MILLENNIUM BULK TERMINALS–LONGVIEW SEPA ENVIRONMENTAL IMPACT STATEMENT

SEPA ALTERNATIVES TECHNICAL REPORT

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Acronyms and Abbreviations

Applicant	Millennium Bulk Terminals—Longview, LLC
BMP	Black Mud Pond
BPA	Bonneville Power Administration
BNSF	BNSF Railway Company
CCC	Cowlitz County Code
Corps	U.S. Army Corps of Engineers
Ecology	Washington State Department of Ecology
gpm	gallons per minute
LVSW	Longview Switching Company
OHWM	ordinary high water mark
Proposed Action	Millennium Bulk Terminals—Longview Project
Reynolds facility	Reynolds Metals Company facility
SEPA	State Environmental Policy Act
SR	State Route
UP	Union Pacific Railroad
WDNR	Washington Department of Natural Resources

Chapter 1
Introduction

Millennium Bulk Terminals—Longview, LLC (Applicant) is proposing to construct and operate a coal export terminal (Proposed Action) on a 190-acre site (project area) in Cowlitz County, Washington, along the Columbia River (Figure 1). The project area is primarily located within a 540-acre site currently leased by the Applicant (referred to as the Applicant's leased area). The proposed coal export terminal would receive coal from the Powder River Basin in Montana and Wyoming and the Uinta Basin in Utah and Colorado via rail shipment, then load and transport the coal by ocean-going vessels via the Columbia River and Pacific Ocean to overseas markets in Asia. The coal export terminal would receive, stockpile, blend, and load coal by conveyor onto vessels in the Columbia River for export.

The Proposed Action would be constructed in two stages with a maximum throughput of 44 million metric tons of coal per year. The coal export terminal would consist of one operating rail track, eight rail tracks for storing rail cars, rail car unloading facilities, a stockyard for coal storage, conveyor and reclaiming facilities, two new docks (Docks 2 and 3) in the Columbia River, and shiploading facilities on the two docks. Dredging would be required to provide access to and from the Columbia River navigation channel and for berthing at the two new docks. A detailed description of these proposed facilities, existing facilities, and operations at the project area is provided in Chapter 3, *Proposed Action*.

This technical report is organized as follows.

Chapter 1, *Introduction.* This chapter provides an introduction to this technical report.

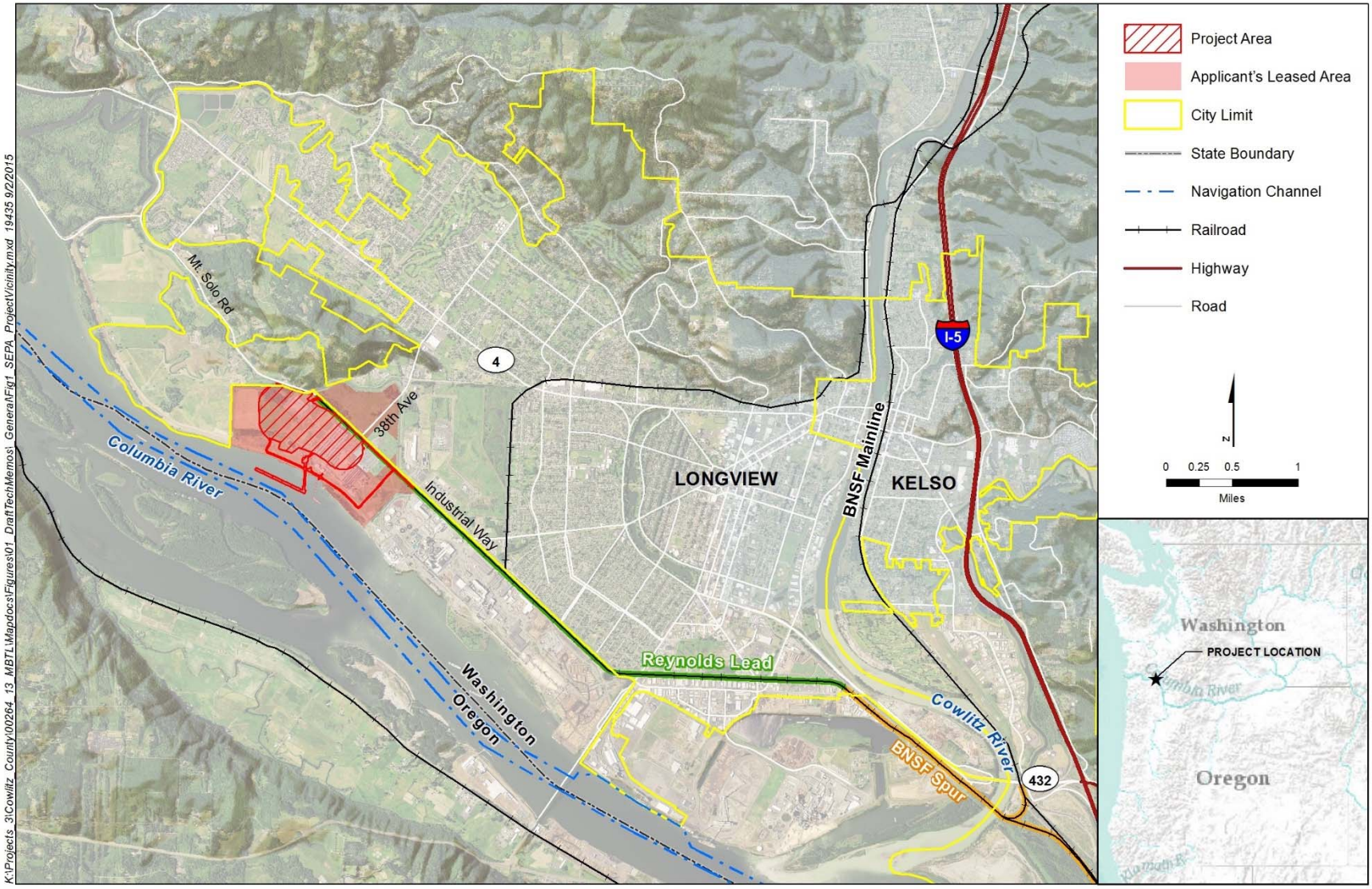
Chapter 2, *Project Objectives*. This chapter describes the Applicant's project objectives for the Proposed Action.

Chapter 3, *Proposed Action*. This chapter describes the Proposed Action, including the project location, existing facilities and operations, and proposed facilities and operations.

Chapter 4, *No-Action Alternative.* This chapter describes the No-Action Alternative, including planned operations and transport, as well as potential future operations and transport.

Chapter 5, *References*. This chapter presents the references cited in this technical report.

Figure 1. Project Vicinity



Chapter 2
Project Objectives

As part of the Washington State Environmental Policy Act (SEPA) process, the Applicant provided the SEPA co-lead agencies[1] with a description of the project objectives. This chapter presents the Applicant's objectives for the Proposed Action, which are listed below and described in the following sections.

- Enable western U.S. coal to compete in the Pacific international coal supply market.
- Diversify Washington State's trade-based economy.
- Reduce local unemployment.

2.1 Enable Western U.S. Coal to Compete in the Pacific International Coal Supply Market

The Applicant states the Proposed Action would enable western U.S. coal to compete in the Pacific international coal supply market by providing a terminal designed to efficiently transport western U.S. coal from rail to ocean-going vessels. Further development of western U.S. coalfields and the growth of Asian market demand for U.S. coal is expected to continue, and existing West Coast terminals are unavailable to support this need. To derive benefit from economies of scale, implementation of the Proposed Action would provide a coal export terminal sufficient in throughput to give U.S. coal producers the opportunity to expand their share of the international coal market.

Further, the Proposed Action would reuse an existing industrial terminal and use existing rail infrastructure and a direct shipping route to Asia, which would promote efficiency and minimize costs for handling and transferring U.S. coal for shipment to Asian markets. These factors would enable U.S. coal to compete in Asian energy markets.

2.2 Diversify Washington State's Trade-Based Economy

The Applicant states the Proposed Action would support the diversification of Washington State's trade-based economy by providing a new coal export terminal to accommodate the anticipated growth in demand for the export of U.S. coal. Approximately 40% of all jobs in Washington State relate to trade, making international trade a key driver of the state's economy (Washington Council on International Trade 2014). Economic diversification of the trade-based economy is vital to Washington State's long-term economic growth. In times of market volatility, an economy that

[1] The two co-lead agencies responsible for the Washington State Environmental Policy Act (SEPA) environmental review are Cowlitz County and the Washington State Department of Ecology (Ecology). Cowlitz County is the designated nominal lead agency for SEPA environmental review since the Proposed Action would occur within unincorporated Cowlitz County.

branches out to other sectors—such as exporting services—can help protect existing, and create new, jobs. Implementation of the Proposed Action would help support the state's diverse economy, which is essential for maintaining economic sustainability.

2.3 Reduce Local Unemployment

The Applicant states the Proposed Action would help reduce unemployment in Cowlitz County by creating employment opportunities in the Longview area. As of February 2016, Cowlitz County's unemployment rate was 8.0%, which was higher than both the national and state averages (Washington State Employment Security Department 2016). The Applicant states the Proposed Action would create approximately 1,350 construction employment opportunities and add approximately 135 new family-wage[2] jobs to operate the coal export terminal. This would also generate needed tax revenues for local economies.

[2] Income that is sufficient to support a family.

Chapter 3
Proposed Action

This chapter describes the Proposed Action, including project location, existing facilities and operations, and proposed facilities, construction, and operations.

Lighthouse Resources, Inc.[3] and Arch Coal, Inc. own Millennium Bulk Terminals—Longview, LLC. In 2010, Millennium Bulk Terminals—Longview, LLC applied for and received a Shoreline Permit from Cowlitz County to build a coal export terminal. In March 2011, the permit was withdrawn. The Proposed Action addresses a separate, second application. In January 2011, Lighthouse Resources, Inc. began looking for a suitable location between northwest Washington and southern California to construct a coal export terminal and determined a 540-acre site in Cowlitz County, Washington, on the Columbia River as the most suitable location.

The Proposed Action would construct and operate a coal export terminal for the shipment of coal in Cowlitz County, Washington, along the Columbia River. The coal export terminal would receive coal from the Powder River Basin in Montana and Wyoming and Uinta Basin in Utah and Colorado via rail shipment. The coal would be stored on site then loaded and transported by ocean-going vessels via the Columbia River and Pacific Ocean to overseas markets in Asia. The coal export terminal would be capable of receiving, stockpiling, blending, and loading coal by conveyor onto vessels in the Columbia River for export.

The Applicant determined there is sufficient Asian market demand for U.S. low-sulfur coal to warrant the development of a coal export terminal in the western United States for shipping Powder River Basin and Uinta Basin coal to Asian markets. Japan, South Korea, and Taiwan lack substantial coal resources and depend almost exclusively on foreign imports. According to the Applicant, Pacific Northwest ports are well positioned to provide western U.S. coal to trade partners in Japan, South Korea, and Taiwan at rates that are competitive in the international marketplace, and to provide a diversification of coal supply to those importing countries.

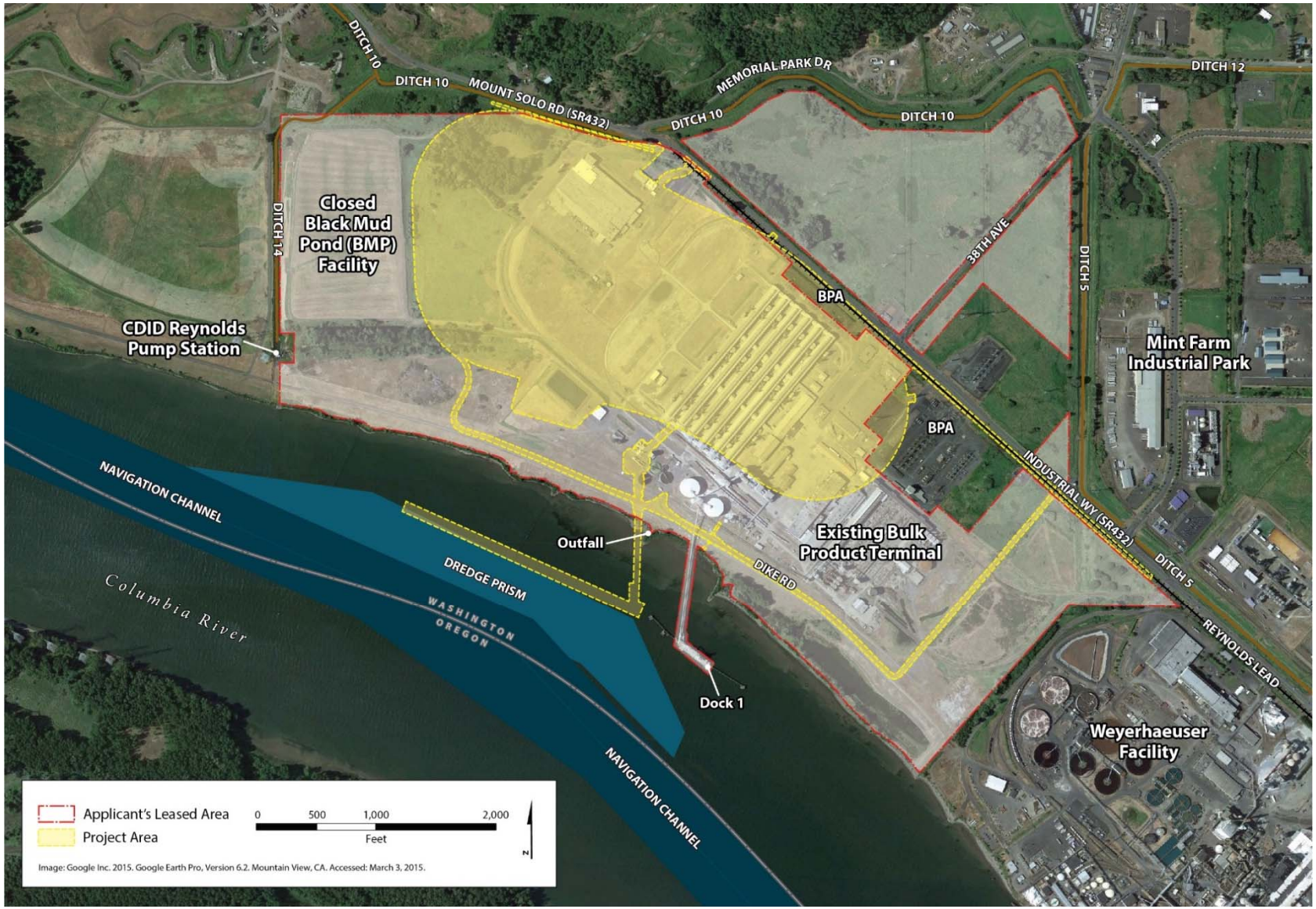
3.1 Project Location

The location for the Proposed Action is adjacent to the Columbia River in unincorporated Cowlitz County, Washington near Longview, Washington. Under the Proposed Action, the Applicant would develop a coal export terminal on 190 acres, primarily within an existing 540-acre site that is currently leased by the Applicant.[4] The 190-acre upland site is referred to as the *project area*, and the 540-acre site is referred to as the *Applicant's leased area*. Figure 2 illustrates the project area and vicinity for the Proposed Action and the Applicant's leased area.

[3] In April 2015, Ambre Energy North America, Inc. announced that it had changed its name to Lighthouse Resources, Inc. In 2014, Ambre Energy North America, Inc. separated from its Australian parent company, Ambre Energy Limited, when Resource Capital Funds became the majority owner of Ambre Energy North America, Inc. (Lighthouse Resources, Inc. 2015).

[4] The project area is also located on two parcels currently owned by Bonneville Power Administration and a portion of the Reynolds Lead.

Figure 2. Project Area



Cowlitz County Land Use and Development Code (CCC) Title 18 designates the project area for heavy industrial use. As illustrated in Figure 2, the project area is bounded by existing industrial uses within the Applicant's leased area to the south and east, the closed Black Mud Pond facility[5] within the Applicant's leased area to the west, and Industrial Way (State Route [SR] 432) and the Reynolds Lead to the north. Existing industrial uses within and adjacent to the project area are described in Section 3.2, *Existing Facilities and Operations*.

Vehicular access to the project area is provided via Industrial Way. The Reynolds Lead and BNSF Spur—both jointly owned by BNSF Railway Company (BNSF) and Union Pacific Railroad (UP), and operated by Longview Switching Company (LVSW)[6]—provide rail access to the project area from a point on the BNSF main line (Longview Junction, Washington) located to the east in Kelso, Washington. The distance from the BNSF main line along the BNSF Spur and the Reynolds Lead to the project area is approximately 7 miles. Vessels access the project area via the Columbia River and berth at an existing dock (Dock 1) in the Columbia River.

3.2 Existing Facilities and Operations

This subsection describes the existing facilities and operations within the Applicant's 540-acre leased area (Figure 2).

3.2.1 Background and History of the Applicant's Leased Area

The Applicant's leased area is the location of the former Reynolds Metals Company facility (Reynolds facility). The facility was constructed in 1941 to support World War II efforts. Reynolds Metals Company expanded in 1968, and operated as an aluminum smelter until 2001 when smelter operations ceased. The former Reynolds facility was an intensive industrial use and, at the time of its closure in 2001, employed approximately 800 workers, and operated 24 hours per day, 7 days per week. In 2000, Reynolds Metals Company was acquired by Alcoa as a wholly owned subsidiary. In 2001, the Longview facility site assets were sold to Longview Aluminum, but ownership of the land was retained by the Reynolds Metals Company. Longview Aluminum declared bankruptcy in 2003. In 2004, Chinook Ventures purchased Longview Aluminum's assets, including the buildings, structures and equipment, and entered into a long-term land lease with the Reynolds Metals Company, who owns the 540 acres. In 2005, Alcoa transferred ownership of the land from the Reynolds Metals Company to Northwest Alloys, a wholly owned subsidiary of Alcoa, Inc. Northwest Alloys also has an existing Aquatic Lands Lease No. 20-B09222 from the Washington Department of Natural Resources (WDNR) through January 2038.

In 2011, Chinook Ventures sold the plant assets to the Applicant, at which time, the Applicant entered into a long-term land lease with Northwest Alloys, a subsidiary of Alcoa. Work has been done to:

- Remove equipment and storage sheds left behind by Chinook Ventures.

[5] More information about the closed Black Mud Pond facility can be found in the SEPA Hazardous Materials Technical Report (ICF International 2016a).

[6] The Longview Switching Company (LVSW) is jointly owned by BNSF Railway Company (BNSF) and Union Pacific Railroad (UP).

- Dispose of wastes generated during the removal process.
- Clean other equipment and buildings.

The 190-acre project area was separated from the Applicant's leased area through a lot boundary adjustment to develop a coal export terminal. The remaining land within the Applicant's leased area is intended to be used for other purposes including the existing bulk product terminal.

Portions of the Applicant's leased area are also subject to ongoing hazardous materials cleanup activities resulting from contamination by the former aluminum smelting and casting uses. Northwest Alloys and the Applicant are actively engaged in site cleanup in the Applicant's leased area, and continue to work with local, state, and federal regulatory agencies to clean up the site. The Applicant's leased area continues to support industrial operations and is currently used as a bulk product terminal that includes both marine and upland facilities.

3.2.2 Existing Bulk Product Terminal

The existing bulk product terminal is within the Applicant's 540-acre leased area (Figure 2). The terminal includes buildings and equipment used for various activities. The terminal is served by Industrial Way and the Reynolds Lead. Vessels access the terminal from an existing dock (Dock 1), which is located on the Columbia River.

The existing bulk product terminal includes rail facilities, storage, conveyors and transfer stations, vessel facilities, and other buildings and employee-support facilities.

3.2.2.1 Rail Facilities

The existing bulk product terminal is located on the Reynolds Lead, an existing rail line serving several industries and connects via the BNSF Spur to the BNSF main line rail network approximately 7 miles away at Longview Junction. The BNSF Spur consists of a track through Longview Junction yard, across the Cowlitz River Bridge, and through the LVSW yard. The Reynolds Lead consists of a track from the LVSW yard to the project area. The Reynolds Lead covers the majority of the distance between the project area and the BNSF main line.

The Applicant has operating permits to load alumina and unload coal by rail. Bulk materials are received and shipped by railcars at an unloading area of the existing bulk product terminal called the Central Transfer Tower. The Central Transfer Tower is an enclosed building receiving bulk material from railcars using a gravity fed bin under the rail line.

3.2.2.2 Storage

Storage of alumina and coal at the existing bulk product terminal occurs in storage tanks (silos). Six vertical storage tanks, originally constructed by Reynolds Metals Company for alumina facility operations, store bulk material near the southern portion of the facility. Three of these tanks receive material from the Central Transfer Tower for storage prior to shipping the material by truck. Two of the remaining tanks are for the storage of bulk materials that then feed to the last of the six tanks for transfer and shipment by train. Maximum capacity for handling materials varies by tank from 30 to 100 tons per hour (Southwest Clean Air Agency 2014).

The existing bulk product terminal includes four additional storage tanks used during previous smelter operations. Currently, one tank is empty and the other three tanks contain material from

previous operations, but are in the process of being emptied by the Applicant. In addition, there are miscellaneous storage tanks on site, including fuel tanks.

The bulk product terminal includes an area in the central portion of the site called the North Plant Potrooms, which contains six potline[7] buildings (approximately 600,000 total square feet). Various bulk products from previous operations were stored in these buildings. However, these products have been removed and the potrooms have been cleared by the Applicant.

3.2.2.3 Conveyors and Transfer Stations

The existing bulk product terminal includes a conveyor system extending from the bulk material unloading facilities to the storage silos or truck loading areas. Existing conveyors are enclosed and use either a wet suppression system or dust-collection equipment to minimize fugitive emissions during the transfer of bulk materials.

3.2.2.4 Vessel Facilities

The existing bulk product terminal includes Dock 1, which is currently used to unload alumina from vessels and to berth other ships. Dock 1 is directly south of the existing terminal's upland facilities and provides vessels access to the terminal via the Columbia River at the existing berthing area. The dock includes an overwater approach trestle and equipment to unload bulk materials from the vessels. Current vessel traffic at the dock is relatively low, at approximately six to seven ships accessing the dock per year.

The Applicant has operating permits to unload alumina from vessels. Unloading facilities include a vacuum ship unloader used for alumina shipments. The existing ship berth has been periodically dredged to support alumina shipments.

3.2.2.5 Buildings and Employee-Support Facilities

The existing bulk product terminal includes a former cable plant building, an approximately 270,000-square-foot facility with associated ancillary structures occupying the northwestern corner of the area. The plant was constructed in the late 1960s, and until 1992, produced electrical cable products, including aluminum wire, rods, and insulated low and medium voltage cable.

The terminal also includes various buildings and employee-support facilities including four office buildings, two cast house buildings, a carbon plant, and several maintenance sheds.

3.2.3 Current Operations and Transport

Current operations of the bulk product terminal, allowed under current permits and zoning, include storing and transporting alumina and up to 150,000 metric tons per year of coal. On-site operations and off-site transport activities are described below. The transport of alumina has been put on hold because Alcoa announced in November 2015 that it will curtail the Wenatchee smelter, temporarily ceasing production while maintaining the facility for restart. The on-site and off-site operations related to alumina are discussed to describe alumina transport when the Wenatchee facility restarts.

[7] Potlines are defined as a row of electrolytic cells connected electrically in series, used in the production of aluminum.

3.2.3.1 On-Site Operations

On-site operations of the existing bulk product terminal involve receiving, storing, and loading (for transport) coal and alumina. Coal is delivered to the site by train, stored in the existing silos, and transferred by truck to the neighboring Weyerhaeuser facility. Alumina is delivered to Dock 1 by vessel, stored on site, and transported by train.

Portions of the project area are also undergoing hazardous waste cleanup activities resulting from contamination by former aluminum smelting operations (Washington State Department of Ecology 2014). Washington State Department of Ecology (Ecology) is overseeing work being done by Northwest Alloys, Alcoa, and the Applicant to investigate and cleanup the site under Washington's Model Toxics Control Act. A Remedial Investigation and Feasibility Study was finalized in January 2015. The study investigated contamination, identified soil and groundwater contaminants and identified cleanup options. The draft Cleanup Action Plan and Consent Decree were issued in January 2016, which describe cleanup methods and standards. Additional hazardous materials are described in the SEPA Hazardous Materials Technical Report and its corresponding appendix (ICF International 2016a).

3.2.3.2 Off-Site Transport

Trains currently deliver coal to the bulk product terminal where it is transferred by truck to Weyerhaeuser, located 1 mile to the east of the bulk product terminal. Vessels would deliver alumina to Dock 1 on the Columbia River. Alumina would be stored and then shipped to Chelan County, Washington, by train. Table 1 identifies current activities and the means for transporting the commodities to and from the existing bulk product terminal.

Table 1. Current Activities and Transport Operations at the Existing Bulk Product Terminal

		Transport Operations		
Commodity	**Activity**	**Truck**	**Train**	**Vessel**
Coal	Trains deliver coal where it is transferred by truck to Weyerhaeuser, located approximately 1 mile southeast of the existing bulk product terminal	Operate on a continual basis (24 hours a day; 7 days a week)	1 train (25 to 30 rail cars) 1 to 2 times per week	N/A (trains deliver coal; trucks transport)
Alumina	Vessels deliver alumina to Dock 1; Alumina is stored and then shipped to Chelan County, Washington by train	Not applicable (vessels deliver alumina; trains transport)	60 rail cars per week shipped at a rate of 12 rail cars per day, 5 days per week	6 vessels per year

Notes:
N/A = not applicable

3.3 Proposed Facilities, Construction, and Operations

As described in the Section 3.2, *Existing Facilities and Operations*, the Applicant currently operates and would continue to operate the bulk product terminal on land leased by the Applicant, separate from and independent of the Proposed Action. Under the Proposed Action, the coal export terminal would be developed on 190 acres (project area), primarily within the Applicant's leased area and adjacent to the existing bulk product terminal (Figure 2). The proposed coal export terminal facilities and operations described in this section would occur within the 190-acre project area.

BNSF or UP trains would transport coal in unit trains (meaning all the rail cars carry the same commodity) from the BNSF main line at Longview Junction to the project area via the BNSF Spur and Reynolds Lead (Figure 3). Coal would be unloaded from rail cars, stockpiled and blended, and loaded by conveyor onto ocean-going vessels at two new docks (Docks 2 and 3) to be located in the Columbia River for export. Figure 4 illustrates the Proposed Action.

Construction of the Proposed Action would involve clearing and grading, construction of rail and coal handling facilities including eight storage track loops to provide staging for arriving and departing trains, as well as a tandem rotary dumper, conveyors, stackers, and reclaimers. The stockpile area would be located within the rail loop and consist of four discrete stockpile pads. The stockpile area would require ground improvements, which would entail preloading[8] of the stockpile area. Approximately 2.1 million cubic yards of preloading material (i.e., rock, dirt, concrete or other appropriate debris) would be placed on the stockpile area to a height of approximately 35 feet.

Wick drains[9] would be placed within the stockpile area to reduce the time required for preloading, from an estimated 18 months to 9 months. The wick drains would allow groundwater to be expelled from beneath the stockpile area and allow the necessary ground settlement to occur.

The Proposed Action would also require constructing a trestle and two docks, with one shiploader on each dock. The trestle and docks would require 630 36-inch pilings, 610 of which would be installed below the ordinary high water mark (OHWM)[10] of the Columbia River. Most pilings would be installed approximately 140 to 165 feet below the mudline, using vibratory pile drivers and an impact pile driver for proofing. Shiploaders located on the docks would consist of a traveling structural steel portal, shuttle, and boom and would be fed coal by a dedicated conveyor. Shiploaders would be rail mounted to allow movement along the dock.

[8] Preloading is the consolidation or compression of soils to support coal stockpiles and associated infrastructure to prevent excessive future settlement.

[9] Wick drains, also known as prefabricated vertical drains and vertical strip drains, are a ground-improvement technique that provides drainage paths for pore water in soft compressible soil, using prefabricated geotextile filter-wrapped plastic strips with molded channels.

[10] Per Washington State's Shoreline Management Plan, "that mark that will be found by examining the bed and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland, in respect to vegetation as that condition exists on June 1, 1971, as it may naturally change thereafter, or at it may change thereafter in accordance with permits issued by a local government or the Department of Ecology, provided, that in any area where the ordinary high water mark cannot be found, the ordinary high water mark adjoining salt water shall be the line of mean higher high tide and the ordinary high water mark adjoining fresh water shall be the line of mean high water."

Figure 3. BNSF Spur and Reynolds Lead

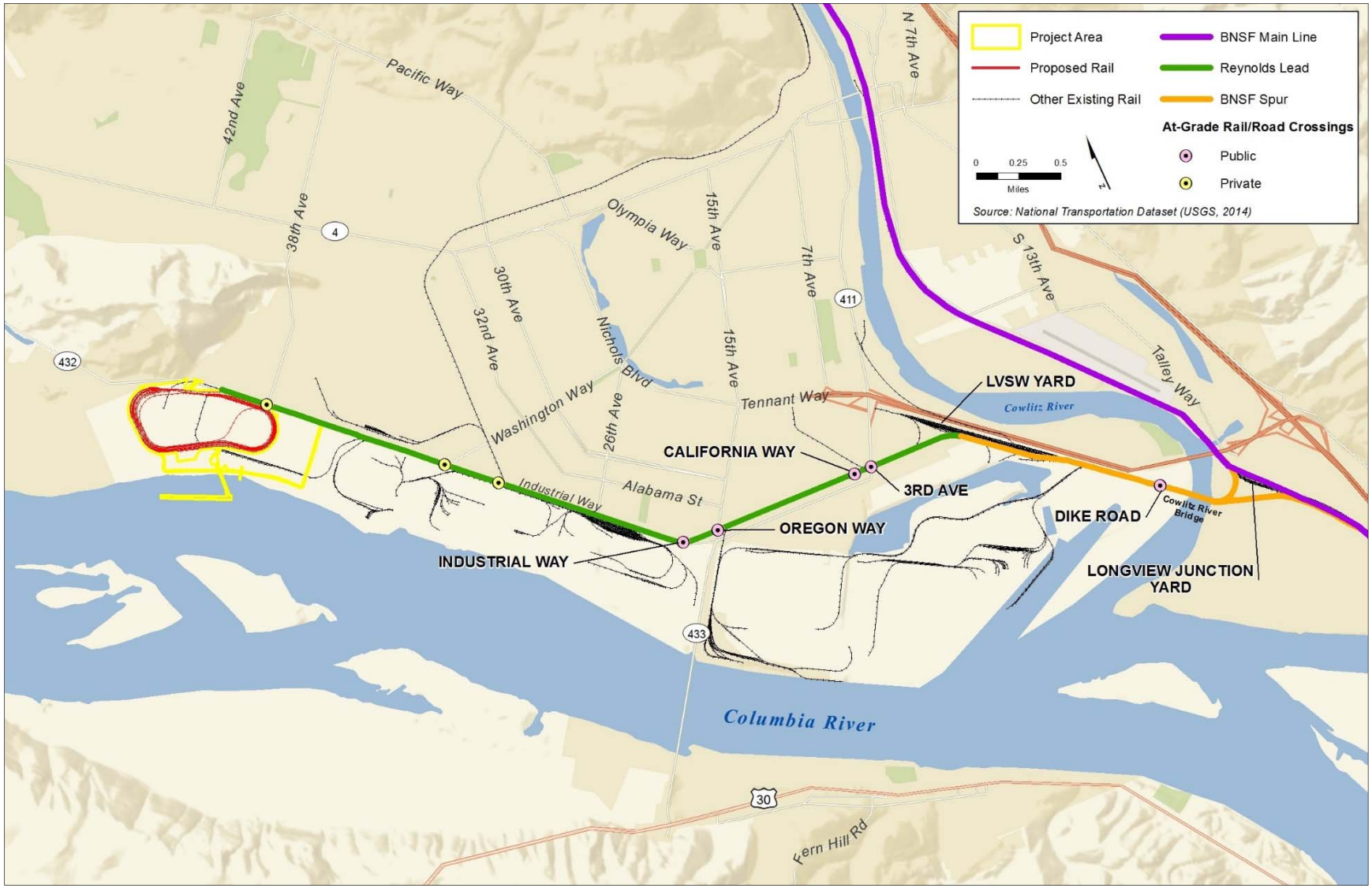
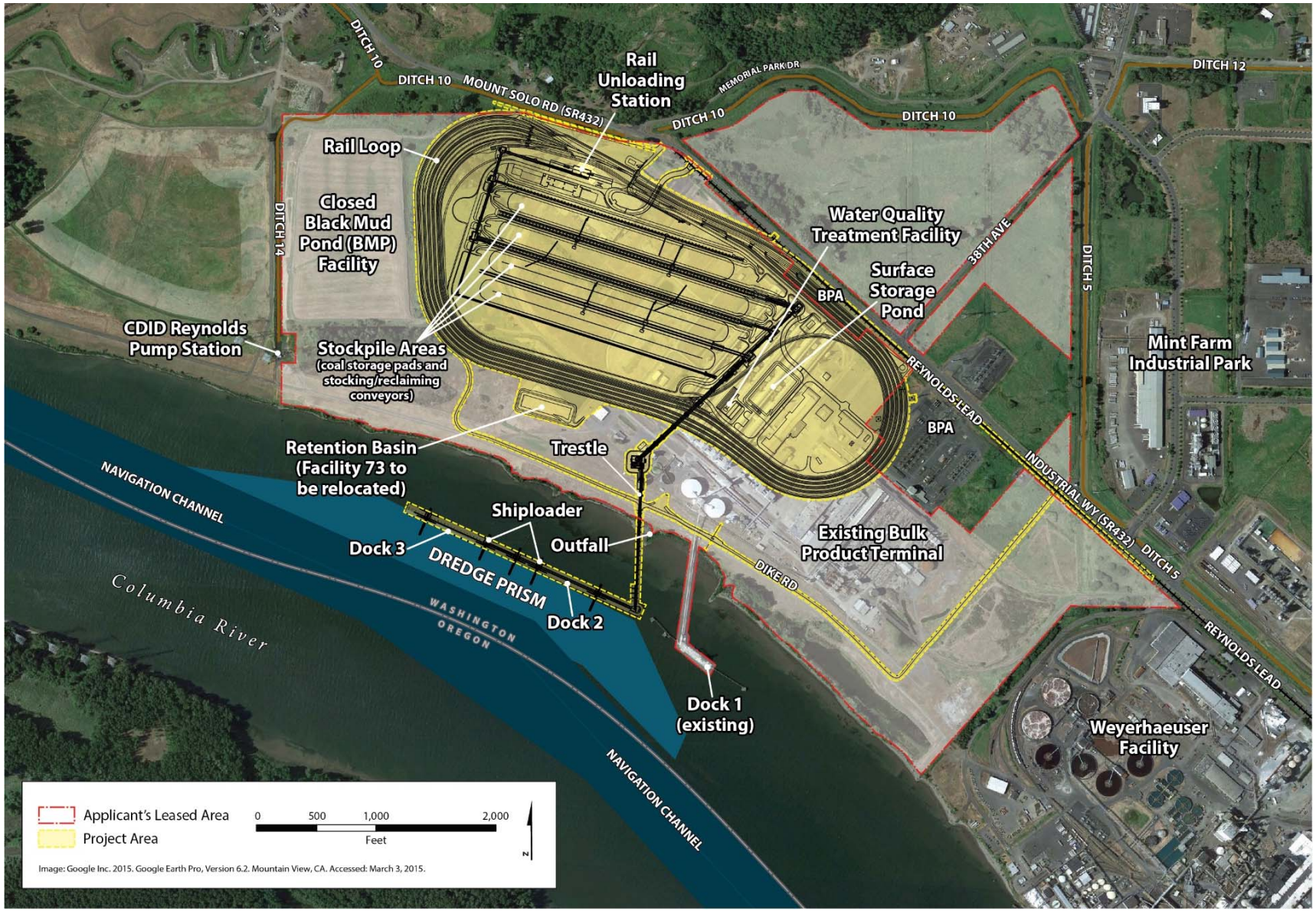


Figure 4. Proposed Action



The Proposed Action could have a maximum annual throughput capacity of up to 44 million metric tons per year.[11,12] As illustrated in Figure 5, the Proposed Action would consist of one operating rail track, eight rail tracks for storing up to 8 unit trains, rail car unloading facilities, a stockpile area for coal storage, conveyor and reclaiming facilities, two new docks in the Columbia River (Docks 2 and 3), and shiploading facilities on the two docks. Dredging of the Columbia River would be required to provide access to the Columbia River navigation channel and for berthing at Docks 2 and 3. Figure 5 illustrates coal export terminal operations for unloading, stockpiling, transferring, and shipping coal.

Vehicles would access the project area from Industrial Way, and vessels would access the project area via the Columbia River and berth at Dock 2 or 3. Coal export terminal operations would occur 24 hours per day, 7 days per week. The Proposed Action would be designed for a minimum 30-year period of operation.

The Applicant anticipates construction would begin in 2018 and would be completed by 2024. Construction and operations would consist of two stages. Stage 1 would include two sub-stages: Stage 1a for start-up operations and Stage 1b for increased operations. Stage 2 would involve construction and operations for full build-out. For the purpose of the analysis in this document, it is assumed that the Proposed Action would be fully operational at maximum capacity by 2028.

3.3.1 Proposed Facilities

The proposed facilities of the Proposed Action would include the following.

- Rail facilities
- Coal stockpile area
- Conveyors, transfer stations, and buffer bins
- Vessel facilities
- Supporting facilities

The following provides a summary of these proposed facilities, based on the project design and project description provided by the Applicant.

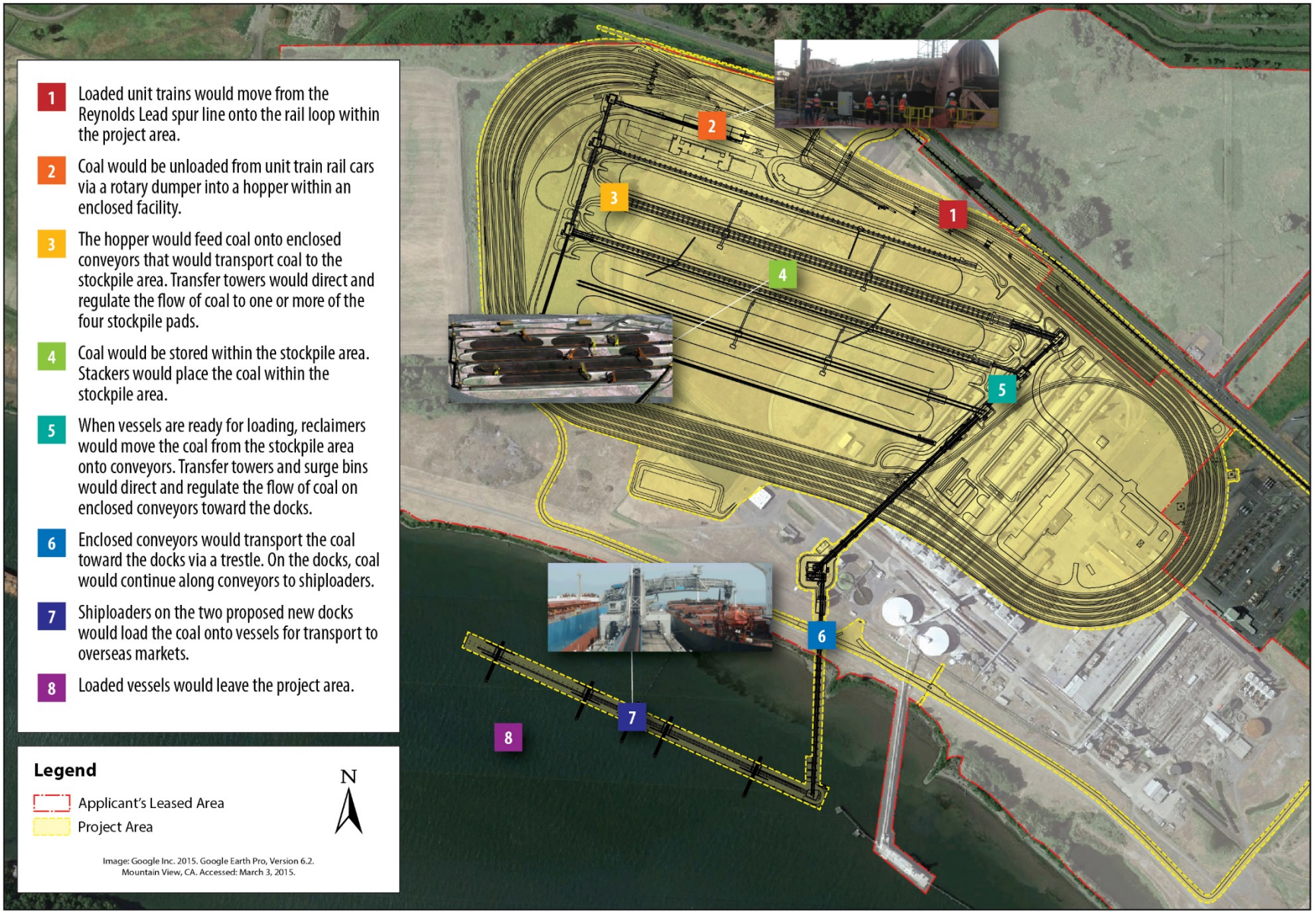
3.3.1.1 Rail Facilities

The Reynolds Lead would be modified within the project area to accommodate unit train access to and from the coal export terminal. Unit trains would move from the Reynolds Lead into a rail loop system where the trains would be directed to an unloading station to unload coal (Figure 5). The rail loop would have one operating track and eight loop tracks to provide storage for arriving and departing trains, and to allow unit trains to travel to and from the Reynolds Lead. Grade-separated roadways above the rail tracks would be provided to allow access to and within the project area.

[11] According to the Applicant, proposed rail operations and coal export terminal design would support terminal throughput of 40 million metric tons per year. The Proposed Action is based on a throughput of up to 44 million metric tons per year. The Applicant assumes a 10% increase in throughput (4 million metric tons per year) from rail car capacity and operational efficiencies that could be achieved through industry process and technological improvements by 2028, the first year of assumed full operations.

[12] A metric ton is the U.S. equivalent to a tonne per the International System of Units, or 1,000 kilograms or approximately 2,204.6 pounds.

Figure 5. Proposed Action Operations



A small portion of the rail loop would be constructed on two parcels currently owned by Bonneville Power Administration (BPA) (Figure 4). One parcel contains an access road and substation. To maintain or provide for pedestrian and vehicular access to BPA facilities, the Applicant would construct an access road between the Proposed Action access road and the BPA yard, and install a gate to the BPA yard at a location to be determined by BPA. According to the Applicant, BPA will not make a determination whether to sell or grant an easement to the Applicant until after the U.S. Army Corps of Engineers (Corps) publishes the National Environmental Policy Act Final EIS for the coal export terminal.

Unit trains would enter the coal export terminal from the east and move through the rail loop in a counter-clockwise direction until the train was contained within the terminal rail loop. The rail loop would be able to accommodate up to 8 unit trains. Once unloaded, trains would be redirected in a clockwise direction on the inner-most rail loop and would then be able to exit the coal export terminal.

Unloading facilities would be constructed to unload coal from rail cars within an enclosed structure. Two rail cars would be simultaneously positioned inside a fully enclosed, metal-clad building. The unloading facilities would contain equipment to rotate rail cars and discharge the coal from the rail cars into a large hopper (Figure 6).

Figure 6. Typical Tandem Rotary Unloader

Source: Millennium Bulk Terminals—Longview 2013

As the tandem rotary dumper rotates the rail cars and begins to unload the coal into hoppers beneath the dumper, sprayers would spray water to avoid and minimize dust dispersion within the enclosed structure. The hopper beneath the rotary dumper would feed coal onto a conveyor at a nominal rate of 7,500 metric tons per hour. The conveyor would move the coal to the stockpile area.

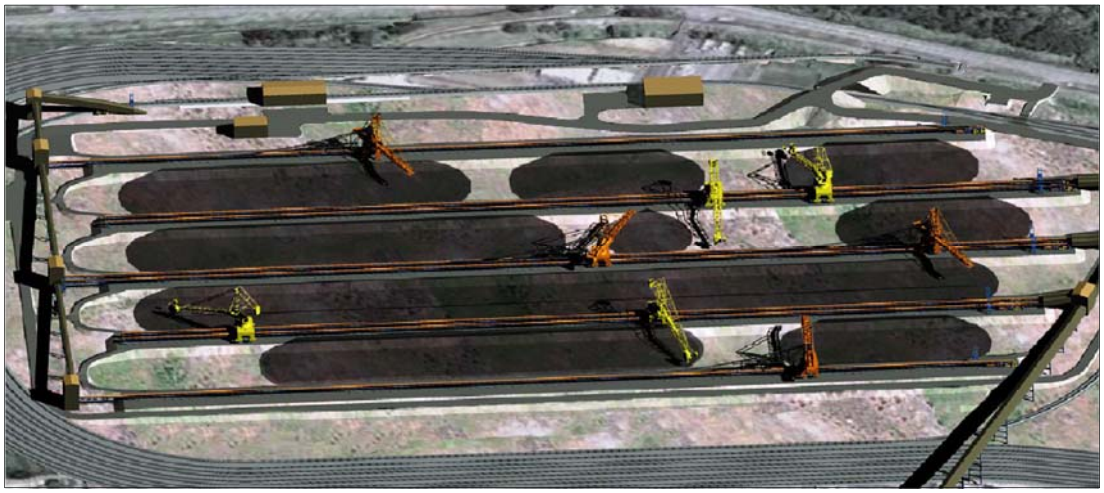
During start-up operations of the Proposed Action, a rapid discharge (i.e., bottom) unloader, located within an enclosed building, would be used to unload rail cars. The rapid discharge unloader would be retained after start-up operations and might be used during maintenance periods of the rotary unloader. Both unloaders would not be able to operate simultaneously.

3.3.1.2 Coal Stockpile Area

The inner portion of the rail loop would include coal stockpile storage pads and associated stacking and reclaiming equipment to place and move coal (Figure 7). The open-air stockpile area would

consist of four parallel stockpile pads and five berms. The stockpile area would cover approximately 75 acres and would be served by four rail mounted stackers and four bucket-wheel reclaimers that would be associated with conveyors.

Figure 7. Representation of the Stockpile Area with Stackers and Reclaimers



Source: Millennium Bulk Terminals—Longview 2013

The stockpile pads together would be able to hold approximately 1,500,000 metric tons of coal. The pads would vary in length from 2,200 to 2,500 feet and could hold from 360,000 to 400,000 metric tons each. Coal would be stacked to approximately 85 feet above the pads. The pads and berms would be made of low-permeability engineered material. The stockpiles and berms would be graded to allow the water to drain and be collected for treatment and reuse or discharge. The use of low-permeability engineered materials for formation of the pads and berms would control water from entering subsurface soil or groundwater.

3.3.1.3 Water Systems

Industrial water supply needed for operations of the coal export terminal and fire protection would be supplied from treated water stored on site from the terminal's water-treatment facility. During dry weather, water would be supplemented from on-site wells as needed. An on-site storage reservoir would provide water required for normal operations (i.e., dust control, stockpile spray, equipment wash-down) and emergency fire demand. A separate pumping system would be designated for the emergency fire system, where appropriate, to provide redundancy and to supply additional pressure where needed. Peak process water demand would be approximately 5,000 gallons/minute (gpm). Peak emergency fire water demand would be approximately 1,500 gpm. Peak potable water demand would be approximately 185 gpm based on anticipated labor force at full build-out. The bulk product terminal's stormwater detention pond would be relocated and would store treated stormwater, collected from the bulk product terminal area and treated in the stormwater-treatment facilities. All water (stormwater and process water) within the limits of the proposed rail loop, trestle and docks would be collected and conveyed to new water-treatment facilities (including a new detention pond). Treated water would be used to maintain process water within the new water pond.

Excess treated water would be discharged to the Columbia River at the existing outfall (Outfall 002A, refer to the SEPA Surface Water and Floodplains Technical Report (ICF International 2016b) for

more information). Process water would be used for operations, such as for dust control and sprayers at the tandem rotary dumper, along all conveyers, the stockpile areas and transfer towers and surge bins. Process water would also be used for wash-down and cleanup of equipment such as conveyors, under-belt plating, bins, hoppers and walkways. All process water—as well as stormwater from the rail loop and those areas within the rail loop, trestle, and docks—would be collected, conveyed, treated, and stored on site. The proposed trestle and docks would have capture and containment measures beneath them and all water captured would be conveyed to water-treatment facilities. Excess treated water would be discharged to the Columbia River.

3.3.1.4 Conveyors, Transfer Stations, and Buffer Bins

A network of belt conveyors would transport coal from the rail car-unloading facilities to the stockpile area, and from the stockpile area to the vessel-loading facilities, or from rail cars directly to the vessel-loading facilities. Multiple conveyors would connect at transfer stations that would redirect the flow of coal. Buffer bins would provide storage capacity in the conveyor system to allow continuous coal reclaiming and transfer. All belt conveyors and transfer stations would be fully enclosed, except for the stockpile area and vessel-loading conveyors, which would be open due to their operational requirements.

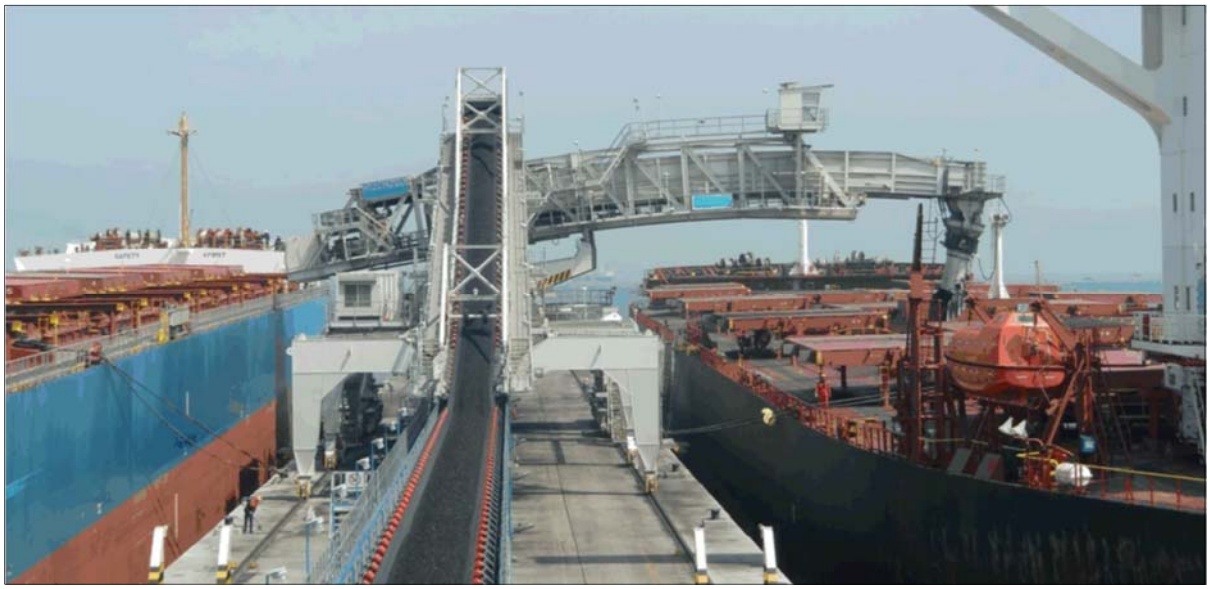
3.3.1.5 Vessel Facilities

The proposed Docks 2 and 3 would be constructed west (downstream) of Dock 1 (Figure 4). Dock 2 would be up to 1,400 feet long and would vary in width from approximately 100 to 130 feet. Dock 3 would be up to 900 feet long and approximately 100 feet wide. Vehicle and pedestrian access and coal transfer to the docks would be provided by a single trestle approximately 800 feet long, varying in width from approximately 35 feet on the northern, landward end, up to 60 feet on the southern end. Each dock would include a shiploader and associated loading equipment (Figure 8). The main shipping channel in the Columbia River is 43 feet deep at low tide (-43 feet Columbia River Datum). The docks and shiploaders would be able to accommodate Panamax-class vessels[13] and Handymax-class vessels.[14] The fleet mix would be approximately 80% Panamax-class vessels and 20% Handymax-class vessels. The Applicant has stated there would be no vessel bunkering at Docks 2 and 3.

[13] Panamax vessels would have a dead weight tonnage (dwt) between 60,000 and 100,000 tons with a draft of between 42 and 49 feet. For more information, see the SEPA Vessel Transportation Technical Report (ICF International 2016c).

[14] Handymax vessels have a dwt of up to 60,000 tons with a draft of between 36 and 39 feet (SEPA Vessel Transportation Technical Report [ICF International 2016c).

Figure 8. Typical Shiploader



Source: Millennium Bulk Terminals—Longview 2013

Vessels would be loaded using shiploaders that would each include an enclosed boom and loading spout. The loading spout would also be telescopic and would be inserted below the deck of the vessel during vessel loading to avoid and minimize dust dispersion. Shiploader cleanup and washdown would be done with pressurized water and all water would be captured and contained, and then conveyed to upland water-treatment facilities.

3.3.1.6 Dredging

Dredging of approximately 500,000 cubic yards of substrate from an approximate 48-acre berthing area along the riverward side of Docks 2 and 3 would be required to provide berthing access from the Columbia River navigation channel to the docks. Sediment transport, current, and river flow studies would be performed to determine the optimum dredge prism. Dredged material is expected to be suitable for flow-lane disposal or beneficial use in the Columbia River based on recent sediment sampling. A dredging and disposal quality control plan would be implemented in compliance with the dredged material management program as required by state agencies (Ecology and WDNR) and federal agencies (Corps and U.S. Environmental Protection Agency). Periodic future maintenance dredging of the berthing area would be required.

3.3.1.7 Water Drainage and Treatment

Drainage systems would be designed such that runoff within the coal export terminal would be collected for treatment before reuse or discharge. The terminal's water-treatment facility would be designed to treat all surface runoff and process water with capacity to store the water for reuse. Treatment would be as required to meet reuse quality or Ecology's requirements for off-site discharge. Additional water storage would be provided in the coal storage area during large storm events. Water volumes exceeding the demands for reuse would be discharged off site via an existing outfall into the Columbia River. Water released off site would be treated and would meet Ecology's requirements and required permits.

3.3.1.8 Supporting Facilities

The Proposed Action would also include the following support facilities.

- Roadways and bridges to provide vehicular access throughout the coal export terminal
- Service and administration buildings
- Stormwater-management facilities
- Utility infrastructure
- Electrical transformers
- Switchgear and equipment buildings
- Process-control systems

3.3.2 Construction

Construction of the Proposed Action is divided into three sections: construction elements; construction staging; and construction environmental controls.

3.3.2.1 Construction Elements

This section summarizes the following primary construction elements.

- Demolition and site preparation
- Preloading
- Rail loop construction
- Trestle and dock construction

Demolition and Site Preparation

An existing cable plant building (approximately 270,000 square feet), existing potline buildings (approximately 600,000 total square feet), and smaller ancillary structures in the project area would be demolished under the Proposed Action. The structures are primarily steel, aluminum, concrete, and wood. The demolition phase would take approximately 6 months. Site preparation would include operating heavy machinery to prepare the site, including clearing of vegetation, grading, earthmoving, earthworks, and constructing erosion-control facilities (including settlement ponds). Heavy machinery could include cranes, wheeled loaders, dozers, dump trucks, excavators, graders, rollers, compactors, drill rigs, vibratory and impact pile-driving equipment, portable ready-mix batch plant, ready-mix trucks, concrete pumps, elevated work platforms, forklifts, rail track laying equipment, welders, water pumps, and other similar machinery. Site preparation would last approximately 3 months.

Preloading

Preloading of the site would be required to strengthen the existing soil conditions and improve the load-bearing capacity of the coal stockpile areas. Import of preloading material and installation of wick drains would be required for ground improvement for the stockpile areas. Approximately 2.1 million cubic yards of material would be imported to be used as preloading material. Material imported for preloading would be clean and obtained from an approved facility. Approximately

2.5 million cubic yards of material would be moved around the project area during preloading activities.

Ground improvement would occur progressively and would take up to 7 years to complete. Preloading material would be imported by truck, rail or barge[15] and could include dredge spoils if the material was suitable.

A rolling preload of material would be used to improve the load-bearing capacity of the soils (i.e., one stockpile pad at a time would be preloaded). Preloading material would be placed in a pile approximately 35 feet high covering the area of the berm and adjacent stockpile pads and would be left in place until soil consolidation is achieved. Following consolidation, preloading material would be moved to another berm and stockpile pad location, with supplementary import material added to achieve a pile approximately 35 feet high. The process would be repeated at each berm and stockpile location until soil consolidation is achieved across the entire stockpile area. After completion of soil consolidation, the excess preloading material would be used on site, stockpiled, or removed from the area and disposed of at an approved facility.

Rail Loop Construction

Rail loop construction would include the following activities. This work would involve the operation of heavy machinery, cranes, and specialized rail laying equipment.

- Importing ballast rock
- Constructing railroad foundations
- Placing railroad ties
- Laying steel rail
- Installing signaling
- Installing switching equipment
- Installing track lighting

The rail loop would include one operating track (i.e., turn-around track) and eight rail storage tracks. Construction of the rail loops would require 130,000 cubic yards of ballast rock for rail foundations. All construction activities work would involve operating heavy machinery, cranes, and specialized rail laying equipment. Once completed, trains would enter the coal export terminal from the east and move through the rail loop in a counter-clockwise direction until the train was contained within the terminal rail loop. The rail loop would be able to accommodate up to 8 unit trains. Once unloaded, trains would be redirected in a clockwise direction on the inner-most rail track and would then be positioned to exit the terminal.

Trestle and Dock Construction

Dredging would occur as part of the construction of Docks 2 and 3, which would include removing approximately 500,000 cubic yards of material. Dock and trestle construction would include pile driving of approximately 630 36-inch-diameter steel pipe piles, 610 of which would be installed in aquatic areas below the OHWM. Most piles would be driven to a depth of 140 to 165 feet below the

[15] Most of the deliveries of preload material would occur early in the construction period with up to 753 barges making deliveries in the first year.

mudline. Each would be installed using a vibratory driver until the pile meets resistance and vibratory driving is no longer effective, at which point an impact driver would be used to complete pile installation. Docks 2 and 3 would consist of 36-inch-diameter piles driven into the riverbed to support the shiploader runway beams, shiploader conveyors, and reinforced concrete decking. The dock structures would be equipped with fenders, mooring bollards, and capstans to facilitate the docking of vessels.

Upon completion of Stage 2 construction, Docks 2 and 3 would be served by two rail-mounted shiploaders. Each shiploader would be fed coal by a dedicated conveyor that would move coal from the stockpile area to the shiploader.

3.3.2.2 Construction Scenarios and Staging

The Applicant has identified three construction-material-delivery scenarios: delivery by truck, rail, or barge.

- **Truck.** If material is delivered by truck, it is assumed that approximately 88,000 truck trips would be required over the construction period. Approximately 56,000 loaded trucks would be needed during the peak construction year.
- **Rail.** If material is delivered by rail, it is assumed that approximately 35,000 loaded rail cars would be required over the construction period. Approximately two-thirds of the rail trips would occur during the peak construction year.
- **Barge.** If material is delivered by barge, it is assumed that approximately 1,130 barge trips would be required over the construction period. Approximately two-thirds of the barge trips would occur during the peak construction year. Because the project area does not have an existing barge dock, the material would be off-loaded at an existing dock elsewhere on the Columbia River and transported to the project area by truck.

The Applicant would construct the Proposed Action in two stages and anticipates that construction activities would primarily occur during daylight hours.

Stage 1

Stage 1 of construction would consist of two sub-stages: Stage 1a Construction and Start-Up Operations, and Stage 1b Construction and Increased Operations. Stage 1 would include the following tasks.

- Perform project-area ground improvements.
- Construct one operating rail track and up to eight rail storage tracks.
- Construct the stockpile area including two stockpile pads.
- Construct rail car unloading facilities and associated facilities and infrastructure.
- Construct Docks 2 and 3, including the shiploader and related conveyors on Dock 2 and the berthing facilities on Dock 3.
- Perform the necessary dredging within the Columbia River for Docks 2 and 3.

After Stage 1 construction, nominal coal export terminal throughput capacity would be up to 25 million metric tons per year. To allow for a start-up of export activities during the project-area preloading activities and construction, Stage 1 would include a start-up facility that would directly

unload coal from rail cars to an enclosed hopper and onto vessels via conveyors and would have a nominal throughput capacity of approximately 5 to 10 million metric tons per year (Table 2).

Table 2. Construction Staging

Element	Stage 1a Construction and Start-Up Operations	Stage 1b Construction and Increased Operations	Stage 2 Construction and Full Build-Out Operations
Description	Start of Stage 1 construction for start-up operations	Continuation of Stage 1 construction through completion of Stage 1 construction	Start of Stage 2 construction through completion of Stage 2 construction and start of full operations
Approximate Timing and Duration	0–1.5 years (18 months) from the start of construction	0–3 years from the start of construction	4–6 years from the start of construction
Approximate Year	2018–2020	2020–2021	2022–2024
Year Used for the Analyses in this Document	2018	2018	2028[a]
Terminal Throughput Capacity During Stage of Construction	None	5 to 10 MMPTY	Up to 25 MMTPY
Terminal Throughput Capacity After Stage of Construction	5 to 10 MMTPY	Up to 25 MMTPY	Up to 44 MMTPY

Notes:

[a] The Applicant anticipates construction would begin in 2018 and would be completed by 2024. For the purpose of the analysis, it is assumed that the Proposed Action would be fully operational by 2028.

MMTPY = million metric tons per year

Stage 2

Stage 2 Construction and Full Build-Out Operations would involve the following tasks.

- Construct a shiploader on Dock 3.
- Construct additional stockpile pads.
- Construct additional conveyors and associated infrastructure to support additional throughput.

After Stage 2 construction, nominal coal export terminal throughput capacity would increase to up to 44 million metric tons of coal per year. Table 2 summarizes the three construction stages. Table 3 identifies the primary elements of the Proposed Action that would be constructed for the Stage 1a Construction and Start-Up Operations, Stage 1b, Construction and Increased Operations, and Stage 2 Construction and Full Build-Out Operations.

Table 3. Primary Construction Elements by Stage

Construction Stage	Description	Primary Construction Elements
Stage 1a Construction and Start-Up Operations	Start of Stage 1 Construction and Start-Up Operations (construction activities for 5 to 10 MMTPY)	• One operating track and up to eight rail storage tracks. • One rapid discharge tandem rail car unloader (bottom dumper). • Conveyors, buffer bins, and transfer towers (approximately 4,300 lineal feet of conveyors, of which approximately 1,000 lineal feet would be open conveyors and approximately 3,300 lineal feet would be enclosed). • Construct Docks 2 and 3. • One shiploader on Dock 2. • Support structures, electrical transformers, switchgear and equipment, process-control systems, and buildings.
Stage 1b Construction and Increased Operations	Continuation of Stage 1 Construction and Increased Operations (construction activities for up to 25 MMTPY)	• Tandem rotary unloading facility (rotary dumper, capable of unloading two rail cars simultaneously). • Three berms for stackers and reclaimers. • Two stackers. • Two reclaimers. • Conveyors, buffer bin, and transfer towers (approximately 16,100 lineal feet of conveyors, of which approximately 4,900 lineal feet would be enclosed). • Support structures, electrical transformers, switchgear and equipment, process control systems, and buildings.
Stage 2 Construction and Full Operations	Construction and Full Operations (construction activities for up to 44 MMTPY)	• The remaining rail storage tracks (for a total of eight rail storage tracks). • The remaining two berms (for stackers and reclaimers) (for a total of five berms). • Two additional stackers (total of four). • Two additional reclaimers (total of four). • Conveyors, buffer bin and transfer towers (approximately 26,200 lineal feet of conveyors, of which 8,300 lineal feet would be enclosed). • One shiploader on Dock 3. • Support structures, electrical transformers, switchgear and equipment, buildings, process-control equipment, etc.

Notes:
MMTPY = million metric tons per year

Appendix A, *Coal Export Terminal Stages of Construction and Operations*, provides detailed information on the construction and operational elements associated with the start of Stage 1 Construction and Start-Up Operations (Stage 1a), continuation of Stage 1 Construction and Increased Operations (Stage 1b), and Stage 2 Construction and Full Operations.

3.3.3 Operations

This section describes on-site operations and off-site transport for the Proposed Action.

3.3.3.1 On-Site Operations

Similar to construction, operations of the Proposed Action would include two stages: Stage 1 and Stage 2.

- **Stage 1.** Stage 1 includes Stage 1a Start-up Operations and Stage 1b Increased Operations.
- **Stage 2.** Stage 2 includes Full Build-Out Operations.

All operations stages would follow the completion of the appropriate construction stages (Stages 1a, 1b, and 2). Table 4 summarizes operations by stage and component. Appendix A, *Coal Export Terminal Stages of Construction and Operations*, provides detailed information on the operational elements associated with Stage 1 and Stage 2. Appendix B, *Coal Export Terminal Design Features*, provides design elements of the coal export terminal provided by the Applicant.

3.3.3.2 Off-Site Transport

Coal would be transported to the project area by rail and transported from the project area by vessel.

Rail

The coal export terminal would receive coal from the Powder River Basin in Montana and Wyoming and possibly the Uinta Basin in Utah and Colorado via rail shipment. BNSF trains would most likely ship Powder River Basin coal and UP trains would ship Powder River Basin and Uinta Basin coal.[16]

[16] UP has the capability to ship Powder River Basin coal. However, the route to the project area would be longer than the BNSF route from the Powder River Basin.

Table 4. Coal Export Terminal Operations by Stage and Component

Component	Stage 1a Start-Up Operations	Stage 1b Increased Operations	Stage 2 Full Build-Out Operations
All Coal Export Terminal Operations			
Appx. Timing	1.5 years from the start of construction	3 years from the start of construction	6 years from the start of construction
Appx. Years of Operation	2020–2021 Follows Construction Stage 1a (2018–2020)	2021–2024 Follows Construction Stage 1b (2018–2021)	2024 and beyond Follows Construction Stage 2 (2022–2024)
Year Used for the Analyses in this Document	N/A	N/A	2028[a]
Terminal Throughput Capacity	5 to 10 MMTPY	Up to 25 MMTPY	Up to 44 MMTPY[b]
Number of Employees	Approximately 60 employees for operations.	Approximately 115 employees for operations.	Approximately 135 employees for operations.
Operations Equipment	Same type of equipment for each stage: Wheel loaders, cranes, forklifts, trucks, welders, pumps, track dozers, and other similar equipment. The equipment would be powered by diesel, liquid petroleum gas, or gasoline engines.		
Land Operations			
Rail	• All coal would arrive by unit train. • Unit trains would consist of 3 locomotives and 125 coal cars, with a total length of 6,844 feet. • Up to 60 loaded unit trains would arrive and 60 empty unit trains would depart monthly (average of 120 unit train trips monthly). This equals approximately 4 trains a day (2 trains arriving and 2 trains departing). • Inbound/outbound trains would be stored on site, on a maximum of eight available storage tracks.	• All coal would arrive by unit train. • Unit trains would consist of 3 locomotives and 125 coal cars, with a total length of 6,844 feet. • An average of 150 loaded unit trains would arrive and 150 empty unit trains would depart monthly (average of 300 unit train trips monthly). This equals approximately 10 trains a day (5 trains arriving and 5 trains departing). • Inbound and outbound trains would be stored on site, on a maximum of eight available storage tracks.	• All coal would arrive by unit train. • Unit trains would consist of 3 locomotives and 125 coal cars, with a total length of 6,844 feet. • An average of 240 loaded unit trains would arrive and 240 empty unit trains would depart monthly (average of 480 unit train trips monthly). This equals approximately 16 trains a day (8 trains arriving and 8 trains departing). • Inbound and outbound trains would be stored on site on up to a maximum of eight available storage tracks.

Component	Stage 1a Start-Up Operations	Stage 1b Increased Operations	Stage 2 Full Build-Out Operations
Rail Car Unloading	• Delivered directly from the rail cars to the shiploader by way of a rapid discharge unloading facility and interconnecting conveyors. • No stockpiling of coal.	• Rail cars would be unloaded by an electrical-powered tandem rotary unloader. • A mechanical positioner would index unit trains, position two rail cars at a time, and dump the coal into a hopper and onto the stacking conveying system.	• The Stage 1 tandem rotary unloader would service Stage 2 Operations; no additional unloading equipment would be required. • The rapid discharger tandem rail car unloader installed for Stage 1 would remain operable and may be used during maintenance of tandem rotary unloader.
Conveyor Systems	• Conveyors would transport coal directly from the rail cars to the shiploader by way of a rapid discharge unloading facility and interconnecting conveyors.	• Conveyors would transport coal from rail car unloading to the stockpile area and from the stockpile area to the shiploader. • Conveyors would be enclosed except where required to feed onto or reclaim from stockpiles or onto the shiploaders. • When unloading rail cars, the conveyors from rail car unloading to the stockpile area would operate, and when loading ships, the conveyors from the stockpile area to the shiploader would operate. • Rail car unloading and shiploading would at times occur both independently and simultaneously. • Conveyors would operate for approximately 45% of the available time.	• Conveyors would transport coal from rail car unloading to the stockpile area and from the stockpile area to the shiploader. • Conveyors would be enclosed except where required to feed onto or reclaim from stockpiles or onto the shiploaders. • When unloading rail cars, the conveyors from rail car unloading to the stockpile area would operate, and when loading ships, the conveyors from the stockpile area to the shiploaders would operate. • Rail car unloading and shiploading could occur independently or simultaneously. • Conveyors would operate for approximately 80% of the available time.
Stockpiling	None.	Two electrical-powered traveling stackers would stockpile coal at an average rate of 7,500 metric tons per hour onto two longitudinal stockpiles with an estimated total storage capacity of 750,000 metric tons.	Four traveling stackers would stockpile coal at an average rate of 7,500 metric tons per hour onto two additional longitudinal stockpiles with a total storage capacity of up to 1.5 million metric tons.

Component	Stage 1a Start-Up Operations	Stage 1b Increased Operations	Stage 2 Full Build-Out Operations
Reclaimers	None.	Two electrical-powered traveling bucket wheel reclaimers would transfer coal from the stockpile to the shiploading system (each with an average rate of 6,500 metric tons per hour).	Two additional traveling bucket wheel reclaimers (total of four at Stage 2) would transfer coal from the stockpile to the shiploading system (each with an average capacity of 6,500 metric tons per hour).
Dock Operations			
Shiploading	Performed using an electrical-powered single traveling shiploader installed on Dock 2 with average capacity of 6,500 metric tons per hour.	Would use the shiploader installed for Stage 1 Start-Up Operations (Dock 2 only).	One additional traveling shiploader would be installed on Dock 3 with an average rated capacity of 6,500 metric tons per hour.
Vessels	Up to 15 vessels per month (80% Panamax, 20% Handymax) would be loaded.	Up to 40 vessels per month (80% Panamax, 20% Handymax) would be loaded.	Up to 70 vessels per month (80% Panamax, 20% Handymax) would be loaded.

Notes:

[a] The Applicant anticipates construction would begin in 2018 and would be completed by 2024. For the purpose of the analysis, it is assumed that the Proposed Action would be fully operational by 2028.

[b] According to the Applicant, proposed rail operations and coal export terminal design would support terminal throughput of 40 million metric tons per year. The Proposed Action is based on a throughput of up to 44 million metric tons per year. The Applicant assumes a 10% increase in throughput (4 million metric tons per year) from rail car capacity and on-site operational efficiencies that can be achieved through industry process and technological improvements by 2028, the first year of assumed full operations.

MMTPY = million metric tons per year; N/A = not applicable

Proposed Action-related train routes from mines in the Powder River Basin and Uinta Basin to the project area, and the return of empty trains from the project area, was assumed to be the same as current BNSF and UP train operational protocols in Washington State, as documented in adopted publications, including the *Washington State Rail Plan* (Washington State Department of Transportation 2014a) and *Washington State Freight Mobility Plan* (Washington State Department of Transportation 2014b). In 2012, BNSF changed its train operations protocol in Washington State using directional running to enhance use of existing capacity. This strategy routes all westbound-loaded unit trains (including coal) from Pasco via the Columbia River Gorge to Vancouver, where they continue on the BNSF north-south main line to their final destination. Empty unit bulk trains north of Vancouver, including Cowlitz County, return to Pasco and to points east via Auburn and Stampede Pass.

Loaded and empty Proposed Action-related BNSF trains would travel on the same route between the Powder River Basin and Pasco, Washington. West of Pasco, westbound loaded trains are expected to travel to the project area via the Columbia River Gorge route through Vancouver to Longview Junction. Empty trains are expected to travel from Longview Junction on the Stampede Pass route through Centralia, Auburn, and Yakima to Pasco, Washington (Figure 9).

However, as volume increases on any one-line segment, BNSF may revise its operations within Washington State to distribute the traffic over existing infrastructure. Railroad companies may also expand their infrastructure, which occurs on an ongoing basis based on demand. For these reasons, empty and loaded BNSF trains could travel through the Columbia River Gorge or across Stampede Pass, depending on BNSF system operations for maintenance or traffic flow.

Loaded and empty Proposed Action-related UP trains would travel on the same route between the Uinta Basin and Powder River Basin and Longview Junction. Within Washington State, UP operates over the same track that carries BNSF trains between Vancouver and Longview Junction (Figure 9).

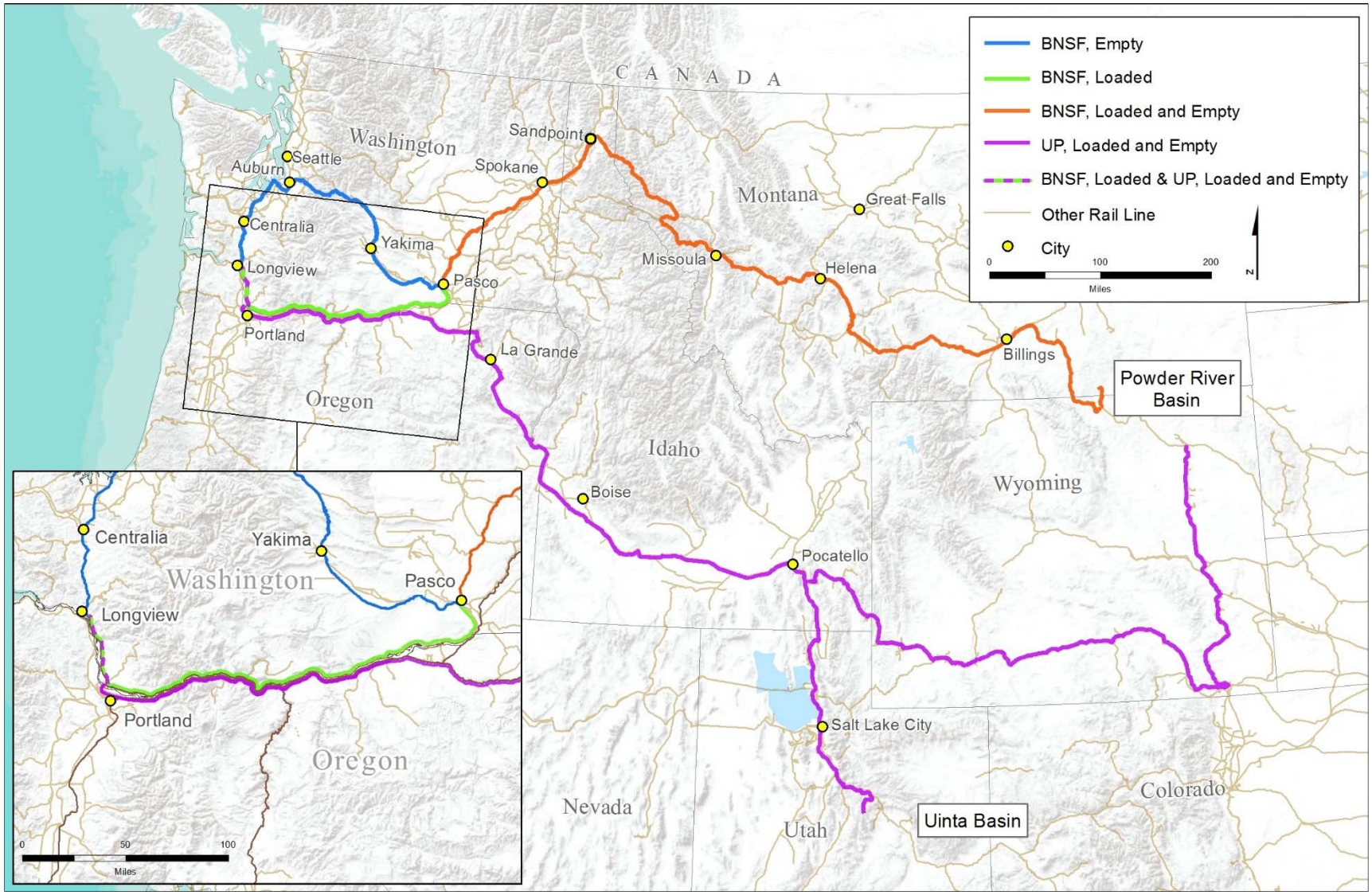
Between Longview Junction and the project area, BNSF and UP trains would travel over the BNSF Spur and Reynolds Lead rail line. Rail transportation is discussed in detail in the SEPA Rail Transportation Technical Report (ICF International and Hellerworx 2016).

Increased train traffic would consist of unit trains 125 cars long (approximately 1.3 miles long). Unit trains would be typically hauled by three locomotives. At full capacity, an average of 8 loaded trains and 8 empty coal trains per day (average of 16 trains daily; 480 trains monthly) would operate on BNSF and UP rail lines inside and outside of Washington State as they travel to and from the project area.

Vessel

Coal would be transported from the project area by vessel to Asian markets. The Applicant anticipates these markets would be Japan, South Korea, and Taiwan. Vessels would travel from the project area via the Columbia River and across the Pacific Ocean. Vessel transportation is discussed in the SEPA Vessel Transportation Technical Report (ICF International 2016c). Vessel trips would use Panamax-class (including new Panamax-class) and Handymax-class vessels. The fleet mix is estimated to be 80% Panamax and 20% Handymax vessels. The Proposed Action would result in an average of 840 vessel trips per year (an average of 2.3 vessel trips per day).

Figure 9. Route of Loaded and Empty Trains



Chapter 4
No-Action Alternative

This chapter describes the No-Action Alternative, including planned operation and transport, as well as potential future operations and transport.

Under the No-Action Alternative, the Applicant would not construct the Proposed Action. Current operations of the adjacent existing bulk product terminal under existing permits would continue, which include storing and transporting alumina and up to 150,000 metric tons per year of coal. Importing of alumina would continue using Dock 1. Upland areas of the project area are zoned Heavy Industrial and it is assumed that future proposed industrial uses in these upland areas could be permitted. Cleanup activities caused by past industrial uses would also continue.

The Applicant could expand the existing bulk product terminal onto the project area, developing storage and shipment facilities to increase bulk product terminal operations. Coal and alumina would continue to be stored, transferred, and shipped. Additional bulk product transfer activities involving products such as calcine pet coke, coal tar pitch, cement, fly ash, and sand or gravel could also be pursued, and new or revised permits could be required based on the operations. These operations could involve storage and upland transfer of bulk products, which would use existing or new buildings. Construction of new buildings could involve demolition and replacement of existing buildings and new or modified permits. The No-Action Alternative does not include activities that could require a Corps permit or shoreline permit. Any new construction would be limited to uses allowed under existing Cowlitz County development regulations (CCC Title 18, Land Use and Development).

Under the No-Action Alternative, new construction, demolition, or related activities to develop the project area into an expanded bulk product terminal would occur on previously developed upland portions of the project area. The quantity of impervious surface area would not change and new construction, demolition, or different activities would not require new docks or new unloading structures on Dock 1. The No-Action Alternative includes current roadway and rail infrastructure near the project area that will be implemented by 2018. It is assumed that continued operation of the bulk terminal within the 20-year analysis period (2018 to 2038) would continue to be economically viable. The following describes planned operations and transport and potential future operations and transport under the No-Action Alternative.

4.1 Planned Operations and Transport

The Applicant plans to continue current activities at the bulk product terminal and increase commodities storage regardless of whether the Proposed Action in the 190-acre project area is built. Maintenance of the bulk product terminal would continue, including maintenance dredging for the existing dock which would occur every 2 to 3 years (Table 5).

Table 5. Planned Activities and Transport Operations at the Existing Bulk Product Terminal

		Transport Operations[a]		
Commodity	**Activity**	**Truck**	**Train**	**Vessel**
Coal	Trains would continue to deliver coal where it would be stored on site and transferred as needed by truck to Weyerhaeuser, located approximately 1 mile southeast of the existing bulk product terminal. An increase in the receipt and transfer of Weyerhaeuser coal by 50% began in late 2014, and is separate from the coal export terminal.	Operate on a continual basis (24 hours a day; 7 days a week)	1 train (38 to 45 rail cars); 3 times per week	N/A (trains deliver coal; trucks transport)
Alumina	Vessels deliver alumina to Dock 1. Alumina is stored on site and then shipped to Chelan County by train.	N/A (vessels deliver alumina; trains transport)	80 rail cars per week at a rate of 16 rail cars per day, 5 days per week	8 vessels per year
Other Commodities	Other commodities that are assumed to be delivered by vessel, stored, and shipped via truck and train to various locations	Transported by truck for local distribution at the rate of 16 trucks per day (4,160 trucks per year)	4 rail cars per day (1,040 rail cars per year) for non-local distribution	6 vessels per year

Notes:
[a] Includes existing transport operations as identified in Table 1.
N/A = not applicable

4.1.1 On-Site Operations

On-site operations under the Applicant's planned operations would be similar to those associated with the current operations of the existing bulk product terminal. Planned activities would include increasing the amount of the existing commodities stored and shipped. Thus, planned operations for handling the increase in existing commodities would be similar, but would be more frequent.

4.1.2 Off-Site Transport

The Applicant plans to increase commodities shipment regardless of whether the Proposed Action is built. Table 5 provides information about the planned activities and the means for transporting commodities to and from the existing bulk product terminal.

4.2 Potential Future Operations and Transport

In addition to current and planned activities described in Tables 3-1 and 4-1, the Applicant is also considering receiving and shipping any products permitted by the terms of an existing WDNR aquatic lands lease[17] including pet coke, coal tar pitch, cement, fly ash, and sand/gravel.

4.2.1 On-Site Operations

The following are estimates of the amount and method for transporting each of the commodities permitted per the terms of the existing aquatic lands lease. These operations would be separate from, and independent of, the Proposed Action.

- Calcine pet coke would be imported by vessel from Asia, unloaded from vessels on Dock 1 using a vacuum unloader, and stored in an existing on-site building. Approximately 600,000 tons of calcine pet coke per year could be imported.
- Coal tar pitch would arrive by vessel via super-sacks, and unloaded from either vessel mounted unloading gear or new equipment. Approximately 200,000 tons of coal tar pitch per year could be imported.
- Cement would arrive by vessel and distributed either by rail or truck.
- Fly ash would arrive by rail and depart by truck, or come in by truck and depart by rail.
- Sand or gravel would likely come in by rail and depart by truck, or come in by truck and depart by rail.

4.2.2 Off-Site Transport

The following are estimates of the anticipated transport operations of the potential future commodities by the year 2028 (Table 6) and estimates of the anticipated transport operations of the potential future commodities combined with the existing and planned activities and transport operations at the bulk product terminal (Table 7). These operations would be separate from, and independent of, the Proposed Action.

Table 6. Potential Future Commodities and Transport Operations at the Bulk Product Terminal by Year 2028

	Anticipated Transport Operations		
Future Commodity	**Truck**	**Train**	**Vessel**
Calcine pet coke, coal tar pitch, cement, fly ash, sand, or gravel	24 hours per day, 7 days per week	6 to 7 trains per week (30 rail cars per train)	10 to 12 additional vessels per year

[17] Northwest Alloys holds a 30-year aquatic lease (20-B09222) with the Washington State Department of Natural Resources (WDNR) allowing the use of WDNR property for three docks. The lease expires January 2, 2038. Per the existing lease:

- The existing dock can be used for off-loading alumina ore from vessels for transfer to rail car or trucks, off-loading cement for transfer to rail cars and trucks, and off-loading any product that can be moved by vacuum including any type of powder or granulated product.
- Two new fixed docks can be used for products not compatible with the existing system on Dock 1. The products include coal, silica sand, dry fertilizer, potash, coke, cement clinker and other general bulk cargo.

Table 7. Total Transportation Operations for Existing, Planned, and Potential Future Activities at the Bulk Product Terminal

	Total Transport Operations		
Activities	**Truck**	**Train**	**Vessel**
Existing (Table 1), Planned (Table 5), and Potential Future (Table 6)	24 hours per day, 7 days per week	2 trains per day; 12 to 14 trains per week: • 2 to 4 incoming trains (between 38 and 45 rail cars) • 10 outgoing trains (between 12 and 16 rail cars)	26 vessels per year

Chapter 5
References

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Appendix A

Coal Export Terminal Stages of Construction and Operations

Millennium Bulk Terminals—Longview
Coal Export Terminal Stages of Construction and Operations

TABLE 1

Stage of Construction/Operations: Stage 1a Construction

Description: Start of Stage 1 Construction

Timing: 0–1.5 years (18 months) from the start of construction

Approximate Years:[1] 2018–2020

Throughput Capacity: 0 MMTPY[2]

Stage 1a Construction	
Project Component	**Activity**
Number of Construction Workers	• 1,350 construction workers (combined number of workers for all construction activities associated with Stage 1 and Stage 2)
Construction Trips	• Total construction trips are dependent on how material is imported during preloading activities (numbers below are combined for preloading activities during Stage 1 and Stage 2): o If all material is imported by truck: approximately 88,000 loaded truck trips over an approximate 5-year period with the majority of the truck trips occurring during the first 1 to 2 years (Stage 1). o If all material is imported by rail: approximately 35,000 loaded railcars over an approximate 5-year period with the majority of the railcars received during the first 1 to 2 years (Stage 1). o If all material is imported by barge: approximately 1,130 barge trips over an approximate 5-year period with the majority of the barge trips occurring during the first 1 to 2 years (Stage 1)
Construction Staging	• Demolish existing structures • Prepare site area and make ground improvements/grading • Stockpile area, including preloading for stockpile pads (2 out of 4 stockpile pads would be preloaded during Stage 1 construction). • Coal export terminal start-up facilities o One shiploader and related conveyors on Dock 2 o Rail car unloading facilities (rapid unloader, bottom dumper) o Associated facilities and infrastructure (i.e., conveyors, etc.) • Construct rail loop o Complete berm for rail tracks o Install up to 8 rail storage tracks for train parking o Install 1 operating track • Conduct dredging in the Columbia River • Construct 2 docks (Docks 2 and 3) and trestle
Demolition of Existing Structures	• Demolish existing cable plant building (approximately 270,000 ft^2) • Demolish existing potline buildings (approximately 600,000 ft^2) and some smaller ancillary structures • Duration of approximately 6 months
Site Preparation	• Clearing of vegetation

[1] Assumes that construction begins 2018

[2] MMTPY = million metric tons per year

Millennium Bulk Terminals—Longview
Coal Export Terminal Stages of Construction and Operations

TABLE 1

Stage of Construction/Operations: Stage 1a Construction

Description: Start of Stage 1 Construction

Timing: 0–1.5 years (18 months) from the start of construction

Approximate Years:[1] 2018–2020

Throughput Capacity: 0 MMTPY[2]

Stage 1a Construction	
Project Component	**Activity**
	• Grading • Earthmoving • Earthworks • Construction of erosion control facilities (including settlement ponds) • Duration of approximately 3 months
Preloading	• Initiation of rolling preload: up to 7 years total for entire stockpile areas (continues through construction of both Stage 1 and Stage 2) • Preloading would commence on 2 of the 4 stockpiling areas • Existing soil conditions would be strengthened to improve load-bearing capacity • Preload material would be imported and wick drains would be installed for ground improvement for the stockyard area • Preload material would be placed in a pile approximately 35 feet high covering the area of the berm and adjacent stockpile pad(s) • Process would be repeated at each berm and stockpile location until soil consolidation is achieved across the complete stockyard • Groundwater expelled through the wick drains would be collected, treated, and discharged to the Columbia River • Excess preload material would be used on site, stockpiled, or removed from the area • Approximately 2.1 million cubic yards of preload material would be imported (Stage 1 and Stage 2) • Approximately 2.5 million cubic yards of material would be moved around the project area (Stage 1 and Stage 2)
Construction/Installation of Coal Export Terminal Equipment	• Coal would not be stockpiled during any stage of construction • Installation of plant and equipment for start-up operations would include: o One operating track o Up to 8 rail storage tracks for train parking/staging o One rapid discharge (bottom) tandem railcar unloader to unload coal for transfer by conveyor to the dock for shiploading; the rail car unloader would be capable of unloading 2 railcars at once. o Conveyors, buffer bin, and transfer towers, including approximately 4,300 lineal feet of conveyors, of which approximately 1,000 lineal feet would be open conveyors and approximately 3,300 lineal feet would be enclosed o Dock 2 and Dock 3 o One shiploader on Dock 2 o Support structures, electrical transformers, switchgear and equipment, process control systems, buildings, etc.
Rail Loop Construction	• Importing and placing of approximately 130,000 cubic yards of ballast rock for the rail foundations • Placement of railroad ties • Laying of steel rail lines

Millennium Bulk Terminals—Longview
Coal Export Terminal Stages of Construction and Operations

TABLE 1

Stage of Construction/Operations: Stage 1a Construction

Description: Start of Stage 1 Construction

Timing: 0–1.5 years (18 months) from the start of construction

Approximate Years:[1] 2018–2020

Throughput Capacity: 0 MMTPY[2]

Stage 1a Construction	
Project Component	**Activity**
	• Installation of signaling • Installation of switching equipment • Installation of track lighting • Installation of 1 rapid discharge (bottom) tandem railcar unloader
Dredging, Trestle, and Dock Construction	• Dredging would occur as part of the construction of Docks 2 and 3 (simultaneous with site prep and preload; may require 2 fish windows to complete) • Dredging would remove approximately 500,000 cubic yards of material over a 48-acre area and to a depth of -43 feet Columbia River Datum • Dredging would be required from the river side face of the dock out to the Columbia River navigation channel; the riverbed would be sloped from the dock to the riverbank with a 3H:1V slope • Dock and trestle construction would include pile driving of approximately 630 36-inch-diameter steel pipe piles, 610 of which would be installed in aquatic areas below ordinary high water • Piling would be installed from approximately 140 to 165 feet below the mudline • Dredge spoils will be disposed of adjacent to the navigation channel between approximately river mile 60 and 66 • Approximately 225 linear feet (125 feet and 100 feet, respectively) of the existing west and east pile dikes would be removed

Millennium Bulk Terminals—Longview
Coal Export Terminal Stages of Construction and Operations

TABLE 2

Stage of Construction/Operations: Stage 1b Construction and Start-Up Operations

Description: Continuation of Stage 1 construction through completion of Stage 1 construction and start-up operations

Timing: 0–3 years from the start of construction

Approximate Years[1]: 2018–2021

Throughput Capacity: 5 to 10 MMTPY[2]

Stage 1b Construction		**Start-Up Operations**	
Project Component	Activity	Project Component	Activity
N/A	N/A	Number of Trains	Arrival of coal by rail: • Up to 10 MMTPY throughput capacity • Up to 60 unit trains arriving and departing monthly
N/A	N/A	Number of Vessels	Transfer of coal to ship: • Up to 10 MMTPY throughout capacity • Up to 15 ships loaded monthly (80% Panamax, 20% Handymax)
Number of Construction Workers	• 1,350 construction workers (combined number of workers for all construction activities associated with Stage 1 and Stage 2)	Number of Employees	• 60 employees required
Construction Trips	• Construction trips are dependent on how material is imported during preloading activities (numbers below are combined for preloading activities during Stage 1 and Stage 2): o If all material is imported by truck: approximately 88,000 loaded truck trips over an approximate 5-year period with the majority of the truck trips occurring during the first 1 to 2 years (Stage 1) o If all material is imported by rail: approximately 35,000 loaded railcars over an approximate 5-year period with the majority of the railcars received during the first 1 to 2 years (Stage 1) o If all material is imported by barge: approximately 1,130 barge trips over an approximate 5-year period with the majority of the barge trips occurring during the first 1 to 2 years (Stage 1)	N/A	—
Construction/Installation of Coal Export Terminal	Coal would not be stockpiled during any stage of construction. Would include the installation of additional facilities and	Rail Cars/Trains	• Inbound and outbound trains would be staged on site on up to eight available storage tracks

[1] Assumes that construction begins 2018

[2] MMTPY = million metric tons per year

Millennium Bulk Terminals—Longview
Coal Export Terminal Stages of Construction and Operations

TABLE 2

Stage of Construction/Operations: Stage 1b Construction and Start-Up Operations

Description: Continuation of Stage 1 construction through completion of Stage 1 construction and start-up operations

Timing: 0–3 years from the start of construction

Approximate Years[1]: 2018–2021

Throughput Capacity: 5 to 10 MMTPY[2]

Stage 1b Construction		**Start-Up Operations**	
Project Component	Activity	Project Component	Activity
Equipment	equipment not installed during the start of Stage 1a construction: • Tandem rotary unloading facility (capable of unloading 2 rail cars) • Three berms (for stackers and reclaimers) • Water management facilities • Two stackers • Two reclaimers • Conveyors, buffer bin, and transfer towers, including approximately 16,100 lineal feet of conveyors, of which approximately 11,200 lineal feet would be open conveyors and approximately 4,900 lineal feet would be enclosed. • Support structures, electrical transformers, switchgear and equipment, process control systems, buildings, etc. Completion of Stage 1 construction would result in a nominal throughput capacity of up to 25 MMTPY		• Rail car unloading operations would use the operating track and the rapid discharge (bottom) unloaders • Up to 60 unit trains would arrive and depart monthly
		Rail Car Unloading	• No stockpiling of coal; coal would be delivered directly from the rail cars to the shiploader by way of a rapid discharge unloading facility and interconnecting conveyors
		Water Management Facilities	• Water collection, conveyance, treatment, reuse, or discharge
—	—	Shiploading	• Ship loading would be performed using a single electrical-powered traveling shiploader installed on Dock 2 • The shiploader would have an average capacity of 6,500 metric tons per hour
		Shipping	• Up to 15 ships per month (80% Panamax, 20% Handymax) would be loaded
		Ship Bunkering Crew Supplies	• These activities would not be allowed or provided for at the dock

Millennium Bulk Terminals—Longview
Coal Export Terminal Stages of Construction and Operations

TABLE 2

Stage of Construction/Operations: Stage 1b Construction and Start-Up Operations

Description: Continuation of Stage 1 construction through completion of Stage 1 construction and start-up operations

Timing: 0–3 years from the start of construction

Approximate Years[1]: 2018–2021

Throughput Capacity: 5 to 10 MMTPY[2]

Stage 1b Construction		**Start-Up Operations**	
Project Component	Activity	Project Component	Activity
		Equipment	• Equipment needed to maintain the terminal would include o wheel loaders o cranes o forklifts o trucks o welders o pumps and other similar equipment

Millennium Bulk Terminals—Longview
Coal Export Terminal Stages of Construction and Operations

TABLE 3
Stage of Construction/Operations: Stage 2 Construction/Increased Operations
Description: Stage 2 Construction and increased operations through completion of Stage 2 construction
Timing: 4–6 years from the start of construction
Approximate Years[1]: 2022–2024
Throughput Capacity: Up to 25 MMTPY[2]

Stage 2 Construction		**Increased Operations**	
Project Component	Activity	Project Component	Activity
N/A	N/A	Number of Trains	Arrival of coal by rail: • Up to 25 MMTPY throughput capacity • An average of 150 unit trains arriving and departing monthly
N/A	N/A	Number of Vessels	Transfer of coal to ship: • Up to 25 MMTPY throughput capacity • Total average of 40 ships loaded monthly (80% Panamax, 20% Handymax)
Number of Construction Workers	• 1,350 construction workers (combined number of workers for all construction activities associated with Stage 1 and Stage 2)	Number of Employees	• 115 employees required
Construction Trips	• Construction trips are dependent on how material is imported during preloading activities (numbers below are combined for preloading activities during Stage 1 and Stage 2 Construction): o If all material is imported by truck: approximately 88,000 loaded truck trips over an approximate 5-year period with the majority of the truck trips occurring during the first 1 to 2 years (Stage 1. o If all material is imported by rail: approximately 35,000 loaded railcars over an approximate 5-year period with the majority of the railcars received during the first 1 to 2 years (Stage 1) o If all material is imported by barge: approximately 1,130 barge trips over an approximate 5-year period with the majority of the barge trips occurring during the first 1 to 2 years (Stage 1)	N/A	—
Construction Staging	• Associated stockpile pads (preloading for remaining 2 of 4 berms/stockpile pads) • Any of the remaining eight rail storage tracks for train parking that were not constructed as part of Stage 1 • Two additional stackers • Two additional reclaimers • Conveyors	Rail Cars/Trains	• Inbound and outbound trains would be stored on site on up to eight available storage tracks • Rail car unloading operations would use the operating track and rail cars would be unloaded using the tandem rotary unloader • An average of 150 unit trains would arrive and depart monthly

[1] Assumes that construction begins 2018
[2] MMTPY = million metric tons per year

Millennium Bulk Terminals—Longview
Coal Export Terminal Stages of Construction and Operations

TABLE 3
Stage of Construction/Operations: Stage 2 Construction/Increased Operations
Description: Stage 2 Construction and increased operations through completion of Stage 2 construction
Timing: 4–6 years from the start of construction
Approximate Years[1]: 2022–2024
Throughput Capacity: Up to 25 MMTPY[2]

Stage 2 Construction		**Increased Operations**	
Project Component	Activity	Project Component	Activity
	• One additional shiploader on Dock 3 • Equipment necessary to add 19 MMTPY and bring the nominal total throughput up to 44 MMTPY		
Preloading	• Remaining 2 of 4 berms/stockpile areas would be preloaded during Stage 2 construction • Existing soil conditions would be strengthened to improve load bearing capacity • Preload material would be imported and wick drains would be installed for ground improvement for the stockyard area • Preload material would be placed in a pile approximately 35 feet high covering the area of the berm and adjacent stockpile pad(s) • The preload process would be repeated at each berm and stockpile location until soil consolidation is achieved across the complete stockyard • Excess preload material would be used on site, stockpiled, or removed from the site • Approximately 2.1 million cubic yards of preload material would be imported (Stage 1 and 2) • Approximately 2.5 million cubic yards of material would be moved around the project area (Stage 1 and 2)	Rail Car Unloading	• Rail cars would be unloaded by an electrical-powered tandem rotary unloader • The terminal would include a mechanical positioner to index the unit into the rotary unloader • Coal would be transferred to the stackers via conveyors

Millennium Bulk Terminals—Longview
Coal Export Terminal Stages of Construction and Operations

TABLE 3
Stage of Construction/Operations: Stage 2 Construction/Increased Operations
Description: Stage 2 Construction and increased operations through completion of Stage 2 construction
Timing: 4–6 years from the start of construction
Approximate Years[1]: 2022–2024
Throughput Capacity: Up to 25 MMTPY[2]

Stage 2 Construction		**Increased Operations**	
Project Component	Activity	Project Component	Activity
Construction/ Installation of Coal Export Terminal Equipment	Coal would not be stockpiled during any stage of construction. Would include the installation of additional facilities and equipment not installed during Stage 1 construction: • The remaining rail storage tracks (total of eight rail storage tracks) • The remaining 2 berms for stackers and reclaimers (total of 5 berms after Stages 1 and 2 construction is complete) • Two stackers (total of up to 4 stackers after Stages 1 and 2 of construction are complete) • Two reclaimers (total of up to 4 reclaimers after Stages 1 and 2 construction is complete) • Conveyors, buffer bin, and transfer towers, including approximately 26,200 lineal feet of conveyors, of which approximately 17,900 lineal feet would be open conveyors and approximately 8,300 lineal feet would be enclosed • One shiploader on Dock 3 • Support structures, electrical transformers, switchgear and equipment, buildings, process control equipment, etc.	Conveyor Systems	• Conveyors would transport coal from rail unloading to the stockyard and from the stockyard to the shiploader • Conveyors would be enclosed except where required to feed onto or reclaim from stockpiles or onto the shiploaders • Rail car unloading and shiploading would at times occur both independently and simultaneously • Conveyors would operate for approximately 45% of the available time • Conveyor drives are electrically powered
		Stockpiling	• Two electrical-powered traveling stackers would stockpile coal at an average rate of 7,500 metric tons per hour onto 2 longitudinal stockpiles with an estimated total storage capacity of 750,000 metric tons
		Reclaiming	• Two electrical-powered traveling bucket wheel reclaimers, each with an average rate of 6,500 metric tons per hour, would transfer coal from the stockpile to the shiploading system
		Shiploading	• Would use the shiploader installed for startup operations on Dock 2 only
		Shipping	• Total average of 40 ships per month (80% Panamax, 20% Handymax) would be loaded
		Mobile Equipment	• Equipment needed to maintain the terminal would include: o wheel loaders

Millennium Bulk Terminals—Longview
Coal Export Terminal Stages of Construction and Operations

TABLE 3
Stage of Construction/Operations: Stage 2 Construction/Increased Operations
Description: Stage 2 Construction and increased operations through completion of Stage 2 construction
Timing: 4–6 years from the start of construction
Approximate Years[1]: 2022–2024
Throughput Capacity: Up to 25 MMTPY[2]

Stage 2 Construction		**Increased Operations**	
Project Component	Activity	Project Component	Activity
			o dozers o cranes o forklifts o trucks o welders o pumps and other similar equipment

Millennium Bulk Terminals—Longview
Coal Export Terminal Stages of Construction and Operations

TABLE 4
Stage of Construction/Operations: Full Build-Out Operations
Description: Construction complete and full build-out operations
Timing: 6+ years from the start of construction
Approximate Years[1]: 2024+
Throughput Capacity: Up to 44 MMTPY[2]

		Full Build-Out Operations	
		Project Component	Activity
—	—	Number of Trains	Arrival of coal by rail: • Up to 44 MMTPY throughput capacity • Average of 240 unit trains arriving and departing monthly
—	—	Number of Vessels	Transfer of coal to ship: • Up to 44 MMTPY throughput capacity • Total average of 70 ships loaded monthly (80% Panamax, 20% Handymax)
—	—	Number of Employees	• 135 employees
—	—	Rail Loop	• Arrival and departure tracks, with 1 operating turnaround track • Eight storage tracks would allow trains to travel directly onto the site from the Reynolds Lead • Two rail cars at unloading station inside an enclosed facility; both would be rotated at the same time for discharge of material • Hopper to feed coal onto conveyor 2 at a nominal rate of 7,500 metric tons per hour
—	—	Stockyard	• Four parallel stockpile pads (hold approximately 1,500,000 metric tons of coal) and 5 berms, located inside the rail loop • Stockyard would cover an area of approximately 75 acres • Served by up to 4 rail-mounted stackers and up to 4 bucket wheel reclaimers, each with associated conveyors • Pads would vary in length from 2,200 feet to 2,500 feet and hold from 360,000 metric tons to 400,000 metric tons each • Coal would be stacked up to a height of approximately 85 feet above the pads

[1] Assumes that construction begins 2018
[2] MMTPY = million metric tons per year

Millennium Bulk Terminals—Longview
Coal Export Terminal Stages of Construction and Operations

TABLE 4
Stage of Construction/Operations: Full Build-Out Operations
Description: Construction complete and full build-out operations
Timing: 6+ years from the start of construction
Approximate Years[1]: 2024+
Throughput Capacity: Up to 44 MMTPY[2]

		Full Build-Out Operations	
		Project Component	Activity
			• Stockyard would be graded to allow water to drain and be collected for treatment and reuse
—	—	Conveyors, Transfer Towers, and Buffer Bins	• Conveyors would transport coal from railcar unloading to the stockpile and stockpile to the shiploader • Conveyors would be enclosed except where required to feed to or receive from stacking, reclaiming, or shiploading equipment • Stockyard and ship loading conveyors would be open • Buffer bins would provide storage capacity during the shiploading process • Once unloaded, coal would be stockpiled or loaded directly onto ships • Stockpiled coal would be reclaimed for shiploading
—	—	Dock 2	• 1,400 feet long and varying in width from approximately 100 feet up to 130 feet • Dredging required to provide berthing access
—	—	Dock 3	• 900 feet long, with a width of approximately 100 feet • Dredging would be required to provide berthing access
—	—	Trestle	• Access to Docks 2 and 3 would be provided by a single trestle approximately 800 feet long and varying in width from approximately 35 feet on the northern end and up to 60 feet on the southern end

Millennium Bulk Terminals—Longview
Coal Export Terminal Stages of Construction and Operations

TABLE 4
Stage of Construction/Operations: Full Build-Out Operations
Description: Construction complete and full build-out operations
Timing: 6+ years from the start of construction
Approximate Years[1]: 2024+
Throughput Capacity: Up to 44 MMTPY[2]

		Full Build-Out Operations	
		Project Component	Activity
—	—	Shiploaders	• Each dock would be served by its own shiploader to load ships at the 2 docks
—	—	Rail Cars/Trains	• Total of 8 storage tracks and 1 operating track • The 1 operating track installed as part of start-up operations would service full build-out operations • 90 additional unit trains per month, increasing the overall number of trains to an average of 240 unit trains arriving and departing monthly
—	—	Rail Car Unloading	• The Stage 1 tandem rotary unloader would service full build-out operations • No additional unloading equipment would be required • The rapid discharge (bottom) tandem railcar unloader installed for Stage 1 Start-Up Operations would remain operable and be used during maintenance of the tandem rotary unloader

Millennium Bulk Terminals—Longview
Coal Export Terminal Stages of Construction and Operations

TABLE 4
Stage of Construction/Operations: Full Build-Out Operations
Description: Construction complete and full build-out operations
Timing: 6+ years from the start of construction
Approximate Years[1]: 2024+
Throughput Capacity: Up to 44 MMTPY[2]

		Full Build-Out Operations	
		Project Component	Activity
—	—	Conveyor Systems	• Conveyors would transport coal from railcar unloading area to the stockyard, and from the stockyard to the shiploader • Conveyors would be enclosed except where required to feed onto or reclaim from stockpiles or onto the shiploaders • When unloading rail cars, the conveyors from rail car unloading to the stockyard would operate • When loading ships, the conveyors from the stockyard to the shiploaders would operate • Rail car unloading and ship loading would at times occur both independently and simultaneously • Conveyors would operate approximately 80% of the time
—	—	Stockpiling	• Total of up to 4 stackers • Each stacker would stockpile coal at an average rate of 7,500 metric tons per hour onto 2 additional longitudinal stockpiles with a total storage capacity of up to 1.5 million metric tons
—	—	Reclaiming	• Total of up to 4 reclaimers • Each would reclaim coal from the stockpile to the shiploading system, with an average capacity of 6,500 metric tons per hour
—	—	Shiploading (Docks 2 and 3)	• Total of 2 traveling shiploaders, 1 on each dock • Each shiploader would have an average rated capacity of 6,500 metric tons per hour

Millennium Bulk Terminals—Longview
Coal Export Terminal Stages of Construction and Operations

TABLE 4
Stage of Construction/Operations: Full Build-Out Operations
Description: Construction complete and full build-out operations
Timing: 6+ years from the start of construction
Approximate Years[1]: 2024+
Throughput Capacity: Up to 44 MMTPY[2]

		Full Build-Out Operations	
		Project Component	Activity
—	—	Shipping	• Up to 30 additional ships, for a total average of 70 ships per month (80% Panamax, 20% Handymax) would be loaded
—	—	Ship Bunkering and Crew Supplies	• These activities would not be allowed or provided for at the dock
—	—	Mobile Equipment	• Equipment needed to maintain the terminal would include: o wheel loaders o dozers o cranes o forklifts o trucks o welders o pumps and other similar equipment

Appendix B

Coal Export Terminal Design Features

Appendix B
Coal Export Terminal Design Features

Table B-1 provides a summary of detailed design features for the coal export terminal provided by the Applicant.

Table B-1. Applicant-Provided Coal Export Terminal Design Features

Topic or Environmental Element	Description	Project Design Features
Design Life of Coal Export Terminal	Reduce the need to replace major equipment, reducing additional construction impacts	Design life for the various components is: • Major Equipment Structures (shiploader, stacker, reclaimer, rail car rotary dumper): 30 years • Mechanical Components (reducers, bearings, pumps. etc.): 80,000 hours • Structural (storage building, conveyors, marine): 50 years • Marine Fender Systems: 25 years
		Achieving the design service life for the above components requires regular maintenance and inspection to identify any deterioration, wear and tear, or damage, and the undertaking of repairs of identified items. In addition to regular inspection and maintenance, it is anticipated that all plant and equipment will require periodic major refurbishment to reinstate protective coating systems and upgrade control/electrical systems.
Applicable Codes, Standards, and Agencies	Applicable codes, standards, and agency oversight are anticipated to reduce or eliminate many potential impacts that could otherwise occur	**Agencies** Equipment shall comply with the present environmental requirements as specified by the following agencies: • Cowlitz County • City of Longview • Washington State Department of Ecology (Ecology) • U.S. Environmental Protection Agency, Region 10 (EPA) • Southwest Clean Air Agency • U.S. Army Corps of Engineers (Corps) • U.S. Fish and Wildlife Service (USFWS)

Topic or Environmental Element	Description	Project Design Features
		• National Oceanic and Atmospheric Administration (NOAA Fisheries) • Washington Department of Fish and Wildlife (WDFW) • Washington State Department of Transportation (WSDOT)
		• **Codes and Standards** • ASTM: American Society for Testing and Materials • ASME: American Society of Mechanical Engineers • ANSI: American National Standards Institute • AGMA: American Gear Manufacturer's Association • NFPA: National Fluid Power Association and National Fire Protection Association • JIC: Joint Industry Conference • SAE: Society of Automotive Engineers • AREMA: The American Railway Engineering and Maintenance-of-Way Association • AASHTO: American Association of State Highway and Transportation Officials • FUS: Fire Underwriters Survey, 1999 Edition • AISC: Steel Construction Manual, 13th Edition • AWS: American Welding Society • AWS A5.X: Arc Welding Electrodes and Fluxes (Various Standards) • ANSI / AISC 360-05: Specification for Structural Steel Buildings (Allowable Stress Design) • 80552-design criteria-rep-0901 (2).docx Page 4 80528 : Rev B : October 27, 2010 • A6 / A6M-09: General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling • ASTM A529 / A529M: High-Strength Carbon-Manganese Steel of Structural Quality • ASTM A123 / A123M: Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products • AASHTO HB-17: Standard Specifications for Highway Bridges, 17th Edition

Topic or Environmental Element	Description	Project Design Features
		• ASCE 7-05: Minimum Design Loads for Buildings and Other Structures • AISC 360-05: Steel Construction Manual • ACI 318-08: Building Code Requirements for Structural Concrete • ASCE 8-02: Design of Cold-Formed Stainless Steel Members • ASTM A615 / A615M-09b: Deformed and Plain Billet-Steel Bars for Concrete Reinforcement • ASTM A1023 / A1023M: Stranded Carbon Steel Wire Ropes for General Purpose • ASME B20.1: Safety Standard for Conveyors and Related Equipment • CEMA: Conveyor Equipment Manufacturers Association; Belt Conveyors for Bulk Materials • ISO R773/4: International Standards Organization, Recommendations for Keys and Key Seats • MSHA: US Department of Labor, Mine Safety and Health Administration, C.F.R. 30, Part 18.65; Fire Resistance of Conveyor Belting • SSPC Standards: Steel Structures Painting Council – Painting Manual Volumes I and II • ASTM A53: Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless • ASTM A325: Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength • ASTM A307: Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength • ASTM A504: Standard Specification for Wrought Carbon Steel Wheels • IBC: International Building Code and Washington State Amendments • MOTEMS: Marine Oil Terminal Engineering and Maintenance Standards • OSHA: Occupational Safety and Health Act • WISHA: Washington Industrial Safety and Health Act

Topic or Environmental Element	Description	Project Design Features
		• API 650: Welded Steel Tanks for Oil Storage • NEMA: National Electrical Manufacturers Association • MPTA: Mechanical Power Transmission Association • NFPA 70: National Electrical Code • NFPA 70E: Standard for Electrical Safety in the Workplace • ICEA: Insulated Cable Engineers Association • IES: Illumination Engineering Society • ISA: International Society of Automation • ISO: International Organization for Standardization • NEC: National Electrical Code • NESC: National Electrical Safety Code • UL: Underwriters Laboratories • CoV's (USA) Electrical Code • IEEE: Institute of Electrical and Electronic Engineers • FEM: Fédération Européenne de la Manutention, Section II, Document 2 131/2 132, Rules for the Design of Mobile Equipment for Continuous Handling of Bulk Materials • ISO / 5049-1: Mobile Equipment for Continuous Handling of Bulk Materials, Part 1 – Rules for the Design of Steel Structures
Aesthetics, Light, and Glare	**Operation –** Prevent potential spillage of light off of project site	• Typical industrial lighting would be provided and installed in a manner so as to prevent light and glare from spilling off of the area • Night lighting would be restricted to the minimum required for operational and safety requirements and would be directed away from roads and sensitive viewpoints, where practicable • Light shields would be used to limit the spill of lighting where practicable • Project lighting would be directed downward to minimize off-site light spill
Air Quality	**Construction –** Prevent creation of dust and wind-borne soil erosion	• Demolition activities would be carried out in accordance with the best management practices listed in the Stormwater Manual for Western Washington. These practices include, but are not limited to:

Topic or Environmental Element	Description	Project Design Features
		• **BMP C105:** Stabilized Construction Entrance / Exit – stabilized entrance and exit would be installed and maintained through the duration of demolition, site preparation, preloading and construction
	Construction – Reduce or eliminate the potential tracking of soils off site	• **BMP C106**: Wheel Wash – would be used if the stabilized construction entrance/exit is not preventing sediment from being tracked off site
	Operation – Reduce or eliminate the potential for dust and soil erosion from internal roadways	• All regularly used roads accessing the buildings and facilities within the site will be sealed with asphalt pavement, other roads will be gravel
		• All sealed roads would be frequently and routinely swept to collect airborne dust
		• Vehicle access to unsealed areas would be controlled to limit airborne dust
	Operation – Reduce or eliminate potential for coal dust during unloading and loading	• The equipment design would incorporate features to minimize dust emissions to the air that could otherwise occur from the use of loaded rail cars, the use of transfer equipment to unload rail cars, the use of conveyors to transfer product, stockpiling of product and the use of equipment to load ships. The design of the terminal incorporates best available practices for control of dynamic and fugitive dust. The design of the terminal would allow for the safe operation and safe maintenance of the plant and equipment using current best available control technologies, and in compliance with the latest OSHA and NFPA requirements.
		• Industrial water would be used for process water and fire protection; process water uses include dust control, stockpile sprays, washdown and cleanup
	Operation – Dust control measures included in design for rail car unloaders	• At the unloading station, two rail cars at a time would be positioned inside the fully enclosed metal clad unloading building where they would be rotated to discharge the material from the cars into a large hopper • A water spray system and/or dry fog system would be used at the tandem rotary unloader to control dust • Unloaders within an enclosed building

Topic or Environmental Element	Description	Project Design Features
		• Dry fog system • Water spray system
	Operation – Dust control measures included in design for conveyors	• All belt conveyors would be fully enclosed, except for the stockyard and shiploading conveyors, which would be open due to their operational requirements • Water spray system would be used at the conveyor transfer points • Enclosed conveyors and transfer points (except for stockyard and shiploader conveyors) • Regular washdown and under-belt plating • Monitoring status of conveyors • Washdown collection and containment • Cleanup using high pressure water • Belt cleaners to control and collect any dust
	Operation – Dust control measures included in design for transfer points	• All transfer points would be fully enclosed, except for the stockyard and shiploader conveyors which would be open due to their operational requirements • Water spray system would be used at the conveyor transfer points • Skirting would be installed at transfer points to control coal flow and spillage • Transfer chutes enclosed in transfer towers • Soft flow transfer chutes • Inlet and outlet curtains and side skirts • Water spray systems • Regular washdown and under-belt plating • Washdown water collection and containment • Cleanup using high pressure water • Enclosed transfer towers
	Operation – Dust-control measures included in design for stockpiles	• A stockpile spray system would be installed to wet the coal surface to control fugitive dust • The stockpile spray system would be controlled by an on-site and remote weather monitoring system to ensure system is operating before wind may arrive at the site

Topic or Environmental Element	Description	Project Design Features
		• Control of drop height from stackers • Cleanup along conveyor berms and sealed roadways • Vehicle access would be limited in the stockpile areas
	Operation – Dust control measures included in design for shiploading	• Vertically adjustable loading boom to decrease drop height • Enclosed shiploader boom • Enclosed loading spout • Discharge below deck of vessel • Cleanup and washdown by high pressure water • Capture and containment of washdown water
	Operation – Diesel particulate matter from trains. Based on information contained in our Air Quality Resource Report, the emission of diesel particulate matter from trains at the site and on the short line were included in the air quality modeling. The estimate impact would be minimal (less than a 1% increase) over countywide 2011 concentrations, and countywide emissions would be expected to remain below the federal and state standards. Because there would be minor or minimal impacts which would not create an exceedance of any standards, no mitigation is required.	• Emissions from rail are mobile and would be spread along the short line, making it unlikely that a localized concentration would exceed 1-hour standards. There are no local or state regulations for diesel particulate emissions from mobile sources.
Aquatic Habitat, general	Shading design considerations for Docks 2 and 3 and the associated trestle	• Trestle has been designed to be long and narrow, and at a height above ordinary high water to minimize shading in shallow water areas. From shore, the trestle would measure 24 feet in width for 700 feet, and 51 feet in width for the final 150 feet. The top of the deck would be at +22 feet Columbia River Datum (CRD) and the bottom of the deck at +19.5 feet CRD. Therefore, the bottom of the deck would be more than 8 feet above ordinary high water.
	Structural design considerations for Docks 2 and 3 and the associated trestle	• Trestle has been designed to minimize overall impact in shallow water areas, including impacts on habitat connectivity along the shoreline • Docks 2 and 3 will be located entirely in deep water habitat to locate structure and terminal activities away from shallow water areas

Topic or Environmental Element	Description	Project Design Features
	Dredging design considerations for Docks 2 and 3 and the associated trestle	• The berthing area will be located at depths that are currently at least -20 feet CRD to avoid habitat conversion from shallow to deep during dredging • Location of the berthing area in deep water closer to the navigation channel will minimize the scope of future maintenance dredging
	General habitat-related design considerations for Docks 2 and 3 and the associated trestle	• Flow lane disposal (initial and maintenance dredging) will be used to keep dredged materials in aquatic areas, maintaining sediment transport processes and aquatic habitats in the lower Columbia River
		• Project lighting will be directed downward or at structures, and will incorporate shielding to avoid spillage of light into aquatic areas
		• The end of the shiploading boom will include a pinpoint light source that will be aimed straight down into the ship hold area, avoiding a broader beam that could cause light spillage
		• Pile caps will be used to minimize opportunities for piscivorous birds to perch
Aquatic Species	**Construction –** General	• The Applicant has developed a series of activity-specific work windows that are designed to minimize specific impact mechanisms as they affect individual species (or populations within those species) of concern • These proposed work windows are protective of the species of concern while providing feasible construction periods for the in-water portion of the Proposed Action over a 2-year schedule
Aquatic Species (includes federally-listed species)	**Construction -** General (regulatory consideration)	• Timing restrictions specifying that in-water construction must occur when species of concern (i.e., salmonids, eulachon, green sturgeon) are absent or present in very low numbers in the adjacent waterbody would be strictly observed. All timing restrictions that may be established by WDFW, the Corps, NOAA Fisheries, or USFWS would be strictly observed (Corps permit and Hydraulic Project Approval
Earth	**Construction –** Reduce the potential for soil erosion	• **BMP C107:** Construction Road/Parking Area Stabilization - roads, parking areas, and other onsite vehicle transportation

Topic or Environmental Element	Description	Project Design Features
		routes would be stabilized to reduce erosion caused by construction traffic or runoff
	Construction – Minimize impacts of disposal of dredge materials	• Dredging would use in-river flow lane disposal;
		• Dredged material that meets environmental standards may be used to construct habitat mitigation sites
		• Should relevant conditions allow, dredge materials may be disposed of upland for preloading the stockpile area
	Operation – Reduce or eliminate the potential for dust and soil erosion from internal roadways	• All regularly used roads accessing the buildings and facilities within the site will be sealed with asphalt pavement, other roads will be gravel
Noise	**Operation –** General	• Operational noise levels at all noise receivers are anticipated to be below both Class A EDNA and Class C EDNA receiver limits, with the exception of the ST5 location. Day and nighttime noise levels at ST5 are compliant with the Class C EDNA receiver limits.
	Operation – Noise control measures to limit sound of rail car unloading	• Rail car unloading would be within an enclosed building • Track lubricators would be installed to control rail and wheel noise
	Operation – Noise control measures to limit sound from conveyors	• Incorporation of "quiet conveyor technologies" (i.e., quiet drives, quiet idlers, and controlled idler harmonics) • Engineered startup and travel alarms • Cladding is proposed to enclose the transfer tower structures and several conveyors to reduce operational noise levels
	Operation – Noise control measures to limit sound from stackers and reclaimers in stockyard	• Incorporation of "quiet technology" • Engineered travel and startup alarms
	Operation – Noise control measures to limit sound from shiploading	• Incorporation of "quiet technology" • Engineered travel and startup alarms
Pubic Services and Utilities	**Construction and Operation –** Maintain or provide for pedestrian, vehicular, and rail access to Bonneville Power Administration (BPA)-owned property	• BPA will be granted access to the Proposed Action's access road, which will be located around the outside of the rail loop. In addition, the Applicant will construct an access road between the access road for the Proposed Action and the BPA yard, and install a gate to the BPA yard at a location to be determined by BPA.

Topic or Environmental Element	Description	Project Design Features
	Operation – Fire Protection – Provide adequate access for fire vehicles in the case of an emergency	• Longitudinal grades of roads will not exceed 10% where fire access is anticipated
	Operation – Fire Protection – Provide for adequate fire flow in case of an emergency	• The firewater system will be fed from on-site wells, filling a 4-hour storage tank as recommended by the National Fire Protection Association 307 "Standard for the Construction of Fire Protection of Marine Terminals, Piers, and Wharves" Chapter 7
Sustainability, Public Utilities, Hazardous Materials	**Construction –** Disposal of demolished structures in a manner to reduce or eliminate impacts	• The materials from the demolition would be recycled (on site or off site) or disposed of at an appropriate waste facility
Traffic and Transportation	**Construction –** Reduce or eliminate potential land use and transportation impacts from off-site construction parking	• Parking would be provided for construction workers
	Operation – Reduce impacts from on- and off-site transportation	• Access to the site is from an existing arterial (Industrial Way). The main access includes an elevated bridge crossing the rail corridor. An additional elevated bridge would be provided to cross the railway and access the easterly yard area.
		• Access to the site would be from Industrial Way (SR 432) either using the existing entrance at the intersection with 38th Avenue or via a new entrance located west of the existing entrance
		• Access to the site would be from a single entry point, with authorized vehicles being able to enter the train unloading and storage facilities, or the marine facilities
	Operation – On-Site Roadways – Provide for safe vehicular movements on site	• The on-site roadways would cross above the rail tracks (grade-separated) to allow for safe and efficient access to the site
		• Overpasses shall be constructed to WSDOT standards for roads and bridges and allow for maximum emergency vehicle loadings
		• Access roads would be designed to allow two-way traffic for standard vehicles
		• All regularly used roads accessing the buildings and facilities within the site would be sealed with asphalt pavement; other roads would be gravel
		• Paved road cross sections will be sloped at 2% minimum

Topic or Environmental Element	Description	Project Design Features
		• Longitudinal grades of roads will not exceed 10% where fire access is anticipated
		• All roadways, parking areas, and paving shall be designed and constructed to WSDOT standards
		• Paving shall be designed to accommodate the appropriate mobile equipment loadings for the particular use of that portion of the site, and asphalt or concrete pavement shall have a design life of 20 years
		• Surfacing of unpaved areas shall be used in order to control soil erosion by wind and water, be able to support pedestrians and light vehicles, including 4-wheel drive vehicles and repress undesirable vegetation
	Operation – Rail – Provide adequate space on site to allow rail to move off the main line and Reynolds Spur to eliminate potential conflicts with other rail users	• Design includes a rail loop with arrival and departure tracks to include one operating track (turn around track) and eight rail storage tracks
Water Quality, Aquatic Habitat, Aquatic Species	**Construction –** Pile Removal and Installation	• A decision was made to use 36-inch rather than 48-inch piles to reduce impacts on aquatic habitat • Vibratory pile-driving/removal will be used to the extent possible to minimize potential injurious or disturbing noise levels on fish species
Water Quality, Aquatic Habitat, Aquatic Species	**Construction –** Dredging and Flow Lane Disposal	• Flow lane (i.e., in-water) disposal of dredged material is proposed as an avoidance/minimization measure. Flow lane disposal keeps the dredged material in aquatic areas and maintains sediment transport processes that build and maintain dynamic aquatic habitats. This is consistent with the Corps' requirements and practices in the Columbia River.

Topic or Environmental Element	Description	Project Design Features
Water Quality	**Construction and Operation –** Reduce or eliminate potential impacts on water quality	• Stormwater, sediment, and erosion control best management practices would be installed in accordance with the Stormwater Management Manual for Western Washington and Cowlitz County. Water quality management would be performed in accordance with the requirements of the NPDES Industrial Stormwater General Permit. The site's NPDES Stormwater Pollution Prevention Plan will provide details of the site best management practices.
	Construction – Reduce or eliminate the potential for sediment to enter surface or	• Stormwater, sediment, and erosion control best management practices would be installed in accordance with the Stormwater Management Manual for Western Washington and Cowlitz County
		• Construction would be performed in accordance with the requirements of the NPDES Construction Stormwater General Permit
		• Drainage systems would be designed such that runoff within the construction site would be collected and treated as necessary before reuse or discharge
		• The treatment facility could treat surface runoff and process/construction waters with capacity to store the water for reuse
		• Treatment could be as required to meet reuse quality or Ecology requirements for off-site discharge
		• **BMP C200:** Interceptor Dike and Swale – A ridge of compacted soil, or a ridge with an upslope swale, would be provided at the top or base of a disturbed slope or along the perimeter of a disturbed construction area to convey stormwater. The dike and/or swale would be used to intercept the runoff from unprotected areas and direct it to areas where erosion can be controlled. This would be used to prevent storm runoff from

Topic or Environmental Element	Description	Project Design Features
		entering the work area or sediment-laden runoff from leaving the construction site.
	Construction – Reduce or eliminate the potential for pollutants to reach surface or	• **BMP C153:** Material Delivery, Storage and Containment – Would be used to prevent, reduce, or eliminate the discharge of pollutants to the stormwater system or watercourses from material delivery and storage • Storage of hazardous materials on site would be minimized to the extent feasible • Materials would be stored in a designated area, and secondary containment would be installed where needed • Refueling would occur in designated areas with appropriate spill control measures • Typical construction best management practices for working over, in, and near water will be applied, including checking equipment for leaks and other problems that could result in discharge of petroleum-based products, hydraulic fluid, or other material to the Columbia River.
		• **BMP C154:** Concrete Washout Area – Concrete waste and washout waters would be either carried out off site or disposed of in a designated facility on site designed to contain the waste and washout water
	Operation – Control of surface drainage to prevent erosion and release of pollutants	• Based on site grading and drainage areas, five water quality ponds (wetponds) will treat runoff based on Ecology requirements. In general, the ponds are sized for treatment of the volume and flow from the water quality design storm event (72% of the 2-year storm). Additional storage will be provided within the coal storage area so that the runoff is always treated within the stockyard area, even for larger storm events. The ponds are designed to provide settlement as the water passes through. Subsequently, water released from these ponds will be conveyed downstream to the existing pump station outfall 002A, which discharges into the Columbia River via an existing 30-inch steel pressure line. The ponds that treat runoff from the coal stockyard would harvest water for circulation around the site for multiple uses, including dust control measures.

Topic or Environmental Element	Description	Project Design Features
		• The Ecology criteria will be used as the basis of design, which uses the Western Washington Hydrology Model (WWHM) computer simulation for sizing. Because of the flat nature of the site, some surface ponding will occur in both the yard areas and open conveyance systems. The piped conveyance systems will be sloped at 0.50% minimum.
		• The surface drainage system and features will be designed and constructed in accordance with the Ecology Stormwater Management Manual for Western Washington
		• Based on site grading and drainage areas, water quality ponds (wetponds) will treat runoff based on Ecology requirements
		• The Ecology criteria will be used as the basis of the design, which uses the WWHM computer simulation for sizing
		• The pads and berms would be made of low permeability engineered material. The use of low permeability engineered materials for formation of the pads and berms would control water from entering subsurface soil or groundwater
		• The stockyard and berms would be graded to allow the water to drain and be collected for treatment and reuse
	Operation – Drainage and treatment of water to prevent on- and off-site impacts on water quality	Drainage systems would be designed such that runoff within the terminal site would be collected for treatment before reuse or discharge. Best management practices that would be part of the terminal design to maximize the availability of water for reuse include: • Enclosed conveyor galleries • Enclosed rotary unloader building and transfer towers • Washdown collection sumps for settlement of sediment • Regular cleanout and maintenance of washdown collection sumps • Containment around refueling, fuel storage, chemicals and hazardous materials • Oil/water separators on drainage systems and vehicle washdown pad

Topic or Environmental Element	Description	Project Design Features
		• Requirement that all employees and contractors receive training, appropriate to their work activities, in the site best management practices • Design of docks to contain spillage, with rainfall runoff and washdown water contained and pumped to the upland water treatment facilities • Design of system to collect and treat all runoff and washdown water either to be reused on site (dust suppression, washdown water or fire system needs) or to be discharged off site
		• The wharf area would be sealed to capture the washdown water and stormwater runoff, preventing it from flowing to the Columbia River without treatment
		• The water treatment facility would be designed to treat all surface runoff and process water with capacity to store the water for reuse. Treatment would be as required to meet reuse quality or Ecology requirements for off-site discharge
		• Additional water storage would be provided within the coal storage area in the event of a larger storm event. Water volumes exceeding the demands for reuse would be discharged off site via the existing outfall 002A into the Columbia River. Water released off site would be treated and would meet the requirements of Ecology and required discharge permits
	Operation – Design of water system to provide fire and health protection	The water system shall be designed and constructed in accordance with or consideration of the latest edition of the following standards, where applicable: • International Building Code • National Fire Protection Association • Washington State Department of Ecology Stormwater Design Manual • United States Department of Health – Occupational Safety and Health Standards • Washington State Department of Health • In the event of conflict between codes and technical specification, the requirements will be reviewed and a decision made on the action to be implemented with the agency of jurisdiction

Topic or Environmental Element	Description	Project Design Features
Water Supply	Use of industrial water to limit impacts on public water supply	• Industrial water supply needed for process and fire protection would be supplied from treated water from the water treatment facility. During times of dry weather, water would be supplemented from on-site wells.
		• A storage reservoir would be included to provide water required for normal operations and water required to be on reserve for fire demand, should the need arise.
		• A separate pumping system would be provided for the fire system, where appropriate, to provide redundancy and to supply additional pressure where needed