

This chapter describes the alternatives development process and the three alternatives evaluated in this Draft Environmental Impact Statement (Draft EIS): On-Site Alternative, Off-Site Alternative, and No-Action Alternative. Pursuant to the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA,¹ Section 1502.14, a federal agency is required to examine all reasonable alternatives to the Applicant's proposal as part of an EIS process. In determining the scope of alternatives to be considered, the emphasis must be on what is "reasonable" rather than on whether the Applicant supports the alternatives. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the Applicant. This chapter presents the process the U.S. Army Corps of Engineers (Corps) used to screen and develop alternatives with Millennium Bulk Terminals—Longview, LLC (Applicant).

3.1 Alternatives Development Process

This section provides a brief overview of the alternatives development process, including the Applicant's screening framework for potential sites, identification of potential alternative sites, alternative sites considered but not carried forward, alternative sites carried forward for evaluation in the EIS, and alternative design layouts for the On-Site Alternative. Appendix D, *Alternatives Development Process*, provides a detailed description of the screening process, and Appendix E, *Alternatives Design Layouts*, identifies the alternative design layouts considered for the proposed export terminal.

The Applicant has identified significant Asian market demand for low-sulfur coal from the western United States (e.g., coal from the Powder River Basin in Montana and Wyoming). According to the Applicant, existing west coast coal terminals do not have sufficient capacity to serve this demand; thus, the Applicant proposes to build an export terminal to receive and transport coal. For such a terminal to be economically viable, the cost of transporting the coal must be low enough that the delivered cost of the coal is competitive in the Asian energy markets with coal from other international supply regions.

The Applicant has determined an economically viable coal export terminal must have a throughput capacity of 40 to 50 million metric tons per year (MMTPY) of coal, must be capable of loading vessels in the Panamax class² or larger, and must include at least two berths, each with an appropriately sized shiploader. The terminal must also be accessible by rail on the land side for economical

¹ 40 CFR Parts 1500-1508

² Ships in this class are 60,000 to 100,000 deadweight metric tons and require deep-water access of at least 42 feet below water surface.

transport of coal to the terminal.³ A throughput capacity of 40 to 50 MMTPY is necessary to take advantage of economies of scale needed to efficiently transfer coal from rail to ship and compete with other international supply regions, such as Australia and Indonesia. Because Australia and Indonesia are the world's largest coal exporters to the Pacific Basin, the Applicant reviewed the throughput capacities for Australian and Indonesian coal export terminals to help determine a viable throughput capacity for the proposed export terminal (Chapter 2, Section 2.2.3.2, *Throughput Capacity*). A configuration with two berths, each with a shiploader capable of loading Panamax-class vessels, is needed to provide the necessary throughput capacity. A single shiploader, sized to efficiently load Panamax-class vessels and paired with a single ship berth, could only support a throughput of 20 MMTPY.

3.1.1 Site Screening

The Applicant developed a two-tier framework to screen potential sites for the export terminal. First-tier screening criteria helped identify general locations for a new export terminal, while second-tier screening used more specific criteria to evaluate sites meeting first-tier criteria.

The following sections describe the criteria and summarize the outcome of the first-tier and second-tier screening. The Corps and its consultant reviewed the Applicant's screening criteria and screening approach. Based on the alternative screening process, two action alternatives (the On-Site Alternative and Off-Site Alternative) and a No-Action Alternative were analyzed in this Draft EIS.

3.1.1.1 First-Tier Screening

The Applicant identified four first-tier criteria to screen potentially suitable export terminal sites in terms of general location. These four criteria are described in more detail in Appendix D, *Alternatives Development Process*.

- **Criterion 1:** Ensure rail transportation costs from the Powder River Basin would be economically viable. The Applicant determined moving coal by rail is the only cost-effective method to transport bulk products to market. An export terminal should be where rail transportation costs are minimized.
- **Criterion 2:** Ensure trans-Pacific shipping costs to Asia remain economically viable. In addition to rail transportation costs, the Applicant determined trans-Pacific shipping costs are also an important factor in the cost of coal deliveries to Asian markets.
- **Criterion 3:** Accommodate Panamax-class vessels. This vessel size class is commonly used for overseas transport of coal and any economically viable coal export terminal needs to have the ability to load this vessel size class (Chapter 2, Section 2.2.3.2, *Throughput Capacity*). This

³ Other methods for transporting coal from the mine to a terminal site (e.g., trucking) were not considered as feasible alternatives because they would be cost prohibitive. Methods of transporting coal from the location it is mined to its final destination depend on the amount of coal being transported and the distance. Over relatively short distances to a terminal, smaller quantities of coal can generally be transported by truck, but only trains are feasible for transporting large quantities of coal over long distances. Trains are more fuel efficient and cost-effective than trucks for long-distance transport. Furthermore, nearly all coal transported by rail is carried by unit trains, which are freight trains made up of rail cars carrying a single commodity, all of which have the same origin and same destination, without being split up or stored en route. Unit trains operate around the clock, use dedicated equipment, generally follow direct shipping routes, and have lower costs per unit shipped than nonunit trains.

criterion considered the adequacy of a potential terminal site to accommodate Panamax-class vessels in terms of navigational access and moorage. A potential terminal site would not be able to accommodate Panamax-class vessels if the adjacent waterbody or navigation channel is too shallow.

- **Criterion 4:** Landowner willing to lease or sell property for a coal export terminal in 2010, when site selection occurred.⁴ Because the Applicant does not have condemnation authority to acquire property, prospective sites owned by unwilling sellers were considered to be unavailable to the Applicant.

After identifying the first-tier screening criteria, the Applicant, under the direction of the Corps, evaluated numerous potential export terminal sites from southern California to northwestern Washington. This evaluation does not extend to potential sites located in Canada and Mexico because neither the federal Clean Water Act nor the National Environmental Policy Act (NEPA) apply to proposed actions or action alternatives occurring in locations outside the United States. Because the Applicant has identified coal markets in Asia, and the purpose and need for the proposed export terminal is focused on exporting coal mined in western states to Asian countries, alternative sites along the Gulf of Mexico or the East Coast were also not considered due to prohibitive rail and ocean vessel transportation costs (Chapter 2, Section 2.2.3.3, *Transportation Costs*). The West Coast of the United States is the logical geographic area for an applicant seeking to export Powder River Basin coal to Asia.

A total of 37 West Coast sites were identified (four sites in California, 23 sites in Washington, and 10 sites in Oregon) and screened using the above criteria. The following summarizes the first-tier screening results.

Screening Results

Four sites were identified in California, none of which were carried forward to the second-tier analysis. The distance to transport Powder River Basin coal to Longview, Washington is approximately 1,307 miles, whereas the distance to transport Powder River Basin coal to Sacramento, California and Long Beach, California is approximately 1,650 miles and 1,781 miles, respectively (BNSF Railway Company 2016). The Applicant determined the cost to transport Powder River Basin coal to California would be greater than the cost of transporting Powder River Basin coal to Washington or Oregon due to the longer distance by rail to California (Criterion 1) (rail transportation costs are discussed in Chapter 2, Section 2.2.3.3, *Transportation Costs*). In addition, the potential California sites are located farther from Asian markets than potential sites in Oregon and Washington (Criterion 2). Therefore, the Applicant determined the sites in California were not economically viable for siting a new export terminal for Powder River Basin coal.

A total of 33 sites were identified in Washington (23 sites) and Oregon (10 sites) by the Applicant and third-party review. Sites considered in Washington and Oregon are located at varying distances from the Powder River Basin but are all a similar distance from ports in Asia. Transportation costs related to moving coal by ship are similar among sites, but costs for rail varies somewhat. However, these difference were not sufficient to eliminate any of the sites based on transportation cost (Criterion 1 and Criterion 2).

⁴ As part of the Corps' third-party review of the Applicant's screening process, this criterion was further defined as a property available to sell or lease and not having a competing proposal for similar scope and scale.

Sites accessed through navigation channels not accommodating Panamax-class vessels were screened out because it would not be reasonable to expect the Applicant to deepen and maintain a public navigation channel⁵ (Criterion 3). Other sites were screened out if the owner was not willing to lease or sell a site for a coal export terminal (Criterion 4).

The Applicant's first-tier screening identified ten sites (all in Washington and Oregon) meeting the four first-tier selection criteria. These sites were carried forward to second-tier screening. The third-party review completed by the Corps and its consultant evaluated the Applicant's first tier screening and determined two sites screened out by the Applicant should also be carried forward into second tier screening:

- Port of Kalama, Kalama, Washington
- Columbia Gateway Facility, Port of Vancouver, Vancouver, Washington

In summary, 37 prospective West Coast terminal sites were identified and subjected to first-tier screening. As a result of the Applicant's first-tier screening and a third-party review, 12 sites met the selection criteria and were carried forward into the second-tier analysis. Table 3-1 lists the 37 sites evaluated in the first-tier screening and the conclusion of the screening.

Table 3-1. Sites Evaluated in the First-Tier Screening

Site	Location	Conclusion of First-Tier Screening
Washington Sites		
Cherry Point	Bellingham, WA	Eliminated
Port of Anacortes	Anacortes, WA	Eliminated
Shell & Tesoro Refinery Dock	Anacortes, WA	Carried forward
Dupont	Dupont, WA	Carried forward
Port of Everett	Everett, WA	Carried forward
Port of Tacoma	Tacoma, WA	Eliminated
Port of Seattle	Seattle, WA	Eliminated
Port of Olympia	Olympia, WA	Eliminated
Blair Waterway, Puyallup Tribe	Tacoma, WA	Eliminated
Austin Point, Port of Woodland	Woodland, WA	Carried forward
Barlow Point	Longview, WA	Carried forward
Northwest Alloys	Longview, WA	Carried forward
Port of Grays Harbor	Aberdeen, WA	Eliminated
Port of Kalama	Kalama, WA	Carried forward
Terminal 2, Port of Longview	Longview, WA	Carried forward
Columbia Gateway Facility, Port of Vancouver	Vancouver, WA	Carried forward
Terminal 5, Port of Vancouver	Vancouver, WA	Eliminated
Kinder Morgan Terminal, Port of Vancouver	Vancouver, WA	Carried forward

⁵ Sites accessed through channels that do not accommodate Panamax-class vessels were considered unsuitable because the Applicant is not willing to assume responsibility for deepening and maintaining a navigation channel due to the logistical and regulatory hurdles deepening a navigation channel would present, in addition to the significant and likely prohibitive additional expense it would entail.

Site	Location	Conclusion of First-Tier Screening
Wasser-Winters	Kelso, WA	Eliminated
Alcoa Intalco Works	Ferndale, WA	Eliminated
Conoco Phillips	Ferndale, WA	Eliminated
Port of Port Angeles	Port Angeles, WA	Eliminated
Port of Brownsville	Brownsville, WA	Eliminated
Oregon Sites		
Hunt Mill Point	Bradwood Landing, OR	Carried forward
Port of Portland	Portland, OR	Eliminated
Port of Westward, Port of St. Helens	Columbia County, OR	Eliminated
Tongue Point, Port of Astoria	Astoria, OR	Carried forward
Troutdale Sundial Sand & Gravel Site	Troutdale, OR	Eliminated
Port of Coos Bay	Coos Bay, OR	Eliminated
Port of The Dalles	The Dalles, OR	Eliminated
Port of Morrow	Boardman, OR	Eliminated
Port of Umatilla	Umatilla, OR	Eliminated
Port of Newport	Newport, OR	Eliminated
California Sites		
Port of Richmond	Richmond, CA	Eliminated
Port of Sacramento	Sacramento, CA	Eliminated
Port of Stockton	Stockton, CA	Eliminated
Port of Long Beach	Long Beach, CA	Eliminated

3.1.1.2 Second-Tier Screening

The Applicant identified the following four criteria for the second-tier screening.

- **Criterion A:** Minimum site size of 175 acres to accommodate proposed throughput. According to the Applicant, to accommodate the proposed throughput, the site would need sufficient space for one operating track and eight loop tracks for unit train parking. To build loop tracks with appropriate curve radii, a suitable site must be at least 175 acres.
- **Criterion B:** Existing rail access or a location close enough to an existing rail line to make constructing an access line practicable.
- **Criterion C:** Site topography flat enough to allow on-site rail operation and connection to the main rail line. Railroad grades must be flat enough to allow trains adequate traction to move unit trains; sites with large differences in elevation over short distances cannot be accessed by rail.
- **Criterion D:** Site configuration accommodating intact unit trains. Maintaining unit trains intact throughout their travel within an export terminal allows efficient movement and handling of trains, which contributes to a more cost-effective and economically viable terminal.

Appendix D, *Alternatives Development Process*, describes these four criteria in more detail. Table 3-2 identifies the results from the second-tier screening. Sites meeting the criteria are shaded.

Table 3-2. Second-Tier Screening Results

Site	Met all Criteria?	Criteria Not Met
Shell & Tesoro Refinery Dock Anacortes, WA	No	Criterion D: Site configuration would not accommodate intact unit trains
DuPont, DuPont, WA	No	Criterion C: Unsuitable site topography
Port of Everett, Everett, WA	No	Criterion A: Inadequate site size
Austin Point, Woodland, WA	No	Criterion A: Inadequate site size
Barlow Point, ^a Longview, WA	Yes	Met all criteria
Northwest Alloys, ^a Longview, WA	Yes	Met all criteria
Port of Longview, Terminal 2 Longview, WA	No	Criterion A: Inadequate site size
Kinder-Morgan Terminal Port of Vancouver Vancouver, WA	No	Criterion A: Inadequate site size
Hunt Mill Point Bradwood Landing Clatsop County, OR	No	Criterion C: Unsuitable site topography Criterion D: Site configuration could not accommodate intact unit trains
Tongue Point Astoria, OR	No	Criterion A: Inadequate site size
Port of Kalama, Kalama, WA	No	Criterion A: Inadequate site size
Columbia Gateway Facility Port of Vancouver, Vancouver, WA	No	Criterion B: New rail infrastructure would be required (currently no rail access to the site) ^b

Notes:

^a Shading indicates the site was carried forward as a potential alternative site for the proposed export terminal.

^b As of June 2014, ownership was not resolved to allow for a rail extension to the Columbia Gateway Facility. A parcel within the potential rail corridor to this site was owned by a third party opposed to terminal development.

Of the 12 sites evaluated using the second-tier screening criteria, only two met the four criteria and were carried forward for further consideration in a NEPA alternatives analysis:

- Northwest Alloys, Longview (the site currently leased by the Applicant and referred to as the *On-Site Alternative* in this Draft EIS).
- Barlow Point, Longview (referred to as the *Off-Site Alternative* in this Draft EIS).

3.2 Alternative Considered but Rejected

The Applicant identified several alternative design layouts for the proposed export terminal (Appendix E, *Alternative Design Layouts*), including different concepts for design layout, rail loop design, and dock designs with the ultimate goal of achieving a throughput of 40 to 50 MMTYPY of coal. Certain design elements, such as the stockpile size and number of berths and shiploaders, were not considered in the design alternatives because they are required to achieve the proposed throughput for an economically viable export terminal, as discussed in Section 3.1.1, *Site Screening*.

The Applicant established a framework to screen alternative design layouts and design features at the location of the On-Site Alternative. More information about the screening process and evaluation criteria can be found in Appendix D: *Alternatives Development Process*.

The Applicant considered 11 alternative design layouts for the On-Site Alternative. A brief description of each alternative layout is listed below.

- **Alternative 1a.** The proposed export terminal would encompass approximately 190 acres, including two Bonneville Power Administration (BPA)-owned parcels.
- **Alternative 1b.** The proposed export terminal would encompass approximately 175 acres, including two BPA-owned parcels, but would use a slightly different configuration compared to Alternative 1a (i.e., an access road would cross the larger of the two BPA parcels, rather than the rail loop).
- **Alternative 2.** The proposed export terminal would encompass approximately 175 acres, including one BPA-owned parcel.
- **Alternative 3.** The proposed export terminal would encompass approximately 175 acres and would not include any BPA-owned parcels.
- **Alternative 4.** The proposed export terminal would use Applicant property on both the north and south sides of Industrial Way.
- **Alternative 5.** The proposed export terminal would use dual-quadrant shiploaders on the dock and locate the rail car unloading station on the west side of the property.
- **Alternative 6.** The proposed export terminal would use the existing Dock 1.
- **Alternative 7.** The proposed export terminal would include two dual-quadrant shiploaders with a rail loop that completely encompasses the site.
- **Alternative 8.** The proposed export terminal would use two new quadrant shiploaders with the rail loop for the unloading of coal located west of the proposed storage area.
- **Alternative 9.** The proposed export terminal would include two traveling shiploaders on two docks with a stockyard extending into the existing operational facilities.
- **Alternative 10.** The proposed export terminal would use two new traveling shiploaders on two docks with the rail loop for unloading located west of the proposed storage area.

The screening framework was applied to the 11 alternative design layouts for the On-Site Alternative. As a result of this screening process, Alternatives 1a, 1b, 2, and 3 were advanced for additional review and Alternatives 4 through 9 were dismissed from further consideration. Table 3-3 summarizes the findings of the alternative design layouts screening process. A “✓” in the column denotes the alternative met the criterion.

Table 3-3. Results of Alternative Design Layouts Screening

Alternative	Purpose and Need Criterion	Design Criteria							
	A	B	C	D	E	F	G	H	
Alternative 1a	✓	✓	✓	✓	✓	✓	✓	✓	
Alternative 1b	✓	✓	✓	✓	✓	✓	✓	✓	
Alternative 2	✓	✓	✓	✓	✓	✓	✓	✓	
Alternative 3	✓			✓	✓	✓	✓	✓	
Alternative 4	✓	✓			✓	✓	✓		
Alternative 5	✓				✓	✓	✓	✓	
Alternative 6					✓	✓	✓	✓	
Alternative 7	✓				✓	✓	✓		
Alternative 8			✓		✓	✓	✓		
Alternative 9	✓				✓	✓	✓	✓	
Alternative 10	✓	✓		✓	✓				

Notes:

✓ = Alternative meets design criterion.

Criterion A – Ability to support a throughput of 40 to 50 MMTY.

Criterion B – Minimize impacts on the footprint of the existing and future bulk terminal facilities.

Criterion C – Minimize impacts on the operation of the existing and future bulk terminal facilities.

Criterion D – Ability to store a “days’ worth” of unit trains on site.

Criterion E – Avoid impact on Bonneville Power Administration (BPA) substation operation.

Criterion F – Avoid impact on Consolidated Diking Improvement District (CDID) levee.

Criterion G – Ability to provide access for emergency vehicles onto site.

Criterion H – Avoid affecting on-site closed landfill.

3.3 Alternative Design Layouts Selected for Review

The following sections describe alternative design layouts that were advanced after screening (Alternatives 1a, 1b, 2, and 3).

- **Alternative 1a:** Layout including two BPA-owned parcels of land (proposed export terminal).
- **Alternative 1b:** Layout including two BPA-owned parcels of land (an alternative layout to the proposed export terminal).
- **Alternative 2:** Layout including one BPA-owned parcel of land.
- **Alternative 3:** Layout excluding BPA-owned parcels of land.

The process to evaluate alternative design layouts resulted in the selection of the project design for the On-Site Alternative evaluated in this Draft EIS: Alternative 1a, identified above as the proposed export terminal. In making this selection, the Applicant considered the throughput efficiencies of each layout and the potential future impact on areas used for the existing bulk product terminal. But for the uncertainty of being able to acquire or lease land from BPA, Alternative 1a is preferred by the Applicant because it allows for a more efficient layout of the stockpile area and rail loop compared to the other alternative designs while not adversely impacting existing bulk product terminal facilities.

Appendix E, *Alternative Design Layouts* presents the Applicant's design layouts considered for review, alternative design layouts advanced after screening, and alternative design layouts considered but not advanced after screening. The Applicant considered eight additional layouts before selecting the four alternatives described above. Criteria for assessing the feasibility of these layouts included the following.

- Ability to support a throughput of 40 to 50 MMTPY.
- Minimize impacts on the footprint of the existing and future bulk terminal facilities.
- Minimize impacts on the operation of the existing and future bulk terminal facilities.
- Ability to store a "days' worth" of unit trains on site.
- Avoid impact on Bonneville Power Administration substation operation.
- Avoid impact on Consolidated Diking Improvement Ditch (CDID) #1 levee.
- Ability to provide access for emergency vehicles.
- Avoid impacting on-site closed landfill.

Layouts considered included different dock configurations (including use of the existing dock), alternative track layouts (including layouts that would include property north of Industrial Way), and different shiploaders. After considering the potential environmental impacts of the various layouts, the Applicant determined the most efficient layouts were those selected as Alternatives 1a, 1b, 2 and 3. Although it is uncertain whether the Applicant can acquire or lease land from BPA, Alternative 1a is the Applicant's preferred alternative. This alternative provides a layout which can provide throughput efficiencies and an efficient dock configuration. This alternative also eliminates or reduces the impacts on the land and facilities used by the existing bulk product terminal.

As a result of the two tiered screening process, two site locations and designs were analyzed in this Draft EIS: the On Site Alternative and the Off Site Alternative. The following sections describe these alternatives, as well as the No-Action Alternative.

3.4 On-Site Alternative

Lighthouse Resources, Inc. owns Millennium Bulk Terminals—Longview, LLC. Prior to the formation of Millennium Bulk Terminals—Longview, LLC in January 2011, Lighthouse Resources, Inc.⁶ began looking for a suitable West Coast location to construct an export terminal. In 2011, a 540-acre site in Cowlitz County, Washington, on the Columbia River was selected as the most suitable location to construct and operate a terminal and the site was leased from the landowner, Northwest Alloys. For purposes of this EIS, the selected site is referred to as the On-Site Alternative. The site was referred to as "Northwest Alloys, Longview, WA" in the alternatives development process (Section 3.1).

The 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 onto ocean-going vessels for transport via the Columbia River and Pacific Ocean to overseas markets

⁶ In April 2015, Ambre Energy North America, Inc. announced 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).

in Asia. The 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 subbituminous coal to warrant the development of an 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 competitive in the international marketplace, and to provide a diversification of coal supply to those importing countries.

3.4.1 Project Location

The On-Site Alternative is located adjacent to the Columbia River in unincorporated Cowlitz County, Washington near Longview, Washington. Under the On-Site Alternative, the Applicant would develop an export terminal on 190 acres, primarily within an existing 540-acre site currently leased by the Applicant.⁷ 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* in this Draft EIS. Figure 3-1 illustrates the project area and vicinity for the On-Site Alternative and the Applicant's leased area.

Cowlitz County Land Use and Development Code (CCC) Title 18 designates the site for heavy industrial use. As illustrated in Figure 3-1, 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 (BMP) facility⁸ within the Applicant's leased area to the west, and Industrial Way (State Route 432) and the Reynolds Lead to the north. Existing industrial uses within and adjacent to the project area are described in Section 3.4.2, *Existing Facilities and Operations*.

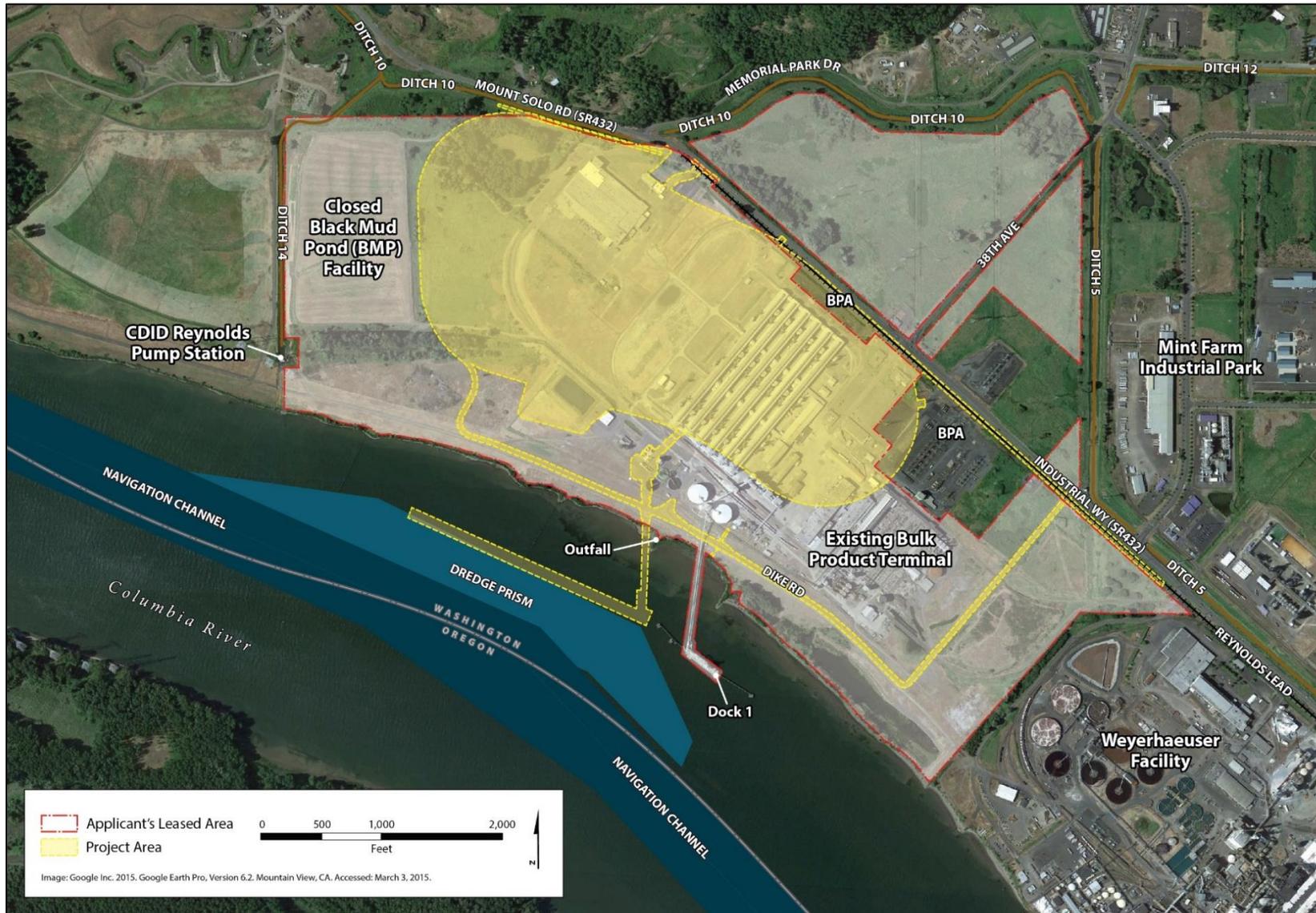
Vehicular access to the project area is provided via Industrial Way. The Reynolds Lead and BNSF Spur—both jointly owned by BNSF Railway Company (BNSF) and Union Pacific Railroad (UP), and operated by the Longview Switching Company (LVSU)⁹—provide rail access to the project area from a point on the BNSF main line (Longview Junction, Washington) located to the east in Kelso, Washington. The BNSF Spur branches off from the BNSF mainline, and the Reynolds Lead branches off from the BNSF Spur. 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.

⁷ The project area is also located on portions of two parcels currently owned by Bonneville Power Administration, totaling 5.7 acres, and a portion of the Reynolds Lead jointly owned by BNSF and UP.

⁸ More information about the closed Black Mud Pond (BMP) facility can be found in Chapter 4, Section 4.6, *Hazardous Materials*, of this Draft EIS.

⁹ The Longview Switching Company (LVSU) is jointly owned by BNSF Railway Company (BNSF) and Union Pacific Railroad (UP).

Figure 3-1. On-Site Alternative Project Area



3.4.2 Existing Facilities and Operations

3.4.2.1 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 site's facility 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 facility assets, including the buildings, structures, and equipment, and entered into a long-term land lease. In 2005, Alcoa transferred ownership of the land from the Reynolds Metals Company to Northwest Alloys, a separate wholly owned subsidiary of Alcoa, Inc. Northwest Alloys also has an existing Aquatic Lands Lease No. 20-B09222 from the Washington State Department of Natural Resources (DNR) 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 for the 540-acre site.

The 190-acre project area was separated out of the Applicant's 540-acre leased area through a lot boundary adjustment to develop a separate lease for the proposed 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 540-acre leased area outside the 190-acre project 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.

3.4.2.2 Existing Bulk Product Terminal

The Applicant currently operates, and would continue to operate, a bulk product terminal within the 540-acre leased area separate from and independent of the proposed export terminal at the On-Site Alternative location (Figure 3-1). The bulk product terminal includes buildings and equipment used for various activities, as described below. The terminal is served by Industrial Way and the Reynolds Lead. Vessels access the terminal from an existing dock (Dock 1) located in 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.

Rail Facilities

The existing bulk product terminal is located on the Reynolds Lead, an existing rail line connecting several industries via the BNSF Spur to the BNSF main line rail network approximately 7 miles away at Longview Junction. The Applicant has operating permits to load alumina and unload coal by rail.

Storage

Storage of alumina and coal at the existing bulk product terminal occurs in storage tanks (silos). Six vertical storage tanks store bulk material near the southern portion of the facility. Four additional storage tanks used during previous smelter operations are also located at the bulk product terminal. In addition, there are miscellaneous storage tanks on site, including fuel tanks.

Conveyors and Transfer Stations

A conveyor system extends 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 emissions during the transfer of bulk materials.

Vessel Facilities

The bulk product terminal includes Dock 1, which is used to unload alumina and other commodities from vessels and to berth other ships. The dock includes an overwater approach trestle and equipment to unload bulk materials from vessels. Current vessel traffic at the dock is approximately six ships per year.

Buildings and Employee-Support Facilities

The bulk product terminal includes a former cable plant building, an approximately 270,000-square-foot facility with ancillary structures occupying the northwestern corner of the area. 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.

3.4.2.3 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. Table 3-4 summarizes current activities and the means for transporting the commodities to and from the existing bulk product terminal.¹⁰

Portions of the project area are undergoing hazardous waste cleanup caused by former aluminum smelting operations (Washington State Department of Ecology 2014). The cleanup activities and involved hazardous materials are described in Chapter 4, Section 4.6, *Hazardous Materials*, and its corresponding appendix.

¹⁰ The transport of alumina has been put on hold because Alcoa announced in November 2015 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 in this Draft EIS to describe the alumina transport as it will exist when the Wenatchee facility restarts.

Table 3-4. Current Activities and Transport Operations at the Existing Bulk Product Terminal

Commodity	Activity	Transport Operations		
		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 ^a	Vessels deliver alumina to Dock 1; alumina is stored on site and then shipped to Chelan County, Washington by train	N/A (vessels deliver alumina; trains transport)	60 rail cars per week (12 rail cars per day, 5 days per week)	6 vessels per year

Notes:

^a The transport of alumina has been put on hold; operations related to alumina describe the alumina transport as it will exist when the transport resumes.

N/A = not applicable

3.4.3 Proposed Facilities, Construction, and Operations

As described in the Section 3.4.2, *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 On-Site Alternative.

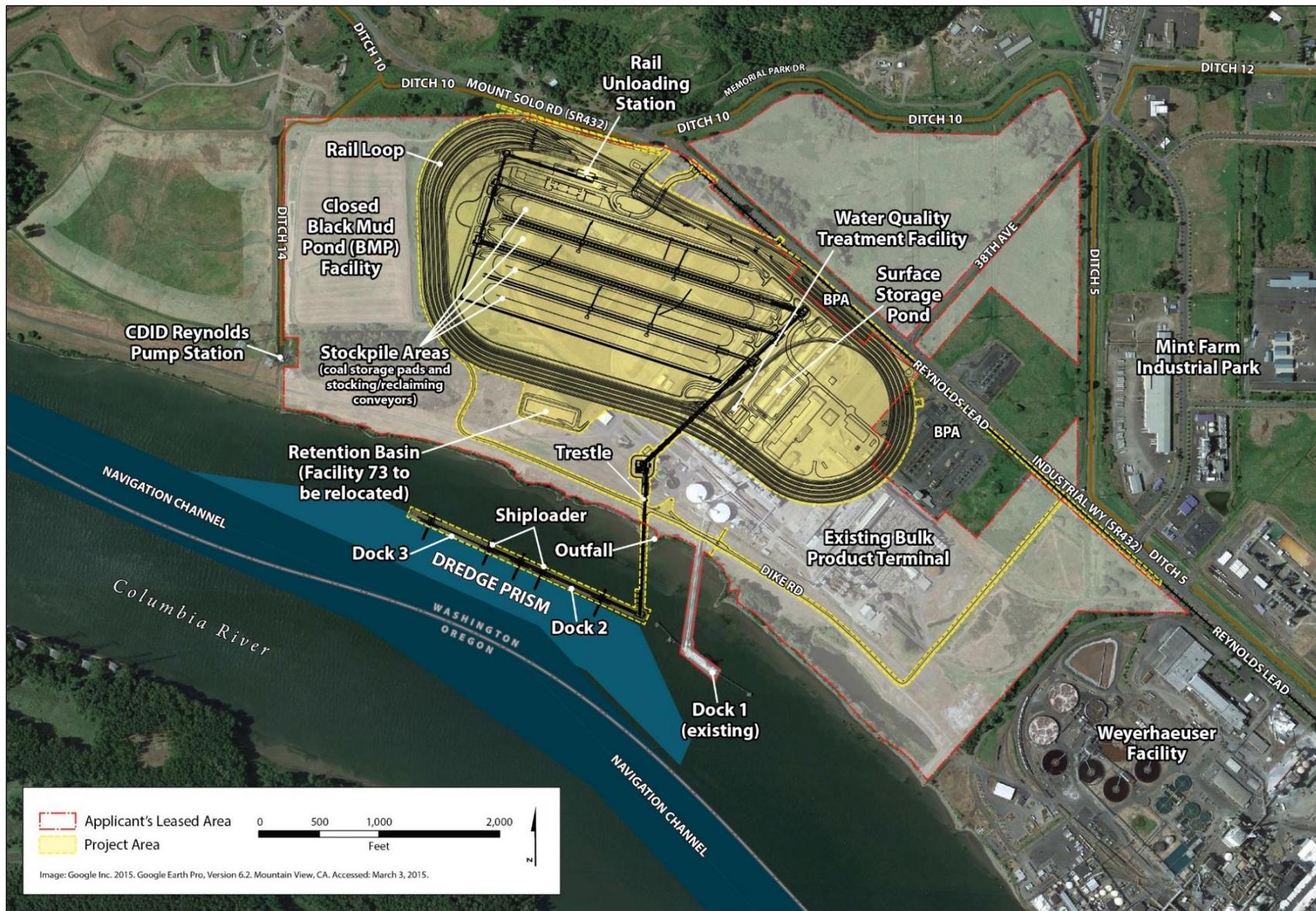
Under the On-Site Alternative, a separate export terminal for the shipment of coal would be developed on 190 acres (project area), primarily within the Applicant's leased area and adjacent to the existing bulk product terminal (Figure 3-1).

BNSF or UP 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. 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. Figure 3-2 illustrates the On-Site Alternative.

Construction of the On-Site Alternative would involve clearing and grading, and construction of rail and coal handling facilities including eight 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 preloading¹¹ of the stockpile area. Approximately 2.1 million cubic yards of preloading material (i.e., rock, dirt, concrete, or Columbia River dredge spoils, if allowed by the Corps, would be placed on the stockpile area to a height of approximately 35 feet.

¹¹ Preloading is the process of consolidation or compression of soils to support the weight of coal stockpiles and associated infrastructure and prevent excessive future settlement.

Figure 3-2. On-Site Alternative



Wick drains¹² 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 On-Site Alternative would involve constructing a trestle and two docks, with one shiploader on each dock. The trestle and docks would require 622 36-inch piles, 603 of which would be installed waterward of the ordinary high water mark (OHWM)¹³ of the Columbia River. Most piling would be driven to a depth of approximately 140 to 165 feet below the mudline, using vibratory pile-drivers and then using 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.

The On-Site Alternative could have a maximum annual throughput capacity of up to 44 million metric tons per year of coal.¹⁴ As illustrated in Figure 3-3, the On-Site Alternative 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 two new docks. Figure 3-3 illustrates export terminal operations for unloading, stockpiling, transferring, and shipping coal.

Vehicles would access the project area from Industrial Way. Export terminal operations would occur 24 hours per day, 7 days per week. The On-Site Alternative would be designed for a minimum 30-year period of operation.

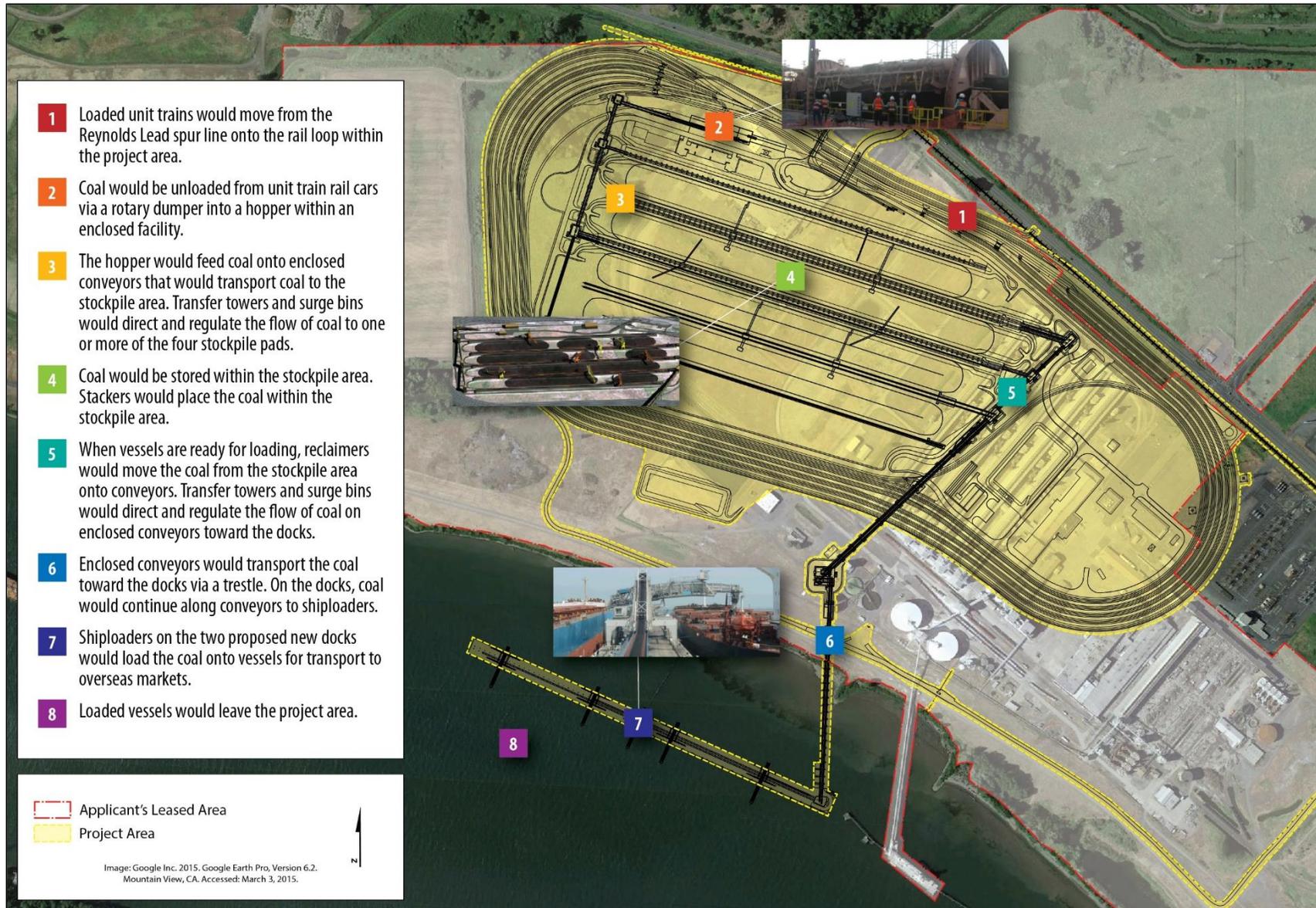
The Applicant anticipates construction would begin in 2018 and be completed by 2024. For the purpose of the analyses in this document, it is assumed the On-Site Alternative would be fully operational at maximum capacity by 2028.

¹² 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.

¹³ Per Corps regulations at 33 CFR 328.3(c), the term ordinary high water mark means “that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.”

¹⁴ 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 3-3. Export Terminal Operations



3.4.3.1 Proposed Facilities

The proposed export terminal would include rail facilities; a coal stockpile area; conveyors, transfer stations, and buffer bins; vessel facilities; and other supporting facilities. The following provides a summary of these proposed facilities, based on the project design and project description provided by the Applicant.

Rail Facilities

The Reynolds Lead would be modified within the project area to accommodate unit train access to and from the export terminal. Unit trains would move from the Reynolds Lead into a new rail loop system where the trains would be directed to an unloading station (Figure 3-3). The rail loop would have one operating track and eight loop tracks to provide storage for trains and access to the Reynolds Lead. Grade-separated roadways above the rail tracks would be provided to allow for safe and efficient access to and within the project area.

A small portion of the rail loop would be constructed on two parcels currently owned by BPA (Figure 3-2). 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 On-Site Alternative 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 Corps publishes the NEPA Final EIS for the export terminal.

Unit trains would enter the 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 innermost rail loop and would then be able to exit the export terminal.

Unloading facilities would be constructed to unload coal trains. Two rail cars would be simultaneously positioned inside a fully enclosed, metal-clad building (Appendix F, *Export Terminal Engineering Plan Sheets*, Sheet 5). The unloading facilities would contain equipment to rotate rail cars and discharge the coal from the rail cars into a large hopper (Figure 3-4). The equipment used to rotate the rail cars and discharge coal is called a tandem rotary unloader.¹⁵

¹⁵ "Tandem" refers to the arrangement of two rail cars, one in front of the other, in the unloader.

Figure 3-4. Typical Tandem Rotary Unloader

Source: Millennium Bulk Terminals—Longview 2013

As the tandem rotary unloader rotates the rail cars and begins to unload the coal into hoppers beneath the unloader, sprayers would spray water to avoid and minimize dust dispersion within the enclosed structure. The hopper beneath the rotary unloader 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 (Appendix F, *Export Terminal Engineering Plan Sheets*, Sheets 5 through 13).

During start-up operations of the On-Site Alternative, for approximately 18 months, 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 periods when the rotary unloader is unavailable, such as during maintenance. Both unloaders would not be able to operate simultaneously.

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 3-5). 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 associated with conveyors.

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.

Figure 3-5. Representation of the Stockpile Area with Stackers and Reclaimers

Source: Millennium Bulk Terminals—Longview 2013

Water Systems

Industrial water needed for operation of the 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. Together the process and fire water demand would total approximately 6,500 gpm. Peak potable water demand would be approximately 185 gpm based on anticipated labor force at full build-out and would be provided by the City of Longview. The bulk product terminal's stormwater detention pond would be relocated (Appendix F, *Export Terminal Engineering Plan Sheets*, Sheet 2) and would store 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 supplies at the terminal.

Excess treated water would be discharged to the Columbia River at the existing outfall (Outfall 002A; refer to Chapter 5, Section 5.2 *Surface Water and Floodplains*, for more information). Process water would be used for operations, such as for dust control and sprayers at the tandem rotary unloader, along all conveyers, and at the stockpile areas, transfer towers, and surge bins. Appendix F, *Export Terminal Engineering Plan Sheets*, provides plan sheets for various project elements. 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 and all water captured would be conveyed to water treatment facilities. Excess treated water would be discharged to the Columbia River.

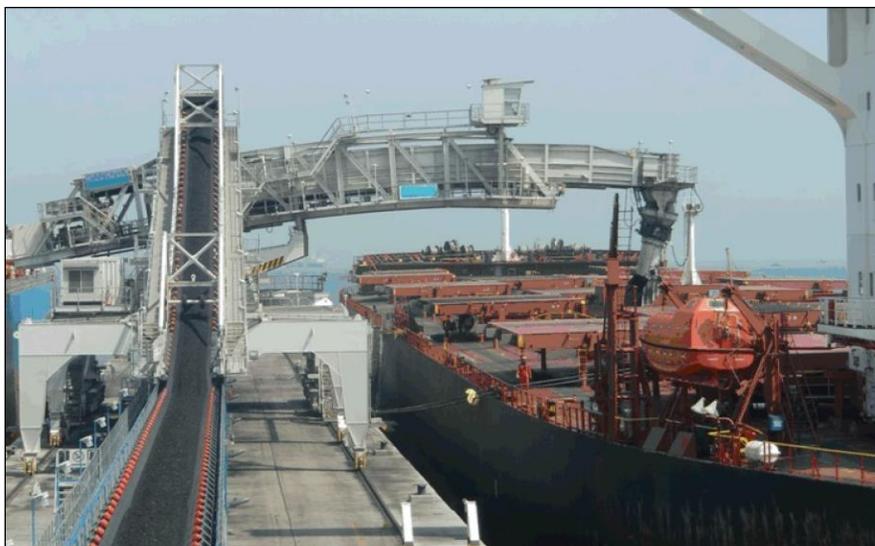
Conveyors, Transfer Stations, and Buffer Bins

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.

Vessel Facilities

The proposed Docks 2 and 3 would be constructed west (downriver) of Dock 1 (Figure 3-2). 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 3-6). 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 vessels¹⁶ and Handymax-class vessels.¹⁷ 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.

Figure 3-6. Typical Shiploader



Source: Millennium Bulk Terminals—Longview 2013

¹⁶ 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 Chapter 6, Section 6.4, *Vessel Transportation*.

¹⁷ Handymax vessels have a dwt of up to 60,000 tons with a draft of between 36 and 39 feet (Chapter 6, Section 6.4, *Vessel Transportation*).

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 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.

Dredging

Dredging of approximately 500,000 cubic yards of substrate from the 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. The sediment to be dredged would be characterized and evaluated by the Corps' regional Dredged Material Management Program (DMMP) for suitability for flow lane disposal. 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 (Washington State Department of Ecology [Ecology] and DNR) and federal agencies (Corps and U.S. Environmental Protection Agency). Periodic future maintenance dredging of the berthing area would be required; maintenance dredging would be subject to future permit actions.

Water Drainage and Treatment

Drainage systems would be designed so runoff within the 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.

Supporting Facilities

The proposed export terminal would also include the following support facilities.

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

3.4.3.2 Construction

This section describes the primary construction elements, construction staging, and construction environmental controls for the On-Site Alternative.

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 On-Site Alternative. 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 barge¹⁸ and could include suitable dredge spoils.

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

¹⁸ 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.

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.

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

This work would involve the operation of heavy machinery, cranes, and specialized rail laying equipment.

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 would involve operating heavy machinery, cranes, and specialized rail laying equipment. Once completed, trains would enter the 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 innermost rail track and would then be positioned to exit the terminal.

Trestle and Dock Construction

As discussed in Section 3.4.3.1, *Proposed Facilities*, 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 up to 622 36-inch-diameter steel pipe piles, 603 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 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.

Two existing timber pile dikes are located in the Columbia River in the areas where dredging and dock and trestle construction would occur. As part of the dredging and dock and trestle construction for the On-Site Alternative, approximately 225 linear feet of the deepest portions of these pile dikes would be removed (125 feet from the westernmost pile dike and 100 feet from the easternmost pile dike).

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.

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 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 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 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. This scenario is different from the truck alternative because the materials would be partially transported by barge. This scenario covers potential impacts related to transportation of construction materials via the river. Once off the barge, impacts associated with construction material delivery would be similar to either the truck or rail scenario, depending on which method was used for final delivery to the project area.

The Applicant would construct the terminal in two stages and anticipates 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 export terminal throughput capacity would be up to 25 million metric tons of coal 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 directly unloading 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 3-5).

Table 3-5. 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 MMTPY	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 in this Draft EIS, it is assumed the On-Site Alternative 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 export terminal throughput capacity would increase to up to 44 million metric tons of coal per year. Table 3-5 summarizes the three construction stages. Table 3-6 identifies the primary elements of the terminal to be constructed for Stage 1a, Construction and Start-Up Operations, Stage 1b, Construction and Increased Operations, and Stage 2, Construction and Full Build-Out Operations.

Appendix G, *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.

Table 3-6. 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)	<ul style="list-style-type: none"> • 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). • 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)	<ul style="list-style-type: none"> • Tandem rotary unloading facility (rotary unloader, 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)	<ul style="list-style-type: none"> • 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

3.4.3.3 Operations

On-Site Operations

Similar to construction, operation of the terminal would be implemented in two stages:

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

Table 3-7 summarizes operations by stage and component. Appendix G, *Export Terminal Stages of Construction and Operations*, provides detailed information on the operational elements associated with Stage 1 and Stage 2. Appendix H, *Export Terminal Design Features*, provides design elements of the export terminal provided by the Applicant.

Table 3-7. Operations of the Proposed Export Terminal by Stage and Component

Component	Stage 1a Start-Up Operations	Stage 1b Increased Operations	Stage 2 Full Build-Out Operations
All 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	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 per 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. 	<ul style="list-style-type: none"> • 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 per 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	<ul style="list-style-type: none"> Delivered directly from the rail cars to the shiploader by way of a rapid discharge unloading facility and interconnecting conveyors. No stockpiling of coal. 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 could be used during maintenance of tandem rotary unloader.
Conveyor Systems	<ul style="list-style-type: none"> Conveyors would transport coal directly from the rail cars to the shiploader by way of a rapid discharge unloading facility and interconnecting conveyors. 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 electrically 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) 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:			
<p>^a The Applicant anticipates construction would begin in 2018 and would be completed by 2024. For the purpose of the analysis in this Draft EIS, it is assumed the On-Site Alternative would be fully operational by 2028.</p> <p>^b According to the Applicant, proposed rail operations and export terminal design would support terminal throughput of 40 million metric tons of coal per year. The On-Site Alternative 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 can be achieved through industry process and technological improvements by 2028, the first year of assumed full operations.</p>			
MMTPY = million metric tons per year; N/A = not applicable			

Off-Site Transport

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

Rail

The 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.¹⁹

On-Site Alternative-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 (Figure 3-7). Loaded and empty BNSF trains would travel on the same route between the Powder River Basin and Pasco, Washington.

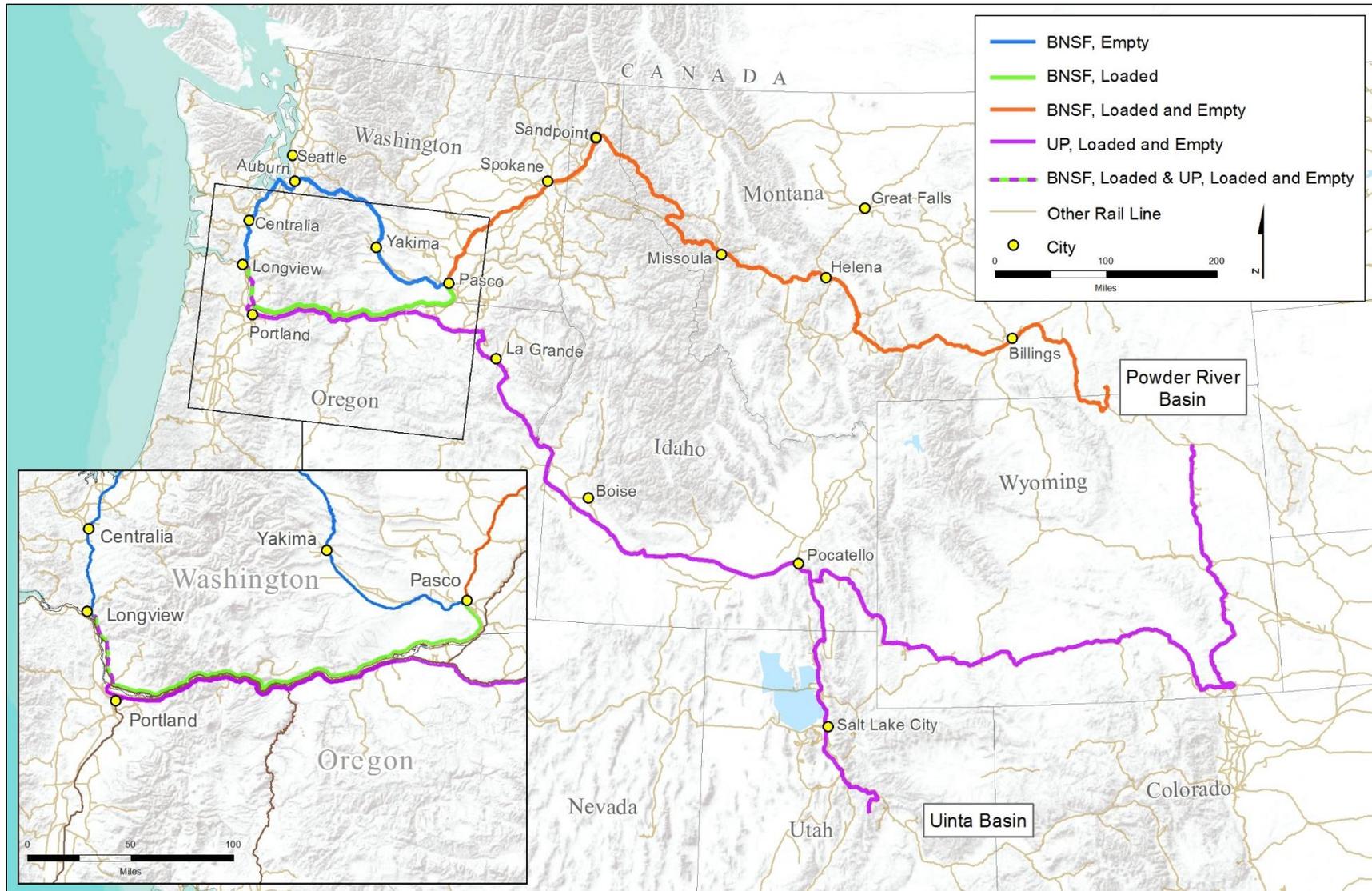
However, as volume increases on any one-line segment, BNSF could revise its operations within Washington State to distribute the traffic over existing infrastructure. Railroad companies could also expand their infrastructure on an ongoing basis based on demand. For these reasons, empty and loaded BNSF 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 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 3-7). Between Longview Junction and the project area, BNSF and UP trains would travel over the LVSW shortline/terminal railroad jointly owned and operated by BNSF and UP, which includes the BNSF Spur and the Reynolds Lead. Rail transportation is discussed in detail in Chapter 6, Section 6.1, *Rail Transportation*.

The export terminal would be served by 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 incoming (loaded) trains and 8 outgoing (empty) trains per day (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.

¹⁹ 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.

Figure 3-7. Route of Loaded and Empty Trains



Vessel

Coal would be transported by ocean-going vessels from the project area 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 Chapter 6, Section 6.4, *Vessel Transportation*. The terminal would load Panamax-class (including new Panamax-class) and Handymax-class vessels. The fleet mix is estimated to be 80% Panamax and 20% Handymax vessels. At full capacity, operating the proposed terminal would result in an average of 840 vessel trips²⁰ per year on the lower Columbia River, 2.3 vessel trips per day.

3.5 Off-Site Alternative

This section describes the project area, existing and proposed facilities, and construction and operation of the proposed export terminal under the Off-Site Alternative.

3.5.1 Project Area

Under the Off-Site Alternative, the export terminal would be built on an approximately 220-acre undeveloped site within both the City of Longview and unincorporated Cowlitz County, adjacent to the Columbia River (Figure 3-8). The area, known locally as Barlow Point, is located immediately west and downriver of the On-Site Alternative. The site is bounded by the Columbia River to the southwest, the closed BMP facility and undeveloped land to the southeast, the inactive Mount Solo Landfill to the northeast, and rural residential and agricultural lands to the northwest. The site was referred to as “Barlow Point, Longview, WA” in the alternatives development process (Section 3.1).

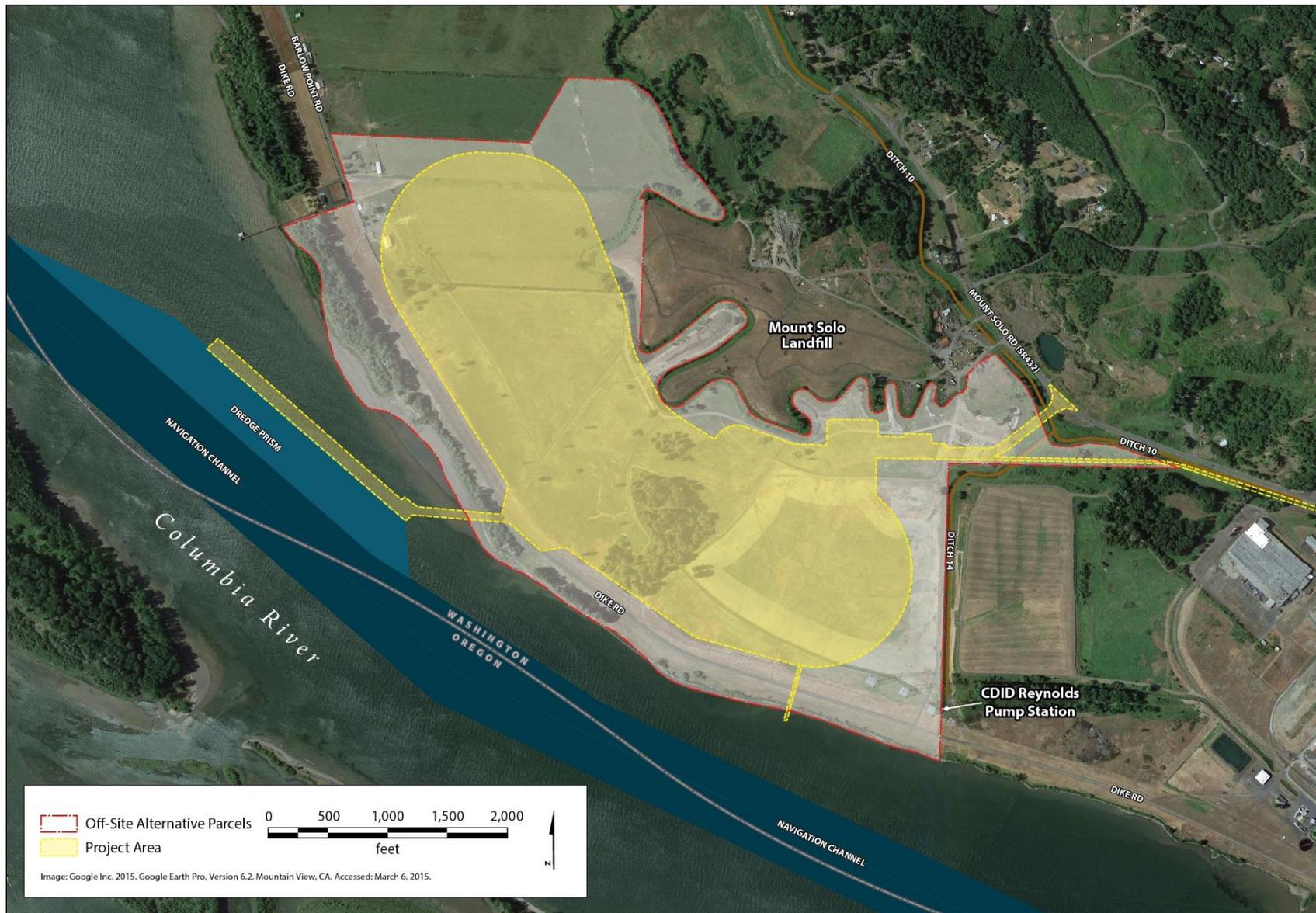
The portion of the project area within Longview city limits is owned by the Port of Longview (Port). In 2010, the Port acquired approximately 280 acres of undeveloped land from a private owner in the Barlow Point area to supplement the Port’s industrial property located approximately 4 miles upriver on the Columbia River. Longview Municipal Code designates the land owned by the Port for heavy manufacturing use. The extreme northern area of the Off-Site Alternative is within unincorporated Cowlitz County; the existing land use of this area is rural residential and agricultural. The Cowlitz County Land Use and Development Code designates this area for heavy industrial and forestry/recreational use.

3.5.2 Existing Facilities and Operations

The project area is currently undeveloped. Current and past uses of the area include agriculture, pasture, and off-road vehicle uses. Demolition of one nonresidential structure would be required, based on aerial photographs. The structure appears to be a pole building that may be used for storage of agricultural equipment and materials.

²⁰ A *vessel trip* is a round trip of two transits, one upriver transit and one downriver transit. Thus, the proposed export terminal operating at full capacity would involve 840 trips or 1680 transits between the Pacific Ocean mouth of the Columbia River and the project area.

Figure 3-8. Off-Site Alternative Project Area



3.5.3 Proposed Facilities, Construction, and Operations

Under the Off-Site Alternative, BNSF or UP trains would transport coal from the BNSF mainline at Longview Junction, Washington over the BNSF Spur and Reynolds Lead, which would need to be extended approximately 2,500 feet to the west to access the project area. Coal would be unloaded from rail cars, stockpiled and blended, and loaded by conveyor onto ocean-going vessels at two new docks (Docks A and B) on the Columbia River.

Construction of a proposed terminal under the Off-Site Alternative would be similar to that described in Section 3.4.3, *Proposed Facilities, Construction, and Operations*, for the On-Site Alternative, except for the Reynolds Lead extension. The Applicant would develop the proposed export terminal in two stages. During the first stage, a start-up facility would provide a nominal throughput capacity of approximately 5 to 10 million metric tons of coal per year. After the first stage, the terminal would be capable of a nominal throughput capacity of up to 25 million metric tons of coal. Once construction is complete, the terminal would have an annual throughput capacity of up to 44 million metric tons of coal per year.

Under the Off-Site Alternative, the export terminal would consist of the same elements as the On-Site Alternative: one operating rail track, eight rail tracks for the storage of rail cars, rail car unloading facilities, stockpile area for coal storage, conveyor and reclaiming facilities, two new docks in the Columbia River (Docks A and B), and shiploading facilities on the two docks. Approximately 50,000 cubic yards of sediment would be dredged from the Columbia River to provide access to and from the Columbia River navigation channel and for berthing at the two new docks.

Vehicles would access the project area via a new access road extending from Mount Solo Road (State Route 432) to the project area. Ships would access the project area via the Columbia River and berth at one of the two new docks. Terminal operations would occur 24 hours per day, 7 days per week. The export terminal would be designed for a minimum 30-year period of operation. Figure 3-9 illustrates the Off-Site Alternative.

3.5.3.1 Proposed Facilities

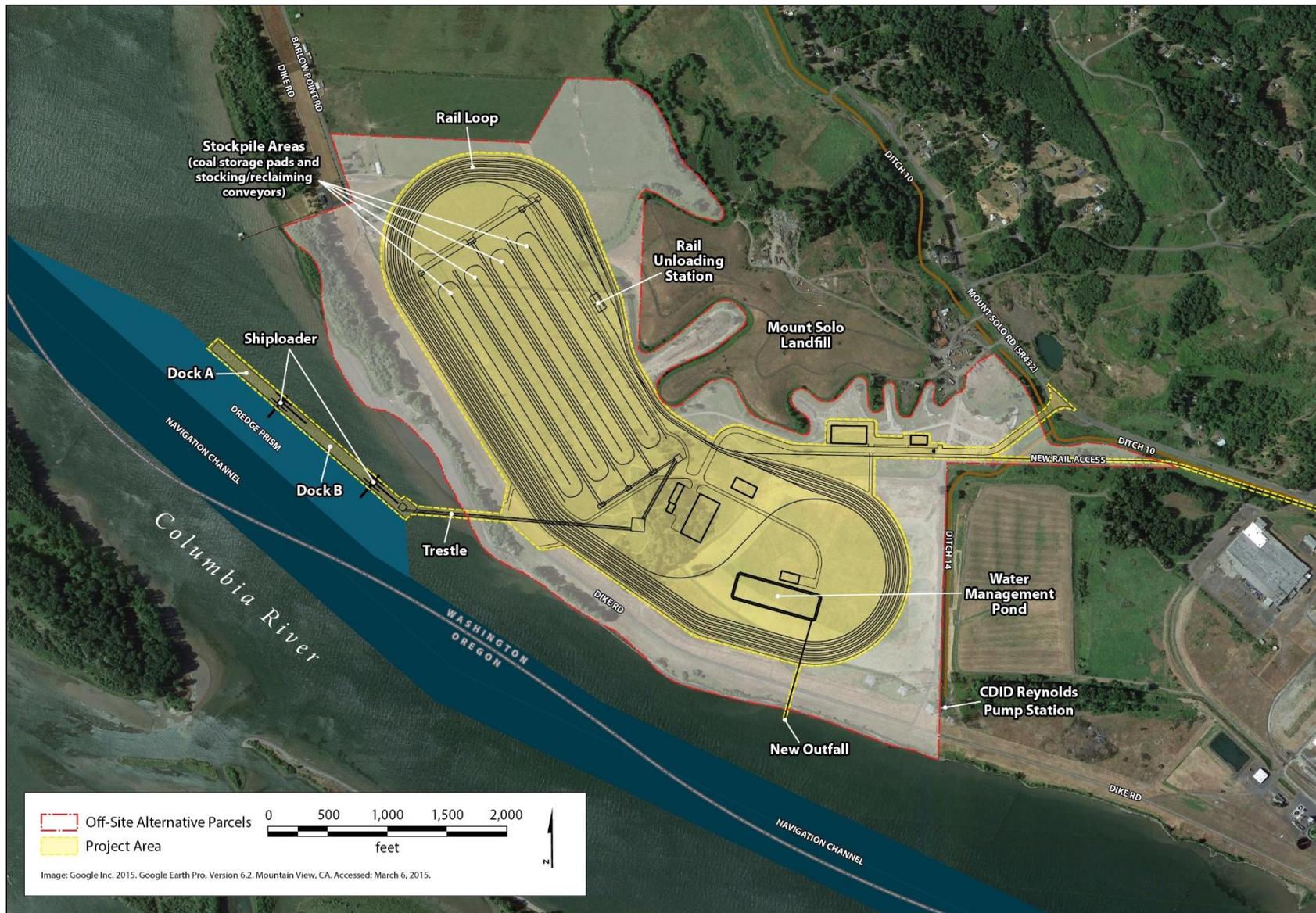
The proposed terminal would have the same facilities under both the Off-Site Alternative and On-Site Alternative, as described in Section 3.4.3, *Proposed Facilities, Construction, and Operations*.

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

Rail Facilities

The existing Reynolds Lead paralleling Industrial Way would be extended approximately 2,500 linear feet to the west to access the project area. All coal would be delivered to the export terminal by rail on unit trains via the extended Reynolds Lead.

Figure 3-9. Off-Site Alternative



Coal Stockpile Area

The stockpile area would have the same features and facilities as the On-Site Alternative, as described in Section 3.4.3, *Proposed Facilities, Construction, and Operations*. The stockpile area under the Off-Site Alternative would span approximately 72 acres.

Conveyors, Transfer Stations, and Buffer Bins

The conveyors, transfer stations, and buffer bins would be the same as those for the On-Site Alternative, as described in Section 3.4.3, *Proposed Facilities, Construction, and Operations*.

Vessel-Loading Facilities

Two new loading docks, referred to as Dock A and Dock B, would be constructed in the Columbia River. Dock A would be up to 1,400 feet long and vary in width from approximately 10 feet to 130 feet. Dock B would be up to 900 feet long and approximately 100 feet wide. Access to the docks would be provided by a single trestle that would extend approximately 638 feet from the shore. The trestle would be 24 feet wide for approximately 588 feet and 51 feet wide for the final 150 feet.

Similar to the On-Site Alternative, each dock would include a shiploader and associated loading equipment. The docks and shiploaders would be able to accommodate vessels up to post-Panamax vessel size.

Dredging

Dredging would be required to provide berthing access from the Columbia River navigation channel to Docks A and B.²¹ Sediment transport, current, and river flow studies would be performed to determine the optimum dredge prism. The sediment to be dredged would be characterized and evaluated by the Corps' DMMP for suitability for flow lane disposal.

Supporting Facilities

The Off-Site Alternative would include the same supporting facilities as the On-Site Alternative, as described in Section 3.4.3, *Proposed Facilities, Construction, and Operations*.

3.5.3.2 Construction

This section describes the primary construction elements, construction staging, and construction environmental controls for the Off-Site Alternative.

Construction Elements

This section summarizes the primary construction elements differing from the On-Site Alternative.

- Rail spur construction

²¹ The Off-Site Alternative would require less material to be dredged compared to the On-Site Alternative (which would require 500,000 cubic yards of material to be dredged) because the water depth is greater closer to the shore for the Off-Site Alternative than it is for the On-Site Alternative. Therefore, the volume of material that would need to be dredged to achieve project depth would be much less for the Off-Site Alternative compared to the On-Site Alternative.

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

Rail Spur Construction

An extension of the Reynolds Lead would be constructed approximately 2,500 feet to the west to access the project area. The extension would require importing and placing ballast rock for the rail foundations, placing railroad ties, laying steel rail lines, and installing signaling, switching equipment, and track lighting.

Demolition and Site Preparation

No demolition of existing structures would occur because the project area is currently undeveloped. Because the project area is undeveloped, site preparation would include more vegetation removal and grading than the On-Site Alternative.

To access the site, a new access road approximately 80 feet wide would be constructed that would extend from State Route 432 for approximately 0.5 mile. The access road would likely be sealed with asphalt pavement, and other roads including the perimeter road would likely be gravel.

The other Off-Site Alternative site preparation activities would be the same as the On-Site Alternative, as described in Section 3.4.3, *Proposed Facilities, Construction, and Operations*.

Preloading

Preloading activities for the Off-Site Alternative would be the same as the On-Site Alternative, as described in Section 3.4.3, *Proposed Facilities, Construction, and Operations*.

Rail Spur and Rail Loop Construction

Rail loop construction activities for the Off-Site Alternative would be the same as the On-Site Alternative, as described in Section 3.4.3, *Proposed Facilities, Construction, and Operations*.

Trestle and Dock Construction

Dredging would occur as part of the construction of Docks A and B, which would include removing approximately 50,000 cubic yards of material. Upon completion of Stage 2 construction, Docks A and B would be served by a rail-mounted shiploader, which would consist of a travelling structural steel portal, shuttle, and boom. Each shiploader would be fed coal by a dedicated conveyor.

All other elements for trestle dock construction for the Off-Site Alternative would be the same as the On-Site Alternative, as described in Section 3.4.3, *Proposed Facilities, Construction, and Operations*.

Construction Staging

Construction staging for the Off-Site Alternative would be the same as the On-Site Alternative, as described in Section 3.4.3, *Proposed Facilities, Construction, and Operations*.

Construction Environmental Controls

Construction environmental controls for the Off-Site Alternative would be the same as the On-Site Alternative, as described in Section 3.4.3, *Proposed Facilities, Construction, and Operations*. However, the demolition construction environmental controls identified would not be required because there are no structures in the project area for the Off-Site Alternative.

3.5.3.3 Operations

Terminal operation under the Off-Site Alternative would be the same as the On-Site Alternative, as described in Section 3.4.3, *Proposed Facilities, Construction, and Operations*, and Table 3-7. Appendix G, *Export Terminal Stages of Construction and Operations*, provides more detailed operations information for the Off-Site Alternative.

3.6 No-Action Alternative

NEPA and its implementing regulations require an EIS to identify and evaluate a reasonable range of alternatives, including a no-action alternative (40 Code of Federal Regulations [CFR] 1502.14). A no-action alternative is not a baseline for evaluating the environmental effects of the proposed action²² but, rather, describes the consequences of not implementing the proposed action. By defining and evaluating a no-action alternative, decision makers and the public can meaningfully compare the effects of approving the proposed action with the effects of not approving it.

Under the No-Action Alternative analyzed in this Draft EIS, the Corps would not issue the requested Department of the Army permit under the Clean Water Act Section 404 and the Rivers and Harbors Act Section 10. This permit is necessary for the Applicant to construct and operate the proposed export terminal. For this Draft EIS, the No-Action Alternative also includes the Applicant's expected future development of the On-Site Alternative project area, described below. This action is analyzed in this Draft EIS as part of the No-Action Alternative because it is a foreseeable consequence of a Department of the Army permit denial.

3.6.1 Planned Operations and Expansion

The Applicant plans to continue operating its existing bulk product terminal located adjacent to the On-Site Alternative project area, as well as expand this business onto previously developed uplands in the southeast portion of the On-Site Alternative project area that would not be used by the proposed export terminal.²³ Maintenance of the existing bulk product terminal would continue, including maintenance dredging at the existing dock (Dock 1) every 2 to 3 years.

Under the terms of an existing lease between Northwest Alloys and DNR,²⁴ expanded operations could include increased storage and upland transfer of bulk products utilizing new and existing

²² The baseline for analysis of environmental effects is defined as existing environmental conditions at the time the NOI was published.

²³ Draft Definition of No Action for use in the NEPA and SEPA EISs, July 2014, Millennium Bulk Terminals, LLC.

²⁴ Northwest Alloys holds a 30-year aquatic lease (20-B09222) with the DNR allowing the use of DNR property for three docks. The lease expires January 2, 2038. Under this 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,

buildings. The Applicant would likely undertake demolition, construction, and other related activities to develop expanded bulk product terminal facilities adjacent to the proposed export terminal. For the purpose of this Draft EIS, it is assumed such expansion would not change the current impervious surface area and would not require new docks or new unloading structures on Dock 1. It is further assumed roadway and rail infrastructure near the On-Site Alternative project area planned for implementation by 2018 will be completed.

The Applicant has stated its intent that new development or operations conducted under this plan would not impact waters of the United States and, therefore, not require a permit from the Corps. Future maintenance of Dock 1 and other existing facilities in and along the Columbia River could require a permit from the Corps. Any new construction would be limited to uses allowed under existing Cowlitz County development regulations (CCC Title 18, Land Use and Development).²⁵ Table 3-8 describes planned future operations.

Table 3-8. Planned Activities and Transport Operations at the Existing Bulk Product Terminal

Commodity	Activity	Transport Operations ^a		
		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. This transfer of coal is separate from and independent of the 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 by train to Chelan County.	N/A (vessels deliver alumina; trains transport)	80 rail cars per week (16 rail cars per day, 5 days per week)	8 vessels per year
Other Commodities	Other commodities, such as liquid sodium hydroxide, assumed to be delivered by vessel, temporarily stored on site, and then shipped by truck or train to various locations.	Transported for local distribution at a rate of 16 trucks per day (4,160 trucks per year)	4 rail cars per day (1,040 rail cars per year) for nonlocal distribution	6 vessels per year

Notes:
^a Includes existing transport operations as identified in Table 3-4.
 N/A = not applicable

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.

²⁵ Draft Definition of No Action for use in the NEPA and SEPA EISs, July 2014, Millennium Bulk Terminals, LLC.

3.6.2 Potential Future Operations and Expansion

In addition to the current and planned activities described in Section 3.6.1, *Planned Operations and Expansion*, if the requested Department of the Army permit is not issued, the Applicant intends to expand its bulk product terminal business onto areas that would have been subject to construction and operation of the proposed export terminal. The extent of this expansion is unknown but could conceivably encompass most or all of the 190-acre On-Site Alternative project area, or even the entire 540-acre leased area. Extensive expansion could involve the Applicant subleasing some areas to other bulk product businesses. Extensive expansion could also involve work in waters of the United States, including the Columbia River and adjacent wetlands, which would require Department of the Army authorization from the Corps.

Under the No-Action Alternative, expansion of the Applicant's bulk product business onto the On-Site Alternative project area could result in construction and operation of a large terminal to handle a variety of commodities. The terminal would presumably be typical of other large industrial developments in the area—dominated by buildings, roads, and commodity-specific handling facilities. Although the nature and extent of future development under the No-Action Alternative is speculative at this point, the impacts of such development on the human environment could be similar to those of the proposed export terminal.

In 2014, the Applicant described a future expansion scenario under the no-action alternative that would involve handling bulk materials already permitted by DNR for off-loading at Dock 1. This scenario, which would avoid impacts on waters of the United States, would include the following materials and transport methods.

- Calcine pet coke, which would likely be imported by vessel from Asia, unloaded at Dock 1, and stored on site. Up to 600,000 tons of calcine pet coke per year could be imported.
- Coal tar pitch, which would likely be delivered by vessel in super-sacks and unloaded at Dock 1. Up to 200,000 tons of coal tar pitch per year could be imported.
- Cement, which could arrive by vessel and be distributed either by rail or truck.
- Fly ash, which could arrive by rail and depart by truck, or arrive by truck and depart by rail.
- Sand and gravel, which could arrive by rail and depart by truck, or arrive by truck and depart by rail.

While future expansion of the Applicant's bulk product terminal business might not be limited to this scenario, it was analyzed to help provide context to a No-Action Alternative evaluation. Transportation for existing conditions (Section 3.4.2), planned operations and expansion (Section 3.6.1), and potential future operations and expansion would result in 2 trains per day and 26 vessels per year.

3.7 Comparison of Alternatives

Chapter 4, *Built Environment*, Chapter 5, *Natural Environment*, and Chapter 6, *Operations*, of this Draft EIS evaluate the potential impacts of the On-Site Alternative, Off-Site Alternative, and No-Action Alternative. Table 3-9 provides a summary comparison of the impacts of each alternative.

The Corps will identify a preferred alternative in the Final EIS based on the Draft EIS analysis and comments received from agencies, tribes, and the public.

Table 3-9. Comparison of Alternatives

Environmental Resource Area	Measure	On-Site Alternative	Off-Site Alternative
Chapter 4, Built Environment: Affected Environment and Project Impacts			
Section 4.1, Land Use	Consistency with applicable land use plans and policies	Consistent with applicable plans and policies.	Would require amendments to the City of Longview Comprehensive Plan and Cowlitz County Zoning Code.
Section 4.2, Social and Community Resources	Accessibility to public services	Average vehicle delay would increase, but no adverse impact on the average driver at the public at-grade study crossings.	Average vehicle delay would increase, but no adverse impact on the average driver at the public at-grade study crossings.
	Economic and fiscal impacts	1,350 direct jobs and \$70 million in direct wages during construction. 135 direct jobs and \$16 million in direct wages during operations. Other indirect and induced jobs and wages. New state and local tax revenue.	1,350 direct jobs and \$70 million in direct wages during construction. 135 direct jobs and \$16 million in direct wages during operations. Other indirect and induced jobs and wages. New state and local tax revenue.
	Impacts on environmental justice populations	Horn noise from project-related trains would have a disproportionately high and adverse effect.	Horn noise from project-related trains would have a disproportionately high and adverse effect.
Section 4.3, Aesthetics	Visual impacts	Moderate level of visual impact on views from Dibblee Beach and the Columbia River. No impacts or low impacts at all other viewpoints.	Moderate level of visual impact on rural and residential views, including from Barlow Point Road and West Longview, and natural views from the Columbia River. No impacts or low impacts at all other viewpoints.
Section 4.4, Cultural Resources	Impact on National Register of Historic Places (NRHP)-listed or eligible resources	Adverse impact on Reynolds Metals Reduction Plant Historic District (NRHP-eligible resource)	No known adverse impacts on NRHP-eligible resources
Section 4.5, Tribal Treaty Rights and Trust Responsibilities	Potential to impact Tribal fishing	No measurable impact.	No measurable impact.

Environmental Resource Area	Measure	On-Site Alternative	Off-Site Alternative
Section 4.6, Hazardous Materials	Potential to encounter hazardous materials during construction	Construction activities could encounter hazardous materials in the Applicant's leased area and during demolition of existing structures.	Construction activities could encounter hazardous materials related to past land uses. Environmental contaminants from the closed Mount Solo landfill could have also migrated into groundwater in the project area.
	New sources of hazardous materials during construction and operation	New sources of hazardous materials such as fuel, oil, grease, lubricants, hydraulic fluids, solvents, and acids would generate small quantities of hazardous waste.	New sources of hazardous materials such as fuel, oil, grease, lubricants, hydraulic fluids, solvents, and acids would generate small quantities of hazardous waste.
Section 4.7, Energy	Energy demand	Could be met by existing local and regional supply.	Could be met by existing local and regional supply.
Chapter 5, Natural Environment: Affected Environment and Project Impacts			
Section 5.1, Geology and Soils	Soil erosion	Best management practices and erosion control measures would avoid and minimize soil erosion during construction. After construction, project area would be approximately 90% impervious surfaces, reducing soil erosion potential to near zero.	Best management practices and erosion control measures would avoid and minimize soil erosion during construction. After construction, project area would be approximately 90% impervious surfaces, reducing soil erosion potential to near zero.
	Exposure to catastrophic geologic events	The project area could be subject to liquefaction and ground-shaking. Compliance with applicable regulations would avoid and minimize potential exposure to such impacts.	The project area could be subject to liquefaction and ground-shaking. Compliance with applicable regulations would avoid and minimize potential exposure to such impacts.
Section 5.2, Surface Water and Floodplains	Water collection and discharge	All stormwater and surface water in the project area would be collected, treated, and either stored and reused or discharged to the Columbia River post-treatment in accordance with the terms and conditions outlined in required permits.	All stormwater and surface water in the project area would be collected, treated, and either stored and reused or discharged to the Columbia River post-treatment in accordance with the terms and conditions outlined in required permits.
	Number of piles installed and acres of benthic habitat removed	610 36-inch steel piles would be installed in-water, removing 0.10 acres of benthic habitat.	597 36-inch steel piles would be installed in-water, removing 0.10 acres of benthic habitat.
Section 5.3, Wetlands	Acres of wetlands filled	24.10 acres of wetlands.	51.28 acres of wetlands filled; 0.08 acre of wetland vegetation clearing/trimming.

Environmental Resource Area	Measure	On-Site Alternative	Off-Site Alternative
Section 5.4, Groundwater	Groundwater supply impacts	Negligible impacts on groundwater recharge patterns and supply due to the current level of development and disturbance.	Recharge patterns, groundwater flow, and groundwater interaction with surface waters would be modified. Application and approval for new water rights would be required.
	Groundwater quality impacts	Not likely affected. All stormwater would be collected, treated and either re-used or discharged to the Columbia River post-treatment.	Not likely affected. All stormwater would be collected, treated and either re-used or discharged to the Columbia River post-treatment.
Section 5.5, Water Quality	Acres of ground surface disturbance and potential to increase surface water turbidity	202.3 acres of ground surface disturbance. Construction best management practices and erosion and sediment control measures required by required permits would avoid and minimize potential impacts.	225.0 acres of ground surface disturbance. Construction best management practices and erosion and sediment control measures required by required permits would avoid and minimize potential impacts.
	Dredging volume and potential to mobilize pollutants or increase turbidity	500,000 cubic yards of material would be dredged from the Columbia River. Standard best management practices would minimize impacts related to turbidity and pollutants in sediments. Disposal of dredged materials would adhere to the Dredged Materials Management Plan overseen by federal and state regulators.	50,000 cubic yards of material would be dredged from the Columbia River. Similar best management practices would minimize impacts. Disposal of dredged materials would adhere to the Dredged Materials Management Plan overseen by federal and state regulators.
Section 5.6, Vegetation	Acres of vegetation removed	Approximately 26 acres of upland vegetation and 24 acres of wetland vegetation.	Approximately 155 acres of upland vegetation and 51 acres of wetland vegetation.
Section 5.7, Fish	Amount of aquatic habitat altered or removed	0.10 acre of benthic habitat removed with the in-water placement of 610 36-inch steel piles. Dredging would permanently alter approximately 48 acres of benthic habitat.	0.10 acre of benthic habitat removed with the placement of 597 36-inch-diameter steel piles. Dredging would permanently alter approximately 15 acres of benthic habitat.
	Underwater noise impacts	Installation of 610 36-inch steel piles would generate underwater noise that would result in injury and/or disturbance to fish.	Installation of 597 36-inch steel piles would generate underwater noise that would result in injury and/or disturbance to fish.
	Acres of shading of fish habitat	Up to approximately 9.83 acres of aquatic shaded and primarily deepwater habitat.	Up to approximately 9.83 acres of aquatic shaded and primarily deepwater habitat .

Environmental Resource Area	Measure	On-Site Alternative	Off-Site Alternative
Section 5.8, Wildlife	Amount of terrestrial habitat altered or removed	Approximately 202 acres of terrestrial habitat removed.	Approximately 216 acres of terrestrial habitat removed.
	Amount of aquatic habitat altered or removed	48 acres of benthic habitat removed due to dredging and pile installation; 11 acres removed from ditches and ponds in the project area.	15 acres of benthic habitat removed due to dredging and pile installation; 9 acres removed from ditches and ponds in the project area.
	Underwater noise impacts	Installation of 610 36-inch steel piles would generate underwater noise that would result in injury and/or disturbance to fish.	Installation of 597 36-inch steel piles would generate underwater noise that would result in injury and/or disturbance to fish.
Chapter 6, Operations: Affected Environment and Project Impacts			
Section 6.1, Rail Transportation	Number of project-related trains on the Reynolds Lead and BNSF Spur	Average of 1.3 trains per day during peak year of construction. 16 trains per day at full export terminal operations.	Average of 1.3 trains per day during peak year of construction. 16 trains per day at full export terminal operations.
	Capacity of Reynolds Lead and BNSF Spur	Project-related and baseline rail traffic would not exceed capacity.	Project-related and baseline rail traffic would not exceed capacity.
Section 6.2, Rail Safety	Predicted accident rate on the Reynolds Lead and BNSF Spur in 2028	0.50 accident per year for project-related trains.	0.52 accident per year for project-related trains.
Section 6.3, Vehicle Transportation	At-grade crossing 24-hour average vehicle delay in 2028	No public crossings operate below the standard used for the analysis with current and planned track infrastructure.	No public crossings operate below the standard used for the analysis with current and planned track infrastructure.
	At-grade crossing vehicle safety in 2028	One crossing with a predicted accident probability above the benchmark used for the analysis.	One crossing with a predicted accident probability above the benchmark used for the analysis.
	Emergency vehicle response time	10% increase in probability of emergency vehicle delay with existing track infrastructure; 5% increase with planned track infrastructure.	10% increase in probability of emergency vehicle delay with existing track infrastructure; 5% increase with planned track infrastructure.
Section 6.4, Vessel Transportation	Number of new vessels annually (transits)	840 vessels (1,680 transits)	840 vessels (1,680 transits)
	Predicted incident frequency in 2028 in the study area	22.2 incidents	22.2 incidents

Environmental Resource Area	Measure	On-Site Alternative	Off-Site Alternative
Section 6.5, Noise and Vibration	Residences with adverse noise impacts from full terminal operations	One residence	Two residences
	Residences with adverse noise impacts from rail traffic during full terminal operations	229 with moderate noise impacts; 60 with severe noise impacts.	229 with moderate noise impacts; 60 with severe noise impacts.
Section 6.6, Air Quality	Compliance with National Ambient Air Quality Standards	Below the applicable standard for all criteria air pollutants.	Below the applicable standard for all criteria air pollutants.
Section 6.7, Coal Dust	Monthly coal dust deposition from terminal operations	Below the benchmark used for the analysis.	Below the benchmark used for the analysis.
Section 6.8, Greenhouse Gas Emissions	Estimated total emissions in the study area between 2018 and 2038	926,866 metric tons CO _{2e}	939,830 metric tons CO _{2e}
Notes:			
NRHP = National Register of Historic Places; CO _{2e} = carbon dioxide equivalent			