KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
354 SW Upper Terrace Drive, Suite 101, Bend, Oregon 97702 P 541.312.8300 F 541.312.4585

South County Red Lots Transportation Planning Rule Analysis

Date: June 17, 2015 Project #: 19028
To: Peter Russell, Deschutes County Planning
From: Matt Kittelson, PE, Joe Bessman, PE & Jenny Miner

The purpose of this memorandum is to document the findings of the Transportation Planning Rule (TPR) analysis of the Red Lots in Deschutes County. The Red Lots are 1,823 vacant tax lots that are zoned either Rural Residential (RR-10) or a combination of RR-10 and Flood Plain (FP). Due to a depth to groundwater of 24 inches or less, these lots were considered undevelopable by Deschutes County. The purpose of this analysis is to evaluate the impact of those lots on the transportation system if the lots could develop in the future through the allowance of community septic systems outside of urban areas.

These lots are generally located west of US 97 and south of Spring River Road near the Little Deschutes River and the Deschutes River. Figure 1 shows the location of the lots evaluated.

TRANSPORTATION ANALYSIS

Based on the location of the lots and direction from Deschutes County, the following intersections were considered as part of this evaluation (intersections are side-street stop-controlled unless otherwise noted):

- Abbott Drive/South Century Drive (roundabout)
- Spring River Road/Solar Drive
- Spring River Road/Stellar Drive
- Spring River Road/South Century Drive
- South Century Drive/Vandevert Road
- South Century Drive/Huntington Road
- Huntington Road/Burgess Road (traffic signal)
- Riverview Drive/Otter Drive
- US 97/6th Street

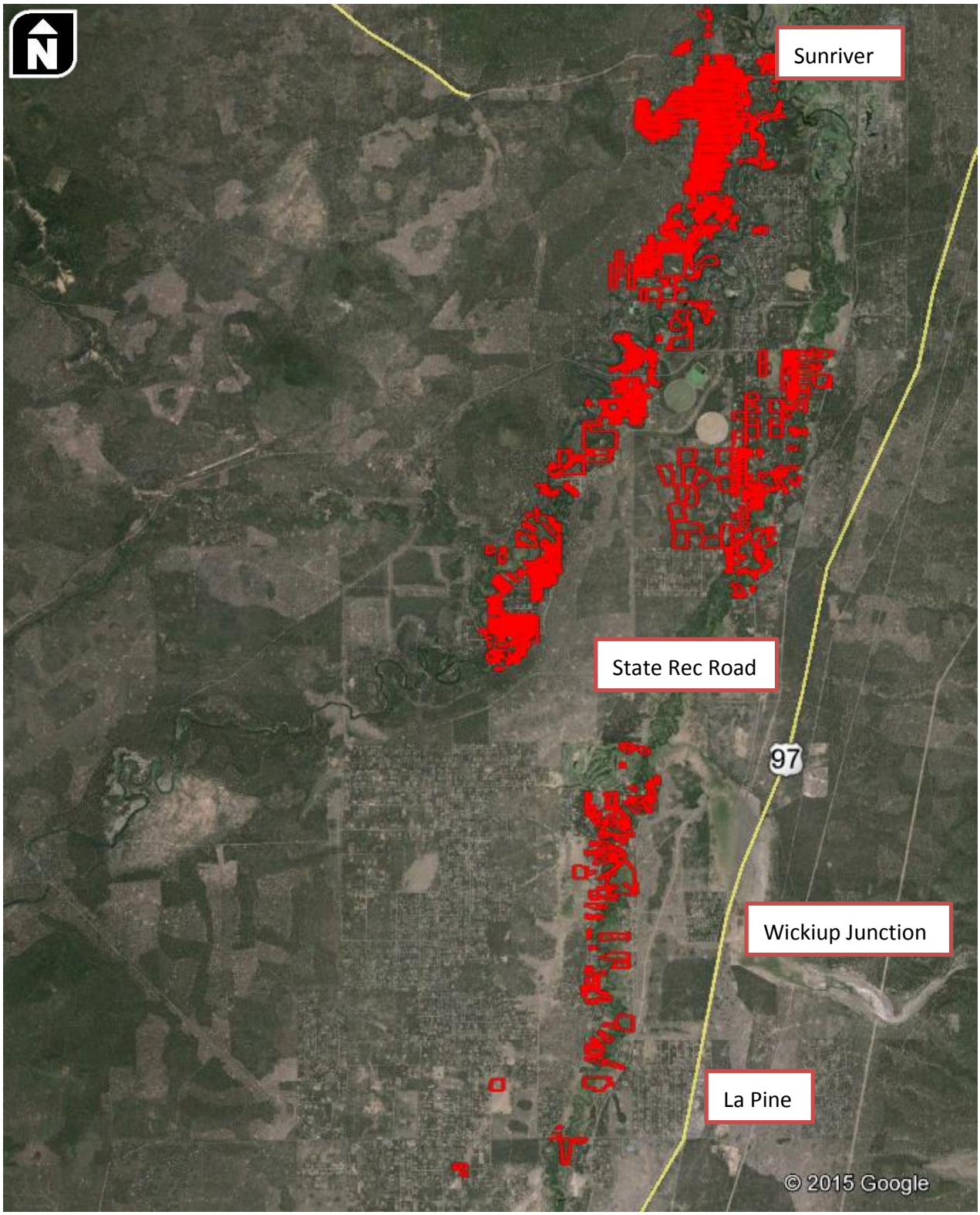


Figure 1 – Red Lot Locations

Traffic counts were collected at these locations on Tuesday, May 19th from 4:00 – 6:00 p.m.[1] The intersections experienced a peak hour generally between 4:00 p.m. and 5:30 p.m. Due to the wide distribution and distinct travel patterns of these dispersed intersections, individual intersection peak hours were applied in the analysis. *Data collection information is included in Appendix A.*

Intersections were compared against applicable intersection performance standards and mobility targets, which are:

- Level of Service (LOS) "D" for Deschutes County intersections
- 0.90 volume-to-capacity ratio (v/c) for US 97/6th Street (ODOT)

Existing Conditions (2015)

The study intersections were evaluated during the weekday p.m. peak hour based on Highway Capacity Manual (HCM) 2010 (Transportation Research Board, 2010) analysis procedures. Based on this evaluation, all study intersections meet applicable mobility standards today. *Existing lane configurations and operational analysis summaries are included in Appendix B.*

Future Conditions with Existing Zoning (2030)

A future conditions analysis was conducted to determine baseline conditions consistent with the horizon year of the current Deschutes County Transportation System Plan (2030). To evaluate year 2030 conditions, the existing volumes observed at the study intersections were grown by 1.7% per year. This growth rate was identified based on observed growth within the Deschutes County Travel Demand Model for the general study area.

Based on the assumed growth, all of the study intersections meet applicable mobility standards during 2030 conditions. It should be noted that the intersection of US 97/6th Street operates with a high delay for side-street movements, but with an acceptable v/c ratio. *Operational analysis summaries are included in Appendix B.*

Future Conditions with Inclusion of Red Lots (2030)

To assess total traffic conditions, the potential trips from the Red Lots were added to 2030 base conditions. The following describes the trip generation and trip distribution methods for this analysis:

[1] The intersection of US 97 & 6th street was previously collected as part of the US 97 corridor study through La Pine. That data is from October 2009. Based on the ODOT ATR station at Lava Butte & US 97, no significant changes in US 97 volume has occurred since that time. As such, this count is still valid for analysis today.

Trip Generation

Within urban areas the land supply is generally constrained to provide an approximately 20-year supply. However, within these rural portions of Deschutes County the timeline for development could span well beyond a 20-year horizon. To understand the likely absorption of these lots through the 2030 horizon year, historical information was reviewed.

Historical Deschutes County building records show that 1,610 lots have been developed within the South County area since 1975, which represents an average of 40 units per year. For the purposes of this analysis, this same rate of absorption was applied to the Red Lots through the horizon year of 2030 (15 years in the future). As such, 600 of the 1,823 units are assumed to develop by 2030. These units are assumed to develop uniformly amongst the Red Lot locations.

To obtain trip generation estimates for these lots we applied data from the standard reference *Trip Generation, 9th Edition.* While it is our understanding that the trip characteristics within south County vary from urban trip rates for single-family detached homes, the urban data was applied to provide a conservative estimate of impacts. Table 1 summarizes the trip generation potential of the developed lots by 2030.

Table 1 – Red Lot Trip Generation Potential

Land Use	Number of Units	Land Use Code	PM Peak Hour Trips[1]		
			Total	In	Out
Single-Family Detached Housing	600	210	528	332	195

Notes: [1]Trip estimates were prepared using the fitted equation based on guidance within the ITE Trip Generation Handbook, 2nd Edition.

As shown, use of the ITE data shows that the Red Lots could generate 528 trips during the peak weekday evening commute hour by the horizon year of 2030.

Trip Distribution

To assess the potential impacts of the trips generated by the Red Lots, the trip generation from the lots was assigned to the study intersections based on assumed trip distribution patterns. Given the wide distribution of lots, several distribution patterns were developed. These are shown in Appendix C and largely reflect commute patterns, recreation trips, and nearby goods and services.

Analysis Results

With the addition of the Red Lots weekday p.m. peak hour trips, all intersections meet applicable mobility standards with two exceptions:

- Spring River Road/South Century Drive

- US 97/6th Street

Possible mitigation measures to address the identified deficiencies are discussed below. *Operational analysis summaries are included in Appendix B.*

Spring River Road/South Century Drive

This is a 3-legged intersection that is free-flow east/west (Spring River Road) and stop-controlled northbound (South Century Drive). US 97 and portions of Sunriver are to the east. Caldera Springs, Crosswater, and other residential and recreational areas are located to the south. Existing residential and a large number of Red Lots (950+) are located to the west.

The addition of trips from the potential development of Red Lots adds a large number of trips east and west along Spring River Road and some trips to South Century Drive. The addition of this demand results in the northbound approach experiencing delays in excess of Deschutes County mobility standards.

A single-lane roundabout is planned at this intersection within the Deschutes County Transportation System Plan. Analysis of such a configuration as part of this analysis showed that with minor additional widening to include some multi-lane approaches the intersection would achieve applicable mobility standards. The specific lane configurations and other design details should be determined at the time of construction as the actual trip generation rates for the Red Lots are likely to be less than those of an urban detached house as contained within the ITE Trip Generation Manual, and a single-lane roundabout would likely continue to serve as the initial intersection treatment regardless.

US 97/6th Street

This 4-legged intersection is free-flow north/south (US 97) and stop-controlled east/west. The west leg is 6th Street and the east leg is a private access to a shopping center.

Red Lots affecting this intersection are located to the west on 6th Street. As such, trips associated with the potential development of these lots add vehicles mainly to the stop-controlled west leg of the intersection.

This intersection was found to exceed mobility standards within the previously completed US 97 La Pine Corridor Plan (2011). That study evaluated the US 97 corridor from 6th Street north to 1st Street through downtown La Pine. While the study identified US 97/6th Street as an intersection failure, improvement plans to install new traffic signals at the intersections of US 97/1st Street and US 97/Finley Butte Road were identified to better allow the rural to urban transition to occur. In lieu of intersection improvements at US 97/6th Street, improvements to local streets to better connect 6th Street to 3rd Street west of US 97 were identified as part of the subsequent La Pine TSP. This would provide access to Morson and Huntington Road that would then connect motorists to the signalized locations identified in the corridor plans. These system improvements negated the need for capacity improvements at the US 97/6th Street intersection, and will continue to be adequate to serve the Red

Lots. Accordingly, mitigation is already present within the adopted Transportation System Plan and additional mitigation or TSP amendments are not necessary.

FINDINGS

The following summarizes the key findings of this analysis:

- The study intersections operate within applicable mobility standards today and through the 2030 horizon year of the Deschutes County Transportation System Plan.
- Of the 1823 Red Lots approximately 600 are expected to be developed by 2030 based on historical absorption rates within Deschutes County.
- The developed Red Lots could generate 528 p.m. peak hour trips on a typical weekday through the horizon year if they showed trip characteristics similar to suburban neighborhoods as contained within the Trip Generation Manual. It is expected that the actual trip impacts will be lower than these owing to the demographics and seasonal usage of homes in the vicinity.
- The following study intersection are projected to exceed applicable mobility standards during future conditions with the inclusion of Red Lots:
    - Spring River Road/South Century Drive
    - US 97/6th Street
- Mitigation measures to address capacity constraints at the intersections not meeting performance standards have been identified through previous planning efforts. These are:
    - Spring River Road/South Century Drive - Construct roundabout *(Deschutes County TSP)*
    - US 97/6th Street – Improve local streets to connect 6th Street to 3rd Street and realign/signalize the Morson Street/Finley Butte intersection *(La Pine TSP)*

Based on this analysis, allowing development within the Red Lots does not create an unmitigated significant effect on the transportation system, and therefore complies with the Transportation Planning Rule. Please call us at (541) 312-8300 with any questions.

Appendix A
Data Collection Sheets

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

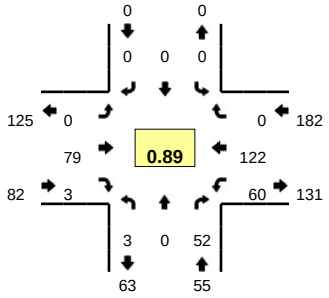
LOCATION: Recreation Rd/Solar Dr -- Spring River Rd

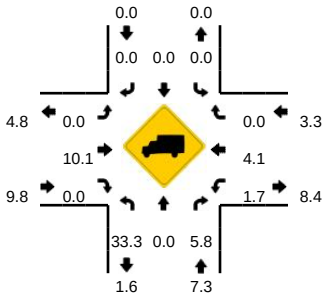
CITY/STATE: Bend, OR

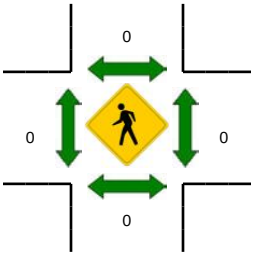
QC JOB #: 13393506

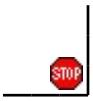
DATE: Tue, May 19 2015

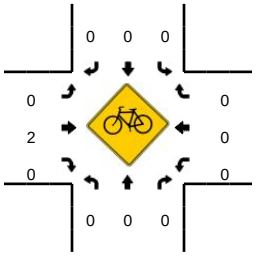
Peak-Hour: 4:10 PM -- 5:10 PM
Peak 15-Min: 4:55 PM -- 5:10 PM

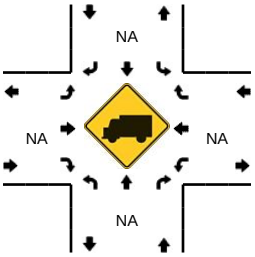


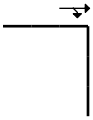


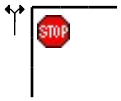


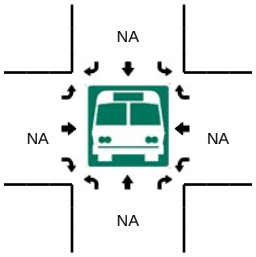












5-Min Count Period Beginning At	Recreation Rd/Solar Dr (Northbound)				Recreation Rd/Solar Dr (Southbound)				Spring River Rd (Eastbound)				Spring River Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	0	4	0	0	0	0	0	0	3	0	0	3	3	0	0	14	
4:05 PM	2	0	6	0	0	0	0	0	0	5	0	0	3	3	0	0	19	
4:10 PM	0	0	1	0	0	0	0	0	0	9	0	0	0	16	0	0	26	
4:15 PM	2	0	4	0	0	0	0	0	0	15	0	0	7	15	0	0	43	
4:20 PM	0	0	3	0	0	0	0	0	0	3	1	0	7	6	0	0	20	
4:25 PM	0	0	3	0	0	0	0	0	0	4	0	0	5	14	0	0	26	
4:30 PM	0	0	4	0	0	0	0	0	0	7	0	0	5	8	0	0	24	
4:35 PM	0	0	9	0	0	0	0	0	0	12	1	0	3	4	0	0	29	
4:40 PM	0	0	5	0	0	0	0	0	0	4	0	0	1	8	0	0	18	
4:45 PM	0	0	1	0	0	0	0	0	0	5	1	0	8	10	0	0	25	
4:50 PM	0	0	6	0	0	0	0	0	0	4	0	0	3	5	0	0	18	
4:55 PM	0	0	8	0	0	0	0	0	0	7	0	0	3	9	0	0	27	289
5:00 PM	1	0	4	0	0	0	0	0	0	4	0	0	8	13	0	0	30	305
5:05 PM	0	0	4	0	0	0	0	0	0	5	0	0	10	14	0	0	33	319
5:10 PM	0	0	1	0	0	0	0	0	0	4	0	0	5	9	0	0	19	312
5:15 PM	0	0	2	0	0	0	0	0	0	10	0	0	6	8	0	0	26	295
5:20 PM	0	0	4	0	0	0	0	0	0	9	0	0	7	12	0	0	32	307
5:25 PM	0	0	0	0	0	0	0	0	0	7	0	0	7	10	0	0	24	305
5:30 PM	0	0	2	0	0	0	0	0	0	3	0	0	5	7	0	0	17	298
5:35 PM	0	0	4	0	0	0	0	0	0	5	1	0	3	7	0	0	20	289
5:40 PM	0	0	1	0	0	0	0	0	0	6	0	0	1	7	0	0	15	286
5:45 PM	0	0	0	0	0	0	0	0	0	11	1	0	5	8	0	0	25	286
5:50 PM	0	0	3	0	0	0	0	0	0	8	0	0	4	11	0	0	26	294
5:55 PM	0	0	2	0	0	0	0	0	0	1	0	0	4	7	0	0	14	281

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	0	64	0	0	0	0	0	0	64	0	0	84	144	0	0	360
Heavy Trucks	4	0	8		0	0	0		0	4	0		0	4	0		20
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/26/2015 3:57 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

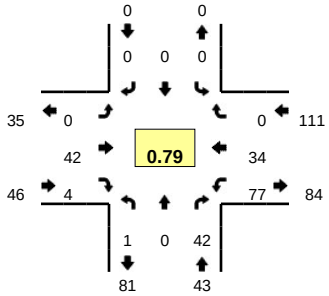
Type of peak hour being reported: Intersection Peak

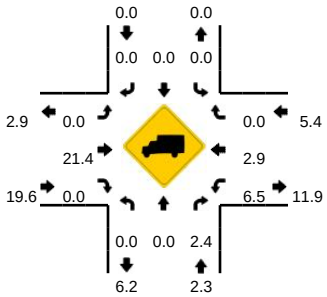
Method for determining peak hour: Total Entering Volume

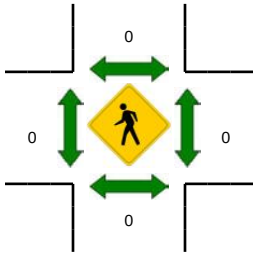
LOCATION: Stellar Dr -- Spring River Rd
CITY/STATE: Bend, OR

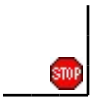
QC JOB #: 13393505
DATE: Tue, May 19 2015

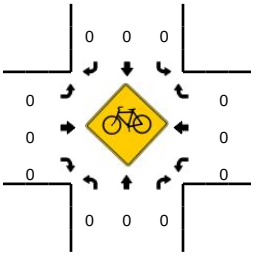
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

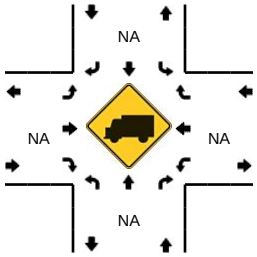


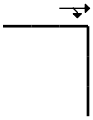


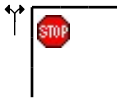


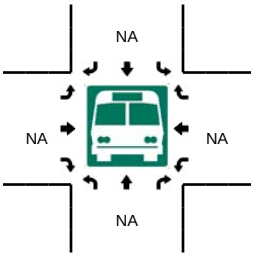












5-Min Count Period Beginning At	Stellar Dr (Northbound)				Stellar Dr (Southbound)				Spring River Rd (Eastbound)				Spring River Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	9	0	0	0	0	0	0	4	0	0	3	5	0	0	21	
4:05 PM	0	0	2	0	0	0	0	0	0	1	0	0	3	4	0	0	10	
4:10 PM	0	0	1	0	0	0	0	0	0	1	1	0	6	3	0	0	12	
4:15 PM	0	0	2	0	0	0	0	0	0	3	0	0	4	5	0	0	14	
4:20 PM	0	0	1	0	0	0	0	0	0	6	0	0	3	2	0	0	12	
4:25 PM	0	0	2	0	0	0	0	0	0	0	0	0	8	3	0	0	13	
4:30 PM	0	0	8	0	0	0	0	0	0	8	0	0	8	4	0	0	28	
4:35 PM	0	0	4	0	0	0	0	0	0	4	0	0	8	4	0	0	20	
4:40 PM	0	0	1	0	0	0	0	0	0	4	0	0	9	1	0	0	15	
4:45 PM	0	0	2	0	0	0	0	0	0	5	0	0	8	1	0	0	16	
4:50 PM	0	0	4	0	0	0	0	0	0	6	0	0	7	1	0	0	18	
4:55 PM	1	0	4	0	0	0	0	0	0	3	0	0	4	2	0	0	14	193
5:00 PM	0	0	4	0	0	0	0	0	0	2	0	0	4	1	0	0	11	183
5:05 PM	0	0	2	0	0	0	0	0	0	1	0	0	7	3	0	0	13	186
5:10 PM	0	0	2	0	0	0	0	0	0	4	0	0	4	2	0	0	12	186
5:15 PM	0	0	6	0	0	0	0	0	0	1	0	0	8	4	0	0	19	191
5:20 PM	0	0	2	0	0	0	0	0	0	2	3	0	4	7	0	0	18	197
5:25 PM	0	0	3	0	0	0	0	0	0	2	1	0	6	4	0	0	16	200
5:30 PM	0	0	4	0	0	0	0	0	0	1	0	0	9	1	0	0	15	187
5:35 PM	0	0	7	0	0	0	0	0	0	4	0	0	6	1	0	0	18	185
5:40 PM	0	0	4	0	0	0	0	0	0	3	0	0	12	3	0	0	22	192
5:45 PM	0	0	3	0	0	0	0	0	0	3	0	0	3	3	0	0	12	188
5:50 PM	0	0	3	0	0	0	0	0	0	2	0	0	6	2	0	0	13	183
5:55 PM	3	0	6	0	0	0	0	0	0	1	0	0	3	6	0	0	19	188

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	52	0	0	0	0	0	0	64	0	0	100	36	0	0	252
Heavy Trucks	0	0	0		0	0	0		0	0	0		4	0	0		4
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/26/2015 3:57 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

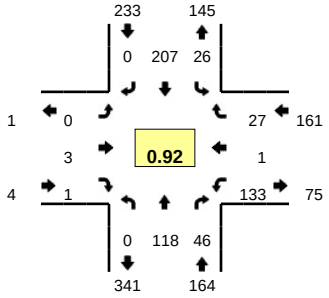
LOCATION: S Century Dr -- Vandevert Rd

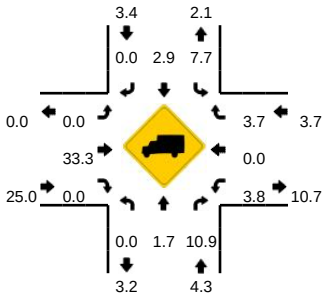
CITY/STATE: Sunriver, OR

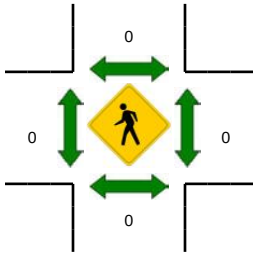
QC JOB #: 13393504

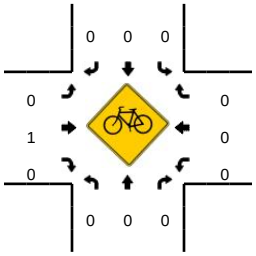
DATE: Tue, May 19 2015

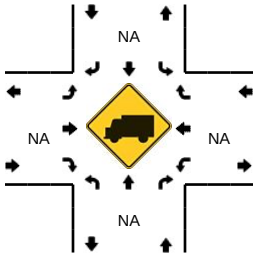
Peak-Hour: 4:10 PM -- 5:10 PM
Peak 15-Min: 4:10 PM -- 4:25 PM

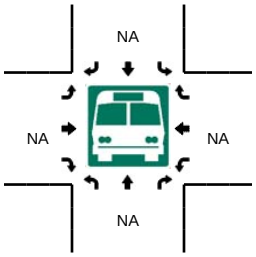












5-Min Count Period Beginning At	S Century Dr (Northbound)				S Century Dr (Southbound)				Vandevert Rd (Eastbound)				Vandevert Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	11	1	0	1	10	0	0	0	0	0	0	16	0	1	0	40	
4:05 PM	0	9	2	0	1	10	0	0	0	0	0	0	8	0	1	0	31	
4:10 PM	0	8	7	0	4	24	0	0	0	1	0	0	13	0	3	0	60	
4:15 PM	0	9	4	0	3	17	0	0	0	0	0	0	16	0	2	0	51	
4:20 PM	0	9	2	0	0	22	0	0	0	0	0	0	8	0	0	0	41	
4:25 PM	0	14	2	0	1	20	0	0	0	1	0	0	12	1	4	0	55	
4:30 PM	0	8	6	0	2	14	0	0	0	0	0	0	10	0	3	0	43	
4:35 PM	0	14	5	0	3	12	0	0	0	0	0	0	7	0	0	0	41	
4:40 PM	0	8	1	0	2	25	0	0	0	0	0	0	8	0	0	0	44	
4:45 PM	0	7	2	0	3	12	0	0	0	0	0	0	15	0	4	0	43	
4:50 PM	0	11	6	0	2	12	0	0	0	1	1	0	15	0	3	0	51	
4:55 PM	0	12	5	0	1	13	0	0	0	0	0	0	9	0	2	0	42	542
5:00 PM	0	12	3	0	1	11	0	0	0	0	0	0	9	0	2	0	38	540
5:05 PM	0	6	3	0	4	25	0	0	0	0	0	0	11	0	4	0	53	562
5:10 PM	0	7	3	0	3	24	0	0	0	0	0	0	14	0	2	0	53	555
5:15 PM	0	14	4	0	2	19	0	0	0	0	0	0	6	0	2	0	47	551
5:20 PM	0	5	2	0	3	12	0	0	1	1	0	0	14	0	3	0	41	551
5:25 PM	0	10	2	0	1	11	0	0	0	0	0	0	10	0	1	0	35	531
5:30 PM	0	7	3	0	3	18	0	0	0	0	0	0	16	1	0	0	48	536
5:35 PM	0	7	1	0	0	13	0	0	0	0	0	0	13	0	0	0	34	529
5:40 PM	0	5	1	0	0	11	0	0	0	0	0	0	10	0	1	0	28	513
5:45 PM	0	7	2	0	1	14	0	0	0	0	0	0	12	0	2	0	38	508
5:50 PM	0	5	3	0	4	12	0	0	0	0	0	0	15	0	2	0	41	498
5:55 PM	0	3	1	0	2	17	0	0	0	0	0	0	7	0	0	0	30	486

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	104	52	0	28	252	0	0	0	4	0	0	148	0	20	0	608
Heavy Trucks	0	0	4		4	8	0		0	0	0		0	0	0		16
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/26/2015 3:57 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

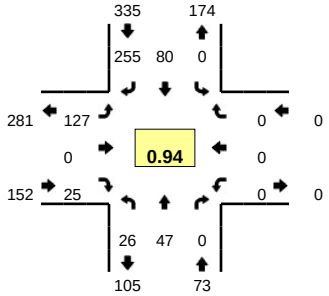
LOCATION: Huntington Rd/S Century Dr -- S Century Dr

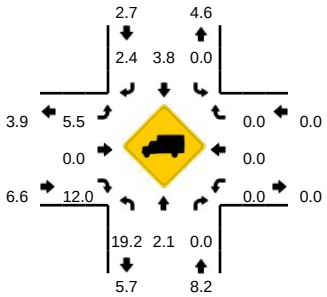
QC JOB #: 13393503

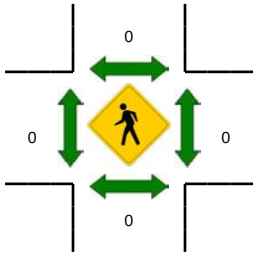
CITY/STATE: Three Rivers, OR

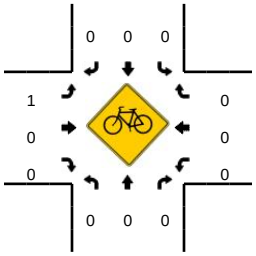
DATE: Tue, May 19 2015

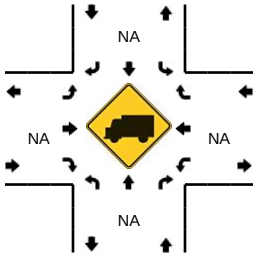
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:15 PM -- 4:30 PM

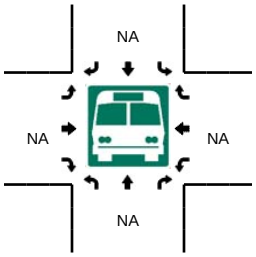












5-Min Count Period Beginning At	Huntington Rd/S Century Dr (Northbound)				Huntington Rd/S Century Dr (Southbound)				S Century Dr (Eastbound)				S Century Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	5	0	0	0	8	15	0	8	0	4	0	0	0	0	0	44	
4:05 PM	4	2	0	0	0	5	18	0	8	0	5	0	0	0	0	0	42	
4:10 PM	0	5	0	0	0	7	23	0	13	0	2	0	0	0	0	0	50	
4:15 PM	1	4	0	0	0	9	28	0	7	0	1	0	0	0	0	0	50	
4:20 PM	0	3	0	0	0	7	23	0	8	0	3	0	0	0	0	0	44	
4:25 PM	1	8	0	0	0	7	29	0	10	0	0	0	0	0	0	0	55	
4:30 PM	2	2	0	0	0	5	17	0	15	0	1	0	0	0	0	0	42	
4:35 PM	3	4	0	0	0	7	16	0	10	0	3	0	0	0	0	0	43	
4:40 PM	2	1	0	0	0	11	21	0	6	0	0	0	0	0	0	0	41	
4:45 PM	5	2	0	0	0	5	22	0	13	0	3	0	0	0	0	0	50	
4:50 PM	3	3	0	0	0	6	20	0	14	0	2	0	0	0	0	0	48	
4:55 PM	1	8	0	0	0	3	23	0	15	0	1	0	0	0	0	0	51	560
5:00 PM	2	1	0	0	0	3	14	0	9	0	1	0	0	0	0	0	30	546
5:05 PM	1	2	0	0	0	13	17	0	6	0	3	0	0	0	0	0	42	546
5:10 PM	1	2	0	0	0	10	30	0	10	0	4	0	0	0	0	0	57	553
5:15 PM	1	4	0	0	0	4	19	0	13	0	3	0	0	0	0	0	44	547
5:20 PM	2	0	0	0	0	4	18	0	7	0	2	0	0	0	0	0	33	536
5:25 PM	2	0	0	0	0	5	24	0	12	0	3	0	0	0	0	0	46	527
5:30 PM	3	1	0	0	0	2	25	0	8	0	3	0	0	0	0	0	42	527
5:35 PM	1	2	0	0	0	11	19	0	6	0	1	0	0	0	0	0	40	524
5:40 PM	3	1	0	0	0	1	21	0	8	0	0	0	0	0	0	0	34	517
5:45 PM	5	1	0	0	0	3	19	0	4	0	1	0	0	0	0	0	33	500
5:50 PM	2	0	0	0	0	5	22	0	6	0	1	0	0	0	0	0	36	488
5:55 PM	0	2	0	0	0	7	17	0	5	0	0	0	0	0	0	0	31	468

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	8	60	0	0	0	92	320	0	100	0	16	0	0	0	0	0	596
Heavy Trucks	0	0	0		0	0	4		0	0	4		0	0	0		8
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/26/2015 3:57 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

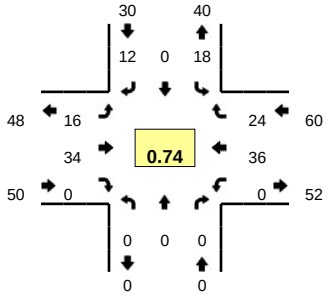
Type of peak hour being reported: Intersection Peak

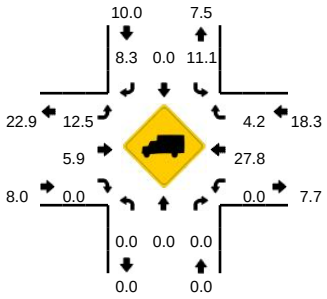
Method for determining peak hour: Total Entering Volume

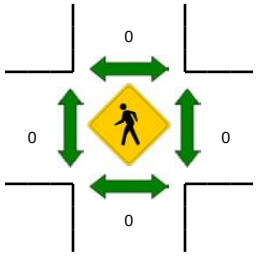
LOCATION: Otter Dr -- Riverview Dr
CITY/STATE: La Pine, OR

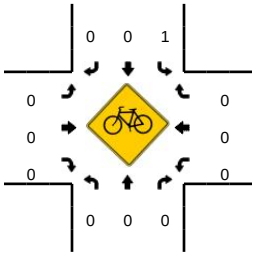
QC JOB #: 13393502
DATE: Tue, May 19 2015

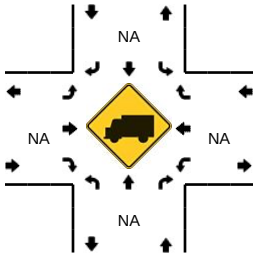
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:00 PM -- 4:15 PM

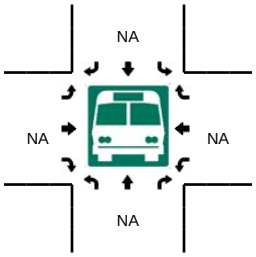












5-Min Count Period Beginning At	Otter Dr (Northbound)				Otter Dr (Southbound)				Riverview Dr (Eastbound)				Riverview Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	0	0	0	1	3	0	0	0	6	5	0	15	
4:05 PM	0	0	0	0	1	0	0	0	1	7	0	0	0	4	4	0	17	
4:10 PM	0	0	0	0	0	0	0	0	4	2	0	0	0	8	1	0	15	
4:15 PM	0	0	0	0	4	0	0	0	1	3	0	0	0	1	2	0	11	
4:20 PM	0	0	0	0	0	0	2	0	0	3	0	0	0	2	4	0	11	
4:25 PM	0	0	0	0	3	0	1	0	3	6	0	0	0	4	1	0	18	
4:30 PM	0	0	0	0	1	0	2	0	2	4	0	0	0	4	1	0	14	
4:35 PM	0	0	0	0	2	0	2	0	2	1	0	0	0	1	1	0	9	
4:40 PM	0	0	0	0	3	0	0	0	1	2	0	0	0	1	0	0	7	
4:45 PM	0	0	0	0	2	0	2	0	0	0	0	0	0	4	2	0	10	
4:50 PM	0	0	0	0	1	0	2	0	1	2	0	0	0	0	1	0	7	
4:55 PM	0	0	0	0	1	0	1	0	0	1	0	0	0	1	2	0	6	140
5:00 PM	0	0	0	0	0	0	3	0	2	1	0	0	0	4	0	0	10	135
5:05 PM	0	0	0	0	1	0	3	0	1	3	0	0	0	3	4	0	15	133
5:10 PM	0	0	0	0	2	0	1	0	2	1	0	0	0	0	5	0	11	129
5:15 PM	0	0	0	0	0	0	0	0	1	3	0	0	0	3	1	0	8	126
5:20 PM	0	0	0	0	1	0	1	0	2	0	0	0	0	3	3	0	10	125
5:25 PM	0	0	0	0	4	0	0	0	0	2	0	0	0	0	3	0	9	116
5:30 PM	0	0	0	0	1	0	0	0	2	1	0	0	0	1	2	0	7	109
5:35 PM	0	0	0	0	2	0	1	0	0	0	0	0	0	0	2	0	5	105
5:40 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2	100
5:45 PM	0	0	0	0	2	0	1	0	3	1	0	0	0	0	4	0	11	101
5:50 PM	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	4	98
5:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	4	96

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	4	0	0	0	24	48	0	0	0	72	40	0	188
Heavy Trucks	0	0	0		0	0	0		4	8	0		0	28	0		40
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/26/2015 3:57 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

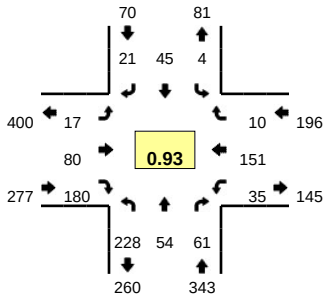
Type of peak hour being reported: Intersection Peak

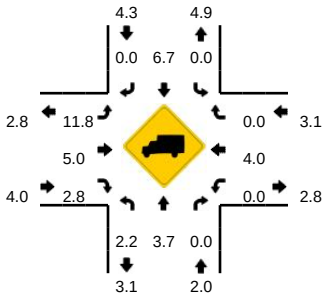
Method for determining peak hour: Total Entering Volume

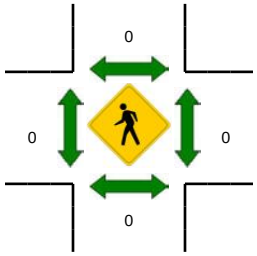
LOCATION: Huntington Rd -- Burgess Rd
CITY/STATE: La Pine, OR

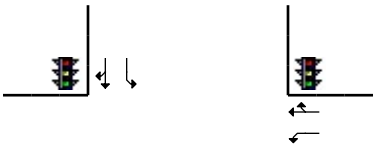
QC JOB #: 13393501
DATE: Tue, May 19 2015

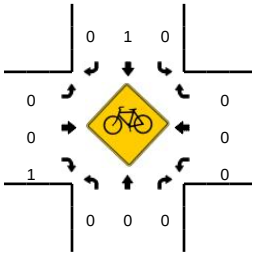
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:00 PM -- 4:15 PM

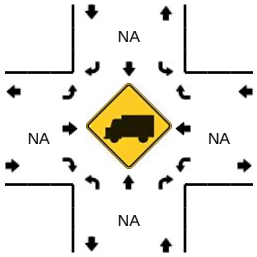


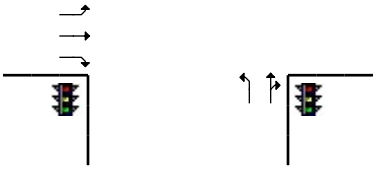


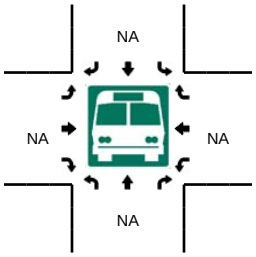












5-Min Count Period Beginning At	Huntington Rd (Northbound)				Huntington Rd (Southbound)				Burgess Rd (Eastbound)				Burgess Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	13	8	7	0	0	4	2	0	1	9	11	0	2	14	1	0	72	
4:05 PM	27	4	6	0	0	6	1	0	4	2	9	0	3	13	2	0	77	
4:10 PM	23	4	6	0	0	6	3	0	2	4	16	0	2	20	2	0	88	
4:15 PM	14	3	5	0	0	5	0	0	2	3	23	0	4	5	1	0	65	
4:20 PM	22	6	3	0	0	4	1	0	2	8	15	0	5	12	0	0	78	
4:25 PM	16	6	5	0	0	5	3	0	0	9	17	0	3	21	0	0	85	
4:30 PM	16	7	5	0	0	4	3	0	0	8	9	0	1	9	0	0	62	
4:35 PM	24	5	4	0	1	2	1	0	0	12	11	0	3	14	2	0	79	
4:40 PM	14	1	4	0	0	3	3	0	2	7	19	0	5	14	0	0	72	
4:45 PM	22	2	7	0	0	3	0	0	1	1	18	0	1	7	0	0	62	
4:50 PM	17	3	4	0	1	3	3	0	1	10	17	0	4	12	1	0	76	
4:55 PM	20	5	5	0	2	0	1	0	2	7	15	0	2	10	1	0	70	886
5:00 PM	13	2	2	0	0	1	0	0	2	12	3	0	4	15	0	0	54	868
5:05 PM	21	4	3	0	0	7	2	0	3	5	13	0	1	12	1	0	72	863
5:10 PM	22	1	4	0	1	4	1	0	2	7	7	0	1	16	0	0	66	841
5:15 PM	28	3	2	0	0	3	1	0	2	9	12	0	3	9	0	0	72	848
5:20 PM	15	6	4	0	1	2	0	0	0	7	7	0	2	11	1	0	56	826
5:25 PM	19	5	3	0	0	2	1	0	0	10	10	0	3	14	1	0	68	809
5:30 PM	10	3	10	0	0	2	1	0	0	10	12	0	4	13	1	0	66	813
5:35 PM	24	2	3	0	0	1	0	0	0	6	14	0	4	18	0	0	72	806
5:40 PM	11	3	2	0	0	7	4	0	1	7	9	0	4	8	2	0	58	792
5:45 PM	11	4	2	0	0	3	1	0	0	8	9	0	6	17	0	0	61	791
5:50 PM	16	2	4	0	0	1	0	0	0	14	7	0	6	15	1	0	66	781
5:55 PM	15	5	4	0	1	3	1	0	1	3	14	0	3	16	0	0	66	777

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	252	64	76	0	0	64	24	0	28	60	144	0	28	188	20	0	948
Heavy Trucks	8	0	0		0	12	0		4	4	4		0	8	0		40
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	1	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/26/2015 3:57 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

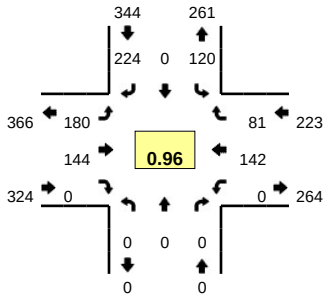
Type of peak hour being reported: Intersection Peak

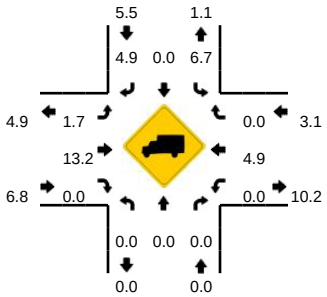
Method for determining peak hour: Total Entering Volume

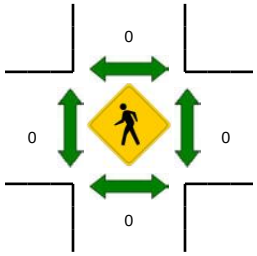
LOCATION: Abbot Dr -- S Century Dr
CITY/STATE: Sunriver, OR

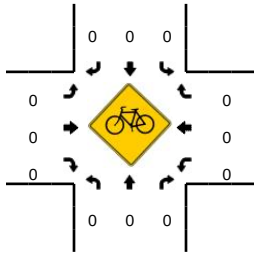
QC JOB #: 13393508
DATE: Tue, May 19 2015

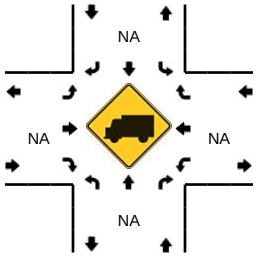
Peak-Hour: 4:10 PM -- 5:10 PM
Peak 15-Min: 4:25 PM -- 4:40 PM

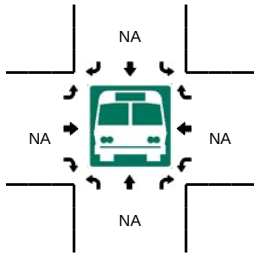












5-Min Count Period Beginning At	Abbot Dr (Northbound)				Abbot Dr (Southbound)				S Century Dr (Eastbound)				S Century Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	12	0	20	0	17	7	0	0	0	7	5	0	68	
4:05 PM	0	0	0	0	6	0	21	0	15	11	0	0	0	8	8	0	69	
4:10 PM	0	0	0	0	8	0	25	0	16	9	0	0	0	9	8	0	75	
4:15 PM	0	0	0	0	14	0	14	0	14	16	0	0	0	13	3	0	74	
4:20 PM	0	0	0	0	5	0	19	0	13	8	0	0	0	12	13	0	70	
4:25 PM	0	0	0	0	11	0	19	0	14	15	0	0	0	13	7	0	79	
4:30 PM	0	0	0	0	15	0	23	0	16	10	0	0	0	10	6	0	80	
4:35 PM	0	0	0	0	10	0	19	0	11	15	0	0	0	13	6	0	74	
4:40 PM	0	0	0	0	13	0	15	0	21	16	0	0	0	4	3	0	72	
4:45 PM	0	0	0	0	11	0	15	0	15	12	0	0	0	19	7	0	79	
4:50 PM	0	0	0	0	12	0	11	0	18	12	0	0	0	8	7	0	68	
4:55 PM	0	0	0	0	4	0	28	0	10	12	0	0	0	12	8	0	74	882
5:00 PM	0	0	0	0	8	0	21	0	17	6	0	0	0	15	6	0	73	887
5:05 PM	0	0	0	0	9	0	15	0	15	13	0	0	0	14	7	0	73	891
5:10 PM	0	0	0	0	11	0	13	0	21	11	0	0	0	11	7	0	74	890
5:15 PM	0	0	0	0	15	0	13	0	13	14	0	0	0	9	4	0	68	884
5:20 PM	0	0	0	0	17	0	22	0	16	8	0	0	0	10	3	0	76	890
5:25 PM	0	0	0	0	13	0	19	0	9	12	0	0	0	12	5	0	70	881
5:30 PM	0	0	0	0	8	0	17	0	17	13	0	0	0	13	7	0	75	876
5:35 PM	0	0	0	0	12	0	19	0	8	8	0	0	0	13	6	0	66	868
5:40 PM	0	0	0	0	10	0	10	0	23	9	0	0	0	11	9	0	72	868
5:45 PM	0	0	0	0	13	0	18	0	15	8	0	0	0	7	8	0	69	858
5:50 PM	0	0	0	0	5	0	13	0	5	12	0	0	0	13	7	0	55	845
5:55 PM	0	0	0	0	6	0	19	0	14	8	0	0	0	14	9	0	70	841

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	144	0	244	0	164	160	0	0	0	144	76	0	932
Heavy Trucks	0	0	0		12	0	4		4	12	0		0	4	0		36
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/26/2015 3:57 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

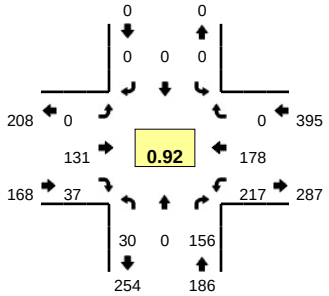
Type of peak hour being reported: Intersection Peak

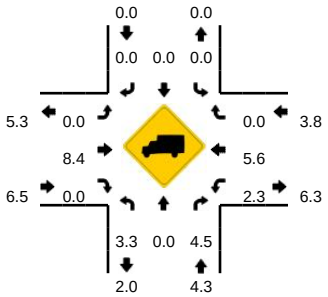
Method for determining peak hour: Total Entering Volume

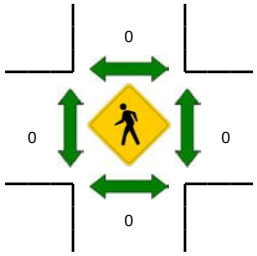
LOCATION: S Century Dr -- Spring River Rd
CITY/STATE: Sunriver, OR

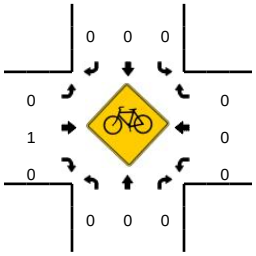
QC JOB #: 13393507
DATE: Tue, May 19 2015

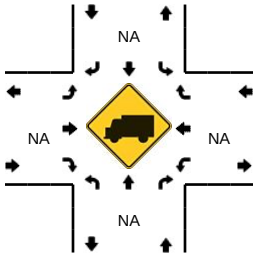
Peak-Hour: 4:25 PM -- 5:25 PM
Peak 15-Min: 5:10 PM -- 5:25 PM

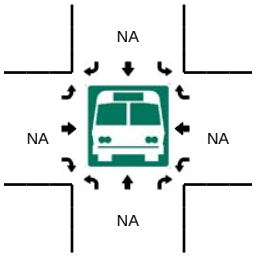












5-Min Count Period Beginning At	S Century Dr (Northbound)				S Century Dr (Southbound)				Spring River Rd (Eastbound)				Spring River Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	3	0	16	0	0	0	0	0	0	12	3	0	14	12	0	0	60	
4:05 PM	2	0	14	0	0	0	0	0	0	7	2	0	23	10	0	0	58	
4:10 PM	1	0	16	0	0	0	0	0	0	8	0	0	15	11	0	0	51	
4:15 PM	4	0	10	0	0	0	0	0	0	13	1	0	14	5	0	0	47	
4:20 PM	5	0	12	0	0	0	0	0	0	8	4	0	15	12	0	0	56	
4:25 PM	3	0	9	0	0	0	0	0	0	12	8	0	17	23	0	0	72	
4:30 PM	3	0	13	0	0	0	0	0	0	11	6	0	20	9	0	0	62	
4:35 PM	1	0	12	0	0	0	0	0	0	9	4	0	20	19	0	0	65	
4:40 PM	3	0	21	0	0	0	0	0	0	11	0	0	14	10	0	0	59	
4:45 PM	2	0	12	0	0	0	0	0	0	10	0	0	14	11	0	0	49	
4:50 PM	5	0	17	0	0	0	0	0	0	17	3	0	29	13	0	0	84	
4:55 PM	1	0	11	0	0	0	0	0	0	6	3	0	9	17	0	0	47	710
5:00 PM	0	0	10	0	0	0	0	0	0	8	3	0	16	13	0	0	50	700
5:05 PM	2	0	14	0	0	0	0	0	0	10	1	0	19	11	0	0	57	699
5:10 PM	2	0	18	0	0	0	0	0	0	18	3	0	9	19	0	0	69	717
5:15 PM	5	0	11	0	0	0	0	0	0	11	4	0	20	18	0	0	69	739
5:20 PM	3	0	8	0	0	0	0	0	0	8	2	0	30	15	0	0	66	749
5:25 PM	1	0	10	0	0	0	0	0	0	3	4	0	19	13	0	0	50	727
5:30 PM	3	0	14	0	0	0	0	0	0	11	4	0	13	18	0	0	63	728
5:35 PM	2	0	12	0	0	0	0	0	0	8	2	0	13	15	0	0	52	715
5:40 PM	2	0	12	0	0	0	0	0	0	9	3	0	20	15	0	0	61	717
5:45 PM	1	0	12	0	0	0	0	0	0	4	3	0	16	9	0	0	45	713
5:50 PM	2	0	7	0	0	0	0	0	0	7	0	0	11	9	0	0	36	665
5:55 PM	0	0	10	0	0	0	0	0	0	8	3	0	17	13	0	0	51	669

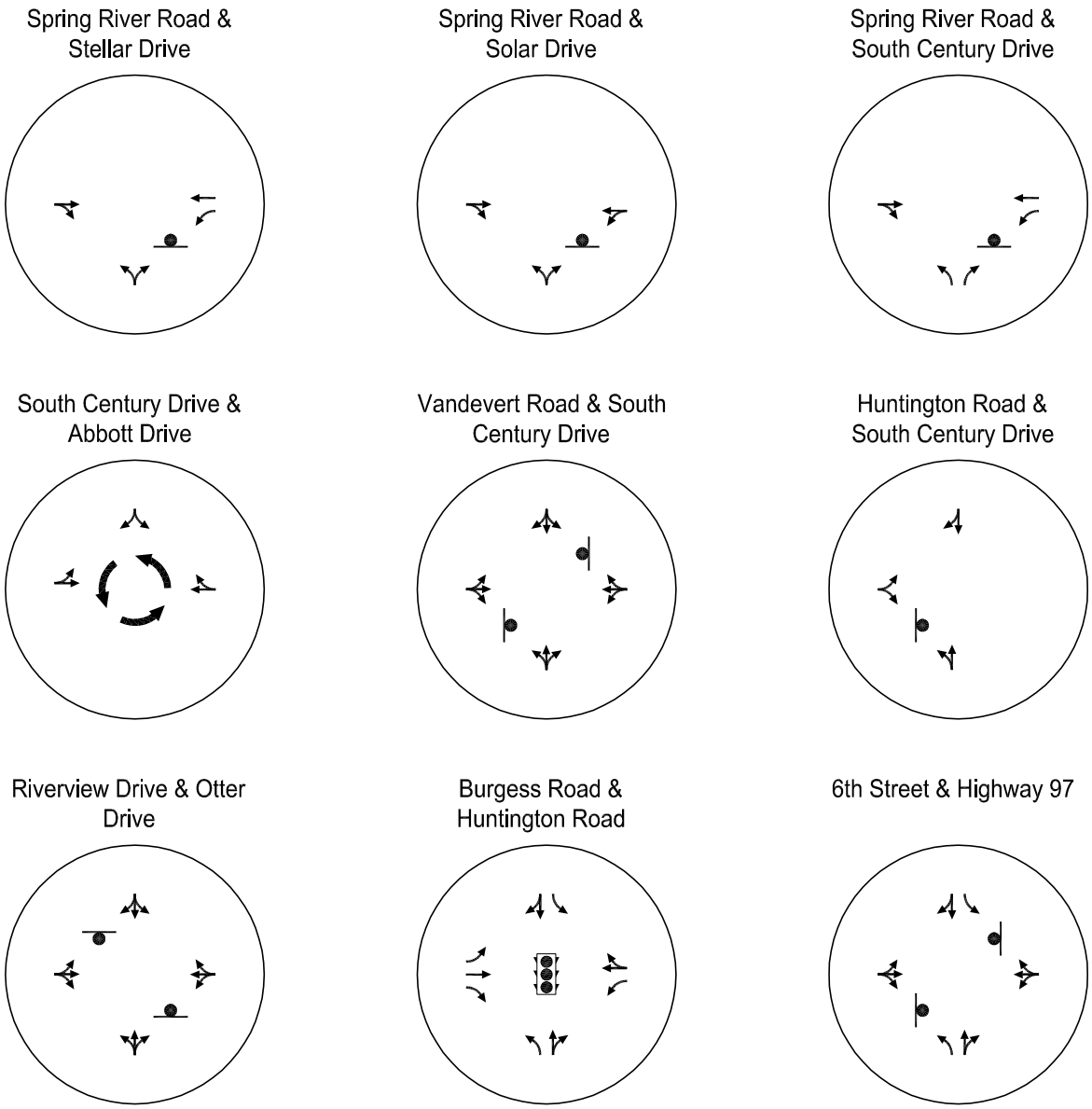
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	40	0	148	0	0	0	0	0	0	148	36	0	236	208	0	0	816
Heavy Trucks	0	0	0		0	0	0		0	12	0		4	8	0		24
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/26/2015 3:57 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

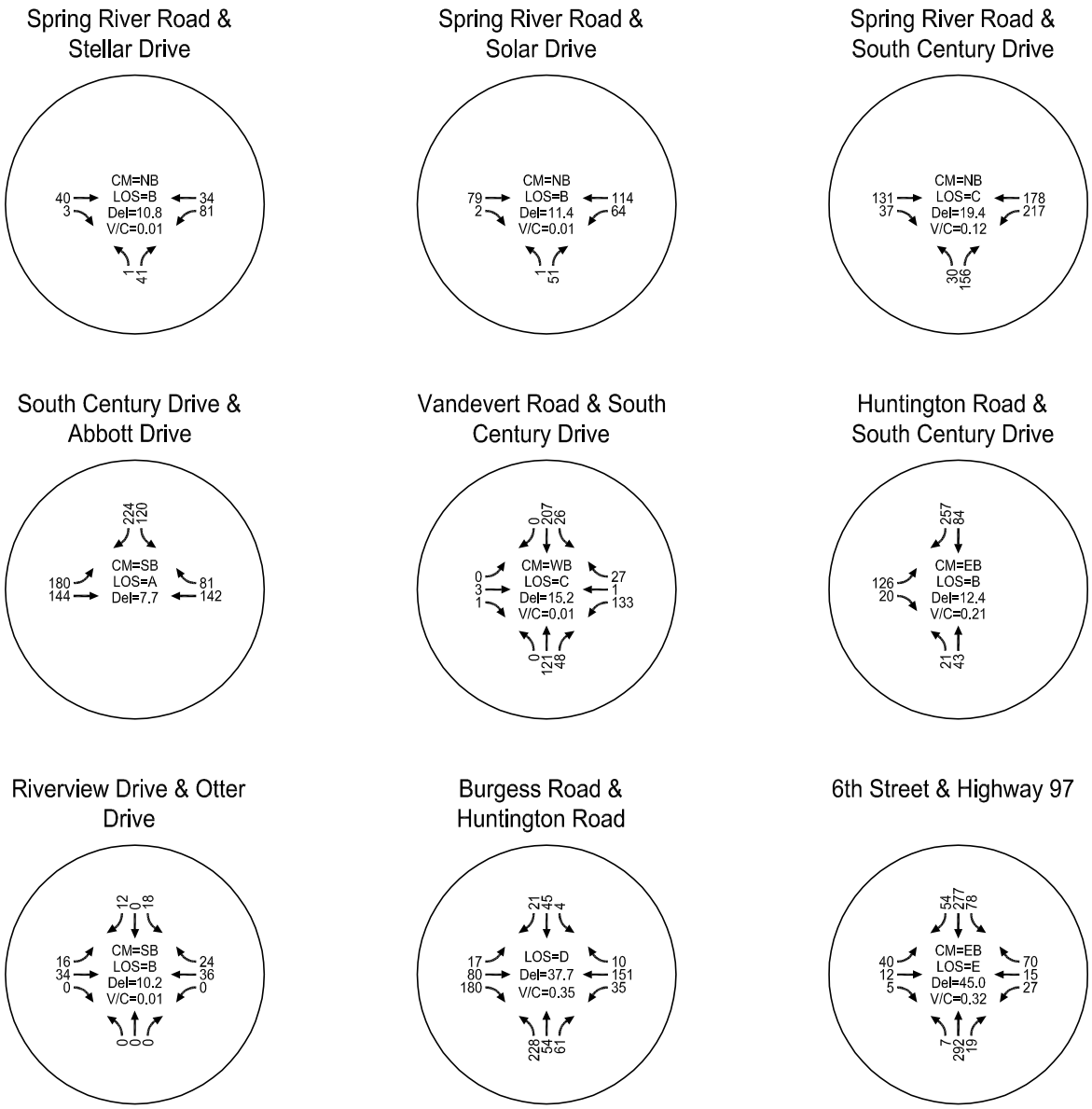
Appendix B
Lane Configurations and Operational Analysis



Lane Configurations and Traffic Control
South Deschutes County, Oregon

Figure
B-1

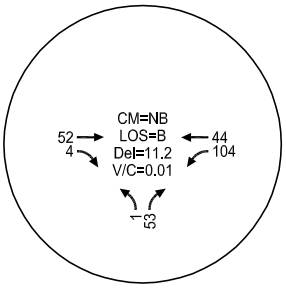
K:\H_Bend\projfile\19028 - South County Red Lot TPR Analysis\dwgs\figs\19028_Figures.dwg Jun 17, 2015 - 2:25pm - jminer Layout Tab: Fig04



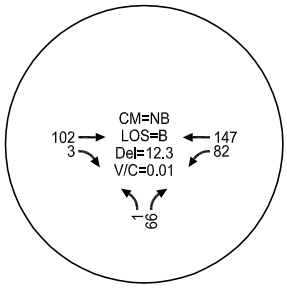
2015 Existing Conditions (PM Peak Hour)
South Deschutes County, Oregon

Figure
B-2

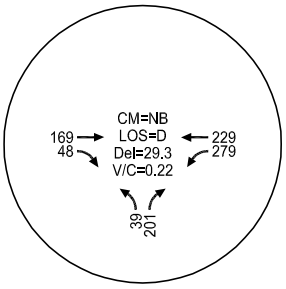
Spring River Road & Stellar Drive



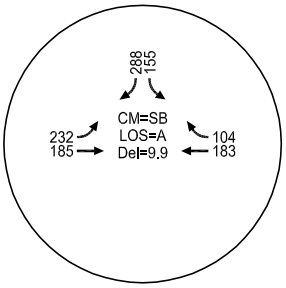
Spring River Road & Solar Drive



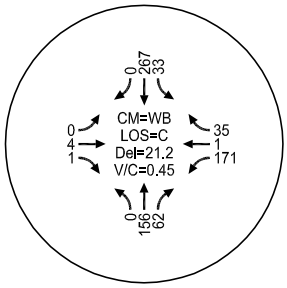
Spring River Road & South Century Drive



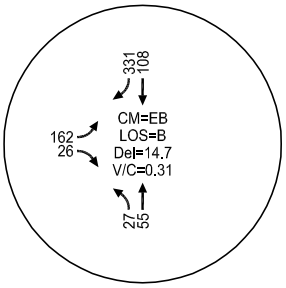
South Century Drive & Abbott Drive



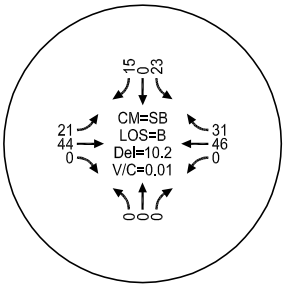
Vandevert Road & South Century Drive



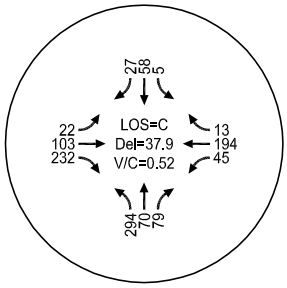
Huntington Road & South Century Drive



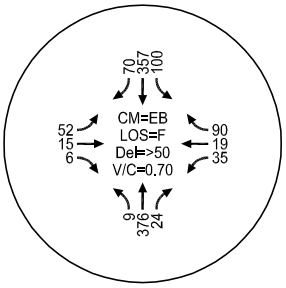
Riverview Drive & Otter Drive



Burgess Road & Huntington Road

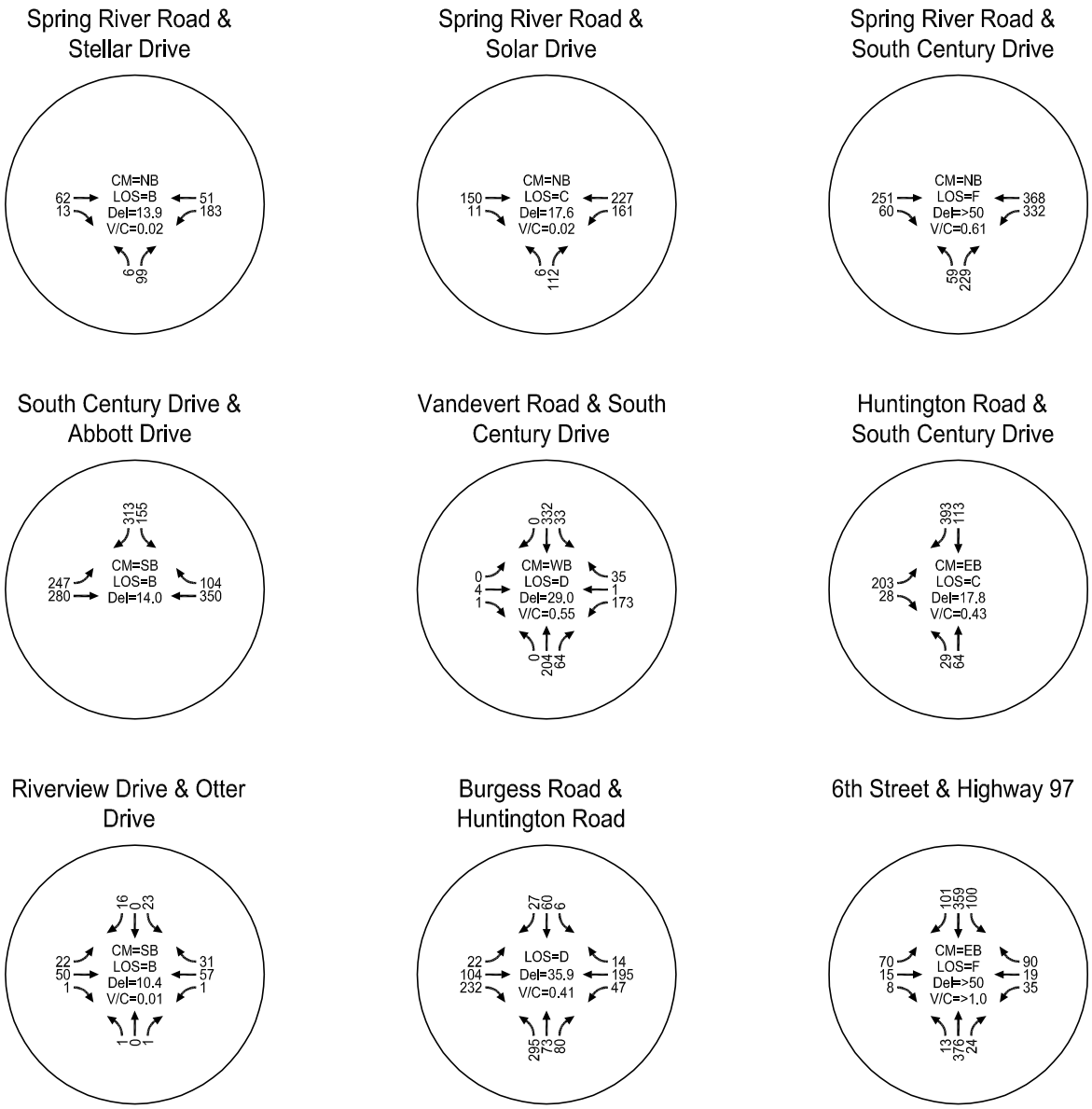


6th Street & Highway 97



2030 Background Conditions (PM Peak Hour)
South Deschutes County, Oregon

Figure
B-3



2030 Total Conditions (PM Peak Hour)
South Deschutes County, Oregon

Figure
B-4

Vistro File: H:\...\Red Lot TPR Base.vistro
Report File: H:\...\2015.pdf

Scenario 3: 3: 2015 Existing
6/17/2015

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Spring River Road and Stellar Drive	Two-way stop	HCM2010	NBL	0.002	10.8	B
2	Spring River Road and Solar Drive	Two-way stop	HCM2010	NBL	0.002	11.4	B
3	Spring River Road and South Century Dr	Two-way stop	HCM2010	NBL	0.117	19.4	C
4	Abbott Drive and South Century Drive	Roundabout	HCM	SEBR		7.7	A
5	South Century Drive and Vanervert Road	Two-way stop	HCM2010	WBT	0.002	15.2	C
6	South Century Drive and Huntington Road	Two-way stop	HCM2010	EBL	0.214	12.4	B
7	Riverview Drive and Otter Drive	Two-way stop	HCM2010	SBT	0.000	10.2	B
8	Huntington Road and Burgess Road	Signalized	HCM2010	WBT	0.346	37.7	D
9	6th Street and Hwy 97	Two-way stop	HCM2010	SEBL	0.316	45.0	E

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value; for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
#1: Spring River Road and Stellar Drive

Control Type:	Two-way stop	Delay (sec / veh):	10.8
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.002

Intersection Setup

Name						
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	no		no		no	

Volumes

Name						
Base Volume Input [veh/h]	1	41	40	3	81	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	20.00	0.00	8.00	3.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	41	40	3	81	34
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	13	13	1	26	11
Total Analysis Volume [veh/h]	1	53	51	4	104	44
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	no		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	no		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.05	0.00	0.00	0.07	0.00
d_M, Delay for Movement [s/veh]	10.81	8.75	0.00	0.00	7.56	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.17	0.17	0.00	0.00	0.32	0.32
95th-Percentile Queue Length [ft]	4.26	4.26	0.00	0.00	8.12	8.12
d_A, Approach Delay [s/veh]	8.79		0.00		5.31	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.90					
Intersection LOS	B					

Intersection Level Of Service Report
#2: Spring River Road and Solar Drive

Control Type:	Two-way stop	Delay (sec / veh):	11.4
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.002

Intersection Setup

Name						
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	no		no		no	

Volumes

Name						
Base Volume Input [veh/h]	1	51	79	2	64	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	8.00	12.00	0.00	3.00	3.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	51	79	2	64	114
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	15	23	1	19	34
Total Analysis Volume [veh/h]	1	60	93	2	75	134
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	no		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	no		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.06	0.00	0.00	0.05	0.00
d_M, Delay for Movement [s/veh]	11.37	9.07	0.00	0.00	7.54	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.21	0.21	0.00	0.00	0.49	0.49
95th-Percentile Queue Length [ft]	5.21	5.21	0.00	0.00	12.17	12.17
d_A, Approach Delay [s/veh]	9.11		0.00		2.71	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	3.07					
Intersection LOS	B					

Intersection Level Of Service Report
#3: Spring River Road and South Century Dr

Control Type:	Two-way stop	Delay (sec / veh):	19.4
Analysis Method:	HCM2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.117

Intersection Setup

Name						
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	1	0
Pocket Length [ft]	125.00	100.00	100.00	100.00	150.00	100.00
Speed [mph]	50.00		45.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	no		no		no	

Volumes

Name						
Base Volume Input [veh/h]	30	156	131	37	217	178
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	4.00	8.00	0.00	2.00	6.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	156	131	37	217	178
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	42	36	10	59	48
Total Analysis Volume [veh/h]	33	170	142	40	236	193
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	no		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.19	0.00	0.00	0.17	0.00
d_M, Delay for Movement [s/veh]	19.43	10.08	0.00	0.00	8.11	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.39	0.71	0.00	0.00	0.61	0.00
95th-Percentile Queue Length [ft]	9.80	17.87	0.00	0.00	15.23	0.00
d_A, Approach Delay [s/veh]	11.60		0.00		4.46	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	5.25					
Intersection LOS	C					

Intersection Level Of Service Report
#4: Abbott Drive and South Century Drive

Control Type:	Roundabout	Delay (sec / veh):	7.7
Analysis Method:	HCM	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name						
Approach	Westbound		Northeastbound		Southeastbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name						
Base Volume Input [veh/h]	142	81	180	144	120	224
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	13.00	5.00	0.00	7.00	5.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	142	81	180	144	120	224
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	21	47	38	31	58
Total Analysis Volume [veh/h]	148	84	188	150	125	233
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Number of Conflicting Circulating Lanes	1		1		1	
Circulating Flow Rate [veh/h]	197		134		151	
Exiting Flow Rate [veh/h]	197		134		151	
Demand Flow Rate [veh/h]	142	81	180	144	120	224
Adjusted Demand Flow Rate [veh/h]	148	84	188	150	125	233

Lanes

Overwrite Calculated Critical Headway	no	no	no
User-Defined Critical Headway [s]	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	no	no	no
User-Defined Follow-Up Time [s]	3.00	3.00	3.00
A (intercept)	1130.00	1130.00	1130.00
B (coefficient)	0.00100	0.00100	0.00100
HV Adjustment Factor	0.95	0.97	0.95
Entry Flow Rate [veh/h]	246	348	379
Capacity of Entry and Bypass Lanes [veh/h]	928	989	972
Pedestrian Impedance	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	878	963	920
X, volume / capacity	0.26	0.35	0.39

Movement, Approach, & Intersection Results

Lane LOS	A	A	A
95th-Percentile Queue Length [veh]	1.06	1.59	1.86
95th-Percentile Queue Length [ft]	26.62	39.79	46.59
Approach Delay [s/veh]	6.90	7.51	8.34
Approach LOS	A	A	A
Intersection Delay [s/veh]	7.67		
Intersection LOS	A		

Intersection Level Of Service Report
#5: South Century Drive and Vanervert Road

Control Type:	Two-way stop	Delay (sec / veh):	15.2
Analysis Method:	HCM2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.002

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Speed [mph]	50.00			50.00			30.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	no			no			no			no		

Volumes

Name												
Base Volume Input [veh/h]	0	121	48	26	207	0	0	3	1	133	1	27
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	2.00	11.00	8.00	3.00	0.00	2.00	2.00	2.00	4.00	2.00	4.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	121	48	26	207	0	0	3	1	133	1	27
Peak Hour Factor	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	33	13	7	56	0	0	1	0	36	0	7
Total Analysis Volume [veh/h]	0	132	52	28	225	0	0	3	1	145	1	29
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			no	no
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			no	no
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.28	0.00	0.03
d_M, Delay for Movement [s/veh]	7.66	0.00	0.00	7.71	0.00	0.00	12.41	12.50	9.47	15.09	15.25	12.12
Movement LOS	A	A	A	A	A	A	B	B	A	C	C	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.69	0.69	0.69	0.02	0.02	0.02	1.36	1.36	1.36
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	17.13	17.13	17.13	0.56	0.56	0.56	34.12	34.12	34.12
d_A, Approach Delay [s/veh]	0.00			0.85			11.75			14.60		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	4.57											
Intersection LOS	C											

Intersection Level Of Service Report
#6: South Century Drive and Huntington Road

Control Type:	Two-way stop	Delay (sec / veh):	12.4
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.214

Intersection Setup

Name	South Century Drive		South Century Drive		Huntington Road	
Approach	Southbound		Eastbound		Northeastbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		30.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	no		no		no	

Volumes

Name	South Century Drive		South Century Drive		Huntington Road	
Base Volume Input [veh/h]	84	257	126	20	21	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.00	10.00	10.00	10.00	10.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	84	257	126	20	21	43
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	70	34	5	6	12
Total Analysis Volume [veh/h]	91	279	137	22	23	47
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Stop	Free
Flared Lane		no	
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		no	
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.21	0.03	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	12.35	11.30	8.21	0.00
Movement LOS	A	A	B	B	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.94	0.94	0.19	0.19
95th-Percentile Queue Length [ft]	0.00	0.00	23.55	23.55	4.87	4.87
d_A, Approach Delay [s/veh]	0.00		12.21		2.70	
Approach LOS	A		B		A	
d_I, Intersection Delay [s/veh]	3.56					
Intersection LOS	B					

Intersection Level Of Service Report
#7: Riverview Drive and Otter Drive

Control Type:	Two-way stop	Delay (sec / veh):	10.2
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name				Otter Drive			Riverview Drive			Riverview Drive		
Approach	Northbound			Southbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Speed [mph]	10.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	no			no			no			no		

Volumes

Name				Otter Drive			Riverview Drive			Riverview Drive		
Base Volume Input [veh/h]	0	0	0	18	0	12	0	36	24	16	34	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	11.00	2.00	8.00	2.00	28.00	4.00	12.00	6.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	18	0	12	0	36	24	16	34	0
Peak Hour Factor	0.740	0.740	0.740	0.740	0.740	0.740	0.740	0.740	0.740	0.740	0.740	0.740
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	6	0	4	0	12	8	5	11	0
Total Analysis Volume [veh/h]	0	0	0	24	0	16	0	49	32	22	46	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	no	no		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	no	no		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.03	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	9.62	10.06	8.52	9.81	10.17	8.87	7.31	0.00	0.00	7.51	0.00	0.00
Movement LOS	A	B	A	A	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.15	0.15	0.15	0.00	0.00	0.00	0.15	0.15	0.15
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	3.69	3.69	3.69	0.00	0.00	0.00	3.67	3.67	3.67
d_A, Approach Delay [s/veh]	9.40			9.44			0.00			2.43		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	2.87											
Intersection LOS	B											

Intersection Level Of Service Report
#8: Huntington Road and Burgess Road

Control Type:	Signalized	Delay (sec / veh):	37.7
Analysis Method:	HCM2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.346

Intersection Setup

Name	Huntington Road			Huntington Road			Burgess Road			Burgess Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.0	100.0	100.0	80.00	100.0	100.0	90.00	100.0	90.00	130.0	100.0	100.0
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Huntington Road			Huntington Road			Burgess Road			Burgess Road		
Base Volume Input [veh/h]	228	54	61	4	45	21	17	80	180	35	151	10
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	4.00	0.00	0.00	7.00	0.00	12.00	5.00	3.00	0.00	4.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	228	54	61	4	45	21	17	80	180	35	151	10
Peak Hour Factor	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	61	15	16	1	12	6	5	22	48	9	41	3
Total Analysis Volume [veh/h]	245	58	66	4	48	23	18	86	194	38	162	11
Presence of On-Street Parking	no		no	no		no	no		no	no		no
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Bicycle Volume [bicycles/h]	0	0	0	0

Intersection Settings

Located in CBD	yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Prote	Permi	Permi	Prote	Permi	Permi
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	10	30	0	10	30	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	15	0	0	15	0	0	15	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		no			no		no	yes		no	yes	
Maximum Recall		no			no		no	no		no	no	
Pedestrian Recall		no			no		no	no		no	no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00
g_i, Effective Green Time [s]	25	25	25	25	23	15	15	23	12
g / C, Green / Cycle	0.28	0.28	0.28	0.28	0.25	0.16	0.16	0.25	0.13
(v / s)_i Volume / Saturation Flow Rate	0.21	0.08	0.00	0.05	0.01	0.05	0.14	0.03	0.11
s, saturation flow rate [veh/h]	1192	1503	1158	1512	1258	1629	1411	1389	1626
c, Capacity [veh/h]	340	421	298	424	260	265	229	312	209
d1, Uniform Delay [s]	34.63	25.40	29.73	24.45	32.83	33.31	36.58	31.00	38.24
k, delay calibration	0.16	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.12	0.38	0.02	0.18	0.11	0.70	8.28	0.17	8.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.29	0.01	0.17	0.07	0.32	0.85	0.12	0.83
d, Delay for Lane Group [s/veh]	38.75	25.78	29.75	24.64	32.94	34.02	44.86	31.17	46.30
Lane Group LOS	D	C	C	C	C	C	D	C	D
Critical Lane Group	yes	no	no	no	no	no	yes	yes	no
50th-Percentile Queue Length [veh]	5.32	2.00	0.07	1.10	0.28	1.63	4.43	0.60	4.00
50th-Percentile Queue Length [ft]	133.12	49.94	1.72	27.45	7.09	40.72	110.8	15.09	99.89
95th-Percentile Queue Length [veh]	9.11	3.60	0.12	1.98	0.51	2.93	7.89	1.09	7.19
95th-Percentile Queue Length [ft]	227.73	89.89	3.09	49.41	12.77	73.30	197.2	27.16	179.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.75	25.78	25.78	29.75	24.64	24.64	32.94	34.02	44.86	31.17	46.30	46.30
Movement LOS	D	C	C	C	C	C	C	C	D	C	D	D
d_A, Approach Delay [s/veh]	34.39			24.91			41.01			43.57		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	37.75											
Intersection LOS	D											
Intersection V/C	0.346											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
#9: 6th Street and Hwy 97

Control Type:	Two-way stop	Delay (sec / veh):	45.0
Analysis Method:	HCM2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.316

Intersection Setup

Name	Hwy 97			Hwy 97			6th Street			6th Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	300.0	100.0	100.0	300.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Speed [mph]	35.00			35.00			10.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	no			no			no			no		

Volumes

Name	Hwy 97			Hwy 97			6th Street			6th Street		
Base Volume Input [veh/h]	7	292	19	78	277	54	27	15	70	40	12	5
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	21.00	0.00	1.00	16.00	4.00	7.00	0.00	3.00	0.00	0.00	20.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	292	19	78	277	54	27	15	70	40	12	5
Peak Hour Factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	2	81	5	22	77	15	8	4	19	11	3	1
Total Analysis Volume [veh/h]	8	324	21	87	308	60	30	17	78	44	13	6
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			no	no
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			yes	yes
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.07	0.00	0.00	0.18	0.10	0.11	0.32	0.07	0.01
d_M, Delay for Movement [s/veh]	8.02	0.00	0.00	8.18	0.00	0.00	34.25	32.33	17.17	44.96	38.86	24.53
Movement LOS	A	A	A	A	A	A	D	D	C	E	E	C
95th-Percentile Queue Length [veh]	0.02	0.00	0.00	0.23	0.00	0.00	1.80	1.80	1.80	1.72	1.72	1.72
95th-Percentile Queue Length [ft]	0.50	0.00	0.00	5.75	0.00	0.00	44.89	44.89	44.89	43.03	43.03	43.03
d_A, Approach Delay [s/veh]	0.18			1.56			23.33			41.75		
Approach LOS	A			A			C			E		
d_I, Intersection Delay [s/veh]	6.35											
Intersection LOS	E											

Vistro File: H:\...\Red Lot TPR Base.vistro
Report File: H:\...\2030background.pdf

Scenario 2: 2: 2030 Background
6/17/2015

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Spring River Road and Stellar Drive	Two-way stop	HCM2010	NBL	0.002	11.2	B
2	Spring River Road and Solar Drive	Two-way stop	HCM2010	NBL	0.002	12.3	B
3	Spring River Road and South Century Dr	Two-way stop	HCM2010	NBL	0.222	29.3	D
4	Abbott Drive and South Century Drive	Roundabout	HCM	SEBR		9.9	A
5	South Century Drive and Vanervert Road	Two-way stop	HCM2010	WBL	0.447	21.2	C
6	South Century Drive and Huntington Road	Two-way stop	HCM2010	EBL	0.313	14.7	B
7	Riverview Drive and Otter Drive	Two-way stop	HCM2010	SBT	0.000	10.2	B
8	Huntington Road and Burgess Road	Signalized	HCM2010	WBR	0.520	37.9	D
9	6th Street and Hwy 97	Two-way stop	HCM2010	SEBL	0.709	141.2	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value; for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
#1: Spring River Road and Stellar Drive

Control Type:	Two-way stop	Delay (sec / veh):	11.2
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.002

Intersection Setup

Name						
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	no		no		no	

Volumes

Name						
Base Volume Input [veh/h]	1	53	52	4	104	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	20.00	0.00	8.00	3.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	53	52	4	104	44
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	15	14	1	29	12
Total Analysis Volume [veh/h]	1	59	58	4	116	49
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	no		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	no		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.06	0.00	0.00	0.08	0.00
d_M, Delay for Movement [s/veh]	11.17	8.81	0.00	0.00	7.59	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.19	0.19	0.00	0.00	0.37	0.37
95th-Percentile Queue Length [ft]	4.81	4.81	0.00	0.00	9.23	9.23
d_A, Approach Delay [s/veh]	8.85		0.00		5.34	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.92					
Intersection LOS	B					

Intersection Level Of Service Report
#2: Spring River Road and Solar Drive

Control Type:	Two-way stop	Delay (sec / veh):	12.3
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.002

Intersection Setup

Name						
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	no		no		no	

Volumes

Name						
Base Volume Input [veh/h]	1	66	102	3	82	147
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	8.00	12.00	0.00	3.00	3.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	66	102	3	82	147
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	18	28	1	23	41
Total Analysis Volume [veh/h]	1	73	113	3	91	163
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	no		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	no		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.08	0.00	0.00	0.06	0.00
d_M, Delay for Movement [s/veh]	12.25	9.25	0.00	0.00	7.62	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.26	0.26	0.00	0.00	0.63	0.63
95th-Percentile Queue Length [ft]	6.60	6.60	0.00	0.00	15.65	15.65
d_A, Approach Delay [s/veh]	9.29		0.00		2.73	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	3.11					
Intersection LOS	B					

Intersection Level Of Service Report
#3: Spring River Road and South Century Dr

Control Type:	Two-way stop	Delay (sec / veh):	29.3
Analysis Method:	HCM2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.222

Intersection Setup

Name						
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	1	0
Pocket Length [ft]	125.00	100.00	100.00	100.00	150.00	100.00
Speed [mph]	50.00		45.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	no		no		no	

Volumes

Name						
Base Volume Input [veh/h]	39	201	169	48	279	229
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	4.00	8.00	0.00	2.00	6.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	201	169	48	279	229
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	55	46	13	76	62
Total Analysis Volume [veh/h]	42	218	184	52	303	249
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	no		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.22	0.26	0.00	0.00	0.23	0.00
d_M, Delay for Movement [s/veh]	29.32	10.92	0.00	0.00	8.50	0.00
Movement LOS	D	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.82	1.06	0.00	0.00	0.88	0.00
95th-Percentile Queue Length [ft]	20.45	26.55	0.00	0.00	21.95	0.00
d_A, Approach Delay [s/veh]	13.89		0.00		4.67	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	5.90					
Intersection LOS	D					

Intersection Level Of Service Report
#4: Abbott Drive and South Century Drive

Control Type:	Roundabout	Delay (sec / veh):	9.9
Analysis Method:	HCM	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name						
Approach	Westbound		Northeastbound		Southeastbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name						
Base Volume Input [veh/h]	183	104	232	185	155	288
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	13.00	5.00	0.00	7.00	5.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	183	104	232	185	155	288
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	27	60	48	40	75
Total Analysis Volume [veh/h]	191	108	242	193	161	300
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Number of Conflicting Circulating Lanes	1		1		1	
Circulating Flow Rate [veh/h]	254		172		195	
Exiting Flow Rate [veh/h]	254		172		195	
Demand Flow Rate [veh/h]	183	104	232	185	155	288
Adjusted Demand Flow Rate [veh/h]	191	108	242	193	161	300

Lanes

Overwrite Calculated Critical Headway	no	no	no
User-Defined Critical Headway [s]	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	no	no	no
User-Defined Follow-Up Time [s]	3.00	3.00	3.00
A (intercept)	1130.00	1130.00	1130.00
B (coefficient)	0.00100	0.00100	0.00100
HV Adjustment Factor	0.95	0.97	0.95
Entry Flow Rate [veh/h]	317	447	488
Capacity of Entry and Bypass Lanes [veh/h]	877	952	930
Pedestrian Impedance	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	829	926	880
X, volume / capacity	0.36	0.47	0.52

Movement, Approach, & Intersection Results

Lane LOS	A	A	B
95th-Percentile Queue Length [veh]	1.65	2.55	3.12
95th-Percentile Queue Length [ft]	41.29	63.80	77.90
Approach Delay [s/veh]	8.58	9.63	11.12
Approach LOS	A	A	B
Intersection Delay [s/veh]	9.94		
Intersection LOS	A		

Intersection Level Of Service Report
#5: South Century Drive and Vanervert Road

Control Type:	Two-way stop	Delay (sec / veh):	21.2
Analysis Method:	HCM2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.447

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Speed [mph]	50.00			50.00			30.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	no			no			no			no		

Volumes

Name												
Base Volume Input [veh/h]	0	156	62	33	267	0	0	4	1	171	1	35
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	2.00	11.00	8.00	3.00	0.00	2.00	2.00	2.00	4.00	2.00	4.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	156	62	33	267	0	0	4	1	171	1	35
Peak Hour Factor	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	42	17	9	73	0	0	1	0	46	0	10
Total Analysis Volume [veh/h]	0	170	67	36	290	0	0	4	1	186	1	38
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			no	no
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			no	no
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.01	0.00	0.45	0.00	0.05
d_M, Delay for Movement [s/veh]	7.81	0.00	0.00	7.86	0.00	0.00	14.27	14.06	9.90	21.19	21.11	16.85
Movement LOS	A	A	A	A	A	A	B	B	A	C	C	C
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	1.00	1.00	1.00	0.03	0.03	0.03	2.69	2.69	2.69
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	25.01	25.01	25.01	0.86	0.86	0.86	67.29	67.29	67.29
d_A, Approach Delay [s/veh]	0.00			0.87			13.23			20.45		
Approach LOS	A			A			B			C		
d_I, Intersection Delay [s/veh]	6.24											
Intersection LOS	C											

Intersection Level Of Service Report
#6: South Century Drive and Huntington Road

Control Type:	Two-way stop	Delay (sec / veh):	14.7
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.313

Intersection Setup

Name	South Century Drive		South Century Drive		Huntington Road	
Approach	Southbound		Eastbound		Northeastbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		30.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	no		no		no	

Volumes

Name	South Century Drive		South Century Drive		Huntington Road	
Base Volume Input [veh/h]	108	331	162	26	27	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.00	10.00	10.00	10.00	10.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	108	331	162	26	27	55
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	90	44	7	7	15
Total Analysis Volume [veh/h]	117	360	176	28	29	60
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Stop	Free
Flared Lane		no	
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		no	
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.31	0.04	0.03	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	14.73	13.30	8.54	0.00
Movement LOS	A	A	B	B	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	1.58	1.58	0.28	0.28
95th-Percentile Queue Length [ft]	0.00	0.00	39.38	39.38	6.97	6.97
d_A, Approach Delay [s/veh]	0.00		14.54		2.78	
Approach LOS	A		B		A	
d_I, Intersection Delay [s/veh]	4.17					
Intersection LOS	B					

Intersection Level Of Service Report
#7: Riverview Drive and Otter Drive

Control Type:	Two-way stop	Delay (sec / veh):	10.2
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name				Otter Drive			Riverview Drive			Riverview Drive		
Approach	Northbound			Southbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Speed [mph]	10.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	no			no			no			no		

Volumes

Name				Otter Drive			Riverview Drive			Riverview Drive		
Base Volume Input [veh/h]	0	0	0	23	0	15	0	46	31	21	44	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	11.00	2.00	8.00	2.00	28.00	4.00	12.00	6.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	23	0	15	0	46	31	21	44	0
Peak Hour Factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	6	0	4	0	13	9	6	12	0
Total Analysis Volume [veh/h]	0	0	0	26	0	17	0	51	34	23	49	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	no	no		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	no	no		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.03	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	9.69	10.13	8.53	9.89	10.25	8.91	7.31	0.00	0.00	7.52	0.00	0.00
Movement LOS	A	B	A	A	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.16	0.16	0.16	0.00	0.00	0.00	0.16	0.16	0.16
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	4.03	4.03	4.03	0.00	0.00	0.00	3.91	3.91	3.91
d_A, Approach Delay [s/veh]	9.45			9.50			0.00			2.40		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	2.91											
Intersection LOS	B											

Intersection Level Of Service Report
#8: Huntington Road and Burgess Road

Control Type:	Signalized	Delay (sec / veh):	37.9
Analysis Method:	HCM2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.520

Intersection Setup

Name	Huntington Road			Huntington Road			Burgess Road			Burgess Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.0	100.0	100.0	80.00	100.0	100.0	90.00	100.0	90.00	130.0	100.0	100.0
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Huntington Road			Huntington Road			Burgess Road			Burgess Road		
Base Volume Input [veh/h]	294	70	79	5	58	27	45	194	13	22	103	232
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	4.00	0.00	0.00	7.00	0.00	12.00	5.00	3.00	0.00	4.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	294	70	79	5	58	27	45	194	13	22	103	232
Peak Hour Factor	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	79	19	21	1	16	7	12	52	3	6	28	62
Total Analysis Volume [veh/h]	316	75	85	5	62	29	48	209	14	24	111	249
Presence of On-Street Parking	no		no	no		no	no		no	no		no
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Bicycle Volume [bicycles/h]	0	0	0	0

Intersection Settings

Located in CBD	yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Prote	Permi	Permi	Prote	Permi	Permi
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	10	30	0	10	30	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	34	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	15	0	0	15	0	0	15	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		no			no		no	no		no	no	
Maximum Recall		no			no		no	no		no	no	
Pedestrian Recall		no			no		no	no		no	no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00
g_i, Effective Green Time [s]	30	30	30	30	33	24	24	33	24
g / C, Green / Cycle	0.33	0.33	0.33	0.33	0.36	0.27	0.27	0.36	0.27
(v / s)_i Volume / Saturation Flow Rate	0.27	0.11	0.00	0.06	0.05	0.13	0.01	0.02	0.25
s, saturation flow rate [veh/h]	1170	1503	1121	1513	1034	1629	1411	1249	1465
c, Capacity [veh/h]	387	498	332	502	217	439	380	354	392
d1, Uniform Delay [s]	33.53	22.50	27.14	21.39	35.12	27.56	24.27	27.28	32.02
k, delay calibration	0.29	0.11	0.11	0.11	0.11	0.41	0.11	0.11	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.74	0.37	0.02	0.17	0.51	3.04	0.04	0.08	17.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.32	0.02	0.18	0.22	0.48	0.04	0.07	0.92
d, Delay for Lane Group [s/veh]	44.26	22.87	27.16	21.56	35.62	30.61	24.31	27.36	49.12
Lane Group LOS	D	C	C	C	D	C	C	C	D
Critical Lane Group	yes	no	no	no	yes	no	no	no	yes
50th-Percentile Queue Length [veh]	7.58	2.40	0.08	1.29	0.65	3.89	0.21	0.31	8.90
50th-Percentile Queue Length [ft]	189.61	60.02	2.02	32.36	16.14	97.37	5.30	7.74	222.51
95th-Percentile Queue Length [veh]	12.10	4.32	0.15	2.33	1.16	7.01	0.38	0.56	13.79
95th-Percentile Queue Length [ft]	302.52	108.04	3.64	58.26	29.06	175.2	9.54	13.94	344.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.26	22.87	22.87	27.16	21.56	21.56	35.62	30.61	24.31	27.36	49.12	49.12
Movement LOS	D	C	C	C	C	C	D	C	C	C	D	D
d_A, Approach Delay [s/veh]	37.07			21.85			31.17			47.76		
Approach LOS	D			C			C			D		
d_I, Intersection Delay [s/veh]	37.92											
Intersection LOS	D											
Intersection V/C	0.520											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
#9: 6th Street and Hwy 97

Control Type:	Two-way stop	Delay (sec / veh):	141.2
Analysis Method:	HCM2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.709

Intersection Setup

Name	Hwy 97			Hwy 97			6th Street			6th Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	300.0	100.0	100.0	300.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Speed [mph]	35.00			35.00			10.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	no			no			no			no		

Volumes

Name	Hwy 97			Hwy 97			6th Street			6th Street		
Base Volume Input [veh/h]	9	376	24	100	357	70	35	19	90	52	15	6
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	21.00	0.00	1.00	16.00	4.00	7.00	0.00	3.00	0.00	0.00	20.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	376	24	100	357	70	35	19	90	52	15	6
Peak Hour Factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	3	104	7	28	99	19	10	5	25	14	4	2
Total Analysis Volume [veh/h]	10	418	27	111	397	78	39	21	100	58	17	7
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			no	no
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			yes	yes
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.10	0.00	0.00	0.38	0.17	0.16	0.71	0.14	0.01
d_M, Delay for Movement [s/veh]	8.31	0.00	0.00	8.57	0.00	0.00	71.88	66.50	42.68	141.1	125.7	103.3
Movement LOS	A	A	A	A	A	A	F	F	E	F	F	F
95th-Percentile Queue Length [veh]	0.03	0.00	0.00	0.33	0.00	0.00	4.70	4.70	4.70	4.75	4.75	4.75
95th-Percentile Queue Length [ft]	0.69	0.00	0.00	8.23	0.00	0.00	117.4	117.4	117.4	118.7	118.7	118.7
d_A, Approach Delay [s/veh]	0.18			1.62			52.92			134.74		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	16.02											
Intersection LOS	F											

Vistro File: H:\...\Red Lot TPR Base.vistro
Report File: H:\...\2030total.pdf

Scenario 1: 1: 2030 Total
6/17/2015

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Spring River Road and Stellar Drive	Two-way stop	HCM2010	NBL	0.016	13.9	B
2	Spring River Road and Solar Drive	Two-way stop	HCM2010	NBL	0.023	17.6	C
3	Spring River Road and South Century Dr	Two-way stop	HCM2010	NBL	0.614	83.3	F
4	Abbott Drive and South Century Drive	Roundabout	HCM	SEBR		14.0	B
5	South Century Drive and Vanervert Road	Two-way stop	HCM2010	WBL	0.550	29.0	D
6	South Century Drive and Huntington Road	Two-way stop	HCM2010	EBL	0.426	17.8	C
7	Riverview Drive and Otter Drive	Two-way stop	HCM2010	SBT	0.000	10.4	B
8	Huntington Road and Burgess Road	Signalized	HCM2010	WBT	0.408	35.9	D
9	6th Street and Hwy 97	Two-way stop	HCM2010	SEBL	1.004	236.8	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value; for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
#1: Spring River Road and Stellar Drive

Control Type:	Two-way stop	Delay (sec / veh):	13.9
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.016

Intersection Setup

Name						
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	no		no		no	

Volumes

Name						
Base Volume Input [veh/h]	6	99	62	13	183	51
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	20.00	0.00	8.00	3.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	99	62	13	183	51
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	28	17	4	51	14
Total Analysis Volume [veh/h]	7	110	69	14	203	57
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	no		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	no		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.11	0.00	0.00	0.14	0.00
d_M, Delay for Movement [s/veh]	13.85	9.23	0.00	0.00	7.83	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.44	0.44	0.00	0.00	0.64	0.64
95th-Percentile Queue Length [ft]	10.94	10.94	0.00	0.00	15.96	15.96
d_A, Approach Delay [s/veh]	9.51		0.00		6.11	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	5.87					
Intersection LOS	B					

Intersection Level Of Service Report
#2: Spring River Road and Solar Drive

Control Type:	Two-way stop	Delay (sec / veh):	17.6
Analysis Method:	HCM2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.023

Intersection Setup

Name						
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	no		no		no	

Volumes

Name						
Base Volume Input [veh/h]	6	112	150	11	161	227
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	8.00	12.00	0.00	3.00	3.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	112	150	11	161	227
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	31	42	3	45	63
Total Analysis Volume [veh/h]	7	124	167	12	179	252
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	no		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	no		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.14	0.00	0.00	0.13	0.00
d_M, Delay for Movement [s/veh]	17.63	10.14	0.00	0.00	7.97	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.60	0.60	0.00	0.00	1.33	1.33
95th-Percentile Queue Length [ft]	15.01	15.01	0.00	0.00	33.31	33.31
d_A, Approach Delay [s/veh]	10.54		0.00		3.31	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	3.79					
Intersection LOS	C					

Intersection Level Of Service Report
#3: Spring River Road and South Century Dr

Control Type:	Two-way stop	Delay (sec / veh):	83.3
Analysis Method:	HCM2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.614

Intersection Setup

Name						
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	1	0
Pocket Length [ft]	125.00	100.00	100.00	100.00	150.00	100.00
Speed [mph]	50.00		45.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	no		no		no	

Volumes

Name						
Base Volume Input [veh/h]	59	229	251	60	332	368
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	4.00	8.00	0.00	2.00	6.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	229	251	60	332	368
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	62	68	16	90	100
Total Analysis Volume [veh/h]	64	249	273	65	361	400
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	no		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.61	0.34	0.00	0.00	0.30	0.00
d_M, Delay for Movement [s/veh]	83.31	12.47	0.00	0.00	9.18	0.00
Movement LOS	F	B	A	A	A	A
95th-Percentile Queue Length [veh]	2.99	1.52	0.00	0.00	1.24	0.00
95th-Percentile Queue Length [ft]	74.75	37.90	0.00	0.00	31.12	0.00
d_A, Approach Delay [s/veh]	26.95		0.00		4.35	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	8.32					
Intersection LOS	F					

Intersection Level Of Service Report
#4: Abbott Drive and South Century Drive

Control Type:	Roundabout	Delay (sec / veh):	14.0
Analysis Method:	HCM	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name						
Approach	Westbound		Northeastbound		Southeastbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	yes		yes		yes	

Volumes

Name						
Base Volume Input [veh/h]	350	104	247	280	155	313
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	13.00	5.00	0.00	7.00	5.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	350	104	247	280	155	313
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	91	27	64	73	40	82
Total Analysis Volume [veh/h]	365	108	257	292	161	326
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Number of Conflicting Circulating Lanes	1		1		1	
Circulating Flow Rate [veh/h]	270		172		372	
Exiting Flow Rate [veh/h]	270		172		372	
Demand Flow Rate [veh/h]	350	104	247	280	155	313
Adjusted Demand Flow Rate [veh/h]	365	108	257	292	161	326

Lanes

Overwrite Calculated Critical Headway	no	no	no
User-Defined Critical Headway [s]	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	no	no	no
User-Defined Follow-Up Time [s]	3.00	3.00	3.00
A (intercept)	1130.00	1130.00	1130.00
B (coefficient)	0.00100	0.00100	0.00100
HV Adjustment Factor	0.96	0.98	0.95
Entry Flow Rate [veh/h]	494	562	515
Capacity of Entry and Bypass Lanes [veh/h]	863	952	779
Pedestrian Impedance	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	827	930	738
X, volume / capacity	0.57	0.59	0.66

Movement, Approach, & Intersection Results

Lane LOS	B	B	C
95th-Percentile Queue Length [veh]	3.70	3.99	5.03
95th-Percentile Queue Length [ft]	92.49	99.73	125.81
Approach Delay [s/veh]	12.86	12.24	17.17
Approach LOS	B	B	C
Intersection Delay [s/veh]	14.03		
Intersection LOS	B		

Intersection Level Of Service Report
#5: South Century Drive and Vanervert Road

Control Type:	Two-way stop	Delay (sec / veh):	29.0
Analysis Method:	HCM2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.550

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Speed [mph]	50.00			50.00			30.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	no			no			no			no		

Volumes

Name												
Base Volume Input [veh/h]	0	204	64	33	332	0	0	4	1	173	1	35
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	2.00	11.00	8.00	3.00	0.00	2.00	2.00	2.00	4.00	2.00	4.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	204	64	33	332	0	0	4	1	173	1	35
Peak Hour Factor	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	55	17	9	90	0	0	1	0	47	0	10
Total Analysis Volume [veh/h]	0	222	70	36	361	0	0	4	1	188	1	38
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			no	no
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			no	no
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.01	0.00	0.55	0.00	0.05
d_M, Delay for Movement [s/veh]	7.98	0.00	0.00	8.00	0.00	0.00	16.32	15.76	10.39	28.96	28.58	23.06
Movement LOS	A	A	A	A	A	A	C	C	B	D	D	C
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	1.40	1.40	1.40	0.04	0.04	0.04	3.78	3.78	3.78
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	35.02	35.02	35.02	1.01	1.01	1.01	94.40	94.40	94.40
d_A, Approach Delay [s/veh]	0.00			0.73			14.69			27.97		
Approach LOS	A			A			B			D		
d_I, Intersection Delay [s/veh]	7.29											
Intersection LOS	D											

Intersection Level Of Service Report
#6: South Century Drive and Huntington Road

Control Type:	Two-way stop	Delay (sec / veh):	17.8
Analysis Method:	HCM2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.426

Intersection Setup

Name	South Century Drive		South Century Drive		Huntington Road	
Approach	Southbound		Eastbound		Northeastbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		30.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	no		no		no	

Volumes

Name	South Century Drive		South Century Drive		Huntington Road	
Base Volume Input [veh/h]	113	393	203	28	29	64
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.00	10.00	10.00	10.00	10.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	113	393	203	28	29	64
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	107	55	8	8	17
Total Analysis Volume [veh/h]	123	427	221	30	32	70
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Stop	Free
Flared Lane		no	
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		no	
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.43	0.04	0.03	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	17.75	16.05	8.79	0.00
Movement LOS	A	A	C	C	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	2.48	2.48	0.35	0.35
95th-Percentile Queue Length [ft]	0.00	0.00	62.03	62.03	8.68	8.68
d_A, Approach Delay [s/veh]	0.00		17.55		2.76	
Approach LOS	A		C		A	
d_I, Intersection Delay [s/veh]	5.19					
Intersection LOS	C					

Intersection Level Of Service Report
#7: Riverview Drive and Otter Drive

Control Type:	Two-way stop	Delay (sec / veh):	10.4
Analysis Method:	HCM2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name				Otter Drive			Riverview Drive			Riverview Drive		
Approach	Northbound			Southbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Speed [mph]	10.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	no			no			no			no		

Volumes

Name				Otter Drive			Riverview Drive			Riverview Drive		
Base Volume Input [veh/h]	1	0	1	23	0	16	1	57	31	22	50	1
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	11.00	2.00	8.00	2.00	28.00	4.00	12.00	6.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	1	23	0	16	1	57	31	22	50	1
Peak Hour Factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	6	0	4	0	16	9	6	14	0
Total Analysis Volume [veh/h]	1	0	1	26	0	18	1	63	34	24	56	1
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	no	no		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	no	no		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.03	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	9.88	10.30	8.57	10.09	10.43	8.98	7.33	0.00	0.00	7.55	0.00	0.00
Movement LOS	A	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.01	0.01	0.01	0.17	0.17	0.17	0.20	0.20	0.20	0.18	0.18	0.18
95th-Percentile Queue Length [ft]	0.18	0.18	0.18	4.25	4.25	4.25	5.07	5.07	5.07	4.48	4.48	4.48
d_A, Approach Delay [s/veh]	9.23			9.64			0.07			2.24		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	2.81											
Intersection LOS	B											

Intersection Level Of Service Report
#8: Huntington Road and Burgess Road

Control Type:	Signalized	Delay (sec / veh):	35.9
Analysis Method:	HCM2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.408

Intersection Setup

Name	Huntington Road			Huntington Road			Burgess Road			Burgess Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.0	100.0	100.0	80.00	100.0	100.0	90.00	100.0	90.00	130.0	100.0	100.0
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	yes			yes			yes			yes		

Volumes

Name	Huntington Road			Huntington Road			Burgess Road			Burgess Road		
Base Volume Input [veh/h]	297	73	80	6	60	27	22	104	232	47	195	14
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	4.00	0.00	0.00	7.00	0.00	12.00	5.00	3.00	0.00	4.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	297	73	80	6	60	27	22	104	232	47	195	14
Peak Hour Factor	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	80	20	22	2	16	7	6	28	62	13	52	4
Total Analysis Volume [veh/h]	319	78	86	6	65	29	24	112	249	51	210	15
Presence of On-Street Parking	no		no	no		no	no		no	no		no
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Bicycle Volume [bicycles/h]	0	0	0	0

Intersection Settings

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Prote	Permi	Permi	Prote	Permi	Permi
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	0	8	0	0	8	0	6	10	0	6	10	0
Maximum Green [s]	0	30	0	0	30	0	10	30	0	10	30	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	3.0	0.0	2.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	15	0	0	15	0	0	15	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		no			no		no	yes		no	yes	
Maximum Recall		no			no		no	no		no	no	
Pedestrian Recall		no			no		no	no		no	no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00
g_i, Effective Green Time [s]	30	30	30	30	26	17	17	26	13
g / C, Green / Cycle	0.33	0.33	0.33	0.33	0.29	0.18	0.18	0.29	0.15
(v / s)_i Volume / Saturation Flow Rate	0.25	0.10	0.00	0.06	0.02	0.06	0.16	0.03	0.12
s, saturation flow rate [veh/h]	1297	1672	1241	1684	1366	1810	1568	1524	1806
c, Capacity [veh/h]	415	548	359	552	304	333	288	379	269
d1, Uniform Delay [s]	32.82	22.53	27.20	21.52	31.68	31.95	35.63	29.13	37.25
k, delay calibration	0.20	0.04	0.04	0.04	0.11	0.04	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.40	0.11	0.01	0.05	0.11	0.22	7.60	0.16	6.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.30	0.02	0.17	0.08	0.34	0.86	0.13	0.84
d, Delay for Lane Group [s/veh]	38.22	22.64	27.21	21.58	31.79	32.17	43.23	29.29	44.09
Lane Group LOS	D	C	C	C	C	C	D	C	D
Critical Lane Group	yes	no	no	no	no	no	yes	yes	no
50th-Percentile Queue Length [veh]	6.96	2.42	0.10	1.33	0.36	2.03	5.59	0.76	5.06
50th-Percentile Queue Length [ft]	173.92	60.58	2.40	33.14	8.91	50.76	139.8	19.11	126.59
95th-Percentile Queue Length [veh]	11.28	4.36	0.17	2.39	0.64	3.66	9.47	1.38	8.75
95th-Percentile Queue Length [ft]	282.06	109.04	4.32	59.65	16.04	91.38	236.7	34.40	218.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.22	22.64	22.64	27.21	21.58	21.58	31.79	32.17	43.23	29.29	44.09	44.09
Movement LOS	D	C	C	C	C	C	C	C	D	C	D	D
d_A, Approach Delay [s/veh]	32.93			21.91			39.30			41.35		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	35.88											
Intersection LOS	D											
Intersection V/C	0.408											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
#9: 6th Street and Hwy 97

Control Type:	Two-way stop	Delay (sec / veh):	236.8
Analysis Method:	HCM2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.004

Intersection Setup

Name	Hwy 97			Hwy 97			6th Street			6th Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	300.0	100.0	100.0	300.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Speed [mph]	35.00			35.00			10.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	no			no			no			no		

Volumes

Name	Hwy 97			Hwy 97			6th Street			6th Street		
Base Volume Input [veh/h]	13	376	24	100	359	101	35	19	90	70	15	8
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	21.00	0.00	1.00	16.00	4.00	7.00	0.00	3.00	0.00	0.00	20.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	376	24	100	359	101	35	19	90	70	15	8
Peak Hour Factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	4	104	7	28	100	28	10	5	25	19	4	2
Total Analysis Volume [veh/h]	14	418	27	111	399	112	39	21	100	78	17	9
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

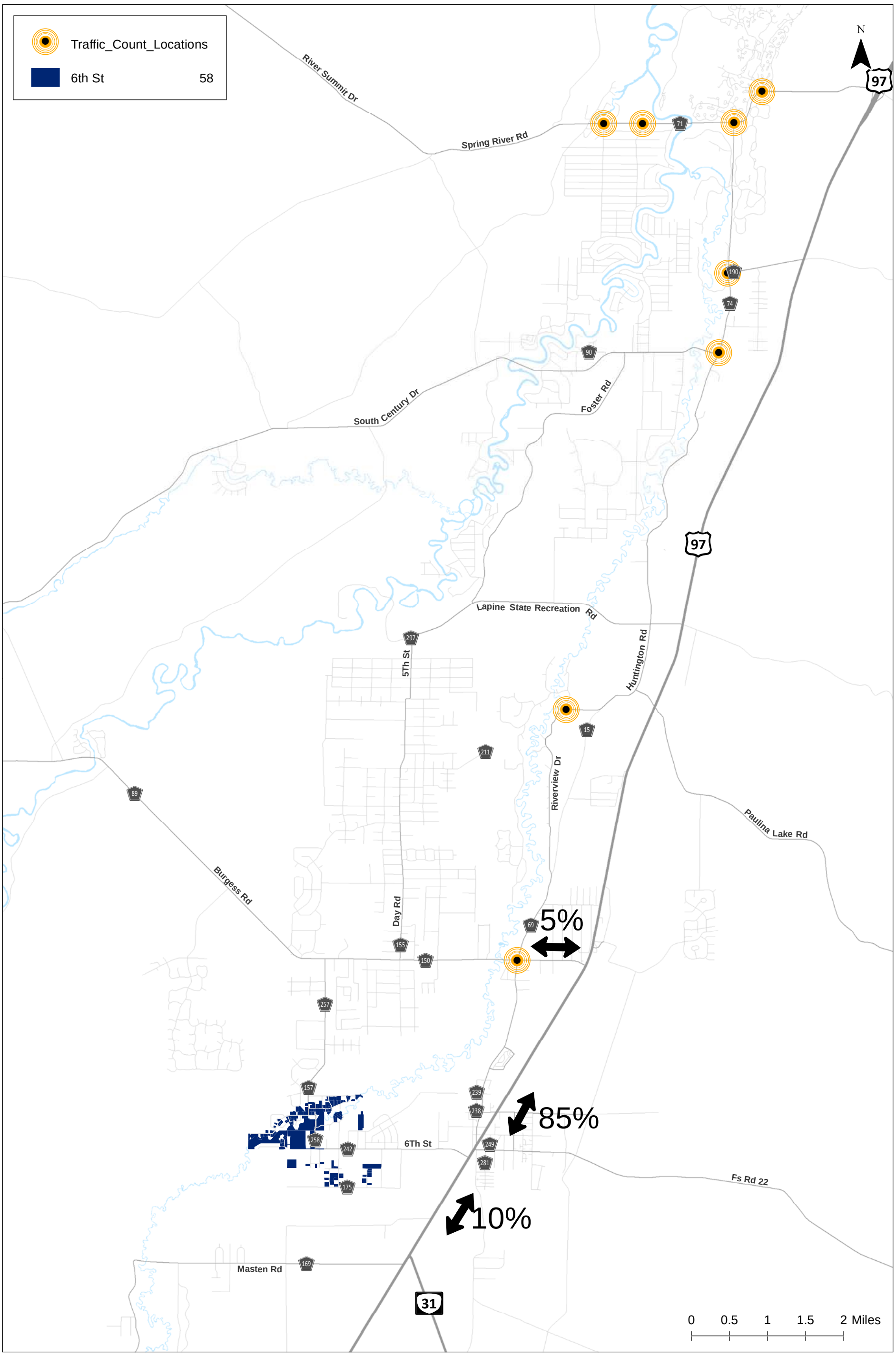
Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			no	no
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			yes	yes
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.10	0.00	0.00	0.40	0.18	0.16	1.00	0.14	0.02
d_M, Delay for Movement [s/veh]	8.43	0.00	0.00	8.57	0.00	0.00	79.02	73.64	47.86	236.8	220.2	196.7
Movement LOS	A	A	A	A	A	A	F	F	E	F	F	F
95th-Percentile Queue Length [veh]	0.04	0.00	0.00	0.33	0.00	0.00	5.05	5.05	5.05	7.21	7.21	7.21
95th-Percentile Queue Length [ft]	1.00	0.00	0.00	8.23	0.00	0.00	126.2	126.2	126.2	180.2	180.2	180.2
d_A, Approach Delay [s/veh]	0.26			1.53			58.84			230.65		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	25.63											
Intersection LOS	F											

Appendix C
Estimated Trip Distribution Patterns



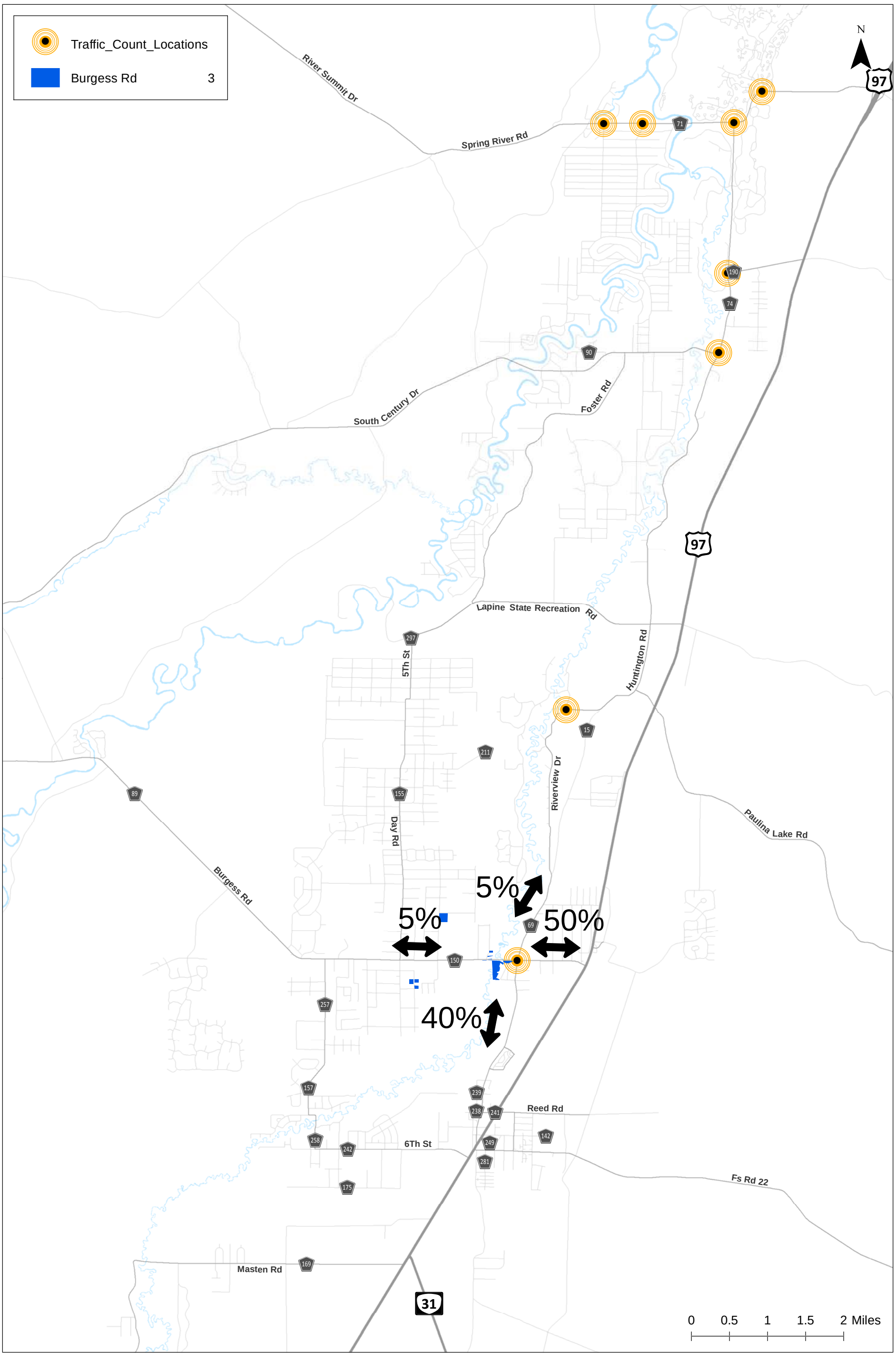
6th Street Trip Distribution
South Deschutes County, Oregon

Figure
C-1

H:\projfile\19028 - South County Red Lot TPR Analysis\gis\C1_6th_TripDist.mxd - jsommerville - 2:36 PM 6/17/2015

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

Coordinate System: NAD 1983 StatePlane Oregon South FIPS 3602 Feet Intl
Data Source: Delete if there isn't one.



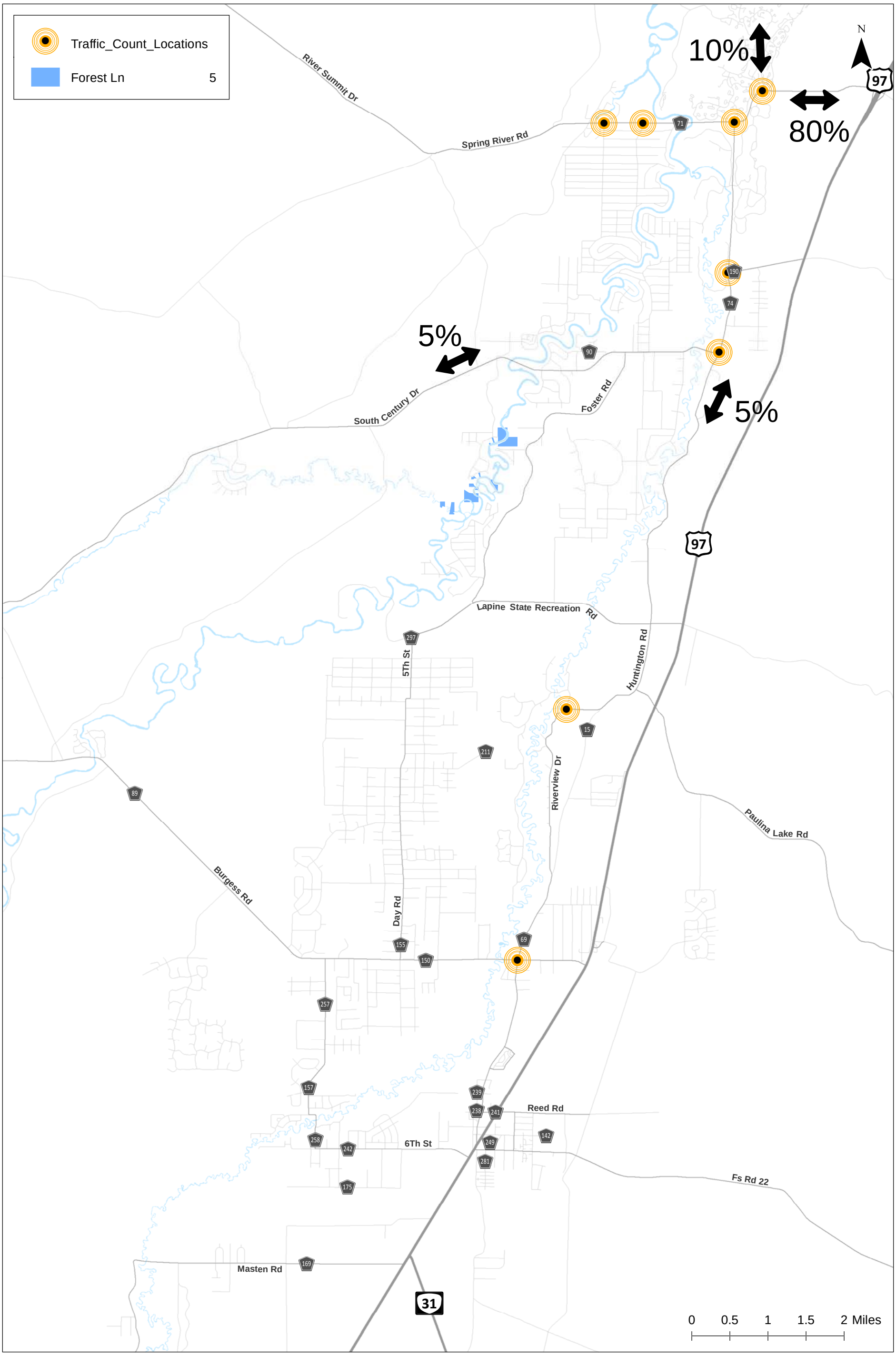
Burgess Road Trip Distribution
South Deschutes County, Oregon

Figure
C-2

H:\profile\19028 - South County Red Lot TPR Analysis\gis\C2_Burgess_TripDist.mxd - jsommerville - 2:36 PM 6/17/2015

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

Coordinate System: NAD 1983 StatePlane Oregon South FIPS 3602 Feet Intl
Data Source: Delete if there isn't one.



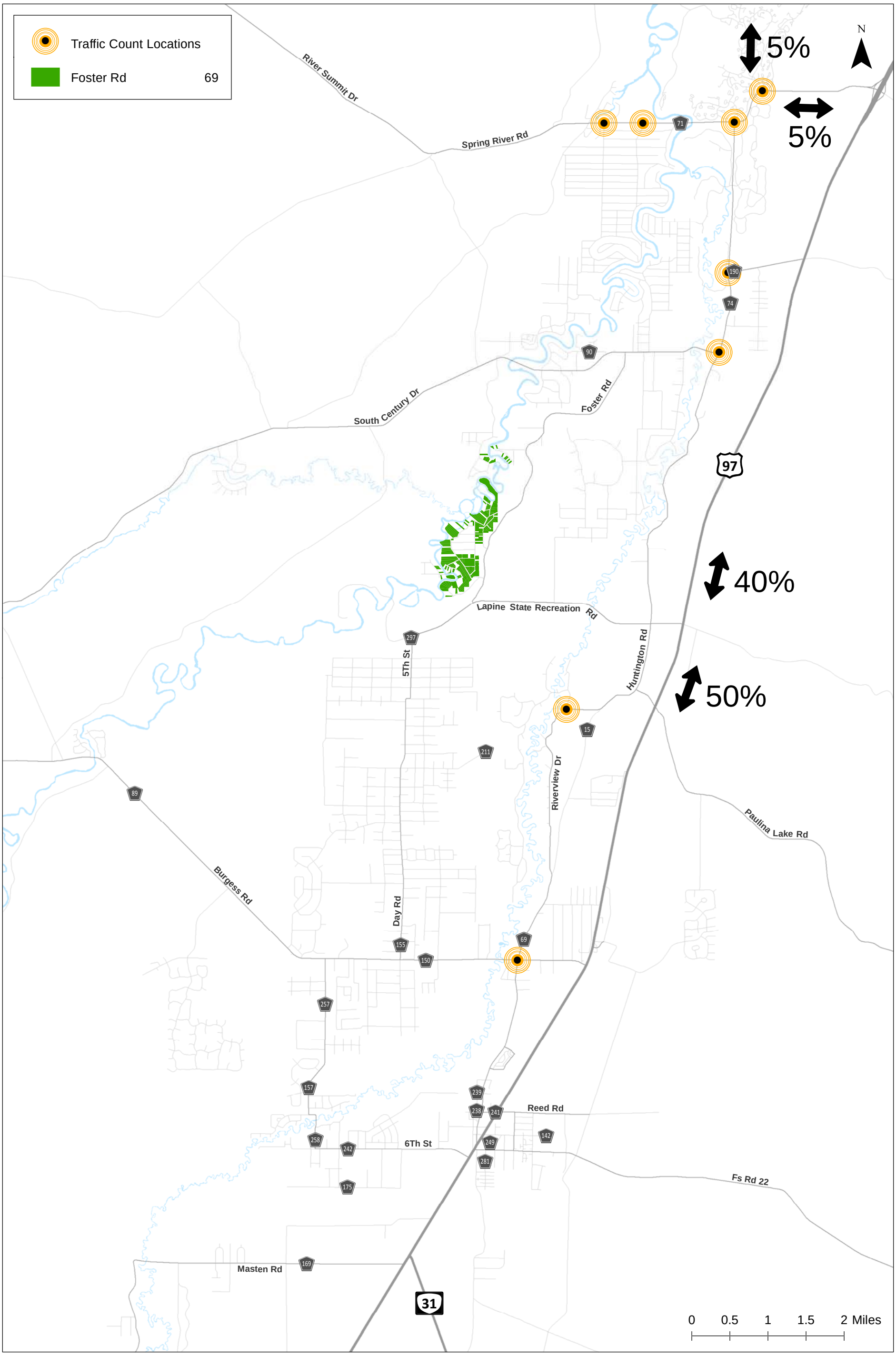
Forest Lane Trip Distribution
South Deschutes County, Oregon

Figure
C-3

H:\profile\19028 - South County Red Lot TPR Analysis\gis\C3_Forest_TripDist.mxd - jsommerville - 2:37 PM 6/17/2015

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

Coordinate System: NAD 1983 StatePlane Oregon South FIPS 3602 Feet Intl
Data Source: Delete if there isn't one.



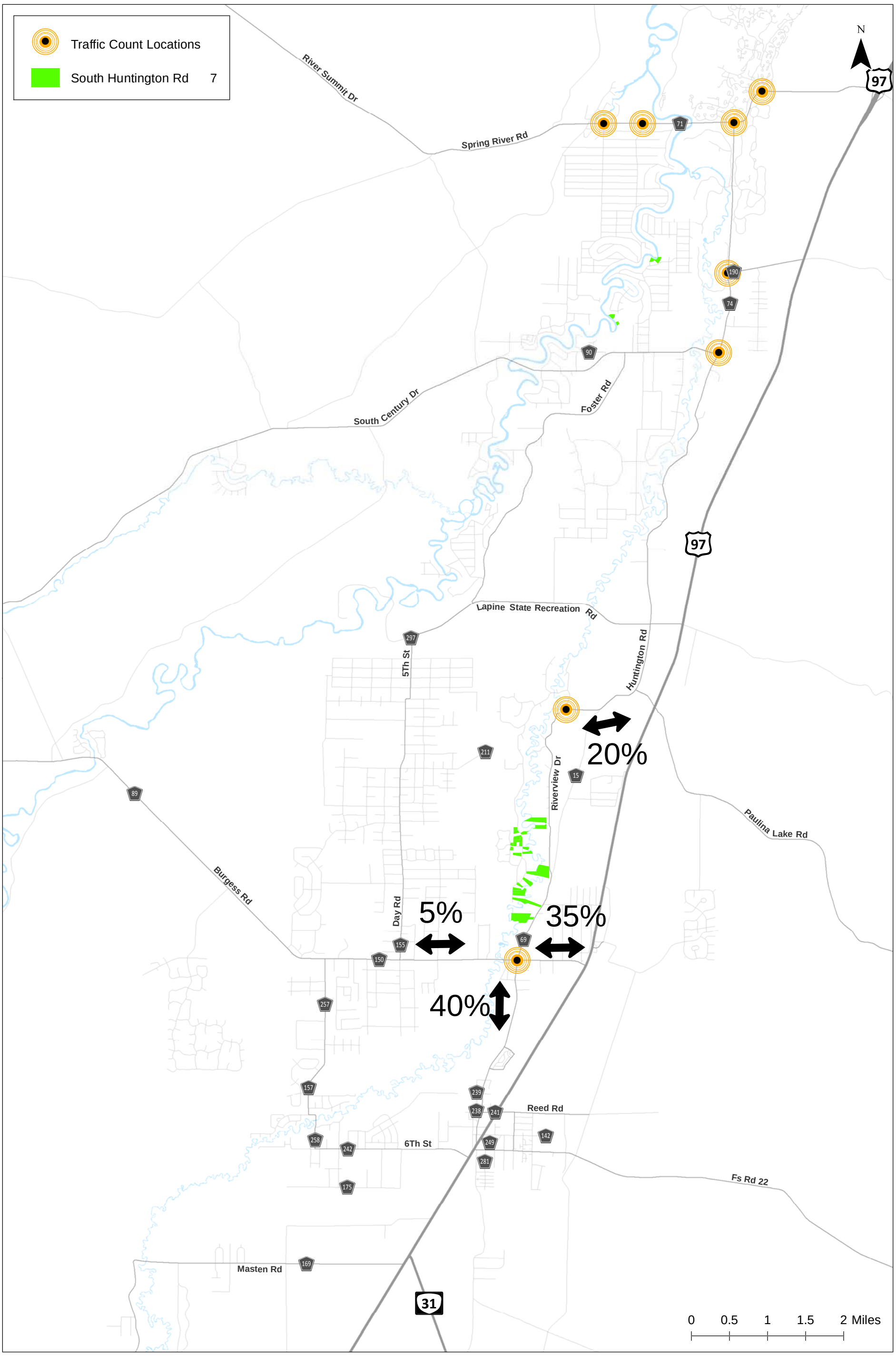
Foster Road Trip Distribution
South Deschutes County, Oregon

Figure
C-4

H:\profile\19028 - South County Red Lot TPR Analysis\gis\C4_Foster_TripDist.mxd - jsommerville - 2:37 PM 6/17/2015

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

Coordinate System: NAD 1983 StatePlane Oregon South FIPS 3602 Feet Intl
Data Source: Delete if there isn't one.



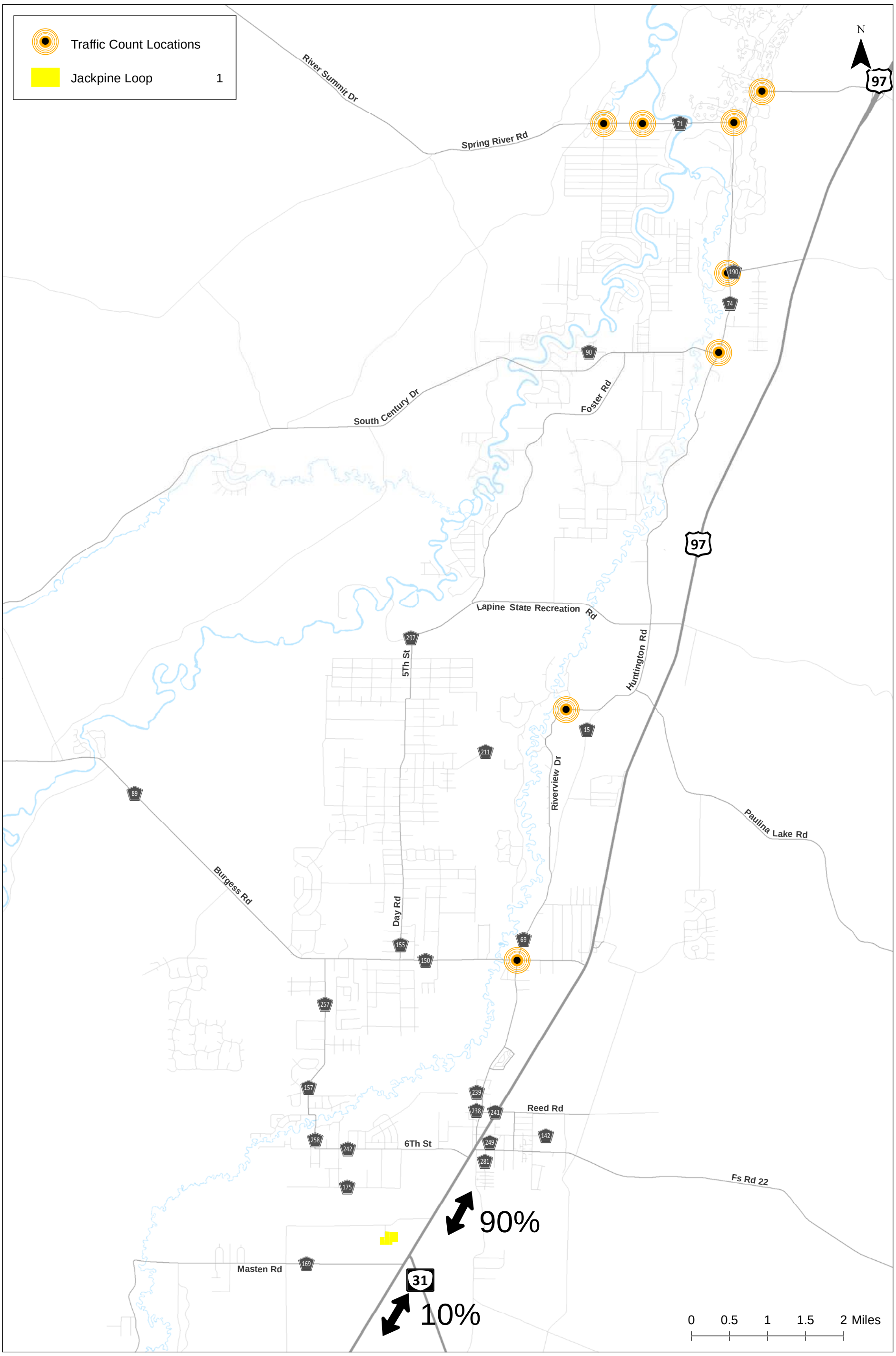
South Huntington Road Trip Distribution
South Deschutes County, Oregon

Figure
C-5

H:\projfile\19028 - South County Red Lot TPR Analysis\gis\C5_SouthHunt_TripDist.mxd - jsommerville - 2:37 PM 6/17/2015

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

Coordinate System: NAD 1983 StatePlane Oregon South FIPS 3602 Feet Intl
Data Source: Delete if there isn't one.



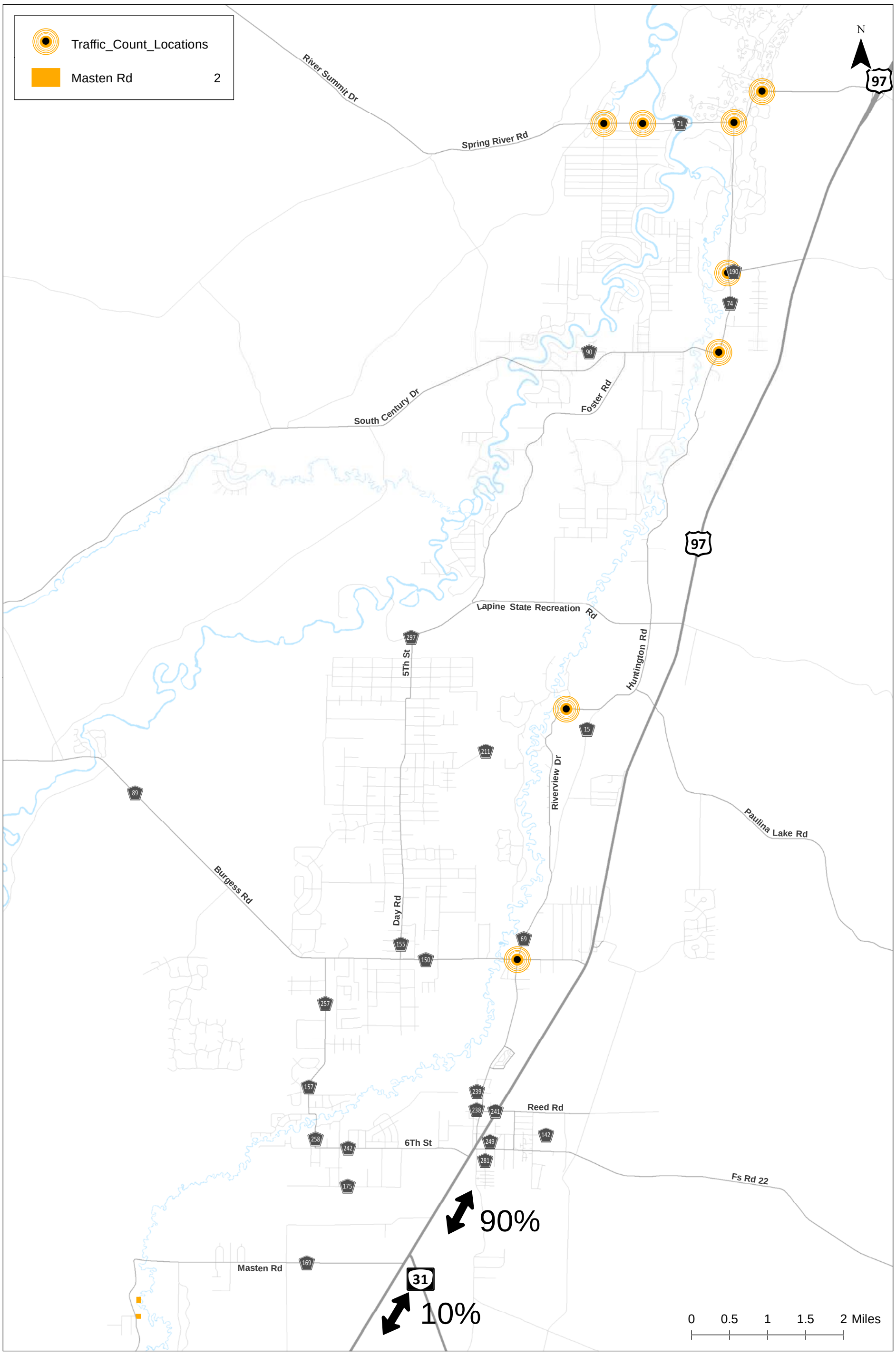
Jackpine Loop Trip Distribution
South Deschutes County, Oregon

Figure
C-6

H:\projfile\19028 - South County Red Lot TPR Analysis\gis\C6_Jackpine_TripDist.mxd - jsommerville - 2:37 PM 6/17/2015

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

Coordinate System: NAD 1983 StatePlane Oregon South FIPS 3602 Feet Intl
Data Source: Delete if there isn't one.



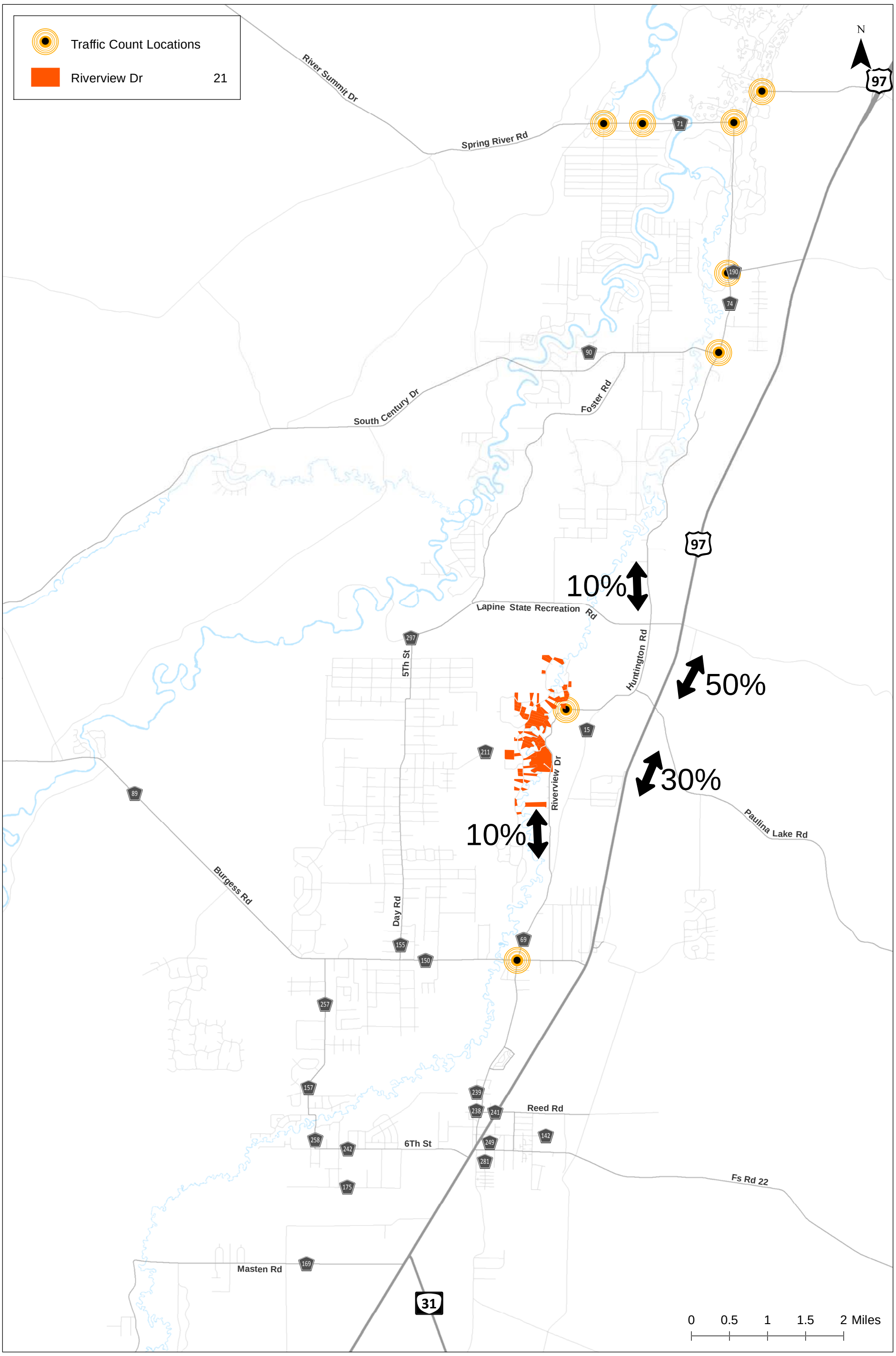
Masten Road Trip Distribution
South Deschutes County, Oregon

Figure
C-7

H:\projfile\19028 - South County Red Lot TPR Analysis\gis\C7_Masten_TripDist.mxd - jsommerville - 2:37 PM 6/17/2015

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

Coordinate System: NAD 1983 StatePlane Oregon South FIPS 3602 Feet Intl
Data Source: Delete if there isn't one.



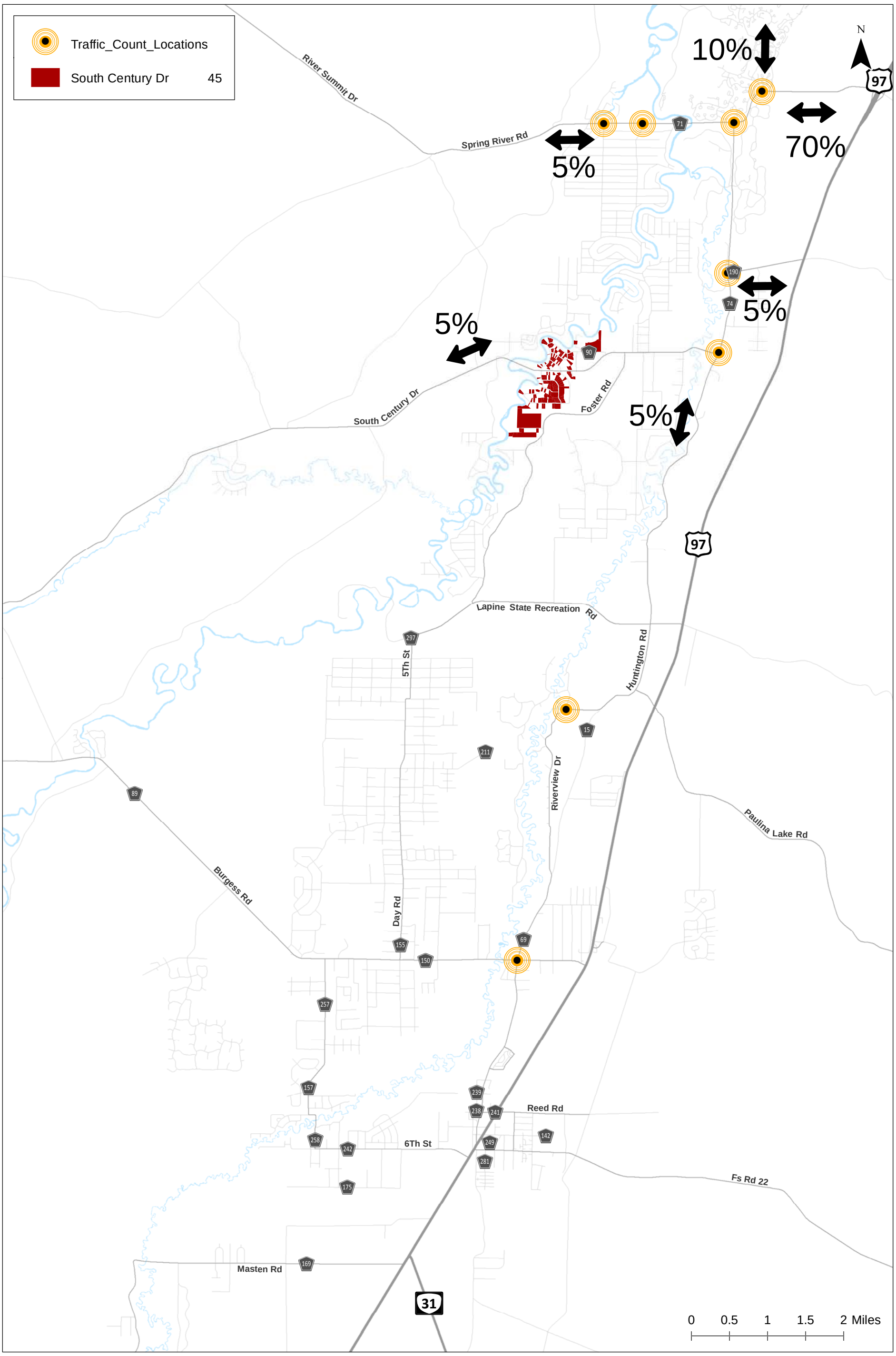
Riverview Drive Trip Distribution
South Deschutes County, Oregon

Figure
C-8

H:\projfile\19028 - South County Red Lot TPR Analysis\gis\C8_Riverview_TripDist.mxd - jsommerville - 2:37 PM 6/17/2015

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

Coordinate System: NAD 1983 StatePlane Oregon South FIPS 3602 Feet Intl
Data Source: Delete if there isn't one.



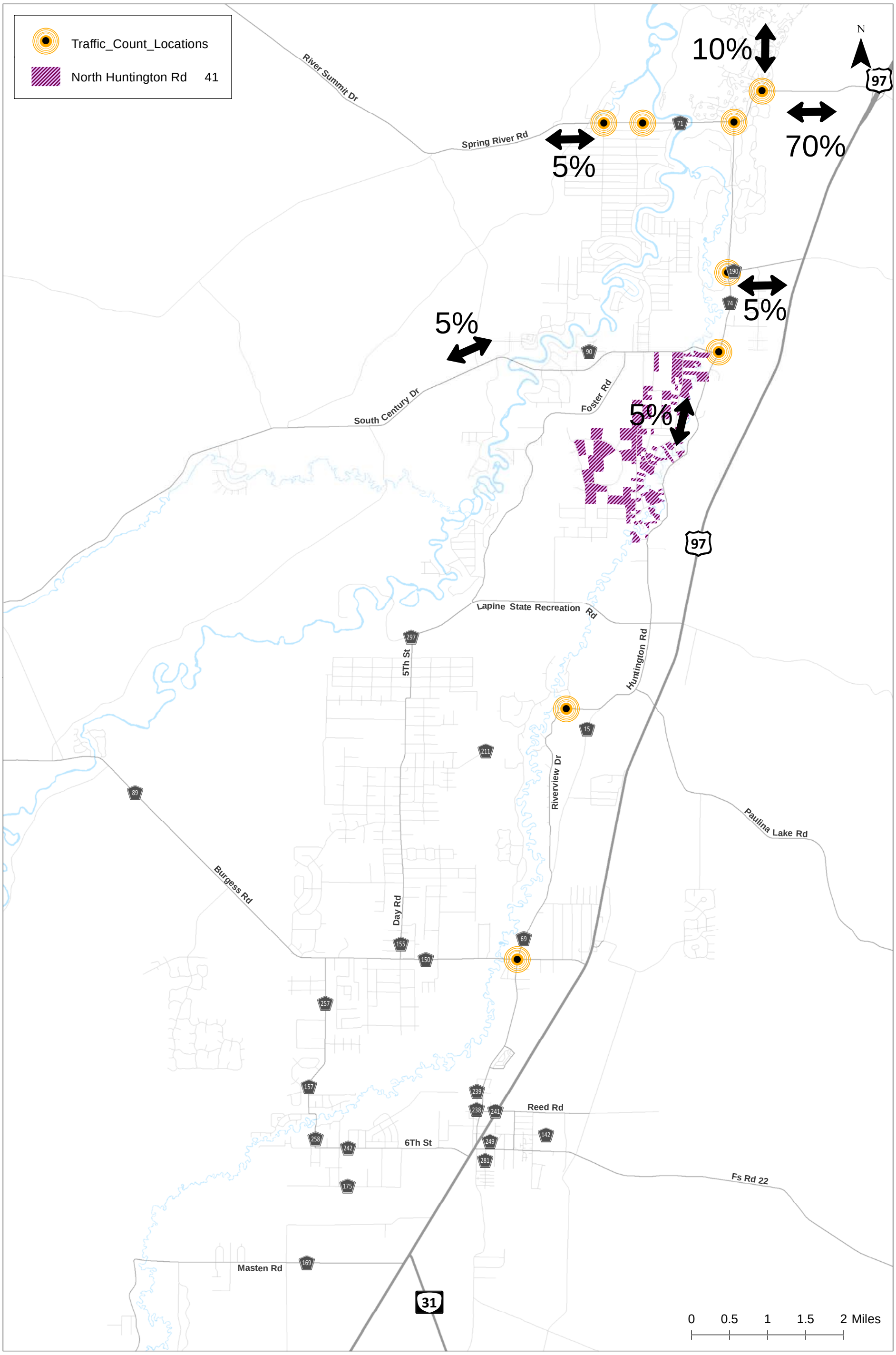
South Century Drive Trip Distribution
South Deschutes County, Oregon

Figure
C-9

H:\profile\19028 - South County Red Lot TPR Analysis\gis\C9_SouthCent_TripDist.mxd - jsommerville - 2:37 PM 6/17/2015

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

Coordinate System: NAD 1983 StatePlane Oregon South FIPS 3602 Feet Intl
Data Source: Delete if there isn't one.



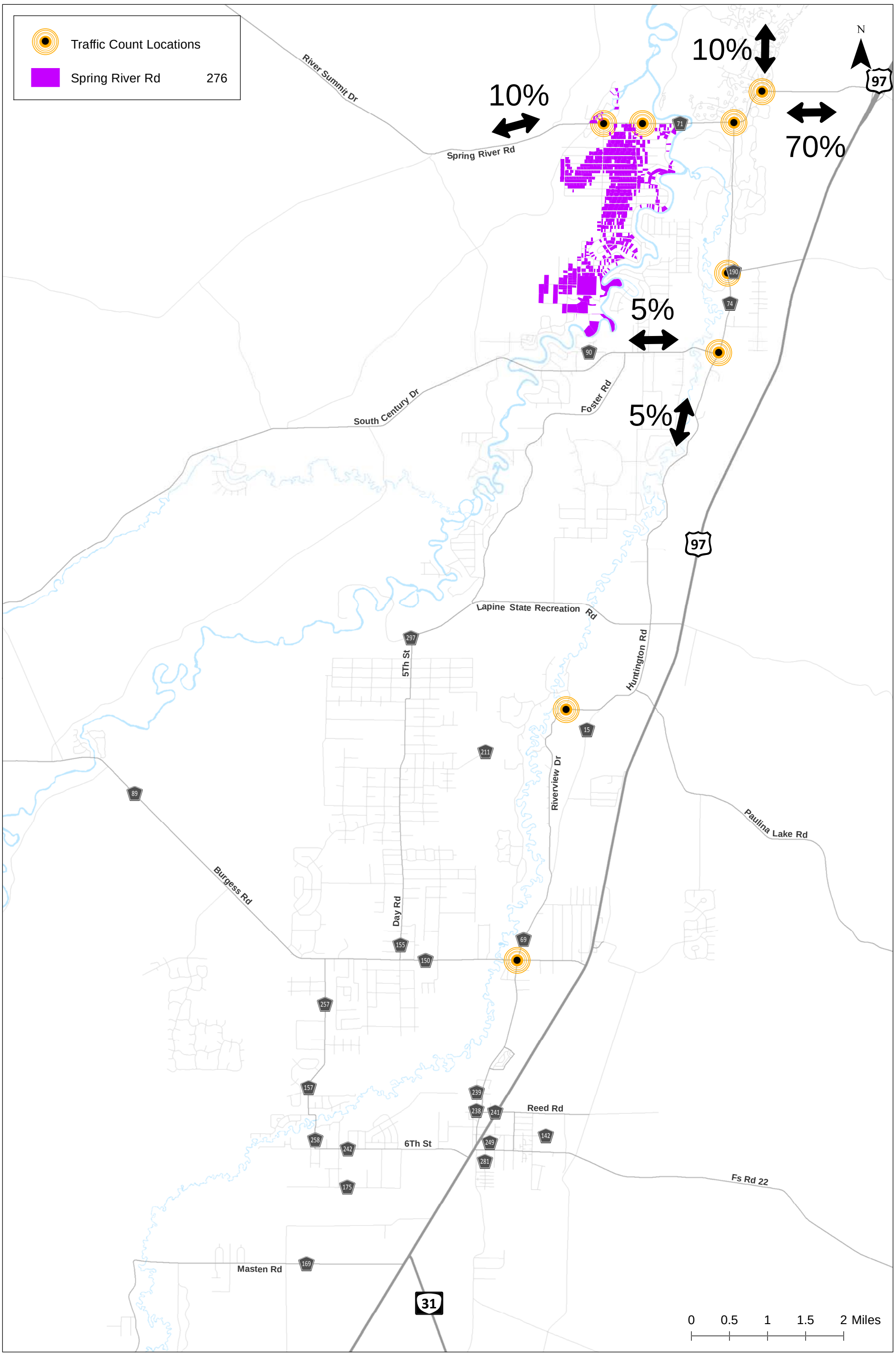
North Huntington Road Trip Distribution
South Deschutes County, Oregon

Figure
C-10

H:\profile\19028 - South County Red Lot TPR Analysis\gis\C10_NorthHunt_TripDist.mxd - jsommerville - 2:36 PM 6/17/2015

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

Coordinate System: NAD 1983 StatePlane Oregon South FIPS 3602 Feet Intl
Data Source: Delete if there isn't one.



Spring River Road Trip Distribution
South Deschutes County, Oregon

Figure
C-11

H:\projfile\19028 - South County Red Lot TPR Analysis\gis\C11_Spring_TripDist.mxd - jsommerville - 2:36 PM 6/17/2015

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

Coordinate System: NAD 1983 StatePlane Oregon South FIPS 3602 Feet Intl
Data Source: Delete if there isn't one.