Section 1.4 Mitigation Measures

1.4.1 Mitigation Measures

This section summarizes impacts to the elements of the natural and built environment potentially resulting from the Facility and the ~~mitigation~~ measures identified in this application to avoid, minimize and mitigate such impacts.

WAC 463-60-085 (1) requires the Applicant to identify impacts and mitigation resulting from decommissioning. As discussed in Section 2.3.9, Decommissioning, the lease entered into by the Applicant and the Port anticipates a variety of options for decommissioning of the project related improvements upon termination of the lease. See also page 2-81.61 of the ASC. At such time that the project is ripe for termination the Port and the Applicant will come to agreement on what improvements are to remain, or will be removed. In accordance with the requirements of WAC 463-72-050, the Applicant will then prepare a detailed plan that addresses the decommissioning activities, impacts that might result from the decommissioning activities, and appropriate mitigation measures. Determining which impacts could occur from decommissioning at this time is speculative. For example, the Port could chose to retain all of the improvements constructed by the Applicant for use by another tenant, and no decommissioning actions would occur. Or, the Port could request that some or all of the improvements be removed, and the site returned to its prior configuration. In this case the project would be dismantled, foundations demolished, features located underground could be left in place or removed, and the site regraded. The impacts resulting from decommissioning activities are expected to be similar in nature to the impacts of construction of the facility.

1.4.1.1 Section 2.6, Water Supply System

Mitigation measures for the water supply consist of the monetary contribution required by the City for water connections and new services. Service connection fees, system development charges, and industrial water use billing will be paid to the City. Connection fees and system development charges paid at the time of building permit application and application for water service is compensatory mitigation paid to the City for the long-term impacts to water rights, source development, system storage, and distribution piping.

The connection to the City water supply system will be made consistent with standard specifications adopted by the City. Backflow devices will be tested yearly per State requirements.

1.4.1.2 Section 2.18, Protection from Natural Hazards

Earthquake Hazards

All structures and pipelines constructed for the Facility will be designed and built in accordance with the applicable design provisions and seismic requirements of the 2012 International Building Code, the American Society of Civil Engineers 7-10 standard (Minimum Design Loads for Buildings and Other Structures), America Concrete Institute 318-11 standard (Building Code Requirements for Structural Concrete), American Institute of Steel Construction Manual section 360-10 (Specifications for Structural Steel Buildings) and Seismic Design Manual 2nd Ed., and

the American Forest & Paper Association 2008 Special Design Provisions for Wind and Seismic. Tables 2.18-1 and 2.18-2 list the seismic design criteria for the Facility.

Table 2.18-1. 2012 IBC Seismic Design Criteria Storage (Area 300)

Parameter	Value	2012 IBC/ASCE 7-10 Reference
0.2 Second Spectral Acceleration, S_s	0.94	ASCE 7-10 Figure 22-1
1.0 Second Spectral Acceleration, S_1	0.41	ASCE 7-10 Figure 22-2
MCE_G Peak Ground Acceleration, PGA (Site Class B)	0.41	ASCE 7-10 Figure 22-7
Soil Profile Site Class	N/A*	ASCE 7-10 Section 20.3.1 and 21.3*
0.2 Second MCE_R Spectral Acceleration, S_{Ms}	1.04	Site Specific Ground Motion, ASCE 7-10 Ch. 21 *
1.0 Second MCE_R Spectral Acceleration, S_{M1}	0.8	Site Specific Ground Motion, ASCE 7-10 Ch. 21 *
MCE_G Peak Ground Acceleration, PGA	0.37	Site Specific Ground Motion, ASCE 7-10 Ch. 21 *
0.2 Second Design Spectral Acceleration, S_{Ds}	0.69	2012 IBC Equation 16-39
1.0 Second Design Spectral Acceleration, S_{D1}	0.53	2012 IBC Equation 16-40
Seismic Design Category	D	2012 IBC Table 11.6-1 (& -2)

*A liquefaction hazard was identified for the Storage area (Area 300). In accordance with ASCE 7-10 Section 11.4.7 and 20.3, a site-specific ground motion analysis was completed for seismic design at the Storage area to develop the criteria listed above.

Table 2.18-2. 2012 IBC Seismic Design Criteria Unloading and Office (Areas 200 and 600)

Parameter	Value	2012 IBC / ASCE 7-10 Reference
0.2-Second Spectral Acceleration, S_s	0.94	ASCE 7-10 Figure 22-1
1.0-Second Spectral Acceleration, S_1	0.41	ASCE 7-10 Figure 22-2
MCE_G Peak Ground Acceleration, PGA (Site Class B)	0.41	ASCE 7-10 Figure 22-7
Soil Profile Site Class	E*	ASCE 7-10 Section 20.3.1*
Site Coefficient, F_a	0.97	2012 IBC Table 1613.3.3(1)
Site Coefficient, F_v	2.40	2012 IBC Table 1613.3.3(2)
Site Coefficient, F_{PGA}	0.9	ASCE 7-10 Table 11.8-1
0.2 Second MCE_R Spectral Acceleration, S_{Ms}	0.91	2012 IBC Equation 11.4-1
1.0 Second MCE_R Spectral Acceleration, S_{M1}	0.98	2012 IBC Equation 11.4-2
MCE_G Peak Ground Acceleration, PGA	0.37	2012 IBC Equation 11.8-1
0.2 Second Design Spectral Acceleration, S_{Ds}	0.61	2012 IBC Equation 11.4-3
1.0 Second Design Spectral Acceleration, S_{D1}	0.66	2012 IBC Equation 11.4-4
Seismic Design Category	D	2012 IBC Table 11.6-1 (& -2)

*A liquefaction hazard was identified for the Unloading and Office area (Areas 200 and 600). Based on ASCE 7-10 Section 20.3.1, Site Class E was used to develop seismic design criteria for the structures in Areas 200 and 600 assuming the fundamental period of the structures in Areas 200 and 600 is less than 0.5 second.

Ground improvement methods and foundations designs will be selected to meet the criteria identified above. Liquefaction mitigation solutions for the risk of liquefaction may include improving the condition of soils beneath the site to reduce the risk of liquefaction during an earthquake or the use of deep foundations to provide foundation support below the liquefiable soils. Ground improvement methods, such as stone columns, jet grouting, or deep soils mixing, could be designed to reduce the seismic lateral load on the dock foundations and improve seismic slope stability. Ground improvement methods and/or the use of deep foundations, such as driven piles or drilled shafts, could be designed to reduce the risk of seismic settlement impacting the proposed structures. Specific mitigation measures will be identified based on the results of the project-specific geotechnical investigation.

Volcanic Eruptions

Should an eruption occur and pose a risk to the Facility the operations will be shut down until conditions allow for safe operation.

Flooding

The Facility will be designed to comply with the City's Frequently Flooded Areas provisions of the Shoreline Management Program. These provisions require that buildings and structures located in the floodplain be elevated to at least one foot above the flood elevation or be floodproofed, be anchored to prevent floatation, collapse or lateral movement and incorporate other design elements to insure safety during a flood event.

Dock operations will comply with the USCG- and Ecology-approved Terminal Operating Limits as published in the Terminal Operations Manual

Storms

The Facility will be designed to comply with the International Building Code requirements to reduce the risk of damage to structures from storm events. For the City of Vancouver the basic wind speed design is 105 miles per hour for a 3-second gust. All buildings are required to be designed by a structural engineer. Compliance with the code provisions will be determined during the building permits administered by EFSEC.

During severe weather events, the Facility operator will monitor the conditions at the site and if conditions result in risks to employees or facilities, will cease operations until safe to resume.

1.4.1.3 Section 3.1, Earth

Seismicity

Mitigation measures for seismicity are identified under section 2.18.

Soils

A qualified geotechnical engineer will monitor the fill placement during construction and conduct appropriate field tests to verify the proper compaction of the fill soils. Appropriate types of ground improvements will be selected during final design based on the specified performance criteria for the elements of the Facility.

Erosion/Enlargement of Land Area (Accretion)

The potential erosion impacts will be minimized through the use of erosion and sedimentation control measures outlined in the preliminary SWPPP (Appendix C). Construction activities will be sequenced and controlled to limit erosion. Clearing, excavation, and grading will be limited to the areas necessary to construct the Facility. Interim surface protection measures, including dust control, straw matting, and erosion control blankets, will be required to prevent erosion. Final surface restoration will be completed within 14 days of an area's final disturbance. All construction practices will emphasize erosion control over sediment control. Temporary cutoff swales and ditches will be installed to route stormwater to the appropriate sediment trap and discharge location.

1.4.1.4 Section 3.2, Air

The Applicant has designed the project to meet all federal and state emissions standards including New Source Performance Standards (NSPS) and National Emissions Standards for Hazardous Air Pollutants (NESHAPS). ~~applicable air emission standards, and~~ The Applicant is proposing measures to reduce emissions including handling crude oil in equipment, which minimizes exposure of the oil to the ambient atmosphere ~~in a fully closed system throughout the Facility~~ to reduce VOC emissions, firing Facility boilers with pipeline quality natural gas, using ultra low sulfur diesel fuel for the emergency fire pumps, and installing a floating roof in each of the storage tanks. The Facility includes control equipment to limit emissions of hydrocarbons when the marine vessels are loaded using a collection system and a thermal combustor (Marine Vapor Combustor Unit, (MVCU)). The Applicant has conducted a comprehensive Best Available Control Technology (BACT) analysis, and has selected the most feasible, effective, and economically viable emission controls (see section 5.1, Attachment 1). The Applicant has conducted air emissions modeling in accordance with approved methods to demonstrate compliance with all applicable air quality standards.

The applicant will implement the following measures during construction:

- To control dust during construction, water ~~would~~ will be applied as necessary. Site access and travel roads ~~would~~ will be graveled or paved.
- Vehicles used on site will meet federal emission standards.
- Emissions from vehicle use will be minimized by adherence to a set of best practices including limited idling time.

1.4.1.5 Section 3.3, Water

Surface Water

A permanent stormwater management system will be constructed to serve the Facility; this system will be constructed during site grading and construction of the Facility surface and subsurface elements. The system is designed in accordance with VMC 14.024, 14.025, and 14.026 and Ecology's administrative codes for stormwater and spill prevention, preparedness, and response and the Ecology stormwater manual.

Surface water quality will be protected through the use of the BMPs designed and constructed in accordance with Ecology's stormwater manual. BMPs, such as oil water separators, hydrodynamic separation, particulate filters, biofiltration swales, and permanent vegetation, will

be used in the permanent Facility installation to protect surface water. Once all permanent stormwater BMPs are in place, operations-related impacts to surface water will be minimized through the use of operational BMPs and operational procedures.

Containment rail drip pans, pumps, and containment sump tanks will be provided for the rail unloading area; the capacity of the containment systems will be sufficient to contain and store the entire volume of a single rail car staged within the unloading building. The tank farm will be surrounded by a containment berm 6 feet high with a full impervious liner capable of containing 110 percent of the largest tank and a 100-year 24-hour rainfall event. Spill, containment will be designed to meet or exceed API, EPA, NFPA, City and other applicable requirements. Tank monitoring, inspection, and testing will be in accordance with API 653, the industry standard for the inspection of aboveground petroleum storage tanks.

The transmission pipeline will be constructed of welded steel pipe, designed specifically for oil conveyance. Safety measures built into the design include thickened pipe walls, pipeline expansion for thermal and/or seismic movement, pressure and temperature sensors, and emergency shutoff valves. The pipeline will largely be constructed aboveground, on concrete foundations, with the exception of a few portions that will be constructed underground to accommodate existing rail and road crossings. The above-grade portion of the pipeline will be subject to visual inspection for leaks, and secondary containment with leak detection will be provided for pipe installed underground~~double-walled pipe will be used underground with monitoring to detect any leaks~~.

Spill containment measures along the pipeline alignment (Area 500) will comply with 40 CFR 112.7 by providing secondary containment, inspections, and contingency planning. All facility piping systems and storage tanks will be hydrostatically tested prior to being placed into operation.

Runoff/Absorption

The designed BMPs are expected to minimize erosion and control sedimentation. Construction-phase erosion and sedimentation control BMPs, as described in sections 2.11 and 5.3 of this Application, will be implemented to mitigate the impacts of soil disturbance. Permanent operations-phase runoff control and water quality treatment will be implemented to mitigate any impacts from the project.

Floodplains

Structures located within the 100-year floodplain will be elevated so that the floor is at least 1 foot above the base flood elevation. They will also be anchored to resistant movement and designed with utilities and other connections that are designed to withstand flood events consistent with the requirements of VMC 20.740.120 Frequently Flooded Areas. Where the pipeline route lies in the floodplain, the pipeline will be elevated aboveground.

In order to prevent the contamination of flood water, operating procedures will require that any crude oil spill, including minor leaks and drips, be contained and affected surfaces cleaned promptly limiting the amount of any residue that could comingle with flood waters inundating the rail drip pans, containment piping, and below-grade trenches. In the event of flood events exceeding the 100-year or 500-year flood stages, the Applicant will monitor the rate of flood water rise and suspend threatened Facility operations prior to the flooding occurring.

Groundwater Resources

Some foundations and utility and pipeline excavations for the project may require dewatering of the excavations during the construction process. Groundwater that is pumped out of the excavations will be stored on site in mobile water tanks and analyzed and managed in accordance with local, state and federal regulations prior to reuse, infiltration or disposal. Disposal will be conducted in accordance with the stormwater permit issued for the project. If dewatering wells are necessary, well points used for construction dewatering will be completed in accordance with WAC 173-160 Minimum Standards for Construction and Maintenance of Wells. If groundwater extracted for construction dewatering is directed to the City's sanitary sewer it will be disposed in accordance with VMC 14.12 Discharge of Industrial Wastes to the Industrial Wastewater Pretreatment Facility.

Public Water Supplies

The Facility will purchase its water supply from the City. The development of new water sources or wells is not required for this Facility. Relative to the existing system demands and total City water rights, the project is not anticipated to have an effect upon the private water supplies in the vicinity of the project site. Mitigation for the use of and impact on the public water system includes payment of system development charges, connection fees, and utility rates. These fees and rates are to support capital and operating expenses of the water system.

1.4.1.6 Section 3.4, Habitat, Vegetation, Fish, and Wildlife

Habitat and Vegetation

The project will implement several impact minimization measures and BMPs to minimize the potential for impacts to terrestrial habitats and vegetation.

Direct Habitat Modification

The proposed project has been designed to avoid and/or minimize impacts to biological resources to the greatest extent possible. The upland facilities associated with the project have been located on developed portions of an existing industrial site, which in its current state provides very little habitat function and very little native vegetation. By siting the project in a developed location, impacts to native terrestrial habitats and native species of vegetation, including special status species, have been avoided.

Ground disturbance and vegetation removal will be limited to the amount necessary to construct the project, and construction fencing will be used to protect existing vegetation to be retained. The project will install urban landscaping, approximately 2.21 acres, including trees and shrubs in Areas 200 and 300, and will offset the removal of nine trees associated with construction. These landscaped areas will provide wildlife habitat typical in an urban environment.

Temporary Construction Noise

The proposed project has the potential to result in temporarily elevated terrestrial and underwater noise levels associated with the operation of construction equipment. Temporary construction noise may render habitats on site and within the project vicinity unsuitable to wildlife, including special status species, during construction activities.

Underwater noise may make aquatic habitats temporarily unsuitable to aquatic species during active construction. As such, aquatic species may tend to avoid the work area or move through

the area faster. Potential underwater noise impacts have been minimized in the project design by limiting construction techniques to vibratory methods, which generate less noise than impact hammers. Temporary support piles will be needed for construction of the dock modifications, so underwater noise is expected during vibratory pile installation and removal. All in-water work that generates temporary noise, including temporary pile installation and removal, will occur during the published work window from November 1 to February 28. Drilling for casing installation may also generate underwater noise.

In-water construction activities will also generate terrestrial noise, as will other upland construction equipment. Peak terrestrial noise generation would occur from impact pile driving, used to install shore-based mooring points and foundations for the rail unloading area (Areas 200 and 400). Other sources of terrestrial noise would include general construction activities, such as grading, paving, material transport, etc.; however, these activities are not expected to be distinguishable from adjacent industrial activity. Peak terrestrial noise is expected to attenuate to background levels within 5,000 feet of the project site, potentially making them unsuitable during construction. Wildlife occupying adjacent habitats within 5,000 feet may avoid these habitats or exhibit startle responses to periods of loud noise. The impacts have been minimized through construction sequencing that will complete work as efficiently as possible when loud noises are expected. Additionally, all noise sources occur outside of recommended management buffers for priority species; therefore, no work window is proposed for terrestrial pile driving.

Overall, underwater and terrestrial noise associated with construction has been minimized to the extent practicable. The dock modifications have been designed so as to require no impact pile driving, which will greatly reduce the extent of terrestrial and underwater noise generated during construction. This will reduce the potential for effects to wildlife, including special status species that may utilize habitats at the project site and within the project vicinity.

Operational Water Quality Impacts

Operations at the site will be governed by an SPCC plan (Appendix B.2), which will define specific BMPs to minimize the potential for leaks and spills and the extent of damage from any unavoidable leaks or spills. These include inspecting construction equipment daily to ensure that there are no leaks of hydraulic fluids, fuel, lubricants, or other petroleum products, and locating temporary material and equipment staging areas above the OHWM of the waterbody and outside environmentally sensitive areas.

Fish

The dock configuration has been designed to require ~~the minimum amount of~~ no new piling and overwater structure ~~necessary~~, and has reduced the quantity of direct permanent habitat impacts to the minimum amount practicable. The proposed removal of piles and existing overwater coverage has further minimized the extent of impacts.

Temporary Water Quality Impacts

The project has the potential to result in temporary water quality impacts during construction including increased potential for spills, and a potential for temporarily elevated levels of turbidity during construction. Construction at the site will be governed by an SPCC plan (Appendix B.2), which will define specific BMPs to minimize the potential for leaks and spills and the extent of damage from any unavoidable leaks or spills. These include inspecting construction equipment daily to ensure that there are no leaks of hydraulic fluids, fuel, lubricants, or other petroleum

products, and locating temporary material and equipment staging areas above the OHWM of the waterbody and outside environmentally sensitive areas.

All temporary pile installation and removal activities below the OHWM will be conducted within the publishedapproved in-water work period for the project (anticipated to be November~~October~~ 1 to February 28). This work window has been established to minimize potential impacts to native fish species, particularly to ESA-listed salmonids and Pacific eulachon. While there is no time when ESA-listed fish are absent from the project vicinity, the window between November~~October~~ 1 and February 28 avoids the peak migratory periods for adult fish and out-migrating juveniles of most populations.

Temporary Construction Noise

The proposed project has the potential to result in elevated underwater noise during ~~construction~~ in-water vibratory pile installation and removal, and impact pile driving of shore-based mooring structures, which can temporarily affect fish and fish habitat quality. ~~The project has been designed to minimize the likelihood of any impacts resulting from underwater noise during pile installation activities. The project will implement a bubble curtain or similarly effective noise attenuation device during all impact pile installation. These devices, when installed and operated properly, typically provide at least 5 dB of noise attenuation (Caltrans 2009).~~ The dock modifications have been designed so as to require no impact pile driving, which will greatly reduce the extent of ~~terrestrial and~~ underwater noise generated during construction. Temporary support piles for dock modifications will be installed and removed with vibratory methods. This will reduce the intensity of underwater noise, and will limit the potential for adverse effects to fish.

In addition, all ~~pile installation~~ in-water work below the OHWM will be conducted within the published ~~approved~~ in-water work period for the project (~~anticipated to be~~ November~~October~~ 1 to February 28). This work window has been established to minimize potential impacts to native fish species, particularly to ESA-listed salmonids and Pacific eulachon. While there is no time when ESA-listed fish are completely absent from the project vicinity, the window between November~~October~~ 1 and February 28 avoids the peak migratory periods for adult fish and out-migrating juveniles of most populations.

Adjacent upland pile driving for mooring structures is to be installed outside the November 1 to February 28 work window because of scheduling constraints. The close proximity of these piles to the OHWM is expected to generate underwater noise that could impact fish within approximately 446 feet of upland pile-driving activity.

Operational Water Quality Impacts

The proposed project has the potential to result in indirect effects to fish and fish habitat through operational water quality impacts including an increased potential for impacts associated with stormwater management at the site and spills or leaks associated with on-site equipment and machinery, and a potential for catastrophic accidents such as spills to surface waters. The Facility will discharge to existing Columbia River outfalls through existing manmade conveyance pipelines, and is categorically exempt from the flow control provisions of the Ecology stormwater manual. According to Appendix I-E of the manual, the Columbia River is listed as a flow control-exempt water body.

As described in section 2.11 of this application, operational stormwater will be collected, treated, and conveyed in permanent constructed conveyances from source to discharge. Stormwater from

the storage area will be treated to enhanced water quality standards and discharged to the ~~existing~~ Terminal 4 stormwater system. Stormwater from ~~a~~Areas 200, 500, and 600 and the rail improvements will be treated to basic levels and discharged to the existing Terminal 5 stormwater system. Stormwater from Area 400 will be treated to an enhanced treatment level and conveyed to existing infiltration swales located immediately north of the site. Stormwater treatment facilities will be sized to accommodate the 6-month, 24-hour event as estimated using Ecology's hydrology model. The proposed stormwater treatment will provide treatment to a level that is consistent with the discharge permits applicable to the Facility and will ensure that fish and fish habitat are not adversely affected by operational stormwater.

Operations at the site will be governed by an SPCC plan (Appendix B.2), which will define specific BMPs to minimize the potential for leaks and spills and the extent of damage from any unavoidable leaks or spills. These include inspecting construction equipment daily to ensure that there are no leaks of hydraulic fluids, fuel, lubricants, or other petroleum products, and locating temporary material and equipment staging areas above the OHWM of the waterbody and outside environmentally sensitive areas.

Transport ships are constructed with double hulls to minimize the potential for the release of cargo in the event of a spill. In addition, international convention requires that a SOPEP govern the operation of each ship. All ships also will be required to comply with state spill prevention and contingency plans. The likelihood of a catastrophic spill is very low, and the proposed BMPs and safety and security measures will minimize the risk of impacts to biological resources.

Shipping

The proposed project will result in approximately 140 ship transits per year in 2016 (first full year of operations) and up to 365 ship transits per year at full ~~buildout~~operating capacity. Increased marine traffic on the Columbia River has the potential to result in impacts to fish and fish habitat through increases in the potential for fish stranding, increased potential for shoreline erosion associated with propeller wash, and through the introduction of exotic species.

The risk of adverse effects to fish and fish habitat from increased bank erosion is low. Streambanks at the site are well armored, and not particularly sensitive to erosion, so these habitats likely will not be affected. Elsewhere in the project vicinity and shipping prism, there are unarmored banks, which could potentially be susceptible to increased erosion from prop wash. Effects associated with bank erosion would be temporary and localized, and would result in only minor negative impacts to fish and fish habitat.

Operators of commercial vessels have a significant economic interest in maintaining underwater body hull platings in a clean condition. Fouled bottom platings result in increased fuel costs and can reduce the vessel's maximum transit speed. To prevent fouling and higher costs, operators preserve and maintain the hulls of their ships aggressively (FERC 2008), greatly reducing the risk of the transport of exotic species. Additionally, the USCG has developed mandatory practices for all vessels with ballast tanks in all waters of the United States. Washington has developed similar guidelines. These practices include requirements for ballast water exchange, to rinse anchors and anchor chains during retrieval to remove organisms and sediments at their place of origin, to regularly remove fouling organisms from the hull, piping, and tanks, and to dispose of any removed substances in accordance with local, state, and federal regulations.

Wildlife

Special Status Species

Direct impacts to special status species have been minimized by locating all project activities within and existing industrial site. According to WDFW Priority Habitats and Species (PHS) data, there are no occurrences of special status species within the project site. Within the project vicinity, there are several occurrences of PHS point, including bald eagle nests (approximately 1.2 miles to the west), bald eagle concentration areas (approximately 1.2 miles northwest), sandhill crane concentrations (approximately 3,000 feet west), and great blue heron breeding (approximately 4,000 feet northeast). Waterfowl concentrations are also known to occur on Vancouver Lake, approximately 1 mile north of the project.

Temporary construction noise has been minimized to the extent practical to reduce impacts to special status species using habitats (e.g., foraging and resting) within the project vicinity. Peak construction noise would be generated by impact pile driving for the rail unloading facility upland mooring points. These areas are located outside of WDFW- and USFWS-recommended management buffers for bald eagle nests (660 feet and 0.5 mile, respectively) and great blue heron rookeries (656 feet). Foraging or resting species may be temporarily displaced from habitats within the project vicinity during periods of construction noise. These impacts have been minimized during construction sequencing to complete the noise generating aspects of construction as efficiently as possible.

Direct Habitat Modification

The upland facilities associated with the project have been located on developed portions of an existing industrial site, which in its current state provides very little habitat function and very little native vegetation. By siting the project in a developed location, impacts to native terrestrial habitats and native species of vegetation, including special status species, have been avoided. Ground disturbance and vegetation removal will be limited to the minimum amount necessary to construct the project, and construction fencing will be used to protect existing vegetation to be retained.

Temporary Water Quality Impacts

The project has the potential to result in temporary water quality impacts during construction including increased potential for spills, and a potential for temporarily elevated levels of turbidity during construction. Construction at the site will be governed by an SPCC plan (Appendix B.2), which will define specific BMPs to minimize the potential for leaks and spills and the extent of damage from any unavoidable leaks or spills. These include inspecting construction equipment daily to ensure that there are no leaks of hydraulic fluids, fuel, lubricants, or other petroleum products, and locating temporary material and equipment staging areas above the OHWM of the waterbody and outside environmentally sensitive areas.

High volume flow events can result in hydraulic forces that re-suspend benthic sediments, temporarily elevating turbidity locally. Any temporary increase in turbidity as a result of the proposed project is not anticipated to measurably exceed levels caused by these normal periodic increases. Additionally, the volume of flow will help minimize the intensity and duration of any temporary episodic increases in sediment suspension or turbidity.

In addition, all in-water temporary pile installation and removal below OHWM will be conducted within the publishedapproved in-water work period for the project (anticipated to be NovemberOctober 1 to February 28). This work window has been established to minimize

potential impacts to native fish species, but also avoids the peak migration timing for marine mammals in the Lower Columbia River.

Temporary Construction Noise

Terrestrial noise levels will be elevated within the vicinity of the project site during construction activities. Peak noise generation would be associated with impact pile driving for foundation supports at the rail unloading facility. ~~, but t~~These sound levels will be expected to ~~decrease~~ attenuate to ambient conditions within approximately 5,000 feet of ~~relatively short distance from~~ the immediate project site.

~~Most of the t~~Terrestrial habitats within approximately ~~3,2~~5,000 feet of the ~~dock~~ project ~~is not suitable for wildlife species, and terrestrial wildlife habitats at the immediate project site~~ are of limited quality and quantity, but likely provide some functions for wildlife foraging and resting. Species that utilize these industrialized habitats are generally well adjusted to nearly continuous human presence and activity because of the nearby port activity.

The proposed project has the potential to result in elevated underwater noise during ~~construction~~ temporary pile installation and removal, which can temporarily affect marine mammals and the quality of their habitat. The project has been designed to minimize the likelihood of any impacts resulting from underwater noise during pile installation activities by using vibratory methods. ~~The project will implement a bubble curtain or similarly effective noise attenuation device during all impact pile installation. These devices, when installed and operated properly, typically provide at least 5 dB of noise attenuation (Caltrans 2009). This will result the intensity of underwater noise, and will limit the potential for adverse effects to marine mammals.~~ The proposed project has the potential to result in temporarily elevated terrestrial noise levels during pile installation, removal, and other construction activities. Terrestrial construction noise has been minimized to the extent practicable through the selection of equipment and timing. This will reduce the potential for effects to wildlife, including special status species that may utilize habitats at the project site and within the project vicinity.

In addition, all ~~pile installation and removal~~ in-water work below the OHWM will be conducted within the ~~approved~~ published in-water work period for the project (~~anticipated to be~~ November~~October~~ 1 to February 28). This work window has been established to minimize potential impacts to native fish species, but also avoids the peak migration timing for marine mammals in the Lower Columbia River. Marine mammals are not expected to occur within the action area during the in-water work period. Impact pile installation for shore-based mooring structures would be installed as construction scheduling allows as no in-water work is necessary. The close proximity to the OHWM is expected to generate underwater noise, which may affect marine mammals in the vicinity of the project. Temporary noise may result in avoidance behaviors, but it is not expected to harm mammals.

Operational Water Quality Impacts

The proposed project has the potential to result in indirect effects to wildlife through operational water quality impacts including an increased potential for impacts associated with stormwater management at the site and spills or leaks associated with on-site equipment and machinery, and a potential for catastrophic accidents such as spills to surface waters. However, the terrestrial habitats at the site provide very little functional habitat, and the impact minimization measures and BMPs that will be implemented will effectively reduce the potential for any adverse effects to the quantity or quality of terrestrial habitats as a result of operation.

As described in section 2.11, operational stormwater will be collected, treated, and conveyed in permanent constructed conveyances from source to discharge. The proposed stormwater treatment will provide treatment to a level that is consistent with existing treatment at the site, which will ensure that aquatic wildlife are not adversely affected by operational stormwater.

Operations at the site will be governed by an SPCC plan (Appendix B.2), which will define specific BMPs to minimize the potential for leaks and spills and the extent of damage from any unavoidable leaks or spills. These include inspecting construction equipment daily to ensure that there are no leaks of hydraulic fluids, fuel, lubricants, or other petroleum products, and locating temporary material and equipment staging areas above the OHWM of the waterbody and outside environmentally sensitive areas.

Transport ships are constructed with double hulls to minimize the potential for the release of crude oil should an accident occur. In addition, international convention requires that a SOPEP govern the operation of each ship. All ships also will be required to comply with state spill prevention and contingency plans. The likelihood of a catastrophic release of crude oil is very low, and the proposed BMPs and safety and security measures will manage the risk of impacts to biological resources effectively.

1.4.1.7 Section 3.5, Wetlands

Wetlands

Direct Habitat Effects
The upland facilities associated with the project have been located on developed portions of an existing industrial site, and no wetlands are present at the site. By siting the project in a developed location, the project has completely avoided the need to directly impact wetlands.

Temporary Water Quality Impacts
The project has the potential to result in temporary water quality impacts during construction which could affect off-site wetlands within the project vicinity or shipping prism. Construction at the site will be governed by an SPCC plan (Appendix B.2), which will define specific BMPs to minimize the potential for leaks and spills and the extent of damage from any unavoidable leaks or spills. These include inspecting construction equipment daily to ensure that there are no leaks of hydraulic fluids, fuel, lubricants, or other petroleum products, and locating temporary material and equipment staging areas above the OHWM of the waterbody and outside environmentally sensitive areas.

Operational Water Quality Impacts
The proposed project has the potential to result in indirect effects to wetlands through operational water quality impacts including an increased potential for impacts associated with stormwater management at the site and spills or leaks associated with on-site equipment and machinery, and a potential for catastrophic accidents such as spills to surface waters.

As described in section 2.11, the project has the potential to increase stormwater runoff at the site, which could affect water quality and quantity. The proposed stormwater treatment will provide treatment to a level that is consistent with existing treatment at the site, which will ensure that off-site wetlands are not adversely affected by operational stormwater.

Operations at the site will be governed by an SPCC plan (Appendix B.2), which will define specific BMPs to minimize the potential for leaks and spills and the extent of damage from any unavoidable leaks or spills. These include inspecting construction equipment daily to ensure that there are no leaks of hydraulic fluids, fuel, lubricants, or other petroleum products, and locating temporary material and equipment staging areas above the OHWM of the waterbody and outside environmentally sensitive areas.

Transport ships are constructed with double hulls to minimize the potential for the release of cargo in the event of a spill. In addition, international convention requires that a SOPEP govern the operation of each ship. All ships also will be required to comply with state spill prevention and contingency plans. The likelihood of a catastrophic spill is very low, and the proposed BMPs and safety and security measures will manage the risk of impacts to wetlands effectively.

Shipping

The proposed project will result in approximately 140 ship transits per year in 2016 (first full year of operations) up to 365 ship transits at full capacity ~~buildout~~. Marine traffic on the Columbia River has the potential to result in impacts to wetlands through the introduction of exotic species.

Wetlands are unlikely to be affected by an increase in shipping traffic. Wetland resources within the project vicinity or downstream in the shipping prism could be impacted through the introduction of exotic species, but there is little risk of ships increasing the transport of exotic species.

1.4.1.8 Section 3.6, Energy and Natural Resources

Energy and Natural Resources

Regional Energy and Natural Resources are readily available to meet the needs of the construction and operation of the Facility, without adversely affecting the needs of other development in the Vancouver-Portland metropolitan area.

Conservation and Renewable Resources

During construction, conservation measures will include construction waste recycling when possible and the coordination of carpooling between construction workers to reduce vehicle emissions.

Operations BMPs will be developed that include conservation measures for nonrenewable resources such as water, fuel, and electricity. These BMPs may include the following conservation measures when cost effective:

- Installation of high efficiency electrical fixtures, appliances, and light bulbs in the support/administrative building;
- Installation of LED light bulbs throughout the Facility;
- Using low-water flush toilets in the support/administrative building;
- Coordinating carpooling among operations workers;
- Recycling waste office paper and aluminum; and
- Sending used oils, lubricants, and greases to facilities where they can be recycled when possible.
- Using vehicles that comply with current fuel consumption and emission standards.

1.4.1.9 Section 4.1, Environmental Health

Noise

Construction would occur only during daytime hours to reduce the potential for noise impacts from this activity. Construction noise is exempt from the Washington noise limits during daytime hours. The Applicant will, to the greatest extent feasible, schedule noisy construction activities to the hours identified in VMC 20.935.030(4), i.e., between 7 AM and 8 PM. If outdoor construction is required outside of these hours, the Applicant will consult with the City of Vancouver, will notify EFSEC in advance, and will not conduct the work until EFSEC has reviewed and approved the planned activities.

Modeled sound levels of the Facility would comply with the applicable Washington State noise limits. Therefore, no operational noise mitigation is proposed.

Risk of Fire or Explosion

Fire Prevention and Suppression
The Facility will be designed and operated according to federal, state, and local standards for the prevention of fire and explosion hazards, including provisions for distances between tanks in the Facility and between the crude oil-handling facilities and adjacent buildings. Examples of other risk-based management approaches to be implemented include:

- Implementing safety procedures for unloading of crude oil from rail cars and loading to vessels, including using fail-safe control valves and emergency shutdown equipment.
- Protecting against potential ignition sources and lightning by (1) proper grounding to avoid static electricity buildup and formal procedures for the use and maintenance of grounding connections; (2) using intrinsically safe electrical installations and non-sparking tools; and (3) implementing permit systems and formal procedures for conducting any hot work during maintenance activities, including proper tank cleaning and venting.
- Reducing emissions of VOCs and evaporative losses by:
- Conducting all unloading, conveyance, storage and loading operations using a closed system, where product is not exposed to the atmosphere;
- Using a double seal internal floating roof in each of the crude oil storage tanks to eliminate vapor space;
- Installing pressure, flow and temperature sensors to ensure all storage and conveyance activities are conducted within appropriate parameters, and to quickly identify any abnormal situations that could potentially lead to a fire;
- Designing electrical equipment to WAC 296-24-95711 which addresses the requirements for electric equipment and wiring in locations that are classified depending on the properties of the flammable vapors, liquids or gases, or combustible dusts or fibers that may be present therein and the likelihood that a flammable or combustible concentration or quantity is present.
- Installing a dock safety unit at the loading berth and a marine vapor combustion unit (MVCU) to minimize the risk of explosive conditions being created during the marine vessel loading operations;

- Requiring all personnel to wear Lower Explosive Limit (LEL) detectors to detect hydrocarbon concentrations that could lead to ignition conditions; requiring all personnel to wear H2S detectors to detect H2S concentrations that could be unsafe.
- Monitoring for fugitive emissions from pipes, valves, seals, tanks and other components with vapor detection equipment and maintaining and/or replacing components as needed.

Fire suppression equipment will be installed to allow control of fires should they occur. Fire suppression equipment and systems will be designed to NFPA and API requirements, the more stringent Factory Mutual Global insurance requirements, and state and local regulations, and will include automatic and engineered controls. Buildings will be fireproofed and emergency egress will be provided in accordance with applicable fire and building codes. All fire suppression systems will be designed to activate automatically and will be equipped with manual trip stations.

Explosion Prevention
Two sources of explosions could potentially occur at the Facility – mechanical explosions due to overpressure conditions, and explosions due to the release of H2S. In addition to the fire prevention and suppression elements listed above, Facility design and operating procedures will include, but not be limited to, the following explosion prevention elements:

- The storage tanks will be operated at atmospheric pressure, and will be equipped with internal pressure relief devices to vent gases should an overpressure situation arise;
- Internal pressure relieving systems will be incorporated throughout the Facility, including the transfer pipelines, marine terminal loading equipment, and rail cars;
- Installing pressure, flow and temperature sensors to ensure all storage and conveyance activities are conducted within appropriate parameters, and to quickly identify any abnormal situations that could potentially lead to an explosion;
- Including expansion loops in the design of the transfer pipelines to ensure the pipelines can expand and contract to accommodate changes in ambient temperature;
- Equipping personnel with H_2S detectors which will trigger alarms at levels well below the explosive concentrations of H_2S gases emitted.

Releases or Potential Releases to the Environment Affecting Public Health

Releases to the environment affecting public health are not anticipated during construction due to the limited types and relatively small quantities of hazardous materials that will be used during construction. Measures to prevent and contain any inadvertent release of hazardous materials will be provided as described in section 2.10 Spill Prevention and Control.

Construction of the Facility is not expected to result in the generation of any hazardous wastes in quantities regulated by state or federal law. Hazardous waste and solid construction debris such as scrap metal, cable, wire, wood pallets, plastic packaging materials, and cardboard will be removed by licensed disposal operators and disposed in accordance with applicable federal, state, and local regulations.

As noted in section 4.1.3.1, areas of the site and/or adjacent to the site are restricted for use because of the presence of subsurface soil and/or groundwater contamination from previous historic uses. Disturbance of those areas will be avoided to the extent practical. However, construction is necessary in each of the restricted areas. Construction will comply with the site-

specific restrictive covenants, consent decrees, ~~and~~ MTCA, RCRA, and Dangerous Waste Regulations.

Safety Standards Compliance

The implementation of a safety program for the F~~f~~acility will be based on compliance with state and federal regulations, as well as the implementation of industry standards. The following discussion identifies the primary safety regulations applicable to the activities conducted at the F~~f~~acility, and provides an overview of the numerous industry standards that the Applicant will implement in the design, construction and operation of the F~~f~~acility.

Facility Design

The Facility will be designed in compliance with all applicable safety regulations and requirements, including applicable industry standards. Prior to beginning construction of the Facility, the Applicant will submit a complete set of construction plans to EFSEC for approval. These construction plans will identify the safety regulations and industry standards that apply to the Facility, and as appropriate will specify which standards apply to specific element designs.

Facility Construction

Through the construction management program described in section 2.16, the Applicant will ensure that the Facility has been constructed to the specifications of the construction drawings approved above. The Applicant will conduct pre-operational commissioning tests in accordance with industry standards and applicable regulations, including but not limited to the following:

- Hydrostatic testing of piping systems, transfer pipelines and storage tanks
- Testing and certification of the dock safety unit and MVCU in accordance with the provisions of 33 CFR 154 Subpart E
- Testing of fire and alarm systems in accordance with applicable fire and building safety codes

Facility Operation

The Applicant will ensure that all safety systems inherent in the project design will be operated according to applicable industry standards and state and local regulations and codes. The Applicant will develop operations manuals to address appropriate measures for operation of F~~f~~acility safety systems and their ongoing maintenance. Facility systems will be tested according to industry standards and applicable state and federal regulations.

The Applicant will implement the usage of personal and facility sub area-wide Lower Explosive Limit (LEL) hydrocarbon detection systems and H_2S detection systems. Personal detection systems will notify individual employees when concentrations of hydrocarbons or H_2S exceed safe thresholds and they must evacuate their immediate work area. Similarly, sub-area-wide detectors will trigger evacuation alarms.

The Applicant commits to having every train attended upon taking control of the unit train from BNSF, and until the time control is released back to BNSF when the train leaves the Facility.

Safety Program

The Applicant will develop, implement and document a F~~f~~acility safety program to ensure compliance with state and federal requirements. The program will incorporate applicable industry design standards. Appendix D includes the Applicant's preliminary Health Safety Security and Environmental (HSSE) Execution Plan. This plan lays out a process through which

the Applicant will develop and implement its Ffacility safety program, and identifies the various safety processes and organizational and staff responsibilities, and the training that will occur as a result of the implementation of the program.

The program will include the preparation of construction and operations safety plans, which will be submitted to EFSEC prior to the beginning of Ffacility construction and operations respectively. The plans will address the requirements of WAC 296, as described above, and the requirements of 33 CFR 154 Part E, as well as any additional related requirements required under other applicable state and federal regulations and spill contingency planning processes described elsewhere in this Application.

Emergency Plans

The emergency response plan will be developed based on industry standards and regulatory requirements, including but not limited to, WAC 296-24 (Employee Emergency Plans and Fire Prevention Plans), WAC 296-56 (Safety Standards --Longshore, Stevedore and Waterfront Related Operations), WAC 296-824 (Emergency Response), and 29 CFR 1910.38 (Emergency Action Plan). The emergency action plan will be in writing, and will cover the designated actions employers and employees must take to ensure employee safety from fire and other emergencies. The emergency plan will address the following elements:

- Emergency escape procedures and emergency escape route assignments
- Procedures to be followed by employees who remain to operate critical plant operations before they evacuate
- Procedures to account for all employees after emergency evacuation has been completed;
- Rescue and medical duties for those employees who are to perform them.
- The preferred means of reporting fires and other emergencies; and
- Names or regular job titles of persons or departments who can be contacted for further information or explanation of duties under the plan.
- Alarm systems established in compliance with WAC 296-800-310.
- Types of evacuation to be used in emergency circumstances.
- Training and review:
  - Of a sufficient number of persons to assist in the safe and orderly emergency evacuation of employees prior to implementation of the plan.
  - Review with each employee when the plan is initially developed, whenever the employee's responsibilities or designated actions under the plan change; and whenever the plan is changed, and
  - Review with each employee upon initial assignment those parts of the plan which the employee must know to protect himself/herself in the event of an emergency.

The Applicant will keep the plan at the workplace and make it available for employee review.

1.4.1.10 Section 4.2, Land and Shoreline Use

Land Use

No impacts to existing land uses are anticipated. Therefore, no mitigation measures are specifically identified.

Light and Glare

Most construction will occur during the day. At night, lights will be directed towards the site and will be the minimum wattage required for safety and operations. Development elements, except for storage tanks, will be painted with earth tones. The storage tanks will be painted with nonreflective paint to reduce surface glare from direct sunlight during the day and headlights at night. Lighting associated with the project could lead to direct and/or indirect impacts to wildlife species because it may affect the nocturnal behavior of animals within the project vicinity, including bird and bat species. Lighting will be directed towards the site and away from adjacent areas.

Aesthetics

While visual impacts are not considered to be significant, to minimize impacts to all viewpoints, the project will implement the following mitigation measures. These are already required by the City and are standard development requirements. They include:

- Existing trees will be used as landscape buffers and will remain along SR 501 to reduce visual impacts.
- A landscape buffer with street trees, shrubs, groundcovers will be established along SR 501, entrance roads, and facilities along Old Lower River Road.
- Landscaping will be provided in parking lots per City requirements.
- Non-reflecting light colors will be used on structures.

Historic and Cultural Preservation

While findings from previous studies indicate a low likelihood for encountering cultural material during construction, an inadvertent discovery plan will be prepared and implemented. The inadvertent discovery plan will include, but not be limited to, these elements:

- Because of the possibility of encountering intact soils beneath the fill in some areas of the study area, and because the study area has been included in previous surveys, if project construction reaches the depth of intact native soils, archaeological monitoring will be conducted if soils are excavated to the surface.
- Should any archaeological resources be found, ground-disturbing activities will be halted in the area of the find in accordance with RCW 27.53.060 (Archaeological Sites and Resources) and RCW 27.44.020 (Indian Graves and Records). Following the stop work, a professional archaeologist will be called to assess the significance of the find and DAHP will be notified to define a course of action.

1.4.1.11 Section 4.3, Transportation

Based on the results of the transportation impact analysis, the proposed Facility can be developed while maintaining acceptable levels of service and safety on the surrounding transportation system. The study concluded that specific mitigation was not necessary to address project impacts. However, the study developed the following recommendations to address existing safety or operational issues within the project vicinity:

- The Applicant will work with the Port and City to post a 25 MPH speed limit on Old Lower River Road south of SR 501, where no posted speed sign exists.
- The Applicant will work with the Port and WSDOT to post a YIELD sign to control the channelized northbound right-turn maneuver from Old Lower River Road onto SR 501.
- The Applicant should work with the Port and City to reconfigure traffic control devices at the Old Lower River Road/Old Alcoa Facility Access Road intersection.
- The Applicant will work with the Port to add texturing/coloring treatments to the striped crosswalk on the private access approach to Lower River Road (SR 501), between the Far West Steel property and the proposed Storage area. This treatment is intended to enhance the safety of bicyclists and pedestrians using this crosswalk as part of the adjacent multi-use path.

1.4.1.12 Section 4.4, Socioeconomic Impact

Socioeconomic Impact

No mitigation measures are proposed for socioeconomic impacts.

1.4.2 Fair Treatment

~~No social or environmental justice impacts are anticipated to result from the construction and operation of the Facility. The Facility will not result in the displacement of minority or low-income populations. The developed area will occur on land owned by the Port and therefore no land use displacements or relocations will occur. The construction and operation of the proposed project are not anticipated to result in disproportionately high or adverse effects to minority or low-income populations.~~

The demographics of the project study area (for this purpose defined as the area within an hour's commute of the proposed project) and Clark County (County) have been identified and a public involvement effort undertaken to reach all of the surrounding residents, including minority and low-income populations. Ongoing public outreach is planned after the submittal of the application as described in section 1.6 below.

Data about the total population and the proportions of minority populations in the County and the study area are shown in Table 1.4-1, which is followed by Table 1.4-2 showing the total population in the County and the study area who live below the poverty level.

Table 1.4-1. Race Composition in Clark County and Study Area, 2012

Location	Total Population (2012)	Race (%)						
		White	Black	Native American	Asian	Native Hawaiian/ Pacific Islander	Two or More Races	Hispanic
Clark County	438,290	87.9	2.1	1.0	4.4	0.7	3.8	8.1
Study Area	2,810,720	86.3	2.7	1.5	5.3	0.5	3.7	12.9

Source: U.S. Census Bureau, 2012

Table 1.4-2. Population Living Below Poverty Level, 2011

Location	Total Population Living Below Poverty Level	Percentage of Persons Living Below Poverty Level
Clark County	58,700	13.7%
Study Area	427,700	15.6%

Source: U.S. Census Bureau, 2011

The demographics of communities in the study area and in individual counties were identified and analyzed to determine potential project impacts on minority or low-income populations; the results are discussed in section 4.4. As discussed in section 4.4.1.1 and shown in Table 4.4-4, although minority residents do exist within the County near the project site, the County does not have a substantially higher minority population than larger reference populations.

Table 4.4-5 includes the 2011 poverty statistics for the County and the overall study area, which show that, compared to the larger study area, a lower proportion of the population in the County lives below the poverty level.

The potential impacts from construction and/or operation of the proposed project will be from additional traffic (including rail traffic), noise, air quality, visual quality and aesthetics, and safety or security. As described in parts 2.0, 3.0, and 4.0 of this application, these potential impacts will be mitigated through design features and construction techniques to ensure that they are reduced to less than significant levels.

~~It is anticipated that operation of the proposed project will result in a positive economic impact to the County and the state due to increased tax revenues, employment, and local expenditures. Operation of the project will require approximately 110 full-time employees, with most workers hired locally. Additional indirect jobs will also be created. These new jobs will increase the opportunities for all County residents, including minority and low-income populations.~~

The demographics of communities in the study area and in individual counties were identified and analyzed to determine potential project impacts on minority or low-income populations; the results are discussed in section 4.4. As discussed in section 4.4.1.1 and shown in Table 4.4-4, although minority residents do exist within Clark County (County) near the project site, the County does not have a substantially higher minority population than larger reference populations. Table 4.4-5 includes the 2011 poverty statistics for the County and the overall study area, which show that, compared to the larger study area, a lower proportion of the population in the County lives below the poverty level.

The potential impacts from construction and/or operation of the proposed project will be from additional traffic (including rail traffic), noise, air quality, visual quality and aesthetics, and safety or security. As described in parts 2.0, 3.0, and 4.0 of this application, these potential impacts will be mitigated through design features and construction techniques to ensure that they are reduced to less than significant levels.

As discussed in section 4.4, the construction and operation of the proposed project are not anticipated to result in disproportionately high or adverse effects to minority or low-income populations. Therefore, no social or environmental justice impacts are anticipated to result from the construction and operation of the Facility and no mitigation is proposed.

While the project is not proposing specific mitigation measures for impacts, the demographics of the project study area (for this purpose defined as the area within an hour's commute of the proposed project) and Clark County have been identified and a public involvement effort undertaken to reach all of the surrounding residents, including minority and low-income populations. Ongoing public outreach is planned after the submittal of the application as described in section 1.6 below.