



720 SW Washington St
Suite 500
Portland, OR 97205
dksassociates.com

MEMORANDUM (DRAFT)

DATE: June 13, 2019

TO: Andrew Parish | Angelo Planning Group

FROM: Garth Appanaitis, P.E. | DKS

SUBJECT: Newberg Riverfront Master Plan
**Technical Memorandum #8: Transportation Planning Rule (TPR)
Assessment**

P #18066-000

The purpose of this memorandum is to address Oregon Administrative Rule (OAR) 660-012-0060, Transportation Planning Rule (TPR), requirements for Riverfront Master Plan map and code amendments. The following sections summarized the proposed land use changes, transportation analysis, and findings to address TPR.

LAND USE

The following sections describe the planned land uses within the Riverfront for the existing Comprehensive Plan and the Riverfront Master Plan.

The Riverfront Study Area

The Riverfront is generally defined as the land within the Newberg Urban Growth Boundary (UGB) south of E Ninth Street. This area contains a mix of existing neighborhoods, parks and natural areas, a small amount of buildable vacant land, and the roughly 115-acre Riverfront Industrial Site.

The following section will provide a comparison of the land use described in the current comprehensive plan to the proposed land use with the Newberg Riverfront Master Plan re-zone.

Comprehensive Plan Land Use

The land use designations for the currently adopted Comprehensive Plan include:

- Residential Medium Density (R-2). Most residential land within the study area today has a designation of R-2, intended to “provide a wide range of dwelling types and styles at an average overall density of nine units per gross buildable acre in the district.” (15.302.032.B).
- Residential High-Density (R-3). Portions of the study area with frontage on E Ninth Street have a designation of R-3, which is intended to “provide multifamily dwellings of different types and styles at an average overall density of 16.5 units per gross buildable acre in the district.” (15.302.032.C).

- **Industrial.** Land designated as “Industrial” is generally consistent with the City’s M-2 and M-3 district, which are “intended to create, preserve, and enhance areas containing a wide variety of sites with good rail or highway access.” (15.302.032.K).

The 2035 Newberg Transportation System Plan (TSP) includes travel forecasts for future land uses consistent with the adopted Comprehensive Plan. Total households (HH) and employees (EMP) in each Transportation Analysis Zone (TAZ) within the Riverfront that were assumed for the TSP travel demand model (Figure 1) are listed in Table 1. The TSP land use included 864 households and 534 total employees, which predominately included industrial and service employment.

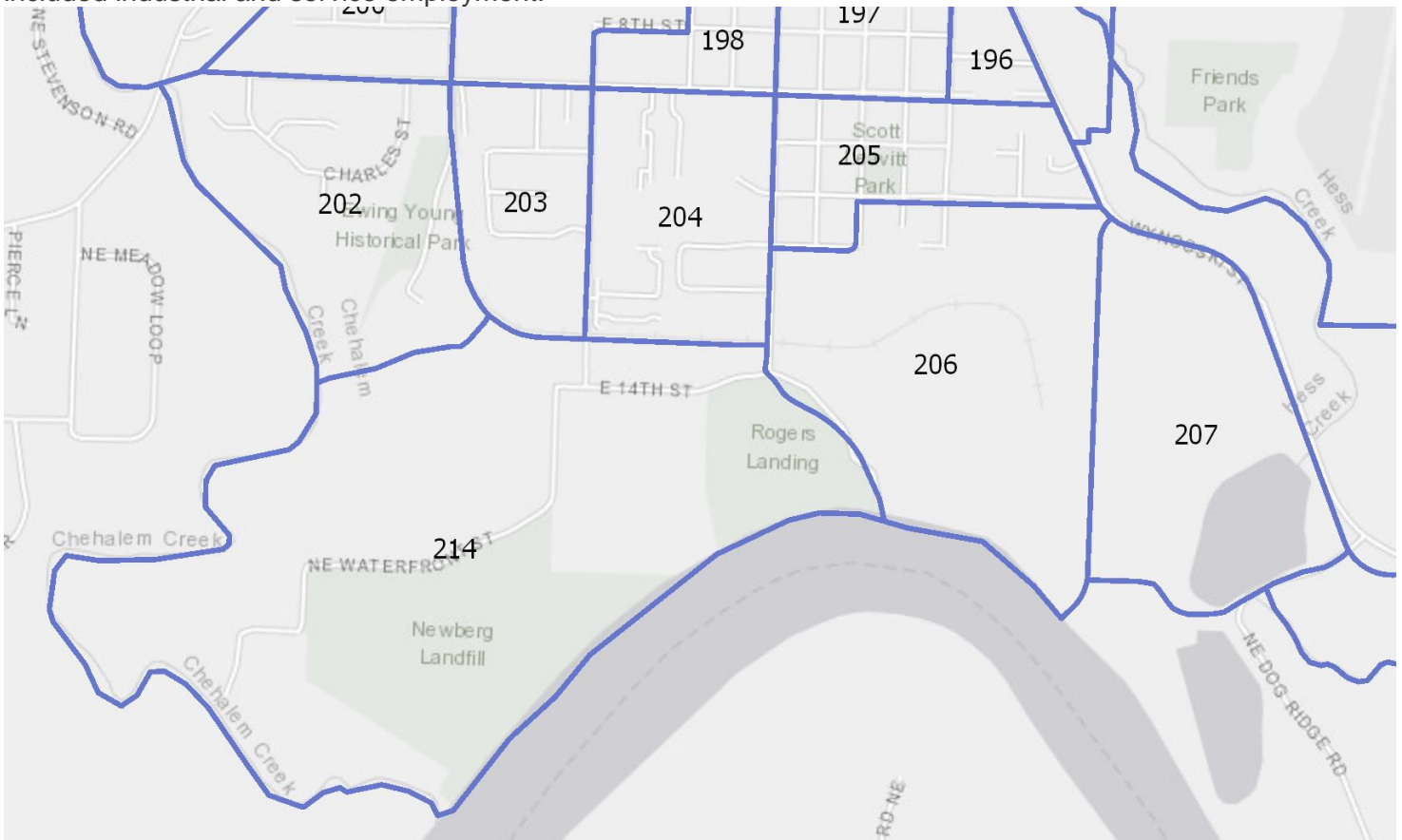


Figure 1. Newberg Travel Demand Model Riverfront TAZs

Table 1. 2035 TSP (Comprehensive Plan) Land Use by TAZ

TAZ	Total HH	Total Emp	AGR	IND	RET	SER	EDU	GOV	OTH
202	108	2	-	-	-	-	-	-	2
203	185	2	-	-	-	-	-	-	2
204	271	2	-	-	-	-	-	-	2
205	142	16	-	-	3	11	-	-	2
206	0	139	-	139	-	-	-	-	-
207	0	208	-	208	-	-	-	-	-
214	158	165	-	-	33	121	-	-	10
Total	864	534	0	347	36	132	0	0	18

Note: Employment types are listed as number of employees and include agriculture (AGR), industrial (IND), retail (RET), service (SER), education (EDU), government (GOV), and other (OTH).

Newberg Riverfront Master Plan Proposed Land Use

The plan development included consideration for several land use alternatives that differ primarily in the use of the large industrial site and whether it remains entirely in industrial use or whether some portion becomes available over time for non-industrial uses. For the purposes of the TPR assessment, the Preferred Alternative¹ was analyzed, which includes additional employment growth (relative to the other scenarios) as a conservative threshold for considering impacts. Figure 1 shows the proposed uses for the Preferred Alternative.

¹ The Preferred Alternative was previously referred as “Alternative E” and denotes the same alternative.

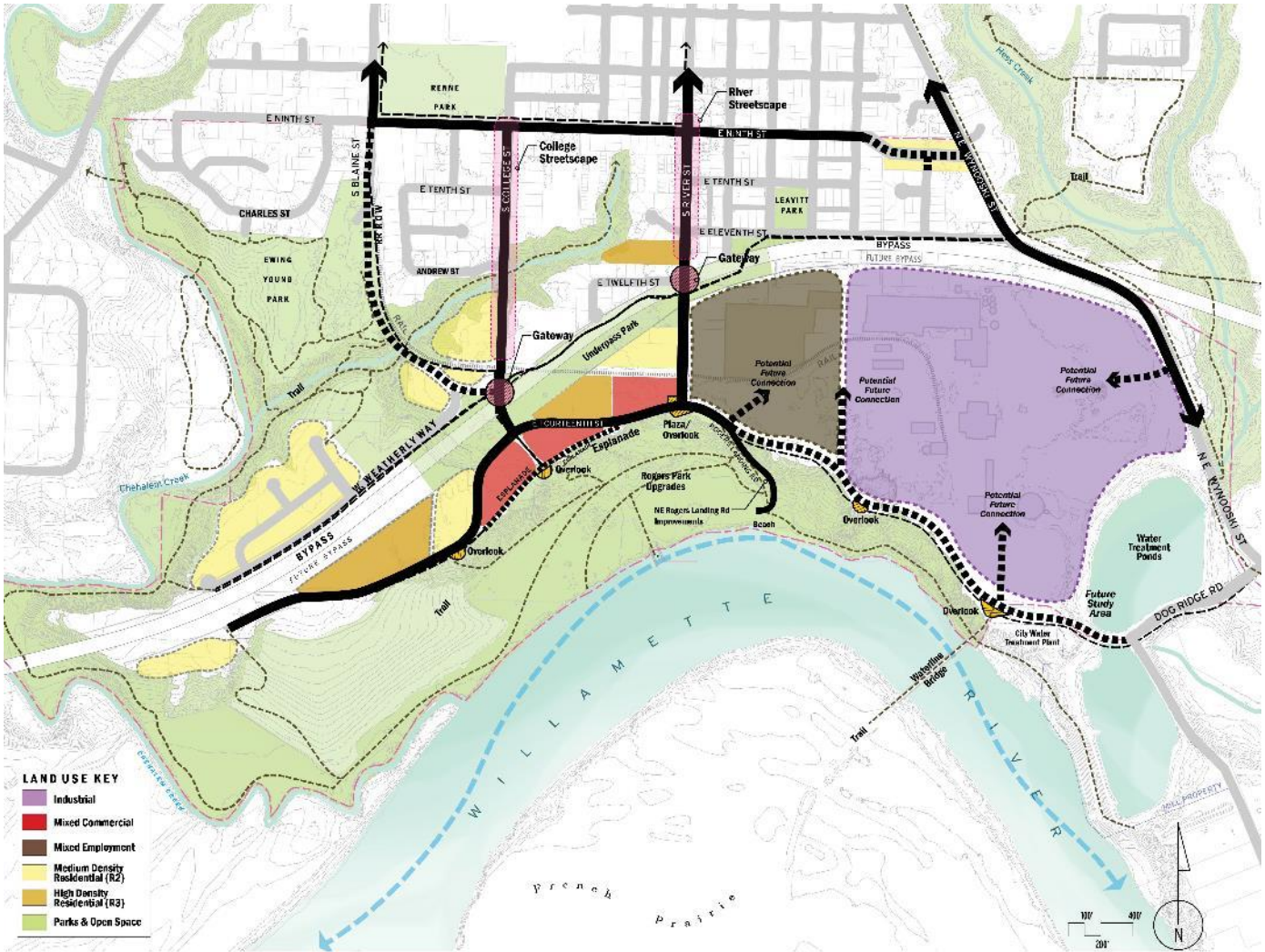


Figure 1. Riverfront Master Plan Preferred Alternative Land Uses

The land use for the Riverfront Master Plan (households and employees) was quantified to analyze the potential transportation impacts. The assumptions regarding type and density of uses are consistent with the Master Plan and Technical Memorandum 7 – Zoning Amendments.

Employment Assumptions

The land use designations described in the Newberg Riverfront Master Plan under the preferred alternative² include the mixed-use land type *Mixed Employment*. The new Mixed Employment (M-E) Zone allows for a mix of light industrial and limited commercial uses intended to create a buffer between heavy industrial uses and pedestrian-friendly, mixed-use development within the core of the Riverfront District. Table 2 lists the number of employees assumed for each land use type proposed by the Newberg Riverfront Master Plan. Notably, the number of industrial employees in the proposed land use will be less than the number of industrial employees

² Alternative E was selected as the preferred alternative from the Newberg Riverfront Master Plan.

in the current comprehensive plan, as the mixed employment land use will replace an area currently zoned as industrial only. TAZ 206 and TAZ 214 will be impacted by these zoning changes for employment. Key assumptions related to proposed land use and employment include:

- Mixed commercial designations were assumed to have no net change from the existing comprehensive plan.
- Mixed employment designations were assumed³ to be comprised of 25 percent retail use, 25 percent office use, and 50 percent industrial use with a floor-area ratio (FAR) of 0.5

Table 2. Employment Summary for Mixed- Employment Area

Land Use	Subcategory Land Use	Acres	Share of Acres	Net/Gross Takeout	Floor-Area Ratio (FAR)	Area (SF)	Employee Density (emp/ksf)	# of Employees
Mixed Employment		21.5						
	Retail		0.25	0.5	0.5	58,533	1.5	88
	Office		0.25	0.5	0.5	58,533	3	176
	Industrial		0.5	0.5	0.5	117,067	1	117

Household Assumptions

Under the proposed zoning alternative with the Newberg Riverfront Master Plan, an additional 186 households would be added to the Riverfront. The following points summarize where the additional households are assumed:

- TAZ 202 does not change from the existing comprehensive plan zoning to the proposed zoning.
- TAZ 206 and TAZ 207 do not include any households in the existing comprehensive plan, and no households are proposed under the preferred alternative.
- A small area of medium-density residential was added to TAZ 205, an estimated addition of 22 households, or about 1/8 of the total additional households added to the riverfront planning area.
- The remaining 164 households were distributed evenly among TAZ 203, TAZ 204, and TAZ 214. These TAZ’s experienced varying re-distributions of medium and high-density households which were determined to have minimal impact on the location of the added housing.

Summary of Proposed Land Use Changes

Total households and employment totals in each TAZ for the proposed Riverfront are listed in Table 3.

³ Assumptions are consistent with Technical Memorandum 7 – Zoning Amendments.

Table 3. Total Household (HH) and Employment (Emp) in Newberg Riverfront Master Plan

TAZ	Total HH	Total Emp	AGR	IND	RET	SER	EDU	GOV	OTH
202	108	2	-	-	-	-	-	-	2
203	239	2	-	-	-	-	-	-	2
204	326	2	-	-	-	-	-	-	2
205	164	16	-	-	3	11	-	-	2
206	0	364	-	100	88	-	-	-	176
207	0	208	-	208	-	-	-	-	-
214	213	164	-	-	33	121	-	-	10
Total	1,050	758	0	308	124	132	0	0	194

Note: Employment types are listed as number of employees and include agriculture (AGR), industrial (IND), retail (RET), service (SER), education (EDU), government (GOV), and other (OTH).

Area-Wide Land Use Scenario Comparison

Table 4 summarizes the differences in overall land use totals that would result with the proposed changes in the Newberg Riverfront Plan. These changes include:

- Total households would increase by 186 (864 to 1,050)
- Total employment would increase by 224 employees (534 to 758)

Table 4. Comparison of Total Land Use in the Riverfront

Scenario	Total HH	Total Emp	AGR	IND	RET	SER	EDU	GOV	OTH
Existing Comprehensive Plan	864	534	0	347	36	132	0	0	18
Newberg Riverfront Plan	1050	758	0	308	124	132	0	0	194
Difference	+186	+224	-	-39	+88	-	-	-	+176

Note: Employment types are listed as number of employees and include agriculture (AGR), industrial (IND), retail (RET), service (SER), education (EDU), government (GOV), and other (OTH).

FUTURE TRAFFIC FORECASTS

A 2035 travel demand model run was coordinated with ODOT and performed with the proposed land uses in the Riverfront. All other assumed land uses (other TAZ) and model inputs were retained from the TSP travel model assumptions. The resulting difference in 2035 PM peak hour trips on the transportation network (relative to the travel forecasts included in the 2035 TSP) included the following nominal increases:

- S Blaine Street – approximately 50 additional trips southbound entering the Riverfront and approximately 15 additional trips northbound
- S College Street – approximately 15 additional trips southbound and approximately 35 trips northbound
- S River Street – approximately 20 additional trips southbound and approximately 35 trips northbound
- NE Wyooski Street – approximately five additional trips eastbound and approximately 15 additional trips westbound

The approximate figures noted above are raw model differences and additional processing was performed at individual study intersections. The travel demand model has a limited roadway network (three streets) linking downtown Newberg and the Riverfront. While Blaine S Street and S River Street provide the most direct connections, the remaining grid system south of the downtown couplet (twelve streets connect between Harrison Street and River Street) would likely further moderate (reduce) the magnitude of additional trips added to individual streets.

Intersection level traffic forecasts were prepared for four study intersections for both the Existing Plan (TSP and existing Comprehensive Plan) and Riverfront Master Plan scenarios. The intersection forecasts for the Existing Plan were prepared by post-processing traffic counts and the background growth assumptions used for the Newberg TSP. Traffic forecasts for the Riverfront Plan were prepared by post-processing the model difference resulting from the proposed land use changes.

TRAFFIC ANALYSIS

Level of service (LOS) ratings and volume-to-capacity (V/C) ratios are two commonly used performance measures that provide a good indication of intersection performance. In addition, they are often incorporated into agency mobility standards.

- Level of service (LOS): A “report card” rating (A through F) based on the average delay experienced by vehicles at the intersection. LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operating conditions. LOS F represents conditions where average vehicle

delay has become excessive and demand has exceeded capacity. The City of Newberg uses LOS D as the intersection performance standard⁴.

- Volume-to-capacity (V/C) ratio: A decimal representation (typically between 0.00 and 1.00) of the proportion of capacity that is being used at a turn movement, approach leg, or intersection. It is determined by dividing the peak hour traffic volume by the hourly capacity of a given intersection, approach, or movement. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 1.00, congestion increases and performance is reduced. If the ratio is greater than 1.00, the turn movement, approach leg, or intersection is oversaturated and usually results in excessive queues and long delays. The performance standard that ODOT uses along the OR 99W downtown corridor is v/c = 0.85 and along OR 219 is 0.95.

To quantify the impacts of the proposed land use changes in the Newberg Riverfront Master Plan, 2035 PM Peak Hour operations at the four study intersections were analyzed and listed in Table 5. The intersection of OR 219 / NE Wyooski Road would meet ODOT mobility targets with a v/c lower than 0.95 under both the Existing Plan and Proposed Riverfront Plan. The three intersections located in the downtown core would all exceed the ODOT mobility target of 0.85 for both scenarios. The two intersections on Blaine Street would also exceed the City’s standard due to the high level of side street delay.

Table 5. 2035 PM Peak Hour Study Intersection Operations

Intersection	Mobility Target (V/C)	Existing Plan			Riverfront Plan		
		V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
OR 219 / NE Wyooski Road	0.95	0.46	31.6	D	0.48	32.6	D
S River Street / OR 99W (E First Street)	0.85	0.98	33.1	C	1.00	35.3	D
S Blaine Street / OR 99W NB (E First Street)	0.85	0.86	80	F	1.30	>100	F
S Blaine Street / OR 99W SB (E Hancock Street)	0.85	>2	>100	F	>2	>100	F

Note: Bold text indicates that the operations exceed the mobility target.

Mitigations

The following section summarizes potential mitigation measures to address mobility needs at the study intersections.

While the intersection of OR 219/NE Wyooski Road would meet mobility targets, it is a key gateway that provides access to the Riverfront. The traffic analysis indicates that the intersection would have high delay

⁴ While the City standard is listed here for reference, all four study intersections are located on state operated facilities and are subject to ODOT’s performance standards for determination of TPR.

from the NE Wyooski Road approach. While the traffic forecasts do not meet the minimum minor street approach thresholds for traffic signal warrants, this location should continue to be monitored for future signalization or traffic control needs. Further, project BY5 in the Newberg TSP would realign Wyooski Road to the south as part of future bypass extension to the east of OR 219⁵.

The intersection operations of S River Street / OR 99W (E First Street) would marginally degrade with the added traffic for the proposed land use changes increasing the v/c from 0.98 to 1.00. The intersection already includes a traffic signal and lane channelization to support the critical movements at the intersection. While the intersection was not analyzed as part of the TSP, ODOT is currently assessing alternate mobility targets for Newberg as a continuation of the TSP policies. The draft target revisions would update the current mobility targets of 0.85 in the downtown core to be a v/c of 0.99 during the peak hour (using a peak hour factor of 1.0). This intersection would meet those draft targets.

The two intersections on S Blaine Street are currently unsignalized and would not meet mobility targets in either scenario. These intersections were not included in prior traffic analysis conducted for the TSP or Newberg Downtown Improvement Plan. Similar mitigation options exist at both locations (turn channelization from the minor street or a traffic signal) and yield similar tradeoffs.

- S Blaine Street / OR 99W NB (E First Street) – Adding a southbound left turn lane would improve capacity for the side street approach and would improve the v/c to 0.73, which would meet the mobility target of 0.85. However, the widening required for a southbound left turn lane would require widening, removal of parking, potential right of way impacts, potential alignment challenges, and would further degrade the pedestrian experience. The current rail connection that runs along Blaine Street may also limit the ability to widen the approach. Adding a traffic signal to the intersection would provide additional capacity to the Blaine Street approaches and improve the v/c to 0.47. The traffic signal, which would require approval of the state traffic engineer, would be located one block (approximately 200 feet) from the existing traffic signal at Howard Street. While the traffic signal would reduce capacity along E First Street (which is currently uncontrolled), it would provide protected crossing opportunities for pedestrians and would improve traffic flow between the Riverfront and downtown. It is imperative that any potential mitigation at this intersection consider the function and vision for the Downtown Improvement Plan and any related corridor and connectivity improvements. Incorporate planned improvements to support mobility need to/from the Riverfront into corridor improvements related to the Downtown Improvement Plan.
- N Blaine Street / OR 99W (E Hancock Street) – Similar options and tradeoffs exist at this location as the other Blaine Street intersection. While at this location a northbound left turn lane would improve the Preferred Alternative Riverfront Plan conditions relative to the Existing Comprehensive Plan, the resulting v/c (1.3) would exceed capacity and the mobility target. A traffic signal (which would require approval of the state traffic engineer) would improve

⁵ BY5 (Wyooski Realignment) When the bypass interchange at OR 219 is constructed as part of Phase 2, Wyooski Road will be closed at its current location and rerouted south to create a 4-way intersection with realigned Wilsonville Road (BY17).

conditions to a v/c of 0.67. As with S Blaine Street / E First Street, planned improvements that support mobility to/from the Riverfront should be incorporated into corridor improvements related to the Downtown Improvement Plan.

FINDINGS

The TPR provides a means for ensuring that future land use and traffic growth is consistent with transportation system planning. The TPR requires that a change of allowable land uses do not create a significant impact on the transportation system beyond currently allowed (planned) uses. The TPR can be addressed through a variety of means, but typically compares the change in trip potential (simply trip generation or traffic impacts) between the allowed use (existing zoning) and proposed use (proposed zoning). In many cases the reasonable worst-case use (for either the existing or propose zoning) will not reflect the actual existing use for a site or the specific use that may ultimately be developed on a site. Rather, the reasonable worst case considers the allowed trip potential for either zoning condition and is rarely development specific (e.g., no site plan, nor intent to use the site for that purpose).

The proposed land use changes to support the Riverfront Master Plan would increase the housing and employment potential for the area. Traffic modeling and analysis indicated that the changes to the allowed uses have the potential to increase traffic beyond what is currently included in the current Comprehensive Plan and TSP. The transportation analysis identified the magnitude of mobility impacts that would result to the transportation system. The analysis also identified future improvements that be required to mitigate the potential impacts to the transportation system and address Transportation Planning Rule requirements. The following findings would address TPR requirements:

- 1) In conjunction with the ongoing update to alternate mobility targets in Newberg, the intersection of S River Street/ OR 99W (E First Street) would meet the planned target v/c of 0.99 for the peak hour (PHF = 1.0). This location would have no significant effect caused by the proposed changes to the Riverfront Master Plan and would meet the alternate mobility target.
- 2) Incorporate intersection control upgrade (traffic signal) at the intersection of S Blaine Street / OR 99W (E First Street) to support mobility need to/from the Riverfront into corridor improvements related to the Downtown Improvement Plan. Pending review by the state traffic engineer, this improvement would be identified in the TSP. Inclusion of this project in the TSP through a TSP Amendment would provide the planned capacity in the transportation system that would mitigate the impact of the proposed plan changes.
- 3) Incorporate intersection control upgrade (traffic signal) at the intersection of N Blaine Street / OR 99W (E Hancock Street) to support mobility need to/from the Riverfront into corridor improvements related to the Downtown Improvement Plan. Pending review by the state traffic engineer, this improvement would be identified in the TSP. Inclusion of this project in the TSP through a TSP Amendment would provide the planned capacity in the transportation system that would mitigate the impact of the proposed plan changes

While not required to address TPR, the following finding should be considered in future planning efforts related to the Riverfront:

- 4) While the intersection of OR 219/NE Wyooski Road would meet mobility targets, it is a key gateway that provides access to the Riverfront. The traffic analysis indicates that the intersection would have high delay from the Wyooski Road approach. While the traffic forecasts do not meet the minimum minor street approach thresholds for traffic signal warrants, this location should continue to be monitored for future signalization or traffic control needs.

ATTACHMENTS [TO BE INCLUDED WITH FINAL MEMO]

- Analysis Methodology Coordination
- Proposed Riverfront Uses – Scenario E
- Traffic Counts
- Model Difference Plot
- Traffic Analysis Worksheets