Chapter 2
Proposed Action and Alternatives

This chapter describes the proposed action (project location and existing and proposed facilities and operations), construction schedule and methods, and the no-action alternative.

2.1 What is the proposed action?

Westway Terminal Company LLC (applicant) is proposing to expand its bulk liquid storage facility by developing an additional 7 acres of its 16-acre site. The expansion would allow the facility to receive crude oil unit trains,[1] store crude oil from these trains, and load crude oil onto tank vessels[2] (proposed action).

2.1.1 Project Location

The proposed action would occur on the existing applicant's facility (project site), located[3] between Terminals 1 and 2 of the Port of Grays Harbor (Port) in Hoquiam, Washington, north of the confluence of the Chehalis River and Grays Harbor (Figure 2-1). The project site covers 16 acres, 9 of which are developed with existing facilities for loading, unloading, and storing methanol.

Local road access to the project site is provided via Port Industrial Road at the intersection with West 1st Street. Regional highway connections are provided within a few miles of the project site by US Route 12 (US 12), which runs east, and US Route 101 (US 101), which runs north and south.

Rail access to the project site is provided by the Puget Sound & Pacific Railroad (PS&P), which is owned and operated by Genesee and Wyoming, Inc. The rail line extends 59 miles from Centralia to Hoquiam. Trains arriving at and departing from the project site must travel along the PS&P rail line before connecting with either the BNSF Railway (BNSF) or Union Pacific Railroad in Centralia. The PS&P rail line largely parallels US 12 from Centralia to Aberdeen, where it generally parallels the Chehalis River before terminating at the Port's loop track (Figure 2-1). No changes to the PS&P rail line are proposed as part of the proposed action.

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[1] A *unit train* is a train in which all cars carry the same commodity and all cars are shipped from the same origin to the same destination, without being split up or stored en route.

[2] The term *tank vessel* refers to a marine vessel used to transport bulk liquids such as crude oil; it includes tankers (self-propelled ships) and tank barges (barges propelled by tugs).

[3] Tax Assessor's Parcel Information: City of Hoquiam in Section 18, Township 17, Range 9 West, North of the Willamette Meridian, Tax Parcel Number #056402300000; and City of Aberdeen in Section 7, Township 17, Range 9 West, North of the Willamette Meridian, Tax Parcel Number #029902000200.
Latitude: 46.968253, longitude: -123.855871.

Figure 2-1. Project Location

Tank vessels approach the project site via the Grays Harbor Navigation Channel, which runs from the mouth of Grays Harbor to the Port docks. Tank vessels calling at the project site typically berth at the Port's Terminal 1 dock. The project site also has access to the Terminal 2 facilities; however, Terminal 2 is frequently used by other Port tenants, which limits the terminal's availability for additional vessels. Therefore, loading vessels would occur under the proposed action at Terminal 1 and Terminal 2 is not considered as part of the proposed action.

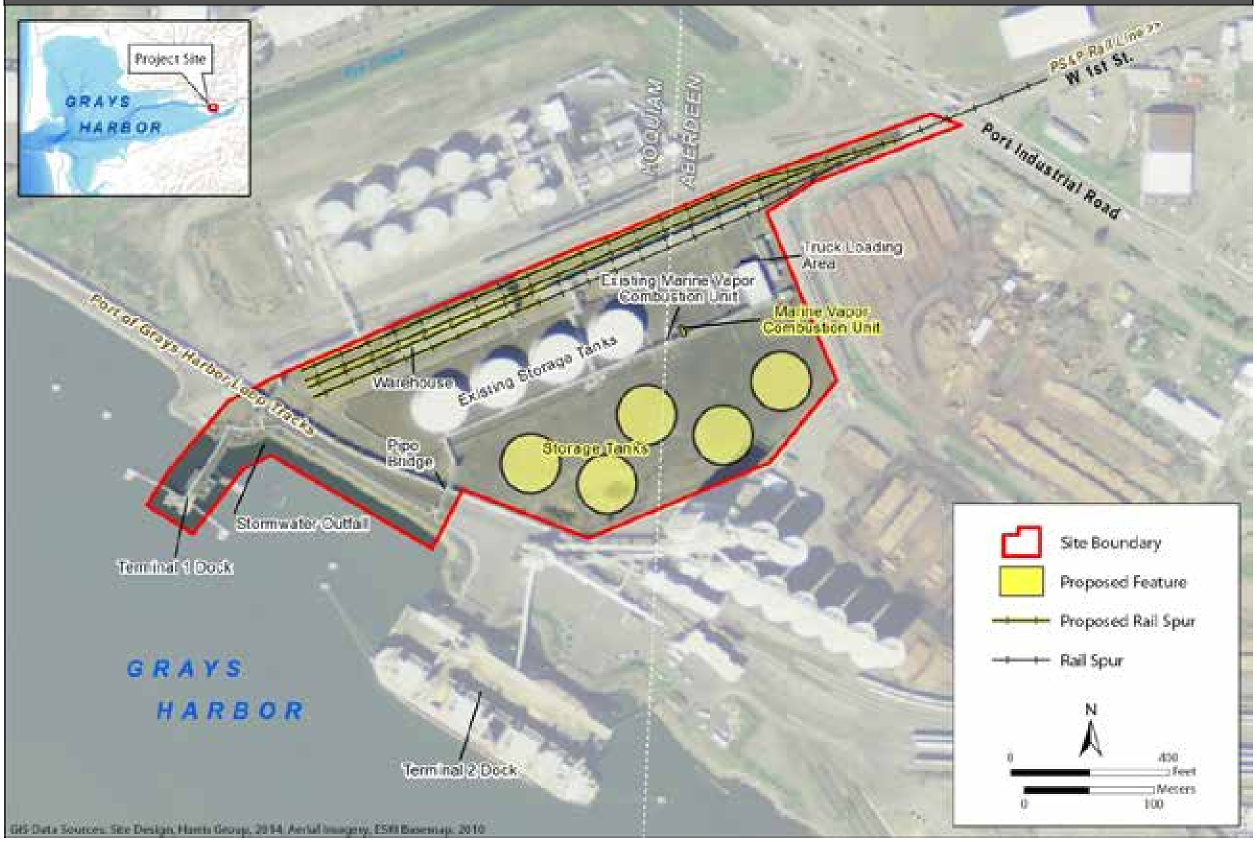
2.1.2 Existing Facilities and Operations

The applicant currently operates a methanol distribution facility at the project site. Operations involve receiving, storing, and loading (for transport) methanol, as described further in this section.

2.1.2.1 Existing Facilities

The existing facilities, constructed in 2009, include bulk liquid storage tanks, loading and unloading areas, a system of pipelines connecting the loading areas with bulk liquid storage tanks, and associated office and electrical buildings (Figure 2-2).

Figure 2-2. Project Site



Storage Tanks

Four aboveground storage tanks are located on the northern portion of the project site. Each tank has the capacity to hold approximately 3.4 million gallons (81,000 barrels), totaling 13.6 million gallons (324,000 barrels) of storage for the facility. The tanks are located in a containment area—an underlying concrete footer surrounded by a concrete wall—with the capacity to hold the volume of a single tank, plus an allowance for precipitation (Figure 2-3).

Loading and Unloading Areas

The applicant is currently permitted to load methanol by rail and tanker truck and unload methanol tank vessels and rail cars. A vapor combustion unit, which is used to incinerate vapors associated with rail and truck loading, is located east of the storage tanks (Figure 2-2).

Rail Loading and Unloading Area

Two rail spurs with 18 loading and unloading spots connect to the PS&P rail line via a crossing of Port Industrial Road at West 1st Street. The loading and unloading spots are located over a concrete containment area that has the capacity to hold the contents of a single rail car, plus an allowance for precipitation (Figure 2-4).

Figure 2-3. Existing Storage Tanks in Containment Area

Figure 2-4. Existing Rail Loading and Unloading Spots over Concrete Containment Area

Truck Loading and Unloading Area

The truck loading area is paved, covered, and located near the northeast entrance to the project site (Figure 2-2). It has containment capacity equal to an entire tanker truck.

Vessel Loading and Unloading Area

Tank vessels are unloaded at the Terminal 1 berth. The berth is also used by Imperium Terminal Services to load biodiesel produced at the company's production facility, which is located directly west of the project site, for transport by tank vessel. The two companies have separate infrastructure used for vessel loading and unloading: the applicant's pipelines run along the north side of the dock and Imperium Terminal Services' pipelines run along the south side.

Pipelines

A system of pipelines connects the loading and unloading areas (rail, truck, and vessel) with the storage tanks. The pipelines run from the truck and rail loading and unloading areas via elevated pipe bridges, then along the southern side of the storage tanks via at-grade supports, then cross the Port's loop track at the southwest corner of the project site via an elevated pipe bridge to connect with the Terminal 1 dock. Docklines throughout the facility are constructed per American Society of Mechanical Engineers Code for Pressure Piping (ASME B31) and are tested annually to 1.5 times the maximum allowable working pressure per U.S. Coast Guard regulations. Non-dockline piping is tested after construction and periodically retested per applicable codes (API 570 nondestructive examinations).

Buildings

Several smaller buildings and an adjacent parking lot are located on the eastern edge of the project site: two of the buildings provide office space for four full-time employees; the third is an electrical building. An empty wood-frame warehouse is located along the northwestern edge of the project site.

2.1.2.2 Existing Operations

Onsite Operations

The facility receives, certifies, and loads methanol on behalf of its customers for transport to the end customer. The facility's allowable (permitted) throughput capacity is 54.6 million gallons of methanol per year. Currently, the facility receives approximately 36.0 million gallons and ships approximately 33.3 million gallons of methanol annually. In general, methanol arrives at the project site by rail or vessel, is unloaded via a system of pipes and hoses, and transferred to storage tanks for certification. The methanol is then transported via the same pipeline system from the storage tanks to the tanker truck and rail loading areas.

Offsite Transport

The specific mode of transportation to and from the project site depends on the source and final destination of the methanol. As stated above, methanol is transported to the facility by rail and tank vessel and from the facility by tanker truck and rail.

Approximately 60% of the incoming methanol arrives at the facility by rail as part of PS&P rail line standard freight traffic. Most of this methanol originates from Medicine Hat, Alberta, Canada. Rail cars carrying methanol are separated from other cars of an incoming train in the Aberdeen rail yard; they are stored on sidings in the yard then moved by a switching locomotive to the facility for unloading. This process typically results in one to two trips onto and off the project site each day, to deliver and remove an average of 10 rail cars. The rails cars are parked on the existing rail spurs on the facility where methanol is unloaded via the pipeline system and pumped to the storage tanks.

The remaining 40% of methanol entering the facility is transported by tank vessels. These tank vessels typically originate from Brunei, Indonesia, Malaysia and Venezuela and berth at Terminal 1. From Terminal 1, they are unloaded via the pipeline system that transports the methanol to the storage tanks (Figure 2-2). This process takes about 24 to 36 hours. Recent operations at the project site have resulted in approximately six vessel calls per year (Doucette pers. comm.).

Methanol is transported from the project site by tanker truck and rail. Methanol is transferred from the storage tanks to tanker truck at the truck-loading area for transport off site. Tanker trucks enter and leave the terminal via Port Industrial Road and make approximately 2,700 round trips each year. Rail cars transporting methanol from the project site are parked along the existing rail spurs and loaded via the same process described for unloading. Loaded rail cars are moved off site as part of the one to two switch trips described above.

Stormwater Management

Stormwater is water that falls onto Earth's surface during precipitation events (e.g., rainfall, snow, and ice melt). It includes the portion of this water that sinks into the ground and that accumulates on or flows over the ground surface on its way to a receiving water (stormwater runoff).

Currently, 15 acres of the 16-acre site are covered with impervious asphalt and concrete. Consequently, most precipitation that falls at the project site runs off as sheet flow[4] . Stormwater that falls within the storage tank and rail containment areas is directed to containment sumps where it is visually inspected. After inspection, stormwater is manually released to the Port's stormwater conveyance system and discharged to the harbor via the Port outfall located next to the Terminal 1 dock (Figure 2-2). If stormwater is determined to be contaminated, it can be treated in place or, if necessary, pumped out by a certified wastewater hauler and taken to an appropriate treatment facility.

Stormwater that falls outside of the existing containment areas flows into catch basins that drain into the same conveyance system and discharge to Grays Harbor via the same outfall.

2.1.3 Proposed Facilities and Operations

Under the proposed action, the applicant would develop 7 acres of its 16-acre site to allow for receiving, storing, and loading crude oil for transport. Crude oil would be shipped to the project site by rail and shipped from the project site by tank vessel.

Up to five storage tanks would be constructed at the project site to the south/southeast of the existing storage tanks (Figure 2-2). The existing rail facilities would be expanded, and pipelines

[4] Sheet flow is the form runoff takes when it is evenly dispersed across a surface.

would be installed to connect the storage tanks with the rail unloading spots and the vessel loading at the Terminal 1 berth. A marine vapor control system would be installed on the dock and pipeline supports would be installed above the dock. No in-water work is proposed.

The proposed action would be completed in two phases: Phase 1 would include constructing two storage tanks, expanding the existing onsite rail facilities, constructing related pipelines, upgrading dock capabilities, and installing a marine vapor combustion unit. Phase 2 would include constructing three additional storage tanks. Depending on market conditions, Phases 1 and 2 may be developed at the same time.

2.1.3.1 Proposed Facilities

Storage Tanks

The proposed action would involve constructing up to five storage tanks at the project site south of the existing storage tanks (Figure 2-2). Each tank would be approximately 150 feet in diameter and 64 feet in height and would have the capacity to hold approximately 8.4 million gallons (200,000 barrels) of crude oil, for a total crude oil storage capacity of 42 million gallons (1 million barrels).

The tanks would be designed with internal floating roofs that would rise and fall with the liquid levels inside the tanks, eliminating the vapor space above the liquid level and reducing the emissions from volatile hydrocarbons that are to be stored in the tanks. Inside the tanks, the liquid surface would be entirely covered by the floating roofs, with the exception of a small ring-shaped space between the edge of the roof and the tank wall and around the internal tank support columns. These spaces contain seals attached to the edges of the roofs that slide against the tank walls and support columns as the roofs move up and down.

An impervious clay liner, approved by a registered Washington State Professional Engineer, would be installed inside the entire storage tank area to prevent any spills or leaks from contacting soil in the area. The clay liner would be covered by clean fill/soil and a top layer of crushed rock. This containment area, which would be surrounded by a 5-foot-tall concrete wall, would have the capacity to contain the total volume of a single tank plus an allowance for precipitation.

Loading and Unloading Areas

Proposed expansion of the rail loading and unloading area and equipment and improvements related to vessel loading and unloading are described below. No changes are proposed for the existing truck loading and unloading areas.

Rail Loading and Unloading Area

Under Phase 1, the two existing rail spurs would be lengthened and two new spurs would be added, thereby increasing the total number of loading and unloading spots from 18 to 80 (Figure 2-2). Similar to the existing spots, the new loading and unloading spots would be constructed on top of a containment area—a center-sloped concrete slab that collects and directs any spills to a central sump. This containment area would have the capacity to contain the total volume of a single rail car, plus an allowance for precipitation.

Connection of the new spurs to the PS&P rail line would use the existing grade crossing at Port Industrial Road and would require no track to be constructed off site. This connection would be maintained by the Port.

Vessel Loading and Unloading Area

The following improvements would be made to accommodate the loading of tank vessels with crude oil. A hose tower would be installed on the dock to add structural support for the hoses used to load crude oil onto the tank vessels. The dockline from the terminal would connect to one end of the tower, and a 6- or 8-inch hose on the other end of the tower would be used to load the tank vessels.

A marine vapor control system would be installed to control emissions of volatile organic compounds from vapors displaced during the loading of crude oil into tank vessels. The system would consist of three components: marine safety unit, vapor blower unit, and vapor combustion unit. Vapors would be collected from tank vessels and routed through a vapor hose into the marine safety unit. The marine safety unit would protect the tank vessels against explosions or fires, as well as excessive pressure and excessive vacuum. The vapor blower staging unit would transfer the vapors from the marine safety unit to the vapor combustion unit. Vapors transferred to the combustion unit would be thermally destroyed in a controlled manner.

The marine safety unit would be installed on top of the dock, if space allows, with no modification to the dock structure in the water. If adequate space is not available on the dock, the unit would be installed on the shoreline near the dock. The vapor blower staging unit and vapor combustion unit would be installed next to the existing combustion unit.

The entire system would be constructed and operated in compliance with U.S. Coast Guard regulations (33 Code of Federal Regulations [CFR] 154) and the applicable air permit.

Pipelines

During Phase 1, a system of pipelines would be constructed to connect the new rail loading and unloading spots to the storage tanks, and the storage tanks to the vessel-loading facilities at the Terminal 1 dock. A 24-inch-diameter carbon steel pipeline would be installed on the existing pipe bridge to connect the storage tanks to the vessel loading facilities at the Terminal 1 dock (Figure 2-2). New 10- or 12-inch-diameter carbon steel pipelines would be installed to move crude oil from the rail unloading areas to the storage tanks. Hoses used at Terminal 1 for over-water transfers will comply with U.S. Coast Guard hose assembly requirements for facilities transferring oil or hazardous material in bulk (33 CFR 154.500, Hose Assemblies). They will be pressure-tested annually per U.S. Coast Guard requirements. The hoses used for crude oil transfer elsewhere at the project site will be designed for crude oil use.

Buildings

Also under Phase 1, additional office space and support facilities would be constructed, including a new electrical building south of the existing electrical building and shower and change rooms. The existing warehouse is not currently being used and would be removed to make room for the new and expanded rail spurs.

2.1.3.2 Proposed Operations

Under the proposed action, the facility's allowable (permitted) throughput capacity would increase by 751.8 million gallons (17.9 million barrels) of crude oil per year for a cumulative total of 19.2 million barrels (806.4 million gallons) per year, including existing methanol operations. The applicant intends to continue to handle methanol similar to existing conditions, and the new capacity provided under the proposed action would be dedicated to handling crude oil.

Onsite Operations

The applicant would receive crude oil from its future customers (i.e., owners of the oil) who would arrange rail transport to, and vessel transport from, the project site. The applicant would be responsible for receiving and unloading the crude oil from rail cars, storing it, and transferring it onto tank vessels for shipment. No crude oil would be transported by tanker truck. Once on site, rail cars would be pushed onto the loading and unloading spots where the crude oil would be unloaded into a central collection area and then pumped to the storage tanks. Under the proposed action, the facilities would be capable of unloading one unit train per day, but the applicant plans to receive one unit train every other day on average. The crude oil would be pumped from the storage tanks via the new pipelines to the Terminal 1 vessel-loading facilities where it would be transferred onto the tank vessel by hose. Depending on the size of the vessel calling, loading could take up to 36 hours.

Offsite Transport

Crude oil would be transported to the project site by rail and transported from the project site by tank vessel. Arranging transportation to and from the project site would be the responsibility of the applicant's customers and would be under the control and regulation of the rail and vessel operators.

Rail

Crude oil would be transported to the project site by rail. It is expected to come from the Bakken formation in the Intermountain Region and Central United States; however, it could come in the form of diluted bitumen derived from oil sands from Alberta, Canada. Depending on the source of the crude oil, trains could travel a variety of routes on the national rail system toward the Port. From Centralia, all trains would use the PS&P rail line to reach the project site (Figure 2-1). Rail transportation is discussed in detail in Chapter 3, Section 3.15, *Rail Traffic*, and Chapter 5, *Extended Rail and Vessel Transport*.

Under the proposed action, increased train traffic would consist of unit trains of approximately 120 cars (1.25 miles long). Unit trains are typically transported by four locomotives and would have to be broken into smaller segments and taken by switch engine to and from the project site. Operation of the proposed action at maximum throughput would result in a maximum of 458 unit train trips[5] per year, or an average of 1.25 trips per day, along the PS&P rail line. These trains would result in additional switch trips to bring the cars onto and off the project site as discussed in Chapter 3, Section 3.15, *Rail Traffic*.

Vessel

Crude oil would be transported from the project site by tank vessel. It is anticipated that crude oil from the project site would be transported to refineries in the Puget Sound area and northern California (Richmond area). Although transport of U.S. crude oil overseas is currently not allowed under U.S. law, it is possible for Canadian oil to be transported abroad, and overseas transport of U.S. oil could occur if current regulations were to change.

[5] A trip represents one-way travel; in other words, an inbound trip and an outbound trip are counted as two trips.

Tank vessels would travel through the harbor along the navigation channel. Vessel transportation is discussed in detail in Chapter 3, Section 3.17, *Vessel Traffic*. The depth constraints of the navigation channel limit the size of the vessel able to enter the harbor. The mix of tankers could vary over time, but the largest tankers would be Panamax class[6] with the capacity to hold up to 14.7 million gallons (350,000 barrels). Tank barges are anticipated to be the most likely vessel type with capacity in the range of 1.05 million gallons to 6.3 million gallons (25,000 to 150,000 barrels) per barge.

Operation of the proposed action at maximum throughput would result in a maximum of 198 to 238 trips[7] per year—approximately one trip every other day—depending on the type of the vessel used.[8]

Stormwater Management

Impervious surface area would increase at the project site by 1 acre under the proposed action. Six of the 7 acres proposed for development are currently paved, and construction of the proposed action would require paving the remaining acre. In general, runoff would flow into the Port's stormwater system similar to existing conditions. Under the proposed action, the applicant would continue to inspect the sump for potential pollution prior to discharge and would conduct any additional testing required by its National Pollution Discharge Elimination System (NPDES) permit. For more information, see Chapter 3, Section 3.3, *Water*.

2.1.4 Construction Schedule and Methods

Phase 1 construction of the proposed action is tentatively scheduled to start in 2016 and is anticipated to last 10 to 12 months. Construction would require approximately 86 workers and would occur during daylight hours (7:30 a.m. to 4:30 p.m.), Monday through Friday. However, the schedule may be altered to add some weekend daytime construction to make up for weather delays. The start date for Phase 2 construction is unknown, but construction is anticipated to last 10 months and require approximately 49 workers.

Construction would require using the following types of machinery: an excavator, D-8 dozer, dump truck(s), backhoe(s), maintenance trucks, a 70-ton crane, two 40-ton cranes, a 250-kilowatt generator, a 65-kilowatt generator, a 60-foot manlift, forklift(s), air compressor(s), a concrete pump, a compactor, and concrete finisher. Construction activities for several of the facilities would likely occur simultaneously.

2.1.4.1 Storage Tanks

The area where the new tanks would be built is currently paved with asphalt. Construction of the proposed tanks would require removing the existing paved area on the project site. Because the proposed tanks would be supported by piles, no soil preloading would be required to consolidate the underlying soil. The area would be graded and leveled by removing approximately 14,000 cubic yards of paved material using an excavator, D-8 dozers, dump trucks, and backhoes. Once contoured,

[6] Panamax class refers to the size limits for vessels traveling through the Panama Canal.

[7] A trip represents one-way travel.

[8] The higher number of trips assumes all tank barges. Because tank barges have smaller capacity than the tankers, more trips would be required.

the geotechnical (clay) liner would be installed over the surface of the storage tank area and covered by soil and crushed rock. The concrete containment wall would be constructed around the tank storage area, tall enough to hold the contents of the largest tank plus a 24-hour/25-year rain event.

The storage tanks would each sit on a concrete slab supported by approximately 200 piles (18-inch-diameter steel pipes) driven into the ground to an estimated depth of 150 feet.[9] Once all piles are driven for a tank foundation, the concrete slab would be formed. Rebar for the slab would extend 20 to 30 feet into the piles. Concrete would then be poured, filling the piles and the form for the slab. The tanks would sit on top of the foundation without mechanical attachment to the slab. The weight of the tanks themselves would hold it in place.

One 70-ton crane would be used as the pile-driving rig. Impact pile driving would last approximately 2 to 3 months during daylight hours. Welding machines would be used to weld the pipes for the piles. A 40-ton crane would be used to move the pipes around the project site and stack them into the jigs for welding. Concrete would be brought in by truck from the local Ready Mix concrete vendors and piles would arrive by train. The storage tanks would be assembled on site along with the associated pipeline and pumps. Once in place, all installed equipment would be painted white.

2.1.4.2 Loading and Unloading Areas

Rail Loading and Unloading Area

All elements of the rail loading and unloading area would be constructed during Phase 1. Construction of the rail facilities would require demolishing the existing warehouse then grading and forming the project site. Crews would lay rebar and pour concrete to construct the containment area underlying the new and extended rail spurs. The entire rail area would be built on a solid concrete slab; there would be no wood ties or ballast rock in the rail area. The loading and unloading equipment (racks, hoses, pipelines, and pumps) would then be installed. This work would require the use of bulldozers, lifts, delivery trucks, and small cranes.

Vessel Loading and Unloading Area

Welding machines would be used to weld the hose tower to the dock.

All components of the marine vapor combustion unit would be manufactured off site and set on foundations. If the marine safety unit is on the dock, it would be installed on a concrete pad and anchored to the existing dock with foundation anchor bolts. A new concrete foundation would be built for the vapor blower unit and vapor combustion unit. The metal frame of each unit would be bolted to the foundation. The foundation designs would be provided by a Washington State-licensed structural Professional Engineer. Once installed, the manufacturer would calibrate the system for operation.

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[9] The detailed foundation design and quantity and depth of piles would be determined based on detailed geotechnical analysis and civil design in accordance with current building and fire codes (International Building Code and International Fire Code) and their associated design standards and seismic requirements, including the American Society of Civil Engineers Standard 7 (Standard ASCE 7) and the American Petroleum Institute Standard 650 (API 650).

2.1.4.3 Pipelines

Pipelines would be constructed in segments and would be above ground. Pipes would be delivered by truck. This work would require the use of welding machines, a forklift, and a 40-ton crane to move the structural steel for pipe bridges and swing concrete into foundations. Pipeline work in the shoreline area would not require any in-water work.

2.1.4.4 Buildings

The support facilities would be used strictly for operations, not construction, and the locations are identified in Figure 2-2. The building designs have yet to be developed, but construction would include preparing the project site by removing earth, pouring a foundation, framing the structure, and installing walls and windows. One of the buildings would be used as an electrical building and the other building would house shower facilities and changing rooms.

2.2 What is the no-action alternative?

Under the no-action alternative, none of the proposed facilities related to crude oil distribution would be constructed and the applicant would continue to operate its existing methanol facility as described in Section 2.1.2.2, *Existing Operations*.

Unrelated to the proposed action, the applicant anticipates an increase in throughput of methanol over the 20-year analysis period. For the purposes of this analysis and based on the applicant's understanding of market conditions, an additional estimated throughput of up to 12 million gallons of methanol per year would arrive by vessel, would be unloaded and stored on site, and would be loaded into barges or rail cars for offsite transport in a manner similar to existing conditions. Offsite transport is estimated to add approximately one tanker in, 10 tank barges out, and 364 rail cars (accommodated as part of existing freight trains) per year.