
MARGARET ESTATES

Marysville, WA

TRAFFIC IMPACT ANALYSIS (TIA)

Updated April 19, 2024



HEATH&ASSOCIATES

Transportation Planning & Engineering

MARGARET ESTATES TRAFFIC IMPACT ANALYSIS

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License:



April 19, 2024

City of Marysville

Subject: Revisions to the Margaret Estates Traffic Impact Analysis

This letter is in response to the City of Marysville's review memo dated December 26, 2023, regarding the TIA for the proposed Margaret Estates project.

City Comments

- Per City TIA Guidelines, analysis years shall be Opening Year and Horizon Year. Opening Year is defined as the year in which development construction is reasonably assumed to be complete.

Comment Acknowledged. Both Opening Year and Horizon Year scenarios are included in the TIA.

- Horizon Year is defined as Opening Year plus 6 Years.

The TIA has been updated accordingly and now includes a 2032 Horizon Year scenario.

- TIA shall be updated to provide analysis of each with and without development traffic.

The TIA has been updated accordingly, see Section 4.5 of the updated report.

Please call if you require anything further.

Sincerely,
Aaron Van Aken, P.E., PTOE



MARGARET ESTATES TRAFFIC IMPACT ANALYSIS

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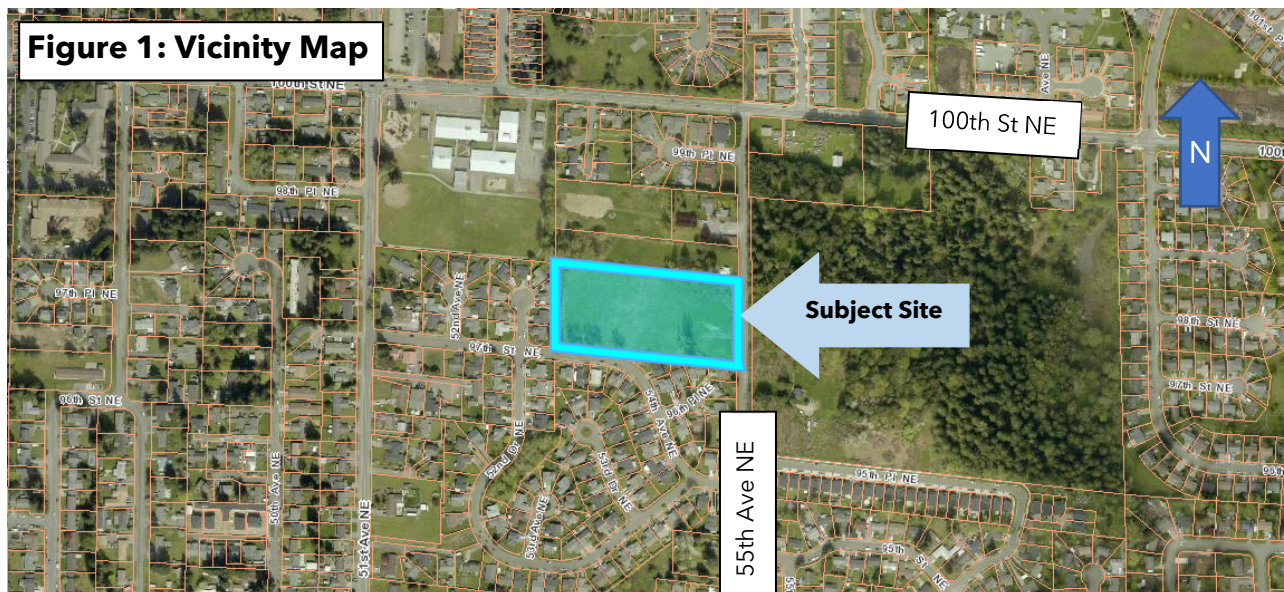
MARGARET ESTATES TRAFFIC IMPACT ANALYSIS

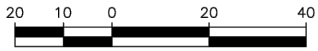
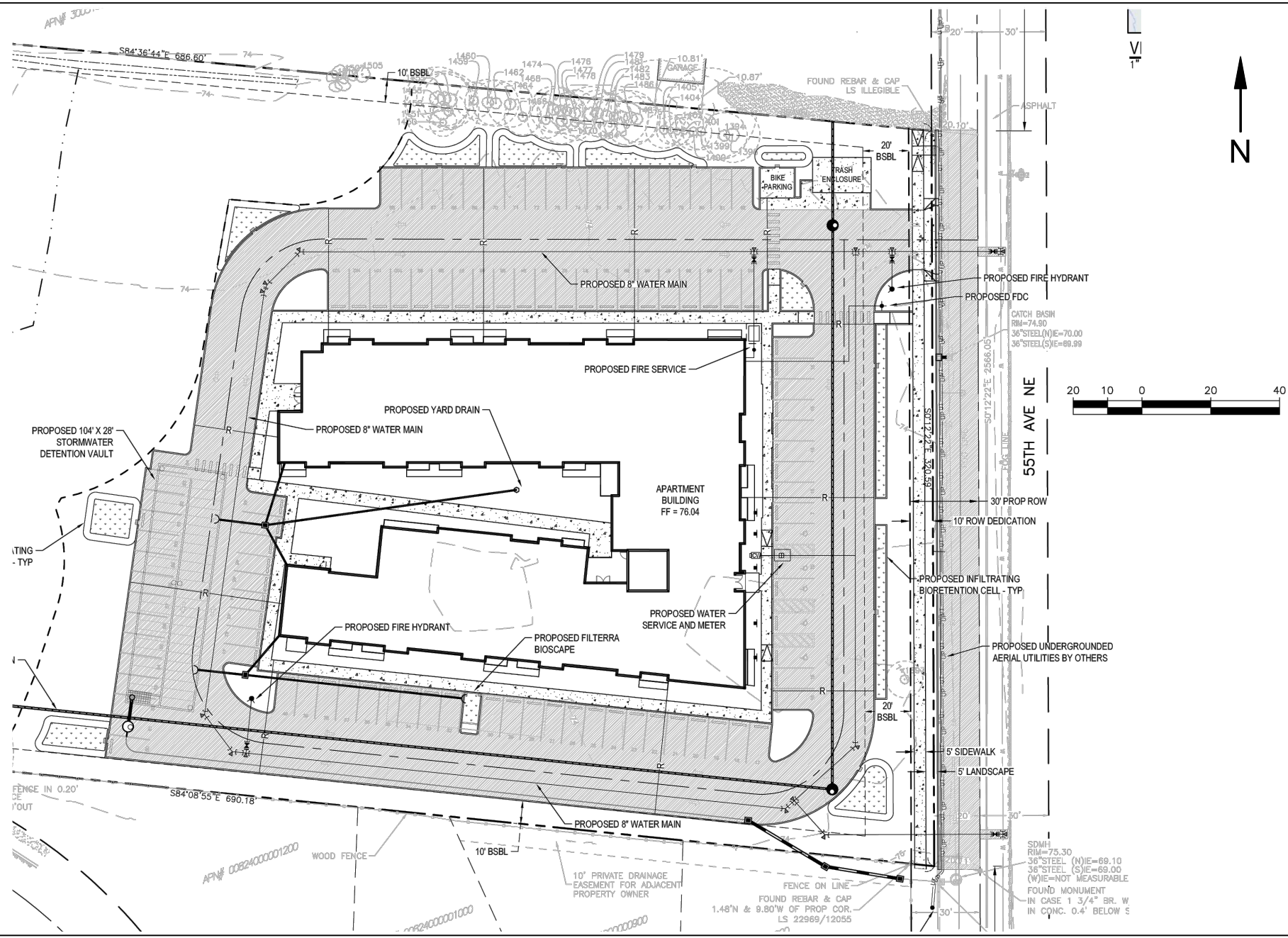
1. INTRODUCTION

Heath & Associates has been engaged to prepare a Traffic Impact Analysis (TIA) for a proposed 58-unit apartment complex in the city of Marysville. A scoping memo was prepared and sent to the City for review and approval. The City provided their approval and comments in a November 2023 memo (attached). This TIA adheres to the guidelines set by the City and the approved scope of work.

2. PROJECT DESCRIPTION

Margaret Estates is a proposed multi-family development comprised of 58 apartment units located within the city of Marysville. The subject site is bordered to the east by 55th Avenue NE, situated on 4.85-acres within undeveloped tax parcel #: 30051500301800. Site ingress/egress is proposed via one new access point extending west from 55th Avenue NE. A total on-site parking supply of 103 spaces is included. Figure 1 below shows the general site location with the subject parcel highlighted in blue. Figure 2 on the following page displays the conceptual site plan.





3. EXISTING CONDITIONS

3.1 Existing Street System

The primary roadways serving the project are listed and described below.

100th Street NE: is an east-west, two-to-three lane collector arterial located north of the subject site. Near 55th Avenue NE, the cross-section is comprised of a single 11-foot travel lane in either direction and paved shoulders varying in width. Sidewalk availability is discontinuous with marked north/south crosswalks at major intersections, including a mid-block crossing accompanied by a rectangular rapid flashing beacon (RRFB) between 52nd and 53rd Drive NE. The posted speed limit is 30-mph or 20-mph to the west due to a school zone.

55th Avenue NE: is a north-south, two-lane residential street bordering the subject site to the east. The roadway's cross-section is comprised of a single travel lane in each direction. Non-motorist infrastructure along the roadway is generally absent. The nearest marked pedestrian crosswalk is provided at the intersection with 100th Street NE. The posted speed limit is 30-mph.

3.2 Transit Service

A review of the Community Transit regional bus schedule indicates that transit is available to and from the subject site (under one mile). Route 201/202 - Smokey Point-Lynwood and Route 222 - Marysville-Tulalip are both provided in the project's vicinity.

Route 201/202: The nearest stop is located near the intersection of 100th Street NE & Shoultes Road (~4,500' northwest of site). Route 202 provides service from the Lynwood Transit Center Bay B4 to the Smokey Point Transit Center. Weekday service is provided from 5:28 AM to 11:24 PM, Saturday service is provided from 6:33 AM to 10:35 PM and Sunday service is provided from 7:32 AM to 9:36 PM.

Route 222: The nearest stop is provided ~4,000' southeast of the project at the intersection of 88th Street NE & 57th Drive NE. Route 222 provides service from State Avenue & Grove Street to Ellison James Drive & Steve Williams Drive. Weekday service is provided from 5:55 AM to 8:45 PM, Saturday service is provided from 7:00 AM to 9:56 PM, and Sunday service is provided from 7:00 AM to 7:30 PM.

Refer to the Community Transit website for more detailed information.



3.3 Roadway Improvements

The City of Marysville Six-Year (2023-2028) Transportation Improvement Program was reviewed and indicates five planned improvements in the project’s vicinity. See Table 1 below.

Table 1: Transportation Improvement Projects

Name	Location	Improvement	Est. Project Cost
Safe Routes to School (ID #: 4)	100th St NE 51st Ave NE	Construct curb, gutter, sidewalk, and bicycle facilities along both roadways.	\$1,482,000
2020 City Safety Program (ID #: 9)	100th & 55th And 139th & 51st	Construct rectangular rapid flashing beacons at both intersections.	\$100,000
100th St NE & 67th Ave NE (ID #: 16)	Intersection	Construct a traffic signal at the intersection.	\$800,000
State Ave/100th St/Shoultes (ID #: 23)	100th St from State Ave to Shoultes	Improve operations at these tightly spaced intersections.	\$4,500,000
88th St NE (ID #: 57)	State Ave to 67th Ave	Widen roadway to the 3-lane cross section plus right/through lane at State Ave.	\$37,138,000

3.4 Existing Peak Hour Volumes and Travel Patterns

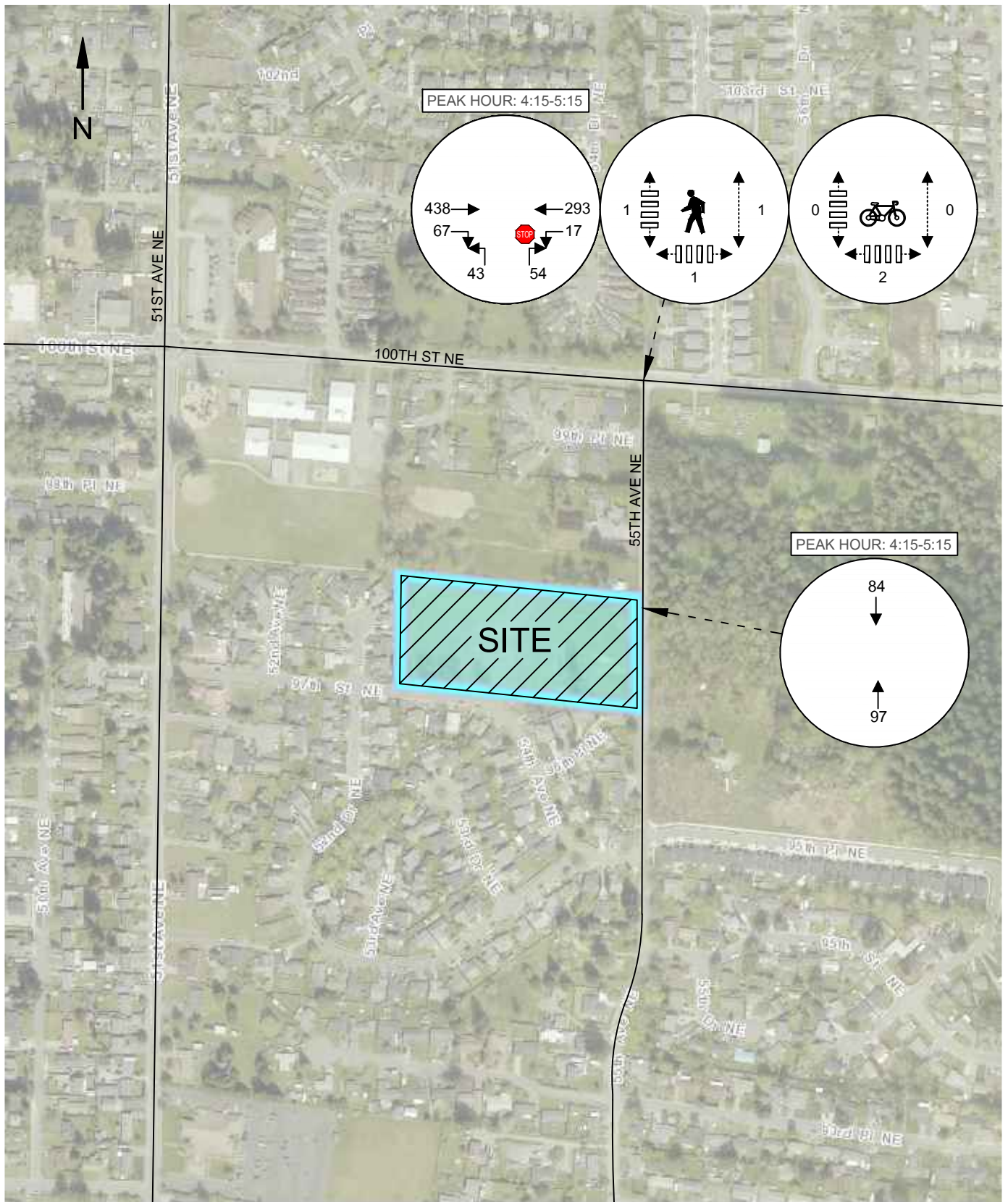
Field data for this study was collected in October of 2023 at the intersection of 100th St NE & 55th Avenue NE. Counts took place during the PM peak period of 4:00-6:00 PM. The single hour representing peak volumes is then determined and used for capacity analysis. Counts were then extrapolated from the intersection to derive volumes crossing the subject frontage. Figure 3 identifies existing PM peak hour volumes at both study locations. Count sheets are included in the appendix for reference.

3.5 Non-Motorist Activity and Infrastructure

Pedestrian and bicycle activity were monitored on the nearby street segments studied for this project during count observations. The intersection of 100th Street NE & 55th Avenue NE received three pedestrians (one crossing each intersection leg) and two bicycles (both crossing the south leg).

Non-motorist infrastructure in the site vicinity is generally absent with discontinuous sidewalks along both 100th Street NE and 55th Avenue NE. However, a marked crosswalk is available at the intersection of 100th Street NE & 55th Avenue NE (future RRFB). Moreover, according to the Transportation Improvement Plan, several improvements would further increase non-motorist mobility in the area.





3.6 Existing Peak Hour Level of Service

PM peak hour delays were determined through methodologies prescribed in the *Highway Capacity Manual* 7th Edition. Capacity analysis is used to determine level of service (LOS) which is an established measure of congestion for transportation facilities. The range¹ for intersection level of service is LOS A to LOS F with the former indicating the best operating conditions with low control delays and the latter indicating saturated conditions with heavy control delays. Detailed descriptions of intersection LOS are given in the *Highway Capacity Manual*. Level of service calculations were made using the *Synchro 12* analysis program. For side-street stop-controlled intersections, LOS is determined by the movement with the highest delay. Table 2 below summarizes existing PM peak hour LOS delays for the study intersection of 100th Street NE & 55th Avenue NE.

Table 2: Existing PM Peak Hour Level of Service

Delays given in seconds per vehicle

Intersection	Control	Critical Movement	LOS	Delay
100th St NE & 55th Ave NE	One-Way Stop	Northbound	C	16.2

City Level of Service Standard²: LOS D conditions or better.

Existing PM peak hour level of service is shown to operate with LOS C conditions. No intersection deficiencies are identified.

¹ *Signalized Intersections - Level of Service*

Level of Service	Control Delay per Vehicle (sec)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

Highway Capacity Manual, 7th Edition

Stop Controlled Intersections - Level of Service

Level of Service	Control Delay per Vehicle (sec)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

² Marysville Comprehensive Plan - 8.0 Transportation Element.



3.7 Collision History

Collision history at the intersection of 100th Street NE & 55th Avenue NE was requested from WSDOT for the previous three full years between 2020-2022. The intersection received a total of 2 reported collisions. Refer to Table 3 below.

Table 3: Collision History

Intersection	2020	2021	2022	Avg/Yr
100th St NE & 55th Ave NE	1	1	0	0.67

The collision types were listed as rear-end (2020) and enter at angle (2021) with driver contributing circumstances listed as follow to closely (2020) and operating defective equipment (2021). Both collisions resulted in property damage only - no injuries were reported.

See below for the crash rate per million entering vehicles (MEV)³. ADT was estimated by multiplying the PM peak hour volumes by 10.

Crash Rate Per MEV (R):

100th Street NE & 55th Avenue NE

ADT = 912 X 10 = **9,120 Vehicles**

R = **0.2**

³ $R = \frac{A*1,000,000}{365*N*V}$, Where A = Avg # of crashes per year, V = Intersection ADT and N = # of years of data



4. FORECAST TRAFFIC DEMAND & ANALYSIS

4.1 Project Trip Generation

Trip generation is defined as the number of vehicle movements that enter or exit the respective project site during a designated time, such as a specific peak hour (AM or PM) or an entire day. Trip generation estimates were derived from the Institute of Transportation Engineers (ITE) publication, *Trip Generation*, 11th Edition. The utilized Land Use Code (LUC) is defined under ITE's *LUC 220 - Multifamily Housing (Low-Rise)*. Dwelling Units were used as the input variable with ITE average rates to determine trip ends. See Table 4 below for the trip generation summary.

Table 4: Project Trip Generation

Land Use	Units	AWDT	AM Peak-Hour Trips			PM Peak-Hour Trips		
			In	Out	Total	In	Out	Total
Multifamily Housing	58	391	6	17	23	19	11	30

According to ITE data, the project is estimated to generate 391 average weekday daily trips with 23 AM peak hour trips (6 inbound/17 outbound) and 30 PM peak hour trips (19 inbound/11 outbound). ITE sheets have been provided in the appendix for reference.

4.2 Distribution & Assignment

Trip distribution describes the process by which project generated trips are dispersed on the street network surrounding the site. Percentages were established based on City provided trip distribution maps (Map #'s: 7 & 15) and existing travel patterns identified from the PM peak hour count at 100th Street NE & 55th Avenue NE.

During the scoping process, the City Traffic Engineer stated that a Neighborhood Traffic Safety project would install 8 speed tables and lower speed limit to 25-mph along 55th Avenue NE thereby deterring traffic to/from the south. Consequently, most project traffic (90%) was assigned traveling to and from the north. Figure 4 illustrates the PM peak hour trip distribution for the project.



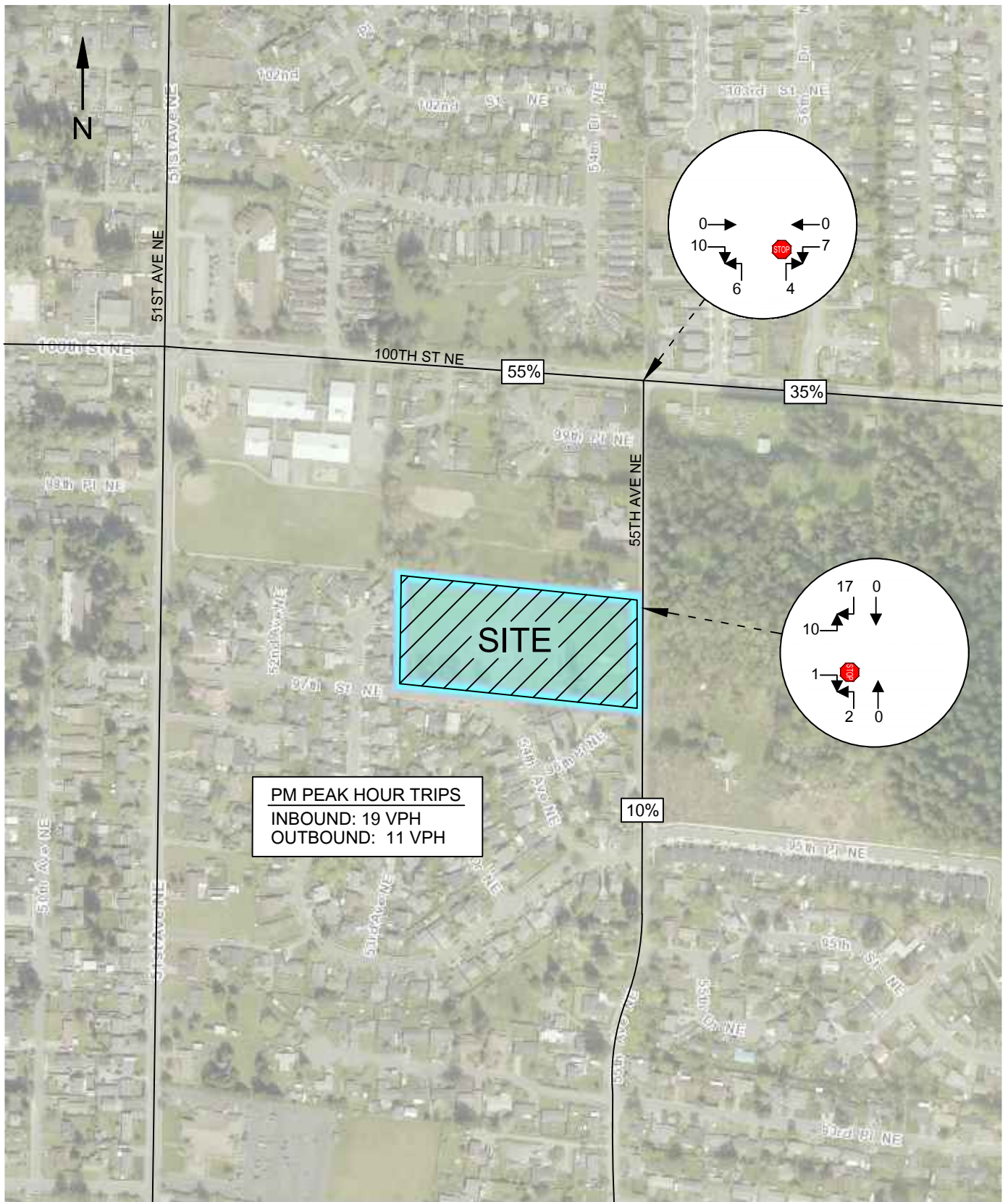
4.3 Future Peak Hour Volumes

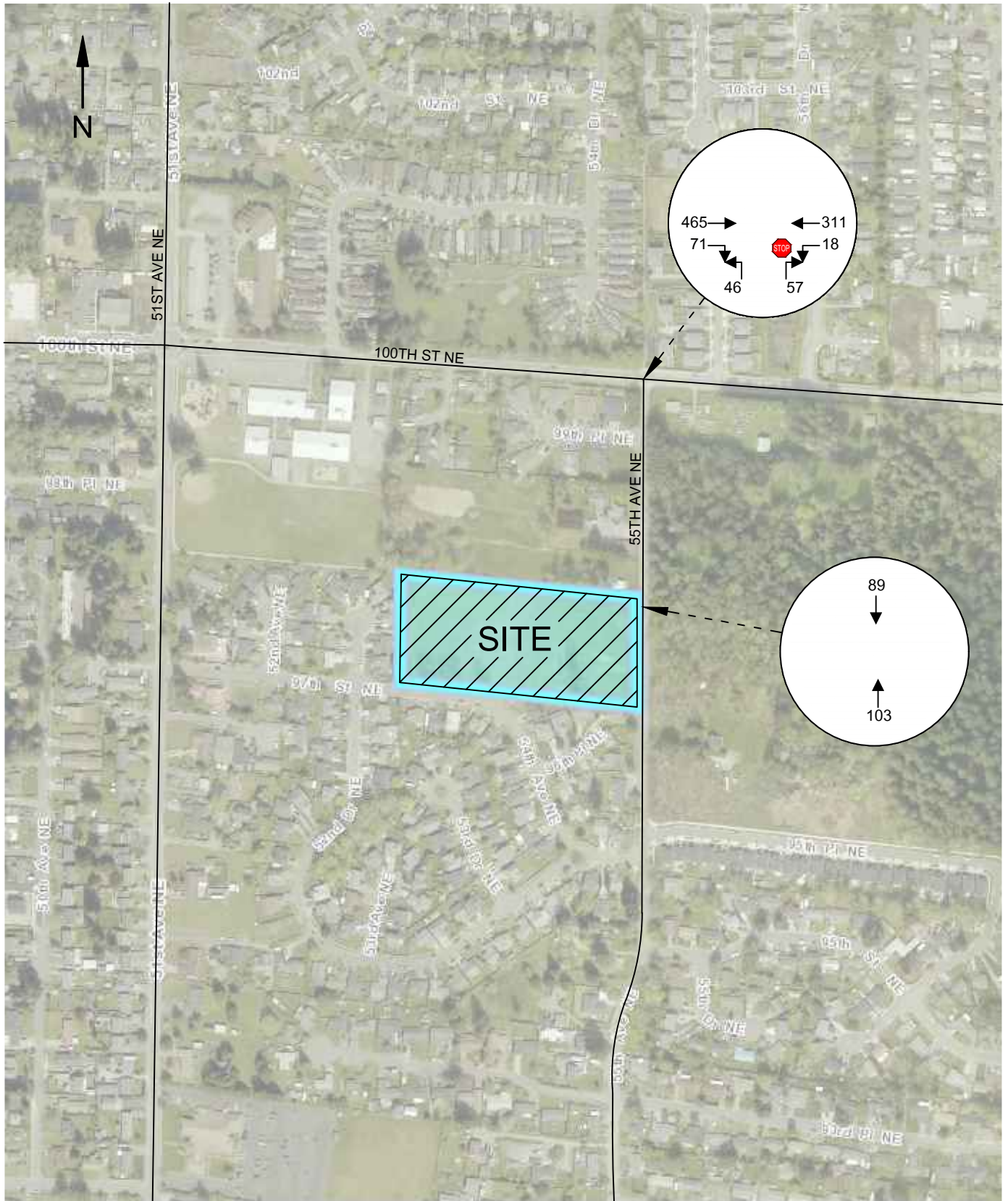
An opening year of 2026 was used to assess future conditions with project-buildout. Forecast 2026 PM peak hour background volumes were derived by applying a compound annual growth rate of 2.0⁴ percent per year to the existing volumes shown in Figure 3. Forecast 2026 volumes without project for the PM peak hour is illustrated in Figure 5 and forecast volumes with project traffic is shown in Figure 6.

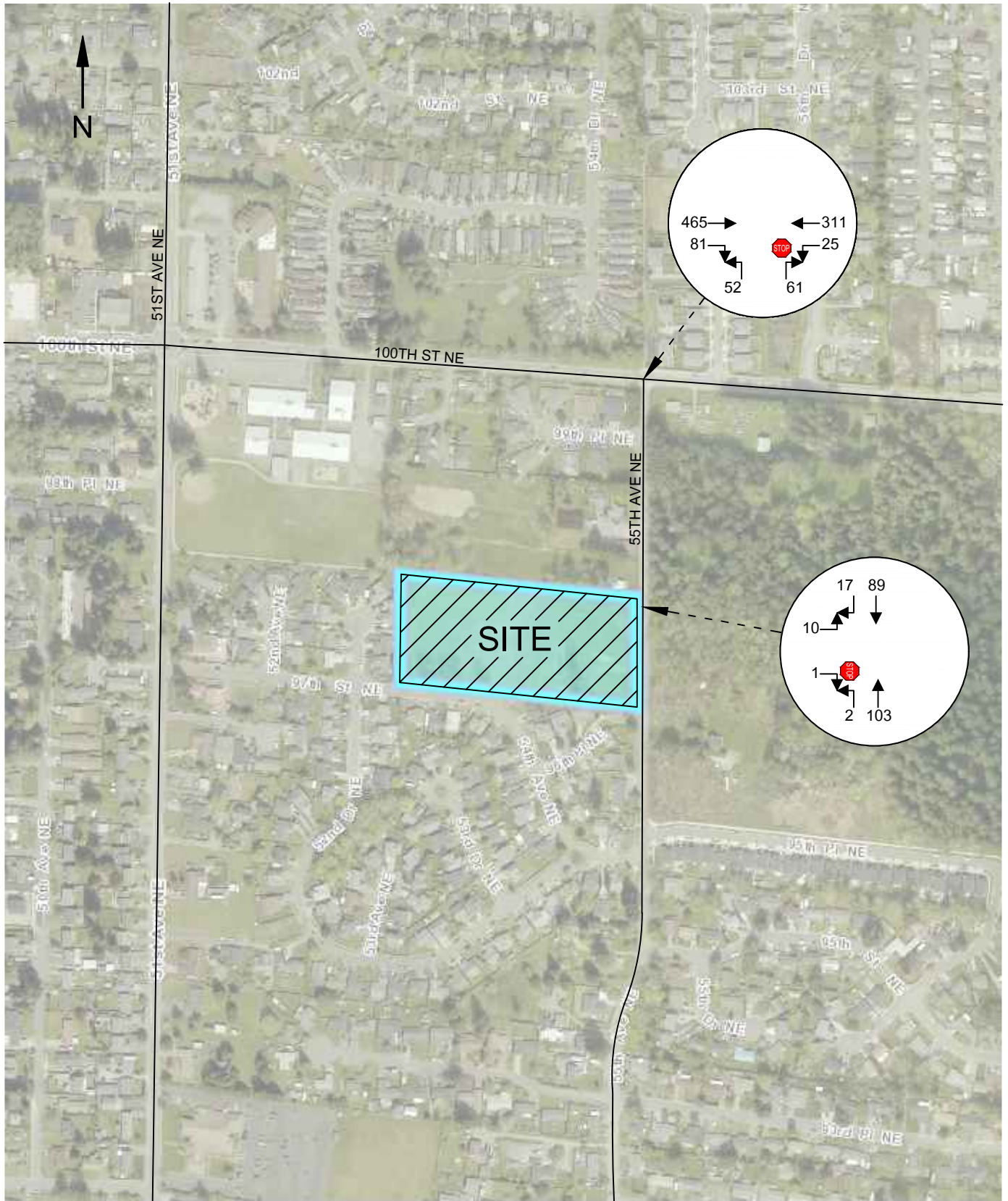
Per City of Marysville review memo, the opening year (2026) and six years after the opening year shall be evaluated (2032). Therefore, a 2032 horizon year was also included in the evaluation using the same 2.0 percent annual growth rate. Figures 7 and 8 displays forecast 2032 PM peak hour volumes without and with project generated traffic, respectively.

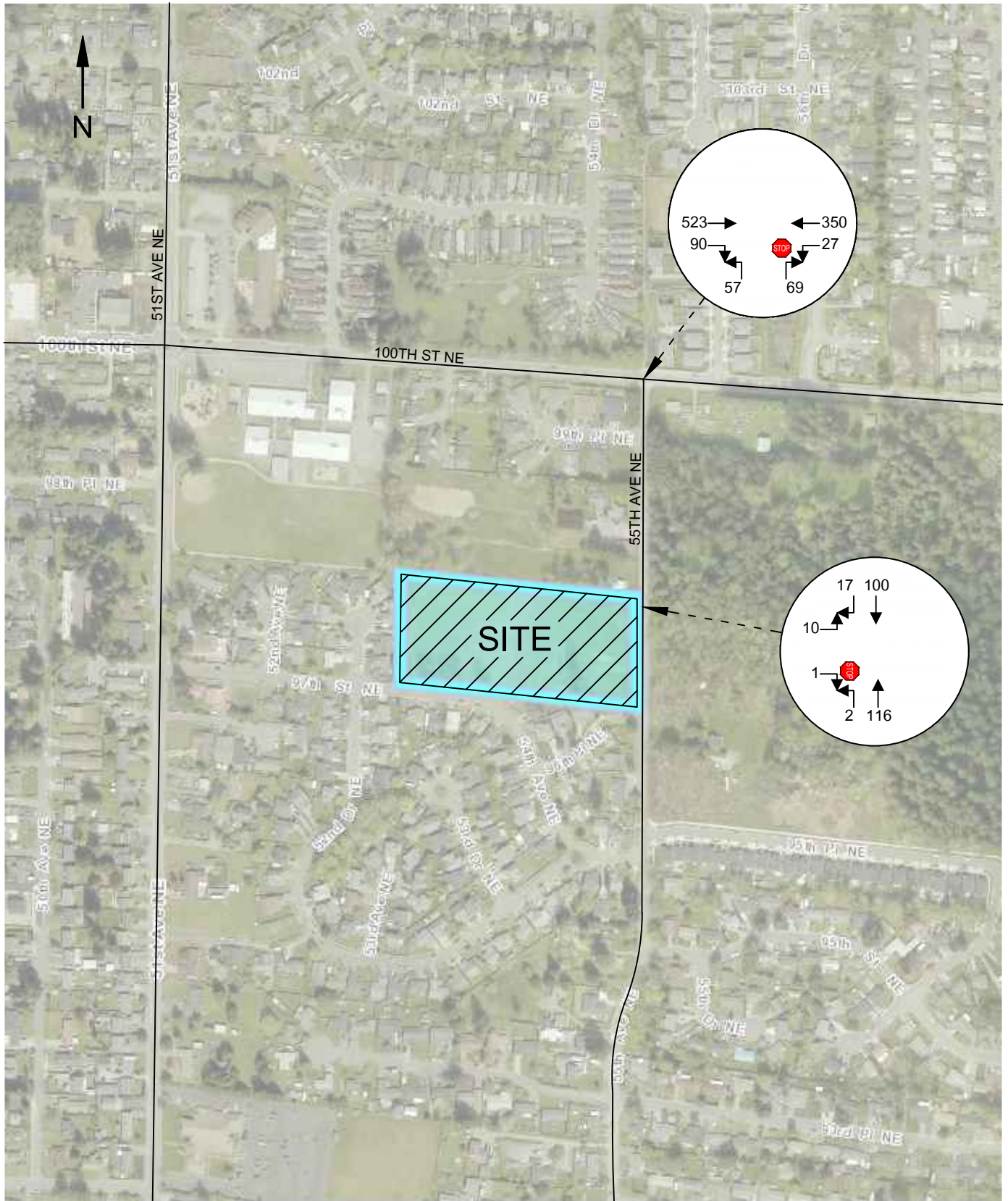
⁴ Approved during scoping process.











4.4 Access

Access to and from the site is proposed via one new access point extending west from 55th Avenue NE.

Access Sight Distance

In accordance with Marysville Design & Development Standards (Chapter 3, Section 3-202), entering sight distance needs to meet a minimum of 200-feet. 55th Avenue is relatively flat in grade and has no horizontal curvature. Initial examinations indicate sight lines in excess of 500-feet in either north or south direction. Overall, no intersection sight distance deficiencies are identified.

4.5 Future Level of Service

Level of service analyses were made of the future peak hour volumes without (background) and with project related trips added to the key roadways and intersections. Delays for each study intersection under future 2026 and 2032 conditions are shown below in Table 5.

Table 5: Forecast PM Peak Hour Level of Service

Delays given in Seconds Per Vehicle

Scenario	Intersection	Control	<i>Without Project</i>		<i>With Project</i>	
			LOS	Delay	LOS	Delay
Forecast 2026	100th St NE & 55th Ave NE	One-Way Stop	C	17.4	C	18.5
	55th Ave NE & Project Access	One-Way Stop	--	--	A	9.7
Forecast 2032	100th St NE & 55th Ave NE	One-Way Stop	C	20.7	C	22.4
	55th Ave NE & Project Access	One-Way Stop	--	--	A	9.8

Forecast 2026 and 2032 PM peak hour level of service is estimated to operate with LOS C conditions or better. Both scenarios are projected to meet city LOS standards and the project is not shown to create a significant impact within the study area.



4.6 Left-Turn Warrants

Left-turn lanes are a means of providing necessary storage space for left turning vehicles at intersections. For this impact study, procedures prescribed by the WSDOT Design Manual Exhibit 1310-7 were used to ascertain storage requirements at the access intersection (55th Avenue NE & Project Access). Based on forecast 2026 and 2032 PM peak hour volumes with project traffic - a left turn lane *would not be warranted*. Refer to the appendix for the warrant nomographs.

4.7 Impact Fees

Margaret Estates is subject to Traffic Impact Fees pursuant to Marysville Municipal Code Chapter 22D.030. Impact fee estimates from Snohomish County through their interlocal agreement is also provided.

Marysville

Per the 2023 fee schedule, residential uses are assessed at \$6,3000 per PM peak hour trip. Initial TIF calculations are therefore as follows:

$$\mathbf{29.6 \text{ trips} \times \$6,300/\text{trip} = \$186,480.00}$$

Snohomish County

The project site is located within the city sub-area CI-MA-4 (residential developments 30%) and within TSA A of Snohomish County. Per Snohomish Municipal Code Chapter 30.66B.330 residential uses are assessed at a rate of \$185.00 per average daily trip. An estimated calculation is provided below. Refer to the appendix for the Snohomish County impact fee worksheet.

$$\mathbf{30 \text{ percent} \times 391 \text{ daily trips} \times \$185.00 = \$21,700.50}$$

It should be noted that the above fees are estimates. Final fees will be determined by the reviewing agencies and are subject to rates in effect at such time.



5. CONCLUSIONS & MITIGATION

Margaret Estates proposes for the construction of 58 apartment units located within the city of Marysville. The subject site, bordered to the east by 55th Avenue NE, is situated on 4.85-acres within a single tax parcel. Access to and from the site is proposed via one new access point extending west from 55th Avenue NE. PM peak hour traffic counts were conducted at the study intersection of 100th Street NE & 55th Avenue NE. Existing level of service was shown to meet city LOS D standards operating with LOS C conditions.

Based on ITE data, the project is estimated to generate 391 average week daily trips with 23 AM peak hour trips and 30 PM peak hour trips. An opening year of 2026 and a horizon year of 2032 (six-year post occupancy) were used to assess full-buildout conditions. Forecast analysis included a 2.0 percent background growth rate to the existing traffic. Forecast 2026 and 2032 PM peak hour level of service is estimated to continue operating with LOS C conditions or better. Lastly, a left-turn lane at the project access point was not warranted during the forecast 2026 or 2032 PM peak hour.

Based on the above analysis, recommended mitigation is as follows:

1. Pay traffic impact fees as required by the City of Marysville and Snohomish County. The exact TIF amount will be determined at the time of application for building permits and is subject to rates in effect at the time payment is made. Initial fee estimates are as follows:
 - a. City of Marysville = \$186,480.00
 - b. Snohomish County = \$21,700.50

Please feel free to contact me should you have any questions.

Aaron Van Aken, P.E., PTOE



MARGARET ESTATES TRAFFIC IMPACT ANALYSIS

APPENDIX

City Scoping Documents





MARYSVILLE
PUBLIC WORKS

MEMORANDUM

TO: Amy Hess - Senior Planner

FROM: Jesse Hannahs, P.E. – Traffic Engineering Manager

DATE: November 13, 2023

SUBJECT: PREA 22-037 – Margaret Estates

I have reviewed the TIA Scoping Memo for the proposed Margaret Estates at 9706 55th Ave NE and have the following comments:

- 1) Traffic impact fees will be required from the City and depending on trip generation/distribution, may be required from the County and State.
- 2) A Traffic Impact Analysis (TIA) will be required.
 - a. Trip Distribution shall follow representations to be provided for neighboring areas developed based upon Comprehensive Plan Traffic Model to be provided.
 - i. Trip Distribution of 55% from south on residential street of 55th Ave NE is not acceptable.
 1. Neighborhood Traffic Safety (NTS) project is scheduled for 2024 construction on 55th Ave NE from 84th ST NE to 100th ST NE and will include installation of 8 speed tables and lowering of speed limit to 25 mph.
 2. 10% max shall be assumed from south on 55th Ave NE.
 3. Remaining 45% should be distributed onto Arterial roadway network.
 - b. Intersection analysis:
 - i. Analysis of intersection(s) of following shall be required of TIA:
 1. 100th ST NE & 55th Ave NE

(360) 363-8100

Public Works
80 Columbia Avenue
Marysville, WA 98270

87TH AVE NORTH - EXISTING



City of Marysville

November 2017

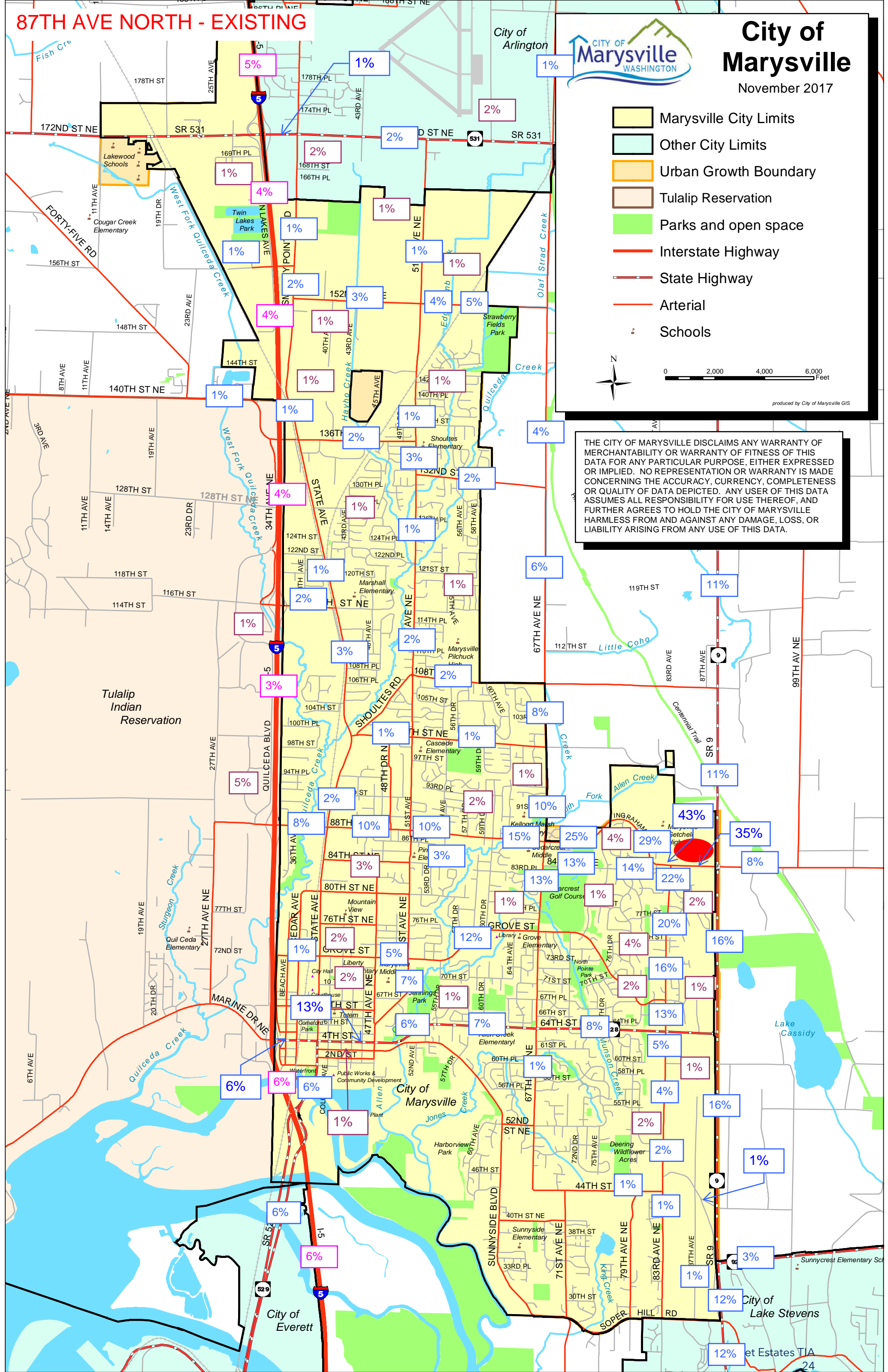
- Marysville City Limits
- Other City Limits
- Urban Growth Boundary
- Tulip Reservation
- Parks and open space
- Interstate Highway
- State Highway
- Arterial
- Schools



0 2,000 4,000 6,000 Feet

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MARGARET ESTATES TRAFFIC IMPACT ANALYSIS

APPENDIX

Traffic Counts



Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 5241a
 Site Code : 00005241
 Start Date : 10/26/2023
 Page No : 1

Groups Printed- Passenger + - Heavy

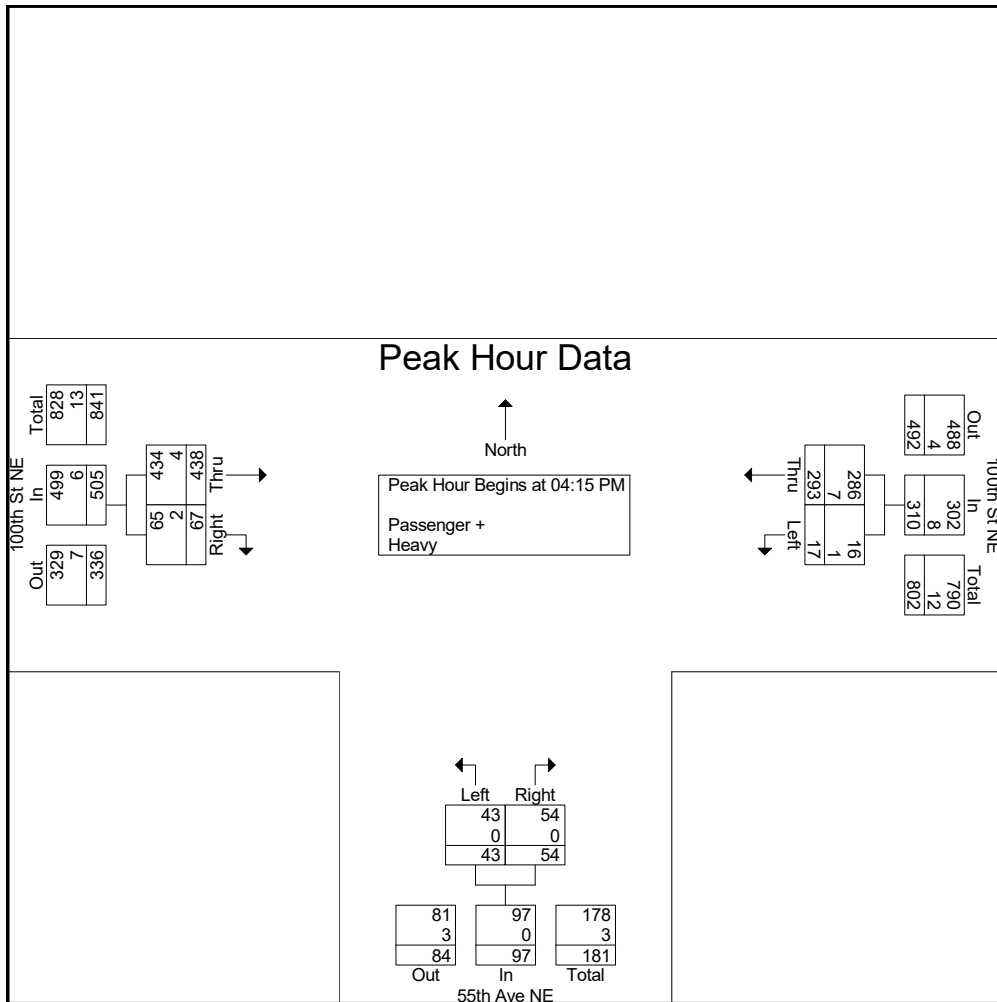
Start Time	100th St NE Westbound			55th Ave NE Northbound			100th St NE Eastbound			Int. Total
	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	
04:00 PM	76	6	82	13	14	27	23	89	112	221
04:15 PM	76	5	81	16	14	30	18	113	131	242
04:30 PM	75	4	79	14	10	24	10	103	113	216
04:45 PM	70	1	71	11	8	19	20	121	141	231
Total	297	16	313	54	46	100	71	426	497	910
05:00 PM	72	7	79	13	11	24	19	101	120	223
05:15 PM	75	7	82	10	8	18	9	94	103	203
05:30 PM	77	6	83	5	8	13	15	102	117	213
05:45 PM	65	3	68	4	6	10	9	88	97	175
Total	289	23	312	32	33	65	52	385	437	814
Grand Total	586	39	625	86	79	165	123	811	934	1724
Apprch %	93.8	6.2		52.1	47.9		13.2	86.8		
Total %	34	2.3	36.3	5	4.6	9.6	7.1	47	54.2	
Passenger +	573	37	610	86	76	162	120	803	923	1695
% Passenger +	97.8	94.9	97.6	100	96.2	98.2	97.6	99	98.8	98.3
Heavy	13	2	15	0	3	3	3	8	11	29
% Heavy	2.2	5.1	2.4	0	3.8	1.8	2.4	1	1.2	1.7

Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 5241a
 Site Code : 00005241
 Start Date : 10/26/2023
 Page No : 2

Start Time	100th St NE Westbound			55th Ave NE Northbound			100th St NE Eastbound			Int. Total
	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	76	5	81	16	14	30	18	113	131	242
04:30 PM	75	4	79	14	10	24	10	103	113	216
04:45 PM	70	1	71	11	8	19	20	121	141	231
05:00 PM	72	7	79	13	11	24	19	101	120	223
Total Volume	293	17	310	54	43	97	67	438	505	912
% App. Total	94.5	5.5		55.7	44.3		13.3	86.7		
PHF	.964	.607	.957	.844	.768	.808	.838	.905	.895	.942
Passenger +	286	16	302	54	43	97	65	434	499	898
% Passenger +	97.6	94.1	97.4	100	100	100	97.0	99.1	98.8	98.5
Heavy	7	1	8	0	0	0	2	4	6	14
% Heavy	2.4	5.9	2.6	0	0	0	3.0	0.9	1.2	1.5



MARGARET ESTATES TRAFFIC IMPACT ANALYSIS

APPENDIX

ITE Data



Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

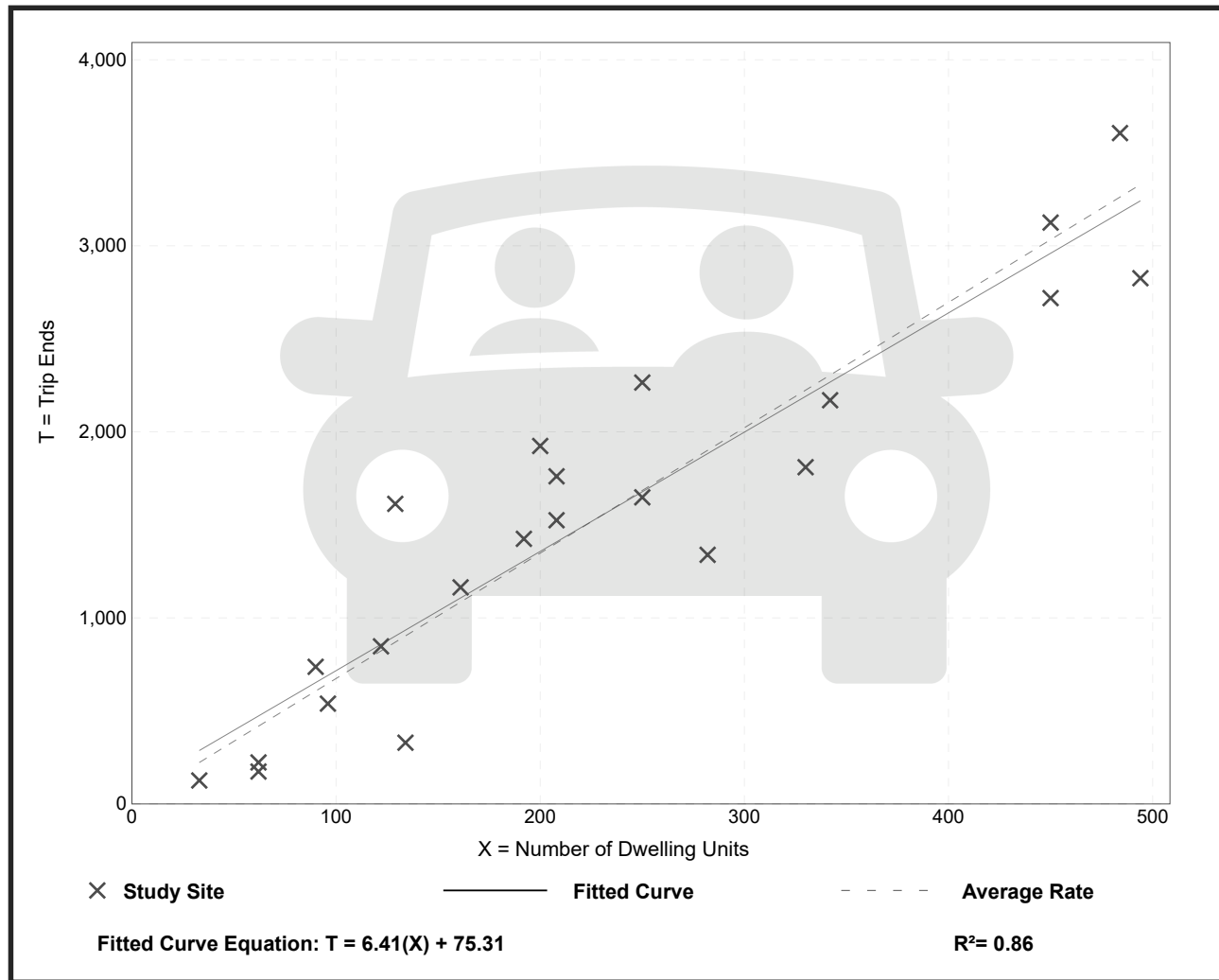
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 22
Avg. Num. of Dwelling Units: 229
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
6.74	2.46 - 12.50	1.79

Data Plot and Equation



Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

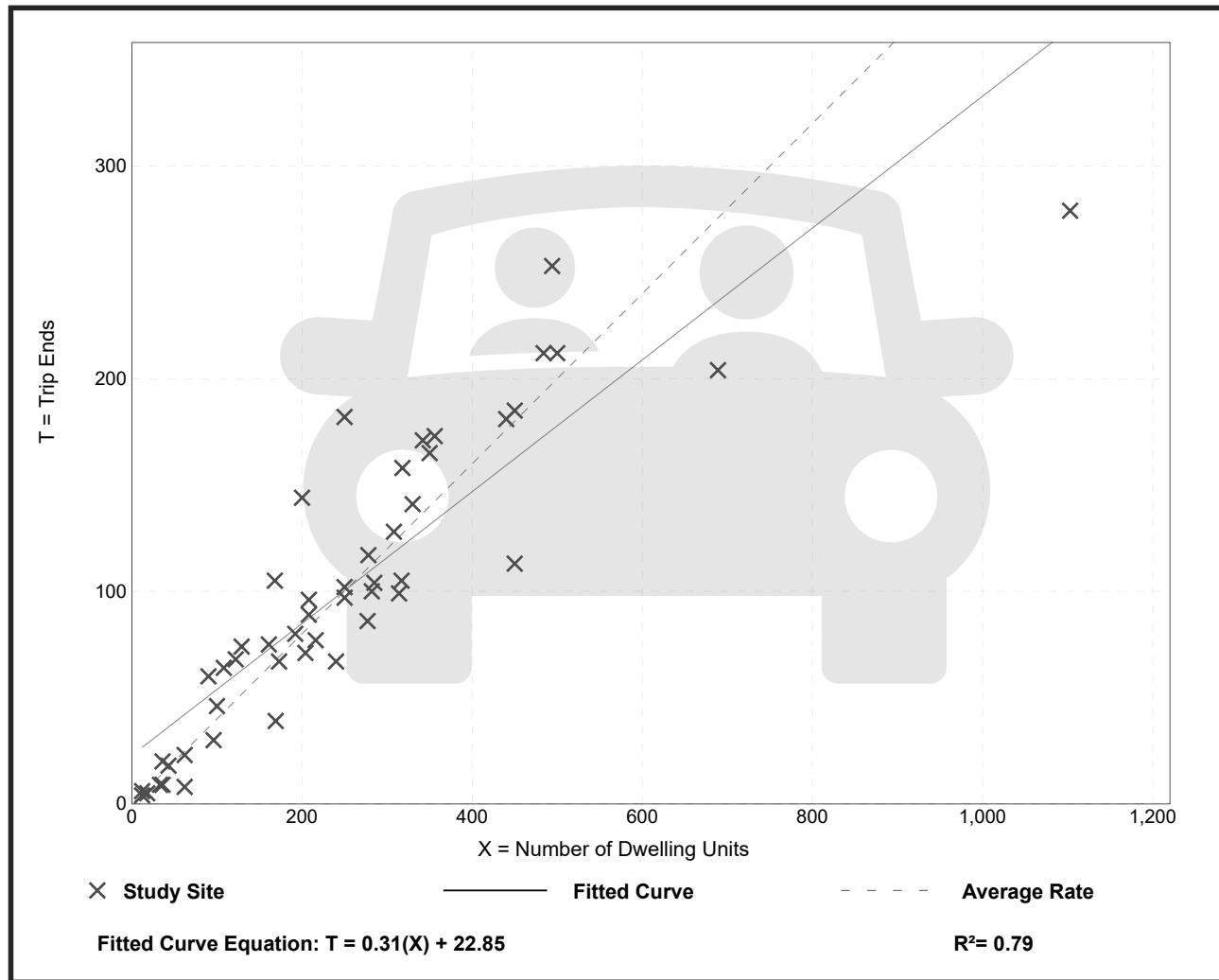
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban
 Number of Studies: 49
 Avg. Num. of Dwelling Units: 249
 Directional Distribution: 24% entering, 76% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.40	0.13 - 0.73	0.12

Data Plot and Equation



Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

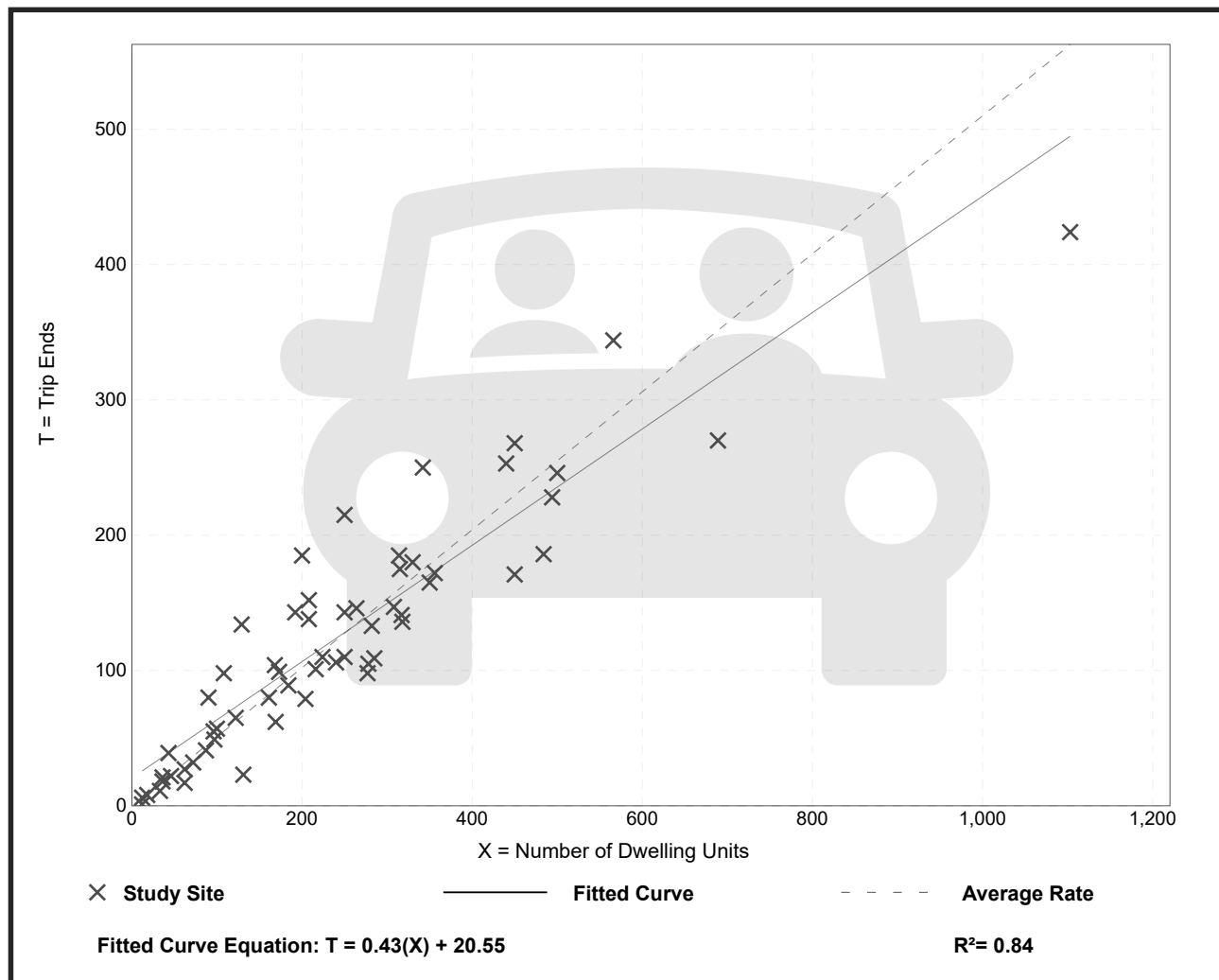
Setting/Location: General Urban/Suburban

Number of Studies: 59
 Avg. Num. of Dwelling Units: 241
 Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.51	0.08 - 1.04	0.15

Data Plot and Equation



MARGARET ESTATES TRAFFIC IMPACT ANALYSIS

APPENDIX

Forecast Excel



MARGARET ESTATES TRAFFIC IMPACT ANALYSIS

APPENDIX

Level of Service



Intersection						
Int Delay, s/veh	1.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	438	67	17	293	43	54
Future Vol, veh/h	438	67	17	293	43	54
Conflicting Peds, #/hr	0	2	2	0	2	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	3	6	2	1	1
Mvmt Flow	466	71	18	312	46	57

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	539	0	853 506
Stage 1	-	-	-	-	504 -
Stage 2	-	-	-	-	350 -
Critical Hdwy	-	-	4.16	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	-	-	2.254	-	3.509 3.309
Pot Cap-1 Maneuver	-	-	1009	-	331 569
Stage 1	-	-	-	-	609 -
Stage 2	-	-	-	-	716 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1007	-	322 566
Mov Cap-2 Maneuver	-	-	-	-	322 -
Stage 1	-	-	-	-	608 -
Stage 2	-	-	-	-	699 -

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.47	16.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	424	-	-	1007	-
HCM Lane V/C Ratio	0.243	-	-	0.018	-
HCM Control Delay (s/veh)	16.2	-	-	8.6	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-

Intersection						
Int Delay, s/veh	2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	465	71	18	311	46	57
Future Vol, veh/h	465	71	18	311	46	57
Conflicting Peds, #/hr	0	2	2	0	2	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	3	6	2	1	1
Mvmt Flow	495	76	19	331	49	61

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	572	0	906 536
Stage 1	-	-	-	-	534 -
Stage 2	-	-	-	-	371 -
Critical Hdwy	-	-	4.16	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	-	-	2.254	-	3.509 3.309
Pot Cap-1 Maneuver	-	-	981	-	308 546
Stage 1	-	-	-	-	590 -
Stage 2	-	-	-	-	700 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	979	-	299 544
Mov Cap-2 Maneuver	-	-	-	-	299 -
Stage 1	-	-	-	-	588 -
Stage 2	-	-	-	-	682 -

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.48	17.42
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	399	-	-	979	-
HCM Lane V/C Ratio	0.275	-	-	0.02	-
HCM Control Delay (s/veh)	17.4	-	-	8.8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.1	-	-	0.1	-

Intersection						
Int Delay, s/veh	2.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	465	81	25	311	52	61
Future Vol, veh/h	465	81	25	311	52	61
Conflicting Peds, #/hr	0	2	2	0	2	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	3	6	2	1	1
Mvmt Flow	495	86	27	331	55	65

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	583	0	926 542
Stage 1	-	-	-	-	540 -
Stage 2	-	-	-	-	386 -
Critical Hdwy	-	-	4.16	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	-	-	2.254	-	3.509 3.309
Pot Cap-1 Maneuver	-	-	972	-	300 542
Stage 1	-	-	-	-	586 -
Stage 2	-	-	-	-	689 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	970	-	288 540
Mov Cap-2 Maneuver	-	-	-	-	288 -
Stage 1	-	-	-	-	585 -
Stage 2	-	-	-	-	665 -

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.66	18.52
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	385	-	-	970	-
HCM Lane V/C Ratio	0.312	-	-	0.027	-
HCM Control Delay (s/veh)	18.5	-	-	8.8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.3	-	-	0.1	-

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			4	4	
Traffic Vol, veh/h	10	1	2	103	89	17
Future Vol, veh/h	10	1	2	103	89	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	4	2
Mvmt Flow	11	1	2	112	97	18

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	222	106	115	0	0
Stage 1	106	-	-	-	-
Stage 2	116	-	-	-	-
Critical Hdwy	6.41	6.21	4.11	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.209	-	-
Pot Cap-1 Maneuver	768	951	1480	-	-
Stage 1	921	-	-	-	-
Stage 2	911	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	767	951	1480	-	-
Mov Cap-2 Maneuver	767	-	-	-	-
Stage 1	919	-	-	-	-
Stage 2	911	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.68	0.14	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1480	-	781	-	-
HCM Lane V/C Ratio	0.001	-	0.015	-	-
HCM Control Delay (s/veh)	7.4	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	2.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	523	80	20	350	51	65
Future Vol, veh/h	523	80	20	350	51	65
Conflicting Peds, #/hr	0	2	2	0	2	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	3	6	2	1	1
Mvmt Flow	556	85	21	372	54	69

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	643	0	1018
Stage 1	-	-	-	-	601
Stage 2	-	-	-	-	417
Critical Hdwy	-	-	4.16	-	6.41
Critical Hdwy Stg 1	-	-	-	-	5.41
Critical Hdwy Stg 2	-	-	-	-	5.41
Follow-up Hdwy	-	-	2.254	-	3.509
Pot Cap-1 Maneuver	-	-	923	-	264
Stage 1	-	-	-	-	549
Stage 2	-	-	-	-	667
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	921	-	255
Mov Cap-2 Maneuver	-	-	-	-	255
Stage 1	-	-	-	-	548
Stage 2	-	-	-	-	647

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.49	20.67
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	352	-	-	921	-
HCM Lane V/C Ratio	0.351	-	-	0.023	-
HCM Control Delay (s/veh)	20.7	-	-	9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.5	-	-	0.1	-

Intersection						
Int Delay, s/veh	2.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	523	90	27	350	57	69
Future Vol, veh/h	523	90	27	350	57	69
Conflicting Peds, #/hr	0	2	2	0	2	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	3	6	2	1	1
Mvmt Flow	556	96	29	372	61	73

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	654	0	1038 608
Stage 1	-	-	-	-	606 -
Stage 2	-	-	-	-	432 -
Critical Hdwy	-	-	4.16	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	-	-	2.254	-	3.509 3.309
Pot Cap-1 Maneuver	-	-	914	-	257 497
Stage 1	-	-	-	-	546 -
Stage 2	-	-	-	-	657 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	912	-	246 495
Mov Cap-2 Maneuver	-	-	-	-	246 -
Stage 1	-	-	-	-	545 -
Stage 2	-	-	-	-	630 -

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.65	22.36
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	339	-	-	912	-
HCM Lane V/C Ratio	0.395	-	-	0.031	-
HCM Control Delay (s/veh)	22.4	-	-	9.1	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.8	-	-	0.1	-

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	10	1	2	116	100	17
Future Vol, veh/h	10	1	2	116	100	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	4	2
Mvmt Flow	11	1	2	126	109	18

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	248	118	127	0	0
Stage 1	118	-	-	-	-
Stage 2	130	-	-	-	-
Critical Hdwy	6.41	6.21	4.11	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.209	-	-
Pot Cap-1 Maneuver	742	937	1465	-	-
Stage 1	910	-	-	-	-
Stage 2	898	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	741	937	1465	-	-
Mov Cap-2 Maneuver	741	-	-	-	-
Stage 1	908	-	-	-	-
Stage 2	898	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.84	0.13	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1465	-	755	-	-
HCM Lane V/C Ratio	0.001	-	0.016	-	-
HCM Control Delay (s/veh)	7.5	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

MARGARET ESTATES TRAFFIC IMPACT ANALYSIS

APPENDIX

LT Warrants



Exhibit 1310-7a Left-Turn Storage Guidelines: Two-Lane, Unsignalized

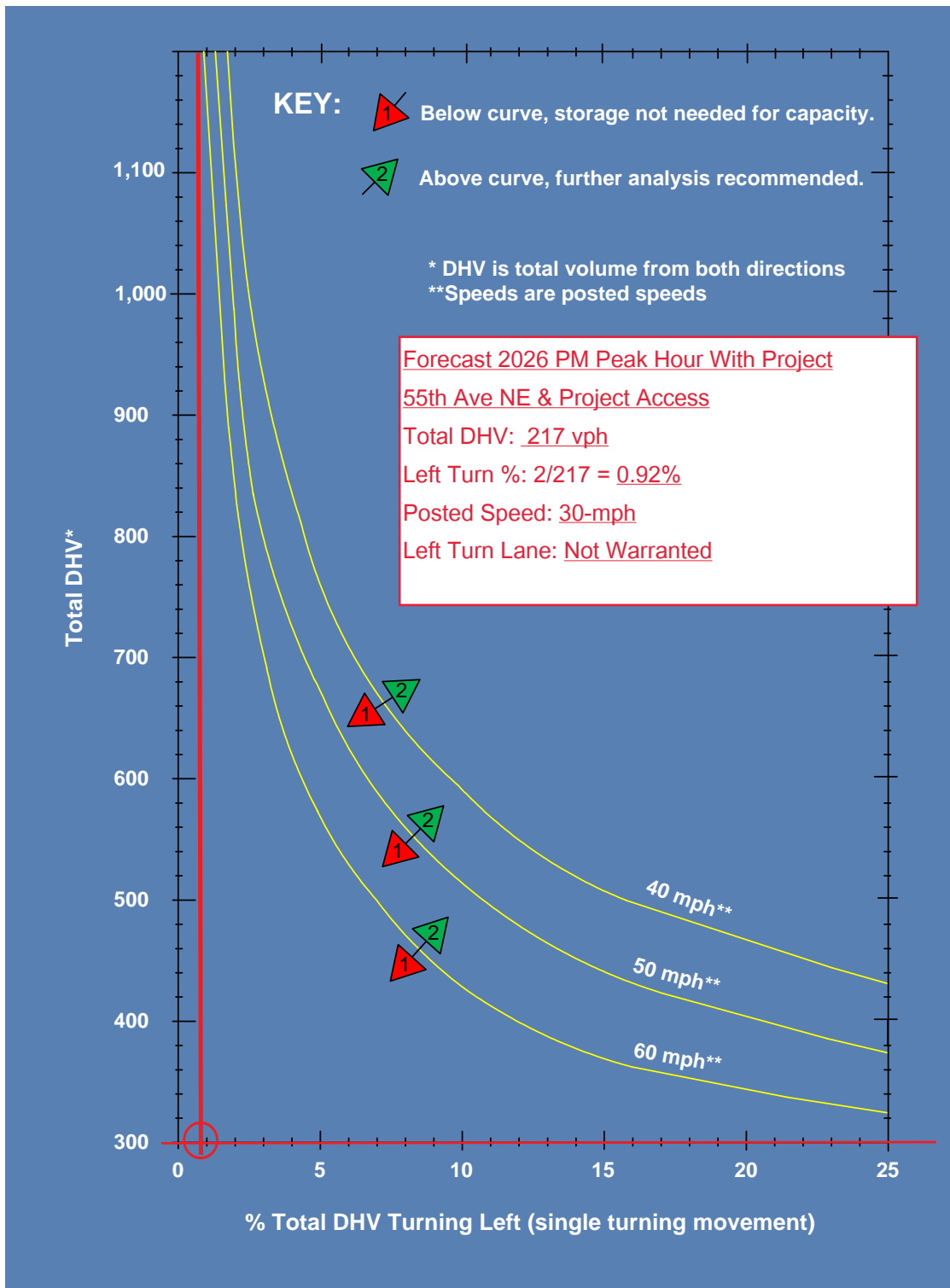
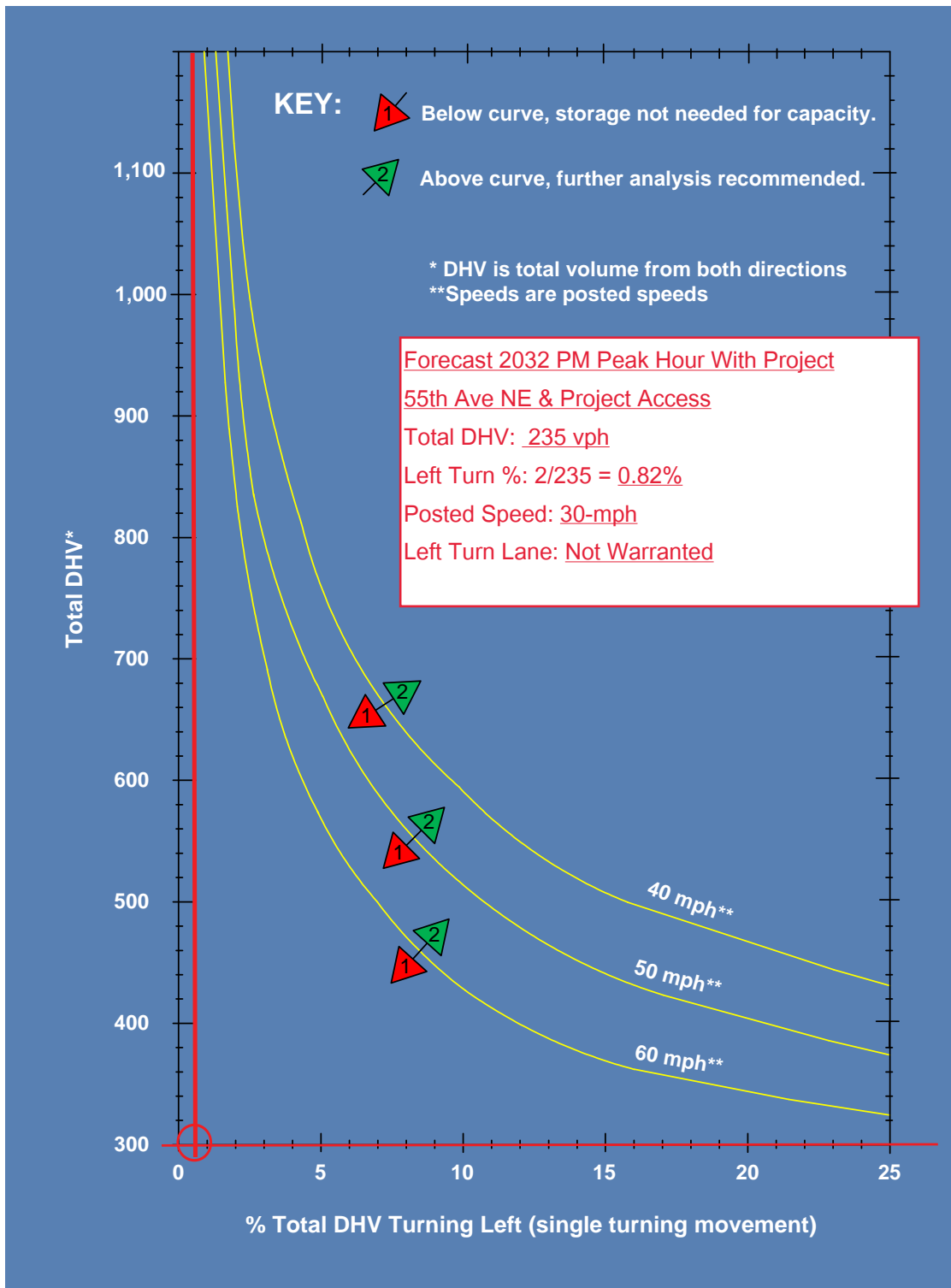


Exhibit 1310-7a Left-Turn Storage Guidelines: Two-Lane, Unsignalized



MARGARET ESTATES TRAFFIC IMPACT ANALYSIS

APPENDIX

Site Plan



NW 1/4 OF THE SW 1/4 OF SEC. 15, T. 30N., R. 05 E, W.M. MARGARET ESTATES

UTILITIES:

GAS: PUGET SOUND ENERGY (425) 882-4406

ELECTRICITY: PUGET SOUND ENERGY (425) 882-4406

STORM: CITY OF MARYSVILLE (360) 363-8000

SEWER: CITY OF MARYSVILLE (360) 363-8000

WATER: CITY OF MARYSVILLE (360) 363-8000

GARBAGE: WASTE MANAGEMENT (800) 592-9995

FIRE: MARYSVILLE FIRE DISTRICT (360) 363-8500

SITE INFORMATION:

PARCEL(S): 30051500301800 (4.85 ACRES)

ADDRESS: 9706 55TH AVE NE, MARYSVILLE, WA 98270

ZONE: R12

LAND USE: APARTMENTS

SETBACKS:
MIN. REAR: 25'
MIN. SIDE: 10'
MIN. STREET: 20'

PERMITS REQUIRED: GRADING, UTILITY, ROW, AND BUILDING PERMITS

IMPERVIOUS SURFACE: 70%

PROJECT TEAM:

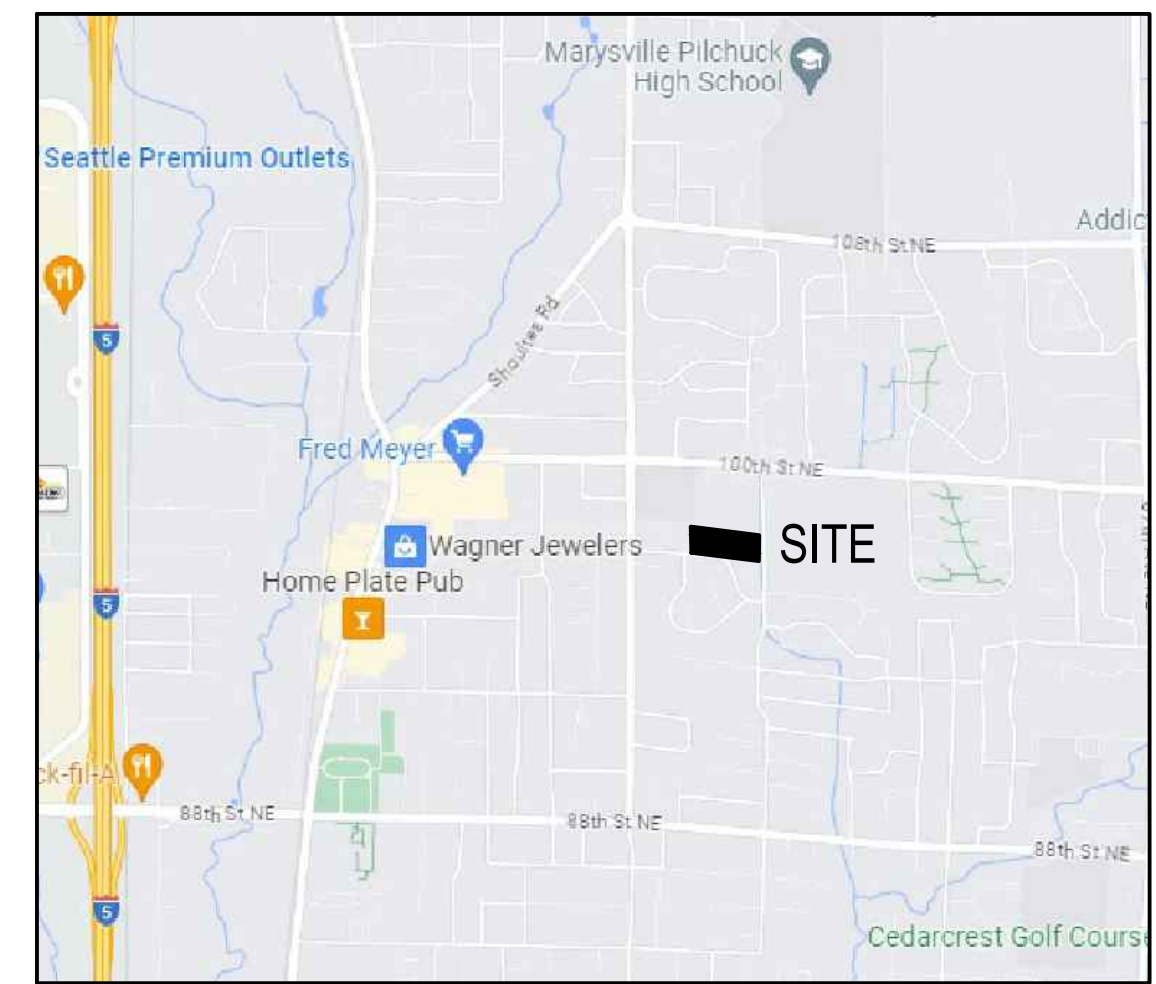
APPLICANT/ LEGAL OWNER: KANG WILLIAM & MARGARET LIVING TRUST/IMR 1086 LLC, 837 NW 25TH ST, SHORELINE, WA 98177

CIVIL ENGINEER: FURR ENGINEERING SERVICES PLLC, DEAN FURR, 4715 142ND PL SW UNIT#B, EDMONDS, WA 98026, 206-890-8291, FURRENGINEERING@GMAIL.COM

GEOTECHNICAL CONSULTANT: JASON ENGINEERING, PO BOX 100 MILTON WA, 98354, 206-786-8645, jason@jasonengineering.com

SURVEYOR: PLOG ENGINEERING, P.O. BOX 412, RAVENSDALE, WA 98051, 206-420-7130, www.PlogEngineering.com

ARCHITECT: BENNY AND LYDIA KIM DESIGN, BENNY KIM, 206-394-3317, bennykimdesign@outlook.com



VICINITY MAP
1" = 2000'

MARGARET ESTATES
9706 55TH AVE NE
MARYSVILLE, WA 98270

XXXX-XXXXXXXX

XXX
Key Plan

VERTICAL DATUM & CONTOUR INTERVAL

ELEVATIONS SHOWN ON THIS DRAWING ARE BASE ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD83) AND WERE ESTABLISHED USING RTK GPS.

1.0' CONTOUR INTERVAL - THE EXPECTED VERTICAL ACCURACY IS EQUAL TO 1/2 THE CONTOUR INTERVAL OR ± 0.5' FOR THIS PROJECT.

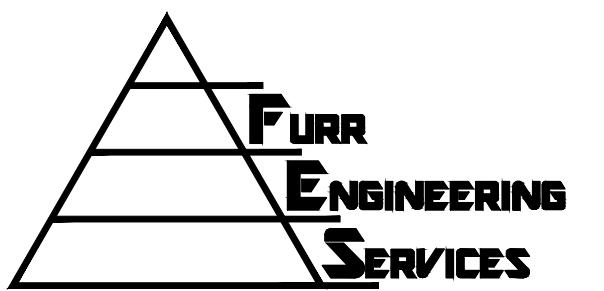
HORIZONTAL DATUM & BASIS OF BEARINGS

BEARINGS AND COORDINATES USED FOR THIS SURVEY ARE BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD83) WASHINGTON NORTH ZONE AND WERE ESTABLISHED USING RTK GPS WITH SMARTNET REFERENCE NETWORK.

LEGAL DESCRIPTION

THE EAST HALF OF THE NORTH HALF OF THE SOUTH HALF OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER, SECTION 15, TOWNSHIP 30N, RANGE 5E, W.M. EXCEPT COUNTY ROAD. SITUATE IN COUNTY OF SNOHOMISH, STATE OF WASHINGTON.

Registration



4715 142nd Pl. SW #B, Edmonds, WA 98026
ph 206.890.8291

Sheet Title

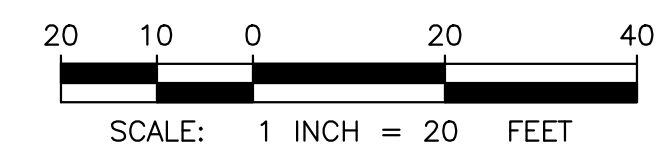
COVER

Revisions

DRAWING INDEX	
C1.0	COVER SHEET
C1.1	NOTES
C2.0	TESC PLAN
C2.1	TESC NOTES AND DETAILS
C3.0	GRADING PLAN
C3.1	NOTES AND DETAILS
C4.0	DRAINAGE PLAN
C4.1	DRAINAGE PROFILES
C4.2	VAULT DETAILS
C4.3	DRAINAGE NOTES AND DETAILS
C5.0	COMPOSITE UTILITY PLAN
C5.1	WATER AND SEWER PROFILES
C5.2	WATER DETAILS
C5.3	SEWER DETAILS
C6.0	HORIZONTAL CONTROL, SIGNAGE AND STRIPING PLAN
C6.1	SIGNAGE AND STRIPING DETAILS
TC1.0	TRAFFIC CONTROL PLAN
	FEASIBILITY MAP (SURVEY)



Know what's below.
Call before you dig.



**CITY OF MARYSVILLE
CONSTRUCTION DRAWING REVIEW ACKNOWLEDGMENT**

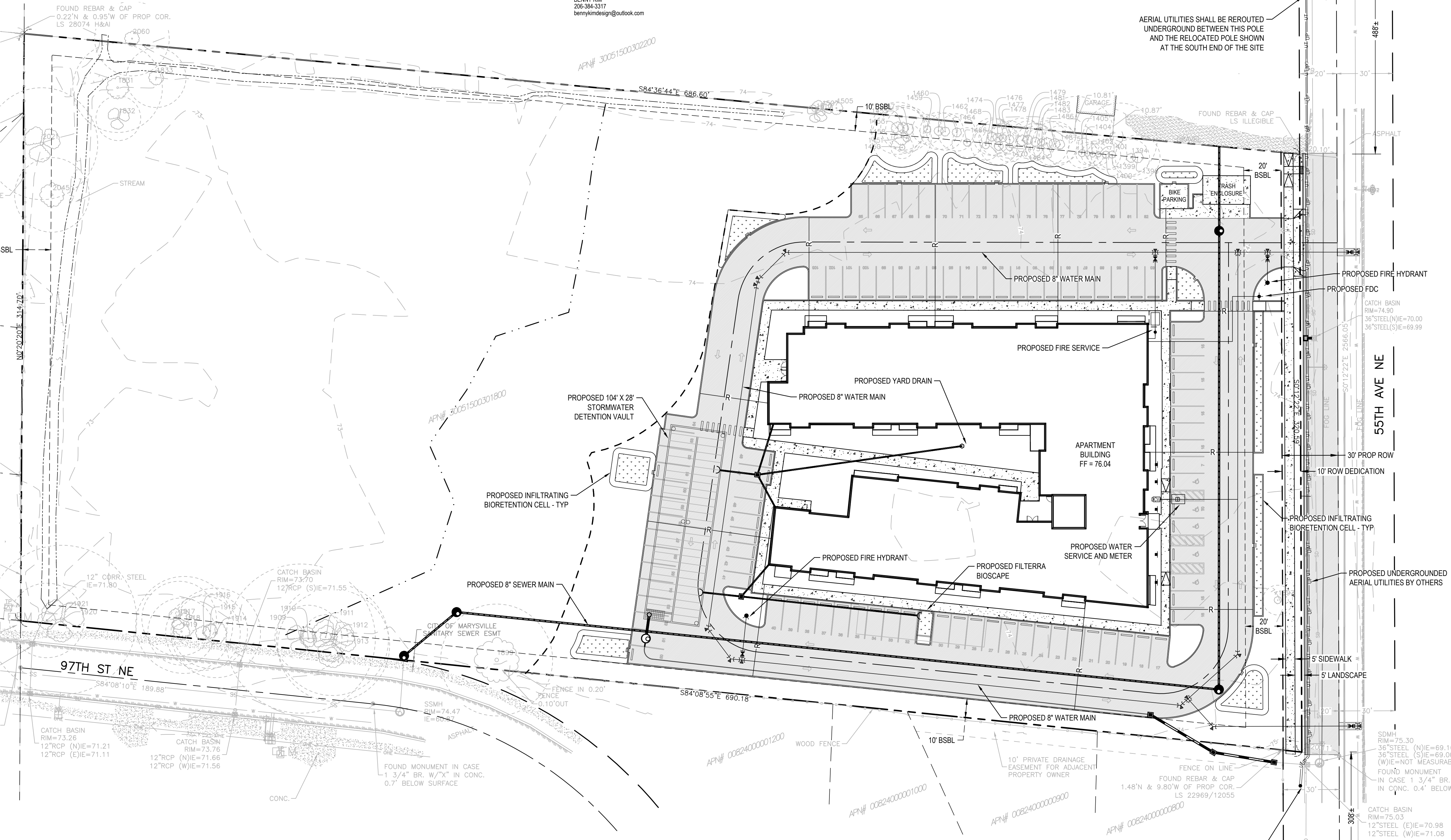
THIS PLAN SHEET HAS BEEN REVIEWED AND EVALUATED FOR GENERAL COMPLIANCE WITH THE APPLICABLE CITY OF MARYSVILLE CODES AND ORDINANCES. CONFORMANCE OF THIS DESIGN WITH ALL APPLICABLE LAWS AND REGULATIONS IS THE FULL AND COMPLETE RESPONSIBILITY OF THE LICENSED DESIGN ENGINEER, WHOSE STAMP AND SIGNATURE APPEAR ON THIS SHEET. ACKNOWLEDGMENT OF CONSTRUCTION DRAWING REVIEW DOES NOT IMPLY CITY APPROVAL FOR CONSTRUCTION ACTIVITIES THAT REQUIRE OTHER COUNTY, STATE OR FEDERAL PERMIT REVIEW AND APPROVAL. THE PROPERTY OWNER AND LICENSED DESIGN ENGINEER SHALL BE RESPONSIBLE FOR THE ACQUISITION AND COMPLIANCE OF ALL APPLICABLE PERMITS OR AUTHORIZATIONS WHICH MAY INCLUDE BUT ARE NOT LIMITED TO, WSPW HYDRAULIC PROJECT APPROVAL (HPA), WSPDE NOTICE OF INTENT (NOI), ANY CORPS OF ENGINEERS FILL PERMITS AND THE REQUIREMENTS OF THE ENDANGERED SPECIES ACT.

THIS _____ DAY OF _____, 20____

BY:
KEN MCINTYRE, P.E., ASSISTANT CITY ENGINEER
THESE APPROVED CONSTRUCTION PLANS EXPIRE AFTER PERIOD OF 60 MONTHS FROM THE DATE SHOWN ABOVE OR UPON EXPIRATION OF PRELIMINARY PLAT OR SITE PLAN APPROVAL, PER MMC 22A.040.020 and 22A.040.030.

Scale:
FES Project No: 23076
Date: DAF AUGUST 08, 2023
Designed: TJW
Drawn: DAF
Checked:

Sheet No: **C1.0**



PROPOSED LEGEND

- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- PROPERTY BOUNDARY
- RIGHT-OF-WAY DEDICATION
- STORM DRAIN LINE
- SANITARY SEWER LINE

THE DEPARTMENT OF ARCHAEOLOGY AND HISTORIC PRESERVATION'S (DAHP) INADVERTENT DISCOVERY PLAN SHALL BE FOLLOWED DURING SITE CONSTRUCTION. IF AT ANY TIME DURING CONSTRUCTION, ARCHAEOLOGICAL RESOURCES ARE OBSERVED ON THE PROJECT SITE, WORK SHALL BE SUSPENDED AT THE LOCATION OF DISCOVERY AND A PROFESSIONAL ARCHAEOLOGIST SHALL DOCUMENT AND ASSESS THE DISCOVERY.

THE DAHP AND ALL CONCERNED TRIBES SHALL BE CONTACTED FOR ANY ISSUES INVOLVING NATIVE AMERICAN SITES. IF PROJECT ACTIVITIES EXPOSE HUMAN REMAINS, EITHER IN THE FORM OF BURIALS OR ISOLATED BONES OR TEETH, OR OTHER MORTUARY ITEMS, WORK IN THAT AREA SHALL BE STOPPED IMMEDIATELY.

LOCAL LAW ENFORCEMENT, DAHP AND AFFECTED TRIBES SHALL BE CONTACTED IMMEDIATELY. NO ADDITIONAL EXCAVATION MAY BE UNDERTAKEN UNTIL THESE PARTIES HAVE AGREED UPON A PROCESS, AND NO EXPOSED HUMAN REMAINS SHOULD BE LEFT UNATTENDED.

ALL MECHANICAL EQUIPMENT SHALL BE ORGANIZED, PROPORTIONED, DETAILED, SCREENED, LANDSCAPED (WITH DECKS OR TERRACES) AND/OR COLORED TO BE AN INTEGRAL ELEMENT OF THE BUILDING AND MINIMIZE VISUAL IMPACTS FROM THE GROUND LEVEL OF ADJACENT STREETS AND PROPERTIES. FOR EXAMPLE, SCREENING FEATURES SHOULD UTILIZE SIMILAR BUILDING MATERIALS AND FORMS TO BLEND WITH THE ARCHITECTURAL CHARACTER OF THE BUILDING.

TOPOGRAPHY, BOUNDARY, AND UTILITIES STATEMENT:
FURR ENGINEERING SERVICES PLLC. DOES NOT WARRANT THE TOPOGRAPHY, BOUNDARY, AND/OR EXISTING UTILITIES SHOWN ON THESE PLANS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE ALL EXISTING IMPROVEMENTS FIELD VERIFIED PRIOR TO CONSTRUCTION. ANY SUBSURFACE EXPLORATION OF EXISTING UNDERGROUND UTILITIES (POWER, WATER, SEWER, TELECOM, ETC.) SHALL BE PERFORMED BY THE CONTRACTOR. DISCREPANCIES BETWEEN WHAT IS SHOWN ON THE PLANS AND LOCATED BY THE CONTRACTOR SHALL BE BROUGHT TO THE ATTENTION OF FURR ENGINEERING SERVICES PLLC. PRIOR TO CONSTRUCTION ACTIVITIES.

MARGARET ESTATES TRAFFIC IMPACT ANALYSIS

APPENDIX

Interlocal Agreement



**Snohomish County Traffic Worksheet and Traffic Study Requirements
for Developments in the City of Marysville**

Snohomish County government, through an interlocal agreement (ILA) with the City of Marysville, may request traffic mitigation measures from any new development in the city that impacts roads in the unincorporated county. The City will impose the requested mitigation to the extent that the City determines that the mitigation is reasonably related to the impacts of the development. To determine the impacts, and to determine reasonable mitigation measures, the City of Marysville requires a traffic study from any development in the city that may have impacts on county roads. This ‘traffic study’ may be as simple as completing sections one and two of the county traffic worksheet below, or having a professional traffic engineer conduct a formal traffic study consistent with the requirements in section three below.

- If a development generates less than ten peak-hour trips and the applicant chooses Option A for mitigation payment (standard payment by percent of county impact fee), then the applicant will generally only have to fill out the first two sections of this traffic worksheet and complete a mitigation offer (see section four).
- However, if a development generates more than ten peak-hour trips, or if the applicant chooses Option B for mitigation payment (comprehensive impact analysis), then the applicant will have to fill out the first section of this worksheet, complete a separate traffic study consistent with the requirements in section three, and complete a mitigation offer (see Section Four).
- Applicants should submit all documents *to the City* as part of their initial submittal.
- Traffic study requirements for impacts on county roads are based on the County’s traffic mitigation ordinance (Chapter 30.66B) and the city/county ILA. At the end of this document find references to the county contacts and county web site (sources for many of the documents related to traffic mitigation).
- Following review of the documents submitted, the County may request supplemental information and analysis as necessary to determine the impacts of the development in accordance with the city/county ILA. The City will require the proposed development to submit the supplemental information and analysis to the extent that the City determines that it is necessary to determine the impacts of the development.

Section One (1) Worksheet General Information

1. Name of Proposed Development Margaret Estates
City Development File Number (if known) N/A
2. Name, Address and Phone Number of Applicant Kang Williams
837 NW 205th Street, Shoreline, WA 98177
3. Development Site Address 9706 55th Ave NE
4. Is it a residential or commercial development? Residential
5. Description of Development (size and specific type) 58 Apartment Units
6. How many new vehicle trips are expected to be generated by the proposed development? (For many common types of developments this information can be provided by the city or the county. For more complex developments trip generation may have to be determined under section three below)
23 AM Peak Hour 30 PM Peak Hour 391 Average Daily Trips (ADT)
7. Proportionate Share Impact Mitigation: All applicants have two options in determining the amount of their traffic mitigation payment:
X For determining the amount based on a percentage of the county fee go to section two.
_____ For determining the amount based on a comprehensive traffic study go to section three.

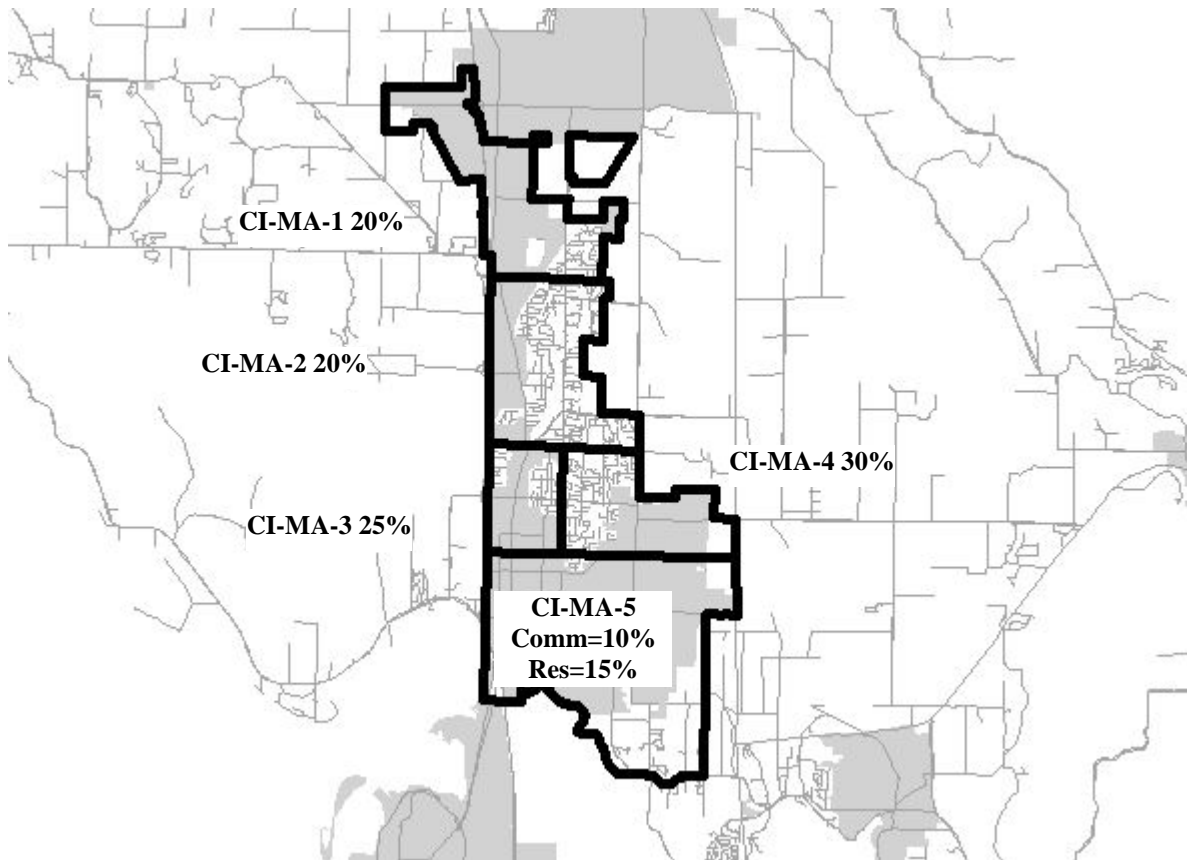
Section Two (2) Proportionate Share Determined by Percentage of County Impact Fee

2(a) Calculation of Payment Amount

1. Standard default estimated percentage of trips impacting the City streets based on subareas (See below) 30 % or 2. Other Percentage: (Note: See author’s qualifications in section three below.) Estimated percentage of trips impacting county roads from attached trip distribution: _____ %

Sub-Area ID #	* City Subarea Description	Residential Developments	Commercial Developments
CI-MA-1	North of 136th ST SE.	20%	20%
CI-MA-2	North of 100th ST NE and South of 136th ST SE.	20%	20%
CI-MA-3	North of 76th ST NE, South of 100th ST SE, and West of 51st AV NE.	25%	25%
CI-MA-4	North of 76th ST NE, South of 100th ST SE, and East of 51st AV NE.	30%	30%
CI-MA-5	South of 76th ST NE.	15%	10%

* Note: Boundaries are either street centerlines or imaginary extensions of street centerlines in places where the actual streets do not exist.



3. Development New Average Daily Trip Generation (ADT) 391

4. Type of Development (Residential or Commercial) Residential

5. County Commercial Fee Rate \$ _____ 6. County Residential Fee Rate \$ **185** (Note: Consistent with county code and the ILA, developments pay the rate in effect at the time of their submittal. As of 07/13/11 the rates were \$39 for commercial developments and \$46 for residential developments. Through ordinance, the County Council can change these rates at any time, so consult with the County or look at Snohomish County Code 30.66B.330 to find the latest fee rates.)

7. Calculation of Proportionate Share Impact Mitigation

$$\begin{array}{rclclcl}
 0.3 & \times & 391 & \times & \$185 & = & \$21,700.50 \\
 \text{\#1 or \#2} & & \text{\#3 above:} & & \text{\#5 or \#6 above:} & & \text{proportionate} \\
 \text{above: \% of} & & \text{ADT} & & \text{Fee Rate} & & \text{share mitigating} \\
 \text{trips} & & & & & & \text{payment}
 \end{array}$$

2(b) Determining whether or not an additional traffic study is necessary

Will the development generate more than 10 peak-hour trips *or* are there other impacts that need to be addressed (e.g., level of service, safety, or access and circulation)

- No. Skip section three and go to section four.
- Yes. Read the introduction to section three and skip to section 3(b).

Section Three (3) Traffic Study Requirements

Introduction: This section outlines requirements for traffic studies for impacts on County roads. If an applicant chooses (or is required) to complete a traffic study, then it should be submitted along with this worksheet and a mitigation offer. (Note on Author’s Qualifications: A traffic study under this section must be conducted by an engineer licensed to practice in the state of Washington with special training and experience in traffic engineering and, preferably, membership in the institute of transportation engineers. For individuals/firms not on the City’s approved list, the developer will provide, with the traffic study, the credentials of the individual or firm performing the traffic study certifying compliance with these qualifications.)

3(a) Proportionate share impact mitigation based on comprehensive traffic study

1. Development’s Trip Generation and Distribution. Determine the PM peak-hour trip generation and distribution for the development consistent with Section 3(b) below.
2. Impacted Improvements. Determine which of the road sections with planned improvements in the county’s impact fee cost basis (Transportation Needs Report Appendix D) are impacted by three or more development-generated *directional* PM peak hour trips (PM PHT).
3. Current Counts. For each impacted improvement, provide current traffic counts to determine the PM PHT.
4. Reserve Capacity. Determine “reserve capacity” for each impacted improvement by subtracting the current PM PHT from the maximum service volume (MSV) for the existing facility. Reserve capacity is set to zero if current PM PHT exceeds the MSV. For MSVs see County DPW Rule 4224.
5. New Capacity. New capacity is the incremental increase in PHT that could be accommodated with the planned improvement. Determine the new capacity of each impacted improvement by subtracting the current MSV from the future MSV after the improvement.
6. Chargeable Capacity. For each impacted improvement, add the reserve capacity to the new capacity.
7. Final Adjusted Cost. Find the cost of each impacted improvement and make any adjustments used by the County for tax credits (see Transportation Needs Report Appendix D).
8. Capacity Cost per Peak-Hour Trip. For each impacted improvement, determine the capacity cost per PM PHT by dividing the final adjusted improvement cost by the chargeable capacity.
9. Traffic Impacts. From step one above, take the *total* number of PM PHT (in both directions) impacting each planned improvement.
10. Proportionate Share. For each impacted improvement, determine the proportionate share impact mitigation by multiplying the capacity cost per peak-hour trip by the number of PM PHT impacting the improvement.

3(b) Trip Generation and AM and PM Peak Hour Trip Distribution and Assignment

Calculate AM, PM and Daily trip generation consistent with the ITE Trip Generation Handbook and Snohomish County Public Works Rule 4220. Determine the trip distribution and assignments consistent with the County’s document titled “Format for Trip Distributions”(available at County web site, see below).

- Within the developments transportation service area (TSA) the distributions will be carried out to each key intersection at which the approach or departure volumes on any leg have three (3) or more peak hour trips. Get the most current list of key intersections on the web site described below. Trips should be distributed onto the road system as it is expected to be in six years.
- The distribution should be a schematic map showing the broad distributions of trips in terms of percentages on different roads. Show all City boundaries.
- The assignment should be a schematic map with the impacted key intersections identified by ID# and turning movements for each shown in separate diagrams on the same page or on different pages. The assignment should also be presented in tabular form listing each intersection by intersection ID#, and the number of trips at each movement.

3(c) Additional Analysis for Developments Generating More Than Fifty (50) Peak Hour Trips

For large developments (i.e., those generating more than 50 peak-hour trips), the County may request mitigation for impacts on the level of service of County roads, documented safety locations (the County calls such locations “inadequate road conditions” or “IRCs”), and access or circulation. The traffic study requirements below are intended to disclose impacts. Based on this information the County may request through the City that the applicant provide additional information showing possible mitigation measures. If any off-site improvements were needed for mitigation the County would work with the applicant to determine requirements for right-of-way, construction plans, right-of-way use permits, construction/maintenance bonds, and other issues.

Impacts on Level of Service (LOS) of County Arterials

Contact Snohomish County Public Works for the most current list of arterial units in arrears and critical arterial units. Identify any arterial units in arrears or critical arterial units impacted by three or more directional peak-hour trips.

Impacts on Inadequate Road Conditions

Contact Snohomish County Public Works for a list of the current IRCs. Identify any IRCs impacted by three or more peak-hour trips. Note: Unlike LOS impacts in which at least three or more peak hour trips have to be added in one direction to require disclosure (e.g., 3 westbound), for IRCs, any three peak hour trips added to IRC locations are considered an impact for which disclosure is necessary (e.g., 2 westbound plus 1 eastbound).

Impacts on Access or Circulation

The County may request improvements to existing roads to provide safe and efficient access and/or circulation. In some instances, the County may request provisions for future County roads identified in the Comprehensive Plan or in Small Area Transportation Studies. If so, the County will request specific additional information through the City.

Section Four (4) Traffic Mitigation Offer to Snohomish County

The applicant should complete a traffic mitigation offer to Snohomish County that summarizes the mitigation identified in the county traffic worksheet and any additional traffic study. This will facilitate timely review of the development and processing of the application. The form to use for the mitigation offer is titled “Traffic Mitigation Offer to Snohomish County.” This form is typically provided to all applicants along with this traffic study checklist. In addition, copies are available from the county contacts or the Snohomish County web site shown below.

Additional Information

County Web Site

Snohomish County Public Works has a web site with many documents related to traffic studies and mitigation requirements for developers. From the Snohomish County Home Page go to:

[Departments/Public Works/Divisions/TES/ProgramPlanning/3066B](#)

County Contacts

- Elbert Esparza, Snohomish County DPW Traffic, 3000 Rockefeller M/S 607, Everett WA 98201, (425) 388-3184, elbert.esparza@snoco.org