments

Development	Expected Completion Date	Approved?	Origin or Destination in Study Area?	Included in Capacity Analysis?
The Catholic University of America Master Plan	2027 (full build out)	Yes	No	No
The Catholic University of America South Campus Redevelopment	2015 (from TIS)	Yes	No	No
VAMC Master Plan	2029 (full builld-out)	n/a	Yes	Yes
Armed Forces Retirement Home – Zone A	2022 (all phases)	n/a	Yes	Yes
Trinity University Campus Plan	2016	Yes	No	No
Michigan at Irving PUD	2016	Yes	No	No
Washington Hospital Center	2015 (TIS from 2000)	Yes, but expired	Yes	No
Howard University Campus Master Plan	2021	Yes	Yes	Yes

The trip generation calculations from the 2007 traffic study used the ITE *Trip Generation*, 6th Edition to estimate new vehicular trips without an alternate mode reduction. For this report, the trip generation was revised based on the methodology outlined in the ITE *Trip Generation Manual*, 9th Edition and to include an alternate mode reduction of 30%. The non-auto mode split of 30% is based on the goal set forth in the *Transportation Management Program*. The trip assignment and distribution assumptions are based on those assembled for the McMillan PUD, as shown previously in Figure 18.

Table 10 shows the total number of trips generated by the AFRH development during the morning and afternoon peak hours. The projections were also extrapolated to determine the Saturday peak hour trip generation based on the Saturday trip generation methodology outlined previously. The Saturday peak hour trips generated by the ARFH are shown in Table 11.

For the Howard University Campus Master Plan (HUCMP), new growth is incorporated based on the existing HUCMP and associated traffic study. The HUCMP projects growth of the university through the year 2021, so it is assumed that all of the traffic changes outlined in the study would be complete by the background study year of 2025.

Therefore, the trip generation and assignment assumptions are based on those contained in the HUCMP *Transportation Impact Study* assembled by Gorove/Slade in October 2011. The trip generation for the HUCMP includes traffic volume changes due to the removal and reconstruction of parking spaces throughout campus; the construction of the Howard Town Center, workforce housing, street-level retail along Georgia Avenue, and the Recreation Center; and minimal student population increases.

Table 10 shows the total number of trips generated by the HUCMP during the morning and afternoon peak hours. Of note, as the HUCMP development is located outside of the Saturday study area, it is not included in the Saturday peak hour analysis. Additional details are contained in the Technical Attachments.

Typically, a percent growth rate based on historic traffic growth is applied to the existing traffic volumes in order to account for other traffic increases, including inherent growth in the roadway network. However, for this report, the growth rate is based on traffic projections obtained from the Metropolitan Washington Council of Government (MWCOG).

The traffic volume data obtained from MWCOG included projections for the years 2013 and 2040 for roadway arterials near the site. The data was broken down by commuter peak hours and a total 24-hour count. The data included the following development forecasts:

- TAZ 168, which includes the McMillan site, forecasts a housing increase of over 2,400 dwelling units, and the adjacent TAZ 222 includes an employment increase of over 2,700 employees. It is likely that the employment increase was intended for the McMillan site since there are no development sites in TAZ 222.
- The forecasts for TAZ 224, which included the AFRH site, show a significant amount of employment and housing growth.
- The forecasts for TAZ 223, which includes the Washington Hospital Center and VA Medical Center sites, match the assumptions discussed previously of modest growth between the two.

Using this data, annual "COG growth" was calculated, as shown in Figure 22. The COG growth was computed for each of the major roadways in the study area (North Capitol Street, Irving Street, etc.). For the smaller roadways where no model data was provided, average east-west and north-south COG growth was computed using all model data provided.

However, because the COG growth includes both the background developments in the study area and the McMillan site itself, using these rates to compute the future traffic volumes would result in double-counting and greatly overestimate the future projections. Thus, the following steps were taken to determine if an "inherent growth" rate was necessary to account for other traffic increases incorporated in the COG projections but not in the background sources included in this analysis:

1. The COG growth was used to establish the minimum annual growth for each roadway. For the Saturday peak hour, the 24-hour COG growth was assumed.
2. Traffic volumes for a "base future" scenario were calculated by summing the existing traffic volumes, the volumes generated by the background developments, and the site-generated vehicular traffic volumes.
3. The base future traffic volumes were then compared to the COG growth.
4. For any roadways where the base traffic volume was less than the minimum COG growth, an "inherent growth" rate was calculated, as shown in Table 12.

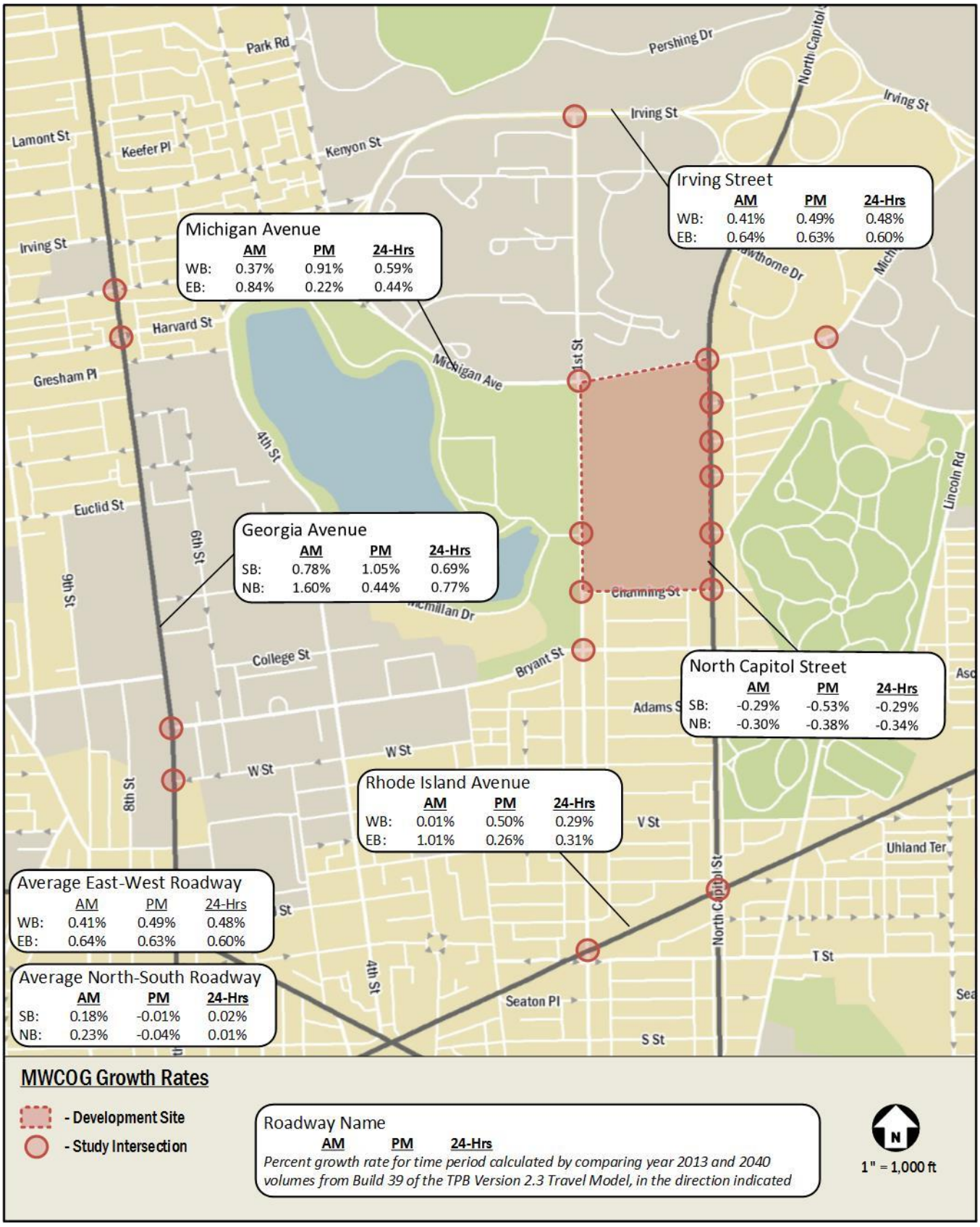


Figure 22: Minimum Growth Rates Calculated Based on MWCOG Projections

Table 10: Weekday Peak Hour Background Trip Generation

Parcel	Land Use	Size		Weekday Background Trip Generation					
				AM Peak Hour			*PM Peak Hour*		
				In	Out	Total	In	Out	Total
VA Medical Center									
Existing Medical Building		*922,000*	*Square Feet*	1,676	445	2,121	861	2,329	3,190
Future Medical Buildling (20% Increase)		*1,106,400*	*Square Feet*	2,011	534	2,545	1,033	2,795	3,828
Net New Trips				**335**	**89**	**424**	**172**	**466**	**638**
Transit Reduction		*20*	*%*	*(84)*	*(22)*	*(106)*	*(43)*	*(117)*	*(160)*
Total New VAMC Trips				**251**	**67**	**318**	**129**	**349**	**478**
Armed Forces Retirement Home - Zone A									
A	Hotel	*126*	*Rooms*	40	27	67	39	37	76
B	Senior Adult Housing	*25*	*Dwelling Units*	2	3	5	4	4	8
	Assisted Living	*214*	*Beds*	20	10	30	21	26	47
C	General Office	*179,228*	*Square Feet*	268	37	305	47	232	279
	On-Street Retail	*60,000*	*Square Feet*	36	22	58	107	116	223
D	Medical Office	*290,650*	*Square Feet*	549	146	695	213	548	761
	On-Street Retail	*20,145*	*Square Feet*	12	7	19	36	39	75
E	General Office	*408,276*	*Square Feet*	519	71	590	91	445	536
F	General Office	*367,864*	*Square Feet*	477	65	542	83	407	490
H	Multi-Family Condos	*347*	*Dwelling Units*	24	116	140	113	55	168
	On-Street Retail	*22,863*	*Square Feet*	14	8	22	41	44	85
I	Multi-Family Condos	*330*	*Dwelling Units*	23	113	136	109	53	162
	On-Street Retail	*19,645*	*Square Feet*	12	7	19	35	38	73
K	Multi-Family Condos	*254*	*Dwelling Units*	19	91	110	87	43	130
	On-Street Retail	*30,240*	*Square Feet*	18	11	29	54	58	112
L	On-Street Retail	*2,925*	*Square Feet*	2	1	3	5	6	11
M	Multi-Family Apartments	*268*	*Dwelling Units*	27	108	135	107	58	165
	On-Street Retail	*29,744*	*Square Feet*	18	11	29	53	57	110
N	Multi-Family Condos	*287*	*Square Feet*	21	101	122	96	48	144
O	Multi-Family Apartments	*271*	*Dwelling Units*	27	110	137	109	58	167
	On-Street Retail	*16,833*	*Square Feet*	10	6	16	30	32	62
P	Multi-Family Apartments	*115*	*Dwelling Units*	12	48	60	53	28	81
Q	Multi-Family Apartments	*139*	*Dwelling Units*	14	58	72	61	33	94
S	Multi-Family Apartments	*123*	*Dwelling Units*	13	51	64	55	30	85
	General Office	*236,023*	*Square Feet*	334	46	380	58	285	343
T	Multi-Family Apartments	*122*	*Dwelling Units*	13	51	64	55	30	85
	On-Street Retail	*11,691*	*Square Feet*	7	4	11	21	22	43
Net New Trips				**2,531**	**1,329**	**3,860**	**1,783**	**2,832**	**4,615**
Transit Reduction		*30*	*%*	*(759)*	*(399)*	*(1,158)*	*(536)*	*(850)*	*(1,386)*
Total New AFRH Trips				**1,772**	**930**	**2,702**	**1,247**	**1,982**	**3,229**
Howard University									
Howard Town Center	Multi-Family Residential	*445*	*Dwelling Units*	34	100	134	101	54	155
	Grocery Store	*35,000*	*Square Feet*	77	49	126	232	222	454
	On-Street Retail	*40,000*	*Square Feet*	55	35	90	51	66	117
	Transit Reduction	*(Varies)*		*(102)*	*(119)*	*(221)*	*(239)*	*(209)*	*(448)*
Workforce Housing	Multi-Family Residential	*234*	*Dwelling Units*	18	53	71	57	30	87
	Transit Reduction	*62*	*%*	*(11)*	*(33)*	*(44)*	*(35)*	*(19)*	*(54)*
Georgia Ave Retail	On-Street Retail	*153,500*	*Square Feet*	121	77	198	172	218	390
	Transit Reduction	*49*	*%*	*(59)*	*(38)*	*(97)*	*(84)*	*(107)*	*(191)*
Recreation Center	Rec Center	*136,500*	*Square Feet*	247	158	405	546	335	881
	Internal University Trips	*84*	*%*	*(207)*	*(133)*	*(340)*	*(459)*	*(281)*	*(740)*
	Transit Reduction	*55*	*%*	*(22)*	*(14)*	*(36)*	*(48)*	*(30)*	*(78)*
Population Increase	Future Population	*12,000*	*Students*	1,961	490	2,451	720	1,679	2,399
	Existing Population	*11,000*	*Students*	*(1,793)*	*(448)*	*(2,241)*	*(663)*	*(1,546)*	*(2,209)*
	Transit Reduction	*91*	*%*	*(153)*	*(38)*	*(191)*	*(52)*	*(121)*	*(173)*
Parking Rerouting	Existing Trips Reassingned	*995*	*Spaces*	445	77	522	77	517	594
	Existing Trips Displaced	*1,478*	*Spaces*	*(445)*	*(77)*	*(522)*	*(77)*	*(517)*	*(594)*
Total New HUCMP Trips				**166**	**139**	**305**	**299**	**291**	**590**

Table 11: Saturday Background Trip Generation

Parcel	Land Use	Size		Saturday Background Trip Generation			
				Peak Hour			Total
				In	Out	Total	
VA Medical Center							
Existing Medical Building		*922,000*	*Square Feet*	211	376	587	8,262
Future Medical Buildling (20% Increase)		*1,106,400*	*Square Feet*	253	451	704	9,914
Net New Trips				**42**	**75**	**117**	**1,652**
Transit Reduction		*20*	*%*	*(11)*	*(18)*	*(29)*	*(413)*
Total New VAMC Trips				**31**	**57**	**88**	**1,239**
Armed Forces Retirement Home - Zone A							
A	Hotel	*126*	*Rooms*	38	30	68	918
B	Senior Adult Housing	*25*	*Dwelling Units*	3	3	6	76
	Assisted Living	*214*	*Beds*	20	16	36	472
C	General Office	*179,228*	*Square Feet*	16	20	36	442
	On-Street Retail	*60,000*	*Square Feet*	161	188	349	3,000
D	Medical Office	*290,650*	*Square Feet*	66	119	185	2,606
	On-Street Retail	*20,145*	*Square Feet*	37	46	83	1,008
E	General Office	*408,276*	*Square Feet*	37	46	83	1,006
F	General Office	*367,864*	*Square Feet*	34	41	75	906
H	Multi-Family Condos	*347*	*Dwelling Units*	70	56	126	1,686
	On-Street Retail	*22,863*	*Square Feet*	61	72	133	1,144
I	Multi-Family Condos	*330*	*Dwelling Units*	67	54	121	1,624
	On-Street Retail	*19,645*	*Square Feet*	53	61	114	982
K	Multi-Family Condos	*254*	*Dwelling Units*	56	44	100	1,348
	On-Street Retail	*30,240*	*Square Feet*	81	95	176	1,512
L	On-Street Retail	*2,925*	*Square Feet*	8	9	17	148
M	Multi-Family Apartments	*268*	*Dwelling Units*	77	61	138	1,848
	On-Street Retail	*29,744*	*Square Feet*	80	93	173	1,488
N	Multi-Family Condos	*287*	*Square Feet*	61	48	109	1,468
O	Multi-Family Apartments	*271*	*Dwelling Units*	78	62	140	1,872
	On-Street Retail	*16,833*	*Square Feet*	45	53	98	842
P	Multi-Family Apartments	*115*	*Dwelling Units*	27	21	48	648
Q	Multi-Family Apartments	*139*	*Dwelling Units*	35	28	63	836
S	Multi-Family Apartments	*123*	*Dwelling Units*	29	23	52	710
	General Office	*236,023*	*Square Feet*	22	26	48	582
T	Multi-Family Apartments	*122*	*Dwelling Units*	29	23	52	702
	On-Street Retail	*11,691*	*Square Feet*	31	37	68	586
Net New Trips				**1,322**	**1,375**	**2,697**	**30,460**
Transit Reduction		*30*	*%*	*(398)*	*(413)*	*(811)*	*(9,139)*
Total New AFRH Trips				**924**	**962**	**1,886**	**21,321**

Table 12: Applied Background Growth Rates

Roadway	Direction	Applied Growth Rate
AM Peak Hour		
Georgia Avenue	Northbound	1%/year
	Southbound	1%/year
Rhode Island Avenue	Eastbound	1%/year
PM Peak Hour		
Georgia Avenue	Southbound	0.7%/year
Rhode Island Avenue	Eastbound	0.25%/year
	Westbound	0.5%/year

Table 12 shows the resulting inherent growth rates. Of note, no growth rates were applied for the Saturday peak hour.

The traffic volumes generated by the background developments and by the applied growth rates shown in Table 12 were added to the existing traffic volumes in order to establish the 2025 future background traffic volumes.

Total Future Conditions (with McMillan PUD)

As stated previously, the McMillan PUD is anticipated to be fully constructed in 2025. The traffic projections for the total future conditions consist of the traffic generated by the site, as outlined previously, added to the future background traffic volumes. Thus, the total future volumes include traffic generated by: existing volumes, background development through the year 2025, inherent growth on the study area roadways, and the proposed McMillan PUD.

The Driveshed Analysis, as shown previously in Figure 18, was used to determine the trip routing and assignment. Based on the Driveshed and the proposed site access locations shown previously on Figure 11, the site-generated vehicular trips were distributed through the study area intersections. The site-generated vehicular traffic volumes, shown previously in Table 6 and Table 7, were added to the future background traffic volumes in order to establish the 2025 total future traffic volumes.

Geometry and Operations Assumptions

The following section reviews the roadway geometry and operations assumptions made and the methodologies used in the roadway capacity analyses, summarized previously in Table 8. Detailed lane configuration graphics are included in the Technical Attachments.

Existing Conditions

Gorove/Slade conducted field reconnaissance to confirm the existing lane configurations and traffic controls at the intersections within the study area. Existing signal timings and offsets were obtained from DDOT and confirmed during field reconnaissance.

Future Background Conditions (without McMillan PUD)

The lane configurations for the future background conditions are based on the existing lane configurations. As stated previously, there are several proposed and planned transportation improvements located in the vicinity of the site. However, only those improvements that are within the study area, fully funded, and planned to be complete by 2025 are included in the future background scenario. Table 13 shows a review of the background developments.

Based on this criteria, none of the potential improvements shown in Table 13 are included in the capacity analysis. However, several roadway improvements are included in the future background conditions due to background developments, as outlined previously. No background improvements were assumed for the VA Medical Center Master Plan (VAMC).

For the Armed Forces Retirement Home – Zone A (AFRH) development, the following improvements from the AFRH Master Plan *Transportation Management Program* were included in the analysis to serve the site-generated trips:

- Construct fourth leg of intersection (southbound) at Irving Street NW and First Street NW to include left-turn lane and shared through/right-turn lane.

Table 13: Review of Background Roadway Improvements

Proposed Improvement	Timeline	Funded?	In Study Area?	Included in Capacity Analysis?
North Capitol Street Cloverleaf Feasibility Study				
Replace the cloverleaf interchange at North Capitol Street and Irving Street with a more multi-modal alternative	Unknown	Unknown	No	No
Improvements to Michigan Avenue NW & 1st Street NW: Adding SB left-turn lane, extending WB, WB, and NB left-turn lanes (among other improvements)	Unknown	Unknown	Yes	No
Improvements to Michigan Avenue NW & Irving Street NW: Realigning intersection to meet at 90^{o} angle, removing free-flow right turns (among other improvements)	Unknown	Unknown	No	No

- Construct eastbound left-turn lane at Irving Street NW and First Street NW.
- Restripe northbound left-turn lane to shared left-turn/through lane at Irving Street NW and First Street NW.
- Optimize signal timings and offsets at Irving Street NW and First Street NW.
- Construct new signalized intersection along Irving Street NW at the AFRH West Gate (approximately 750 feet west of First Street NW), to include separate left- and right-turn lanes on southbound approach.
- Construct eastbound left-turn lane at Irving Street NW and the AFRH West Gate.
- Construct new right-in/right-out, unsignalized intersection along Irving Street NW at the AFRH East Gate (approximately 525 feet east of First Street NW), to include a single right-turn lane on the southbound approach.

For the Howard University Campus Master Plan (HUCMP), the following improvements from the HUCMP *Transportation Impact Study* were included in the analysis to serve the site-generated trips:

- Construct fourth leg of intersection (eastbound) at Bryant Street NW and Georgia Avenue NW to include a shared left-turn/through/right-turn lane.
- Construct fourth leg of intersection (eastbound) at W Street NW and Georgia Avenue NW to include a shared left-turn/through/right-turn lane.

Total Future Conditions (with McMillan PUD)

The lane configurations for the total future conditions are based on the lane configurations from the future background scenario, with the addition of the proposed site access locations shown previously on Figure 11.

The following improvements are also included in the total future conditions, as outlined in the PUD:

- Install traffic signal at the intersection of Michigan Avenue NW and Half Street NW.
- Construct westbound left-turn lane at the intersection of Michigan Avenue NW and Half Street NW.
- Extend eastbound left-turn lane at the intersection of Michigan Avenue NE/NW and North Capitol Street.
- Install traffic signal at the intersection of North Service Court and North Capitol Street.
- Install traffic signal at the intersection of Evarts Street NW and North Capitol Street.
- Construct northbound left-turn lane the intersection of Evarts Street NW and North Capitol Street.
- Widen First Street NW between Michigan Avenue NW and the Parcel 1 employee driveway to extend northbound left-turn lane.

Analysis Methodology

Capacity analyses are typically performed using the *Highway Capacity Manual* (HCM) methodologies. For signalized and unsignalized intersections, the HCM calculates the delay experienced by drivers traveling through an intersection. This delay is associated with vehicles slowing in advance of an intersection, the time spent stopped at an intersection, the time spent as vehicles move up in the queue, and the time needed to vehicles to accelerate to the speed limit. Traffic delay also results from the interaction of vehicles, primarily in a state where the traffic volumes exceed the available capacity.

Highway Capacity Manual (HCM)

The HCM is a publication of the Transportation Research Board (TRB) and the National Academies of Science. It contains concepts, guidelines, and computational procedures for analyzing the capacity and quality of service of various roadway facilities, including freeways, highways, arterial roads, roundabouts, and signalized and unsignalized intersections.

Five editions of the HCM have been published between 1950 and 2010. For the purpose of this analysis, the methodologies outlined in the fourth edition of the HCM (published in 2000) are used. This is due to the change in vehicular analysis methodologies presented in the fifth edition. These changes have not been approved for use by DDOT.

The latest edition (HCM 2010, published in 2010) is the culmination of a multiagency effort, including TRB, the American Association of State Highway and Transportation Officials (AASHTO), and the Federal Highway Administration (FHWA). The HCM 2010 includes updated methodologies and evaluation tools, as referenced later in this report.

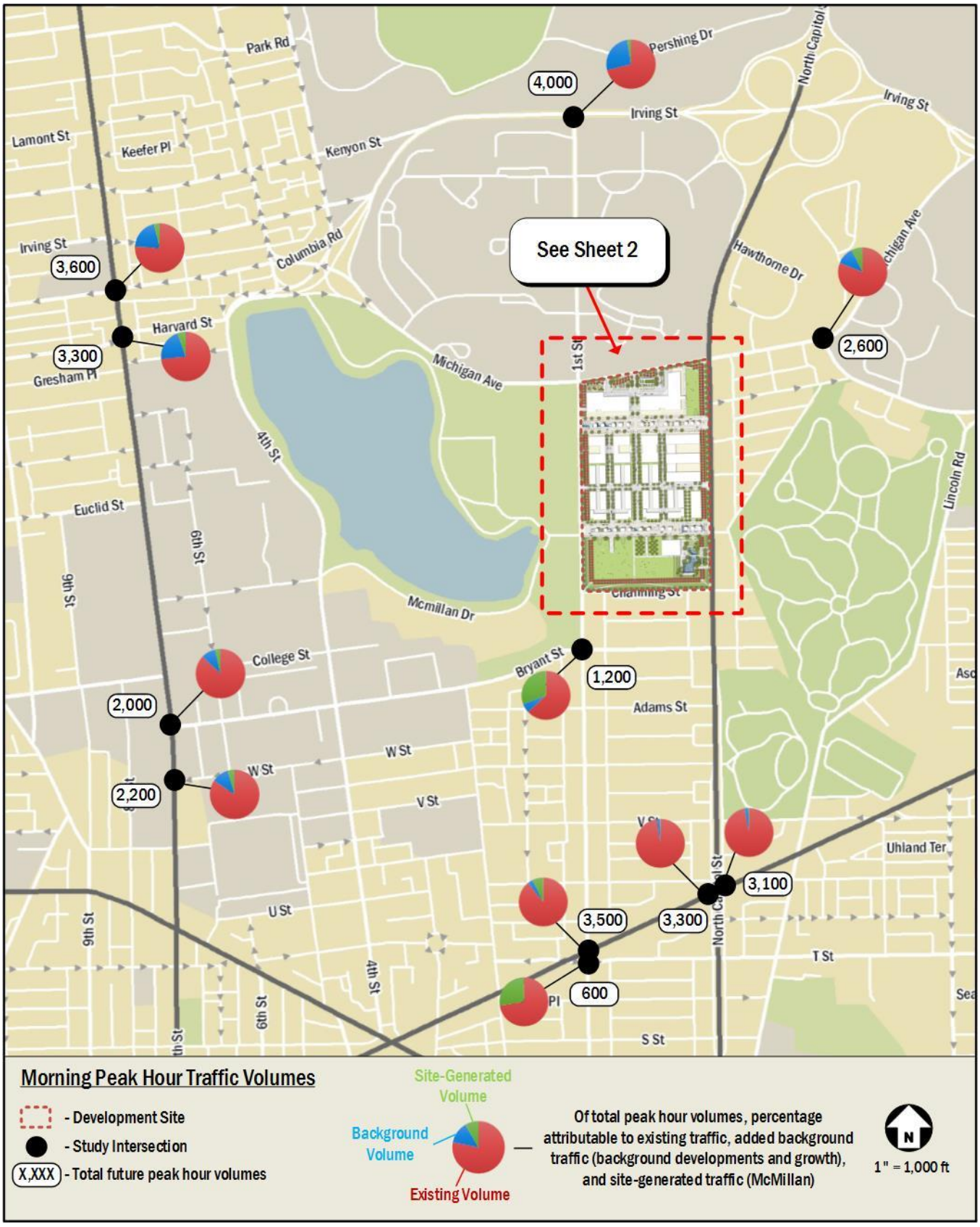


Figure 23: Traffic Volume Summary – Weekday AM Peak Hour (1 of 2)

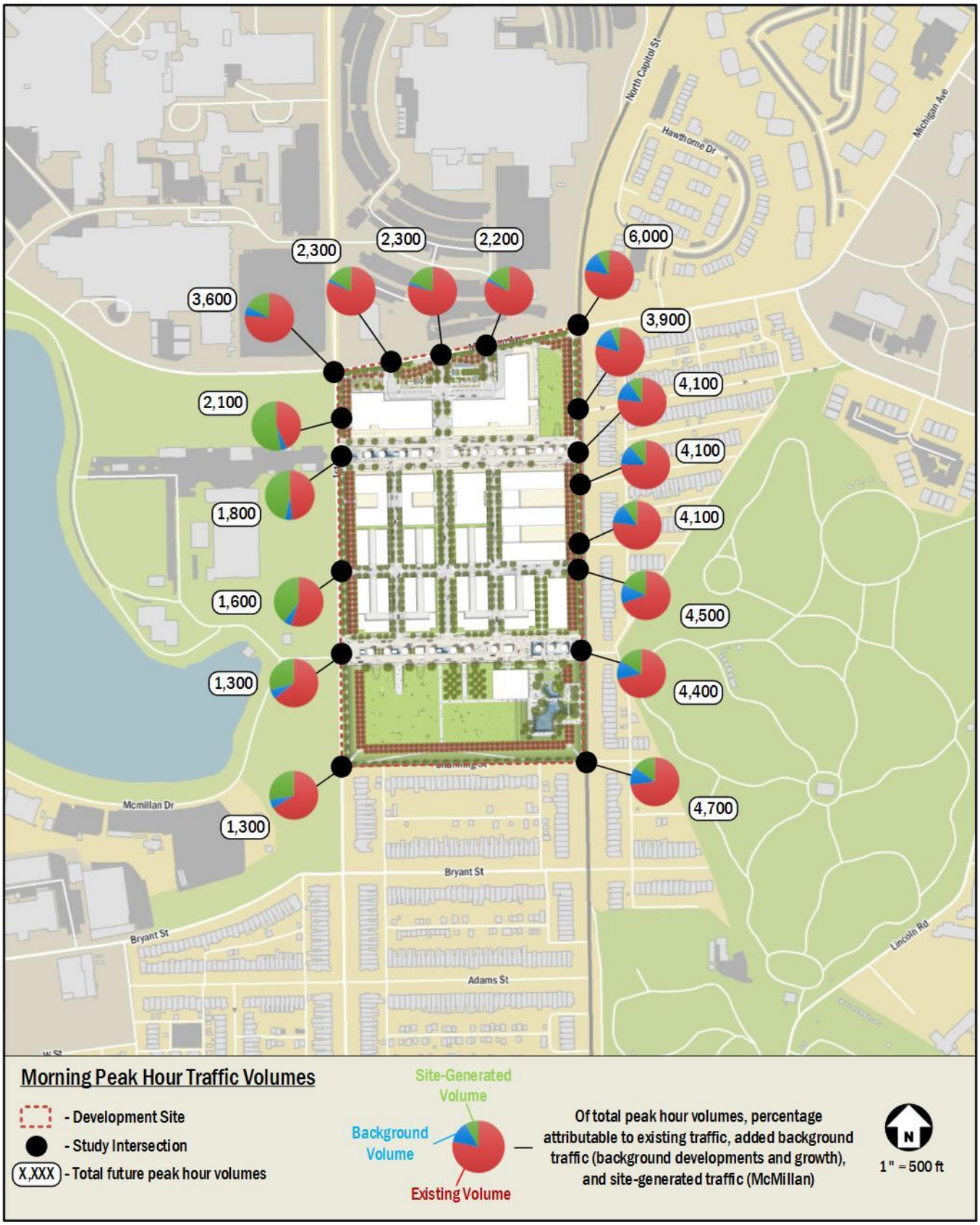


Figure 24: Traffic Volume Summary – Weekday AM Peak Hour (1 of 2)

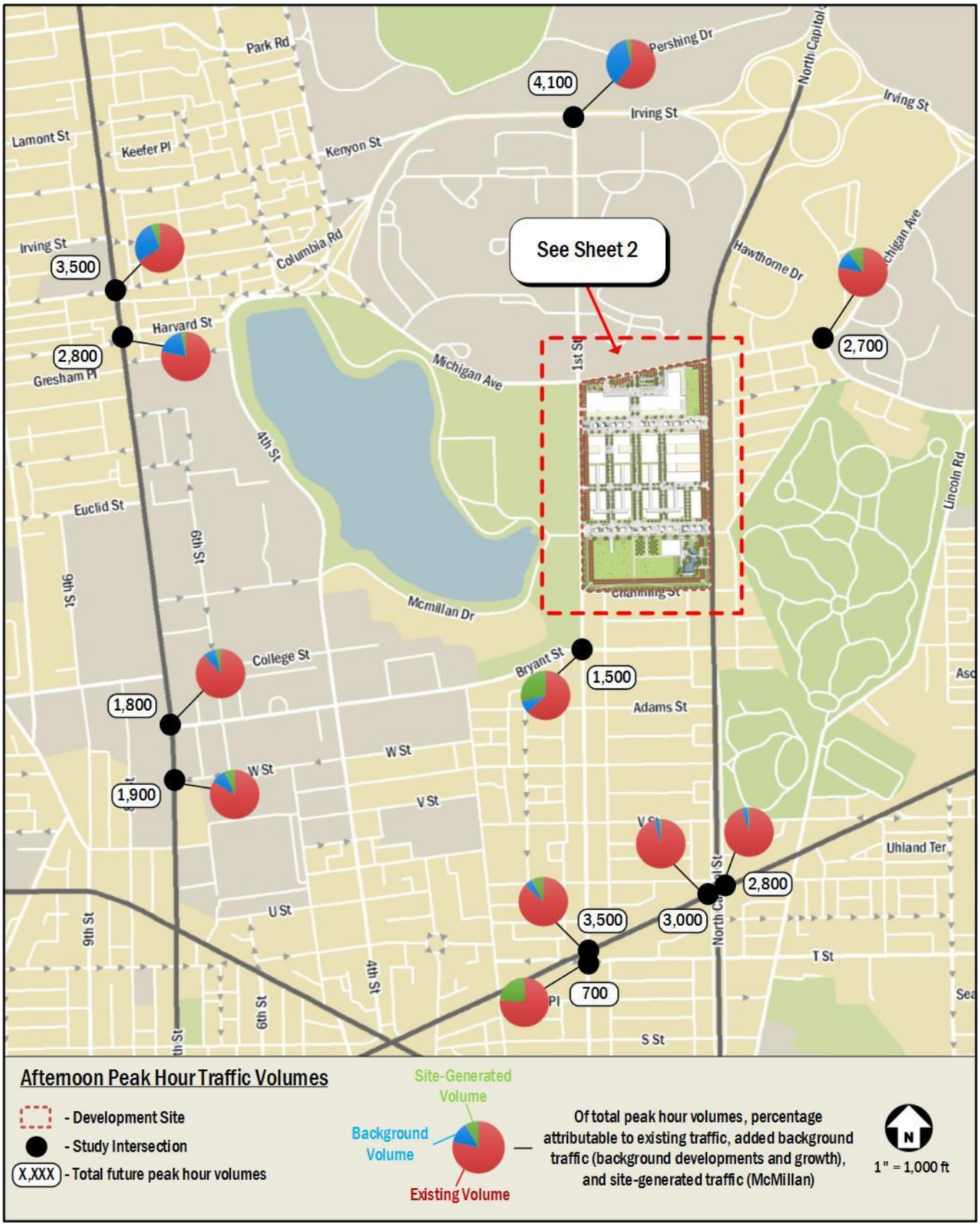


Figure 25: Traffic Volume Summary – Weekday PM Peak Hour (1 of 2)

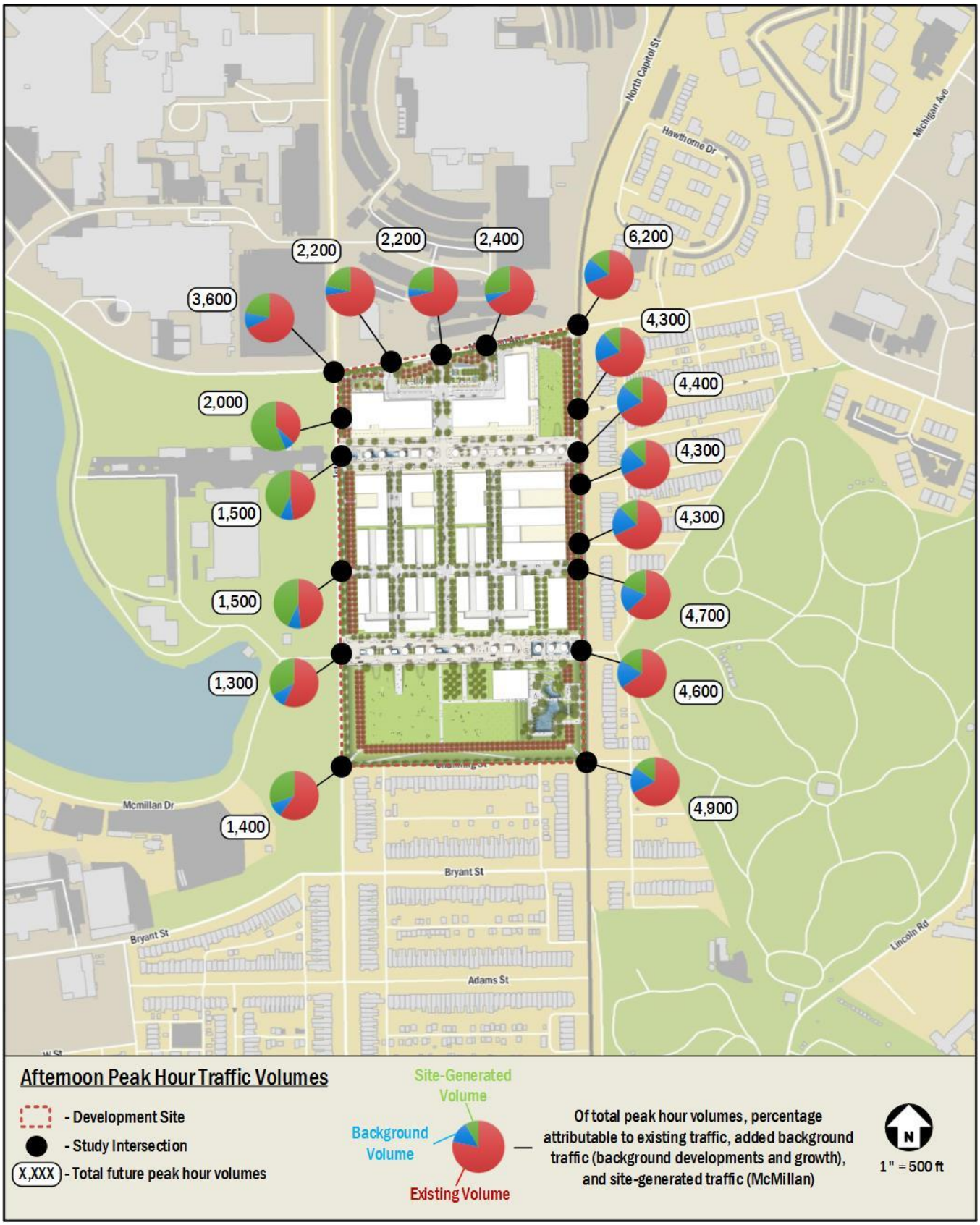


Figure 26: Traffic Volume Summary – Weekday PM Peak Hour (1 of 2)

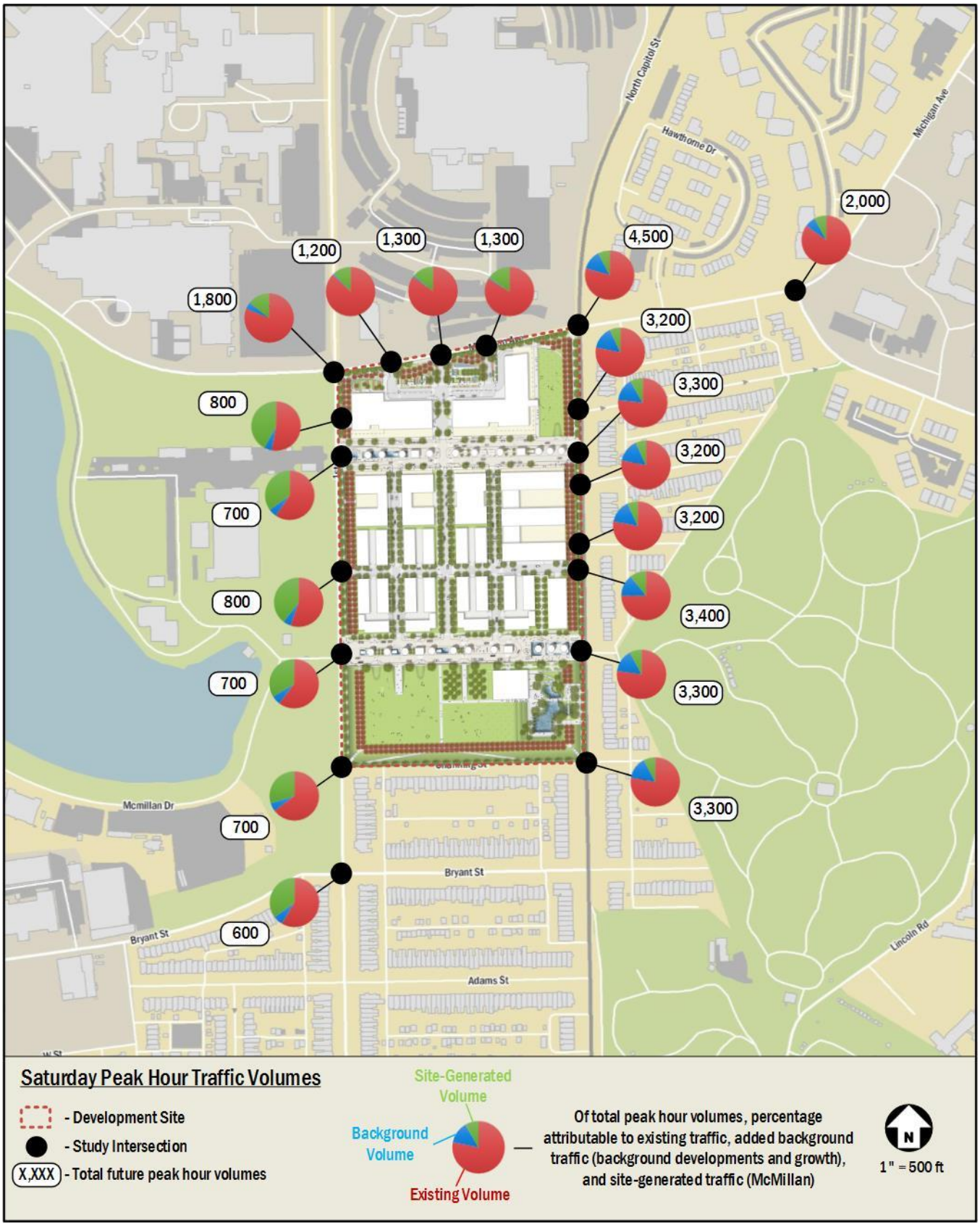


Figure 27: Traffic Volume Summary – Saturday Peak Hour

The results of these delay calculations is a computed average delay (seconds per vehicle) for each approach and a Level of Service (LOS) grade. At signalized intersections, all approaches controlled by the traffic signal have a calculated average delay and associated LOS, and an overall average delay and LOS for the entire intersection are determined. At unsignalized intersections, the approaches controlled by a stop-sign have a calculated average delay and associated LOS. For all-way stop intersections, an overall average delay and LOS are also determined. For one- or two-way stop intersections, an average delay and LOS are also calculated for vehicles turning across a free-flowing approach, as the driver must yield to oncoming traffic. The major through movements and right-turns on free-flowing approaches at one- or two-way stop controlled intersections are assumed to operate with no delay.

For this report, the analysis was performed using the *Synchro, Version 7* software package, which is based on the HCM methodologies. As stated previously, the weekday morning and afternoon commuter peak hours and the Saturday afternoon peak hour were analyzed in the existing, future background, and total future conditions. The *Synchro* models were compiled using signal timings provided by DDOT and with lane configurations and traffic volumes collected by Gorove/Slade.

Capacity Analysis Results

The results of the capacity analyses are expressed in level of service (LOS) and delay (seconds per vehicle) for each approach. A summary of the LOS results is shown in Figure 28 and Figure 29 for the weekday morning peak hour, Figure 30 and Figure 31 for the weekday afternoon peak hour, and Figure 32 for the Saturday peak hour. The detailed capacity analysis worksheets are contained in the Technical Attachments.

The majority of study intersections operate under acceptable conditions during the weekday morning and afternoon peak hours, as well as the Saturday peak hour. However, a few intersections operate under unacceptable conditions in the future background and total future conditions. For those intersections operating under unacceptable conditions during one or more peak hours in the future background conditions, improvements are recommended to mitigate the impacts of the traffic volumes generated by background sources. In the total future scenario, the analysis results are based on the improvements proposed in the PUD applications. Thus, additional improvements were explored to mitigate the impact of the site-generated trips. It is recommended that these improvements be incorporated into the PUD application.

Level of Service (LOS)

Level of service is based upon the traffic volume present in each lane on the roadway, the capacity of each lane at the intersection and the delay associated with each directional movement. The HCM defines six levels of service, ranging from A to F. LOS A represents the "best" operating conditions from a traveler's perspective (free-flowing conditions and little-to-no delay), and LOS F represents the "worst". Detailed LOS descriptions are contained in the Technical Attachments.

For cost, feasibility, and environmental impact, roadways are not typically designed to provide LOS A conditions during peak periods. Instead, roadways are typically designed to reflect a balance between individual traveler's desires, society's desires, and financial resources. In suburban areas, roadways are typically designed to a peak hour threshold of LOS D. In urban areas, such as the District, LOS E is typically used as the acceptable peak hour LOS threshold. Nevertheless, during low-volume periods of the day, a roadway or intersection may operate at LOS A.

Table 14 through Table 42 summarize the results of the capacity analyses for the intersections that operate under unacceptable conditions, including a discussion of what is generating the delays and potential mitigations. A summary of the proposed improvements is included as Figure 33 and Figure 34.

In addition to the capacity analyses presented above, a queuing analysis was performed at the study intersections. The queuing analysis was performed using the *Synchro* software. The 50th percentile and 95th percentile maximum queue lengths are shown for each lane group at the signalized study area intersections. The 50th percentile maximum queue is the maximum back of queue on a typical cycle. The 95th percentile queue is the maximum back of queue with 95th percentile traffic volumes. For unsignalized intersection, the 95th percentile queue is reported for each lane group (including free-flowing left turns and stop-controlled movements) based on the HCM calculations. The HCM does not give guidelines for calculating queues for an all-way stop-controlled intersection, so this information is not reported. The results of the queuing analysis are shown in the Technical Attachments.

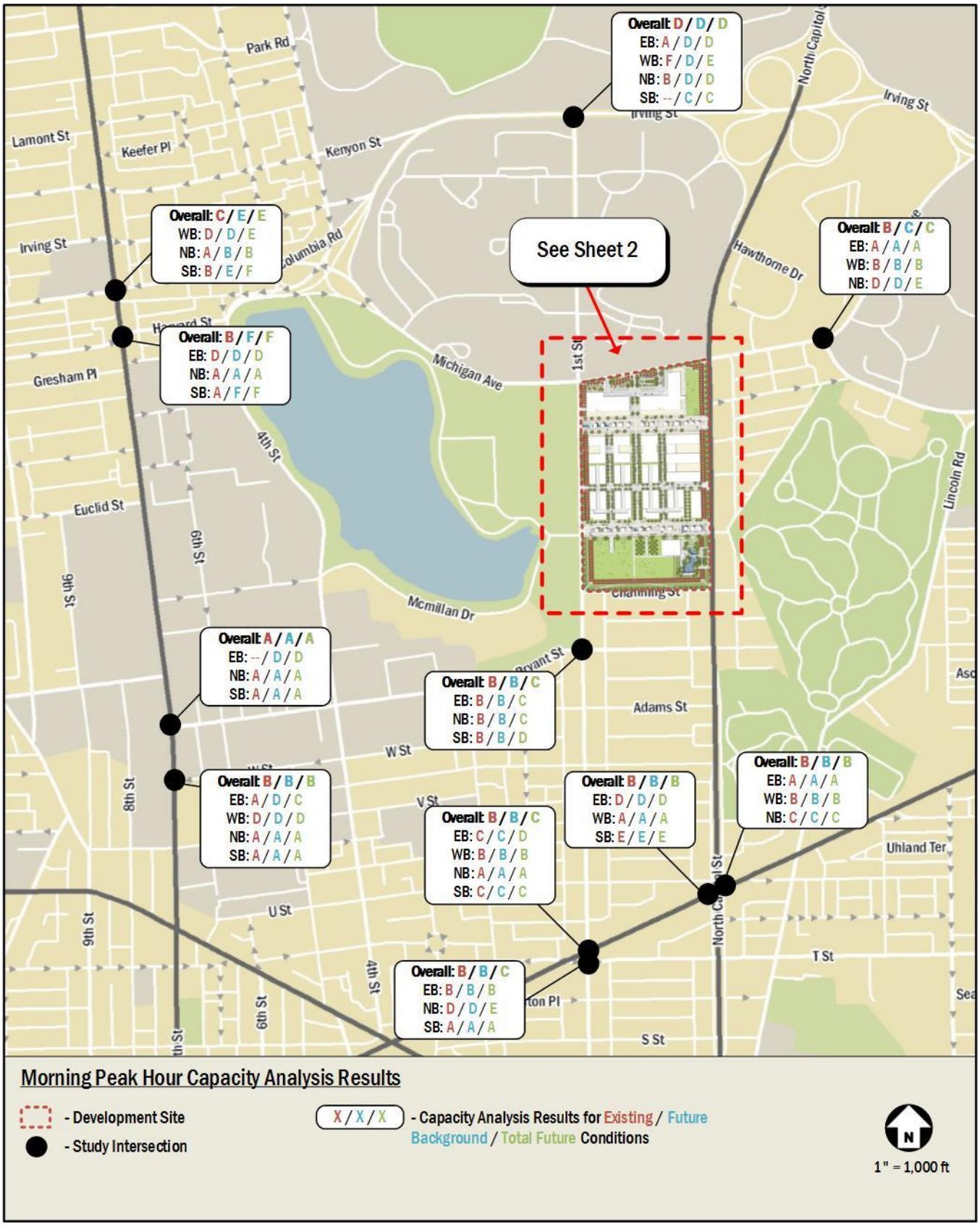


Figure 28: Capacity Analysis Results – Weekday AM Peak Hour (1 of 2)

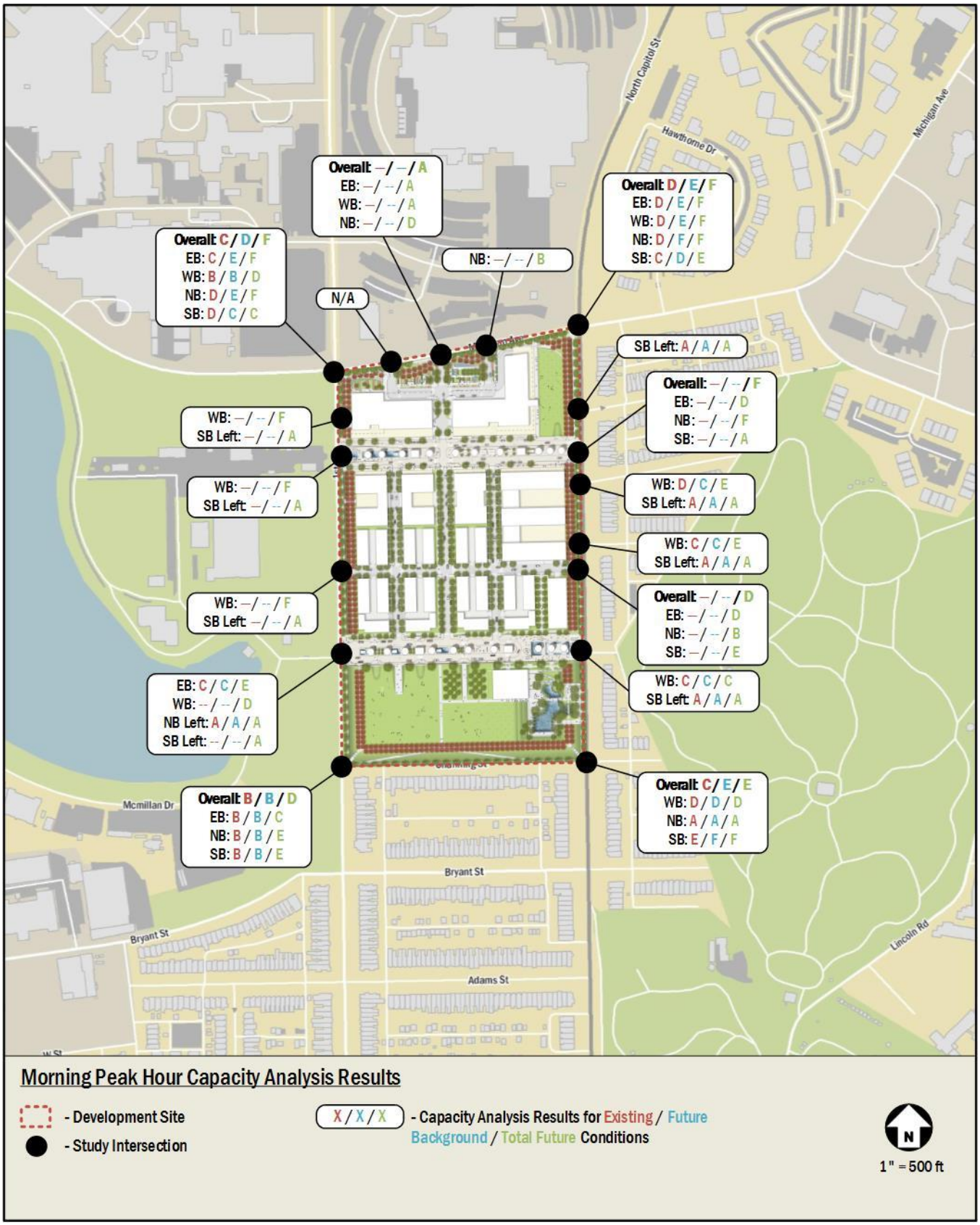


Figure 29: Capacity Analysis Results – Weekday AM Peak Hour (2 of 2)

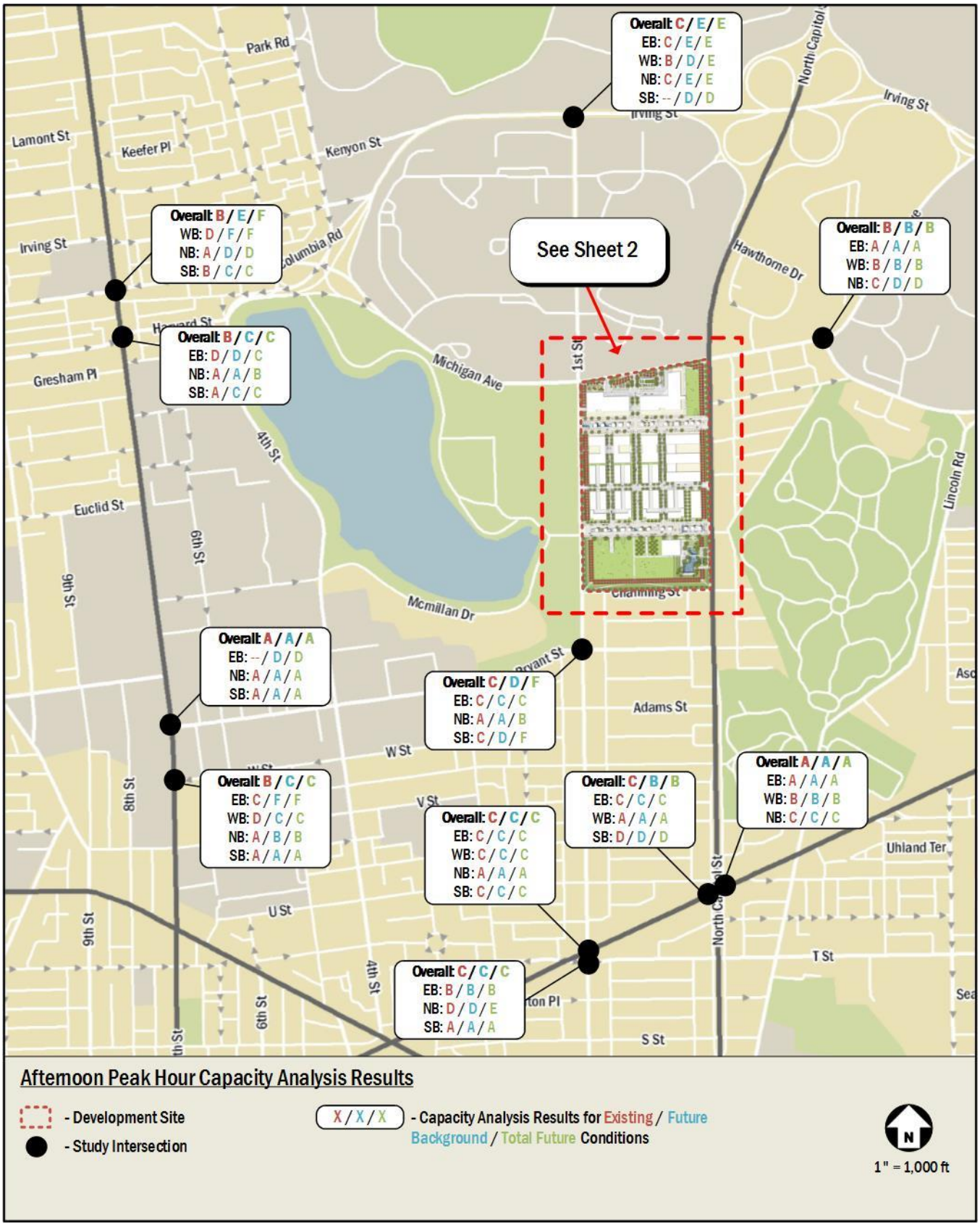


Figure 30: Capacity Analysis Results – Weekday PM Peak Hour (1 of 2)

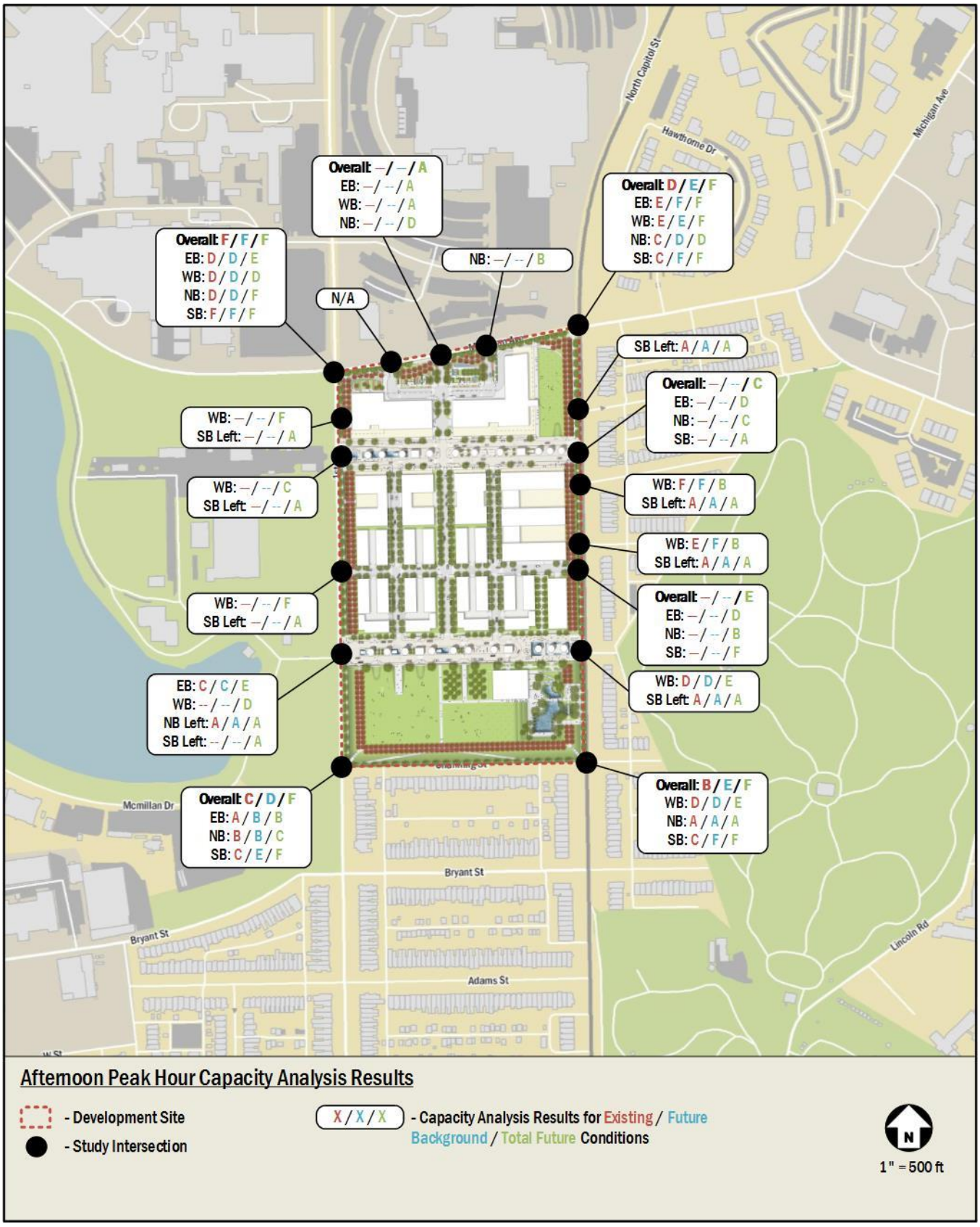


Figure 31: Capacity Analysis Results – Weekday PM Peak Hour (2 of 2)

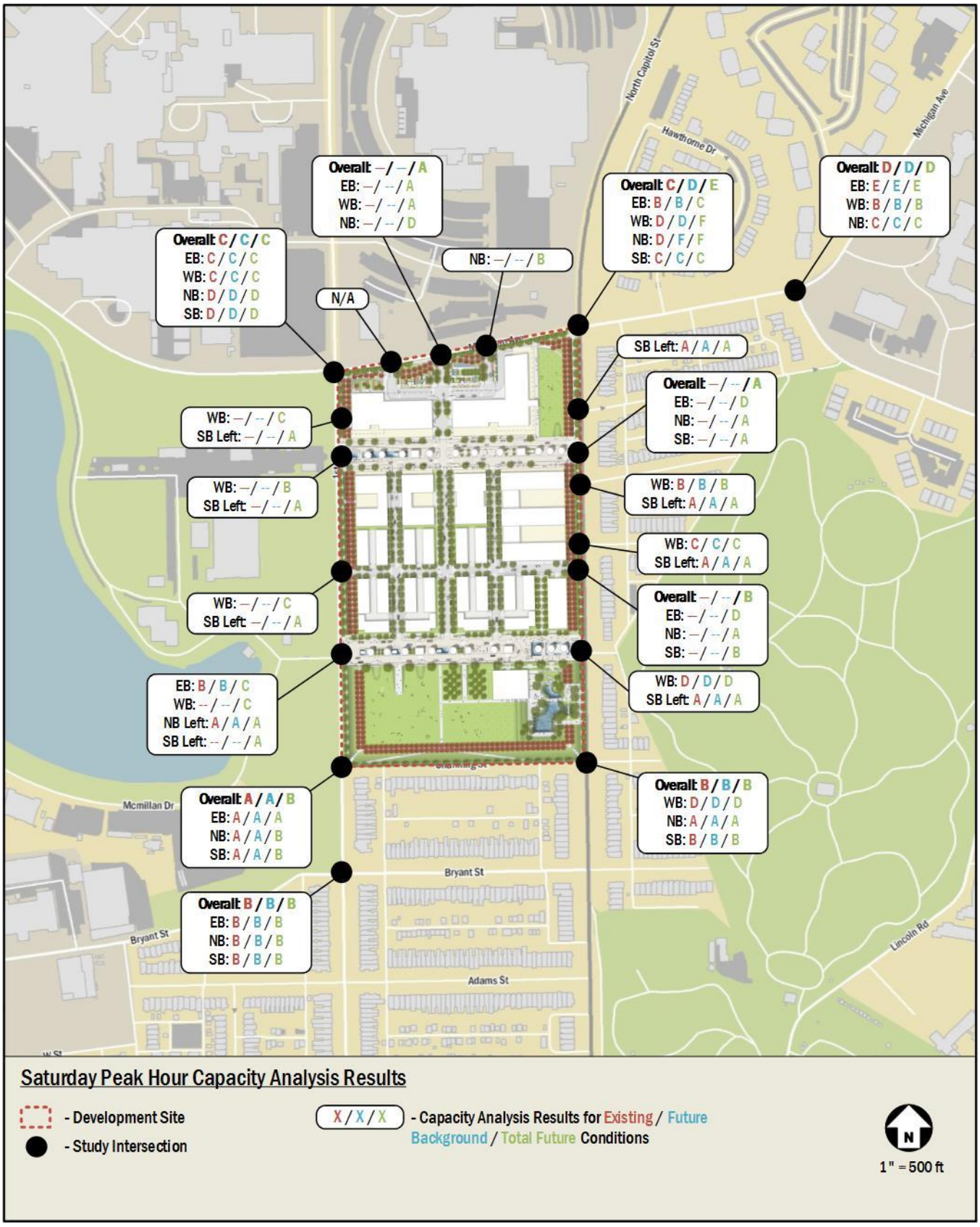


Figure 32: Capacity Analysis Results – Saturday Peak Hour

Table 14: Intersection Summary – Michigan Avenue NW & First Street NW (1 of 2)

Michigan Avenue NW & First Street NW

Location/Scenarios with LOS F EX = Existing (2013) BG = Future Background (2025) TF = Total Future (2025)	AM Peak Hour	PM Peak Hour	Saturday Peak Hour
	Overall intersection: TF Eastbound Michigan Avenue NW: TF Northbound First Street NW: TF	Overall intersection: EX, BG, TF Northbound First Street NW: TF Southbound First Street NW: EX, BG, TF	
Percent of future traffic attributable to development:	17.2%	21.2%	14.4%

Summary of capacity analysis results:

The overall and southbound delays at this intersection during the afternoon peak period are due to the existing signal timing and lane configurations. The addition of the background growth, trips generated by the background developments, and the site-generated trips exacerbates the existing delays. The addition of the site-generated trips also causes the east- and northbound approaches, as well as the overall intersection, to operate under unacceptable conditions during the morning peak hour and causes the northbound approach to operate under unacceptable conditions during the afternoon peak hour.

Potential Improvements:

Existing Conditions (2013)	Future Background Conditions (2025)	Total Future Conditions (2025)
In the existing scenario, retiming the intersection to increase the amount of green time given to the southbound movement allows the intersection to operate more favorably, although still under unacceptable conditions. This report recommends that DDOT consider this change outside the scope of this TIA.	In the future background scenario, the intersection operates under acceptable conditions following the removal of the existing split-phase timing for the north- and southbound approaches. Signal timing that includes concurrent north- and southbound phases with protected + permitted left-turns is recommended for all time periods. In order to allow for concurrent north- and southbound left-turns, it is recommended that the existing median on the southbound approach be converted to a 250-foot left-turn lane. Additionally, the existing southbound approach should be restriped as separate through and right-turn lanes. This report recommends that DDOT consider these improvements outside the scope of this TIA, following the construction of the background developments.	In conjunction with Phase 1 of development, it is recommended that the northbound approach be widened to accommodate a 75-foot left-turn lane, a through lane, and a shared through/right-turn lane. Additionally, the construction of a 50-foot eastbound right-turn lane is recommended to accommodate site-generated trips following the construction of Parcels 2 and 3 (full build-out). In addition to the roadway improvements, retiming the intersection during the afternoon peak period allows it to operate under acceptable conditions during all time periods. This report recommends that this intersection be studied closely as the McMillan site is developed in order to determine if additional mitigation measures are necessary.

Capacity Analysis Results:

Intersection	Approach	Existing Conditions (2013)						Future Background Conditions (2025)						Total Future Conditions (2025)					
		AM Peak		PM Peak		Saturday Peak		AM Peak		PM Peak		Saturday Peak		AM Peak		PM Peak		Saturday Peak	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Michigan Avenue & First Street NW	**Overall**	**30.4**	**C**	97.9	F	**28.8**	**C**	**48.1**	**D**	184.6	F	**31.2**	**C**	91.3	F	235.9	F	**34.4**	**C**
	Eastbound	28.9	C	37.2	D	22.9	C	79.9	E	42.2	D	22.8	C	83.4	F	76.5	E	23.9	C
	Westbound	14.9	B	47.6	D	23.4	C	17.7	B	48.5	D	28.6	C	34.9	D	43.7	D	28.1	C
	Northbound	53.0	D	36.3	D	39.4	D	69.8	E	37.8	D	39.5	D	206.3	F	286.9	F	48.3	D
	Southbound	51.4	D	249.8	F	40.1	D	22.3	C	480.4	F	42.6	D	26.1	C	511.4	F	43.5	D
Improvements:	***Overall***	--	--	***63.7***	***E***	--	--	***36.4***	***D***	***40.4***	***D***	***23.1***	***C***	***30.2***	***C***	***51.3***	***D***	***23.4***	***C***
	Eastbound	--	--	*72.6*	*E*	--	--	*21.8*	*C*	*38.6*	*D*	*22.8*	*C*	*20.4*	*C*	*53.4*	*D*	*21.8*	*C*
	Westbound	--	--	*29.4*	*C*	--	--	*32.6*	*C*	*13.1*	*B*	*18.1*	*B*	*21.8*	*C*	*48.2*	*D*	*15.6*	*B*
	Northbound	--	--	*39.0*	*D*	--	--	*59.7*	*E*	*36.9*	*D*	*23.2*	*C*	*57.1*	*E*	*55.3*	*E*	*28.6*	*C*
	Southbound	--	--	*88.6*	*F*	--	--	*46.4*	*D*	*60.9*	*E*	*31.3*	*C*	*25.5*	*C*	*47.4*	*D*	*30.0*	*C*

Table 15: Intersection Summary – Michigan Avenue NW & First Street NW (2 of 2)

Michigan Avenue NW & First Street NW

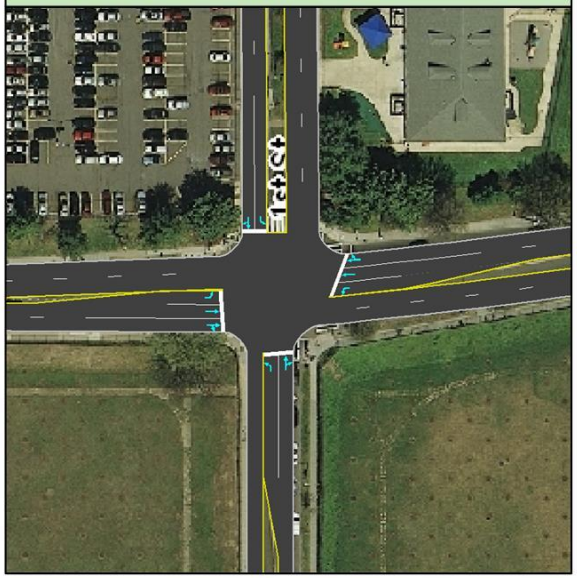
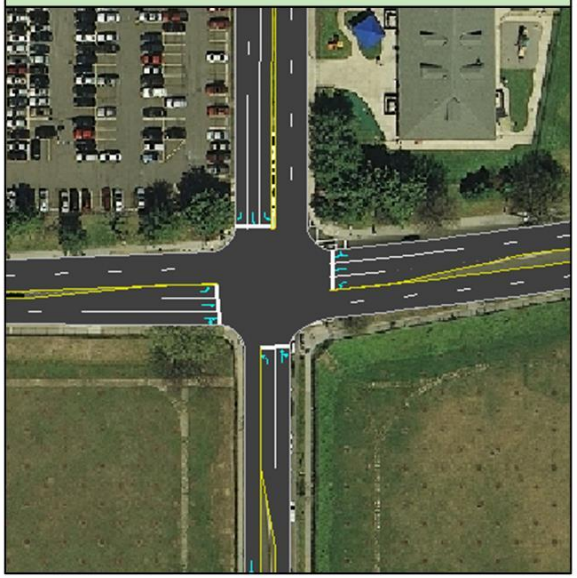
Existing Conditions (2013)	Future Background Conditions (2025)	Total Future Conditions (2025)
		

Table 16: Intersection Summary – Michigan Avenue NE/NW & North Capitol Street (1 of 2)

Michigan Avenue NE/NW & North Capitol Street

Location/Scenarios with LOS F EX = Existing (2013) BG = Future Background (2025) TF = Total Future (2025)	AM Peak Hour	PM Peak Hour	Saturday Peak Hour
	Overall intersection: TF Eastbound Michigan Avenue NW: TF Westbound Michigan Avenue NE: TF Northbound North Capitol Street: BG, TF	Overall intersection: TF Eastbound Michigan Avenue NW: BG, TF Westbound Michigan Avenue NE: TF Southbound North Capitol Street: BG, TF	Westbound Michigan Avenue NE: TF Northbound North Capitol Street: BG, TF
Percent of future traffic attributable to development:	8.3%	16.5%	7.6%

Summary of capacity analysis results:	The delays at this intersection during the morning, afternoon, and Saturday peak periods are due to the addition of the background growth and trips generated by the background developments. The addition of the site-generated trips exacerbates these delays and causes additional movements to operate under unacceptable conditions.

Potential Improvements:

Existing Conditions (2013)	Future Background Conditions (2025)	Total Future Conditions (2025)
	In the future background conditions, it is recommended that the on-street parking along the north- and southbound approaches of North Capitol Street be restricted during the morning and afternoon peak periods. In the existing conditions, on-street parking is permitted on the northbound approach during the morning peak period and on the southbound approach during the afternoon peak period. Restricting this parking allows for three travel lanes north- and southbound. In addition to changing the on-street parking restrictions, retiming the intersection allows it to operate under acceptable conditions during all time periods. This report recommends that DDOT consider these improvements outside the scope of this TIA, following the construction of the background developments.	Following full build-out of the site, it is recommended that the eastbound approach of Michigan Avenue to widened to accommodate a 75-foot right-turn lane. Additionally, retiming the intersection during the afternoon peak period allows the intersection to operate more favorably, although still under unacceptable conditions. No additional improvements are recommended, as the construction of an additional eastbound through lane is not feasible. This report recommends that this intersection be studied closely as the McMillan site is developed in order to determine if additional mitigation measures are necessary.

Capacity Analysis Results:

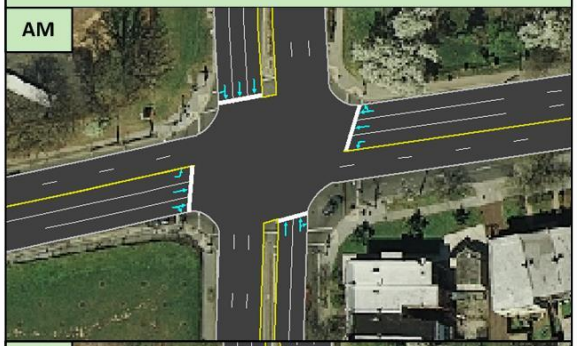
Intersection	Approach	Existing Conditions (2013)						Future Background Conditions (2025)						Total Future Conditions (2025)					
		AM Peak		PM Peak		Saturday Peak		AM Peak		PM Peak		Saturday Peak		AM Peak		PM Peak		Saturday Peak	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Michigan Avenue & North Capitol Street	**Overall**	**42.9**	**D**	**42.3**	**D**	**31.7**	**C**	**77.1**	**E**	**71.9**	**E**	**51.2**	**D**	**108.6**	**F**	**145.5**	**F**	**65.2**	**E**
	Eastbound	47.6	D	58.8	E	18.2	B	55.0	E	103.4	F	18.8	B	148.5	F	324.3	F	28.9	C
	Westbound	51.0	D	70.1	E	44.6	D	65.7	E	59.6	E	45.9	D	98.3	F	125.7	F	93.2	F
	Northbound	44.3	D	31.2	C	37.0	D	136.9	F	52.1	D	84.4	F	139.7	F	54.7	D	95.8	F
	Southbound	32.2	C	23.4	C	23.8	C	46.2	D	82.3	F	30.3	C	72.7	E	91.8	F	31.3	C
Improvements:	***Overall***	--	--	--	--	--	--	***42.0***	***D***	***60.9***	***E***	***41.2***	***D***	***59.1***	***E***	***76.3***	***E***	***46.5***	***D***
	Eastbound	--	--	--	--	--	--	*43.4*	*D*	*71.8*	*E*	*42.8*	*D*	*77.4*	*E*	*111.6*	*F*	*25.6*	*C*
	Westbound	--	--	--	--	--	--	*49.6*	*D*	*75.9*	*E*	*31.6*	*C*	*60.6*	*E*	*89.7*	*F*	*49.0*	*D*
	Northbound	--	--	--	--	--	--	*28.3*	*C*	*71.7*	*E*	*58.1*	*E*	*29.1*	*C*	*77.0*	*E*	*72.1*	*E*
	Southbound	--	--	--	--	--	--	*46.2*	*D*	*31.2*	*C*	*25.8*	*C*	*72.7*	*E*	*32.0*	*C*	*26.4*	*C*

Table 17: Intersection Summary – Michigan Avenue NE/NW & North Capitol Street (2 of 2)

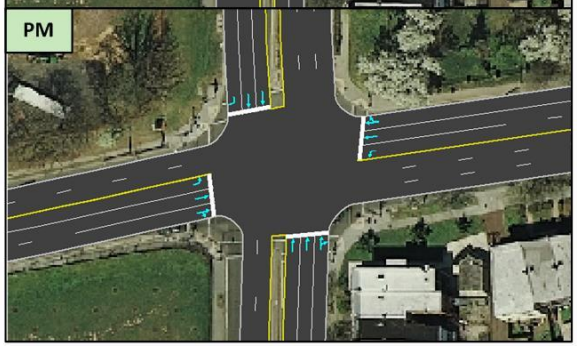
Michigan Avenue NE/NW & North Capitol Street

Existing Conditions (2013)

AM

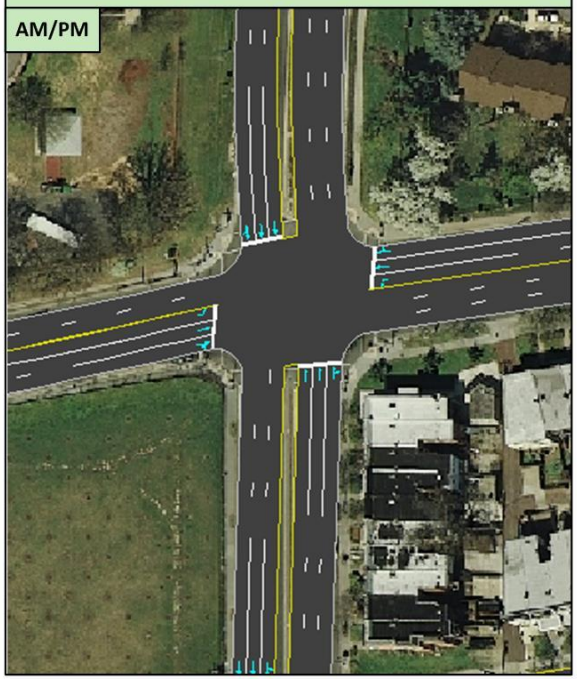


PM



Future Background Conditions (2025)

AM/PM



Total Future Conditions (2025)

AM/PM

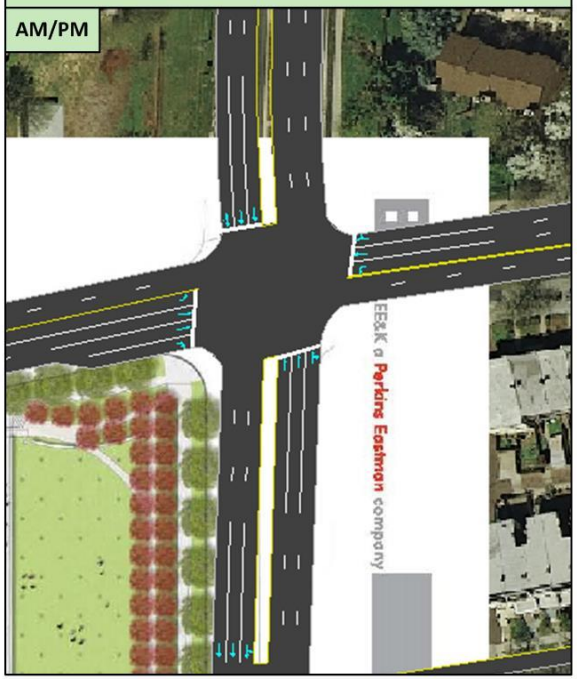


Table 18: Intersection Summary – Girard Street NW & North Capitol Street

Girard Street NE & North Capitol Street			
Location/Scenarios with LOS F EX = Existing (2013) BG = Future Background (2025) TF = Total Future (2025)	**AM Peak Hour**	**PM Peak Hour**	**Saturday Peak Hour**
Percent of future traffic attributable to development:	6.2%	11.4%	6.9%
Summary of capacity analysis results:	This intersection operates under acceptable conditions in all time periods and scenarios.		

Potential Improvements:

Existing Conditions (2013)	Future Background Conditions (2025)	Total Future Conditions (2025)
		In conjunction with Phase 1 of development, it is recommended that the on-street parking along the north- and southbound approaches of North Capitol Street adjacent to the site be restricted during the morning and afternoon peak periods. In the existing conditions, on-street parking is permitted on the northbound approach during the morning peak period and on the southbound approach during the afternoon peak period. Restricting this parking allows for three travel lanes north- and southbound.

Capacity Analysis Results:

Intersection	Approach	Existing Conditions (2013)						Future Background Conditions (2025)						Total Future Conditions (2025)					
		AM Peak		*PM Peak*		*Saturday Peak*		*AM Peak*		*PM Peak*		*Saturday Peak*		*AM Peak*		*PM Peak*		*Saturday Peak*	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Girard Street & North Capitol Street	Southbound Left	1.0	A	1.5	A	1.2	A	1.5	A	2.3	A	1.5	A	1.5	A	1.8	A	1.5	A
Improvements:	*Southbound Left*	--	--	--	--	--	--	--	--	--	--	--	--	*1.3*	*A*	*1.7*	*A*	--	--

Table 19: Intersection Summary – Franklin Street NE & North Capitol Street (1 of 2)

Franklin Street NE & North Capitol Street

Location/Scenarios with LOS F EX = Existing (2013) BG = Future Background (2025) TF = Total Future (2025)	AM Peak Hour	PM Peak Hour	Saturday Peak Hour
		Westbound Franklin Street NE: EX, BG	
Percent of future traffic attributable to development:	9.3%	12.2%	6.8%

Summary of capacity analysis results:	The unacceptable conditions at this intersection are due to the existing lane configurations and commuter traffic volumes. The addition of the background growth and trips generated by the background developments exacerbates the existing delays on the stop-controlled westbound approach. However, the construction of the adjacent signalized intersections along North Capitol Street at the North Service Court and Evarts Street NW increases the frequency of acceptable gaps for turning vehicles and allows the intersection to operate under acceptable conditions during all time periods.

Potential Improvements:

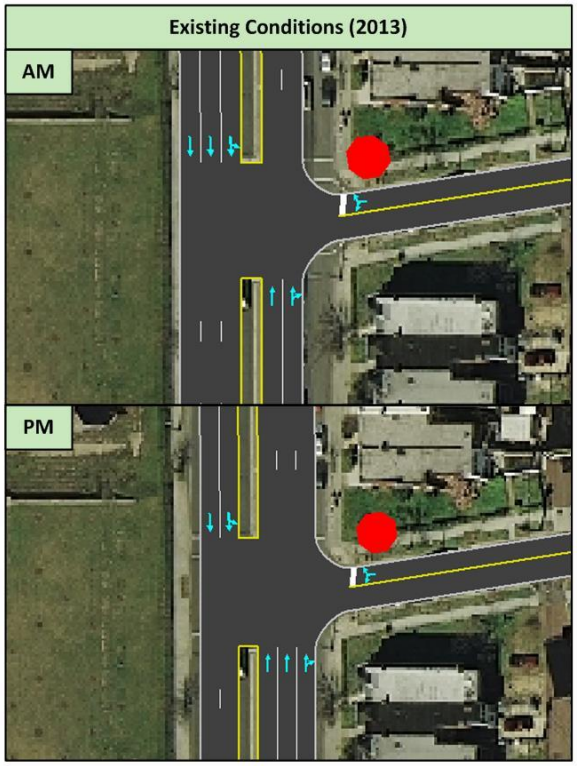
Existing Conditions (2013)	Future Background Conditions (2025)	Total Future Conditions (2025)
		In conjunction with Phase 1 of development, it is recommended that the on-street parking along the north- and southbound approaches of North Capitol Street adjacent to the site be restricted during the morning and afternoon peak periods. In the existing conditions, on-street parking is permitted on the northbound approach during the morning peak period and on the southbound approach during the afternoon peak period. Restricting this parking allows for three travel lanes north- and southbound. Additionally, it is recommended that this intersection be restricted to right-in/right-out operation due to the proposed adjacent signalized intersection at North Service Court. The south- and westbound left turns entering and exiting the Stronghold neighborhood can be executed at the adjacent intersections of North Capitol Street with Girard Street NE and Evarts Street NE.

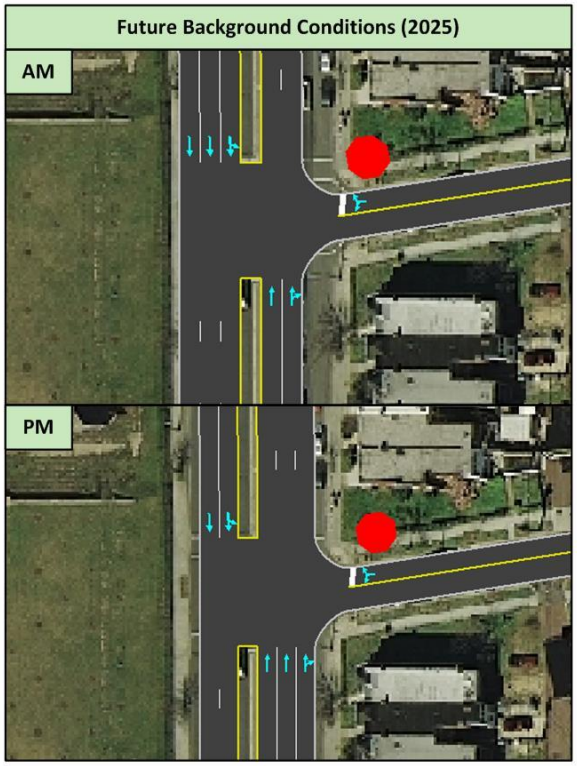
Capacity Analysis Results:

Intersection	Approach	Existing Conditions (2013)						Future Background Conditions (2025)						Total Future Conditions (2025)					
		AM Peak		*PM Peak*		*Saturday Peak*		*AM Peak*		*PM Peak*		*Saturday Peak*		*AM Peak*		*PM Peak*		*Saturday Peak*	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Franklin Street & North Capitol Street	Westbound	26.5	D	80.7	F	13.2	B	19.5	C	119.2	F	12.8	B	39.0	E	12.2	B	10.9	B
	Southbound Left	0.2	A	0.2	A	0.5	A	0.3	A	0.3	A	0.6	A	0.4	A	0.2	A	0.6	A
Improvements:	*Westbound*	--	--	--	--	--	--	--	--	--	--	--	--	*0.0*	*A*	*9.1*	*A*	*8.9*	*A*
	Southbound Left	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 20: Intersection Summary – Franklin Street NE & North Capitol Street (2 of 2)

Franklin Street NE & North Capitol Street





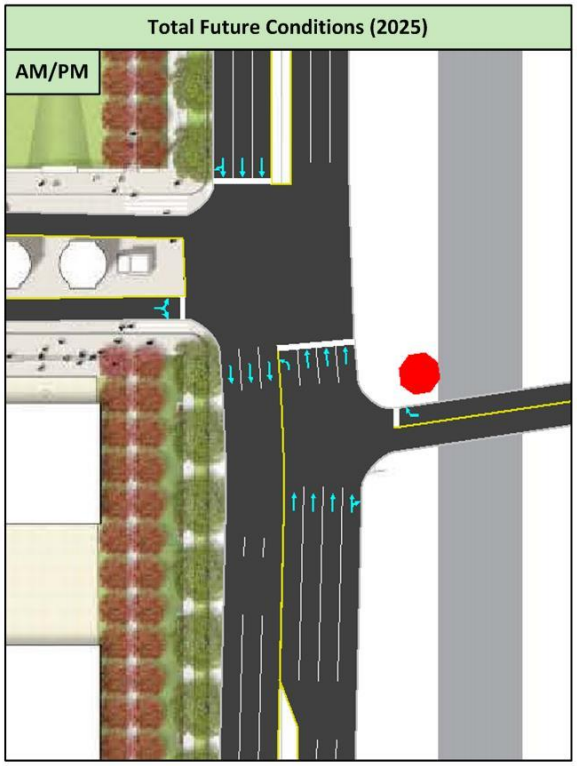


Table 21: Intersection Summary – Evarts Street NE & North Capitol Street

Evarts Street NE & North Capitol Street

Location/Scenarios with LOS F EX = Existing (2013) BG = Future Background (2025) TF = Total Future (2025)	AM Peak Hour	PM Peak Hour	Saturday Peak Hour
		Westbound Evarts Street NE: BG	
Percent of future traffic attributable to development:	9.3%	12.2%	6.8%

Summary of capacity analysis results:	The unacceptable conditions at this intersection are due to the existing lane configurations and commuter traffic volumes with the addition of the background growth and trips generated by the background developments. However, the construction of the adjacent signalized intersections along North Capitol Street at the North Service Court and Evarts Street NW increases the frequency of acceptable gaps for turning vehicles and allows the intersection to operate under acceptable conditions during all time periods.

Potential Improvements:

Existing Conditions (2013)	Future Background Conditions (2025)	Total Future Conditions (2025)
		In conjunction with Phase 1 of development, it is recommended that the on-street parking along the north- and southbound approaches of North Capitol Street adjacent to the site be restricted during the morning and afternoon peak periods. In the existing conditions, on-street parking is permitted on the northbound approach during the morning peak period and on the southbound approach during the afternoon peak period. Restricting this parking allows for three travel lanes north- and southbound.

Capacity Analysis Results:

Intersection	Approach	Existing Conditions (2013)						Future Background Conditions (2025)						Total Future Conditions (2025)					
		AM Peak		*PM Peak*		*Saturday Peak*		*AM Peak*		*PM Peak*		*Saturday Peak*		*AM Peak*		*PM Peak*		*Saturday Peak*	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Evarts Street & North Capitol Street	Westbound	23.7	C	45.8	E	17.1	C	19.8	C	68.5	F	16.8	C	40.8	E	11.4	B	15.5	C
	Southbound Left	0.1	A	0.3	A	0.2	A	0.2	A	0.5	A	0.3	A	0.3	A	0.4	A	0.3	A
Improvements:	*Westbound*	--	--	--	--	--	--	--	--	--	--	--	--	*19.6*	*C*	*14.1*	*B*	*14.6*	*B*
	Southbound Left	--	--	--	--	--	--	--	--	--	--	--	--	*0.6*	*A*	*0.6*	*A*	*0.9*	*A*

Table 22: Intersection Summary – Douglas Street NE & North Capitol Street

Douglas Street NE & North Capitol Street			
Location/Scenarios with LOS F EX = Existing (2013) BG = Future Background (2025) TF = Total Future (2025)	**AM Peak Hour**	**PM Peak Hour**	**Saturday Peak Hour**
Percent of future traffic attributable to development:	15.7%	15.6%	7.8%
Summary of capacity analysis results:	This intersection operates under acceptable conditions in all time periods and scenarios.		

Potential Improvements:

Existing Conditions (2013)	Future Background Conditions (2025)	Total Future Conditions (2025)
		In conjunction with Phase 1 of development, it is recommended that the on-street parking along the north- and southbound approaches of North Capitol Street adjacent to the site be restricted during the morning and afternoon peak periods. In the existing conditions, on-street parking is permitted on the northbound approach during the morning peak period and on the southbound approach during the afternoon peak period. Restricting this parking allows for three travel lanes north- and southbound.

Capacity Analysis Results:

Intersection	Approach	Existing Conditions (2013)						Future Background Conditions (2025)						Total Future Conditions (2025)					
		AM Peak		*PM Peak*		*Saturday Peak*		*AM Peak*		*PM Peak*		*Saturday Peak*		*AM Peak*		*PM Peak*		*Saturday Peak*	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Douglas Street & North Capitol Street	Westbound	18.5	C	20.3	D	25.8	D	19.0	C	27.8	D	27.7	D	17.1	C	42.8	E	27.3	D
	Southbound Left	0.1	A	0.2	A	0.1	A	0.1	A	0.3	A	0.2	A	0.1	A	0.4	A	0.2	A
Improvements:	*Westbound*	--	--	--	--	--	--	--	--	--	--	--	--	*12.0*	*B*	*12.9*	*B*	--	--
	Southbound Left	--	--	--	--	--	--	--	--	--	--	--	--	*0.2*	*A*	*0.4*	*A*	--	--