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TECHNICAL MEMORANDUM #3

Woodburn Southwest Subarea Transportation Plan

No Build Conditions Memorandum (Subtask 3.2)

September 18, 2024 Project# 29264

To: Chris Kerr, City of Woodburn
Heidi Hinshaw, City of Woodburn

From: Matt Hughart, AICP, McKenna Milacek, Russ Doubleday, AICP, and Julia Kuhn, PE

The City's Adopted Transportation System Plan (TSP) identified the transportation facilities needed to support a projected increase in households and jobs of approximately 2 – 3 percent per year between 2015 and 2040. Since the TSP was adopted, Woodburn has been experiencing significant and different economic development than was foreseen by the City, particularly in the southwest portion of the City. In addition, the City is in the process of amending its Urban Growth Boundary (UGB) to add the urban reserve area (URA) lands located to the east of I-5 and south of Parr Road.

The enclosed memo provides an evaluation of the previously identified needs and prioritized investments included in the adopted TSP versus the vehicular capacity needs associated with the revised expectations of job and household growth between now and 2040. This memo also provides an evaluation of the vehicular capacity needs associated with the increased job and household growth plus the development of the lands within the URA lands. The findings in this memo build upon the needs and deficiencies identified in Technical Memorandum #3 for the existing conditions and will serve as the baseline for the alternatives evaluation to be developed as part of Technical Memorandum #4.

This memorandum focuses on the vehicular capacity needs at the following 15 locations based on the increased population and employment forecasts and compares those to the needs identified in the adopted TSP:

- OR 219 & Butteville Road
- OR 219 & Woodland Avenue
- OR 214 & I-5 SB Ramps
- OR 214 & I-5 NB Ramps
- OR 214 & Evergreen Road
- Evergreen Road & Stacy Allison Way
- Evergreen Road & Hayes Street
- Evergreen Road & Harvard Drive
- Hayes Street & Killian Spring Drive
- Parr Road & Settlemier Avenue
- Parr Road & Kirksey Street
- Parr Road & Stubb Road
- Parr Road & Butteville Road

- Parr Road & Evergreen Road (future intersection)

In addition to vehicular capacity needs and prioritized investments, Technical Memoranda #4 and #5 will also include information about multimodal needs and projects within the Southwest Subarea.

Within the memo, intersection capacity needs at the 15 locations identified above are summarized for the following scenarios:

- Increased job and household growth by 2040 but no URA development
- Increased job and household growth by 2040 plus development of the URA lands

Further details about each are presented herein.

Adopted TSP

Exhibit 1 illustrates the prioritized investments identified in the TSP within the Southwest Subarea Plan. As shown, of the 15 locations identified above, only those intersections along OR 214/OR219 have specific geometric and traffic control considerations in the adopted TSP. Per the TSP, all new roadway projects identified below are anticipated to be 2 – 3 vehicular lanes, depending on the functional classification.

Exhibit 1. Roadway Plan Elements (Source: Woodburn TSP Figure 3).

Intersection Operations Mobility Targets

As documented in Technical Memorandum #3, the I-5 ramp terminal intersections are subject to a 0.85 volume-to-capacity mobility target whereas the remaining ODOT study intersections have a volume-to-capacity mobility target of 0.90 or 0.95 (depending on the roadway speed). City intersections are subject to the following mobility standards:

- Level of Service (LOS) "E" for signalized intersections
- V/C ratio less than 1.00 regardless of LOS
- V/C ratio of less than 0.90 on the critical movement should be maintained, provided the queues on the critical approach can be appropriately accommodated.

Development of Year 2040 Traffic Volumes

The City provided ODOT's Transportation Planning Analysis Unit (TPAU) with updated population and employment forecasts for the year 2040 reflective of the high levels of residential growth that the City has been and continues to experience as well as the updated job forecasts for the Southwest Area. The City also provided TPAU with estimates of future development of the URA lands to inform the UGB expansion scenario. These updated household and job forecasts were used to update the travel demand model for Woodburn. For the purposes of the year 2040 Baseline, the Adopted TSP projects plus the existing transportation facilities were all included in the updated travel demand model.

Per ODOT's Analysis Procedures Manual (APM), future year traffic volumes at the study intersections were developed using the methodology included in National Cooperative Highway Research Program (NCHRP) Report 765: *Analytical Travel Forecasting Approaches for Project-Level Planning and Design* (2014). Figure 1 shows the year 2040 traffic volumes assuming the URA lands are not developed, and Figure 2 shows the year 2040 traffic volumes assuming the URA lands are developed.

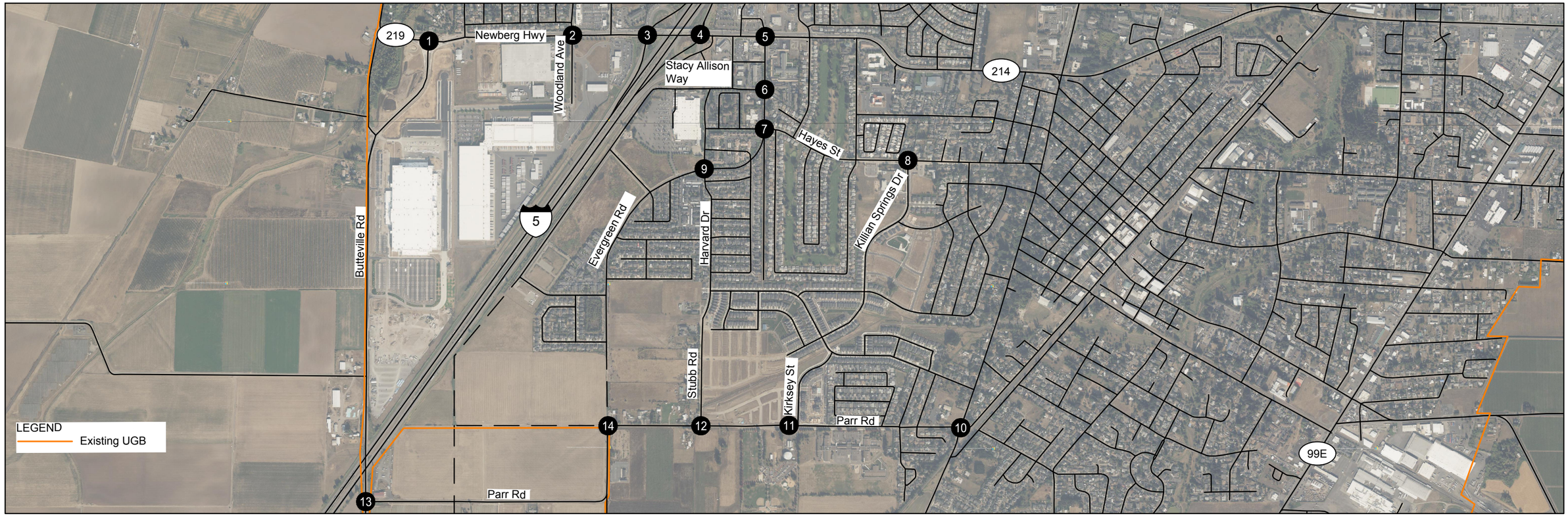
Evaluation of Study Intersections Assuming no URA Land Development

Using the volumes shown in Figure 1, we evaluated the intersection operations for the year 2040 conditions. In comparing the operations to the applicable mobility targets, we note that the following intersections may need future consideration of a traffic signal/roundabout and/or turn lanes:

- Evergreen Road & Stacy Allison Way
- Evergreen Road & Hayes Street

The analyses did not identify the need to widen any of the existing or planned facilities beyond the 2 – 3 lanes noted in the TSP.

Most of the study intersections are expected to operate in accordance with the applicable mobility targets under predicted 2040 volumes assuming no URA land development. Evergreen Road at Stacy Allison Way and Evergreen Road at Hayes Street are expected to not meet the City's mobility targets outlined previously. The Alternatives Evaluation will identify potential changes to these intersections to mitigate future operational issues. Appendix A includes the operations results for all study intersections.



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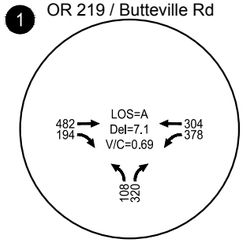

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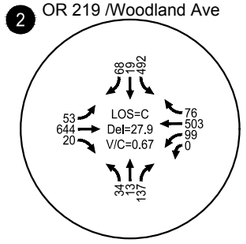
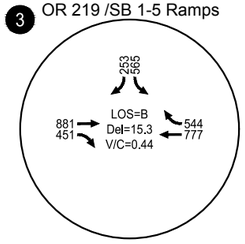
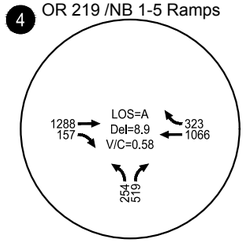


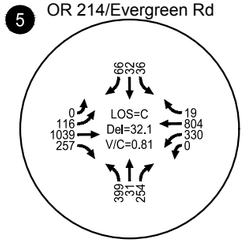
3 OR 219 /SB 1-5 Ramps



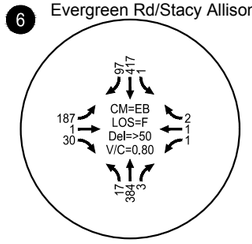
4 OR 219 /NB 1-5 Ramps



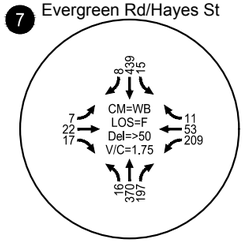
5 OR 214/Evergreen Rd



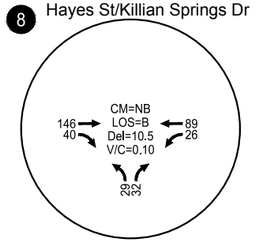
6 Evergreen Rd/Stacy Allison Way



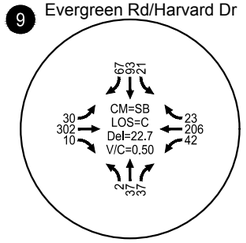
7 Evergreen Rd/Hayes St



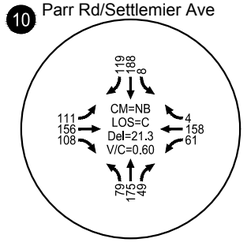
8 Hayes St/Killian Springs Dr



9 Evergreen Rd/Harvard Dr



10 Parr Rd/Settlemier Ave



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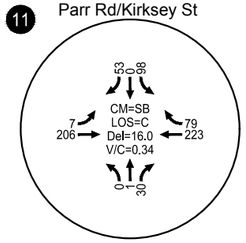
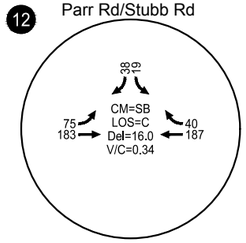
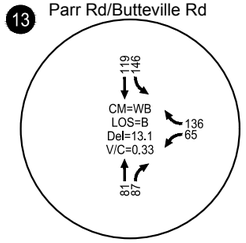


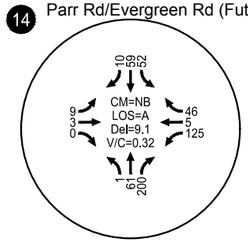
12 Parr Rd/Stubb Rd



13 Parr Rd/Butteville Rd



14 Parr Rd/Evergreen Rd (Future)



CM = CRITICAL MOVEMENT (TWSC/AWSC)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) / CRITICAL MOVEMENT LEVEL OF SERVICE (TWSC/AWSC)
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V/C = CRITICAL VOLUME-TO-CAPACITY RATIO
AWSC = ALL-WAY STOP CONTROL
TWSC = TWO-WAY STOP CONTROL

Existing UGB 2040 No-Build Traffic Operations
Woodburn, OR

Figure 1

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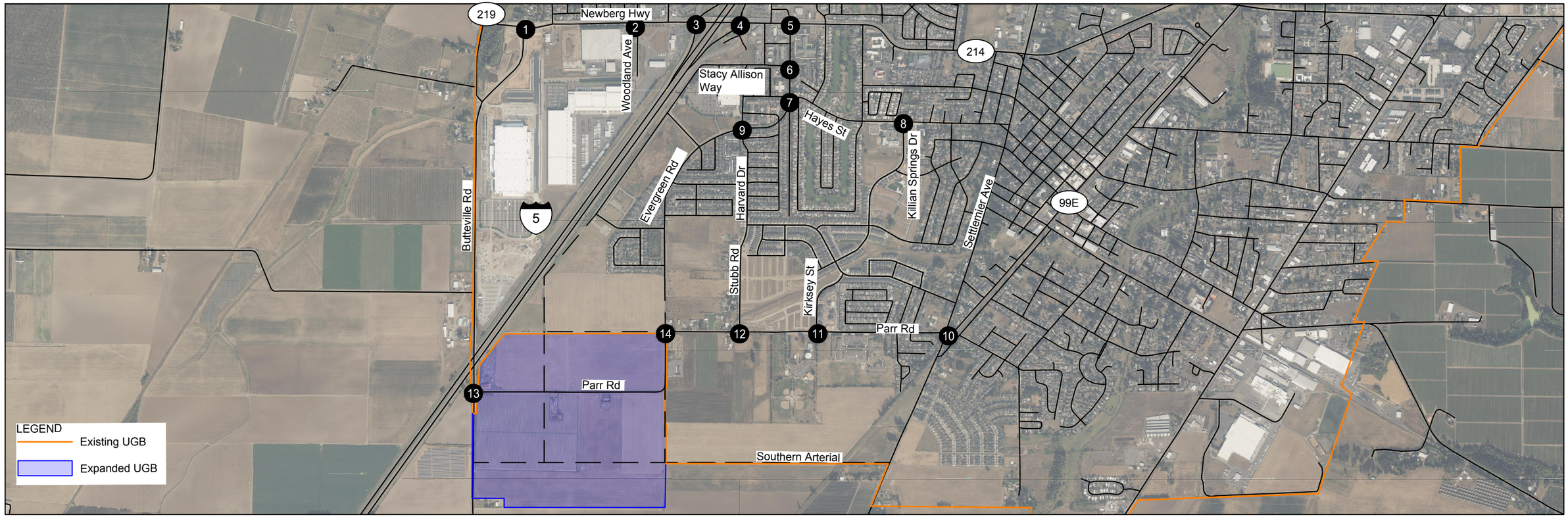
Evaluation of Study Intersections Assuming URA Lands Develop

Using the volumes shown in Figure 2, we evaluated the intersection operations for the year 2040 conditions. In comparing the operations to the applicable mobility targets, we note that the following intersections may need future consideration of a traffic signal/roundabout and/or turn lanes:

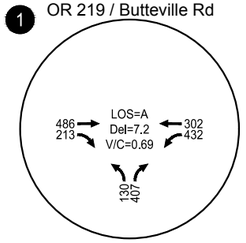
- Evergreen Road & Stacy Allison Way
- Evergreen Road & Hayes Street

All of the study intersections are expected to operate in accordance with the applicable mobility targets under predicted 2040 volumes assuming no URA land development, with exception of Evergreen Road at Stacy Allison Way and Evergreen Road at Hayes Street. The deficiency at the latter was identified in the TSP. The Alternatives Evaluation will identify potential changes to these intersections to mitigate future operational issues. Appendix B includes the operations results for all study intersections.

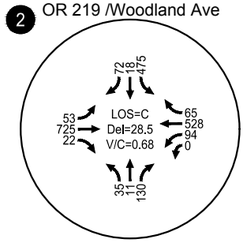
Even with the URA lands developed, the analyses did not identify the need to widen any of the existing or planned facilities beyond the 2 – 3 lanes noted in the TSP.



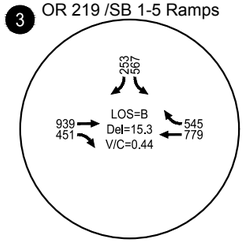
1 OR 219 / Butteville Rd



2 OR 219 /Woodland Ave



3 OR 219 /SB 1-5 Ramps



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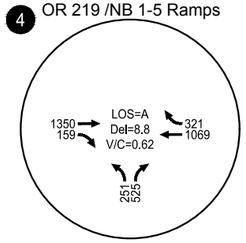
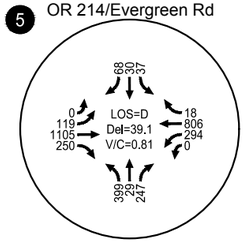


5 OR 214/Evergreen Rd



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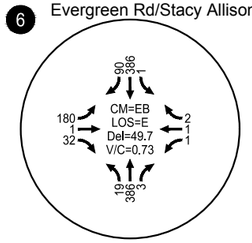

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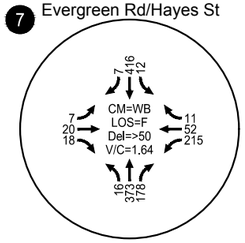

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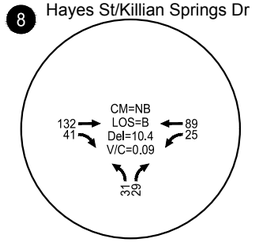

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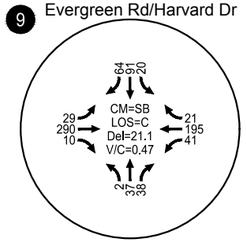

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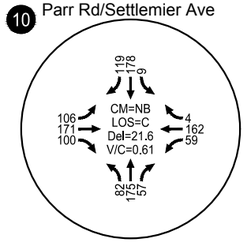

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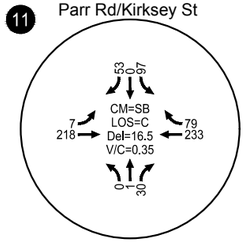

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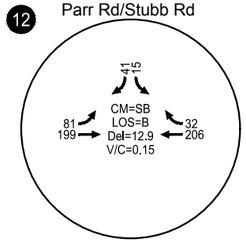

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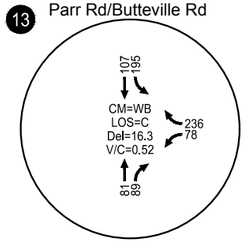

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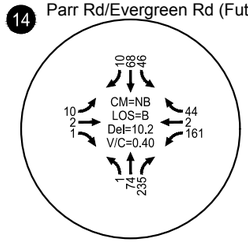

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Expanded UGB 2040 No-Build Traffic Operations
Woodburn, OR

Figure 2

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Next Steps

The information about intersection and street capacity needs associated with the two future baseline scenarios will be used to inform the development of street alternatives to be evaluated and discussed in Technical Memorandum #4.

Appendix A Existing UGB Future No-Build Traffic Operations

Appendix B Expanded UGB Future No-Build Traffic Operations

Appendix C Future Intersection Queues

A queueing analysis was conducted at the signalized intersections within the study area. Table C-1 summarizes the percentile queues during the weekday PM peak hour in the future 2040 traffic conditions expected with and without the UGB expansion. Vehicle queue and storage lengths are rounded to the nearest 25-feet. Storage lengths are considered to be striped storage for the given movement. All 95th percentile queues during the PM peak hour are within the striped storage length, except for the eastbound through movement at the OR 214/Evergreen Road intersection.

The eastbound queue on Evergreen Road at the OR 214 intersection exceeds the available distance between the Evergreen Road and Oregon Way intersections on OR 214.

Table C-1: Weekday PM Peak Hour Queueing

Map ID	Intersection	Movement	Existing UGB 95th Percentile Queue (feet)	Expanded UGB 95th Percentile Queue (feet)	Storage Length (feet)	Adequate?
2	OR 219/Woodland Avenue	EBL	50	50	225	Yes/Yes
		EBT	250	275	1,400	Yes/Yes
		EBR	<25	<25	150	Yes/Yes
		WBL	200	125	225	Yes/Yes
		WBT	225	225	425	Yes/Yes
		WBR	25	<25	100	Yes/Yes
		NBL	25	25	100	Yes/Yes
		NBTR	125	100	250	Yes/Yes
		SBL	250	250	350	Yes/Yes
3	OR 214/I-5 Southbound Ramp	EBT	250	250	950	Yes/Yes
		EBR	<25	<25	250	Yes/Yes
		WBT	<25	<25	600	Yes/Yes
		WBR	<25	<25	525	Yes/Yes
		SBL	300	300	1,000	Yes/Yes
		SBR	425	425	1,000	Yes/Yes
4	OR 214/I-5 Northbound Ramp	EBT	<25	<25	600	Yes/Yes
		EBR	<25	<25	525	Yes/Yes
		WBT	75	<25	700	Yes/Yes
		WBR	<25	<25	400	Yes/Yes
		NBL	175	175	150	Yes/Yes
		NBR	275	275	275	Yes/Yes
5	OR 214/Evergreen Road	EBL	50	50	175	Yes/Yes
		EBT	375	425	350	***No /No***
		EBR	<25	<25	250	Yes/Yes
		WBL	300	250	375	Yes/Yes
		WBTR	250	250	500	Yes/Yes
		NBL	250	250	325	Yes/Yes
		NBR	<25	<25	325	Yes/Yes

Map ID	Intersection	Movement	Existing UGB 95th Percentile Queue (feet)	Expanded UGB 95th Percentile Queue (feet)	Storage Length (feet)	Adequate?
		SBL	50	50	75	Yes/Yes
		SBT	50	50	375	Yes/Yes
		SBR	<25	<25	75	Yes/Yes