

# Chapter 15 Cumulative Impacts

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## 15.1 Introduction

This chapter evaluates and summarizes the potential cumulative impacts of the proposed project. Cumulative impacts are impacts that could result from the incremental consequences of an action (in this case, the proposed project) when added to other past, present, and reasonably foreseeable future actions. When impacts of an action are viewed individually, they may appear minor but, when considered collectively (cumulatively) with the impacts of other actions, especially over a period of time, the impacts can be more significant. The purpose of the cumulative impacts analysis is to ensure that decision-makers consider the full range of consequences for the proposed project, including the proposed project's incremental contribution to cumulative impacts on the environment.

## 15.2 Regulatory Context

The Washington State Environmental Policy Act (SEPA) directs lead agencies to consider the direct, indirect, and cumulative impacts of proposed actions. This cumulative impact analysis is prepared in accordance with SEPA (Chapter 43-21C of the Revised Code of Washington [RCW]), the SEPA Rules (Chapter 197-11-060 and 197-11-792 of the Washington Administrative Code [WAC]), and the SEPA Handbook.

The Council on Environmental Quality publication "Considering Cumulative Effects Under the National Environmental Policy Act (NEPA)" was also considered for additional guidance where NEPA cumulative impact review is consistent with SEPA requirements.

## 15.3 Methodology

This analysis provides a broad assessment of potential cumulative impacts related to implementing the proposed project. A wide array of other past, present, and reasonably foreseeable future actions near the project site and along the Columbia River were reviewed. The cumulative impact analysis used the following approach:

- 1. Identification of geographic boundaries (i.e., the study area):** The preceding chapters of this environmental impact statement (EIS) describe the potential impacts of the proposed project on environmental resources. As discussed in those chapters, the study areas are the areas where the proposed project has the potential to affect environmental resources. In general, the study areas include the project site and surrounding areas, as well as the Columbia River for the marine terminal and vessel traffic related to the proposed project. The cumulative impact assessment uses the same study areas, as those study areas represent the areas where the proposed project, in combination with other past, present, or reasonably foreseeable future actions, could result in cumulative impacts.
- 2. Identification of time-based boundaries:** The proposed project does not have a stated lifespan. Therefore, this assessment accounts for all reasonably foreseeable projects that could be constructed or operational during the same period as the proposed project.
- 3. Identification of reasonably foreseeable future projects and actions within the geographic and time-based boundaries:** Section 15.4 below identifies the reasonably foreseeable future projects considered in this cumulative impact analysis. Reasonably foreseeable future projects considered include public and private projects.

**4. Evaluation of the potential cumulative impacts of the proposed project in combination with other reasonably foreseeable future projects:** Section 0 below evaluates the potential cumulative impacts of the proposed project.

**15.4 Identification of Projects Considered in the Cumulative Impact Analysis**

Reasonably foreseeable future projects generally include actions underway (i.e., current actions), as well as future actions that are formally proposed or planned, or highly likely to occur, based on available information.

The present and future projects assessed are those that could result in cumulative impacts as a result of the projects’ close proximity to the proposed project – i.e., the present and future action would occur near the proposed project and, in combination with its construction and/or operation, could have cumulative impacts. Cumulative impacts could also result from the addition of vessel traffic on the Columbia River. Therefore, the future projects considered include those in the vicinity of the proposed project site, as well as those that may be farther away but that would increase vessel traffic on the Columbia River. Various sources (as noted in **Table 15-1**) were used to obtain information about present and potential future development.

Past projects in proximity to the proposed project are accounted for in the affected environment discussions for each resource area in the EIS. The potential environmental impacts of the proposed project, therefore, account for the effects of past actions on the surrounding environment.

**Table 15-1** identifies future actions that, in combination with the proposed project, could contribute to cumulative impacts on environmental resources. The future projects are divided into two categories – those in the project vicinity and those along the Columbia and Willamette rivers that are expected to contribute additional vessel traffic to the Columbia River. The locations of these future projects are shown on **Figure 15-1** and **Figure 15-2**.

**Table 15-1. Future Development Projects Accounted for in Cumulative Impacts Analysis**

Map ID No.	Project Name	Location	Description	Maximum Estimated Additional Vessel Calls Per Year <sup>1</sup>
<i>In Project Vicinity</i>				
1	Spencer Creek Business Park	Kalama River Road and Old Pacific Highway	Development of 500,000 square feet of light industrial, office, commercial, and retail uses. (Port of Kalama 2015)	0
2	WSDOT Kelso-Martin’s Bluff Rail Improvements (Task 5)	BNSF Railway in Kalama (from Milepost 110 to Kalama River)	Construction of 4.1 miles of new main line track to east of existing double track and related improvements to improve intercity passenger rail service. (WSDOT 2014)	0
3	Port of Kalama Maintenance Dredging	Columbia River	Ongoing maintenance dredging at existing Port marine terminals under existing local, state, and federal approvals. Includes dredged material disposal via flow lane placement in Washington and Oregon, beach nourishment, and upland disposal (Port of Kalama 2015)	0

Map ID No.	Project Name	Location	Description	Maximum Estimated Additional Vessel Calls Per Year <sup>1</sup>
4	USACE Columbia River Channel Maintenance Dredging	Columbia River	Ongoing maintenance dredging of Columbia River navigation channel and anchorages as necessary.	0
5	Steelscape Steel Coil and Paint Warehouse	222 Kalama River Road, Kalama, WA	New 45,000-square-foot steel coil storage warehouse and 17,500-square-foot paint warehouse on southwest portion of existing site. No new employment anticipated. (pers. comm. Eric Yakovich 2015)	0
6	Port of Kalama Small Vessel Dock	1285 NW Third Avenue, Kalama, WA	New floating dock and access trestle for use by small commercial vessels that serve the oceangoing vessels on the Columbia River	0
7	Port of Kalama Marina Renovation	380 West Marine Drive, Kalama, WA	Phased project consisting of maintenance and repair activities, a new visitors dock and connection bridge, and an expanded launch float	0
<i>Along the Columbia River and Willamette River</i>				
8	Canpotex	Marine Terminal 5, Port of Portland	Proposed expansion of potash export facility; in permitting. Includes new storage building, shiploader, and conveyor system improvements. (Canpotex 2014)	Unknown at this time
9	Pembina Pipeline	Marine Terminal 6, Port of Portland, OR <sup>2</sup>	Proposed propane export terminal. <sup>2</sup> (Pembina 2015)	36
10	Global Partners - Columbia Pacific Bio-Refinery	Port Westward Industrial Park, Clatskanie, OR <sup>3</sup>	Proposed expansion of crude oil and ethanol export facility to as much as 1,839,600,000 gallons per year. Crude oil and/or ethanol would be received by rail, transferred to storage tanks, and exported on marine vessels. <sup>3</sup> (Global Partners 2013) (ODEQ 2013)	130
11	Millennium Bulk Terminals Longview	Longview, WA	Proposed coal export terminal with new upland facilities, rail improvements, docks, and dredging activities. Coal would be received by rail, stored in stockpiles, and exported by marine vessel. (Ecology 2015)	840
12	Arc Logistics	Port of Portland, OR	Conversion of the Portland Terminal, an existing rail/marine export facility on the Willamette River to crude-by-rail facility with marine export. (Arc Logistics Partners 2014)	Unknown at this time
13	NWIW Manufacturing and Marine Export Facility	Port Westward Industrial Park, Clatskanie, OR	Proposed natural gas-to-methanol production facility and marine export terminal. (NWIW 2015)	72

Map ID No.	Project Name	Location	Description	Maximum Estimated Additional Vessel Calls Per Year <sup>1</sup>
14	Morrow Pacific	Port of Morrow, Boardman, OR/Port Westward, Clatskanie, OR	Proposed coal export facility. Coal would be shipped by rail to Port of Morrow, where it would be stored and then shipped on barge down Columbia River to Port of St. Helens' Port Westward Industrial Park and transferred to oceangoing Panamax vessels. At full capacity, 12 barge tows/week from Morrow to Port Westward and 3 Panamax vessels per week from Port Westward to Asia. <sup>34</sup> (Ambre Energy 2015)	156 Panamax vessels; 624 barges
15	Oregon Liquefied Natural Gas	Warrenton, OR <sup>5</sup>	Proposed LNG import/export terminal. Facilities would include feed gas pretreatment facilities, two liquefaction trains, two 160,000-cubic-meter LNG storage tanks, regasification facilities, accessory facilities, and marine berth for one LNG carrier. Natural gas would be transported to the terminal via 86-mile natural gas pipeline through Clatsop, Tillamook, and Columbia counties in Oregon from Washington (FERC 2015) <sup>5</sup> .	125
16	CHS/TEMCO	Port of Kalama, WA	Grain export terminal expansion completed in 2015. <sup>6</sup> (The Daily News 2014)	48
17	Woodland Marine Terminal	Woodland, WA	Proposed marine off-loading facility for calcium carbonate stone delivered by barge, off-loaded, and stored upland. (Cowlitz County 2015)	24 barges
18	Vancouver Energy	Port of Vancouver, WA	Proposed crude-by-rail terminal. Crude oil would be delivered by rail, stored on site, and exported via marine vessel. Facilities would include rail unloading facility, transfer pipelines, storage tanks, modifications to existing marine terminal and dock, and accessory support facilities. (EFSEC 2015)	365
19	Washington Energy Storage and Transfer	Port of Longview, WA	Proposed liquefied petroleum gas (i.e., propane and butane) export facility. Facility would receive LPG by rail and store/export it by marine vessel (Waterside Energy 2015a). <sup>7</sup>	48
20	Riverside Refinery	Port of Longview, WA	Proposed refinery using crude oil (delivered by rail) and renewable biofuels (would arrive via two to three vessels per month). Refined product would move to local/regional markets on existing barges or larger vessels on Columbia River. Atmospheric residuals may be shipped to other West Coast refiners (Waterside Energy 2015b). <sup>7</sup>	Unknown at this time

Map ID No.	Project Name	Location	Description	Maximum Estimated Additional Vessel Calls Per Year <sup>1</sup>
21	NuStar Terminals Conversion to Crude Oil	Port of Vancouver, WA	Proposed retrofit of existing bulk liquid storage and transfer facility to crude oil service. Crude oil would be received by rail and exported by vessel/barge using existing marine loading rack. (SWCAA 2014)	18
<b>Vessel Trip Projection Summary</b>				
<b>1. Cumulative Projects - Total Additional Trips (not including barge trips)</b>				<b>1,838</b>
<b>2. Cumulative Projects - Total Inbound and Outbound Transits</b>				<b>3,676</b>
<b>3. Proposed Project – Total Additional Trips</b>				<b>72</b>
<b>4. Proposed Project – Total Inbound and Outbound Transits</b>				<b>144</b>
<b>Total Projected Additional Trips (1 + 3)</b>				<b>1,910</b>
<b>Total Projected Additional Inbound and Outbound Transits (2 + 4)</b>				<b>3,820</b>
<b>Baseline Vessel Trips</b>				
<b>2014 Vessel Entry Transits<sup>8</sup> (Ecology 2015b)</b>				<b>1,581</b>
<b>2014 Vessel Inbound and Outbound Transits</b>				<b>3,162</b>
<b>Recent Peak – 1999 Vessel Entry Transits<sup>8</sup></b>				<b>2,269</b>
<b>Recent Peak – 1999 Vessel Inbound and Outbound Transits</b>				<b>4,538</b>

Notes

1 Each vessel call involves two river transits – one inbound and one outbound.

2 Since issuance of the Draft EIS, Pembina canceled the proposed terminal on 1 March 2016 (Gallivan 2016). Project is included for conservative analysis.

3 As of January 2016, the Global Partners facility is shut down for conversion to ship ethanol and is expected to return to operations in the second half of 2016; there was no additional information regarding how many vessel calls the facility will handle when it starts up. (Stepankowsky 2016)

4 Permit application has been denied but the developer has not stated publicly that the project is canceled. Project is included here for the sake of completeness and a conservative analysis.

5 Since issuance of the Draft EIS, Oregon LNG canceled the proposed terminal on 15 April 2016. (House 2016). Project is included for conservative analysis.

6 Project is included because vessel traffic associated with the expansion is not included in the baseline vessel traffic volumes for the Columbia River.

7 Since issuance of the Draft EIS, the Port of Longview severed all discussions with the project proponent on 23 February 2016 (Luck 2016). Project is included for conservative analysis.

8 Includes cargo and passenger vessels, tank ships, and articulated tug barges.

Ecology = Washington State Department of Ecology; EFSEC = Energy Facility Site Evaluation Council; FERC = Federal Energy Regulatory Commission; LNG = liquefied natural gas; LPG = liquefied petroleum gas; NWIW = Northwest Innovation Works, LLC – Kalama; ODEQ = Oregon Department of Environmental Quality; SWCAA = Southwest Clean Air Agency; USACE = U.S. Army Corps of Engineers; WSDOT = Washington State Department of Transportation



Projects Included in Cumulative Impact Analysis in Project Vicinity  
**Figure 15-1**

**KALAMA** SEPA  
 Manufacturing & Marine Export Facility



Projects Included in Cumulative Impact Analysis along Columbia River  
**Figure 15-2**

**KALAMA** SEPA  
 Manufacturing & Marine Export Facility

As shown in **Table 15-1**, the reasonably foreseeable future projects are expected to contribute approximately 1,838 vessel trips (3,676 vessel transits) on the Columbia River, not including additional barge traffic. The Morrow Pacific project would add 624 barge trips or 1,248 one-way transits between the Port of Morrow and Port Westward and the Woodland Marine Terminal would add 24 barge trips. The Columbia River has a federally authorized navigation channel maintained to a depth of -43 feet and a width of 600 feet. The federally authorized and maintained navigation channel begins at the mouth of the Columbia River and extends 106.5 miles to the Interstate 5 (I-5) bridge crossing at Vancouver, Washington (the portion between the Vancouver railroad bridge and the I-5 bridge crossing is only maintained to a depth of 35 feet).

## **15.5 Potential Cumulative Impacts of the Proposed Project**

This section evaluates the potential cumulative impacts of the proposed project in combination with the other reasonably foreseeable projects identified above for each area of the environment discussed in this draft EIS (DEIS). Each section is divided into potential cumulative impacts near the project site and potential impacts due to increased vessel traffic along the Columbia River.

### **15.5.1 Earth**

#### **Project Site Vicinity**

As discussed in Chapter 3, Earth, the study area for the assessment of potential impacts related to earth and geology is the project site. The assessment also considers the potential for local geologic hazards to affect the proposed project. The reasonably foreseeable development projects in the vicinity of the proposed project would not alter regional or local geological processes, nor would they affect earth and geology (e.g., erosion, slope stability, etc.) on the project site. The proposed project will involve the removal of up to 325,000 cubic yards of dredged material. The Spencer Creek Business Park and Kelso-Martin's Bluff projects will likely involve grading and fill activities but quantities are not known (Port of Kalama 2013) (US DOT 2015). Based on the size and location, these projects are not likely to require the same level of material removal as they do not contain dredged materials and cumulative impacts would be minor. The other projects in **Table 15-1** are too far removed from the project to result in cumulative impacts related to grading and fill activities. Therefore, the proposed project, in combination with the other reasonably foreseeable development projects, would not result in significant adverse cumulative impacts related to earth and geology.

#### **Vessel Transportation**

Increased marine vessel traffic has the potential to affect soil erosion caused by wakes generated by vessels. However, the Columbia River is subject to existing vessel wakes from current marine traffic, as well as waves generated by wind and tidal forces. The U.S. Army Corps of Engineers (USACE) found that it was impossible to estimate ship wake erosion separately from erosion caused by other forces and there would be no measureable increase in erosion caused by additional ship traffic (USACE 1999). More recent work has indicated that erosion from ship wakes can occur resulting in environmental impacts but is limited in area because of existing bank conditions (EFSEC 2015). The cumulative vessel traffic along the Columbia River associated with the proposed project and other reasonably foreseeable development projects is likely to result in an increase in erosion. The extent of erosion is not readily determined and the project vessels are not anticipated to create wakes differently than current deep draft vessels using the federal navigation channel. The extent of impacts is not

known and should be further studied, and agencies responsible for overall management of the navigation channel are best positioned to address mitigation for this issue.

## 15.5.2 Air Quality and Greenhouse Gas Emissions

### Air Quality

#### *Project Site Vicinity*

As discussed in Chapter 4, Air Quality and Greenhouse Gas Emissions, the proposed project would not result in significant adverse impacts related to air pollutant or greenhouse gas (GHG) emissions during construction or operation. There is the potential for cumulative impacts related to air quality near the project site if the other reasonably foreseeable future actions are constructed at the same time as the proposed project. The potential for impacts related to concurrent construction is greatest for projects close to the project site, because air quality is highly localized and pollutants disperse in air. Concurrent operation of local facilities is unlikely to result in cumulative air quality impacts due to the permitting review requirements for such sources that take into account emissions from other sources in the vicinity.

During construction, those projects identified in **Table 15-1** as *In Project Vicinity* would be close enough to the proposed project to have the potential for cumulative air quality impacts. If the projects are constructed at the same time as the proposed project, it could result in minor cumulative increases in air pollutants from construction equipment and from dust and particulate matter during earth-moving activities for the land-based activities. However, these increases would be temporary for the duration of overlapping construction and would be localized. Each project would also be required to comply with air quality regulations that include proper emission control on construction equipment and dust control.

The air quality analysis completed for the project (Chapter 4) considered estimated existing levels of air pollution in the vicinity of the project site from all sources and thus considered the potential cumulative impacts of the proposed project and air pollutant emissions from existing sources affecting the project area. As shown, the project, in conjunction with existing air pollutants sources, is consistent with regulatory requirements and would not have significant adverse environmental impacts to air resources. Similarly, projects in **Table 15-1** that involve emissions, such as the proposed Riverside Refinery, would be required to consider emissions from existing sources in their permit review. Cumulative impacts from emissions of all existing sources are, therefore, incorporated into each individual emissions source air permit review.

The reasonably foreseeable future projects near the project site as shown in **Table 15-1** would not be expected to introduce new large sources of air pollutant emissions or toxic air pollutants once operational, based on the nature of those projects. The Steelscape warehouse project would likely only have negligible new emissions from fossil fuel-fired heating and cooling systems. The Spencer Creek Business Park is expected to house office, light industrial, commercial, hotel, and dining uses (Port of Kalama 2015a). These uses typically do not generate significant pollutants during operations. In addition, the business park project would be over 4,000 feet away and pollutants would be expected to disperse over that distance.

Therefore, the proposed project, in combination with other reasonably foreseeable future projects in the vicinity, would not be expected to result in significant adverse impacts to air quality.

### *Vessel Transportation/Air Impacts*

The proposed project, in combination with the other reasonably foreseeable future projects that would add vessel traffic to the Columbia River, could result in cumulative increases in air emissions from vessels. These emissions would be from mobile sources and dispersed over large areas and, therefore, unlikely to result in significant cumulative air quality impacts.

Air pollution from large vessels is controlled by the International Maritime Organization (IMO) through Annex VI of the International Convention for the Prevention of Marine Pollution from Ships (MARPOL). Annex VI of the MARPOL Convention sets limits on sulfur oxide (SO<sub>x</sub>) and nitrogen oxide (NO<sub>x</sub>) emissions from ship exhausts and prohibits deliberate emissions of ozone depleting substances, and more stringent standards for SO<sub>x</sub>, NO<sub>x</sub>, and particulate matter apply in designated emission control areas (ECAs). The waters off the North American coasts are designated as an ECA. Large vessels that enter the Columbia River to serve the proposed project or other reasonably foreseeable future projects would be required to meet the more stringent standards that apply to ECAs. Specifically, vessels will be required to use engines that meet the most advanced technology-forcing standards for NO<sub>x</sub> emissions beginning in 2016 (i.e., Tier 3 for new engines), fuel with a sulfur content not exceeding 10,000 parts per million in the first phase of the program (July 2010), and 1,000 parts per million in the second phase of the program (January 2015).

With these requirements, it is expected that emissions of NO<sub>x</sub>, SO<sub>x</sub>, and particulate matter will be reduced over time. The U.S. Environmental Protection Agency (EPA) estimates that emissions of NO<sub>x</sub>, fine particulate matter (PM<sub>2.5</sub>), SO<sub>x</sub> would be reduced by 23 percent, 74 percent, and 86 percent, respectively, below levels in 2020 without the ECA requirements (EPA 2010). Therefore, the cumulative increase in emissions due to the increase in vessel traffic would be partially offset by the reduction in emissions from individual vessels due to the IMO standards.

### **Greenhouse Gas Emissions**

The climate of the earth is primarily influenced by the combination of incoming energy from the sun and reflected energy from the earth's surface. GHGs can trap outbound radiation in the earth's atmosphere. This phenomenon occurs through natural means, such as aerobic respiration or organic decomposition. GHGs are also released through human activities, such as changes to land use, deforestation, fossil fuels combustion, industrial processes, and agricultural production activities. Unlike other emissions, the potential impact of GHG emissions is not limited to any particular geographic proximity, but rather is evaluated and addressed on a global scale. This fact, coupled with the breadth of human activity that can result in GHG emissions and ongoing efforts to reduce GHG emissions from existing sources, makes identifying a specific list of reasonably foreseeable projects that might add to (or reduce) GHG emissions not feasible. Additionally, while many potential projects with potential for additional GHG emissions are announced, or in some cases are under permit review, it remains to be seen whether each project will actually be constructed and operated. Particularly in the fossil fuel energy industries, many proposed projects subsequently are abandoned or denied, such as the proposed propane terminal at the Port of Portland. For all of these reasons, GHG cumulative impacts are considered on a qualitative rather than a quantitative basis, relying primarily on Washington State projections and goals for GHG targets and reductions.

Total GHGs emitted in Washington State were estimated at 91.7 million tonnes of CO<sub>2</sub>e (Mt CO<sub>2</sub>e) in 2011, the most recent year for which the Washington Department of Ecology (Ecology) has published data. According to Ecology, GHG emissions fluctuate yearly

(primarily due to the electricity sector emissions) but are on a downward trend overall (Ecology 2011). Washington State has adopted the following GHG emission reduction goals (RCW 70.235.020):

- By 2020, reduce overall emissions of GHGs in the state to 1990 levels;
- By 2035, reduce overall emissions of GHGs in the state to 25 percent below 1990 levels;
- By 2050, reducing overall emissions to 50 percent below 1990 levels, or 70 percent below the state's expected emissions that year.

The World Resources Institute maintains an online database, known as CAIT, of overall estimated global GHG emissions. The database is developed using a consistent method to estimate emissions for the GHGs. Calculations in the CAIT process draw on data from the Carbon Dioxide Information Analysis Center, CIA World Factbook, Food and Agriculture Organization of the United Nations, International Energy Agency, World Bank, UNFCCC Secretariat, U.S. Census Bureau, U.S. Department of Commerce, U.S. Energy Information Administration and the EPA. In 2011, global emissions were estimated by CAIT to be 45,379.27 Mt CO<sub>2</sub>e.

Existing development, the proposed project, and other proposed projects in Washington State could all generate GHGs that could lead to an increase in overall emissions and contribute to cumulative impacts to air quality and climate change through the continuing introduction of GHGs. A few examples of proposed projects in Washington State that may result in significant emissions of GHGs per Ecology's SEPA policy (25,000 metric tonnes per year) include the planned Tacoma Manufacturing and Marine Export Facility,<sup>1</sup> Tacoma LNG, Shell Puget Sound Refinery Rail Improvements, Gateway Pacific Terminal in Whatcom County, Vancouver Energy Terminal, Vancouver Transportation Logistics Project, three crude by rail facilities in Grays Harbor and Millennium Bulk Terminals in Longview. However, because each of these projects may or may not be developed, and because other GHG emissions may be eliminated or reduced through changes in technology, it is speculative for this document to quantify cumulative GHG emissions within the state. One specific example of pending GHG emission reductions is the TransAlta Centralia coal-fired power plant scheduled for closure beginning in 2020. For these reasons, this cumulative impacts discussion relies primarily on state projections and targets to identify expected future conditions and cumulative effects.

The approximately 976,445 tonnes per year of GHGs identified in Chapter 4 from the Ultra-Low Emissions Technology Alternative operation would represent an approximately 1.1 percent increase from the 2011 statewide GHGs total of 91.7 Mt CO<sub>2</sub>e and a 0.0022 percent increase from the 2011 global GHGs of 45,379.27 Mt CO<sub>2</sub>e. The approximately 1,423,397 tonnes per year of GHGs from the CR Technology Alternative operations would represent an approximately 1.6 percent increase from the 2011 statewide GHGs total of 91.7 Mt CO<sub>2</sub>e and a 0.0031 percent increase from the 2011 global GHGs of 45,379.27 Mt CO<sub>2</sub>e. This does not indicate that there would be a specific increase to state or worldwide GHG emissions if the project is built, because other sources of GHG emissions may be reduced over time consistent with Washington State goals and programs. As noted above, the state has established GHG emission reduction goals and has also implemented executive orders regarding GHG

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<sup>1</sup> This project is the methanol manufacturing facility proposed by NWIW at the Port of Tacoma, Washington. Since publication of the Draft EIS, the proposed methanol manufacturing facility at the Port of Tacoma is no longer being pursued (Port of Tacoma 2016, Godley 2016) and will, therefore, not cumulatively contribute to any KMMEF vicinity-wide or statewide impacts.

emission reductions and is in the rulemaking process to develop a regulatory cap on carbon emissions. It also does not indicate that if the project is not built that GHG emissions will stay the same or be reduced as other projects may be built and increase state or global GHG emissions. This analysis also does not take into account NWIW's stated objective of reducing global GHG emissions by supplanting coal to methanol manufacturing in China, which produces substantially greater levels of GHG than the process used by the project.

In conclusion, the project, together with other future projects in the state of Washington, have the potential to increase GHG emissions in the state. Additionally, changes in technology and closure of some existing sources of GHG emissions (such as the TransAlta coal-fired power plant in Centralia), have the potential to reduce GHG emissions. The State of Washington is a policy leader in addressing GHG emissions, has adopted strong goals for reduction of GHG emissions in the state. With successful implementation of these policy efforts at the statewide level, cumulative GHG impacts are expected to be within the range acceptable in light of these state targets.

### **15.5.3 Water Resources**

#### **Project Site Vicinity**

Potential cumulative impacts to surface water include increased turbidity and sediment and pollutants entering waterways from stormwater runoff during construction activities. The proposed project would prepare and adhere to a detailed construction stormwater pollution prevention plan (SWPPP) during construction, and the plan would include best management practices (BMPs) designed to reduce erosion and sediment delivery to surface waters. Other reasonably foreseeable development projects that disturb at least 1 acre of land would also be required to prepare an SWPPP to manage stormwater discharges during construction. Pollutant discharges could also occur during construction from spills and leaks of petroleum products and lubricants, but the proposed project and other reasonably foreseeable projects would implement spill prevention, control, and countermeasure plans appropriate to the substances being handled and in accordance with applicable regulations. Furthermore, any accidental releases would likely be small and localized and would not have the potential for cumulative impacts.

The Steelscape, Kelso-Martin's Bluff, and Spencer Creek Business Parks are all located in close proximity to the project site. If these projects were constructed at the same time, there is a potential for a cumulative impact, but the impact would only be during construction and temporary for the duration of the construction activity.

Operational activities would similarly use capture and treatment systems from activities that can release contaminants to stormwater (i.e., industrial and vehicle parking lots) in accordance with applicable federal, state, and local surface water quality regulations. Wastewater discharges (sanitary and otherwise) would be permitted within the capacity of existing public sewer system capacities or would require individual treatment and disposal systems that would be reviewed and approved under applicable regulations. The proposed project will infiltrate stormwater generated on site. Therefore, there would be no cumulative impacts due to stormwater discharge to surface water. The reasonably foreseeable projects would be required to comply with state and local standards that are protective of surface and groundwater quality. Under these development conditions, wastewater or stormwater discharges would not cause a cumulative impact.

The proposed project would involve dredging activities, as would the two reasonably foreseeable dredging projects near the project site. If these activities occur at the same time and

in the direct vicinity of the project site, there could be localized and temporary increases in turbidity near the project site caused by dredging and in-water disposal of dredged materials. While it is reasonable to assume that dredging of the adjacent North Port berth could occur at the same time, it is unlikely as the Port has only needed to perform maintenance dredging at this berth infrequently (BergerABAM 2013). Maintenance dredging of the Columbia River navigation channel by the USACE occurs only on shoals (shallow sand formations) that have formed in a reach (straight stretch of a river), not the entire reach, and although many reaches of the navigation channel are annually dredged, other reaches may require dredging on a less frequent basis depending upon the hydrographic surveys and flow conditions (USACE 2014). Based on current channel conditions, significant maintenance dredging in the reach adjacent to the project site is not anticipated (USACE 2015). If the dredging for the proposed project were to take place at the same time as the other reasonably foreseeable dredging projects, all dredging activities would implement BMPs (e.g., work timing, equipment operating procedures, and water quality monitoring, among others). The BMPs would reduce sediment loss and turbidity generation and minimize the potential for adverse cumulative impacts. Under these development conditions, dredging activity would not cause a cumulative impact on water resources.

Groundwater use by the proposed project and other reasonably foreseeable projects (for construction and operations supply) would only be from permitted sources with sufficient capacity to provide water. Impacts on groundwater would only occur on other projects in close proximity to the proposed project site. None of the reasonably foreseeable projects in close proximity would likely use significant amounts of water during construction or operation. The proposed project, the Steelscape warehouse project, and the Spencer Creek Business Park project are all expected to receive water service from the City of Kalama water supply. As discussed in Chapter 13, City of Kalama representatives indicate that the system has sufficient supply and reservoir capacity to serve the water service area for six years and sufficient water rights for a 20-year period; cumulative impacts would, therefore, not occur.

The proposed project would result in the construction of the proposed recreation access improvements within a regulatory wetland buffer, and would provide mitigation to offset this impact. If the other reasonably foreseeable development projects result in impacts to wetlands, they would be required to mitigate for those impacts in accordance with local ordinances and critical areas reviews. Therefore, there would not be cumulative impacts to wetlands.

The proposed project would result in new construction within the floodplain, including the access road to the recreation area, infiltration pond, wastewater treatment facility, and new marine terminal. These marine terminal structures are not expected to affect the elevation of the water surface measurably as the floodplain at this location is large (more than a mile wide); in addition, the volume of fill (inclusive of structures) would be negligible in comparison to the size of the Columbia River floodplain basin (West Consultants 2015). If the other reasonably foreseeable development projects require filling in floodplains, they would be required to conduct analyses, including determining cut/fill volumes, as well as no-net rise studies, and to offset any loss of floodplain capacity in accordance with local ordinances and critical area reviews. Therefore, it is not anticipated that any of the proposed activities would further degrade or create limitations upon the floodplains along the Columbia River. Therefore, there would not be cumulative impacts to floodplains.

## **Vessel Transportation/Erosion Impacts**

Increases in vessel traffic with the proposed project and other reasonably foreseeable development projects could increase erosion caused by vessel wakes, which could increase turbidity and result in localized water quality effects, particularly in areas where the shoreline is not strengthened with riprap or other armoring. The vessel traffic associated with the proposed project and reasonably foreseeable development projects could result in cumulative impacts to wetland communities from increased bank erosion generated by vessel wakes. However, the Columbia River is subject to existing vessel wakes from current marine traffic, as well as waves generated by wind and tidal forces. It is impossible to estimate ship wake erosion separately from erosion caused by other forces and there would not likely be a measureable increase in erosion caused by additional ship traffic (USACE 1999). Recent work has indicated that erosion from ship wakes can occur resulting in environmental impacts but is limited in area because of existing bank conditions (EFSEC 2015). The cumulative vessel traffic along the Columbia River associated with the proposed project and future development projects would likely result in an increase in erosion. The extent of erosion is not readily determined and the project vessels or those from proposed projects are not anticipated to create wakes differently than current deep draft vessels using the federal navigation channel. The extent of impacts is not known and should be further studied and agencies responsible for overall management of the navigation channel are best positioned to address mitigation for this issue.

Increases in vessel traffic with the proposed project and other reasonably foreseeable development projects would not contribute to any loss or alteration of floodplains. The potential for additive cumulative effects with other past, present, and reasonably foreseeable projects is absent or negligible. Vessel transport has a very limited potential to impact groundwater supplies because groundwater generally flows toward a body of water. In tidal areas, there is some potential for surface water to impact groundwater quality, but this impact is generally limited to shoreline areas and is not widespread. Past, present, and future projects using the Columbia River navigation channel and the open ocean for the receipt and delivery of cargoes would have no foreseeable cumulative impact on groundwater quantity or quality.

Potential cumulative impacts to water resources due to spills, inadvertent releases, or other incidents on the project site or during vessel loading or transport are discussed in section 15.5.6, Environmental Health and Safety.

### **15.5.4 Plants and Animals**

#### **Project Site Vicinity**

As discussed in Chapter 6, Plants and Animals, the proposed project would have the potential to affect plant and animal resources, but with the proposed mitigation measures would not result in significant adverse impacts to these resources. The other reasonably foreseeable development projects that are considered also have the potential to affect plant and animal resources.

As discussed in Chapter 6, past and present development and land uses have altered the native vegetation communities within the project vicinity. These activities include upland placement of dredge material, existing Port industrial development, and road and rail construction, and are accounted for in the assessment of plants and animals in Chapter 6 as baseline conditions. Other projects could potentially result in further impacts to native vegetation communities or vegetation resources. The Spencer Creek Business Park, WSDOT Kelso-Martin's Bluff rail improvements, and Steelscape warehouse projects could all affect vegetation resources near the project site. However, vegetation resources are of limited quality at all of these project sites,

primarily consisting of ruderal upland grass/forbs and/or agricultural lands in close proximity to existing industrial or transportation land uses. As discussed in Chapter 6, the project site provides only a very small amount of low-quality vegetation, and impacts to vegetation resources associated with the proposed project would be minimal.

Wildlife and fisheries habitat within the project vicinity has been similarly altered from its historic conditions as a result of past and present development and land use activities. As described above, the project site and much of the vicinity have been used as a site for dredge material placement, which limits their suitability as habitat for most species of terrestrial wildlife. However, portions of the proposed site may provide potentially suitable habitat for Endangered Species Act (ESA)-listed streaked horned lark and Columbian white-tailed deer. As discussed in Chapter 6, Plants and Animals, both have been previously documented on and in the vicinity of the project site (ENVIRON 2015; U.S. Fish and Wildlife Service [USFWS] 2013b). The streaked horned lark has been previously documented on portions of the project site with approximately 3 acres of potentially suitable nesting habitat for streaked horned lark, which is located in the northern section of the proposed site, on an area of dredge material that was placed as part of the USACE Columbia River Navigation Channel project. The remainder of the project site does not provide suitable nesting habitat for streaked horned lark. The USACE conducted an ESA Section 7 consultation for their project. According to their biological assessment analysis, approximately 3 acres of the project site is expected to remain as suitable habitat for larks only through the end of the 2015 nesting season; after which time, it is expected to be “unsuitable” for lark nesting habitat due to vegetation succession (USACE 2014; USFWS 2014). This was confirmed by the USFWS in their biological opinion (USFWS 2014). Further, the USACE and USFWS stated that larks that might otherwise attempt to nest at the site would be expected to find suitable habitat on islands in the vicinity (USACE 2014; USFWS 2014).

With the exception of the USACE maintenance dredging project, none of the reasonably foreseeable projects in close proximity to the project will impact critical habitat for streaked horned lark. The maintenance dredging project may include disposal of dredged material on lark critical habitat reducing currently available lark habitat. It is not anticipated that the proposed project nor any of the other foreseeable future projects would further degrade lark habitat because the habitat on the proposed project site will become unsuitable after the 2015 nesting season, and the other project sites do not provide suitable habitat. Therefore, there would not be cumulative impacts to critical habitat for streaked horned lark.

While Columbian white-tailed deer have been previously documented at the project site and within the vicinity, the project site and areas in the immediate vicinity provide little suitable habitat for the deer because of the amount of human activity in the area, both recreational and port-related, as well as the poor forage quality of the vegetation and low amount of cover. Because the project site contains little cover, browse, or other forage habitat, it is likely that any deer present at the site would be those passing through to habitat north of the project site. As a result, it is not anticipated that the proposed project or any of the other foreseeable future projects would degrade Columbian white-tailed deer habitat because the habitat on the proposed project site and that on the foreseeable project sites is not suitable habitat. Therefore, there would not be cumulative impacts to critical habitat for Columbian white-tailed deer. See Chapter 6, section 6.5.2.1, for additional information on these species.

In addition to impacts to terrestrial vegetation communities, the aquatic environment has also been affected by activities, such as dredging and deepening the Columbia River federal navigation channel, streambank armoring, and waterfront and floodplain development. The

proposed project would result in impacts to the aquatic environment, as well as to portions of the riparian and wetland buffers at the project site. Reasonably foreseeable future development activities in the project vicinity also have the potential to result in impacts to wildlife and/or fish habitats. Impacts, such as vegetation removal and conversion of pervious to impervious surfaces, would eliminate areas of potentially suitable habitat and could further fragment terrestrial habitats.

Other projects may also have in-water disturbance and water quality impacts that may affect habitat. For instance, construction activities (e.g., pile installation and fill placement) have the potential to directly remove fish habitat by replacing aquatic or benthic habitat with built environment, and new in-water structures can impair habitat suitability by creating shaded areas where predator species can thrive. Proposals that include these activities would be required to mitigate for habitat loss in accordance with local critical areas ordinances and to implement controls and treatment systems to protect surface and groundwater quality. Any newly proposed development would also be held to current environmental standards for impact avoidance and minimization and the provision of compensatory mitigation. Within the project vicinity, the proposed project and the Port's Small Vessel Dock and Marina Renovation projects would result in new in-water structures. The new overwater structures are small in comparison to the project alternative, and would result in a minor increase in cumulative impacts. With respect to dredging, the proposed project's dredging activities would occur in deep water and are not expected to result in habitat impacts greater than those resulting from naturally occurring hydraulic action<sup>2</sup>. Therefore, the proposed project's dredging activities would not result in cumulative impacts in combination with the other reasonably foreseeable dredging projects. Given that the impacts attributable to the proposed project would be minimal and would be mitigated, a cumulative impact to wildlife and fisheries resources would not result.

### **Vessel Transportation**

The proposed project would add an incremental increase to existing vessel traffic on the Columbia River and, in combination with other reasonably foreseeable development projects on the Lower Columbia River, could result in cumulative impacts to vegetation, wildlife, and/or fisheries resources.

Vessel traffic associated with the proposed project, as well as with the reasonably foreseeable future projects on the Lower Columbia River identified in this analysis, could result in effects to vegetation resources that include increased bank erosion generated by vessel wakes and propeller wash. These impacts would have the potential to contribute incrementally to this impact. Impacts would likely be greater in areas where shoreline armoring is not present. The increase in vessel traffic could also add incrementally to the risk of inadvertent release of materials in aquatic environments resulting in impacts to riparian and aquatic vegetation.

Increased vessel traffic would have the potential to result in cumulative impacts to wildlife and fisheries resources, including increased potential for the introduction of invasive species, ship strikes, and wake stranding. For those reasonably foreseeable projects that propose to transport liquid bulk materials by vessel, there is also a potential for increased risk of navigation incidents that may have the potential to release material to surface waters. The extent of impacts associated with each project varies greatly and depends on factors that include the number of trips, vessel sizes, and type and volume of materials transported. Any of the projects,

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<sup>2</sup> Naturally occurring turbidity caused by currents moving sediment within the river system.

however, if constructed, could generate additional vessel trips that could contribute incrementally to cumulative impacts to wildlife and fisheries habitat and species.

To address potential cumulative effects of wake stranding, it is necessary to consider past, present, and reasonably foreseeable actions within the Lower Columbia River Basin. Ecology's Vessel Entries and Transits data indicate that the total number of cargo and tank vessels transiting through the Lower Columbia River has decreased by approximately 33 percent since 1993 (Ecology 2014a). Total vessel entry transits ranged from a high of 2,269 in 1999 to a low of 1,397 in 2009, with a 20-year average of 1,837 vessel entry transits. The proposed action would add between 36 and 72 entry transits (or between 72 and 144 total transits) per year. The reasonably foreseeable projects plus the proposed project could result in an estimated additional 1,910 vessel entry transits (3,820 total transits) per year, not including additional barge traffic.

Changes in the number of fish strandings would be driven by increases or decreases in the numbers of ship passages and the dimensions of the ships (Pearson 2011). Assuming at least some moderate growth occurs in the region (and that the Columbia River federal navigation channel is properly maintained), it is likely that there would be some increase in vessel dimensions and transits in the Lower Columbia River, relative to existing conditions. It is, therefore, likely that additional wake stranding would occur as additional and/or larger vessels transit through the river as some or all of the projects are brought on line. Changes in stranding probabilities would be driven by changes in the mix of ship types and the associated ship characteristics, river conditions, and fish availability. It is likely that the proposed project, in conjunction with the other reasonably foreseeable development projects, could contribute incrementally to wake stranding on the Lower Columbia River. However, based on current understanding and available information, it is not possible to quantify potential impacts associated with wake stranding accurately. Additionally, because potential impacts due to wake stranding are not unique to project vessels, but are similar for all deep draft vessel traffic on the river, both existing and projected cumulative traffic, any plan or program to address these impacts should be addressed collectively under the direction of agencies responsible for maritime traffic on the river.

## **15.5.5 Energy and Natural Resources**

### **Project Site Vicinity**

The proposed project would contribute to increased energy and natural resources consumption at the same time as other reasonably foreseeable development projects in the area. Construction of the proposed project and the other development projects would use traditional building materials, such as steel, concrete, and sand and gravel. As discussed in Chapter 7, Energy, these resources are not expected to be in short supply.

The proposed project and other development projects would also consume energy in the form of electricity and natural gas. The proposed project would receive natural gas via the proposed Kalama Lateral Project (the proposed pipeline) that would provide dedicated natural gas transportation service to the project site, while most other users in Kalama receive natural gas from the Cascade Natural Gas system. As discussed in Chapter 7, Energy, natural gas production is increasing in the United States and Canada. Therefore, the proposed project would not have the potential to result in cumulative impacts on natural gas supply ~~or delivery~~ in combination with other development projects. As also discussed in Chapter 7, section 7.4.1.2, increased consumer and industrial demand and increased demand for gas-fired power generation is likely to eventually require additional pipeline transmission capacity, but the proposed project itself does not depend on expansion of regional pipeline capacity. If the

proposed project and some combination of other large projects are constructed, additional pipeline capacity may be required sooner than otherwise projected. With respect to electricity, the Cowlitz County Public Utility District No. 1 (Cowlitz PUD) has stated that it can support the proposed project's energy demand with improvements to its system. These improvements are anticipated as a related action to the proposed project. With these improvements, the Cowlitz PUD would be able to provide adequate service to the proposed project and other customers – including other reasonably foreseeable development projects – in the area. Therefore, the proposed project, in combination with the other reasonably foreseeable development projects, would not result in significant adverse cumulative impacts to energy and natural resources.

### **Vessel Transportation**

The vessel traffic associated with the proposed project and other reasonably foreseeable development projects would consume fuel for their operation. However, transportation fuel availability is not constricted, either locally or regionally. The cumulative transportation-related fuel consumption associated with these projects in combination with the proposed project is not expected to impact fuel availability for other uses. In addition, regulations designed to reduce emissions would likely result in increased efficiency over time as older vessels are replaced. The cumulative vessel traffic would not have the potential to result in significant adverse cumulative impacts to energy and natural resources.

## **15.5.6 Environmental Health and Safety**

### **Project Site Vicinity**

The other reasonably foreseeable projects in the vicinity of the project site would not result in environmental health and safety risks beyond those typical of construction and dredging activities and the operation of commercial, light industrial, and rail uses. Risks to workers and the public from the proposed project in combination with the reasonably foreseeable future actions are not expected to result in cumulative impacts related to environmental health and safety beyond those already discussed in Chapter 8, Environmental Health and Safety.

### **Vessel Transportation**

The proposed project and reasonably foreseeable future projects would increase vessel traffic along the Columbia River. The increase in vessel traffic could result in cumulative impacts related to increased potential for general navigation incidents, such as collisions. However, large vessels would use a pilot service to enter, transit, and exit the Columbia River and would be under the control of trained and licensed mariners familiar with local navigational conditions. Vessel traffic on the Columbia River is monitored through the Lower Columbia Vessel Traffic Information System, which is used by pilots, vessel and tug operators, the USACE, and the U.S. Coast Guard to collectively monitor vessel traffic, manage anchorages, and maintain awareness of current conditions. These measures would reduce, but not eliminate, the potential for increased risk of vessel incidents.

A vessel incident could result in an inadvertent release of methanol, fuels, oil, or other hazardous material to the Columbia River. Although available data addresses only oil spills, it is assumed to represent the potential risk for vessels carrying other liquids. Historical information shows the following:

- Ecology identifies five spills with a volume of oil greater than 10,000 gallons on the Columbia River and near its mouth between 1971 and 1996.

- The largest spill on the Columbia River was the SS Mobil Oil tanker spill in 1984 (Ecology 1997 rev. 2007; Ecology 2015c). This spill resulted when the loaded 618-foot tanker lost steering because of an equipment malfunction and grounded on the riverbank approximately 1 mile upstream from St. Helens, Oregon; approximately 200,000 gallons of oil were spilled.
- From 1995 to 2008, tanker vessels spilled a total of 13,709 gallons (326 barrels) of oil in the waters of Washington in 14 incidents (ERC 2009).

The potential impacts to environmental health and safety in the event of an inadvertent release could vary widely depending on the size of the release, the type of material, local conditions, and other factors. Increased vessel traffic on Columbia River resulting from the project and proposed projects could increase the potential risk of incidents due to vessel collisions. However, serious incidents involving deep draft vessels on the Columbia River are rare with most incidents involving grounding of vessels on sandy shoals (USACE 1999). More recent studies have indicated that additional marine traffic will increase the overall risk of incidents and spills (Ecology 2015c) (EFSEC 2015). The increase in vessel traffic due to project and proposal projects will increase the likelihood of a vessel incident with a spill. Changes in vessel traffic management systems, pilotage requirements, and the addition of new anchorages and the decreasing age of the shipping fleet will all serve to reduce the potential for serious incidents. In the unlikely event of an incident, the Maritime Fire and Safety Association would provide fire safety and oil spill response and communication coordination to fire and spill incidents involving commercial vessels in the Columbia River from the Portland/Vancouver area to Astoria.

## **15.5.7 Land Use and Shoreline Use, Housing, and Employment**

### **Project Site Vicinity**

The proposed project would not result in any significant adverse impacts to land use and shoreline use, as discussed in Chapter 9, Land Use and Shoreline Use, Housing, and Employment. Past and present projects have resulted in changes to land use in accordance with zoning ordinances and comprehensive plans in place at the time of their approval, and it is expected that future projects would continue to affect growth and development at the Port of Kalama and in other surrounding areas. The proposed project would be compatible with surrounding land and shoreline uses and consistent with zoning and applicable land use plans and public policies, as would the other reasonably foreseeable development projects in the vicinity of the proposed project. The dredging projects would maintain the Columbia River for vessel navigation and berthing. The Steelscape warehouse and Kelso-Martin's Bluff rail improvement projects would be continuations of existing uses and would not affect land and shoreline use adversely. The Spencer Creek Business Park has been subject to an established environmental review process that was required to consider land use impacts and has been determined to be consistent with local land use plans, zoning, and development regulations. Furthermore, the Spencer Creek Business Park would be developed pursuant to a master plan approved by the City of Kalama Planning Commission. Therefore, the proposed project, in combination with the other reasonably foreseeable development projects, would not result in significant adverse cumulative impacts to land and shoreline use.

As discussed in Chapter 9, the proposed project would result in only a negligible increase to the overall population of the study area (i.e., a 12-county region around the project site) even if all employees were new to the area. The proposed project's contribution to the population of the study area would be even smaller when growth associated with the other reasonably foreseeable

development projects is taken into account. Furthermore, with a 7 percent vacancy rate in the study area, it is anticipated that any increase in households could be absorbed into the current housing market. Therefore, the proposed project, in combination with the other reasonably foreseeable development projects, would not result in significant adverse cumulative impacts to population and housing.

### **Vessel Transportation**

The vessel traffic associated with the proposed project and other reasonably foreseeable development projects would occur on the Columbia River. Surrounding land uses have developed alongside this vessel corridor and with the existing levels of vessel traffic. Additional vessel traffic along the Columbia River is not anticipated to result in significant adverse cumulative indirect impacts to land and shoreline use, nor would it have the potential to impact population and housing conditions.

## **15.5.8 Aesthetics and Visual Resources**

### **Project Site Vicinity**

Reasonably foreseeable projects in the vicinity of the proposed project would result in additional changes to the visual resources. As indicated in Chapter 10, Aesthetics and Visual Resources, the degree of viewer sensitivity to visual change depends on a number of factors, including viewer type, exposure and orientation, duration, and viewer awareness. Impacts from these projects occurring during construction could contribute to short-term, adverse effects on visual resources in the viewshed if construction periods were to overlap and sensitive viewers are present in locations where multiple construction sites are visible.

In general, viewers would be unlikely to notice an overall increase in industrial activity during operations because of the limited scale of the dredging projects and the Steelscape warehouse and Kelso-Martin's Bluff rail improvement projects. However, in combination with the proposed project, portions of the Spencer Creek Business Park may be visible to some residential viewers. For viewers with low sensitivity, such as workers at industrial sites near the project site or travelers on southbound I-5, the visual change in the viewshed would not represent an adverse, cumulative impact because their attention is typically focused on work or driving. Viewers with moderate or high sensitivity, such as recreational and residential viewers, may notice an overall increase in development in the viewshed and subjectively relate this to a cumulative impact. However, views combining both the proposed project and Spencer Creek Business Park are expected to be available to a limited number of viewers. Views combining both the proposed project and the Port's Small Vessel Dock and Marina Renovation projects would not be expected because of the distances between the projects. Additionally, these projects would not alter views of the Columbia River and Columbia River valley, which are defining features of the affected viewshed. Therefore, the proposed project, in combination with the other reasonably foreseeable development projects, would not result in significant adverse cumulative impacts to visual resources.

### **Vessel Transportation**

The reasonably foreseeable projects would result in increased vessel traffic on the Lower Columbia River. The proposed project would contribute, in an incremental manner, to this increased vessel traffic. However, viewers already experience ship traffic along the Columbia River and additional vessel traffic would not substantially alter existing views. Therefore, it is not expected that increased vessel traffic would result in cumulative visual impacts.

## **15.5.9 Historic and Cultural Resources**

### **Project Site Vicinity**

As discussed in Chapter 11, Historic and Cultural Resources, the area of potential effect (APE) for the purpose of considering potential impacts to cultural resources resulting from the proposed project was defined as the project site and the wooden pile structures in the Columbia River and sloughs north of the project site. There are no cultural resources listed on or eligible for listing on the National Register of Historic Places or Washington Heritage Register within the proposed project's APE. Because there are no listed or eligible cultural resources within the proposed project's APE, in combination with the other reasonably foreseeable development projects on other sites, the project would not have the potential to result in significant adverse cumulative impacts to cultural resources.

### **Vessel Transportation**

As noted above, there are no listed or eligible cultural resources within the proposed project's APE. The vessel traffic associated with the proposed project and other reasonably foreseeable development project would occur within an established navigation channel and would not have the potential to impact historic and cultural resources directly. Increased erosion resulting from increased ship wakes from the project and proposed projects could impact cultural resource sites if the sites are located in close proximity to the navigation channel and in areas that are susceptible to erosion. Because of the existing channel configuration and bank conditions, these areas are limited and located in the lower river.

## **15.5.10 Transportation**

### **Project Site Vicinity**

Reasonably foreseeable development projects in the vicinity of the proposed project would result in trip generation that would affect area roadways. Reasonably foreseeable projects distant from the project site and served by different roadway systems would not have the potential to result in cumulative impacts to vehicular transportation with the proposed project.

During construction, short-term impacts would potentially occur from construction traffic if other nearby proposals, such as the Steelscape warehouse project, and the proposed project are constructed at the same time. This could result in additional congestion at nearby intersections, such as Kalama River Road and Tradewinds Road.

As discussed in Chapter 12, Transportation, the transportation analysis considered existing baseline traffic information and future growth in analyzing the impacts of the proposed project. Specifically the analysis included the trip generation from the planned Spencer Creek Business Park and an additional 2.5 percent annual growth rate to the 2019 analysis year. Therefore, the transportation analysis already accounts for the potential cumulative impacts of the proposed project with the Spencer Creek Business Park, and any additional trips that might be generated by the Steelscape warehouse would be accounted for by the background annual growth rate. The dredging projects and Kelso-Martin's Bluff rail improvement project would not generate vehicular traffic during operation. The Port's Small Vessel Dock and Marina Renovation projects would not generate significant vehicle trips during operations and would not likely direct trips to the intersections impacted by the proposed project. The transportation analysis for the proposed project concluded that the proposed project, including the trips associated with the Spencer Creek Business Park and the background growth rate, would not result in significant adverse cumulative impacts to transportation facilities.

## **Vessel Transportation**

The vessel traffic associated with the proposed project and other reasonably foreseeable development projects would not affect surface transportation networks. Water bodies that would experience additional vessel transits from the other future development projects and the proposed project are not crossed by surface transportation structures that may be interrupted by vessel traffic. The only such crossings are over the Columbia River (I-5 drawbridges and the rail bridge at Vancouver) upstream from the proposed project.

If all of the future projects are developed as anticipated, there could be up to an additional 1,838 vessel entry transits (3,676 total vessel transits) on the Columbia River, not including additional barge traffic. The proposed project would contribute up to an additional 72 vessel entry transits (144 total vessel transits) per year, for a total of 1,910 vessel entry transits (3,820 total vessel transits). This would represent a 121 percent increase over the 2014 vessel entry transits baseline of 1,581 (cargo and passenger vessels, tank ships, and articulated tug barges), and an 84 percent increase over the recent peak of 2,269 vessel entry transits in 1999.

This increase in vessel traffic could result in increased demand for vessel pilots and tug assist services. However, the reasonably foreseeable future projects would likely be built out over time and vessel trips would not likely reach peak levels upon opening, and it is expected that vessel pilots and new tugs would be added as necessary to meet growing demand and maintain adequate service levels.

### **15.5.11 Public Services and Utilities**

#### **Project Site Vicinity**

Along with the proposed project, the other reasonably foreseeable projects would contribute toward the demand for public services and utilities, such as water supply and wastewater treatment, police services, and fire protection and emergency medical services in the vicinity of the project site. However, the Steelscape warehouse project is an expansion of an existing use and would not result in new demands on public service and utility providers. The dredging projects and WSDOT Kelso-Martin's Bluff rail improvement project are infrastructure improvements and would not require the provision of public services. The environmental assessment for the WSDOT Kelso-Martin's Bluff rail improvement project concludes that the project could result in short-term temporary disruptions to utility service during construction, but otherwise would not result in short- or long-term effects to public services and utilities. The Spencer Creek Business Park project would result in new development, but because it would house typical light industrial, office, commercial, and retail uses, it is not expected to generate unique or substantial demands on public service providers. Therefore, the cumulative demand from the proposed project and other reasonably foreseeable development projects is not expected to exceed the capacity of the service providers. The proposed project, in combination with the other reasonably foreseeable development projects, would not result in significant adverse cumulative impacts to public services and utilities.

Reasonably foreseeable projects would likely generate additional economic benefits from construction spending, taxes, and fees. Some of the foreseeable future actions would involve employment for construction only, such as the Kelso-Martin's Bluff rail improvement project, while other existing and future actions would involve employment for both construction and operations, such as the Spencer Creek Business Park project. Also, substantial indirect and induced employment would occur from the proposed project in combination with past, present, and reasonably foreseeable future actions, leading to increased beneficial cumulative impacts for socioeconomics.

It is expected that all employment for the project would come from within a 90-minute driving radius of the proposed project and includes a total labor market of 1.4 million workers and would result in no significant impacts for housing and population. Construction and long-term housing needs for reasonably foreseeable projects would not be substantial based on anticipated construction time and locations.

### **Vessel Transportation**

Vessel transportation does not typically require the provision of public services. However, vessels require the provision of licensed river and bar pilots. A substantial increase in vessel transport could exceed the available bar and river pilots and require additional pilots to serve the anticipated vessel traffic. The pilots indicate that the number of available pilots and current vessel management systems are sufficient to handle the anticipated growth (Worley Parsons 2014). Therefore, the vessel traffic associated with the proposed project and other reasonably foreseeable development projects would not result in cumulative impacts to public services and utilities.

Increased vessel traffic from the project and reasonably foreseeable projects with additional ship traffic is not likely to result in cumulative impacts to economic resources. It is likely that some additional benefit would be generated from fees associated with pilotage, tug assists, ship provisioning, and other activities.

## **15.5.12 Noise**

### **Project Site Vicinity**

Cumulative noise impacts can occur in situations where multiple projects affect the same receivers. In order for this to happen, the projects must be relatively close to each other and to the sensitive receivers. Thus, only those projects in the vicinity of the proposed project could result in a cumulative contribution to the noise landscape. However, the Port of Kalama Spencer Creek Business Park and the Steelscape warehouse projects would not generate substantial noise during operation and would not be major contributors to noise levels in the context of existing roadways, highways, and industrial uses near the project site. If construction of all these projects were to occur simultaneously, there could be some increase in sound levels. As discussed in Chapter 14, section 14.2.1, on the logarithmic noise scale, a doubling of sound-generating activities causes a 3-dB increase in the average sounds produced by the sources, and not a doubling of the loudness of the sound (which requires a 10-dB increase). Should construction activities take place at the same time, the noise would not increase linearly, and such an increase might not be discernible in a typical outdoor environment.

The maintenance dredging by the Port of Kalama and USACE would be intermittent and would not contribute to daily noise levels. The environmental assessment for the WSDOT Kelso-Martin's Bluff rail improvement project states that the project has the potential to result in noise impacts within approximately 500 feet of the rail line; beyond this distance, there is very limited potential for noise impacts as noise levels decrease as the distance from the noise source increases (WSDOT 2014). None of the receptors analyzed for the proposed project are within 500 feet of the WSDOT Kelso-Martin's Bluff rail improvement project. Therefore, the reasonably foreseeable development projects in the vicinity of the proposed project would not have the potential to result in significant adverse cumulative noise impacts.

## Vessel Transportation

Vessel traffic is generally not a major contributor to existing noise levels when other noise sources are accounted for, such as railroads on either side of the river, interstate and state highways, or industrial sources, among others. Sensitive receivers near the river are not expected to be affected by the cumulative increase in vessel traffic. The cumulative vessel traffic would not have the potential to result in significant adverse cumulative noise impacts.

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