

Baseline Traffic Conditions

Prepared For

**Western Federal Lands
Highway Division (WFLHD)**

Ridgefield River 'S' Unit

Date: August 30, 2012



HDR

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1.0 EXECUTIVE SUMMARY

In support of the Ridgefield Wildlife Refuge River 'S' Unit Access Project, an assessment of baseline traffic conditions is being performed to determine potential impacts on traffic circulation in downtown Ridgefield, Washington. Peak hour traffic volumes indicate that relocating the existing refuge entrance to a number of alternative access locations is not expected to re-route a significant amount of traffic during the weekday peak hour study period. A total of 16 peak hour trips will be re-routed from the existing refuge entrance to the alternative crossing locations resulting in only minor operational impacts that would not exceed the City of Ridgefield's Level-of-Service (LOS) standards. Future year conditions are also anticipated to perform at acceptable LOS standards, even if the number of refuge trips were to double as a result of relocating the existing entrance.

2.0 PROJECT BACKGROUND AND DESCRIPTION

The Ridgefield Wildlife Refuge River 'S' Unit Access Project, led by the Western Federal Lands Highway Division (WFLHD) of the Federal Highway Administration (FHWA), in cooperation with the US Fish and Wildlife Service (USFWS), will assess the current access location and identify specific alternative locations for the replacement of the existing bridge accessing the River 'S' Unit.

The River 'S' Unit is part of the Ridgefield National Wildlife Refuge in Ridgefield, Washington. The entrance to the River 'S' Unit is located on South Hillhurst Road, approximately 0.7 miles south of SR 501 (Pioneer Street). The primary feature of the River 'S' Unit is a 4.3 mile auto-tour route that draws over 120,000 visitors per year and is open year round to the general public.

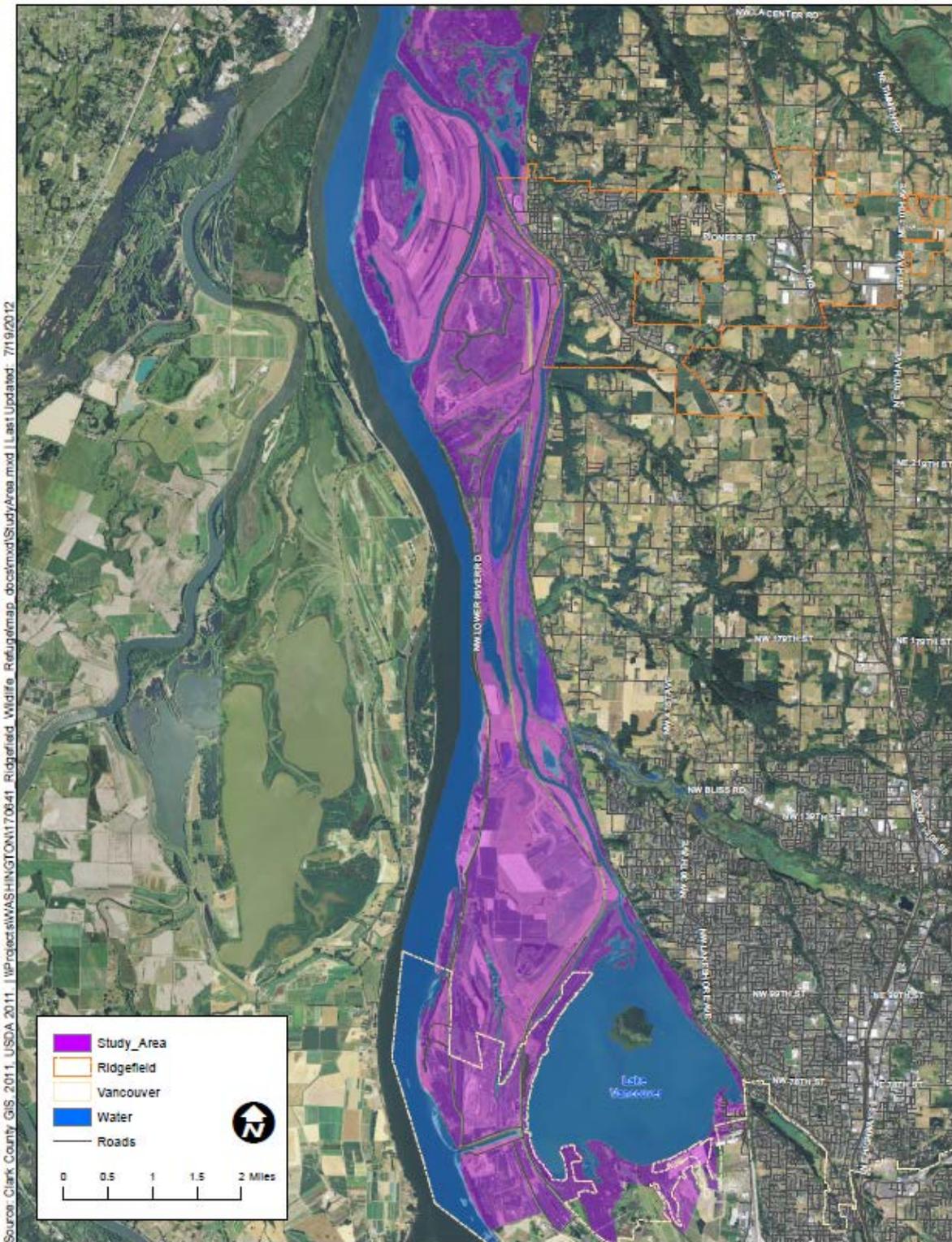
The purpose of this report is to obtain and assess baseline traffic conditions for Ridgefield area traffic that influences the River 'S' Unit study area. Existing traffic counts and forecast traffic growth from various contributors will be used to determine potential impacts as a result of re-routing refuge traffic to each alternative crossing location.

3.0 STUDY AREA

The study area for the Ridgefield Wildlife Refuges' River 'S' Unit is located within the incorporated cities of Vancouver and Ridgefield and in unincorporated western Clark County, Washington. The study area includes the Ridgefield Wildlife Refuge area and land adjacent to Vancouver Lake, Lake River, Columbia River, and connected waters. As shown in Figure 1, the bounds of the study area include Vancouver Lake to the south, the Columbia River to the west, Union Pacific/Burlington Northern railroad to the east, and the Lake River-Columbia River confluence to the north.

The Ridgefield Wildlife Refuge River 'S' Unit Access Project includes an assessment of baseline traffic conditions for adjacent roadways in the City of Ridgefield that will influence the River 'S' Unit study area. These adjacent roadways include the following streets: Cook Street, Division Street, Mill Street, Main Avenue, 3rd Avenue, 5th Avenue, 9th Avenue and Pioneer Street west of 9th Avenue.

Figure 1: River 'S' Unit Study Area



4.0 RIDGEFIELD WILDLIFE REFUGE ACCESS ALTERNATIVES

In addition to replacing the existing bridge at the current access to the Ridgefield Wildlife Refuges' River 'S' Unit, the Access Project has identified multiple alternative crossing locations that will be accessed from within the downtown Ridgefield area. Each of these alternatives, shown below in Figure 2, will provide access to the refuge via one of five (5) City streets.

Figure 2: River 'S' Unit Access Alternatives



The crossing alternatives include access to the River 'S' Unit from Cook Street, Division Street, Mill Street, Pioneer Street and S. Main Avenue. Currently, only Cook and Division Streets provide an at-grade crossing of the Union Pacific/Burlington Northern railroad. If a rail overcrossing is considered as part of the preferred access alternative,

the *Ridgefield Rail Overcrossing Traffic Study*, completed by HDJ Engineers in July 2007, recommended the Pioneer Street crossing as the option that creates the least impact in terms of vehicle delay, safety and parking when considering the future impacts of development in the Port area.

5.0 EXISTING CONDITIONS

5.1 Transportation Facilities

The following summarizes the existing roadway classifications and descriptions, as identified in the City of Ridgefield’s Transportation Plan, for the adjacent roadways west of and including 9th Avenue that influence the River ‘S’ Unit study area.

Table 1: Roadway Characteristics

Roadway	Classification	Posted Speed	Existing Lanes	Bike Lanes
Pioneer Street (SR 501)	State Highway/ Principal Arterial	25 mph	2	No
Cook Street	Local Road	25 mph	2	No
Division Street	Local Road	25 mph	2	No
Mill Street	Local Road	25 mph	2	No
N. Main Avenue	Minor Arterial	25 mph	2	No
S. Main Avenue	Local Road	25 mph	2	No
3 rd Avenue	Local Road	25 mph	2	No
5 th Avenue	Local Road	25 mph	2	No
9 th Avenue	Minor Arterial	25 mph	2	No

Parallel parking is provided on all streets that are part of the alternative access locations. All parking is unmarked and the number of available spaces will vary based on vehicle lengths. If roadway or intersection improvements are required as a result of relocating access to the River ‘S’ Unit, it is possible that parking may be affected.

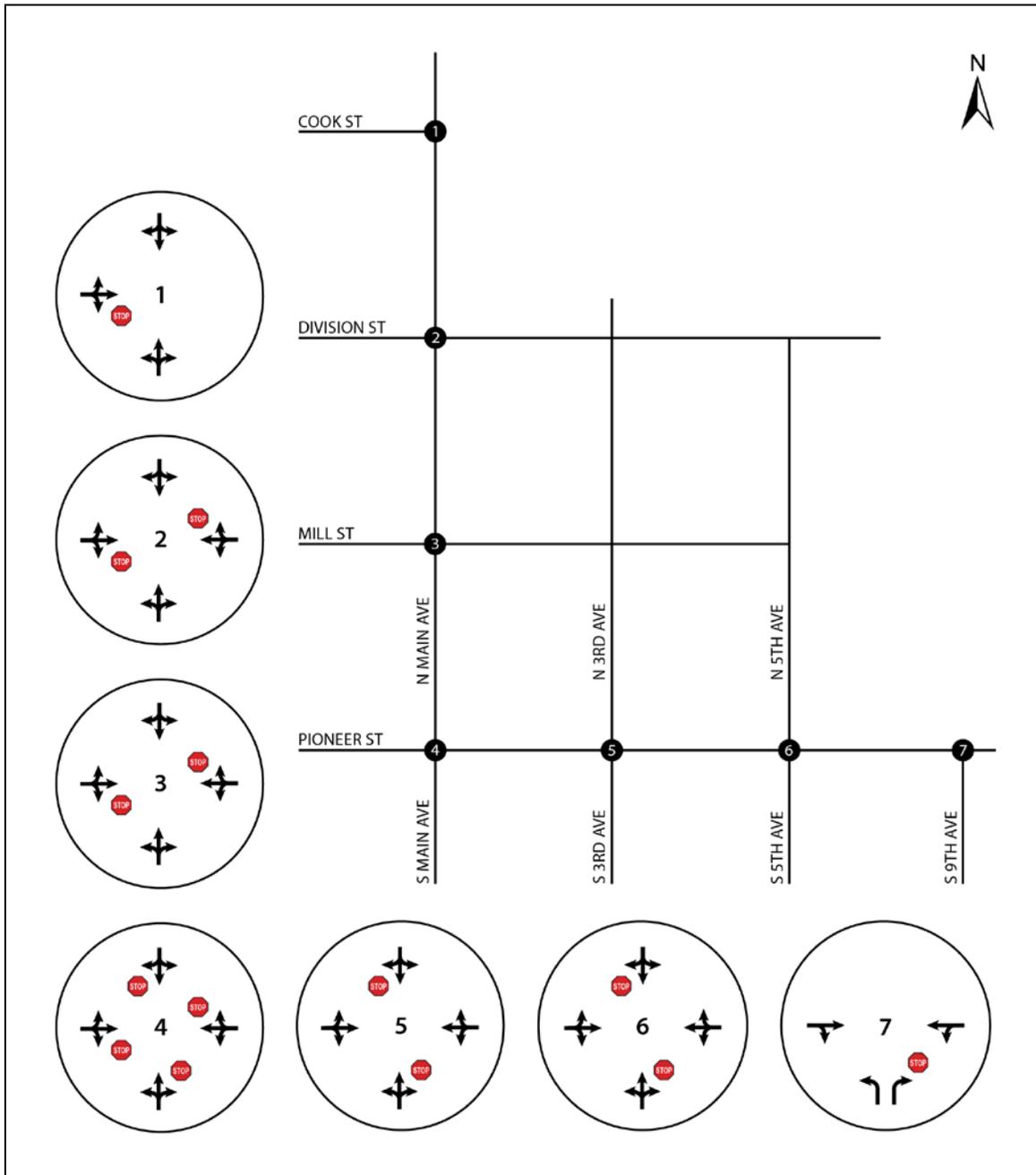
5.2 Land Use

As shown on Figure 3, land uses on the eastern edge of the study area and within the areas surrounding the alternative access locations to the River ‘S’ Unit include residential, parks, commercial, industrial, vacant lands, and road/railroad rights-of-way. Both the Cook and Division Street crossing alternatives are located on industrial land that is part of the Port redevelopment area. The Mill Street alternative has industrial land to the north and land zoned residential to the south. The Pioneer Street and S. Main Avenue crossing alternatives include a mix of residential and commercial land uses. Existing roadways and intersections that may be impacted by relocating the entrance to the wildlife refuge are primarily zoned for residential and commercial use, with some available vacant land adjacent to the intersection of Pioneer Street and Main Avenue.

5.3 Existing Lane Configurations and Traffic Control

Existing lane configurations and traffic control for key study area intersections are presented in Figure 4. All intersections included in the area of influence for the River 'S' Unit study area are stop-controlled for the minor roadway approaches, with the exception of the Pioneer Street and Main Avenue intersection, which is all-way stop controlled.

Figure 4: Existing Lane Configuration and Traffic Control



5.4 Existing Traffic Counts

Existing vehicle classification counts were collected over a continuous two-week period between Thursday, June 14, 2012 and Wednesday, June 27, 2012. Traffic counts were collected at the following locations:

- Ridgefield Wildlife Refuge Entrance
- Pioneer Street (east of Main Avenue)
- Main Avenue (south of Pioneer Street)
- Mill Street (west of Main Avenue)
- Division Street (west of Main Avenue)

A vehicle classification count was not collected on Cook Street, the northernmost alternative for a new access to the River ‘S’ Unit, because it was assumed that the traffic characteristics would be similar to Division Street.

Traffic counts included the FHWA 13-vehicle classification scheme and an unclassified bin for recording vehicles that could not be classified. The average daily vehicle classifications for the two-week study period are presented in Table 2. The percentage of trucks includes buses as well as two-axle vehicles with six tires, i.e. ambulances or small delivery trucks.

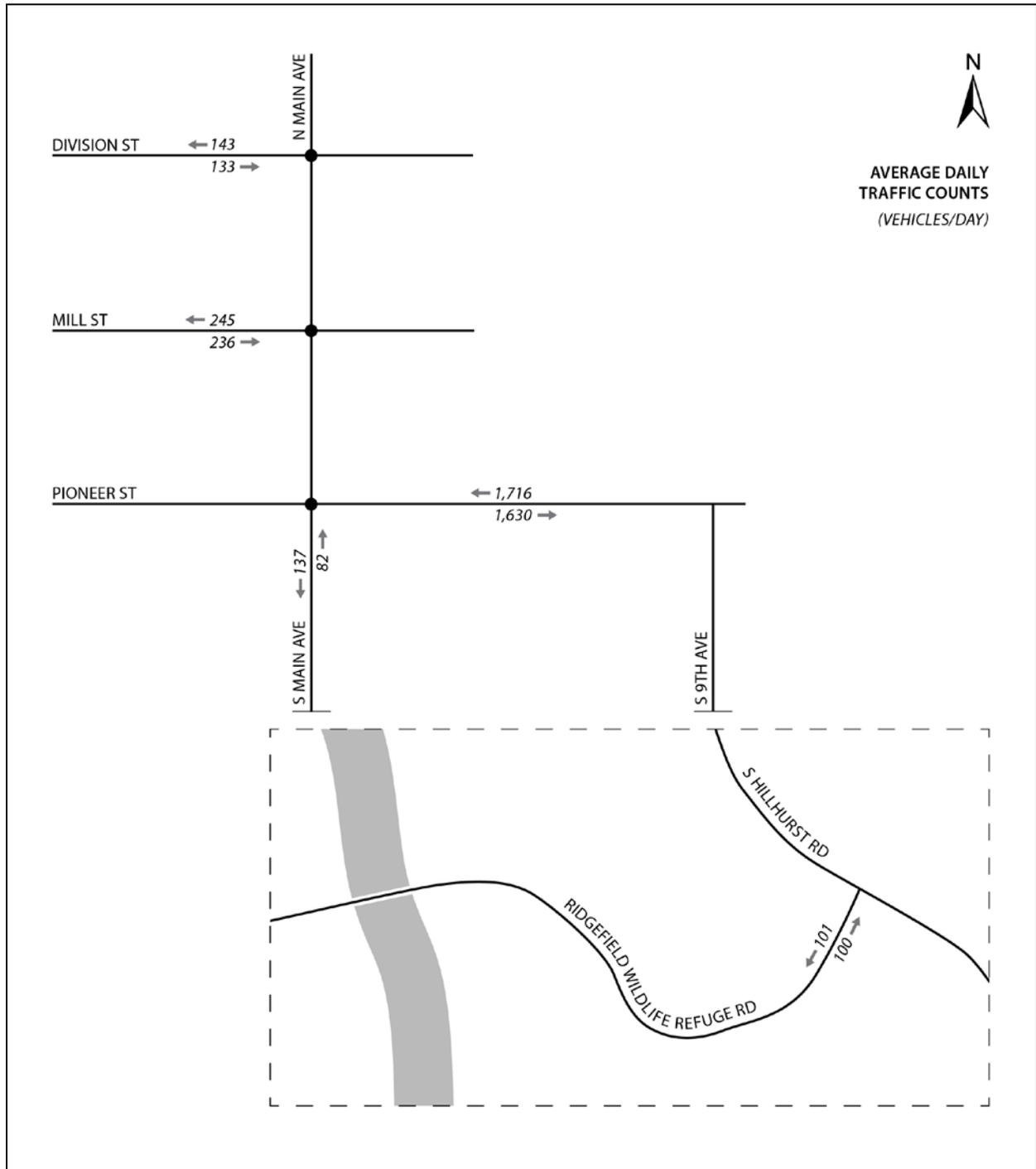
Table 2: Average Daily Vehicle Classification

Location	Weekday		Weekend	
	Trucks	Unclassified	Trucks	Unclassified
	%	%	%	%
Wildlife Refuge Entrance	6	7	2	7
Pioneer Street (east of Main Ave.)	11	2	11	2
Main Avenue (south of Pioneer St.)	7	5	8	7
Mill Street (west of Main Ave.)	19	5	25	9
Division Street (west of Main Ave.)	17	7	6	5

The percentage of unclassified vehicles includes vehicles that may not have been classified due to the difficulty of measuring axle strikes on the gravel road at the refuge entrance. Classification counts are also less reliable at low speeds, less than 15 mph, and likely contributed to the higher percentage of unclassified vehicles on local streets.

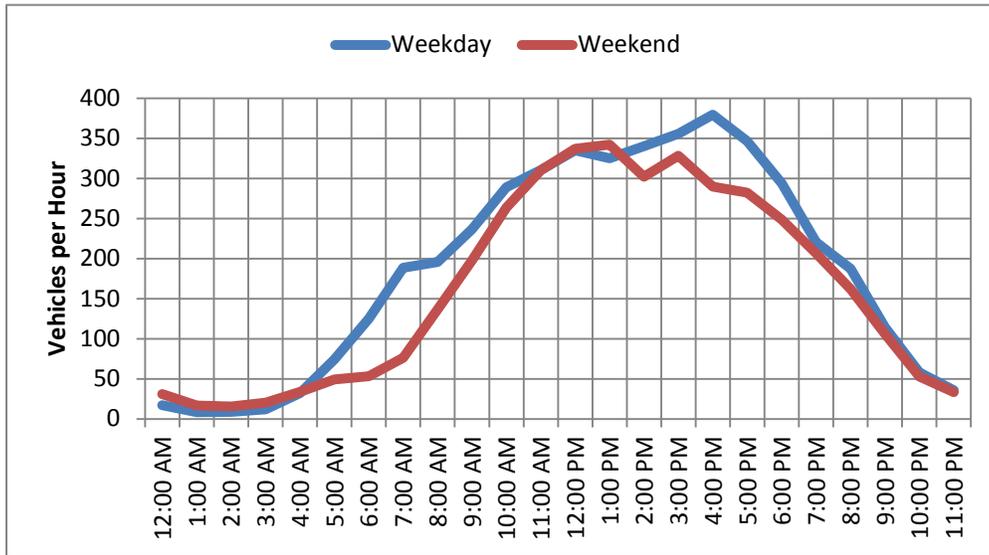
Average daily traffic volumes for the two-week study period are provided in Figure 5. The current objective of the Ridgefield Wildlife Refuge is to limit the number of entering trips per day to the River ‘S’ Unit to fewer than 200. As shown in Figure 5, the average number of entering trips during the study period is 101, just over half of the desired limit. The highest number of entering trips in a single day was 134, which occurred on a Sunday.

Figure 5: Average Daily Traffic



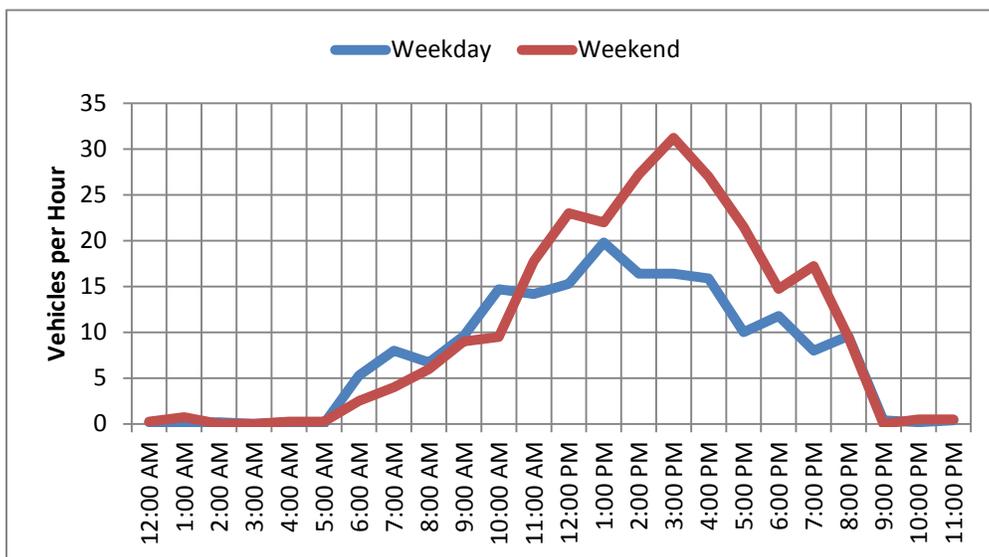
In addition to average daily traffic, hourly traffic volumes were averaged for both weekdays (Monday – Friday) and weekends (Saturday – Sunday) at all count locations using the two-week vehicle classification counts. Average hourly traffic volumes in downtown Ridgefield, based on a combination of the four count locations north of the refuge, are presented below in Figure 6.

Figure 6: Average Hourly Traffic in Downtown Ridgefield



The average weekday peak hour for Ridgefield traffic was determined to occur between 4:00 and 5:00 PM. The average weekend peak hour occurred between 1:00 and 2:00 PM. Average hourly traffic volumes at the entrance to the Ridgefield Wildlife Refuges’ River ‘S’ Unit are provided in Figure 7.

Figure 7: Average Hourly Traffic at Ridgefield Wildlife Refuge



As shown in Figure 7, traffic volumes at the River 'S' Unit are higher on weekends compared to weekdays. The average weekday peak hour for refuge traffic, based on both entering and exiting traffic, was determined to occur between 1:00 and 2:00 PM. The average weekend peak hour occurred between 3:00 and 4:00 PM.

Average hourly volumes for traffic entering and exiting the refuge are shown below in Figure 8 and Figure 9.

Figure 8: Average Weekday Traffic at Refuge Entrance

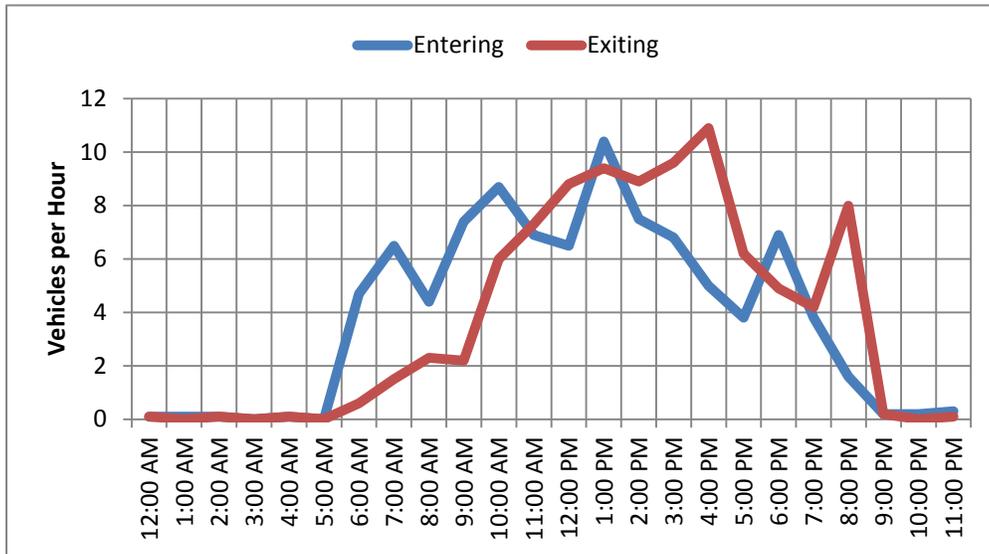
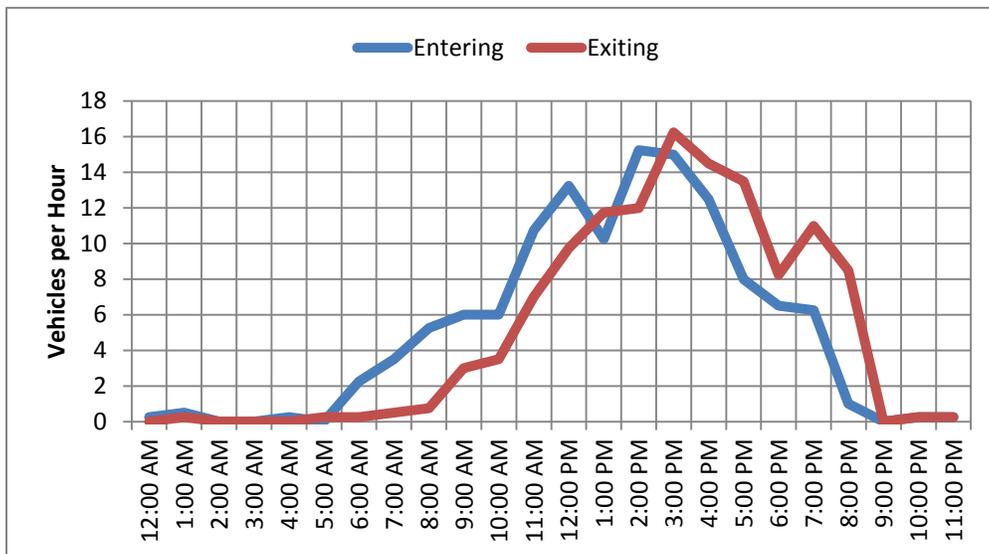


Figure 9: Average Weekend Traffic at Refuge Entrance



5.5 Peak Hour Analysis

As previously shown, the peak hours for the Ridgefield Wildlife Refuge occur at different times than in downtown Ridgefield. In order to determine the potential impacts of re-routing refuge traffic to the alternative crossing locations, the weekday and weekend peak hours for Ridgefield traffic were used for analysis. Therefore, the weekday peak hour study period is 4:00 to 5:00 PM and the weekend peak hour study period is 1:00 to 2:00 PM.

Similar to the average daily traffic, vehicle classifications for the average weekday and weekend peak hour study periods are presented in Table 3.

Table 3: Average Peak Hour Vehicle Classification

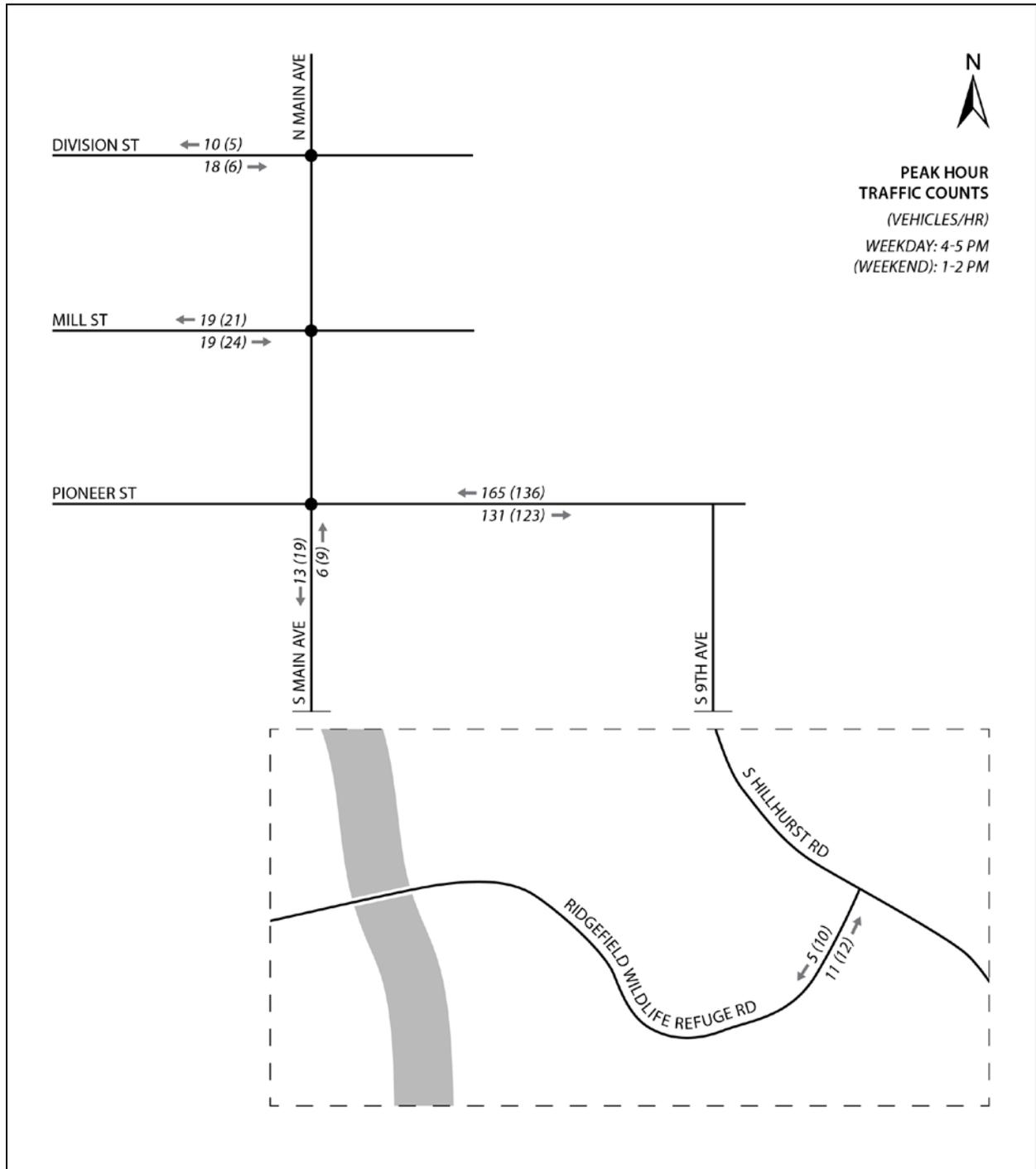
Location	Weekday		Weekend	
	Trucks %	Unclassified %	Trucks %	Unclassified %
Wildlife Refuge Entrance	7	5	1	2
Pioneer Street (east of Main Ave.)	8	3	8	3
Main Avenue (south of Pioneer St.)	8	5	8	4
Mill Street (west of Main Ave.)	18	6	28	7
Division Street (west of Main Ave.)	14	5	10	14

Average peak hour volumes for the weekday and weekend study periods are provided in Figure 10. The Ridgefield Wildlife Refuges' River 'S' Unit generates an average of 5 entering trips and 11 exiting trips during the weekday peak hour, for a total of 16 trips. In comparison, the weekend peak hour has an average of 10 entering trips and 12 exiting trips, for a total of 22 trips.

Although the weekend peak hour traffic volumes at the refuge entrance are higher than the weekday volumes, the weekday peak hour is higher in downtown Ridgefield; even when considering the re-routing of trips to the alternative crossing locations. As a result, the weekday peak hour (4:00-5:00 PM) represents the single study period that will be used for future analysis to determine the potential impacts of relocating the entrance to the River 'S' Unit.

As part of the peak hour analysis, the City of Ridgefield has established Level-of-Service (LOS) standards in their 2010 Comprehensive Plan Update for determining traffic impacts. The LOS standard used by the City of Ridgefield is "D", except at unsignalized intersections, where the planned LOS is "E". The *Transportation Impact Analysis (TIA) for Millers Landing*, completed by Group Mackenzie in April, 2010, identified that the Pioneer Street, Mill Street and Division Street intersections with Main Avenue operated at an LOS "A" during the 2010 PM peak hour.

Figure 10: Average Peak Hour Volumes



The trips into and out of the refuge will be relocated away from 9th Avenue / Hillhurst Road, which serves mainly as a local street and includes residential driveways. These trips are assumed to originate from I-5 to the east and Hillhurst Road to the south and will access the various crossing alternatives via westbound Pioneer Street. With the addition of only 16 total trips during the weekday PM peak hour, intersection operations will not exceed the City's established LOS threshold of "E" for unsignalized intersections.

6.0 TRAFFIC GROWTH CONTRIBUTORS

Background growth and the proposed Millers Landing development at the Port of Ridgefield, as identified in the *Millers Landing TIA*, have been identified as the primary contributors to traffic growth in the downtown Ridgefield area. The potential future year impacts of relocating the entrance to the River 'S' Unit will take into consideration general background growth, the Millers Landing development and the additional refuge trips.

6.1 Background Traffic Growth

Background growth is considered the general growth in traffic not related to specific projects. The *Millers Landing TIA* used historic traffic counts and Regional Transportation Council (RTC) travel demand model data to determine that a background growth rate of 2.5 percent is appropriate for downtown Ridgefield. The background growth in traffic also includes consideration of in-process developments that have been approved but not yet constructed. This assumption was confirmed with City of Ridgefield staff as part of the *Millers Landing TIA*.

6.2 Future Development

For the purposes of this report, future development includes the Millers Landing mixed-use development. The Millers Landing development will include office, hotel, retail and marina land uses and is expected to generate over 1,200 new total trips in the weekday PM peak hour, as identified in the *Millers Landing TIA*. All trip generation calculations in the *Millers Landing TIA* were prepared using the Institute of Transportation Engineers (ITE) *Trip Generation*, 8th Edition and *ITE Trip Generation Handbook*, 2nd Edition.

6.3 Future Year Peak Hour Analysis

Using a design year of 2025, which was the "post-development" year identified in the *Millers Landing TIA*, the three study area intersections along Main Avenue (Pioneer Street, Mill Street and Division Street) are anticipated to operate at an acceptable LOS "B" under future year conditions. These results assume all planned infrastructure improvements identified in the City's 2008 Capital Facilities Plan and Six-Year Transportation Improvement Program. Future year operations also assume construction of the preferred alternative for the Union Pacific/Burlington Northern railroad over-crossing project, which will signalize the intersection of Pioneer Street and Main Avenue.

At a growth rate of 2.5 percent per year, the wildlife refuge will generate 22 weekday peak hour trips in 2025, an addition of only 6 trips from 2012. If the entrance to the River 'S' Unit were relocated to an alternative location in downtown Ridgefield, there would likely be an increase in trips beyond the background traffic growth. Even if the number of trips were to double to 32, which would represent an increase of 7.5 percent per year, the additional trips represent a very small fraction of the future year peak hour traffic volumes in downtown Ridgefield and will not result in intersection operations that exceed the City's LOS standards.

7.0 SUMMARY AND CONCLUSIONS

The potential relocation of the entrance to the Ridgefield Wildlife Refuges' River 'S' Unit is not expected to re-route a significant amount of traffic during the weekday peak hour that would impact traffic circulation in downtown Ridgefield. With the addition of only 16 existing peak hour trips, intersection operations will not exceed the City's established LOS threshold of "E" for unsignalized intersections. Future year operations are also not expected to exceed LOS standards, even if the relocated refuge trips were to double.

The amount of traffic that the relocation of the River 'S' Unit access will add to the downtown network is approximately 1% of the traffic that other identified developments will produce. Therefore, it is likely that intersection improvements will be required to support future development and general background growth in downtown Ridgefield, but not as a result of relocating access to the wildlife refuge.

Appendix A

Traffic Count Data