MEMORANDUM

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DATE: September 2, 2020

TO: Newport TSP Project Management Team

FROM: Carl Springer, DKS
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SUBJECT: Newport Transportation System Plan Update
Technical Memo 5 – Existing Conditions

This memorandum provides a summary of the existing transportation conditions in Newport. Included is a summary of how the existing transportation system is operating for pedestrians, bicyclists, transit riders, and motor vehicles. The analysis focuses on areas of Newport within the Urban Growth Boundary (UGB) and north of the Yaquina Bay Bridge, including detailed analysis for the pedestrian, bicycle, transit, and motor vehicle system. The following intersections were analyzed:

1. US 101/NE 73rd Street
2. US 101/NE 52nd Street/NW Lighthouse Drive
3. US 101/NW Oceanview Drive
4. US 101/NE 36th Street
5. US 101/NE 31st Street
6. US 101/NE 20th Street
7. US 101/NE 11th Street
8. US 101/NE 6th Street
9. US 101/US 20
10. US 101/SW Angle Street
11. US 101/SW Hurbert Street
12. US 101/SW Bayley Street
13. US 20/SE Benton Street
14. US 20/SE Moore Drive
15. NW Oceanview Drive/NW 25th Street
16. NW 11th Street/NW Nye Street
17. NE Harney Street/NE 7th Street
18. SW Hurbert Street/SW 9th Street
19. SW Abbey Street/SW 9th Street
20. SE Bay Boulevard/Se Moore Drive

The entire Newport UGB (including the area to the south of the Yaquina Bay Bridge) was analyzed as part of the 2012 Newport TSP update with a special emphasis on the South Beach area of Newport. That analysis will be reviewed and incorporated as appropriate as part of the current TSP update.

Methods

This section describes the methods used to complete each portion of the existing conditions analysis and is consistent with the Newport Methodology and Assumptions Memorandum.

Safety

Safety analysis is covered in Chapter 4 of the ODOT Analysis and Procedures Manual (APM)[1] and includes the following components and their corresponding data sources:

Study Intersections

Raw crash data was provided by ODOT from 2013 to 2017 (the five most-recent years of complete crash data) for the Newport UGB. This data was processed to identify crashes occurring at study intersections and used to calculate:

- Critical crash rates (APM Section 4.3.4)
- Excess proportion of crash types (APM Section 4.3.5)

Roadway Segments

ODOT publishes two data sets which summarize crash rates on state highway roadway segments which were used for this analysis:

- State highway crash rate tables[2]
- Safety Priority Index System (SPIS) sites (APM Section 4.3.1)[3]

The raw crash data provided by ODOT was also used to summarize crash trends throughout Newport over the five-year analysis period.

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[1] ODOT. *Analysis and Procedures Manual, V. 2, Ch. 4 Safety*. November, 2018.

[2] ODOT. *Crash Statistics & Reports.* https://www.oregon.gov/ODOT/Data/Pages/Crash.aspx. Accessed August 20, 2019.

[3] ODOT. *Safety Priority Index System Reports for On-State Highways.* https://www.oregon.gov/ODOT/Engineering/Pages/SPIS-Reports-On-State.aspx. Accessed August 20, 2019.

Level of Traffic Stress (LTS)

Multimodal analysis, including pedestrian and bicycle LTS, is covered in Chapter 14 of the APM[4]. Pedestrian and bicycle LTS evaluations provide a quantitative metric to understand a multimodal user's perception of the safety and comfort of the transportation network. This method can be used to understand key gaps and barriers to walking and bicycling which can then be addressed through targeted improvements. Segment analysis was completed for both pedestrians (APM Section 14.5.4) and bicyclists (APM Section 14.4.4) on all arterial and collector roadways within the Newport UGB. Intersection analysis was completed for all study intersections (Pedestrians, APM Section 14.5.9; Bicyclists, APM Section 14.4.5 and 14.4.6). The LTS evaluation generates a ranking between 1 and 4 of the relative safety and comfort of a segment or intersection for bicyclists or pedestrians based on roadway and intersection characteristics (*e.g.* number of lanes, travel speed and volume, intersection control, and the presence of any bicycle or pedestrian facilities). The LTS rating scale recognizes that as vehicle speeds and volumes increase, enhanced pedestrian and bicycle facilities are needed to maintain a system that is accessible for all users. ODOT uses the following definitions to define the LTS rankings[4]:

- Low Stress (LTS 1) – represents little traffic stress and requires less attention, so is suitable for all cyclists or pedestrians. Traffic speeds are low and there is no more than one lane in each direction. Intersections are easily crossed by children and adults. Typical locations include residential local streets, separated bike paths/cycle tracks, and sidewalks/shared use paths with a buffer between vehicles and cyclists or pedestrians.
- Moderate Stress (LTS 2) – represents little traffic stress, but requires more attention than young children would be expected to deal with, so is suitable for teen and adult cyclists or pedestrians with adequate bike handling skills. Traffic speeds are slightly higher but speed differentials are still low and roadways can be up to three lanes wide for both directions. Intersections are not difficult to cross for most teenagers and adults. Typical locations include collector-level streets with bike lanes or a central business district. Sidewalks should generally be in good condition with limited impediments for mobility device users.
- High Stress (LTS 3) – represents moderate stress and is suitable for most observant adult cyclists or pedestrians. Traffic speeds are moderate but can be on roadways up to five lanes wide in both directions, and there can be limited buffers between travel lanes and the

[4] ODOT. *Analysis and Procedures Manual, V. 2, Ch. 14 Multimodal Analysis*. November, 2018.

sidewalk. Intersections are still perceived to be safe by most adults. Typical locations include low-speed arterials with bike lanes or moderate speed non-multilane roadways. Select segments of these roadways may be impassable to pedestrians who require a mobility device.

- Extreme Stress (LTS 4) – represents high stress and suitable for experienced and skilled cyclists or able-bodied adult pedestrians. Traffic speeds are moderate to high and can be on roadways from two to over five lanes wide for both directions with limited or no pedestrian facilities. Intersections can be complex, wide, and or high volume/speed that can be perceived as unsafe by adults and are difficult to cross. Typical locations include high-speed or multilane roadways with narrow or no bike lanes and sidewalks. Roadways without sidewalks are also included in this category.

Data for this analysis relied on project team field reviews and publicly available data sets, including:

- Google Maps
- Google Streetview
- ODOT TransGIS[5]

Results of the LTS evaluation were mapped and modified to match conditions within Newport. These modifications include:

Bicycle LTS

- Improve LTS on road segments with marked centerlines and one lane in each direction on collector streets with residential character consistent with streets with unmarked centerlines (Exhibit 14-5)
- Worsen LTS for signalized study intersections with offset legs (*e.g.* US 101/6th Street)

Pedestrian LTS

- Improve LTS on road segments with heavy on-street parking utilization (*e.g.* Bay Boulevard and Nye Beach) consistent for streets with buffers (Exhibit 14-17 and 14-18)

Intersection Operations

Traffic operations at study intersections were reported using Synchro 10 and Highway Capacity Manual (HCM) 6th Edition Methodology based on traffic counts collected July 11, 2019. Collecting traffic counts during July captures typical traffic conditions during the summer peak which

[5] ODOT. *TransGIS.* https://gis.odot.state.or.us/transgis/.

represents the 30th highest annual hour for traffic volumes (30 HV). Intersection geometry was collected using Google Maps/Streetview and field verified, if necessary.

Signalized intersection volume to capacity (v/c) ratios were post-processed at signalized intersections based on HCM 6th Edition Chapter 19[6] (APM Section 4). If HCM 6th Edition results could not be reported for signals, v/c ratios were reported using HCM 2000. Mainline through movement v/c ratios were post-processed at unsignalized intersections consistent with Chapter 12 of the APM[7] (APM Section 12.3.1).

Planning mobility targets for all study intersections on highway segments (*i.e.* US 101 and US 20) are outlined in Table 6 of the Oregon Highway Plan (OHP)[8] based on the highway classification, posted speed, and type of area. Newport does not have adopted mobility targets for study intersections on local streets; the OHP standards for district/local interest roads were applied at these locations instead. Mobility targets for each study intersection are summarized below in Table 4.

Existing Transportation Conditions

Safety

Crash Trends

930 crashes, seen in Figure 1, occurred within Newport over the five-year analysis period (2013-2017). There were on average 186 crashes each year, including:

- 322 rear-end crashes (35% of crashes)
- 234 turning movement crashes (25% of crashes)
- 31 pedestrian crashes (3% of crashes)
- 14 bicycle crashes (2% of crashes)

Crashes within Newport were generally not severe; over the analysis period:

- 3 crashes resulted in fatalities
- 20 crashes resulted in serious injuries (Injury A)

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[6] Transportation Research Board. *Highway Capacity Manual, 6th Ed., Ch. 19 Signalized Intersections.* 2016.

[7] ODOT. *Analysis and Procedures Manual, V. 2, Ch. 12 Unsignalized Intersection Analysis*. July, 2018.

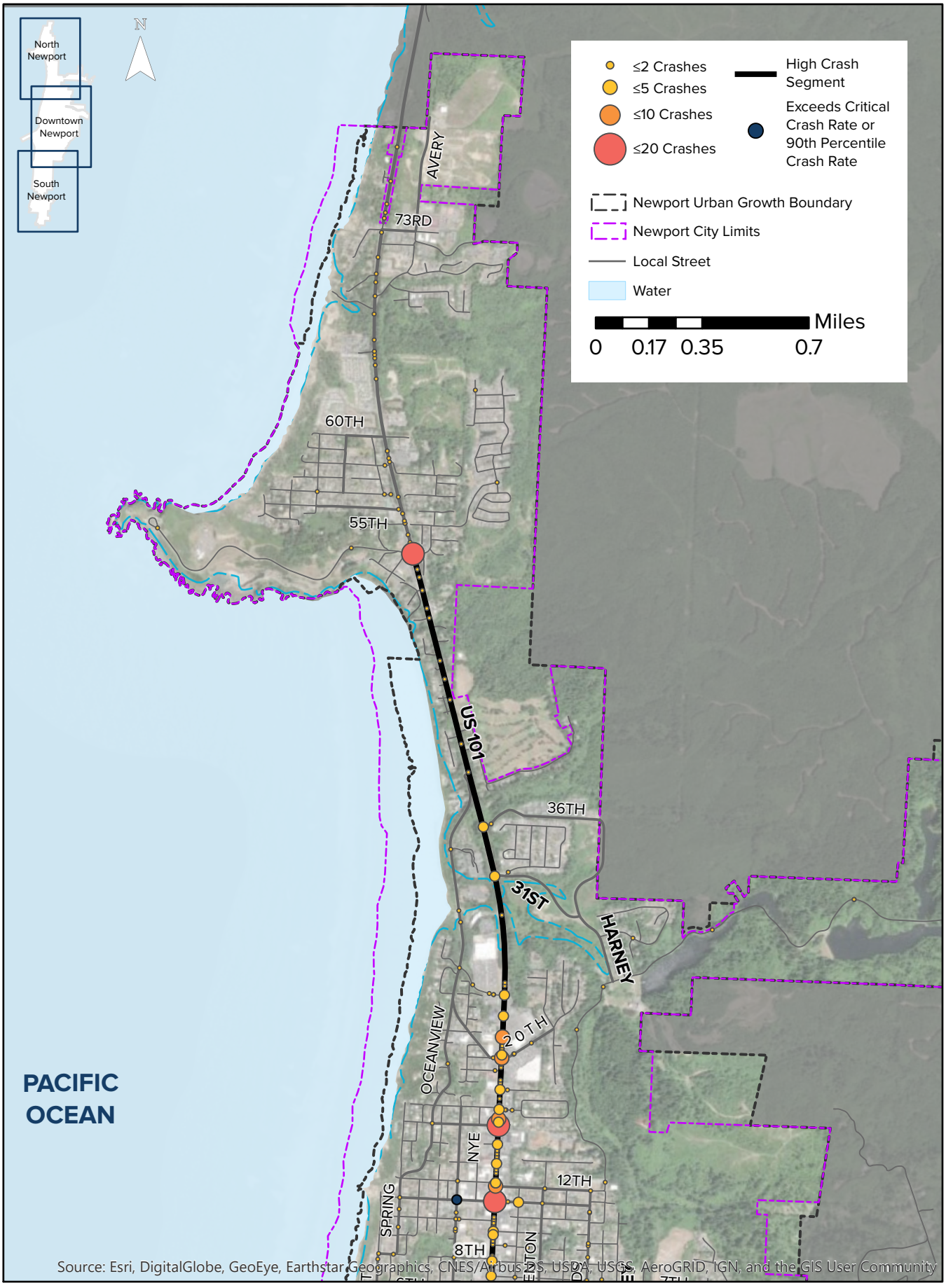
[8] ODOT. *Oregon Highway Plan, Table 6.* August, 2005.

- 85% of crashes resulted in property damage only or lead to minor injuries (Injury C)

The five most common driver errors are responsible for nearly 65 percent of all crashes in Newport, including:

- Did Not Yield Right-of-Way (28 percent)
- Followed Too Closely (14 percent)
- Other Improper Driving (9 percent)
- Inattention (6 percent)
- Failed to Avoid Vehicle Ahead (6 percent)

Risky behavior, including alcohol/drug use or speeding was implicated in 41 and 39 crashes, respectively. These crashes tend to be more severe; alcohol/drug use and speeding is involved in 17% and 9% of high-severity crashes, respectively, despite being a factor in only 4% of crashes.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≤10 Crashes
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High Crash Segment
Exceeds Critical Crash Rate or 90th Percentile Crash Rate
Newport Urban Growth Boundary
Newport City Limits
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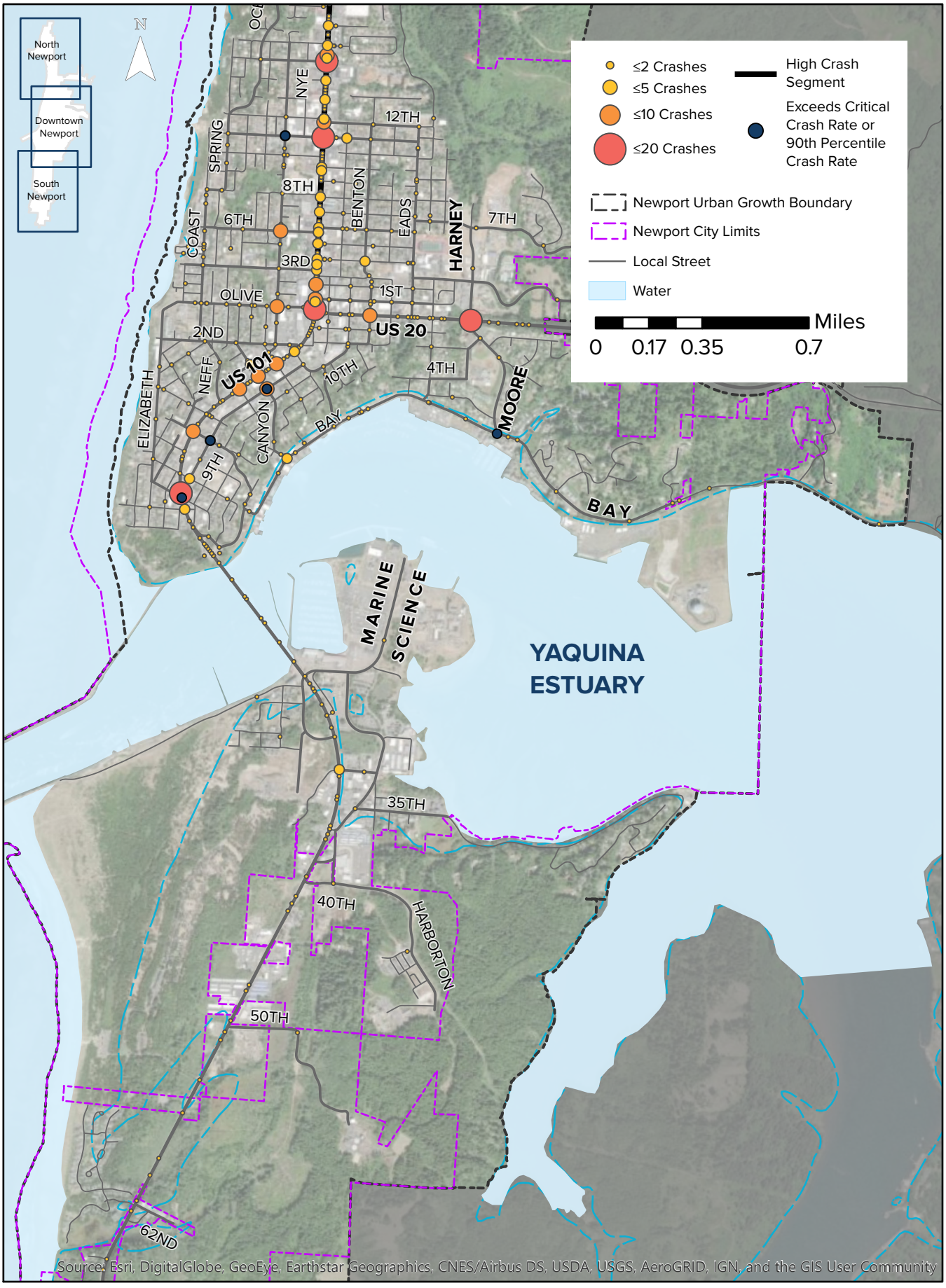
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community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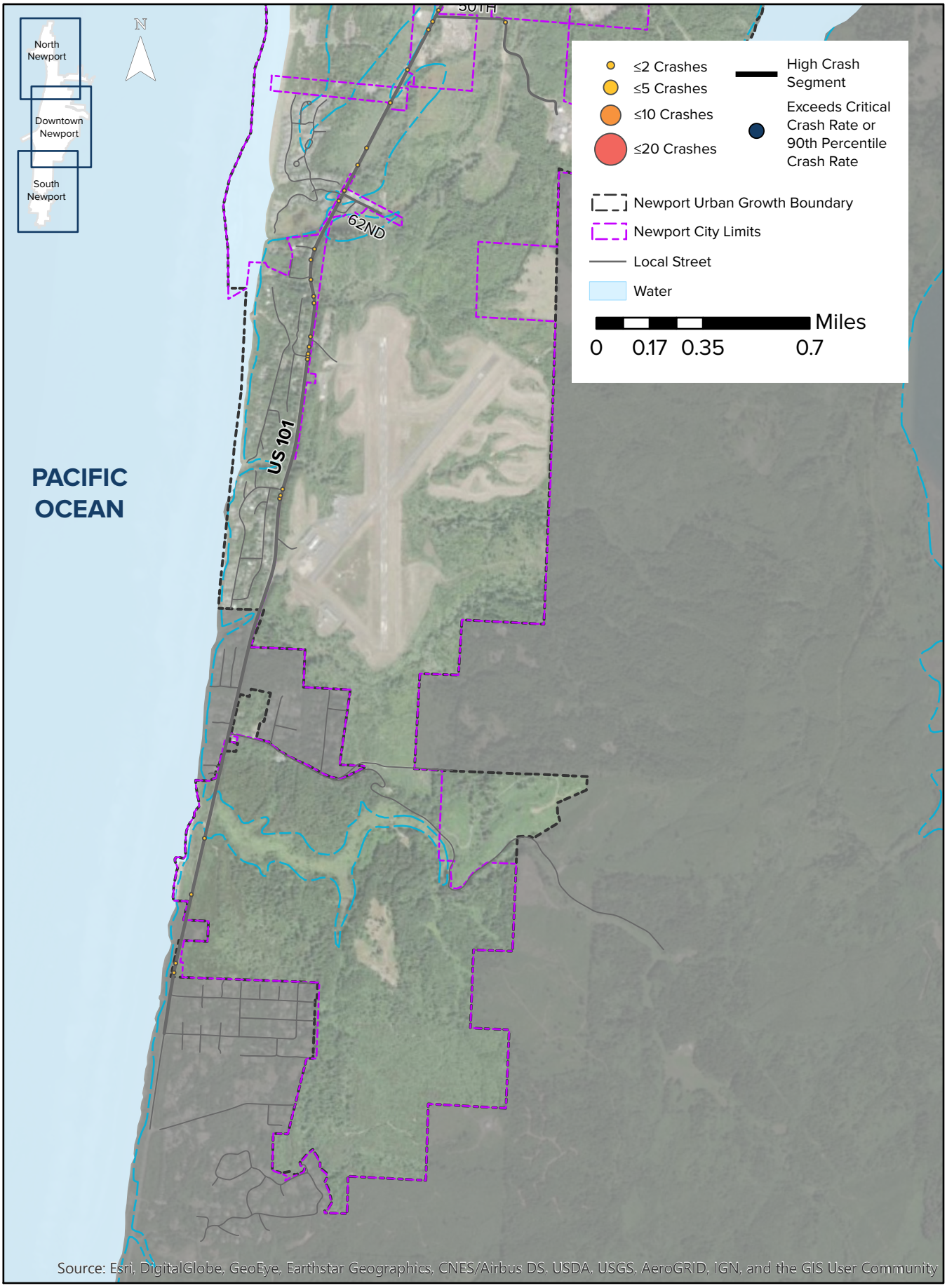
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Pedestrian Safety

31 pedestrian crashes occurred over the analysis period. Crashes involving pedestrians were most common in areas with higher levels of pedestrian activity, including downtown Newport (14 crashes) and at the Bay Boulevard/Fall Street intersection (two crashes).

One pedestrian fatality occurred during the analysis period near the intersection of US 101 and Ferry Slip Road. Pedestrians sustained severe injuries in seven crashes at the following intersections, and moderate injuries were sustained in 10 additional crashes at the following locations:

- US 101/N 11th Street
- US 101/N 1st Street
- US 101/Bayley Street
- Benton Street/N 4th Street
- Nye Street/N 6th Street
- Surf Street/S 4th Street
- Fall Street/Bay Boulevard

The majority of pedestrian-involved crashes (52 percent) were caused by drivers failing to yield the right of way; about 10 percent of the crashes were caused by a pedestrian illegally in the roadway. Over two-thirds (68%) of pedestrian-involved crashes occurred during the day or at night in a location with street lighting.

Bicycle Safety

14 bicyclist crashes occurred over the analysis period, primarily at intersections along US 101 like the US 101/NE 3rd Street intersection (three crashes) or US 101/NE 11th Street intersection (two crashes). A cyclist sustained severe injuries in one of the crashes, while moderate injuries were sustained in nine of the crashes.

Most of the crashes involving a bicyclist were caused by drivers failing to yield the right of way when turning or crossing (64 percent). The remaining crashes were caused by either a bicycle or motorist failing to obey traffic control devices. All reported bicycle crashes occurred during the day.

Intersection Safety

55% of crashes occur at intersections with Newport. Crash rates describe the annual number of crashes relative to the total traffic entering the intersection and can be used to flag intersections with safety deficiencies by comparing to other similar locations (*i.e.* the same control type and number of legs). ODOT uses both the critical crash rate and the statewide 90th percentile crash rate to flag safety

deficiencies. The critical crash rate is calculated for each intersection type based on the average crash rate for study intersections and the selected statistical significance (typically 95th percentile). ODOT also maintains statewide critical crash rates and 90th percentile crash rates for each intersection type. Both the critical crash rate and the 90th percentile crash rates are used to flag intersections whose observed crash rate significantly exceeds the average crash rate of similar intersections in either the study or Oregon. There were four intersections with crash rates that exceeded either the critical crash rate or 90th percentile crash rate as shown in Table 1. Additionally, nine other intersections, also shown in Table 1, experienced an excess proportion of a specific crash type. The crash rates for all study intersections are provided in the appendix.

Table 1: Intersections with High Crash Rates

#	Location	Total Collisions (2013 to 2017)	Observed Crash Rate (per MEV)	Critical Crash Rate (per MEV)	Over Critical Crash Rate	90th Percentile Crash Rate (per MEV)	Over 90th Percentile Rate	Excess Proportion Crash Types**
2	US 101/52nd Street	15	0.46	0.64	No	0.86	No	Rear-End
7	US 101/11th	15	0.31	0.60	No	0.86	No	Bike
8	US 101/6th	15	0.31	0.60	No	0.86	No	Rear-End
12	US 101/Bayley	14	0.37	0.33	**Yes**	0.41	No	--
16	11th/Nye	5	0.96	0.62	**Yes**	0.41	**Yes**	--
18	Hurbert/9th	7	0.92	0.53	**Yes**	0.41	**Yes**	--
19	Abbey/9th	3	0.45	0.56	No	0.41	**Yes**	--
20	Bay/Moore	4	0.46	0.39	**Yes**	0.29	**Yes**	--

Per MEV = Crashes per million entering vehicles

** Parameters used: 90% minimum probability, 10% minimum excess proportion. Full results in appendix.

Each intersection with a high crash rate or an excess proportion of crash types is discussed below.

- **US 101/52nd Street (signal):** This four-leg signalized intersection experienced 15 collisions over the five years, including 11 rear-end crashes. Rear-end crashes at this site were typically

caused by a driver following too closely or failing to avoid the vehicle ahead. Most crashes at this site led to injuries (11 of 15).

- **US 101/11th Street (signal):** This is a four-leg signalized intersection; seven crashes occurred here over the five years. Two of the seven crashes involved bicyclists, caused by a driver failing to yield or disregarding the traffic signal. Both crashes led to an injury to the cyclist.
- **US 101/6th Street (signal):** This is four-leg signalized intersection with offset intersection legs for 6th Street. Two-thirds (10 of 15) of the crashes were rear-ends, primarily caused by a driver following too closely or inattention. Most of the crashes involved property damage only (9 of 15).
- **US 101/Bayley Street (Two-Way Stop Control, or TWSC):** This is a four-leg intersection with stop control on Bayley Street. A Rectangular Rapid Flashing Beacon (RRFB) is located immediately north of the intersection, along US 101, and the 9th Street/US 101 intersection is also located in close proximity which could contribute to a higher crash rate at this location. One pedestrian crash also occurred at this site over the five years caused by careless driving. Over half of the crashes resulted in injuries (10 of 14).
- **11th Street/Nye Street (TWSC):** This is a four-leg intersection with stop control on Nye Street where five crashes occurred over the five years. Both the critical crash rate and 90th percentile crash rate are exceeded at this site, in part due to the relatively low entering volume among study intersections on local streets. All crashes at this site were angle crashes and were caused by a driver failing to yield or drivers who passed the stop sign. All five crashes resulted in property damage only.
- **Hurbert Street/9th Street (TWSC):** This is a four-leg intersection with stop control on 9th Street. The critical crash rate and 90th percentile crash rate are both exceeded at this site, likely due to the comparatively low entering volume. Additionally, this site experienced a high number of angle crashes (6 of 7) which were caused by failure to yield or vehicles passing the stop sign. Over half of the crashes (5 of 7) resulted in injuries.
- **Abbey Street/9th Street (TWSC):** This is a four-leg intersection with stop control on 9th Street. While the observed intersection crash rate is lower than the critical crash rate, this site exceeds the statewide 90th percentile crash rate. Over the past five years, all three crashes at this site were angle crashes caused by either passing the stop sign or failure to yield. Two of the crashes led to injuries and one crash resulted in property damage only.
- **Bay Boulevard/Moore Drive (TWSC):** This three-leg skewed intersection with stop control on the west leg (Bay Boulevard) had four crashes over the five years. Both the critical crash rate and 90th percentile crash rates are exceeded at this site. Half of the crashes involved

turning movements, caused by either failure to yield or passing the stop sign which could be exacerbated due to the sites' geometry. This intersection was realigned to reduce some of the intersection skew between August, 2016, and July, 2019; the impacts of this geometric change cannot be assessed from the available data. Half of the crashes resulted in property damage only (2 of 4).

Segment Safety

One state highway segment was identified as having a high crash rate which exceeded the statewide average crash rate for similar roadways, as shown in Table 2. The appendix includes additional details, including analysis results for all segments.

Table 2: Highway Segment with High Crash Rates

Highway (limits)	Distance (miles)	Total Collisions (2013 to 2017)	Observed Crash Rate (per MVMT)	Statewide Collison Rate (per MVMT)	Over Statewide Collison Rate
US 101- N 52nd Street/Lighthouse Drive to US 20	2.75	305	3.21	3.00	**Yes**

Per MVMT = Crashes per million vehicle miles traveled

US 101 – N 52nd Street/Lighthouse Drive to US 20 is a three- to five-lane two-way roadway segment which comprises the main north-south corridor in Newport. Crash causes on this segment reflect the dense urban land uses and are primarily categorized as failure to yield, following too closely, and failing to avoid the vehicle ahead. Most crashes (59 percent) occurred at intersections. There were five pedestrian-involved collisions and eight bicycle-involved collisions along this segment.

Additionally, according to the ODOT 2017 SPIS report (data reported between 2014 and 2016), and 2016 SPIS report (data reported between 2013 and 2015), several locations in Newport rank among the top most hazardous sections of highways in Oregon. The identified locations are listed below.

- US 101 around the N 20th Street intersection (top 10 percent segment, 2017; top 10 percent segment, 2016)
- US 101 around the N 16th Street intersection (top 10 percent segment, 2017)
- US 101 around the N 3rd Street intersection (top 10 percent segment, 2016)
- US 101 around the N 2nd Street intersection (top 10 percent segment, 2017)

- US 101 around the N 1st Street intersection (top 5 percent segment, 2017)
- US 101 around the SW Lee Street intersection (top 10 percent segment, 2016)
- US 101 around the SW Hurbert Street intersection (top 10 percent segment, 2016)
- US 101 around the SW Bayley Street intersection (top 5 percent segment, 2017)
- US 101 around the SW Bay Street intersection (top 5 percent segment, 2016)

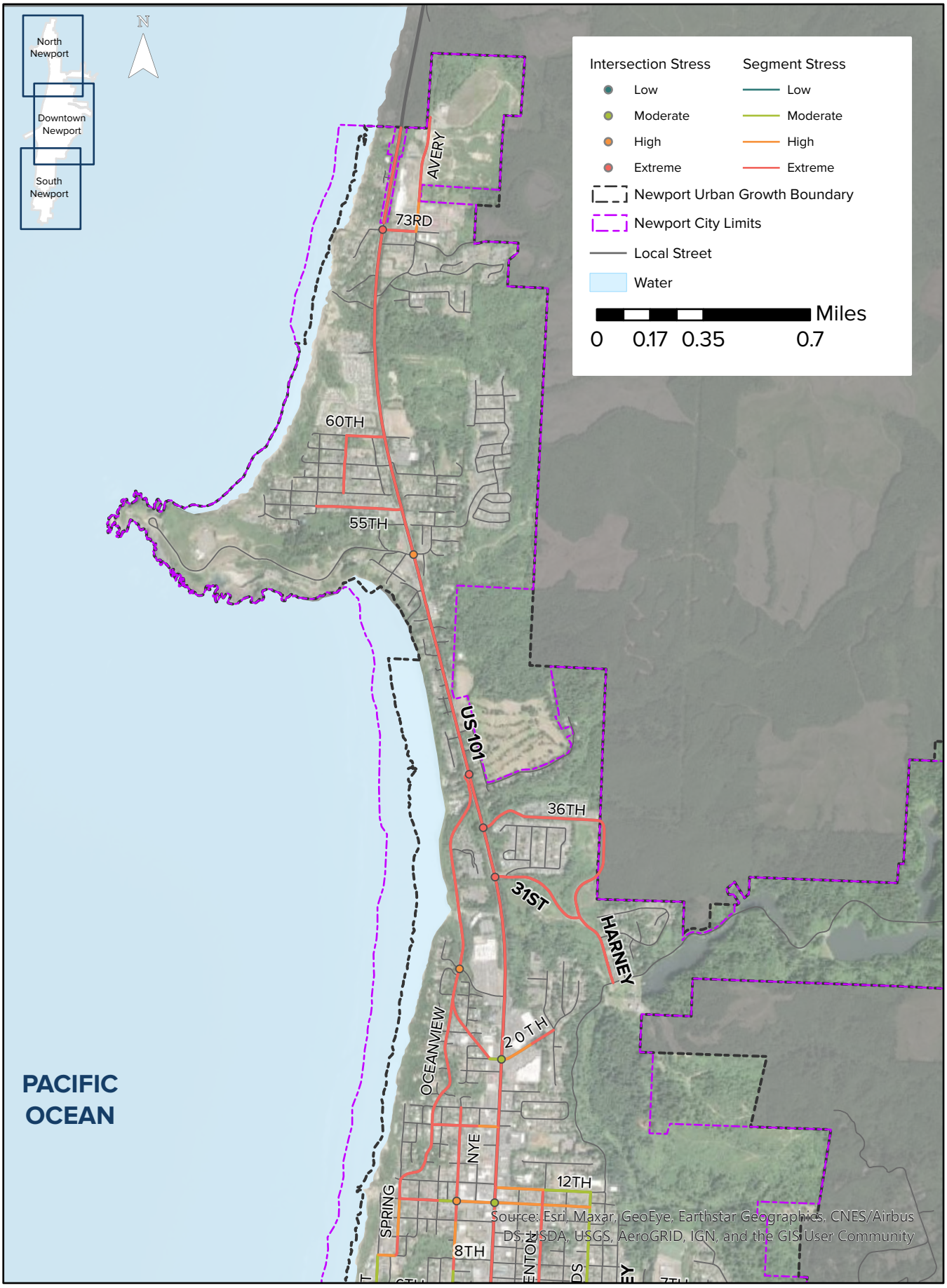
Pedestrian LTS

Pedestrians in Newport currently face a variety of sidewalk conditions throughout the City. When sidewalks are provided along an arterial or collector roadway in Newport, it is typically designated with moderate or high stress (LTS 2 or 3) which is suitable for most teenagers and adults. Only a few roadways in Newport operate with low stress (LTS 1) which is suitable for users of all ages and abilities. The existing pedestrian LTS is summarized in Figure 2. The following factors contribute to different LTS levels in the City:

- Presence of buffers: buffers provide greater physical separation between pedestrians and vehicles creating a more comfortable environment for pedestrians. Many streets within Newport only have curb-tight sidewalks or a narrow landscape buffer which restricts these segments to moderate stress (LTS 2) or higher stress, except in pedestrian oriented districts (*i.e.* Agate Beach or Bay Boulevard) where wider sidewalks or other street furnishings create provide additional separation from vehicles for pedestrians
- Lack of sidewalks: older or more rural streets within Newport often lack sidewalks which restricts these segments to extreme stress (LTS 4) which is only suitable for able-bodied adults. In the event sidewalks are provided on at least one side of the street, these segments generally achieved high stress ratings (LTS 3)

Intersections, both signalized and unsignalized, also pose many challenges for pedestrians; the majority of study intersections operate at high or extreme stress (LTS 3 or 4). Key factors that degrade the LTS at intersections include:

- Lack of ADA compliant curb ramps: only six study intersections have curb ramps that meet ADA standards for all intersection legs
- Complex elements at signals, including: permissive right turns, channelized right turns, offset intersection legs, or crosswalk closures
- Limited medians on high-speed, high-volume routes to create pedestrian refuges or provide other enhancements (*e.g.* rectangular rapid flashing beacons or RRFBs)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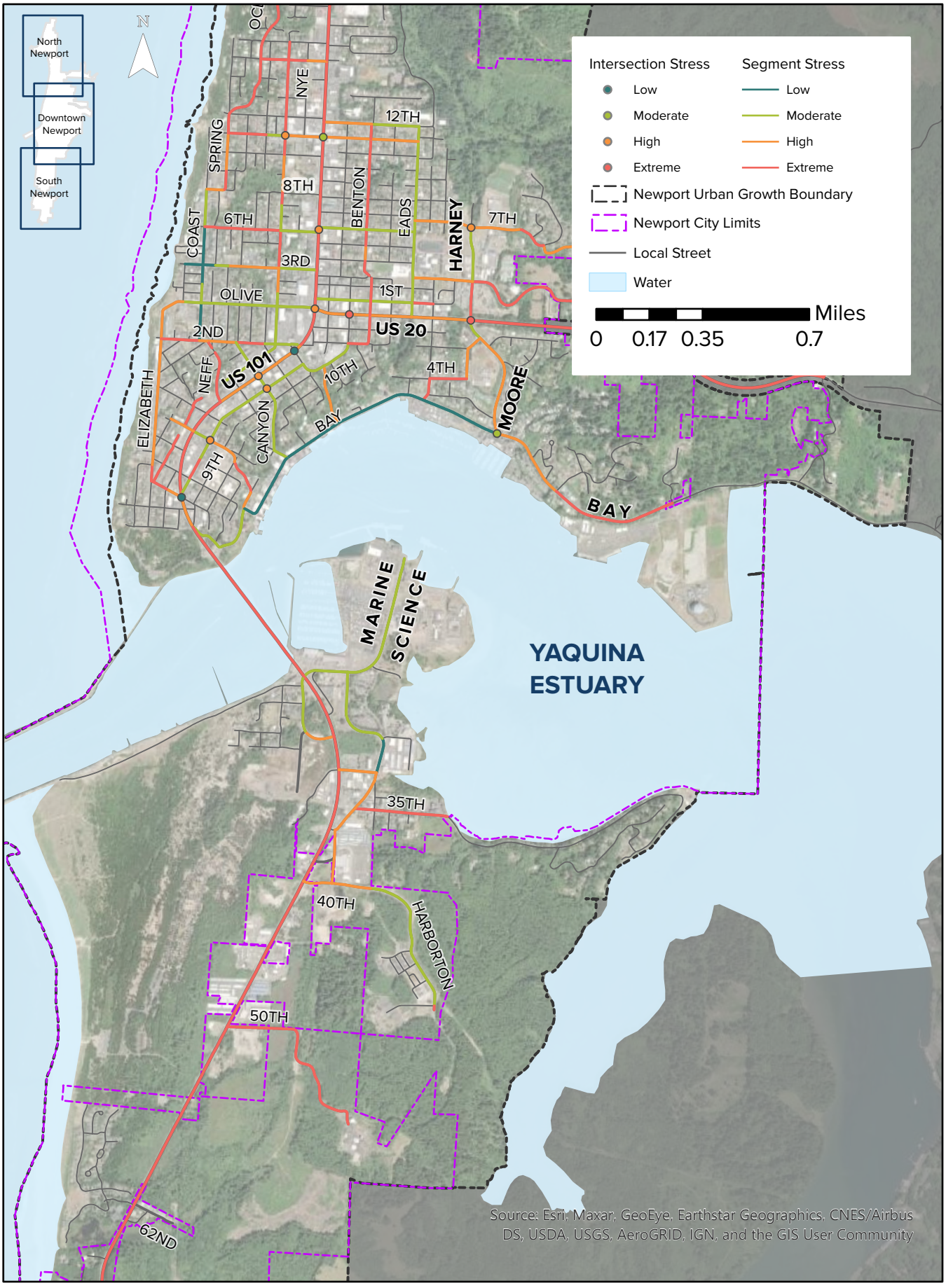
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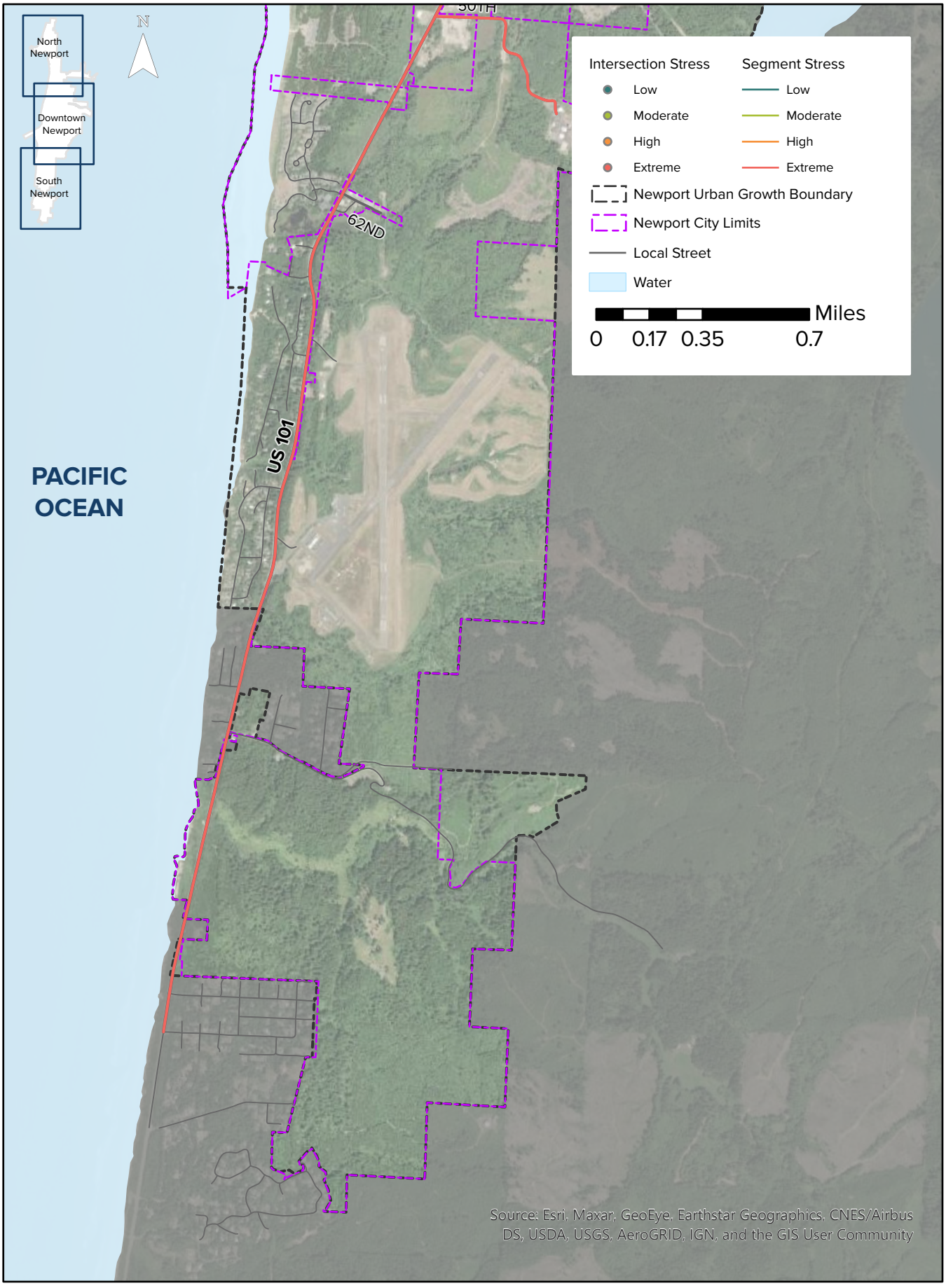
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Bicycle LTS

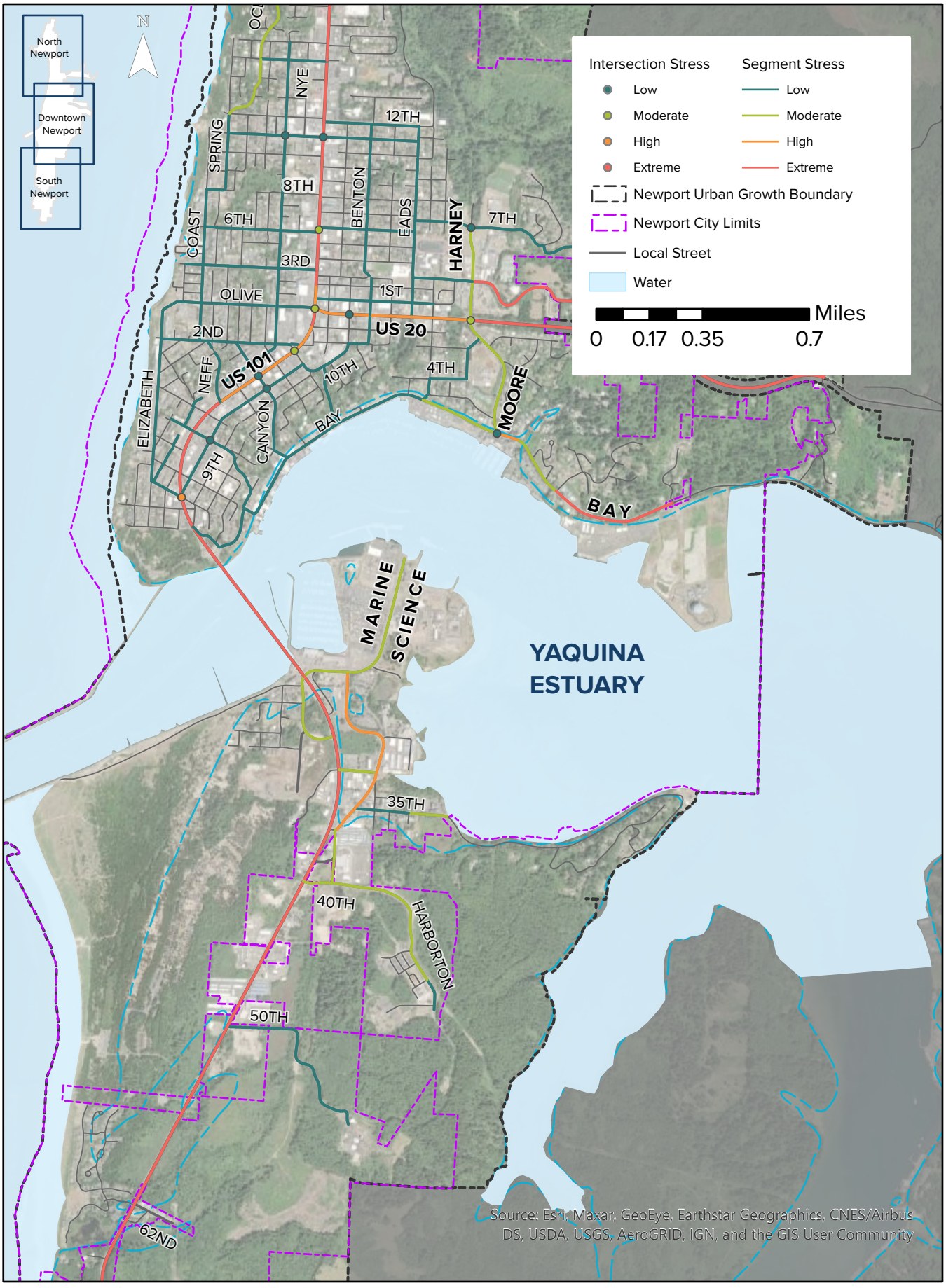
The Level of Traffic Stress (LTS) for bicyclists is generally good in Newport although major barriers to connectivity do exist (see Figure 3). Most collector streets in Newport have characteristics similar to local streets (*e.g.* 25 mph speeds, two lanes, shared roadway environments) and operate at low stress (LTS 1) which is suitable for cyclists of all ages and abilities. The LTS tends to increase on collector or arterial roadways away from Newport's downtown core, driven by a higher speed (30 mph or greater), shared roadway environment. The LTS is highest on US 101 and US 20 for Newport which creates a major barrier for the bicycle network connectivity, particularly north of Oceanview Drive and across the Yaquina Bay Bridge. Most segments of US 101 and US 20 within Newport are extreme stress (LTS 4) which is only suitable for experienced and confident cyclists, and even within the downtown core, US 101 and US 20 have a high bicycle stress (LTS 3), deterring many cyclists from riding on these facilities. Key findings for the segment bicycle LTS include:

- Most collectors in Newport's downtown core operate at low stress (LTS 1) due to a low-speed, shared roadway environment
- Adding bicycle facilities on collectors or minor arterials with higher speeds (*e.g.* Oceanview Drive north of 12th Street) could reduce the LTS, although many of these roadways in Newport have a constrained roadway width and tend to be more rural in character
- US 101 and US 20 have a high or extreme LTS (3 or 4) due to their lack of bicycle facilities; even in locations with existing on-street bike lanes (*i.e.* near the US 101/NE 52nd Street/NW Lighthouse Drive intersection), the bicycle LTS remains high due to high operating speeds for vehicles
- Due to Newport's topography, US 101 is the primary north-south route and provides the only connection for vehicles or bicyclists in certain locations (*e.g.* Yaquina Bay Bridge) creating a significant barrier for bicyclists

Signalized intersections generally provide the best opportunities for cyclists to cross US 101 or US 20, and most signalized study intersections along these corridors operate at low or moderate stress (LTS 1 or 2). Signalized study intersections with a lower LTS generally had one of the following characteristics which create a more challenging environment for cyclists to navigate:

- A three-lane approach (US 101/US 20)
- Offset intersection legs (US 101/N 6th Street)
- Potential sight distance limitation (US 20/Harney Street/Moore Drive)

Most unsignalized study intersections along US 101 had a high or extreme LTS (either 3 or 4) which is driven by the speed and the wide cross section for US 101. Conversely, unsignalized study intersections on local streets primarily had a low stress ranking (LTS 1) driven by their low speed and narrow cross section.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Segment Stress
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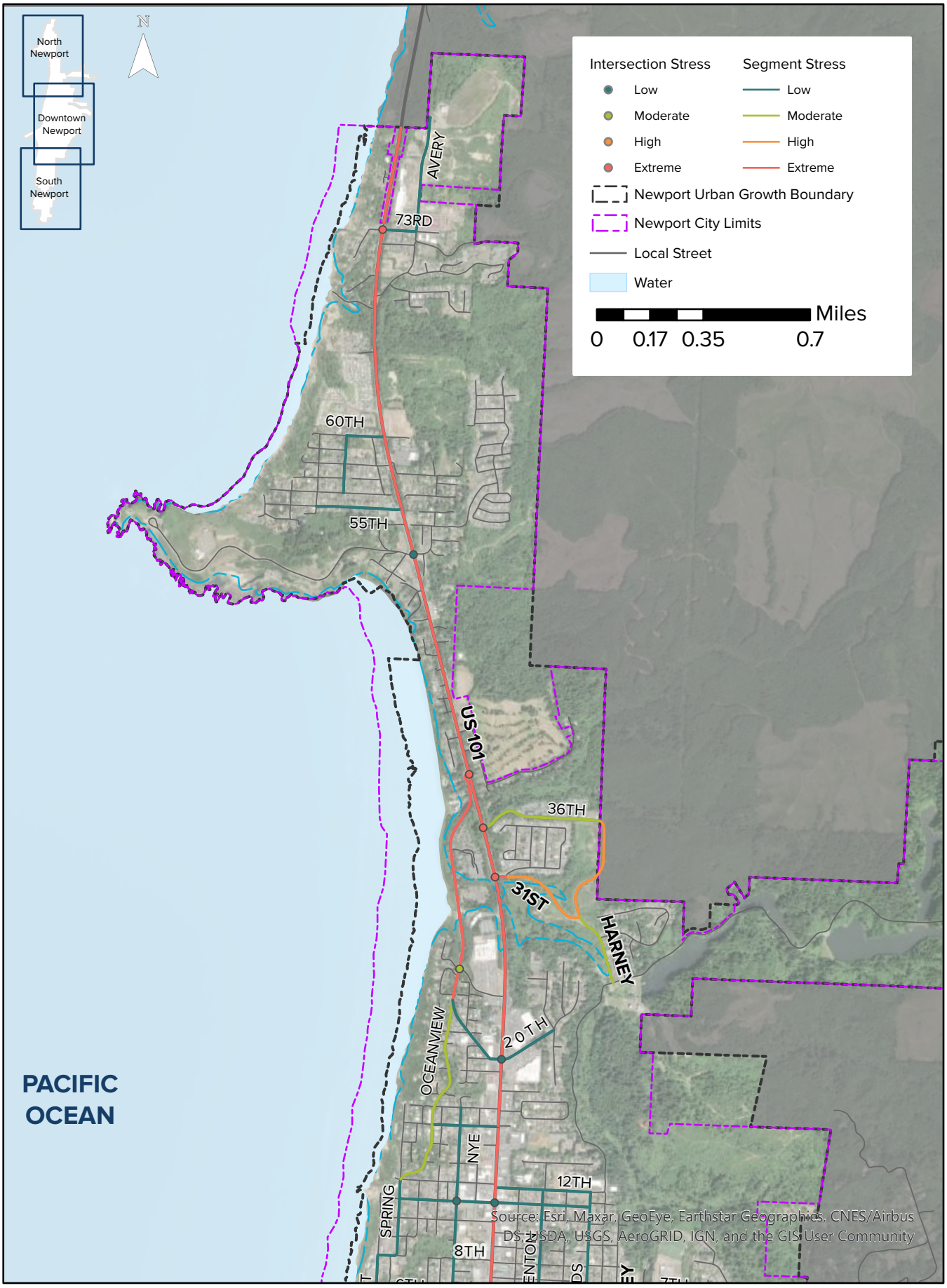
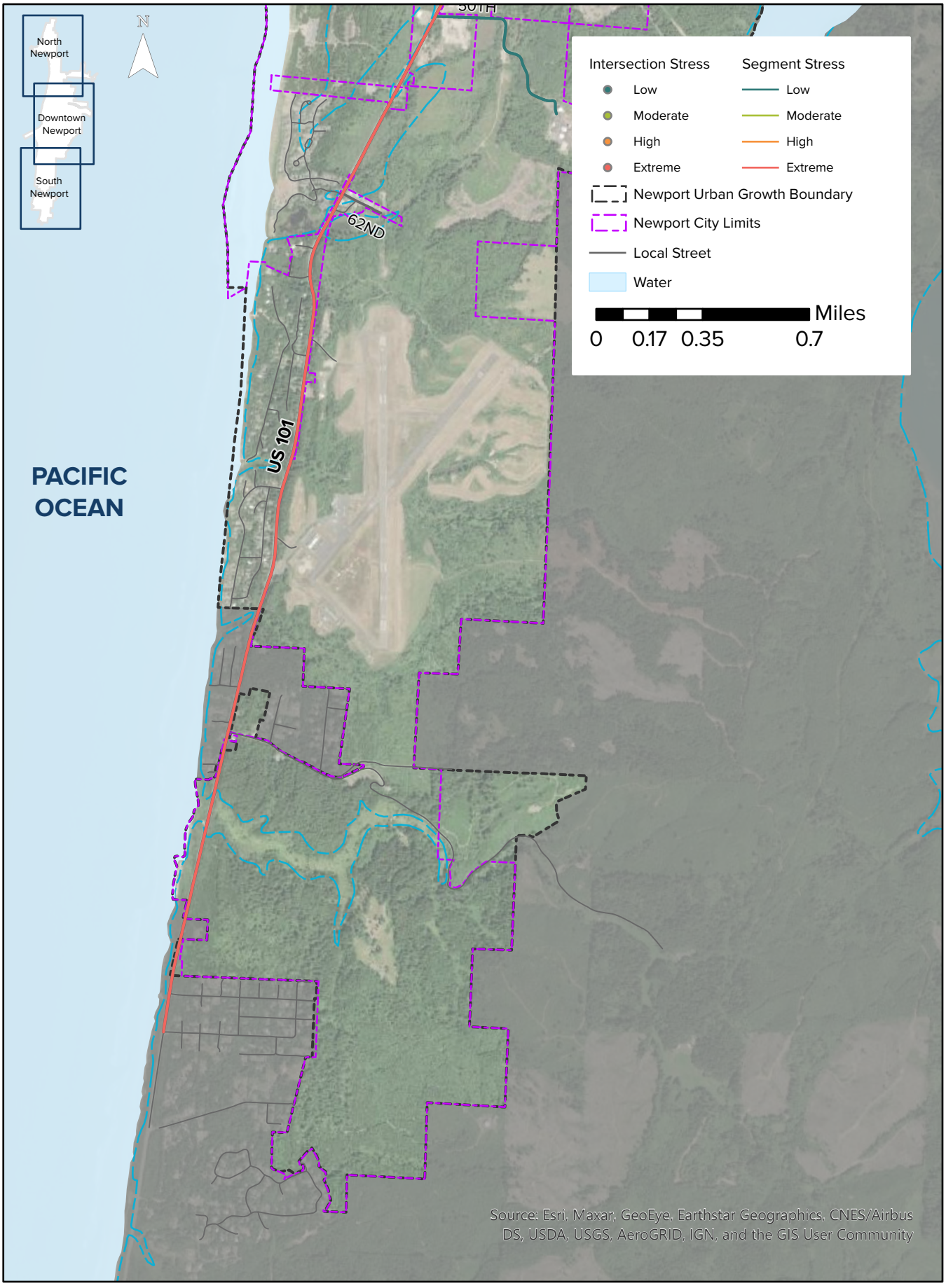
Moderate
High
Extreme
Newport Urban Growth Boundary
Newport City Limits
Local Street
Water
Miles
0 0.17 0.35 0.7
OCEAN
NYE
SPRING
12TH
8TH
COAST
6TH
BENTON
EADS
HARNEY
7TH
3RD
OLIVE
1ST
2ND
US 20
US 101
NEFF
10TH
4TH
MOORE
ELIZABETH
CANYON
BAY
9TH
BAY
MARINE SCIENCE
YAQUINA ESTUARY
35TH
40TH
HARBORTON
50TH
62ND
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


North Newport
Downtown Newport
South Newport
N
Intersection Stress
Low
Moderate
High
Extreme
Segment Stress
Low
Moderate
High
Extreme
Newport Urban Growth Boundary
Newport City Limits
Local Street
Water
Miles
0
0.17
0.35
0.7
AVERY
73RD
60TH
55TH
US 101
36TH
31ST
HARNEY
OCEANVIEW
20TH
NYE
12TH
SPRING
8TH
PACIFIC OCEAN
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community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0 0.17 0.35 0.7
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Existing Transit Service

Lincoln County Transit provides basic transit service to Newport which includes a city loop and inter-city transit service to Lincoln City, Siletz, Yachats, Corvallis, and Albany. Characteristics of this transit service are:

- The Newport city loop completes a full loop through Newport six times each day, seven days a week, and in the evening, there is an additional southbound run to City Hall. Key destinations within Newport served by transit include grocery stores and other shopping, restaurants, local hotels and residences, Newport City Hall, post office, Oregon Coast Aquarium, NOAA facilities, and Nye Beach. Most destinations served by transit are north of Yaquina Bay Bridge or in the South Beach area. City loop buses are wheelchair accessible with bicycle racks.
- Inter-city transit service operates routes to Corvallis and Albany four times each day, to Lincoln City four times each day, to Yachats four times each day, and to Siletz six times a day between Monday and Saturday.
- Lincoln County Transit also operates Dial-A-Ride transit in Newport between Monday and Friday.
- Most Newport residents are within a half mile of a transit stop, and in the downtown core, most residents are within a quarter mile of a transit stop.
- Limited stop amenities (including many unmarked stops) makes the transit system challenging to navigate, particularly for visitors.
- Long headways (up to 90 minutes) and limited service hours (approximately between 7 am and 5pm) for the Newport city loop transit service limits the utility of this service for residents and visitors.
- Transit service is not currently provided south of SE 50th Avenue.

Intersection Operations

Intersection operations were analyzed for existing (2019) conditions and compared to the mobility targets developed by ODOT which use the volume to capacity (v/c) ratio for a performance measure at each study intersection. Mobility targets define an acceptable level of congestion for roadways within Oregon which depends on the roadway functional class and posted speed; these targets are applied to evaluate transportation system improvements and identify potential improvements. Vehicle delay and level of service (LOS) are two other commonly reported operations metrics which

can more directly translate to a driver's experience when travelling through an intersection. The correlation between vehicle delay and LOS is summarized below in Table 3 for both signalized and unsignalized intersections.

Table 3: HCM 6th Edition LOS Thresholds[9]

Level of Service	Average Control Delay (s/veh) – Signalized Intersections	Average Control Delay (s/veh) – Unsignalized Intersections	Description
A	≤10	0-10	Free flow
B	>10-20	>10-15	Stable flow (slight delays)
C	>20-35	>15-25	Stable flow (acceptable delays)
D	>35-55	>25-35	Approaching unstable flow (tolerable delay)
E	>55-80	>35-50	Unstable flow (intolerable delay)
F	>80	>50	Forced flow (congested and queues fail to clear)

As shown in Table 4, the intersection of US 101/US 20 currently exceeds its mobility target (v/c ratio – 0.92). All other study intersections operate well within the currently adopted mobility targets. Although these intersections meet the mobility target, many drivers attempting to turn left from an unsignalized side street approach to US 101 or US 20 experience high delay during peak travel periods (>35 seconds or LOS E/F is common at many unsignalized intersections). These approaches typically require more time for an acceptable gap in traffic to make a left turn onto the mainline.

[9] *Highway Capacity Manual 2010*. http://www.seatacwa.gov/home/showdocument?id=11371

Table 4: Study Intersection Operations

#	Study Intersection	Intersection Control	Mobility Target	v/c Ratio	Delay	LOS	Exceeds Mobility Target
1	US 101/73rd	TWSC	0.80/0.95	0.41/0.46	10.8/45.8	B/E	No
2	US 101/52nd	Signal	0.80	0.68*	25.9	C	No
3	US 101/Oceanview	TWSC	0.80/0.95	0.58/0.36	9.9/28.5	A/D	No
4	US 101/36th	TWSC	0.80/0.95	0.58/0.16	10.3/23.3	B/C	No
5	US 101/31st	TWSC	0.80/0.95	0.61/0.16	10.7/24.7	B/C	No
6	US 101/20th	Signal	0.90	0.72*	29.4*	C*	No
7	US 101/11th	Signal	0.90	0.54	5.4	A	No
8	US 101/6th	Signal	0.90	0.69	21.7	C	No
9	US 101/US 20	Signal	0.85	0.92	61.7	E	**Yes**
10	US 101/Angle	TWSC	0.90/0.95	0.37/0.71	10.8/168.5	B/F	No
11	US 101/Hurbert	Signal	0.90	0.74	34.8	C	No
12	US 101/Bayley	UTWSC	0.90/0.95	0.33/0.39	11.2/36.4	B/E	No
13	US 20/Benton	TWSC	0.85/0.95	0.43/0.75	9.8/49.4	A/E	No
14	US 20/Moore	Signal	0.85	0.68	18.8	B	No
15	Oceanview/25th	TWSC	0.95/0.95	0.12/0.08	7.7/10.6	A/B	No
16	11th/Nye	TWSC	0.95/0.95	0.03/0.21	7.3/10.3	A/B	No
17	Harney/7th	AWSC	0.95	0.21	9.8	A	No
18	Hurbert/9th	TWSC	0.95/0.95	0.06/0.41	7.4/14.1	A/B	No
19	Abbey/9th	TWSC	0.95/0.95	0.07/0.21	7.6/12.5	A/B	No

20	Bay/Moore	TWSC	0.95/0.95	0.09/0.2	7.6/11.4	A/B	No

*Reported using HCM 2000

Note: Intersection operations are reported for the entire intersection at traffic signals, for the worst case major street turn movement/worst case minor street turn movement at two-way stop control (TWSC) intersections, and for the worst case turn movement at all-way stop control (AWSC) intersections.

Poor intersection operations is driven by both high seasonal traffic demands and commuting patterns for residents and employees in Newport. Newport's position along the Oregon Coast and US 101 leads to significant variations in traffic throughout the year; traffic volumes along US 101 are approximately 20% higher during July and August compared to average weekday volumes. Newport is also a major employment destination along the Oregon Coast with major employers including Lincoln County, Oregon State University, NOAA, the fishing industry, and the tourism industry. However, many Newport residents still choose to work outside of the city. Approximately 50% of Newport residents commute more than 10 miles to work with key destinations including Corvallis and other coastal towns, while 50% of Newport workers commute more than 10 miles to work from other coastal towns. Similarly, nearly 70% of workers employed in Newport live outside of Newport city limits while almost 55% of Newport's residents work outside of Newport[10].

Key findings

Walking

- Actions to improve driver yielding behavior (*e.g.* signing, lighting, or modified signal phasing) would be effective in reducing the number of crashes involving pedestrians.
- Other enforcement measures (*e.g.* red light cameras) could increase motorist compliance with red signal indications and stop signs.
- The historical built environment (lack of buffered sidewalks) creates a more stressful walking environment within Newport, particularly for high-speed and high-volume facilities like US 101 or US 20.

[10] US Census. *On the Map. Newport, Oregon.* https://onthemap.ces.census.gov/ Accessed December, 2019.

- Many intersections lack ADA-compliant curb ramps, if ramps are even provided, creating a barrier for pedestrians.
- Installing median refuges on high-volume, high-speed facilities, like US 101, creates a lower stress pedestrian environment at existing unsignalized crossings. Locations with RRFBs can further reduce the crossing stress for pedestrians; RRFBs are currently installed on US 101 at SW Bayley Street, SW Abbey Street, SW Angle Street, NW 3rd Street, NE 10th Street, and NW 15th Street.
- Due to Newport's topography, US 101 is the primary north-south route and provides the only connection for vehicles or pedestrians in certain locations (*e.g.* Yaquina Bay Bridge) creating a significant barrier for pedestrians.
- Sidewalk infill, an ADA transition plan, and a low-stress parallel route to US 101 could improve pedestrian conditions throughout Newport.

Biking

- Actions to improve driver yielding behavior at intersections (*e.g.* bike boxes, signing, or dedicated signal phases) would be effective in reducing the number of crashes involving bicyclists.
- Other enforcement or education measures (*e.g.* camera enforcement, good driver programs, or cycling skills courses) could improve motorist and bicyclist behavior.
- Most collectors in Newport's downtown core operate at low stress (LTS 1) due to a low-speed, shared roadway environment.
- Adding bicycle facilities on collectors or minor arterials with higher speeds (*e.g.* Oceanview Drive north of 12th Street) could reduce the LTS, although many higher speed roadways currently have a constrained roadway width and tend to be more rural in character. Without significant investments in quality bicycle facilities (*e.g.* shared use paths) on these routes, these roads will likely not be suitable for users of all ages and abilities.
- US 101 and US 20 have high or extreme stress for cyclists(LTS 3 or 4) due to their lack of bicycle facilities; even in locations with existing on-street bike lanes (*i.e.* near the US 101/NE 52nd Street/NW Lighthouse Drive intersection), the bicycle LTS remains high due to high operating speeds for vehicles.
- Due to Newport's topography, US 101 is the primary north-south route and provides the only connection for vehicles or bicyclists in certain locations (*e.g.* Yaquina Bay Bridge) creating a significant barrier for bicyclists.

- Traffic signals provide the best opportunities for bicyclists to cross US 101 due to the speed and total number of lanes although Newport has relatively few traffic signals. While existing RRFBs can serve pedestrians crossing US 101, RRFBs are typically placed only on one intersection leg or mid-block which does not serve cyclists travelling from both directions.
- Developing a comprehensive bicycle network, including a low-stress, parallel route to US 101 would reduce total conflicts between bicycles and vehicles.

Transit

Lincoln County Transit provides service in Newport and manages potential transit improvements. Noted existing needs from Lincoln County's Transit Development Plan[11] include:

- Increase transit frequency and service hours, particularly for midday, evening, and weekend service or for alternate work schedules
- Expand dial-a-ride service areas and increase service hours to allow customers to complete multiple errands
- Create tourist-oriented routes in Newport (*e.g.* Nye Beach to Bayfront)
- Improve transit facilities and stop accessibility
- Improve ease of use through new technology or other public information

Driving

- The US 101/US 20 intersection currently exceeds its mobility target (v/c ratio – 0.92) during the summer peak in Newport (30 HV conditions).
- Side street approaches at unsignalized intersections with US 101 experience high delay, particularly for left-turning vehicles.
- There are limited parallel routes to US 101 for north-south vehicle traffic in Newport including:
    - Between SW Naterlin Drive and SW Abalone Street (Yaquina Bay Bridge)
    - Between NE 12th Street and NE 52nd Street (Northbound traffic only)

11 Lincoln County Transit. Transit Development Plan. 2018.

- Between NW Oceanview Drive and NE 52nd Street (Southbound traffic only)
- South of SE 42nd Street

- Limited parallel routes outside of US 101 can isolate neighborhoods and residential areas in Newport that are located outside the downtown core whose only access is to US 101, including Agate Beach, South Beach, and San-Bay-O Circle
- Local street connectivity is limited in parts of Newport, including within the downtown core. Existing gaps in the street network include SW 7th Street and NE 3rd Street
- Limited parking in tourist-oriented areas such as Nye Beach and the Bay front, particularly during peak summer
- Bay front is a unique working waterfront and is a significant freight generator for the City of Newport. Freight traffic may have difficulties navigating parking vehicles and heavy pedestrian traffic during peak summer.

Appendix

General & Site Information	
Analyst:	Rochelle Starrett
Agency/Company:	DKS
Date:	8/7/2019
Project Name:	Newport TSP

Intersection Crash Data

Intersection	Intersection Type	Year 2013	2014	2015	2016	2017	Total
US 101/73rd	Urban 4ST	0	0	0	0	0	0
US 101/52nd	Urban 4SG	5	0	4	3	3	15
US 101/Oceanview	Urban 3ST	1	0	1	1	0	3
US 101/36th	Urban 3ST	1	3	1	2	0	7
US 101/31st	Urban 3ST	1	0	2	1	0	4
US 101/20th	Urban 4SG	8	5	1	8	4	26
US 101/11th	Urban 4SG	1	1	2	6	5	15
US 101/6th	Urban 4SG	4	3	1	4	3	15
US 101/US 20	Urban 4SG	8	4	9	6	5	32
US 101/Angle	Urban 4ST	3	2	0	5	1	11
US 101/Hurbert	Urban 4SG	3	1	5	4	3	16
US 101/Bayley	Urban 4ST	3	3	2	2	4	14
US 20/Benton	Urban 4ST	1	0	1	2	1	5
US 20/Moore	Urban 4SG	1	2	1	7	5	16
							AWSC
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
	Total	40	24	30	51	34	179

Intersection Population Type Crash Rate				
Average Crash Rate per intersection type				
Intersection Pop. Type	Sum of Crashes	Sum of 5-year MEV	Avg Crash Rate for Ref Pop.	INT in Pop
Rural 3SG	0	0		
Rural 3ST	0	0		
Rural 4SG	0	0		
Rural 4ST	0	0		
Urban 3ST	14	99	0.1421	3
Urban 3SG	0	0		
Urban 4ST	30	130	0.2309	4
Urban 4SG	135	309	0.4372	7

Critical Rate Calculation															
Intersection	AADT Entering Intersection	5-year MEV	Crash Total	Intersection Population Type	Intersection Crash Rate	Reference Population Crash Rate	Critical Rate	Over Critical	APM Exhibit 4-1 Reference Population Crash Rate		Critical Rate	Over Critical	90th Percentile Rate	Over 90th Percentile
US 101/73rd	12,720	23.2	0	Urban 4ST	0.00	APM Exhibit 4-1			0.198		0.37	Under	0.408	Under
US 101/52nd	17,990	32.8	15	Urban 4SG	0.46	0.44	0.64	Under	0.437		0.64	Under	0.86	Under
US 101/Oceanview	18,310	33.4	3	Urban 3ST	0.09	APM Exhibit 4-1			0.131		0.25	Under	0.293	Under
US 101/36th	17,610	32.1	7	Urban 3ST	0.22	APM Exhibit 4-1			0.131		0.25	Under	0.293	Under
US 101/31st	18,080	33.0	4	Urban 3ST	0.12	APM Exhibit 4-1			0.131		0.25	Under	0.293	Under
US 101/20th	26,810	48.9	26	Urban 4SG	0.53	0.44	0.60	Under	0.437		0.60	Under	0.86	Under
US 101/11th	26,530	48.4	15	Urban 4SG	0.31	0.44	0.60	Under	0.437		0.60	Under	0.86	Under
US 101/6th	26,910	49.1	15	Urban 4SG	0.31	0.44	0.60	Under	0.437		0.60	Under	0.86	Under
US 101/US 20	32,740	59.8	32	Urban 4SG	0.54	0.44	0.59	Under	0.437		0.59	Under	0.86	Under
US 101/Angle	20,780	37.9	11	Urban 4ST	0.29	APM Exhibit 4-1			0.198		0.33	Under	0.408	Under
US 101/Hurbert	19,580	35.7	16	Urban 4SG	0.45	0.44	0.63	Under	0.437		0.63	Under	0.86	Under
US 101/Bayley	20,830	38.0	14	Urban 4ST	0.37	APM Exhibit 4-1			0.198		0.33	**Over**	0.408	Under
US 20/Benton	16,850	30.8	5	Urban 4ST	0.16	APM Exhibit 4-1			0.198		0.35	Under	0.408	Under
US 20/Moore	18,650	34.0	16	Urban 4SG	0.47	0.44	0.64	Under	0.437		0.64	Under	0.86	Under

General & Site Information	
Analyst:	Rochelle Starrett
Agency/Company:	DKS
Date:	8/7/2019
Project Name:	Newport TSP

Intersection Crash Data

Intersection	Intersection Type	Year 2013	2014	2015	2016	2017	Total	
Oceanview/25th	Urban 4ST	0	1	1	0	0	2	
11th/Nye	Urban 4ST	2	0	1	1	1	5	
Harney/7th	Rural 4ST	0	0	0	0	0	0	AWSC
Hurbert/9th	Urban 4ST	0	1	1	3	2	7	
Abbey/9th	Urban 4ST	0	0	0	1	2	3	
Bay/Moore	Urban 3ST	2	1	0	0	1	4	
							0	
							0	
							0	
							0	
							0	
							0	
							0	
							0	
							0	
							0	
	Total	4	3	3	5	6	21	

Intersection Population Type Crash Rate				
Average Crash Rate per intersection type				
Intersection Pop. Type	Sum of Crashes	Sum of 5-year MEV	Avg Crash Rate for Ref Pop.	INT in Pop
Rural 3SG	0	0		
Rural 3ST	0	0		
Rural 4SG	0	0		
Rural 4ST	0	7	0.0000	1
Urban 3ST	4	9	0.4634	1
Urban 3SG	0	0		
Urban 4ST	17	25	0.6745	4
Urban 4SG	0	0		

Critical Rate Calculation														
Intersection	AADT Entering Intersection	5-year MEV	Crash Total	Intersection Population Type	Intersection Crash Rate	Reference Population Crash Rate	Critical Rate	Over Critical	APM Exhibit 4-1 Reference Population Crash Rate		Critical Rate	Over Critical	90th Percentile Rate	Over 90th Percentile
Oceanview/25th	3,160	5.8	2	Urban 4ST	0.35	APM Exhibit 4-1			0.198		0.59	Under	0.408	Under
11th/Nye	2,850	5.2	5	Urban 4ST	0.96	APM Exhibit 4-1			0.198		0.62	**Over**	0.408	**Over**
Harney/7th	3,730	6.8	0	Rural 4ST	0.00	APM Exhibit 4-1			0.434		0.92	Under	1.08	Under
Hurbert/9th	4,180	7.6	7	Urban 4ST	0.92	APM Exhibit 4-1			0.198		0.53	**Over**	0.408	**Over**
Abbey/9th	3,620	6.6	3	Urban 4ST	0.45	APM Exhibit 4-1			0.198		0.56	Under	0.408	**Over**
Bay/Moore	4,730	8.6	4	Urban 3ST	0.46	APM Exhibit 4-1			0.131		0.39	**Over**	0.293	**Over**

POSITIVE EXCESS PROPORTION OF CRASHES (FLAGGED IF GREATER THAN 0.1)

Name	Int	Ref Pop	Angle	Back	Bike	Fix	Head	NonCol OTH	Park	Ped	SS-M	SS-O	Turn	Rear
US 101/73rd	1	U4ST												
US 101/52nd	2	U4SG											0.030	0.200
US 101/Oceanview	3	U3ST											0.143	
US 101/36th	4	U3ST											0.000	0.000
US 101/31st	5	U3ST											0.000	0.107
US 101/20th	6	U4SG	0.041	0.047								0.032	0.000	0.005
US 101/11th	7	U4SG	0.000		0.119	0.044				0.030			0.096	0.000
US 101/6th	8	U4SG	0.000										0.030	0.133
US 101/US 20	9	U4SG	0.020	0.033		0.009				0.025		0.018	0.013	0.000
US 101/Angle	10	U4ST	0.106			0.024						0.115	0.015	0.000
US 101/Hurbert	11	U4SG				0.040	0.055			0.088		0.081	0.000	0.000
US 101/Bayley	12	U4ST	0.000			0.005				0.038			0.000	0.214
US 20/Benton	13	U4ST	0.033										0.233	0.000
US 20/Moore	14	U4SG	0.051										0.013	0.092
Oceanview/25th	15													
11th/Nye	16													
Harney/7th - AWSC	17													
Hurbert/9th	18													
Abbey/9th	19													
Bay/Moore	20													

POSITIVE EXCESS PROPORTION OF CRASHES (FLAGGED IF GREATER THAN 0.1)

Name	Int	Ref Pop	Angle	Back	Bike	Fix	Head	NonCol OTH	Park	Ped	SS-M	SS-O	Turn	Rear
US 101/73rd	1													
US 101/52nd	2													
US 101/Oceanvie	3													
US 101/36th	4													
US 101/31st	5													
US 101/20th	6													
US 101/11th	7													
US 101/6th	8													
US 101/US 20	9													
US 101/Angle	10													
US 101/Hurbert	11													
US 101/Bayley	12													
US 20/Benton	13													
US 20/Moore	14													
Oceanview/25th	15	U4ST					0.441						0.441	
11th/Nye	16	U4ST	0.176											
Harney/7th - AW	17	R4ST												
Hurbert/9th	18	U4ST	0.034											0.084
Abbey/9th	19	U4ST	0.176											
Bay/Moore	20	U3ST	0.000				0.000						0.000	

				Total Crashes							Crash Rate							Statewide Crash Rate						
Start MP	Road	Section	Type	Miles	2017	2016	2015	2014	2013	2012	Total	2017	2016	2015	2014	2013	2012	Avg	2017	2016	2015	2014	2013	2012	Average
136.2	US 101	Newport UA to CL	Suburban	0.33	2	0	0	0	3	0	5	1.63	0	0	0	2.83	0	0.892	1.39	1.41	1.45	1.7	1.45	1.71	1.48
136.53	US 101	Newport CL to Agate Beach	Urban	1.08	7	8	2	4	5	3	26	1.43	1.6	0.41	0.74	0.92	0.55	1.02	2.95	3.2	3.11	2.93	2.82	2.8	3.002
137.61	US 101	Agate Beach (52nd) to US 20	Urban	2.75	49	82	51	61	62	48	305	2.6	4.27	2.71	3.21	3.26	2.52	**3.21**	2.95	3.2	3.11	2.93	2.82	2.8	3.002
140.36	US 101	US 20 to Yaquina Bay Bridge	Urban	2.15	37	40	52	31	26	37	186	2.83	3	3.98	2.36	1.97	2.79	2.828	2.95	3.2	3.11	2.93	2.82	2.8	3.002
0	US 20	US 101 to Newport CL	Urban	0.76	12	14	13	9	7	11	55	3.23	3.69	3.49	2.26	1.75	2.74	2.884	2.95	3.2	3.11	2.93	2.82	2.8	3.002
0.76	US 20	Newport CL to UA	Suburban	1.08	1	8	4	2	1	4	16	0.23	1.79	0.91	0.39	0.19	0.78	0.702	1.39	1.41	1.45	1.7	1.45	1.71	1.48

Data Source: ODOT Crash Rate Tables, 2012-2017

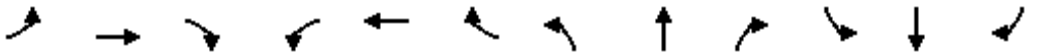
Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	4	59	0	9	3	655	34	13	492	2
Future Vol, veh/h	1	0	4	59	0	9	3	655	34	13	492	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	200	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	7	0	0	0	3	38	69	3	0
Mvmt Flow	1	0	4	62	0	9	3	689	36	14	518	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1265	1278	519	1244	1243	689	520	0	0	725	0	0
Stage 1	547	547	-	695	695	-	-	-	-	-	-	-
Stage 2	718	731	-	549	548	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.17	6.5	6.2	4.1	-	-	4.79	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.563	4	3.3	2.2	-	-	2.821	-	-
Pot Cap-1 Maneuver	147	168	561	147	176	449	1056	-	-	638	-	-
Stage 1	525	521	-	425	447	-	-	-	-	-	-	-
Stage 2	423	430	-	511	520	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	141	164	561	143	172	449	1056	-	-	638	-	-
Mov Cap-2 Maneuver	141	164	-	143	172	-	-	-	-	-	-	-
Stage 1	523	510	-	424	446	-	-	-	-	-	-	-
Stage 2	413	429	-	496	509	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.4	45.8	0	0.3
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1056	-	-	352	157	638	-	-
HCM Lane V/C Ratio	0.003	-	-	0.015	0.456	0.021	-	-
HCM Control Delay (s)	8.4	-	-	15.4	45.8	10.8	-	-
HCM Lane LOS	A	-	-	C	E	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0	2.1	0.1	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	2	86	49	0	8	50	818	73	17	635	28
Future Volume (veh/h)	33	2	86	49	0	8	50	818	73	17	635	28
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1750	1736	1750	1750	1750	1695	1682	1750	1750	1695	1750
Adj Flow Rate, veh/h	35	2	91	52	0	8	53	861	0	18	668	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	1	0	0	0	4	5	0	0	4	0
Cap, veh/h	74	2	394	76	0	397	74	972		42	944	
Arrive On Green	0.26	0.27	0.27	0.26	0.00	0.27	0.05	0.58	0.00	0.03	0.56	0.00
Sat Flow, veh/h	0	8	1461	0	0	1472	1615	1682	1483	1667	1695	1483
Grp Volume(v), veh/h	37	0	91	52	0	8	53	861	0	18	668	0
Grp Sat Flow(s),veh/h/ln	8	0	1461	0	0	1472	1615	1682	1483	1667	1695	1483
Q Serve(g_s), s	0.0	0.0	4.6	0.0	0.0	0.4	3.1	41.8	0.0	1.0	27.2	0.0
Cycle Q Clear(g_c), s	25.0	0.0	4.6	25.0	0.0	0.4	3.1	41.8	0.0	1.0	27.2	0.0
Prop In Lane	0.95		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	76	0	394	76	0	397	74	972		42	944	
V/C Ratio(X)	0.49	0.00	0.23	0.68	0.00	0.02	0.71	0.89		0.43	0.71	
Avail Cap(c_a), veh/h	76	0	394	76	0	397	436	1104		450	1113	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	45.6	0.0	26.9	47.1	0.0	25.3	44.5	17.2	0.0	45.4	15.3	0.0
Incr Delay (d2), s/veh	3.5	0.0	0.2	20.7	0.0	0.0	9.0	9.1	0.0	5.0	2.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	1.6	1.7	0.0	0.1	1.4	15.7	0.0	0.5	9.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.1	0.0	27.1	67.7	0.0	25.3	53.5	26.4	0.0	50.4	17.7	0.0
LnGrp LOS	D	A	C	E	A	C	D	C		D	B	
Approach Vol, veh/h		128			60			914	A		686	A
Approach Delay, s/veh		33.4			62.1			27.9			18.6	
Approach LOS		C			E			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	56.6		29.5	6.4	58.6		29.5				
Change Period (Y+Rc), s	4.5	6.0		4.5	4.5	6.0		4.5				
Max Green Setting (Gmax), s	25.0	60.0		25.0	25.0	60.0		25.0				
Max Q Clear Time (g_c+I1), s	5.1	29.2		27.0	3.0	43.8		27.0				
Green Ext Time (p_c), s	0.1	8.8		0.0	0.0	8.8		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		25.9	
HCM 6th LOS		C	

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	59	22	19	932	747	52
Future Vol, veh/h	59	22	19	932	747	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	300	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	11	5	4	4
Mvmt Flow	63	23	20	991	795	55

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1826	795	850	0	-	0
Stage 1	795	-	-	-	-	-
Stage 2	1031	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.21	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.299	-	-	-
Pot Cap-1 Maneuver	86	391	751	-	-	-
Stage 1	448	-	-	-	-	-
Stage 2	347	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	84	391	751	-	-	-
Mov Cap-2 Maneuver	208	-	-	-	-	-
Stage 1	436	-	-	-	-	-
Stage 2	347	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.5	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	751	-	238	-	-
HCM Lane V/C Ratio	0.027	-	0.362	-	-
HCM Control Delay (s)	9.9	-	28.5	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0.1	-	1.6	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	13	927	38	10	752
Future Vol, veh/h	21	13	927	38	10	752
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	125	275	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	31	4	0	0	3
Mvmt Flow	22	14	986	40	11	800

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1808	986	0	0	1026	0
Stage 1	986	-	-	-	-	-
Stage 2	822	-	-	-	-	-
Critical Hdwy	6.4	6.51	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.579	-	-	2.2	-
Pot Cap-1 Maneuver	88	265	-	-	685	-
Stage 1	364	-	-	-	-	-
Stage 2	435	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	87	265	-	-	685	-
Mov Cap-2 Maneuver	217	-	-	-	-	-
Stage 1	358	-	-	-	-	-
Stage 2	435	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.3	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	233	685	-
HCM Lane V/C Ratio	-	-	0.155	0.016	-
HCM Control Delay (s)	-	-	23.3	10.3	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.5	0	-

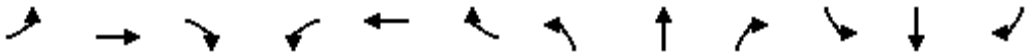
Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	24	7	957	48	9	763
Future Vol, veh/h	24	7	957	48	9	763
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	50	300	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	14	5	0	0	3
Mvmt Flow	26	8	1040	52	10	829

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1889	1040	0	0	1092	0
Stage 1	1040	-	-	-	-	-
Stage 2	849	-	-	-	-	-
Critical Hdwy	6.4	6.34	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.426	-	-	2.2	-
Pot Cap-1 Maneuver	78	265	-	-	647	-
Stage 1	344	-	-	-	-	-
Stage 2	423	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	77	265	-	-	647	-
Mov Cap-2 Maneuver	205	-	-	-	-	-
Stage 1	339	-	-	-	-	-
Stage 2	423	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.7	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	216	647	-
HCM Lane V/C Ratio	-	-	0.156	0.015	-
HCM Control Delay (s)	-	-	24.7	10.7	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.5	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	51	79	293	26	80	58	1028	98	65	848	18
Future Volume (vph)	37	51	79	293	26	80	58	1028	98	65	848	18
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.98	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.94		1.00	0.99		1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1694	1405	1564	1495		1630	3159		1614	3218	
Flt Permitted		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1694	1405	1564	1495		1630	3159		1614	3218	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	40	55	85	315	28	86	62	1105	105	70	912	19
RTOR Reduction (vph)	0	0	77	0	23	0	0	5	0	0	1	0
Lane Group Flow (vph)	0	95	8	220	186	0	62	1205	0	70	930	0
Confl. Peds. (#/hr)	4		4	4		4	7		2	2		7
Heavy Vehicles (%)	0%	2%	4%	1%	0%	2%	2%	4%	0%	3%	3%	0%
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	
Protected Phases	8	8		4	4		1	6		5	2	
Permitted Phases			8									
Actuated Green, G (s)		10.6	10.6	21.6	21.6		7.8	61.2		8.1	61.5	
Effective Green, g (s)		11.1	11.1	22.1	22.1		8.3	62.2		8.6	62.5	
Actuated g/C Ratio		0.09	0.09	0.18	0.18		0.07	0.52		0.07	0.52	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		2.5	2.5	2.5	2.5		2.5	5.1		2.5	5.1	
Lane Grp Cap (vph)		156	129	288	275		112	1637		115	1676	
v/s Ratio Prot		c0.06		c0.14	0.12		0.04	c0.38		c0.04	0.29	
v/s Ratio Perm			0.01									
v/c Ratio		0.61	0.06	0.76	0.68		0.55	0.74		0.61	0.55	
Uniform Delay, d1		52.4	49.7	46.5	45.6		54.1	22.5		54.1	19.4	
Progression Factor		1.00	1.00	1.00	1.00		0.98	0.78		1.00	1.00	
Incremental Delay, d2		5.6	0.1	10.9	5.9		4.1	2.6		7.5	1.3	
Delay (s)		57.9	49.8	57.4	51.5		57.3	20.1		61.5	20.7	
Level of Service		E	D	E	D		E	C		E	C	
Approach Delay (s)		54.1			54.5			21.9			23.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	15	24	26	9	49	10	1209	15	15	1189	21
Future Volume (veh/h)	71	15	24	26	9	49	10	1209	15	15	1189	21
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1750	1750	1750	1750	1750	1750	1709	1709	1750	1709	1709
Adj Flow Rate, veh/h	75	16	25	27	9	52	11	1273	16	16	1252	22
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	3	3	0	3	3
Cap, veh/h	143	28	34	77	33	102	24	2536	32	30	2532	44
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.03	1.00	1.00	0.04	1.00	1.00
Sat Flow, veh/h	856	260	307	342	300	927	1667	3283	41	1667	3263	57
Grp Volume(v), veh/h	116	0	0	88	0	0	11	629	660	16	623	651
Grp Sat Flow(s),veh/h/ln	1422	0	0	1569	0	0	1667	1624	1700	1667	1624	1697
Q Serve(g_s), s	3.3	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	1.1	0.0	0.0
Cycle Q Clear(g_c), s	9.5	0.0	0.0	6.3	0.0	0.0	0.8	0.0	0.0	1.1	0.0	0.0
Prop In Lane	0.65		0.22	0.31		0.59	1.00		0.02	1.00		0.03
Lane Grp Cap(c), veh/h	199	0	0	205	0	0	24	1254	1314	30	1260	1317
V/C Ratio(X)	0.58	0.00	0.00	0.43	0.00	0.00	0.46	0.50	0.50	0.53	0.49	0.49
Avail Cap(c_a), veh/h	352	0	0	362	0	0	125	1254	1314	125	1260	1317
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.65	0.65	0.65	0.79	0.79	0.79
Uniform Delay (d), s/veh	52.0	0.0	0.0	50.6	0.0	0.0	57.8	0.0	0.0	57.4	0.0	0.0
Incr Delay (d2), s/veh	2.0	0.0	0.0	1.1	0.0	0.0	6.4	0.9	0.9	8.4	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	0.0	2.6	0.0	0.0	0.4	0.3	0.3	0.5	0.4	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.0	0.0	0.0	51.7	0.0	0.0	64.3	0.9	0.9	65.8	1.1	1.1
LnGrp LOS	D	A	A	D	A	A	E	A	A	E	A	A
Approach Vol, veh/h		116			88			1300			1290	
Approach Delay, s/veh		54.0			51.7			1.5			1.9	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.7	97.1		17.1	6.2	96.7		17.1
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5
Max Green Setting (Gmax), s	8.5	72.0		25.5	8.5	72.0		25.5
Max Q Clear Time (g_c+I1), s	2.8	2.0		8.3	3.1	2.0		11.5
Green Ext Time (p_c), s	0.0	37.7		0.3	0.0	38.4		0.4

Intersection Summary	
HCM 6th Ctrl Delay	5.4
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	31	30	72	16	33	31	1177	20	21	1146	26
Future Volume (veh/h)	88	31	30	72	16	33	31	1177	20	21	1146	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1750	1750	1750	1750	1750	1750	1709	1709	1750	1695	1695
Adj Flow Rate, veh/h	98	34	33	80	18	37	34	1308	22	23	1273	29
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	0	0	0	0	3	3	0	4	4
Cap, veh/h	127	44	43	111	25	51	49	1940	33	37	1888	43
Arrive On Green	0.11	0.13	0.11	0.10	0.12	0.10	0.02	0.40	0.39	0.04	1.00	1.00
Sat Flow, veh/h	972	337	327	957	215	442	1667	3267	55	1667	3219	73
Grp Volume(v), veh/h	165	0	0	135	0	0	34	650	680	23	637	665
Grp Sat Flow(s),veh/h/ln	1637	0	0	1614	0	0	1667	1624	1699	1667	1611	1681
Q Serve(g_s), s	11.7	0.0	0.0	9.7	0.0	0.0	2.4	39.5	39.6	1.6	0.0	0.0
Cycle Q Clear(g_c), s	11.7	0.0	0.0	9.7	0.0	0.0	2.4	39.5	39.6	1.6	0.0	0.0
Prop In Lane	0.59		0.20	0.59		0.27	1.00		0.03	1.00		0.04
Lane Grp Cap(c), veh/h	214	0	0	187	0	0	49	964	1008	37	944	986
V/C Ratio(X)	0.77	0.00	0.00	0.72	0.00	0.00	0.70	0.67	0.67	0.63	0.67	0.67
Avail Cap(c_a), veh/h	218	0	0	215	0	0	153	964	1008	153	944	986
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.48	0.48	0.48	0.86	0.86	0.86
Uniform Delay (d), s/veh	51.2	0.0	0.0	52.0	0.0	0.0	58.3	26.6	26.6	56.9	0.0	0.0
Incr Delay (d2), s/veh	14.5	0.0	0.0	8.7	0.0	0.0	6.2	1.8	1.8	10.7	3.3	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	0.0	0.0	4.5	0.0	0.0	1.1	16.5	17.2	0.8	0.9	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.7	0.0	0.0	60.8	0.0	0.0	64.5	28.4	28.4	67.6	3.3	3.2
LnGrp LOS	E	A	A	E	A	A	E	C	C	E	A	A
Approach Vol, veh/h		165			135			1364			1325	
Approach Delay, s/veh		65.7			60.8			29.3			4.4	
Approach LOS		E			E			C			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.5	74.9		17.9	6.6	75.7		19.7
Change Period (Y+Rc), s	4.5	6.5		6.0	4.5	6.5		6.0
Max Green Setting (Gmax), s	10.5	58.5		14.0	10.5	58.5		14.0
Max Q Clear Time (g_c+I1), s	4.4	2.0		11.7	3.6	41.6		13.7
Green Ext Time (p_c), s	0.0	21.7		0.1	0.0	14.3		0.0

Intersection Summary	
HCM 6th Ctrl Delay	21.7
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	190	28	239	159	280	60	784	193	306	777	65
Future Volume (veh/h)	193	190	28	239	159	280	60	784	193	306	777	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1736	1736	1736	1654	1723	1723	1750	1695	1614	1695	1709	1709
Adj Flow Rate, veh/h	205	202	30	254	169	298	64	834	0	326	827	69
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	7	2	2	0	4	10	4	3	3
Cap, veh/h	237	238	35	276	334	274	87	1007		350	1444	120
Arrive On Green	0.14	0.16	0.16	0.17	0.19	0.19	0.05	0.31	0.00	0.07	0.16	0.15
Sat Flow, veh/h	1654	1468	218	1576	1723	1410	1667	3221	1367	1615	3027	253
Grp Volume(v), veh/h	205	0	232	254	169	298	64	834	0	326	443	453
Grp Sat Flow(s),veh/h/ln	1654	0	1686	1576	1723	1410	1667	1611	1367	1615	1624	1656
Q Serve(g_s), s	14.5	0.0	16.0	19.0	10.5	23.3	4.5	28.8	0.0	24.1	30.4	30.4
Cycle Q Clear(g_c), s	14.5	0.0	16.0	19.0	10.5	23.3	4.5	28.8	0.0	24.1	30.4	30.4
Prop In Lane	1.00		0.13	1.00		1.00	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	237	0	274	276	334	274	87	1007		350	774	790
V/C Ratio(X)	0.86	0.00	0.85	0.92	0.51	1.09	0.73	0.83		0.93	0.57	0.57
Avail Cap(c_a), veh/h	289	0	295	276	334	274	153	1007		350	774	790
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.65	0.65	0.65
Uniform Delay (d), s/veh	50.3	0.0	48.9	48.7	43.2	48.4	56.0	38.2	0.0	54.8	39.2	39.3
Incr Delay (d2), s/veh	18.9	0.0	18.5	33.9	1.2	80.4	8.5	7.8	0.0	25.1	2.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	0.0	8.2	10.0	4.6	14.3	2.1	12.5	0.0	12.9	13.7	14.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.1	0.0	67.3	82.5	44.5	128.8	64.5	46.1	0.0	80.0	41.2	41.2
LnGrp LOS	E	A	E	F	D	F	E	D		E	D	D
Approach Vol, veh/h		437			721			898	A		1222	
Approach Delay, s/veh		68.2			92.7			47.4			51.6	
Approach LOS		E			F			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	61.2	21.2	27.3	30.0	41.5	25.0	23.5
Change Period (Y+Rc), s	4.5	5.0	4.5	4.5	4.5	5.0	4.5	4.5
Max Green Setting (Gmax), s	10.5	50.0	20.5	20.5	25.5	35.0	20.5	20.5
Max Q Clear Time (g_c+I1), s	6.5	32.4	16.5	25.3	26.1	30.8	21.0	18.0
Green Ext Time (p_c), s	0.0	9.5	0.2	0.0	0.0	2.9	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	61.7
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

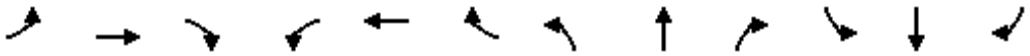
Intersection	
Int Delay, s/veh	7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	12	12	7	8	105	7	894	11	45	924	44
Future Vol, veh/h	9	12	12	7	8	105	7	894	11	45	924	44
Conflicting Peds, #/hr	0	0	17	17	0	0	22	0	11	11	0	22
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	14	0	2	0	4	0	4	2	2
Mvmt Flow	10	13	13	8	9	115	8	982	12	49	1015	48

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1671	2180	571	1644	2198	508	1085	0	0	1005	0	0
Stage 1	1159	1159	-	1015	1015	-	-	-	-	-	-	-
Stage 2	512	1021	-	629	1183	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.78	6.5	6.94	4.1	-	-	4.18	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.78	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.78	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.64	4	3.32	2.2	-	-	2.24	-	-
Pot Cap-1 Maneuver	64	47	469	58	45	510	651	-	-	673	-	-
Stage 1	212	272	-	234	318	-	-	-	-	-	-	-
Stage 2	518	316	-	409	265	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	33	36	452	33	35	505	637	-	-	666	-	-
Mov Cap-2 Maneuver	33	36	-	33	35	-	-	-	-	-	-	-
Stage 1	202	218	-	225	306	-	-	-	-	-	-	-
Stage 2	377	304	-	300	212	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	168.5	61.9	0.2	1.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	637	-	-	52	185	666	-	-
HCM Lane V/C Ratio	0.012	-	-	0.697	0.713	0.074	-	-
HCM Control Delay (s)	10.7	0.1	-	168.5	61.9	10.8	0.9	-
HCM Lane LOS	B	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0	-	-	2.8	4.5	0.2	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	22	34	67	40	44	20	768	9	38	859	20
Future Volume (veh/h)	37	22	34	67	40	44	20	768	9	38	859	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.98		0.98	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1750	1750	1682	1682	1682	1695	1695	1695	1723	1723	1723
Adj Flow Rate, veh/h	38	23	35	69	41	45	21	792	9	39	886	21
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	5	5	5	4	4	4	2	2	2
Cap, veh/h	103	64	71	121	63	58	26	1044	12	59	1413	35
Arrive On Green	0.13	0.14	0.13	0.13	0.14	0.13	0.31	0.32	0.31	0.58	0.59	0.58
Sat Flow, veh/h	440	459	516	562	458	417	82	3256	39	135	3205	80
Grp Volume(v), veh/h	96	0	0	155	0	0	431	0	391	497	0	449
Grp Sat Flow(s),veh/h/ln	1414	0	0	1436	0	0	1691	0	1686	1716	0	1703
Q Serve(g_s), s	0.0	0.0	0.0	5.1	0.0	0.0	27.9	0.0	24.6	23.4	0.0	20.2
Cycle Q Clear(g_c), s	7.3	0.0	0.0	12.5	0.0	0.0	27.9	0.0	24.6	23.4	0.0	20.2
Prop In Lane	0.40		0.36	0.45		0.29	0.05		0.02	0.08		0.05
Lane Grp Cap(c), veh/h	232	0	0	236	0	0	542	0	541	756	0	751
V/C Ratio(X)	0.41	0.00	0.00	0.66	0.00	0.00	0.79	0.00	0.72	0.66	0.00	0.60
Avail Cap(c_a), veh/h	273	0	0	276	0	0	620	0	618	756	0	751
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.7	0.0	0.0	50.0	0.0	0.0	37.2	0.0	36.1	18.8	0.0	18.1
Incr Delay (d2), s/veh	0.9	0.0	0.0	3.7	0.0	0.0	8.6	0.0	5.7	4.4	0.0	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.0	4.8	0.0	0.0	12.9	0.0	11.0	9.2	0.0	7.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.6	0.0	0.0	53.7	0.0	0.0	45.8	0.0	41.7	23.2	0.0	21.6
LnGrp LOS	D	A	A	D	A	A	D	A	D	C	A	C
Approach Vol, veh/h		96			155			822			946	
Approach Delay, s/veh		48.6			53.7			43.9			22.4	
Approach LOS		D			D			D			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		56.9		20.6		42.5		20.6				
Change Period (Y+Rc), s		5.0		4.5		5.0		4.5				
Max Green Setting (Gmax), s		43.0		19.5		43.0		19.5				
Max Q Clear Time (g_c+I1), s		25.4		14.5		29.9		9.3				
Green Ext Time (p_c), s		10.0		0.3		7.6		0.2				

Intersection Summary		
HCM 6th Ctrl Delay		34.8
HCM 6th LOS		C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	0	56	9	0	27	25	955	7	6	968	18
Future Vol, veh/h	12	0	56	9	0	27	25	955	7	6	968	18
Conflicting Peds, #/hr	10	0	0	0	0	10	13	0	8	8	0	13
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0	4	3	0	0	2	0
Mvmt Flow	13	0	62	10	0	30	28	1061	8	7	1076	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1710	2246	561	1681	2252	553	1109	0	0	1077	0	0
Stage 1	1113	1113	-	1129	1129	-	-	-	-	-	-	-
Stage 2	597	1133	-	552	1123	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.18	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.24	-	-	2.2	-	-
Pot Cap-1 Maneuver	60	42	476	63	42	482	614	-	-	655	-	-
Stage 1	226	286	-	221	281	-	-	-	-	-	-	-
Stage 2	461	280	-	491	283	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	52	38	470	51	38	474	606	-	-	650	-	-
Mov Cap-2 Maneuver	52	38	-	51	38	-	-	-	-	-	-	-
Stage 1	213	275	-	209	266	-	-	-	-	-	-	-
Stage 2	408	265	-	414	272	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	34.9	36.4	0.3	0.2
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	606	-	-	194	154	650	-	-
HCM Lane V/C Ratio	0.046	-	-	0.389	0.26	0.01	-	-
HCM Control Delay (s)	11.2	-	-	34.9	36.4	10.6	0.1	-
HCM Lane LOS	B	-	-	D	E	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.7	1	0	-	-

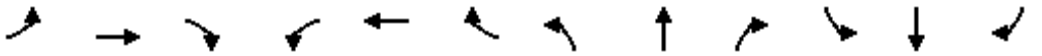
Intersection	
Int Delay, s/veh	7.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	654	38	109	624	4	16	3	177	5	6	37
Future Vol, veh/h	12	654	38	109	624	4	16	3	177	5	6	37
Conflicting Peds, #/hr	1	0	1	1	0	1	1	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	6	5	4	4	0	6	0	3	0	0	3
Mvmt Flow	13	688	40	115	657	4	17	3	186	5	6	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	662	0	0	729	0	0	1648	1627	710	1720	1645	661
Stage 1	-	-	-	-	-	-	735	735	-	890	890	-
Stage 2	-	-	-	-	-	-	913	892	-	830	755	-
Critical Hdwy	4.1	-	-	4.14	-	-	7.16	6.5	6.23	7.1	6.5	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.236	-	-	3.554	4	3.327	3.5	4	3.327
Pot Cap-1 Maneuver	936	-	-	866	-	-	77	103	432	71	101	461
Stage 1	-	-	-	-	-	-	405	428	-	340	364	-
Stage 2	-	-	-	-	-	-	322	363	-	367	420	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	935	-	-	865	-	-	59	88	431	35	86	460
Mov Cap-2 Maneuver	-	-	-	-	-	-	59	88	-	35	86	-
Stage 1	-	-	-	-	-	-	399	422	-	335	315	-
Stage 2	-	-	-	-	-	-	250	314	-	204	414	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.4	49.4	36.4
HCM LOS			E	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	274	935	-	-	865	-	-	164
HCM Lane V/C Ratio	0.753	0.014	-	-	0.133	-	-	0.308
HCM Control Delay (s)	49.4	8.9	-	-	9.8	-	-	36.4
HCM Lane LOS	E	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	5.5	0	-	-	0.5	-	-	1.2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	680	135	37	453	71	106	50	46	137	64	37
Future Volume (veh/h)	49	680	135	37	453	71	106	50	46	137	64	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1614	1723	1723	1709	1709	1654	1723	1723	1695	1750	1750	1750
Adj Flow Rate, veh/h	53	739	147	40	492	77	115	54	50	149	70	40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	3	3	7	2	2	4	0	0	0
Cap, veh/h	83	1238	246	76	764	627	341	142	456	255	113	52
Arrive On Green	0.05	0.45	0.44	0.05	0.45	0.45	0.31	0.32	0.32	0.31	0.32	0.31
Sat Flow, veh/h	1537	2721	541	1628	1709	1402	785	446	1430	535	353	162
Grp Volume(v), veh/h	53	444	442	40	492	77	169	0	50	259	0	0
Grp Sat Flow(s),veh/h/ln	1537	1637	1625	1628	1709	1402	1232	0	1430	1050	0	0
Q Serve(g_s), s	2.3	13.6	13.7	1.6	14.9	2.1	0.0	0.0	1.7	9.7	0.0	0.0
Cycle Q Clear(g_c), s	2.3	13.6	13.7	1.6	14.9	2.1	7.3	0.0	1.7	16.9	0.0	0.0
Prop In Lane	1.00		0.33	1.00		1.00	0.68		1.00	0.58		0.15
Lane Grp Cap(c), veh/h	83	745	739	76	764	627	474	0	456	412	0	0
V/C Ratio(X)	0.64	0.60	0.60	0.53	0.64	0.12	0.36	0.00	0.11	0.63	0.00	0.00
Avail Cap(c_a), veh/h	471	1003	997	499	1048	860	665	0	652	608	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.0	13.6	13.8	31.2	14.3	10.8	18.0	0.0	16.1	23.2	0.0	0.0
Incr Delay (d2), s/veh	5.8	2.9	3.0	4.1	3.5	0.3	0.3	0.0	0.1	1.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	5.0	5.1	0.7	5.8	0.7	2.0	0.0	0.5	3.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.8	16.6	16.7	35.3	17.8	11.1	18.3	0.0	16.1	24.8	0.0	0.0
LnGrp LOS	D	B	B	D	B	B	B	A	B	C	A	A
Approach Vol, veh/h		939			609			219			259	
Approach Delay, s/veh		17.8			18.1			17.8			24.8	
Approach LOS		B			B			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.1	34.4		25.3	7.6	33.9		25.3				
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5				
Max Green Setting (Gmax), s	20.0	40.0		30.0	20.0	40.0		30.0				
Max Q Clear Time (g_c+I1), s	3.6	15.7		18.9	4.3	16.9		9.3				
Green Ext Time (p_c), s	0.0	13.8		1.2	0.1	8.5		0.9				

Intersection Summary			
HCM 6th Ctrl Delay		18.8	
HCM 6th LOS		B	

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	28	0	14	0	89	82	16	87	0
Future Vol, veh/h	0	0	0	28	0	14	0	89	82	16	87	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	7	0	0	0	0	0	0	2	0
Mvmt Flow	0	0	0	35	0	17	0	110	101	20	107	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	316	359	107	309	309	162	107	0	0	212	0	0
Stage 1	147	147	-	162	162	-	-	-	-	-	-	-
Stage 2	169	212	-	147	147	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.17	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.563	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	641	571	953	634	609	888	1497	-	-	1370	-	-
Stage 1	860	779	-	828	768	-	-	-	-	-	-	-
Stage 2	838	731	-	844	779	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	621	561	953	626	599	887	1497	-	-	1369	-	-
Mov Cap-2 Maneuver	621	561	-	626	599	-	-	-	-	-	-	-
Stage 1	860	767	-	827	767	-	-	-	-	-	-	-
Stage 2	822	730	-	830	767	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.6	0	1.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1497	-	-	-	694	1369	-	-
HCM Lane V/C Ratio	-	-	-	-	0.075	0.014	-	-
HCM Control Delay (s)	0	-	-	0	10.6	7.7	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0	-	-

Intersection	
Int Delay, s/veh	8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	3	29	3	12	21	6	14	75	54	12	51	5
Future Vol, veh/h	3	29	3	12	21	6	14	75	54	12	51	5
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	2	2	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	4	36	4	15	26	8	18	94	68	15	64	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	34	0	0	40	0	0	142	110	40	189	108	31
Stage 1	-	-	-	-	-	-	46	46	-	60	60	-
Stage 2	-	-	-	-	-	-	96	64	-	129	48	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1591	-	-	1583	-	-	832	784	1037	776	786	1049
Stage 1	-	-	-	-	-	-	973	861	-	957	849	-
Stage 2	-	-	-	-	-	-	916	846	-	880	859	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1591	-	-	1583	-	-	767	774	1035	650	776	1048
Mov Cap-2 Maneuver	-	-	-	-	-	-	767	774	-	650	776	-
Stage 1	-	-	-	-	-	-	970	858	-	954	841	-
Stage 2	-	-	-	-	-	-	832	838	-	729	856	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	2.2	10.3	10.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	855	1591	-	-	1583	-	-	764
HCM Lane V/C Ratio	0.209	0.002	-	-	0.009	-	-	0.111
HCM Control Delay (s)	10.3	7.3	0	-	7.3	0	-	10.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.4

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	36	127	24	28	0	124	0	32	0	1	0
Future Vol, veh/h	1	36	127	24	28	0	124	0	32	0	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	0	0	0	0	0	0	1	0	0	0	0	0
Mvmt Flow	1	40	143	27	31	0	139	0	36	0	1	0
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	8	8	9.3	7.8
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	1%	46%	0%
Vol Thru, %	0%	0%	22%	54%	100%
Vol Right, %	0%	100%	77%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	124	32	164	52	1
LT Vol	124	0	1	24	0
Through Vol	0	0	36	28	1
RT Vol	0	32	127	0	0
Lane Flow Rate	139	36	184	58	1
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.215	0.043	0.203	0.075	0.001
Departure Headway (Hd)	5.557	4.334	3.975	4.647	4.745
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	649	831	905	772	754
Service Time	3.257	2.034	1.989	2.668	2.777
HCM Lane V/C Ratio	0.214	0.043	0.203	0.075	0.001
HCM Control Delay	9.8	7.2	8	8	7.8
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.8	0.1	0.8	0.2	0

Intersection	
Int Delay, s/veh	9.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	9	51	9	3	68	20	16	212	13	17	91	70
Future Vol, veh/h	9	51	9	3	68	20	16	212	13	17	91	70
Conflicting Peds, #/hr	4	0	15	15	0	4	2	0	11	11	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	2	0	0	0	0	6	2	23	0	6	0
Mvmt Flow	10	58	10	3	77	23	18	241	15	19	103	80

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	104	0	0	83	0	0	286	208	89	321	202	95
Stage 1	-	-	-	-	-	-	98	98	-	99	99	-
Stage 2	-	-	-	-	-	-	188	110	-	222	103	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.16	6.52	6.43	7.1	6.56	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.52	-	6.1	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.52	-	6.1	5.56	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.554	4.018	3.507	3.5	4.054	3.3
Pot Cap-1 Maneuver	1500	-	-	1527	-	-	658	689	914	636	687	967
Stage 1	-	-	-	-	-	-	899	814	-	912	805	-
Stage 2	-	-	-	-	-	-	805	804	-	785	802	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1494	-	-	1505	-	-	520	670	892	441	668	961
Mov Cap-2 Maneuver	-	-	-	-	-	-	520	670	-	441	668	-
Stage 1	-	-	-	-	-	-	880	797	-	902	800	-
Stage 2	-	-	-	-	-	-	640	799	-	529	785	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.2	14.1	12
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	666	1494	-	-	1505	-	-	719
HCM Lane V/C Ratio	0.411	0.007	-	-	0.002	-	-	0.281
HCM Control Delay (s)	14.1	7.4	0	-	7.4	0	-	12
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	2	0	-	-	0	-	-	1.2

Intersection	
Int Delay, s/veh	7.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	23	30	11	1	61	39	17	80	8	33	44	15
Future Vol, veh/h	23	30	11	1	61	39	17	80	8	33	44	15
Conflicting Peds, #/hr	23	0	27	27	0	23	8	0	34	34	0	8
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	3	0	4	0	6	0	7
Mvmt Flow	28	36	13	1	73	47	20	96	10	40	53	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	143	0	0	76	0	0	268	271	104	308	254	128
Stage 1	-	-	-	-	-	-	126	126	-	122	122	-
Stage 2	-	-	-	-	-	-	142	145	-	186	132	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.54	6.2	7.16	6.5	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.54	-	6.16	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.54	-	6.16	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.036	3.3	3.554	4	3.363
Pot Cap-1 Maneuver	1452	-	-	1536	-	-	689	632	956	637	653	909
Stage 1	-	-	-	-	-	-	883	788	-	873	799	-
Stage 2	-	-	-	-	-	-	866	773	-	807	791	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1420	-	-	1497	-	-	599	590	901	513	609	882
Mov Cap-2 Maneuver	-	-	-	-	-	-	599	590	-	513	609	-
Stage 1	-	-	-	-	-	-	843	753	-	837	781	-
Stage 2	-	-	-	-	-	-	784	755	-	660	755	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.7	0.1	12.5	12.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	607	1420	-	-	1497	-	-	599
HCM Lane V/C Ratio	0.208	0.02	-	-	0.001	-	-	0.185
HCM Control Delay (s)	12.5	7.6	0	-	7.4	0	-	12.4
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0.1	-	-	0	-	-	0.7

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	56	71	70	104	132	40
Future Vol, veh/h	56	71	70	104	132	40
Conflicting Peds, #/hr	2	9	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Yield
Storage Length	0	-	100	-	-	125
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	4	0	0	3	3	8
Mvmt Flow	62	79	78	116	147	44

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	421	156	147	0	-	0
Stage 1	147	-	-	-	-	-
Stage 2	274	-	-	-	-	-
Critical Hdwy	6.44	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	585	895	1447	-	-	-
Stage 1	876	-	-	-	-	-
Stage 2	768	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	553	887	1447	-	-	-
Mov Cap-2 Maneuver	553	-	-	-	-	-
Stage 1	829	-	-	-	-	-
Stage 2	768	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.4	3.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1447	-	700	-	-
HCM Lane V/C Ratio	0.054	-	0.202	-	-
HCM Control Delay (s)	7.6	-	11.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.7	-	-