HEATH & ASSOCIATES
Transportation Planning & Engineering

TRAFFIC IMPACT ANALYSIS

Springwood Garden

Olympia, Washington

August 21, 2025

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SPRINGWOOD GARDEN
TRAFFIC IMPACT ANALYSIS

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SPRINGWOOD GARDEN
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CONTENTS

TABLES

FIGURES

APPENDICES

SPRINGWOOD GARDEN
TRAFFIC IMPACT ANALYSIS

1. INTRODUCTION

Heath & Associates has been retained to prepare a Traffic Impact Analysis (TIA) for the proposed Springwood Garden residential project. This analysis will review baseline traffic conditions and compare those against forecast conditions without and with the project. A summary of collision history and speeds on Bethel Street NE are also provided. A project description is provided below.

2. PROJECT DESCRIPTION

The Springwood Garden project is a proposed 37-unit single-family residential development located at 1609 Springwood Avenue NE (Tax Parcel No: 0968007300). The seven-acre site is bordered to the north by Springwood Avenue NE and lies east of Bethel Street NE. On-site is a single-family dwelling unit that would be removed for new construction, yielding a net increase of 38 dwelling units to the area.

Access would be provided via two public road extensions—Central Street NE and Marion Street E—which would provide north to south connectivity between Miller Avenue NE and Springwood Avenue NE. A vicinity map is provided in **Figure 1** with the subject site highlighted in blue. **Figure 2** presents a conceptual site plan.

Figure 1: Vicinity Map

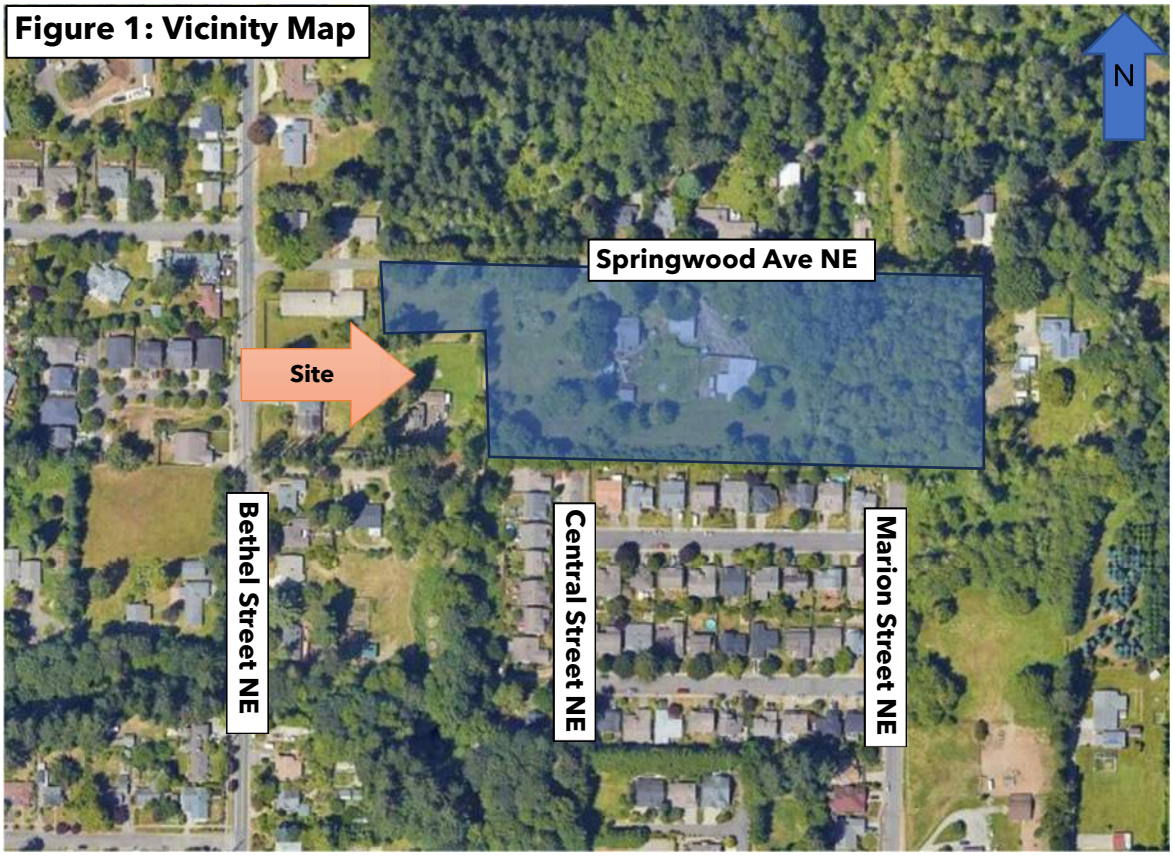
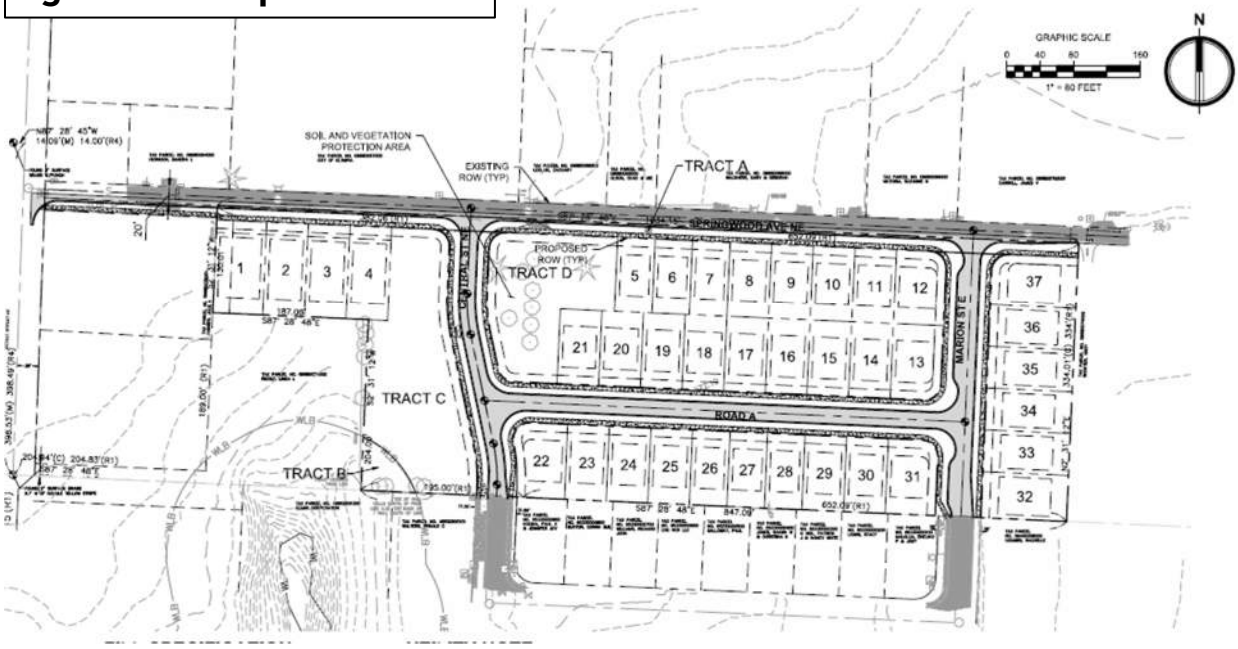


Figure 2: Conceptual Site Plan



3. EXISTING CONDITIONS

3.1 Existing Street System

The roadways within the study area for this project are listed below in **Table 1**.

Table 1: Roadway Network

Functional Classification	Roadway	Speed Limit	Lanes	Side-walk	Bike Facil
Major Collector	Bethel St NE	25	2	Yes[1]	No
	Miller Ave NE	25	2	Yes[2]	No
Local Access	Springwood Ave NE[3]	25	2	No	No
	Central St NE	25	2	Yes	No
	Marion St NE	25	2	Yes[2]	No

[1] West side only
[2] North side only
[3] Overall roadway width varies from approximately 16.5 to 20 feet. A posted speed limit sign of 10 mph was observed; however, the City's legal speed limit of local roads is 25 mph.

3.2 Transit Service

The Intercity Transit website indicates one transit route operates in the study area, Route 21, North Bethel/North Central Route. Service operates from 6:00 AM to 10:25 PM Monday through Friday. On weekends, buses operate from 7:30 AM to 10:12 PM. The nearest southbound bus stop is located on Bethel Street NE across from Springwood Avenue NE, about 500 feet west of the site. The closest northbound stop is located on Miller Avenue NE at Marion Street NE, about 0.6 miles from the site by existing roadways (via Springwood Avenue NE, Bethel Street NE, then Miller Avenue NE). When Marion Street NE and Central Street NE are connected to Springwood Garden, the northbound stop will be about ¼ mile from the site.

3.3 Roadway Improvements

A review of the City of Olympia 2025-2030 Capital Facilities Plan indicates no six-year improvement projects planned in the vicinity of the site. However, there is one project in the long term (7-20 year) list which is summarized below in **Table 2. Figure 3** shows the location of the improvement project relative to the proposed Springwood Garden project site.

Table 2: Long Term (7-20 Years) Transportation Improvement Projects

Name	Location	Improvement
Bethel Street Safety	Bethel Street NE - 26th Ave NE to San Francisco Ave NE	Speed management and safety improvements

Figure 3: Safety Project

Source: City of Olympia Transportation Master Plan (Feb. 2021)

As illustrated above, speed management and safety improvements are planned along the Bethel Street NE corridor near the subject site. However, the City's Transportation Master Plan does not provide specific project details, and it is unclear whether any funding has been allocated.

3.4 Existing Peak Hour Volumes

Field data for this study was collected in May 2025 at the three study intersections listed below. Data were obtained during the PM peak period between the hours of 4:00 PM – 6:00 PM, which generally translates to the highest roadway volumes in a weekday 24-hour period. The peak hour (highest volumes) at each intersection was identified and utilized for capacity analysis.

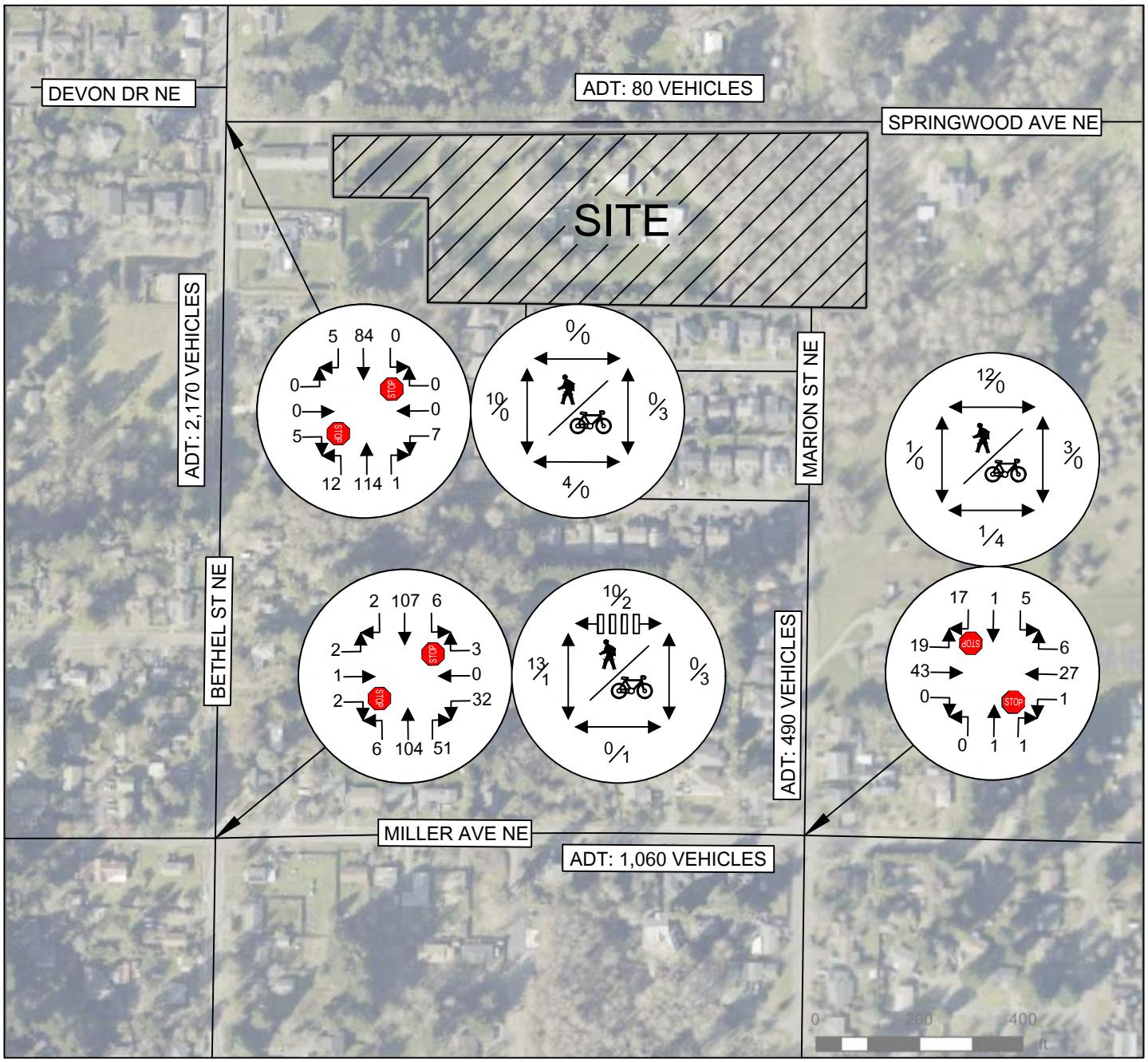
- Bethel Street NE/Springwood Avenue NE (Peak Hour: 4:00-5:00 PM)
- Bethel Street NE/Miller Avenue NE (Peak Hour: 4:15-5:15 PM)
- Miller Avenue NE/Marion Street NE (Peak Hour: 4:30-5:30 PM)

The intersection of Bethel Street NE/Devon Drive NE is slightly north and offset (~60 feet) from the Bethel Street NE/Springwood Avenue NE three-legged intersection. The two intersections have been combined for the analyses in this report. Speed data was also collected on Bethel Street NE. Refer to **Figure 4** for the existing PM peak hour turning movement volumes. Moreover, a 24-hour count indicated an average daily traffic (ADT) rate of ~2,170 vehicles along Bethel Street NE (south of Springwood Avenue NE). The ADT for the other roadways were estimated by multiplying the PM peak hour volumes by ten. These are also shown in Figure 4.

3.5 Non-Motorist Activity and Infrastructure

Pedestrian and bicycle activity were monitored during the PM peak hour counts at all study intersections. All the study intersections had pedestrian activity, ranging from 14 to 23 pedestrians in the peak hour. Bicycle numbers ranged from 3 to 7 during this time. **Figure 4** also illustrates non-motorist activity at the study intersections.

Springwood Avenue NE does not have sidewalks. The project would include sidewalks along the site frontage. Sidewalks will be provided internally. Bethel Avenue NE has a sidewalk on the west side, and Miller Avenue NE, on the north side. No bicycle lanes exist in the study area.



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EXISTING PM PEAK HOUR VOLUMES
FIGURE 4

3.6 Existing Level of Service

Level of service (LOS) rates[1] the quality of traffic flow and user experience, typically on a scale from A to F, where:

- **LOS A** represents free-flowing traffic with minimal delays and low congestion.
- **LOS B** indicates stable traffic flow with some minor delays.
- **LOS C** shows moderate traffic flow with noticeable delays at peak times.
- **LOS D** is high-density traffic flow with more frequent and longer delays.
- **LOS E** is near-capacity conditions with significant delays and congestion.
- **LOS F** denotes over-capacity conditions, where traffic flow breaks down, resulting in severe congestion and delays.

Level of service calculations were performed using the Synchro 12 analysis program. For stop-controlled intersections, the approach with the highest delay is reported. **Table 3** below summarizes the PM peak hour LOS results.

Table 3: Existing PM Peak Hour Level of Service

Delays given in seconds per vehicle

Intersection	Control	Critical Movement	LOS	Delay
Bethel St NE/Springwood Ave NE	Stop	WB	B	10.9
Bethel St NE/Miller Ave NE	Stop	WB	B	11.3
Marion St NE/Miller Ave NE	Stop	NB	A	9.3

City of Olympia Level of Service Standards[2]: The City of Olympia has an LOS D or better standard.

All three study intersections operate at LOS B or better in existing conditions, meeting the city's standard.

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[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

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

Highway Capacity Manual (HCM), 7th Edition

[2] City of Olympia EDDS Chapter 4 Transportation, Appendix 7, Section D.6. Mitigation

3.7 Safety Analysis

Collision History

Collision history for each study intersection was requested from WSDOT for the five most recent full years (2020 to 2024). During this period, one collision was reported within the study area. The incident occurred at 9:07 AM on February 2, 2023, at the intersection of Bethel Street NE/Miller Avenue NE. A driver traveling southbound on Bethel Street NE, exceeding a reasonably safe speed, struck a pedalcyclist. A minor injury was reported. No other incidents were reported.

Speed Data

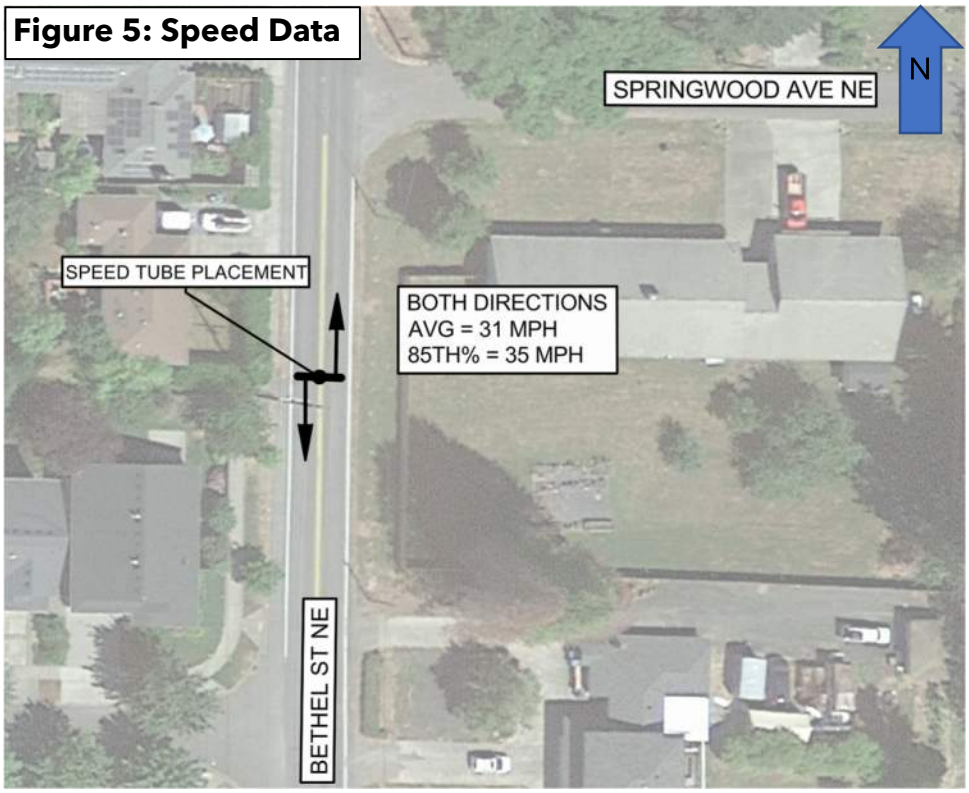
Speed data were collected along Bethel Street NE on May 1, 2025, using radar monitoring equipment in the approximate location shown in **Figure 5**. Over the span of 24 hours, the following speeds were recorded.

Posted Speed Limit: 25 mph

- Average Speed – 31 mph
- 85th percentile Speed – 35 mph
- Maximum Speed – 54 mph (at 12:51 AM)

As shown above, both the average speed (6 mph over posted) and 85th percentile speeds (10 mph over posted) were higher than the posted speed limit which likely is contributing to the city's planned speed management and safety improvements along this corridor.

Figure 5: Speed Data



4. FORECAST TRAFFIC DEMAND AND ANALYSIS

4.1 Project Trip Generation

Trip generation is defined as the number of vehicle movements that enter or exit a site during a designated period, such as the PM peak hour or an entire day. Vehicle trip generation for the proposed project was derived from the Institute of Transportation Engineers (ITE) publication, *Trip Generation Manual, 10th Edition* – consistent with the City's Traffic Impact Fee (TIF) schedule[3].

Land Use Code (LUC) 210 – Single Family Detached Housing was utilized to determine the number of net new trips. Dwelling units were used as the input variable with ITE average rates to determine trip ends. **Table 4** below summarizes the project trip generation. Note that the net new dwelling units (36) were used for the estimations which accounts for the removal of the one existing single-family unit.

Table 4: Project Trip Generation

Land Use	Units	AWDT	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Single Family Detached Housing (LUC 210)	36 Net New	340	7	19	26	23	13	36

Based on ITE data, the project is estimated to generate 340 net new average weekday daily trips with 26 net new AM peak hour trips (7 entering, 19 exiting) and 36 net new PM peak hour trips (23 entering, 13 exiting). The appendices contain the relevant ITE trip generation sheets.

4.2 Distribution and Assignment

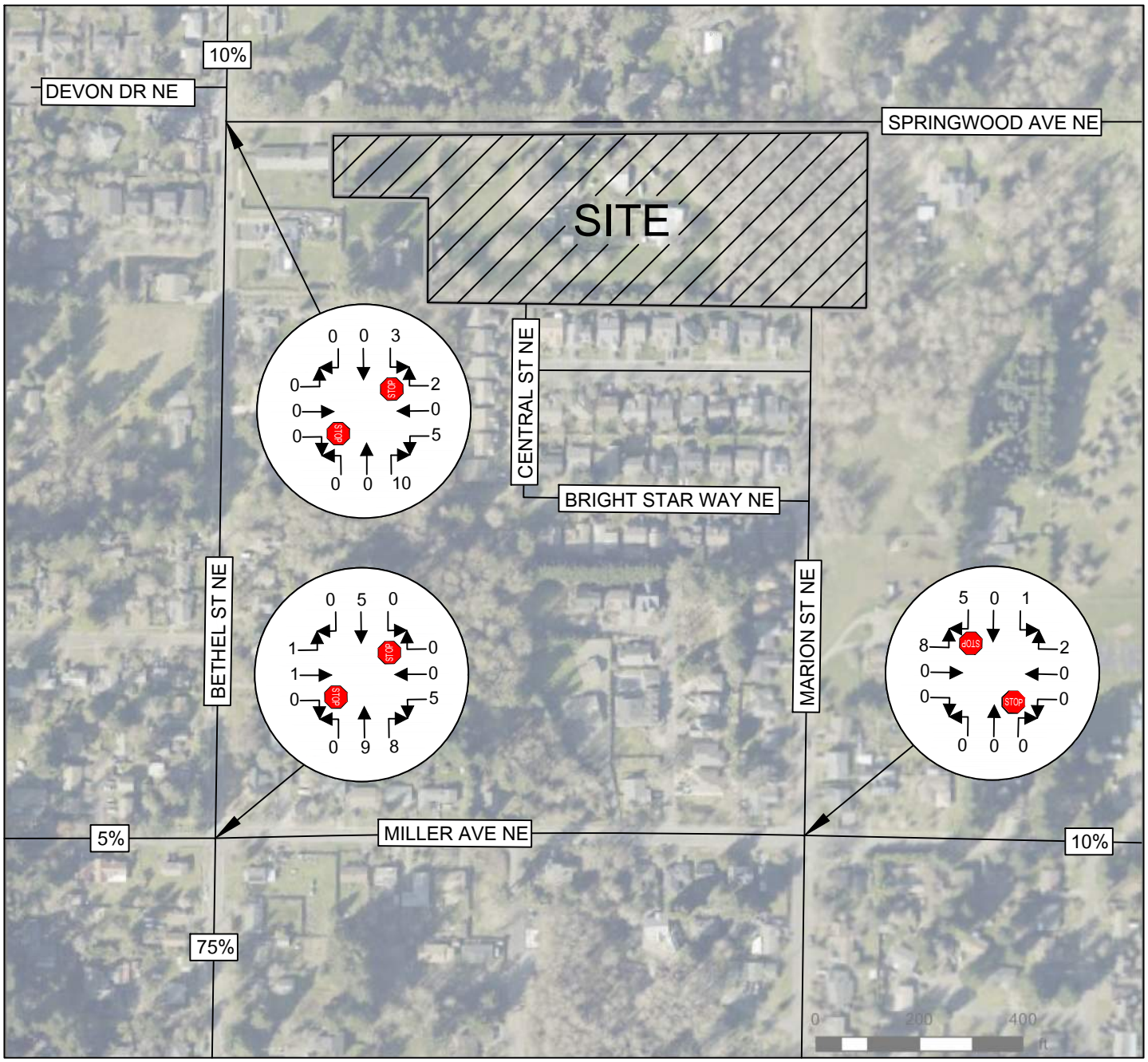
Trip distribution refers to expected travel routes for project-generated traffic during. Distribution patterns here are based on information from the PM peak hour counts and the location of the project site in relation to other land uses. **Figure 6** illustrates the site's PM peak hour trip distribution and assignment.

[3] The most current version of Trip Generation is the 11th edition; however, the 10th was used here to match City of Olympia standards.

While the improved connectivity with Central Street NE and Marion Street NE to Springwood Avenue NE might cause some traffic rerouting, review of the existing turning movement volumes indicates this might be negligible. Traffic was not rerouted for this analysis.

4.3 Forecast 2028 PM Peak Hour Volumes

A three-year horizon of 2028 was used to evaluate future condition traffic operations in the study area. Forecast 2028 background traffic volumes were derived by applying a conservative 3% compound annual growth rate for three years to the existing volumes. **Figure 7** displays the forecast without project 2028 PM peak hour volume, while **Figure 8** shows the forecast volumes with the project in place.



NET NEW PM PEAK HOUR TRIPS
INBOUND: 23 VPH
OUTBOUND: 13 VPH

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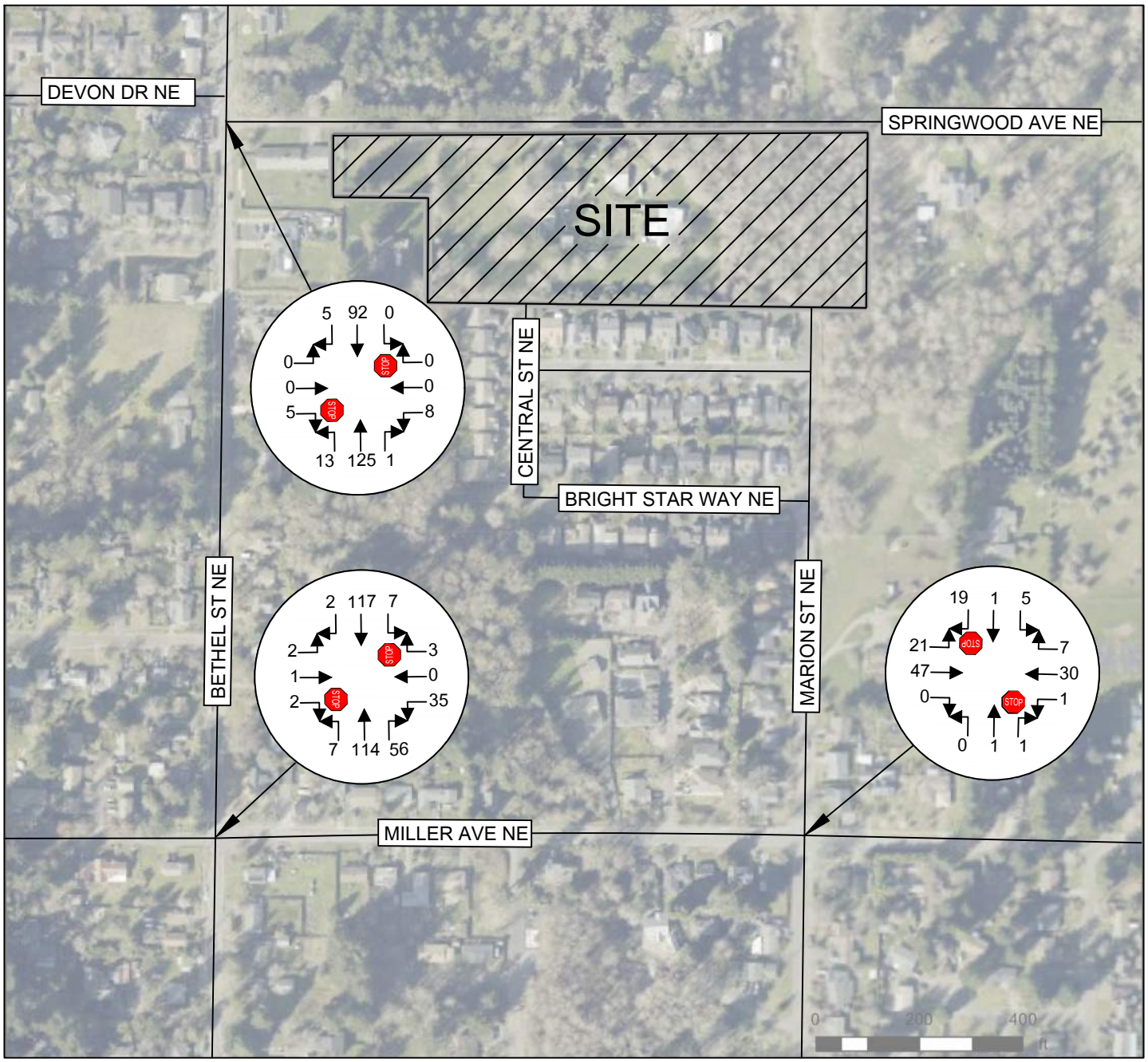
TRIP DISTRIBUTION AND ASSIGNMENT PM PEAK HOUR
FIGURE 6



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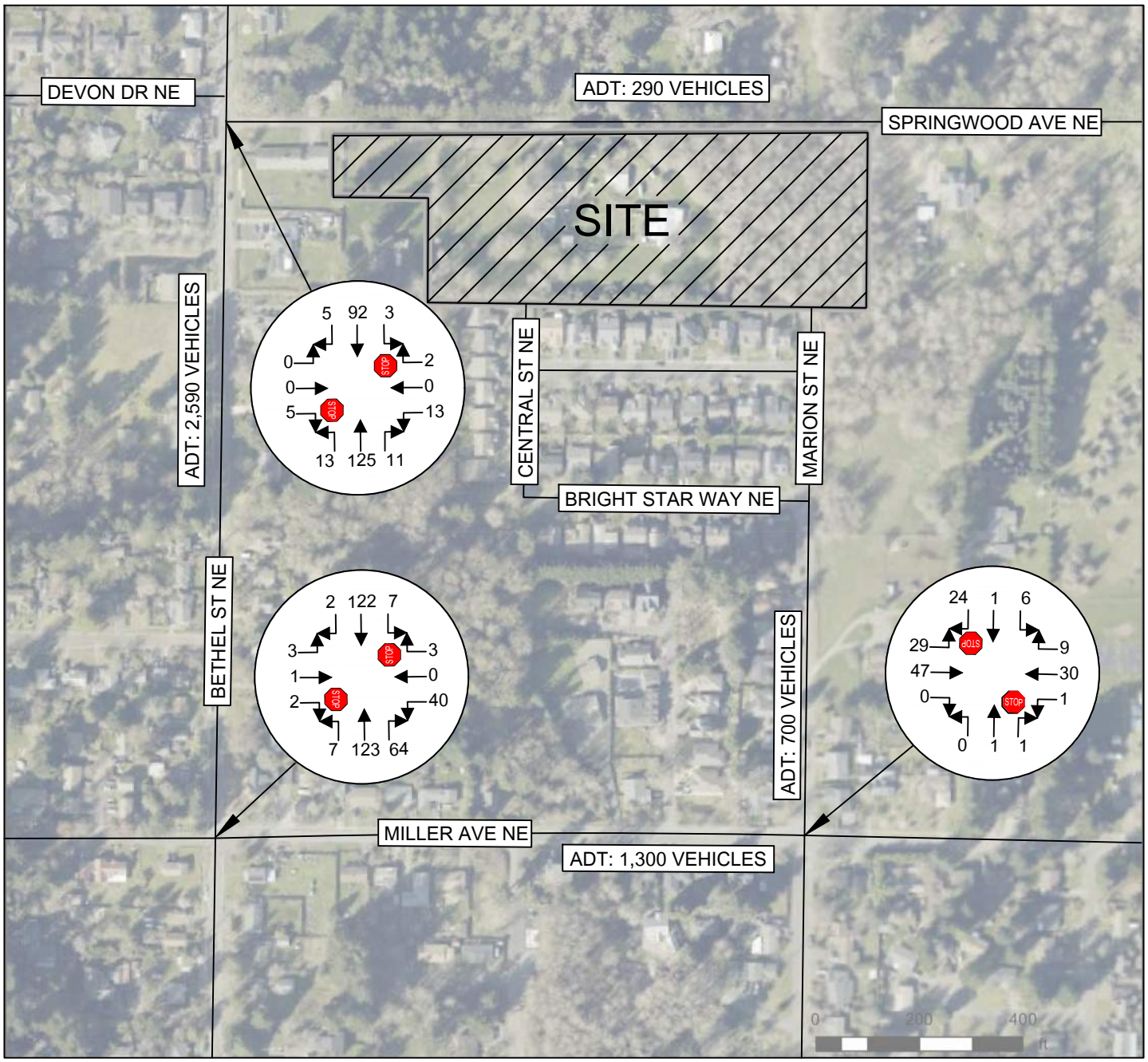
FORECAST WITHOUT PROJECT 2028 PM PEAK HOUR
FIGURE 7



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FORECAST WITH PROJECT 2028 PM PEAK HOUR
FIGURE 8

4.4 Forecast 2028 Level of Service and Average Daily Volumes

Level of service analyses were conducted for forecast peak hour volumes without and with project-related trips added to the key roadways and intersections. Level of service and delays for each study intersection under forecast 2028 conditions are shown below in **Table 5**.

Table 5: Forecast 2028 PM Peak Hour Level of Service

Delays given in Seconds per Vehicle

Intersection	Critical Movement	Without Project		With Project	
		LOS	Delay	LOS	Delay
Bethel St NE/Springwood Ave NE	WB	B	11.2	B	11.2
Bethel St NE/Miller Ave NE	WB	B	11.7	B	12.1
Marion St NE/Miller Ave NE	NB	A	9.4	A	9.5

Forecast 2028 PM peak hour level of service shows that all study intersections operate at LOS B or better, meeting the City of Olympia level of service standard.

Table 6 demonstrates how the future study area roadway volumes meet City of Olympia standards for ADT, with one exception. Marion Street NE is a Local Access roadway, according to the City of Olympia Engineering Design and Development Standards (EDDS). For a local access road, the ADT range is 0-500 vehicles. Marion Street NE already has 490 daily vehicles. With forecast projected volumes (including background growth at 3% per year), the ADT goes up to 700. The next higher roadway classification is Neighborhood Collector (ADT standard: 500-3,000). Those roadways typically involve sidewalks on both sides; Marion Street NE has sidewalks on one side. However, the road right-of-way and pavement width seem to be sufficient to meet the Neighborhood Collector standards.

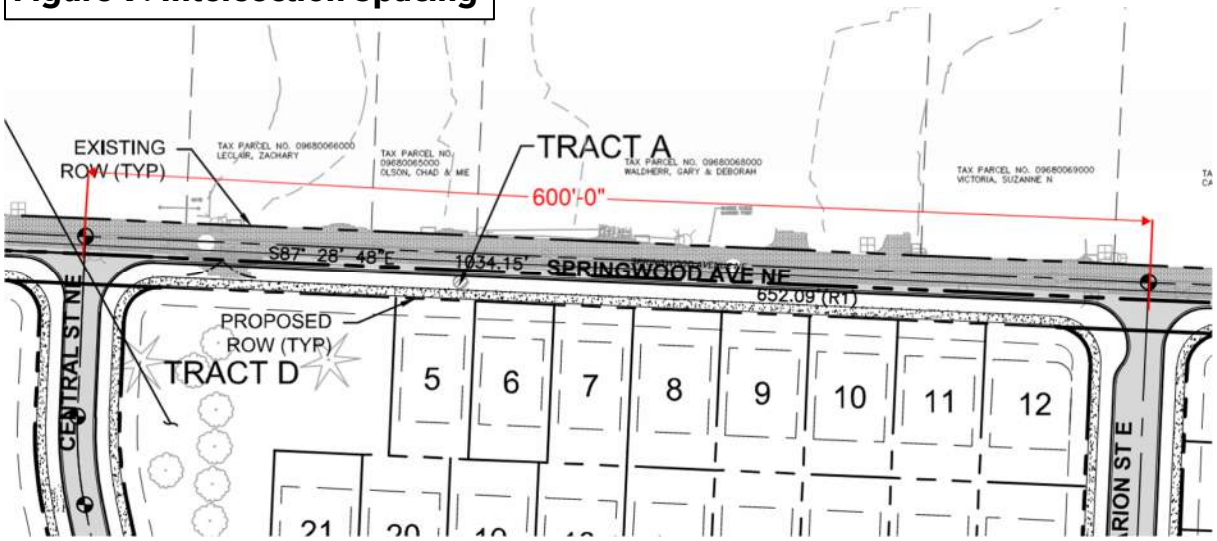
Table 6: Roadway Classifications and ADT

Roadway	Classification	City Standard Range, ADT	Existing 2025	Future 2028 With Project
Bethel St NE	Major Collector	3,000-14,000	2,170	2,590
Miller Ave NE	Major Collector	3,000-14,000	1,060	1,300
Marion St NE	Local Access	0-500	490	700
Springwood Ave NE	Local Access	0-500	80	290

4.5 Intersection Spacing

As part of the site development, Central Street NE and Marion Street NE will be extended north and tie into Springwood Avenue NE. The two new intersections would be spaced approximately 600-feet apart. According to the City of Olympia's EDDS, intersection spacing on Local Access streets should be between 250-350-feet.[4] Therefore the spacing standards are met. **Figure 9** illustrates the intersection spacing.

Figure 9: Intersection Spacing



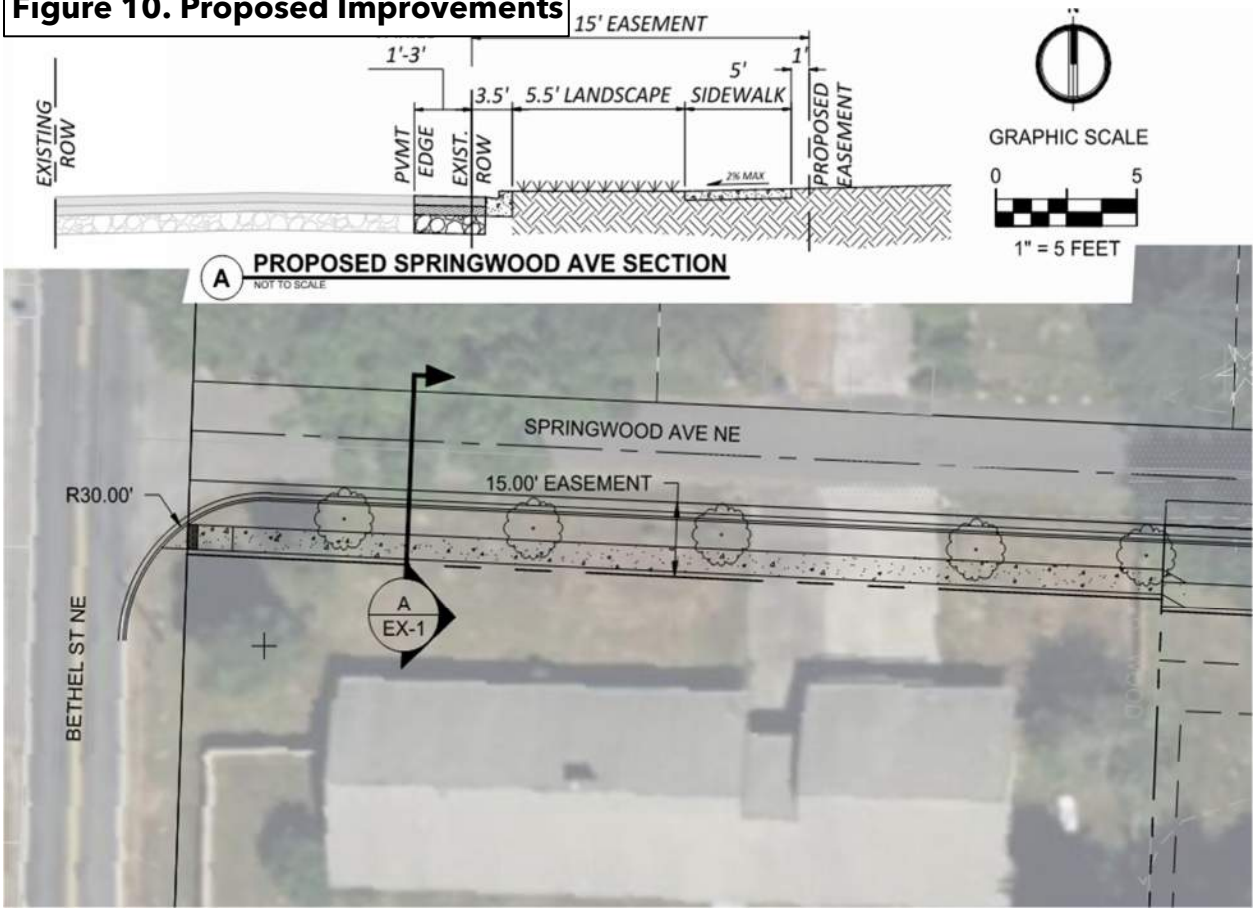
The Bethel Street NE/Springwood Avenue NE intersection is currently offset from the Bethel Street NE/Devon Drive NE intersection by approximately 60 feet (centerline to centerline), which does not meet the City of Olympia's minimum intersection spacing standard of 200 feet, as outlined in EDDS Section 4B.103.C, Table 17. This offset is an existing condition, and no public right-of-way is available to correct it. Traffic volumes in the area are low and do not warrant the installation of left-turn lanes or a traffic signal. While not ideal, there is no feasible remedy for the offset intersection configuration.

[4] Chapter 4, Table 3: Street Characteristics

4.6 Springwood Avenue NE Improvements

As part of frontage improvements, Springwood Avenue NE would be widened up to 20-feet along the frontage spanning approximately 1,035 feet. This widening brings Springwood Avenue NE up to City of Olympia's local access road width requirements[5]. Moreover, the Applicant has secured a 15-foot easement to allow for pavement widening, landscaping, and sidewalk improvements across the off-site property, extending from the west end of the project site to Bethel Street NE, as illustrated below. This would create a continuous improvement section along Springwood Avenue NE from Bethel Street to the east edge of the subject parcel.

Figure 10. Proposed Improvements



Local access roads have typical ADT rates of 0-500 vehicle per day. With the project in place, the ADT on Springwood Avenue NE would be 310 vehicles. Therefore, Springwood Avenue NE would meet the city standards for ADT.

[5] City of Olympia Municipal Code, Section 16.32.050.F.1.

The proposed connections to Central Street NE and Marion Street NE will help address a current deficiency related to emergency vehicle turnaround. Presently, there is no designated turnaround on Springbrook Avenue NE, which extends approximately 1,380 feet—well beyond the maximum allowable length of 150 feet without a turnaround, as typically required by code[6]. These connections will improve emergency access and overall circulation within the area. There is also a deficiency with regard to block perimeters. The City of Olympia EDDS require block perimeters to be less than 1,800 feet. With the current configurations of Central Street NE and Marion Street NE, that cannot be met.

5. COMMUNITY CONCERNS

As part of the public process for the Springwood Garden project, many community members wrote to the City of Olympia to express concerns. These are generally summarized to cover: connectivity to existing roadways; the future width and function of Springwood Avenue NE; Bethel Street NE; concerns about safety, crosswalks, and traffic calming measures.

Connectivity: The most frequent comments question the need to connect Springwood Garden through to Central Street NE and Marion Street NE. Both Central Street NE and Marion Street NE were constructed to be through roads, to meet City of Olympia connectivity standards. This was specifically done in anticipation of development in the Springwood Garden area. The City of Olympia EDDS Section 2.040B.3(a–f) and Chapter 4 of the Comprehensive Plan outline policies and goals for creating a well-connected street grid with short block lengths. These provisions are intended to improve mobility, enhance pedestrian and bicycle access, improve emergency vehicle access, and promote a more connected community.

Springwood Avenue NE: The project proponent is working with the City of Olympia and the neighbor to the west of the project site to widen Springwood Avenue NE from Bethel Street NE to the eastern edge of the project site. It would include 20 feet of pavement, sidewalk along the south side, curb, and gutter. This design meets City of Olympia EDDS standards for local access roadways.

Bethel Street NE: Existing speeding behavior is discussed in Section 3.7 of this report. The findings do confirm that most drivers are traveling above the posted speed limit. The City of Olympia has a long-range plan to address safety concerns along and speed management along this roadway.

[6] City of Olympia Municipal Code, Section 16.32.050.A

6. CONCLUSIONS

The Springwood Garden project is a proposed 37-unit single-family residential development located at 1609 Springwood Avenue NE (Tax Parcel No: 0968007300). The seven-acre site is bordered to the north by Springwood Avenue NE and lies east of Bethel Street NE. One existing single-family dwelling unit on the site would be removed for new construction, yielding a net increase of 36 dwelling units to the area.

In addition to the access points on Springwood Avenue NE, access would be provided via two public road extensions—Central Street NE and Marion Street E. These would provide north to south connectivity between Miller Avenue NE and Springwood Avenue NE. This also improves a current condition where Springwood Avenue NE is 1,380 feet long without a turnaround, which does not meet the city standard of 150 feet.

The intersection of Bethel Street NE/Springwood Avenue NE is offset from the intersection of Bethel Street NE/Devon Drive NE by about 60 feet. This is an existing condition which has no reasonable remedy. However, improvements will be made on Springwood Avenue NE from the east edge of the subject property extending to Bethel Street NE, including an off-site property.

Based on ITE data, the project is estimated to generate 340 net new average weekday daily trips with 26 net new AM peak hour trips (7 entering, 19 exiting) and 36 net new PM peak hour trips (23 entering, 13 exiting). All study intersections operate at LOS B or better in existing, forecast without project, and forecast with project conditions. The study area roadways would meet City of Olympia ADT standards, with one exception. Marion Street NE is already near the maximum standard of 500 vehicles per day currently. This will be exceeded with background traffic growth and the project in place. The roadway appears to have sufficient right-of-way and pavement width to meet Neighborhood Collector standards, which is the next higher roadway classification.

Speed data was collected over a 24-hour period on Bethel Street NE, which has a posted speed limit of 25 mph. The data demonstrated that drivers operate at speeds higher than posted, with an average speed of 31 mph and an 85th percentile speed of 35 mph. The City of Olympia has a long-term project to address speeds and safety on this road.

Please feel free to contact me should you have any questions.
Aaron Van Aken, P.E., PTOE

SPRINGWOOD GARDEN
TRAFFIC IMPACT ANALYSIS

APPENDIX
Count Sheets

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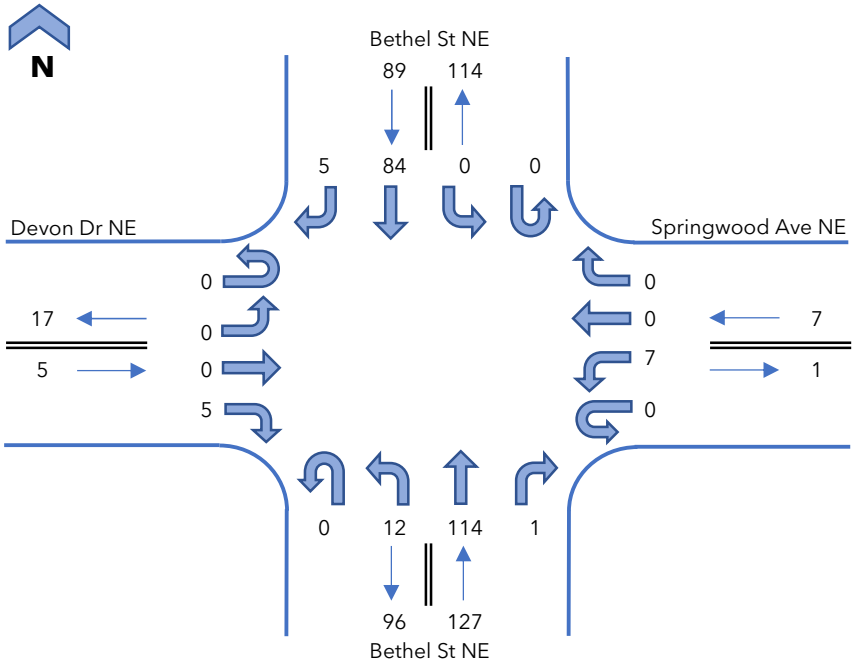
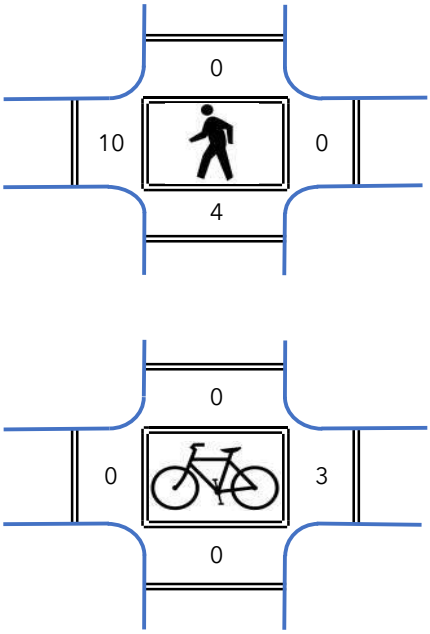
Date Collected: 5/1/2025
Day of the Week: Thursday
Time Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM

Springwood Avenue NE & Bethel Street NE





Interval Start Time	Devon Dr NE Eastbound				Springwood Ave NE Westbound				Bethel St NE Northbound				Bethel St NE Southbound				15 Minute Totals	Hourly Totals
	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT		
4:00 PM	0	0	0	4	0	2	0	0	0	3	43	0	0	0	24	2	78	
4:15 PM	0	0	0	1	0	1	0	0	0	2	29	1	0	0	16	0	50	
4:30 PM	0	0	0	0	0	2	0	0	0	4	15	0	0	0	23	1	45	
4:45 PM	0	0	0	0	0	2	0	0	0	3	27	0	0	0	21	2	55	228
5:00 PM	0	2	0	4	0	0	0	0	0	3	26	1	0	1	26	0	63	213
5:15 PM	0	1	0	1	0	0	0	0	0	3	20	1	0	0	33	0	59	222
5:30 PM	0	2	0	3	0	0	0	0	0	2	27	0	0	0	14	2	50	227
5:45 PM	0	0	0	1	0	0	0	0	0	1	22	0	0	0	17	2	43	215
Count Total	0	5	0	14	0	7	0	0	0	21	209	3	0	1	174	9	443	--
Peak Hour Total	0	0	0	5	0	7	0	0	0	12	114	1	0	0	84	5	228	--
PHF	0.31				0.88				0.69				0.86				0.73	--
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	4	0	0	0	3	0	7	--
HV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.5%	0.0%	0.0%	0.0%	3.6%	0.0%	3.1%	--

Interval Start Time	Heavy Vehicles				
	EB	WB	NB	SB	Total
4:00 PM	0	0	3	0	3
4:15 PM	0	0	0	2	2
4:30 PM	0	0	1	0	1
4:45 PM	0	0	0	1	1
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	1	1
5:30 PM	0	0	0	0	0
5:45 PM	0	0	1	1	2
Count Total	0	0	5	5	10
Peak Hour Total	0	0	4	3	7
Peak Hour HV%	0.0%	0.0%	3.1%	3.4%	3.1%

Pedestrians (Leg)				
E	W	N	S	Total
0	2	0	2	4
0	2	0	0	2
0	4	0	1	5
0	2	0	1	3
0	1	0	4	5
0	1	0	0	1
0	3	0	1	4
0	4	3	3	10
0	19	3	12	34
0	10	0	4	14

Bicycles (Leg)				
E	W	N	S	Total
3	0	0	0	3
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
2	2	1	1	6
1	1	0	0	2
2	2	0	0	4
0	1	1	0	2
8	6	2	1	17
3	0	0	0	3

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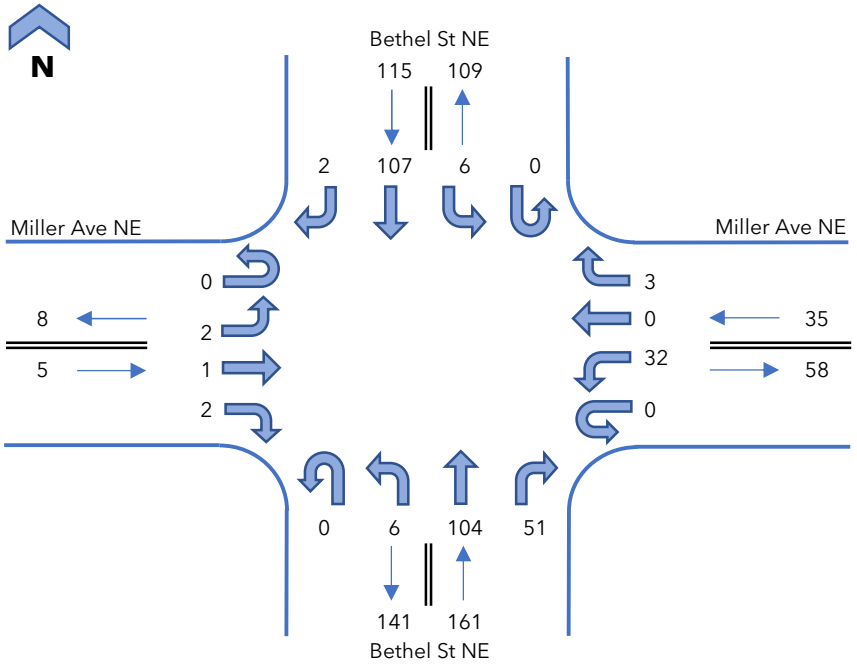
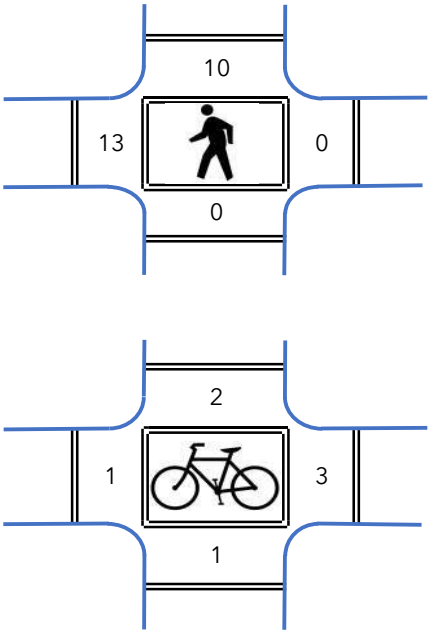
Date Collected: 5/1/2025
Day of the Week: Thursday
Time Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM

Miller Avenue NE & Bethel Street NE





Interval Start Time	Miller Ave NE Eastbound				Miller Ave NE Westbound				Bethel St NE Northbound				Bethel St NE Southbound				15 Minute Totals	Hourly Totals
	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT		
4:00 PM	0	1	0	0	0	9	0	1	0	0	42	8	0	4	29	0	94	
4:15 PM	0	0	1	2	0	8	1	1	0	0	31	11	0	1	18	2	76	
4:30 PM	0	0	0	0	0	8	0	0	0	1	22	12	0	1	23	1	68	
4:45 PM	0	0	1	0	0	9	0	1	0	1	27	12	0	1	21	0	73	311
5:00 PM	0	1	0	2	0	10	0	2	0	2	31	15	0	3	28	1	95	312
5:15 PM	0	1	0	0	0	5	0	0	0	2	24	12	0	1	35	0	80	316
5:30 PM	0	1	0	0	0	4	0	2	0	0	29	9	0	0	19	0	64	312
5:45 PM	0	0	0	0	0	6	0	0	0	1	25	7	0	1	22	1	63	302
Count Total	0	4	2	4	0	59	1	7	0	7	231	86	0	12	195	5	613	--
Peak Hour Total	0	2	1	2	0	32	0	3	0	6	104	51	0	6	107	2	316	--
PHF	0.42				0.73				0.84				0.80				0.83	--
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4	--
HV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%	0.0%	0.0%	0.0%	1.9%	0.0%	1.3%	--

Interval Start Time	Heavy Vehicles				
	EB	WB	NB	SB	Total
4:00 PM	0	1	2	0	3
4:15 PM	0	1	0	2	3
4:30 PM	0	0	1	0	1
4:45 PM	0	0	1	1	2
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	1	1
5:30 PM	0	0	1	0	1
5:45 PM	0	0	1	1	2
Count Total	0	2	6	5	13
Peak Hour Total	0	0	2	2	4
Peak Hour HV%	0.0%	0.0%	1.2%	1.7%	1.3%

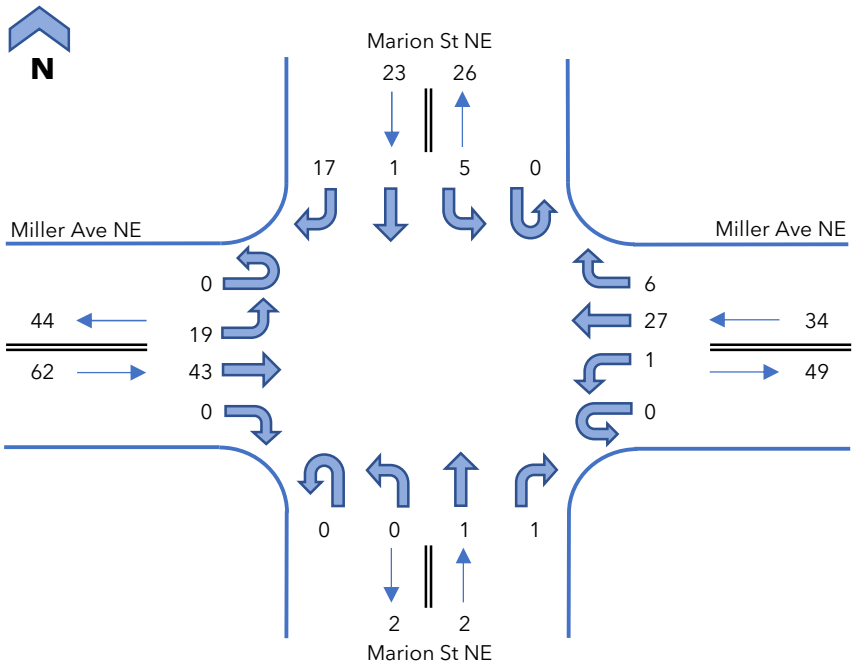
Pedestrians (Leg)				
E	W	N	S	Total
0	9	7	0	16
0	1	0	0	1
0	5	5	0	10
0	3	2	0	5
0	4	1	0	5
0	1	2	0	3
0	4	3	0	7
0	2	3	0	5
0	29	23	0	52
0	13	10	0	23

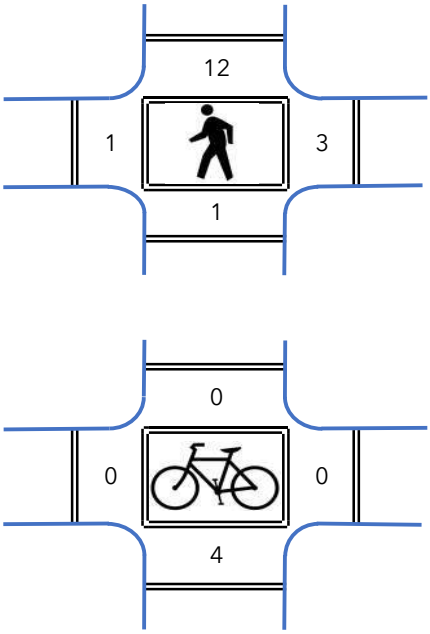
Bicycles (Leg)				
E	W	N	S	Total
1	0	0	0	1
0	1	1	0	2
0	0	0	0	0
0	0	0	0	0
2	1	2	0	5
1	0	0	1	2
2	0	3	0	5
0	1	0	0	1
6	3	6	1	16
3	1	2	1	7

HEATH & ASSOCIATES
Transportation Planning & Engineering

Date Collected: 5/1/2025
Day of the Week: Thursday
Time Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM

Miller Avenue NE & Marion Street NE





Interval Start Time	Miller Ave NE Eastbound				Miller Ave NE Westbound				Marion St NE Northbound				Marion St NE Southbound				15 Minute Totals	Hourly Totals
	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT		
4:00 PM	0	6	11	1	0	0	5	1	0	0	0	0	0	3	0	4	31	
4:15 PM	0	4	10	0	0	0	6	3	0	0	1	1	0	2	1	6	34	
4:30 PM	0	6	9	0	0	0	4	1	0	0	0	0	0	1	0	2	23	
4:45 PM	0	3	8	0	0	0	9	2	0	0	0	0	0	1	0	4	27	115
5:00 PM	0	6	16	0	0	1	8	0	0	0	0	0	0	1	0	5	37	121
5:15 PM	0	4	13	0	0	1	4	1	0	0	0	1	0	1	0	2	27	114
5:30 PM	0	1	9	0	0	0	4	3	0	0	0	0	0	3	0	3	23	114
5:45 PM	0	0	8	0	0	0	9	3	0	0	0	1	0	1	0	0	22	109
Count Total	0	30	84	1	0	2	49	14	0	0	1	3	0	13	1	26	224	--
Peak Hour Total	0	19	43	0	0	1	27	6	0	0	1	1	0	5	1	17	121	--
PHF	0.70				0.77				0.25				0.64				0.82	--
Heavy Vehicles	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	3	--
HV %	0.0%	0.0%	4.7%	0.0%	0.0%	0.0%	3.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.5%	--

Interval Start Time	Heavy Vehicles				
	EB	WB	NB	SB	Total
4:00 PM	1	1	0	0	2
4:15 PM	0	1	0	0	1
4:30 PM	0	0	0	0	0
4:45 PM	1	0	0	0	1
5:00 PM	1	0	0	0	1
5:15 PM	0	0	0	0	0
5:30 PM	1	0	0	0	1
5:45 PM	0	2	0	0	2
Count Total	4	4	0	0	8
Peak Hour Total	2	1	0	0	3
Peak Hour HV%	3.2%	2.9%	0.0%	0.0%	2.5%

Pedestrians (Leg)				
E	W	N	S	Total
1	2	3	1	7
0	0	0	0	0
1	0	3	0	4
1	0	5	0	6
1	1	4	1	7
0	0	0	0	0
0	0	0	0	0
0	3	0	0	3
4	6	15	2	27
3	1	12	1	17

Bicycles (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	2	2
0	0	0	2	2
1	0	2	3	6
1	0	1	4	6
0	0	1	1	2
2	0	4	12	18
0	0	0	4	4

SPRINGWOOD GARDEN
TRAFFIC IMPACT ANALYSIS

APPENDIX
ITE Trip Generation Sheets

Single-Family Detached Housing
(210)

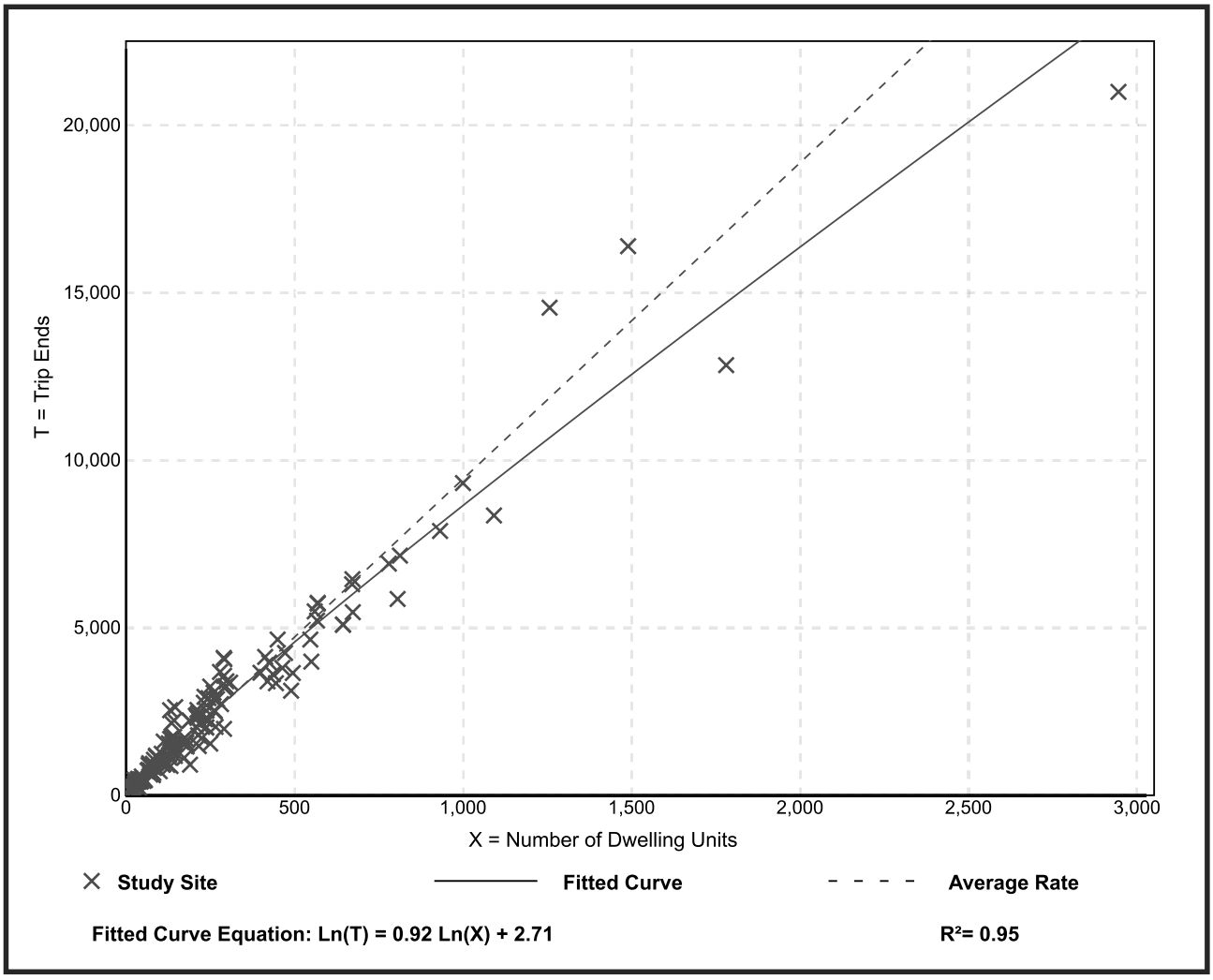
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 159
Avg. Num. of Dwelling Units: 264
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.44	4.81 - 19.39	2.10

Data Plot and Equation



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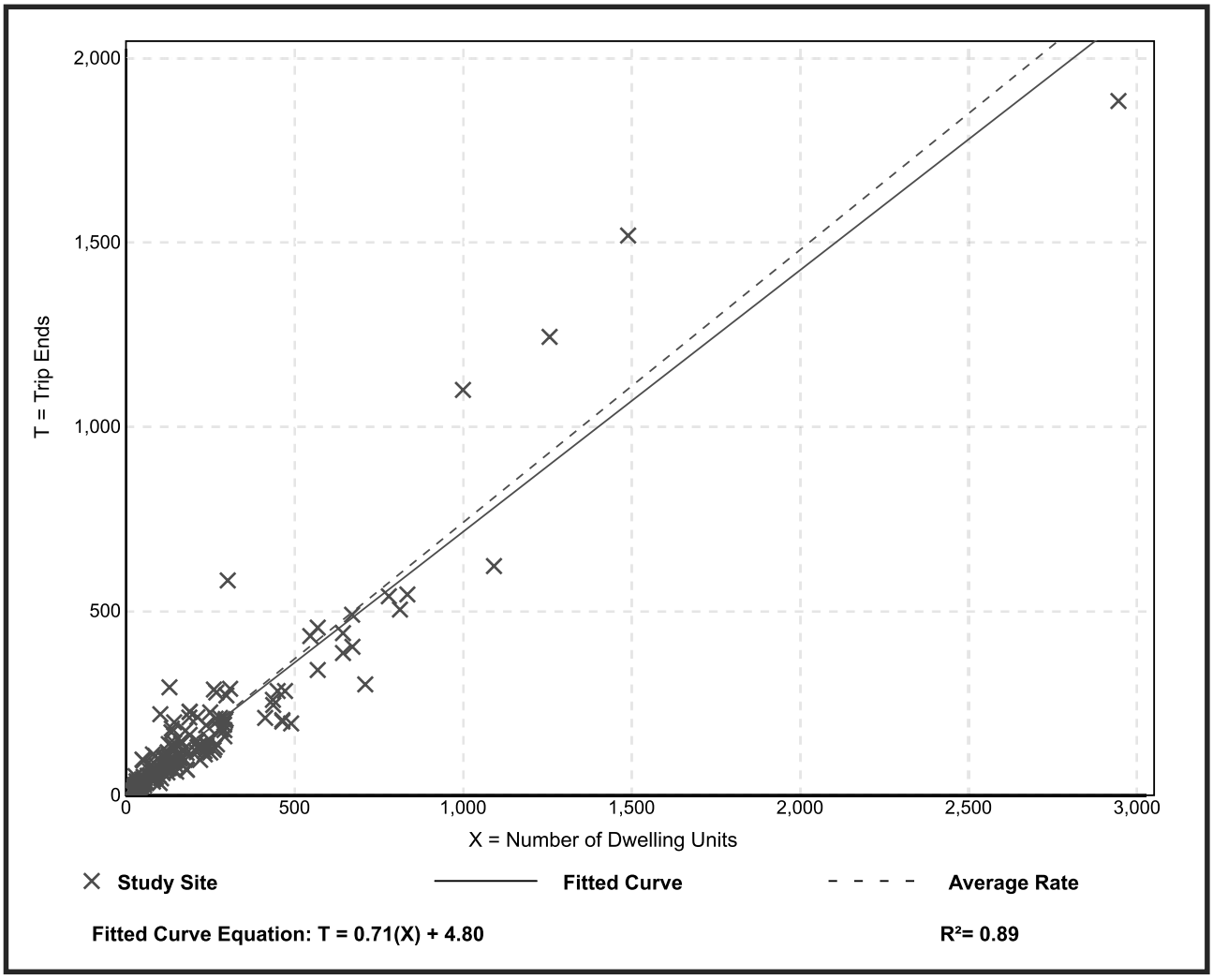
Single-Family Detached Housing
(210)

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: 173
Avg. Num. of Dwelling Units: 219
Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.74	0.33 - 2.27	0.27

Data Plot and Equation



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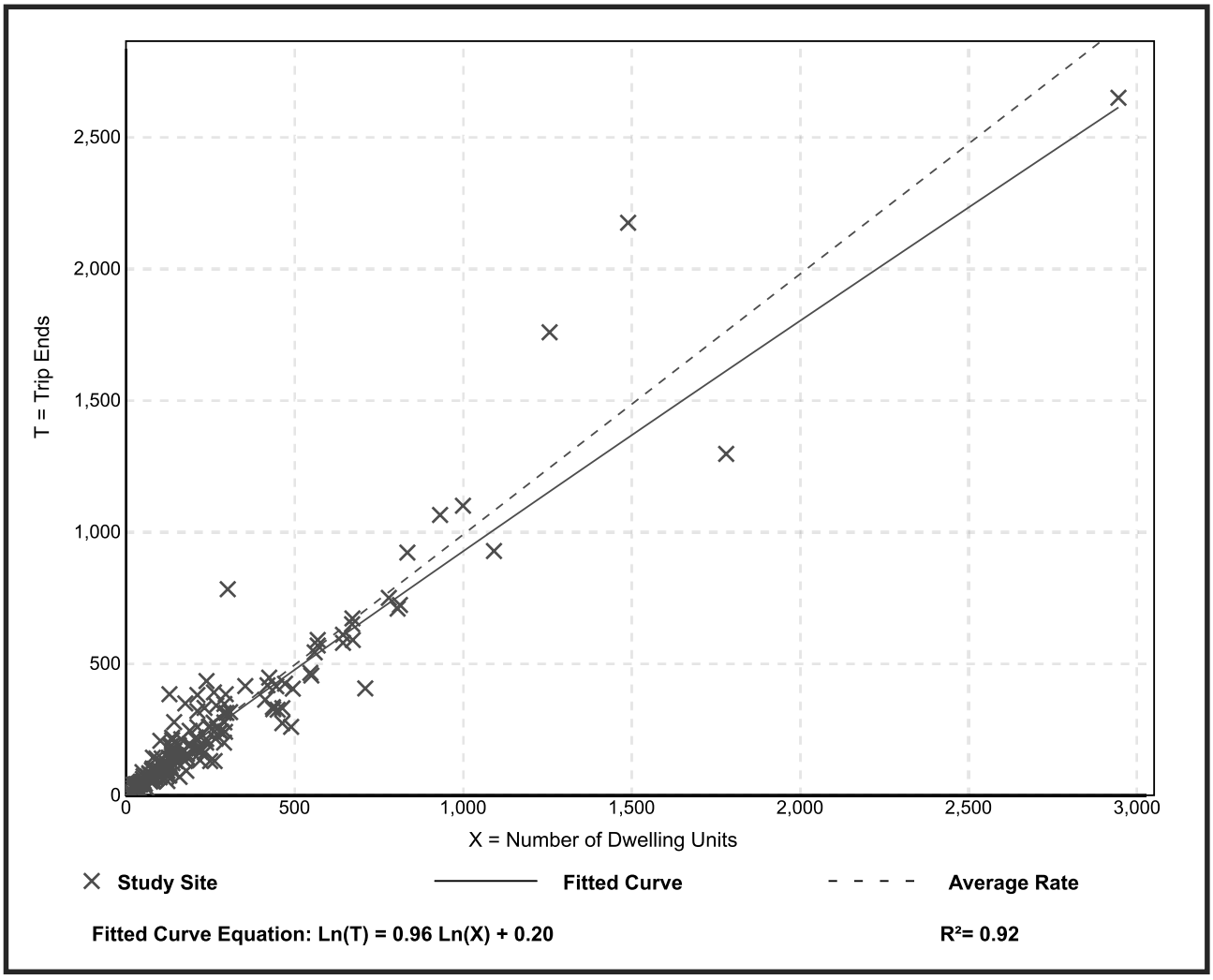
Single-Family Detached Housing
(210)

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: 190
Avg. Num. of Dwelling Units: 242
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.99	0.44 - 2.98	0.31

Data Plot and Equation



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SPRINGWOOD GARDEN
TRAFFIC IMPACT ANALYSIS

APPENDIX
Existing Conditions Level of Service Worksheets

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	5	7	0	0	12	114	1	0	84	5
Future Vol, veh/h	0	0	5	7	0	0	12	114	1	0	84	5
Conflicting Peds, #/hr	10	0	10	0	0	0	4	0	4	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	73	73	73	73	73	73	73	73	73
Heavy Vehicles, %	0	0	0	0	0	0	0	4	0	0	4	0
Mvmt Flow	0	0	7	10	0	0	16	156	1	0	115	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	322	317	132	319	320	171	126	0	0	162	0	0
Stage 1	122	122	-	194	194	-	-	-	-	-	-	-
Stage 2	199	194	-	125	126	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	635	603	922	638	600	878	1473	-	-	1430	-	-
Stage 1	887	798	-	813	744	-	-	-	-	-	-	-
Stage 2	807	744	-	884	796	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	619	591	910	617	589	866	1467	-	-	1424	-	-
Mov Cap-2 Maneuver	619	591	-	617	589	-	-	-	-	-	-	-
Stage 1	883	795	-	800	732	-	-	-	-	-	-	-
Stage 2	790	732	-	869	793	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	8.99	10.93	0.71	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	170	-	-	910	617	1424	-	-
HCM Lane V/C Ratio	0.011	-	-	0.008	0.016	-	-	-
HCM Ctrl Dly (s/v)	7.5	0	-	9	10.9	0	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	1	2	32	0	3	6	104	51	6	107	2
Future Vol, veh/h	2	1	2	32	0	3	6	104	51	6	107	2
Conflicting Peds, #/hr	13	0	13	0	0	0	0	0	0	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	2	0
Mvmt Flow	2	1	2	39	0	4	7	125	61	7	129	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	307	366	153	337	336	179	141	0	0	197	0	0
Stage 1	155	155	-	180	180	-	-	-	-	-	-	-
Stage 2	153	211	-	157	156	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	649	566	898	620	588	869	1454	-	-	1388	-	-
Stage 1	853	773	-	826	754	-	-	-	-	-	-	-
Stage 2	854	731	-	850	773	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	625	549	879	597	570	850	1440	-	-	1375	-	-
Mov Cap-2 Maneuver	625	549	-	597	570	-	-	-	-	-	-	-
Stage 1	840	762	-	813	742	-	-	-	-	-	-	-
Stage 2	836	720	-	831	761	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	10.3	11.31	0.28	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	63	-	-	685	612	94	-	-
HCM Lane V/C Ratio	0.005	-	-	0.009	0.069	0.005	-	-
HCM Ctrl Dly (s/v)	7.5	0	-	10.3	11.3	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	19	43	0	1	27	6	0	1	1	5	1	17
Future Vol, veh/h	19	43	0	1	27	6	0	1	1	5	1	17
Conflicting Peds, #/hr	1	0	0	3	0	3	1	0	1	12	0	12
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	5	0	0	4	0	0	0	0	0	0	0
Mvmt Flow	23	52	0	1	33	7	0	1	1	6	1	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	43	0	0	55	0	0	150	147	67	153	144	52
Stage 1	-	-	-	-	-	-	102	102	-	42	42	-
Stage 2	-	-	-	-	-	-	48	46	-	111	102	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1578	-	-	1562	-	-	823	748	1002	818	751	1022
Stage 1	-	-	-	-	-	-	909	815	-	978	864	-
Stage 2	-	-	-	-	-	-	971	861	-	899	815	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1574	-	-	1558	-	-	780	732	987	791	735	1007
Mov Cap-2 Maneuver	-	-	-	-	-	-	780	732	-	791	735	-
Stage 1	-	-	-	-	-	-	893	800	-	974	861	-
Stage 2	-	-	-	-	-	-	938	858	-	872	800	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	2.24	0.22	9.3	8.96
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	840	552	-	-	51	-	-	937
HCM Lane V/C Ratio	0.003	0.015	-	-	0.001	-	-	0.03
HCM Ctrl Dly (s/v)	9.3	7.3	0	-	7.3	0	-	9
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

SPRINGWOOD GARDEN
TRAFFIC IMPACT ANALYSIS

APPENDIX
Forecast Without Project Level of Service Worksheets

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	5	8	0	0	13	125	1	0	92	5
Future Vol, veh/h	0	0	5	8	0	0	13	125	1	0	92	5
Conflicting Peds, #/hr	10	0	10	0	0	0	4	0	4	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	73	73	73	73	73	73	73	73	73
Heavy Vehicles, %	0	0	0	0	0	0	0	4	0	0	4	0
Mvmt Flow	0	0	7	11	0	0	18	171	1	0	126	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	350	346	143	348	348	186	137	0	0	177	0	0
Stage 1	133	133	-	212	212	-	-	-	-	-	-	-
Stage 2	217	212	-	136	137	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	608	581	909	611	579	861	1460	-	-	1412	-	-
Stage 1	875	790	-	795	731	-	-	-	-	-	-	-
Stage 2	790	731	-	872	787	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	592	568	897	590	566	850	1454	-	-	1406	-	-
Mov Cap-2 Maneuver	592	568	-	590	566	-	-	-	-	-	-	-
Stage 1	871	787	-	781	718	-	-	-	-	-	-	-
Stage 2	772	718	-	857	784	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	9.04	11.22	0.7	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	168	-	-	897	590	1406	-	-
HCM Lane V/C Ratio	0.012	-	-	0.008	0.019	-	-	-
HCM Ctrl Dly (s/v)	7.5	0	-	9	11.2	0	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	1	2	35	0	3	7	114	56	7	117	2
Future Vol, veh/h	2	1	2	35	0	3	7	114	56	7	117	2
Conflicting Peds, #/hr	13	0	13	0	0	0	0	0	0	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	2	0
Mvmt Flow	2	1	2	42	0	4	8	137	67	8	141	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	336	401	165	369	368	194	153	0	0	215	0	0
Stage 1	169	169	-	198	198	-	-	-	-	-	-	-
Stage 2	167	232	-	171	170	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	621	541	885	591	564	852	1440	-	-	1367	-	-
Stage 1	838	762	-	809	741	-	-	-	-	-	-	-
Stage 2	839	717	-	835	762	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	597	524	865	567	546	834	1426	-	-	1354	-	-
Mov Cap-2 Maneuver	597	524	-	567	546	-	-	-	-	-	-	-
Stage 1	824	750	-	795	729	-	-	-	-	-	-	-
Stage 2	820	705	-	816	749	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	10.5	11.71	0.3	0.43
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	67	-	-	660	582	100	-	-
HCM Lane V/C Ratio	0.006	-	-	0.009	0.079	0.006	-	-
HCM Ctrl Dly (s/v)	7.5	0	-	10.5	11.7	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0	-	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	21	47	0	1	30	7	0	1	1	5	1	19
Future Vol, veh/h	21	47	0	1	30	7	0	1	1	5	1	19
Conflicting Peds, #/hr	1	0	0	3	0	3	1	0	1	12	0	12
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	5	0	0	4	0	0	0	0	0	0	0
Mvmt Flow	26	57	0	1	37	9	0	1	1	6	1	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	48	0	0	60	0	0	163	162	72	167	158	56
Stage 1	-	-	-	-	-	-	112	112	-	46	46	-
Stage 2	-	-	-	-	-	-	52	51	-	121	112	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1572	-	-	1556	-	-	806	734	995	801	738	1016
Stage 1	-	-	-	-	-	-	898	807	-	973	860	-
Stage 2	-	-	-	-	-	-	966	857	-	888	807	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1567	-	-	1552	-	-	761	717	981	773	721	1002
Mov Cap-2 Maneuver	-	-	-	-	-	-	761	717	-	773	721	-
Stage 1	-	-	-	-	-	-	881	791	-	969	857	-
Stage 2	-	-	-	-	-	-	931	854	-	861	791	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	2.27	0.19	9.36	8.99
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	828	556	-	-	46	-	-	932
HCM Lane V/C Ratio	0.003	0.016	-	-	0.001	-	-	0.033
HCM Ctrl Dly (s/v)	9.4	7.3	0	-	7.3	0	-	9
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

SPRINGWOOD GARDEN
TRAFFIC IMPACT ANALYSIS

APPENDIX
Forecast With Project Level of Service Worksheets

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	5	14	0	2	13	125	12	3	92	5
Future Vol, veh/h	0	0	5	14	0	2	13	125	12	3	92	5
Conflicting Peds, #/hr	10	0	10	0	0	0	4	0	4	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	73	73	73	73	73	73	73	73	73
Heavy Vehicles, %	0	0	0	0	0	0	0	4	0	0	4	0
Mvmt Flow	0	0	7	19	0	3	18	171	16	4	126	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	359	369	143	363	364	193	137	0	0	192	0	0
Stage 1	142	142	-	219	219	-	-	-	-	-	-	-
Stage 2	217	227	-	144	145	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	601	564	909	596	567	853	1460	-	-	1394	-	-
Stage 1	866	783	-	788	726	-	-	-	-	-	-	-
Stage 2	790	720	-	863	781	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	581	550	897	574	553	842	1454	-	-	1389	-	-
Mov Cap-2 Maneuver	581	550	-	574	553	-	-	-	-	-	-	-
Stage 1	860	778	-	774	713	-	-	-	-	-	-	-
Stage 2	769	707	-	846	775	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	9.04	11.25	0.65	0.23
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	153	-	-	897	598	53	-	-
HCM Lane V/C Ratio	0.012	-	-	0.008	0.037	0.003	-	-
HCM Ctrl Dly (s/v)	7.5	0	-	9	11.3	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	1	2	40	0	3	7	124	64	7	122	3
Future Vol, veh/h	3	1	2	40	0	3	7	124	64	7	122	3
Conflicting Peds, #/hr	13	0	13	0	0	0	0	0	0	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	2	0
Mvmt Flow	4	1	2	48	0	4	8	149	77	8	147	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	355	429	172	392	392	211	161	0	0	237	0	0
Stage 1	176	176	-	215	215	-	-	-	-	-	-	-
Stage 2	179	253	-	177	177	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	604	521	877	571	547	834	1431	-	-	1342	-	-
Stage 1	831	758	-	792	729	-	-	-	-	-	-	-
Stage 2	827	701	-	829	756	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	580	505	858	548	529	816	1417	-	-	1330	-	-
Mov Cap-2 Maneuver	580	505	-	548	529	-	-	-	-	-	-	-
Stage 1	817	745	-	779	717	-	-	-	-	-	-	-
Stage 2	808	690	-	810	744	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	10.76	12.07	0.27	0.41
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	60	-	-	633	561	95	-	-
HCM Lane V/C Ratio	0.006	-	-	0.011	0.092	0.006	-	-
HCM Ctrl Dly (s/v)	7.6	0	-	10.8	12.1	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0	-	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	29	47	0	1	30	9	0	1	1	6	1	24
Future Vol, veh/h	29	47	0	1	30	9	0	1	1	6	1	24
Conflicting Peds, #/hr	1	0	0	3	0	3	1	0	1	12	0	12
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	5	0	0	4	0	0	0	0	0	0	0
Mvmt Flow	35	57	0	1	37	11	0	1	1	7	1	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	51	0	0	60	0	0	183	184	72	188	179	57
Stage 1	-	-	-	-	-	-	131	131	-	48	48	-
Stage 2	-	-	-	-	-	-	52	53	-	141	131	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1569	-	-	1556	-	-	783	714	995	777	719	1015
Stage 1	-	-	-	-	-	-	877	792	-	971	859	-
Stage 2	-	-	-	-	-	-	966	855	-	867	792	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1564	-	-	1552	-	-	730	693	981	745	697	1000
Mov Cap-2 Maneuver	-	-	-	-	-	-	730	693	-	745	697	-
Stage 1	-	-	-	-	-	-	854	771	-	968	856	-
Stage 2	-	-	-	-	-	-	925	852	-	835	771	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	2.81	0.18	9.45	9.05
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	812	687	-	-	43	-	-	926
HCM Lane V/C Ratio	0.003	0.023	-	-	0.001	-	-	0.041
HCM Ctrl Dly (s/v)	9.4	7.4	0	-	7.3	0	-	9.1
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.1

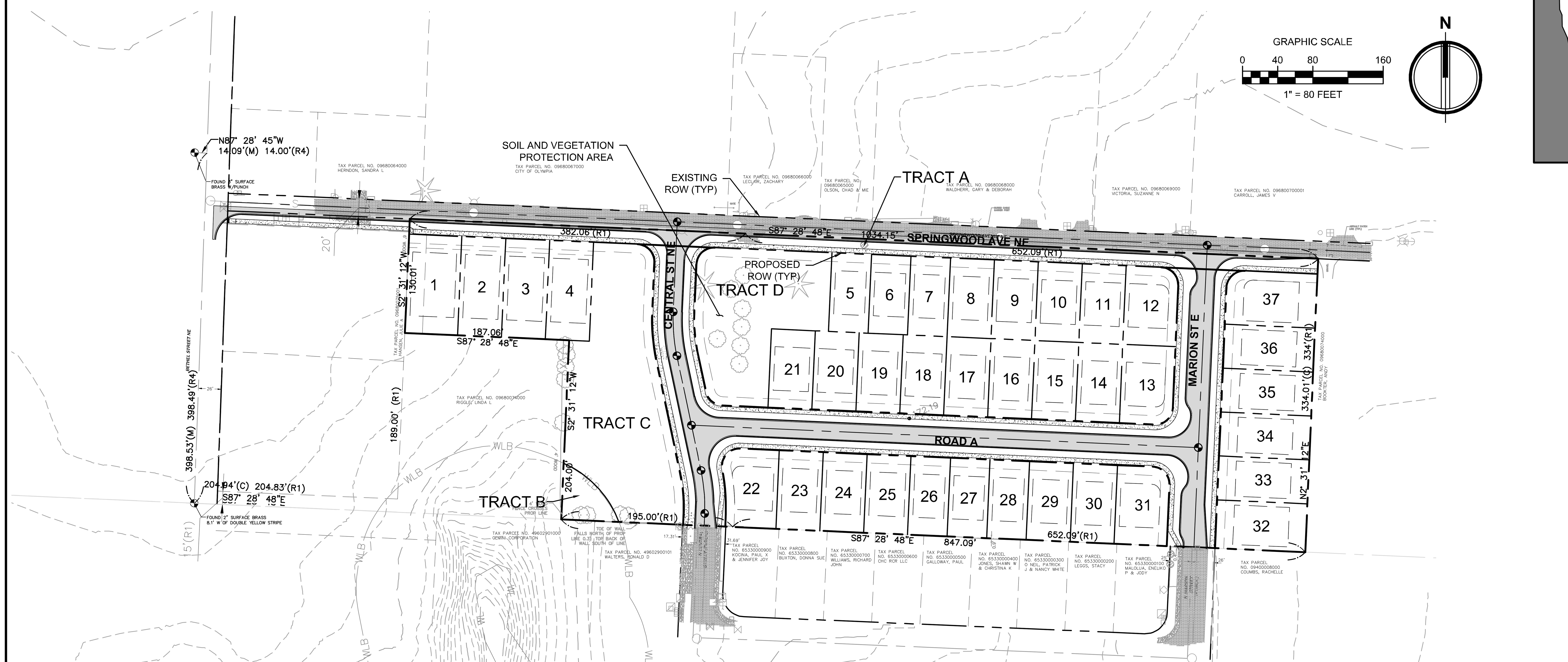
SPRINGWOOD GARDEN
TRAFFIC IMPACT ANALYSIS

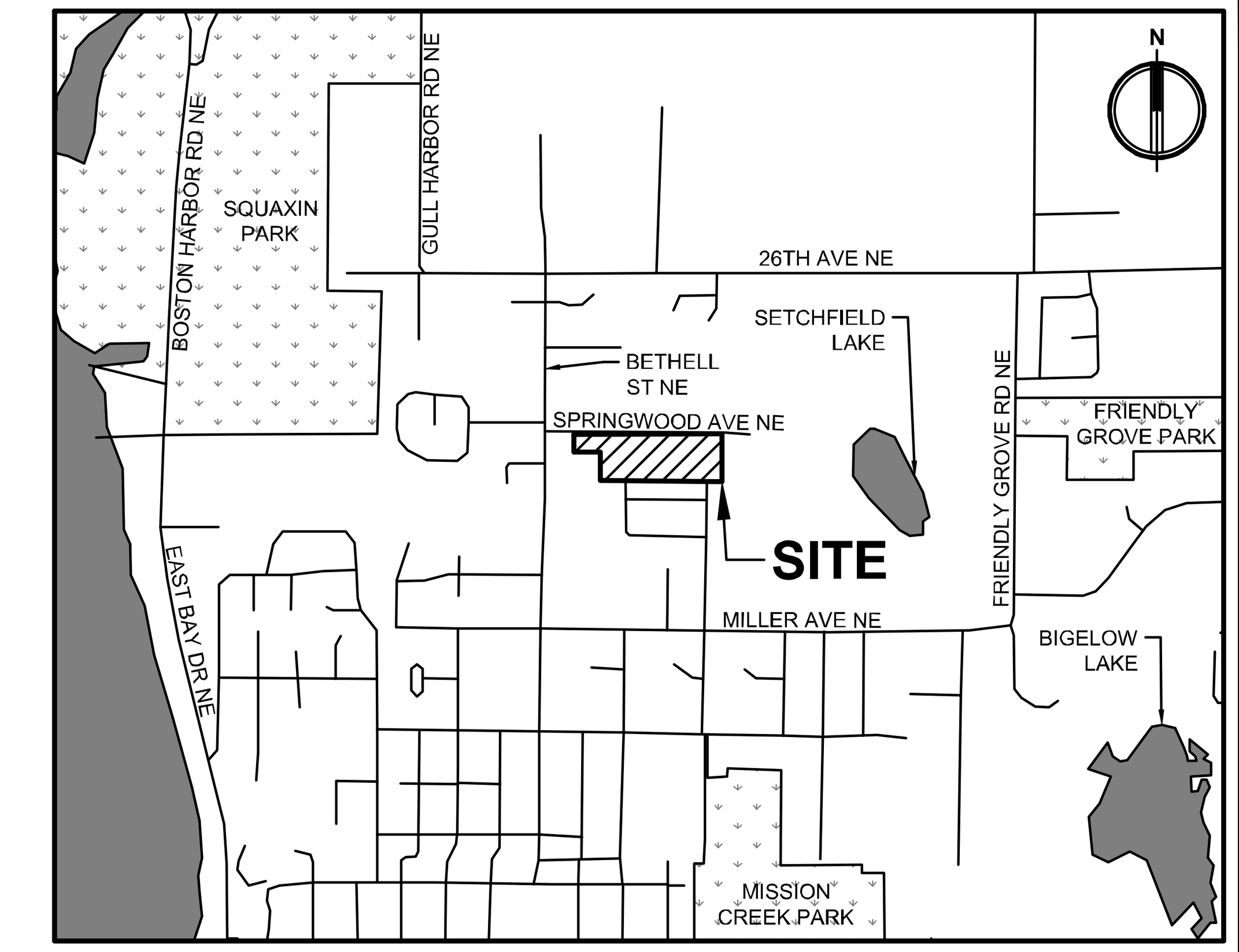
APPENDIX
Site Plan

811 Know what's below. Call before you dig.

SPRINGWOOD GARDEN

A PORTION OF THE O'BRYANT D.L.C. NO. 40, LYING WITHIN THE NW 1/4 AND SW 1/4 OF SECTION 12, TWN. 18 N., RGE. 2 W., W.M., CITY OF OLYMPIA, THURSTON COUNTY, WASHINGTON.





VICINITY MAP
SCALE: 1" = 1,320' (1/4 MILE)

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	ROW	
	MONUMENT	
	FOUND PROPERTY CORNER	
	SANITARY SEWER MANHOLE	
	STORM CATCH BASIN	
	YARD DRAIN	
	ROOF DRAIN	
	POWER TRANSFORMER	
	GUY ANCHOR	
	POWER METER	
	JUNCTION BOX	
	LUMINAIRE	
	WATER VALVE	
	WATER METER	
	FIRE HYDRANT	
	POST INDICATOR VALVE (PIV)	
	FIRE DEPARTMENT CONNECTION (FDC)	
	HOSE BIB	
	TEST PIT	
	SIGN	
	CONIFEROUS TREE	
	DECIDUOUS TREE	
ELEV	CONTOURS	ELEV
S	SEWER LINE	S
D	STORM LINE	D
W	WATER LINE	W
G	GAS LINE	
P	ELECTRICAL LINE	
T	COMMUNICATION LINE	
x	FENCE	x
	ASPHALT PAVEMENT	
	CEMENT CONCRETE PAVEMENT	

OWNER

GARRETTE CUSTOM HOMES PUGET SOUND, INC.
4802 TACOMA MALL BOULEVARD
TACOMA, WA 98409
CONTACT: MATT LEWIS, PRESIDENT

CIVIL ENGINEER

AHBL
2215 NORTH 30TH STREET, SUITE 300
TACOMA, WA 98403
(253) 383-2422
CONTACT: MATT WEBER, PE

SURVEYOR

AHBL
2215 NORTH 30TH STREET, SUITE 300
TACOMA, WA 98403
(253) 383-2422
CONTACT: DAVE FOLLANSBEE, PLS

VERTICAL DATUM

NAVD 1988 VERTICAL DATUM ON ORTHOMETRICALLY CORRECTED GPS OBSERVATIONS USING WSRN AND GEOID 2012A.

BASIS OF BEARING

NAD 1983/11
WASHINGTON STATE PLANE SOUTH PROJECTION, BASED ON GPS OBSERVATIONS USING WSRN AND GEOID 2012A. UNITS OF MEASUREMENT ARE US SURVEY FEET.

FILL SPECIFICATION

FILL MATERIAL SHALL NOT CONTAIN PETROLEUM PRODUCTS, OR SUBSTANCES WHICH ARE HAZARDOUS, DANGEROUS, TOXIC, OR WHICH OTHERWISE VIOLATE ANY STATE, FEDERAL, OR LOCAL LAW, ORDINANCE, CODE, REGULATION, RULE, ORDER, OR STANDARD.

TRENCH NOTE

IF WORKERS ENTER ANY TRENCH OR OTHER EXCAVATION FOUR OR MORE FEET IN DEPTH THAT DOES NOT MEET THE OPEN PIT REQUIREMENTS OF WSDOT SECTION 2-09.3(3)B, IT SHALL BE SHORED AND CRIBBED. THE CONTRACTOR ALONE SHALL BE RESPONSIBLE FOR WORKER SAFETY AND AHBL ASSUMES NO RESPONSIBILITY. ALL TRENCH SAFETY SYSTEMS SHALL MEET THE REQUIREMENTS OF THE WASHINGTON INDUSTRIAL SAFETY AND HEALTH ACT, CHAPTER 49.17 RCW.

LEGAL DESCRIPTION

PER QUIT CLAIM DEED, RECORDED UNDER RECORDING NUMBER 4917908, RECORDS OF THURSTON COUNTY:

PARCEL B OF BOUNDARY LINE ADJUSTMENT NO. SS-5328, AS RECORDED DECEMBER 3, 1984 UNDER AUDITOR'S FILE NO. 8412030032.

UTILITY NOTE

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES THAT HAPPEN DUE TO THE CONTRACTOR'S FAILURE TO LOCATE EXACTLY AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. AHBL ASSUMES NO LIABILITY FOR THE LOCATION OF UNDERGROUND UTILITIES.

UTILITY PURVEYORS

WATER:	CITY OF OLYMPIA
SEWER:	CITY OF OLYMPIA
POWER:	PSE
CABLE:	LUMEN/COMCAST

SITE STATISTICS

PARCEL NUMBER:	09680073000
PARCEL SIZE:	7.06 AC
ROW SIZE:	1.35 AC
NET DEVELOPABLE:	5.64 AC
ZONING:	R4-8
MINIMUM LOT WIDTH:	45'
MINIMUM LOT SIZE:	4,000 SF
NUMBER OF LOTS:	39
PROPOSED DENSITY:	7 UNITS/ACRE
SETBACKS:	
FRONT:	20'
SIDE:	5'
REAR:	20'
CORNER LOT FLANKING:	10'
MINIMUM DENSITY:	4 UNITS/ACRE
MAXIMUM DENSITY:	8 UNITS/ACRE

REQUIRED GENERAL NOTES FOR ALL PROJECTS:

1. ALL WORK AND MATERIALS SHALL BE COMPLETED IN ACCORDANCE WITH THE FOLLOWING:
   A. THE CITY OF OLYMPIA'S (2023) ENGINEERING DESIGN AND DEVELOPMENT STANDARDS (EDDS),
   B. THE MOST CURRENT "STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION" FROM THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION,
   C. THE CITY OF OLYMPIA'S 2016 DRAINAGE AND EROSION CONTROL MANUAL, AND
   D. THE CITY OF OLYMPIA SUPPLEMENTAL SPECIFICATIONS, THE CONTRACT SPECIFICATIONS AND SPECIAL PROVISIONS, AS APPLICABLE.
2. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD WITH THE CITY PRIOR TO THE START OF CONSTRUCTION. ALL PRIVATE DEVELOPMENT (PERMITTED) PROJECTS MUST SCHEDULE THE PRE-CONSTRUCTION CONFERENCE USING THE CITY'S SMARTGOV PERMITTING SYSTEM.
3. UNLESS NOTED OTHERWISE, UTILITIES SHOWN ON THE PLAN AND PROFILE ARE EXISTING, AND ARE LOCATED TO THE BEST INFORMATION AVAILABLE AT THE TIME OF PRINTING. THE CONTRACTOR SHALL VERIFY PRIOR TO CONSTRUCTION AND TAKE EXTRAORDINARY CARE WHEN EXCAVATING NEAR OR AROUND UTILITY CROSSINGS INCLUDING "HAND" EXCAVATION AND POT HOLING. IN THE EVENT OF A CONFLICT, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER AND THE PRIVATE UTILITY TO RAISE, RELOCATE, OR LOWER THE CONFLICTING APPURTENANCES.
4. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING 811, THE UNDERGROUND LOCATE LINE, A MINIMUM OF 48 HOURS (TWO WORKING DAYS) PRIOR TO ANY EXCAVATION. IT IS THE RESPONSIBILITY OF THE REQUESTER TO MAINTAIN THE MARKINGS AFTER THE INITIAL LOCATE IN ACCORDANCE WITH RCW 19.122.
5. EROSION CONTROL SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT "DRAINAGE DESIGN AND EROSION CONTROL MANUAL FOR OLYMPIA" (DRAINAGE MANUAL).
6. CONTRACTOR SHALL PROTECT ALL TREES AND VEGETATION THAT ARE NOT TO BE REMOVED AS DIRECTED BY THE ENGINEER.
7. ALL DRAINAGE STRUCTURES, SANITARY MANHOLES, WATER METERS, WATER VALVES OR OTHER APPURTENANCES SHALL BE ADJUSTED TO FINAL GRADE BY THE CONTRACTOR UNLESS OTHERWISE NOTED ON THE PLANS.
8. CONTRACTOR SHALL MAINTAIN FUNCTION OF ALL EXISTING UTILITIES DURING CONSTRUCTION, UNLESS OTHERWISE AGREED.
9. CONTRACTOR SHALL TAKE CARE NOT TO DAMAGE EXISTING SIDEWALK AND ROAD SURFACES OUTSIDE OF THE PROJECT LIMITS. ALL DAMAGE OR UNDERMINING SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO IMMEDIATELY REPAIR TO CITY STANDARDS AT THE CONTRACTOR'S EXPENSE.
10. ALL EXISTING SIGNS THAT INTERFERE WITH CONSTRUCTION SHALL BE RELOCATED AS DIRECTED BY THE ENGINEER.
11. ACCESS TO PRIVATE PROPERTY SHALL BE MAINTAINED AT ALL TIMES UNLESS PRIOR APPROVAL AND COORDINATION HAS OCCURRED.
12. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL IN ACCORDANCE WITH THE U.S. DEPARTMENT OF TRANSPORTATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). PRIOR TO DISRUPTION OF ANY TRAFFIC, TRAFFIC CONTROL PLANS WILL BE PREPARED AND SUBMITTED TO THE CITY FOR APPROVAL. NO WORK WILL COMMENCE UNTIL ALL APPROVED TRAFFIC CONTROL IS IN PLACE.
13. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE A COPY OF THE APPROVED CONSTRUCTION PLANS ON SITE AT ALL TIMES.
14. ANY CHANGES TO THE DESIGN SHALL FIRST BE REVIEWED AND APPROVED BY THE ENGINEER.
15. CITY OF OLYMPIA VERTICAL DATUM IS NAVD 88 AND SHALL BE USED FOR ALL VERTICAL CONTROL.

SHEET INDEX

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Project Title:
SPRINGWOOD GARDEN PRELIMINARY PLAT

Client:
GARRETTE CUSTOM HOMES PUGET SOUND, INC.

4802 TACOMA MALL BOULEVARD
TACOMA, WA 98409

CONTACT: MATT LEWIS, PRESIDENT

Project No.
2240545.10

Issue Set & Date:
PRELIMINARY PLAT

8/12/2025

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4
3
2
1 CITY COMMENTS - 5/21/2025
Revisions:

Sheet Title:
COVER SHEET

Designed by:	Drawn by:	Checked by:
CF	CR	JMW

Sheet No.
C0.0
1 of 14 Sheets

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