Chapter 2
Comment Themes and Master Responses

This chapter includes responses to key themes raised in comments on the Draft EIS. The responses address overarching issues about the purpose, scope, and approach used in the analysis of impacts, development of mitigation measures, and determination of potentially significant adverse impacts. Specific comments raised by the agencies, tribes, organizations, and the public are individually addressed in Chapters 3 through 7.

The responses refer to the Draft EIS unless information has been revised, in which case the Final EIS is specified.

The following master responses are presented in this chapter.

- Purpose and Focus of the EIS
- Geographic Scope of the EIS
- Connected or Similar Actions
- Project Objectives and Alternatives
- Crude Oil Extraction, Transport, and Combustion
- Baseline and No-Action Alternative
- Vessel Traffic Baseline and Projections
- Mitigation Framework
- Seismic Risk and Design Requirements
- Earthquake Probabilities
- Environmental Health and Safety Analysis
- Risk Assessment Methods
- Oil Spill Modeling Methods
- Emergency Response and Planning Gaps Evaluation
- Liability and Responsibility for Incidents
- Cumulative Impact Analysis
- Economics, Social Policy, and Cost-Benefit Analyses

2.1 Purpose and Focus of the EIS

2.1.1 Comment

Many commenters expressed opposition or support for the proposed action either specifically or generally and stated that the co-lead agencies should either approve or deny the proposed action for the reasons stated in individual comments. Commenters also raised specific issues that they felt should be addressed in the EIS.

2.1.2 Response

Review under the State Environmental Policy Act (SEPA) is required when a governmental action as defined in the Washington Administrative Code (WAC) 197-11-704 is required by a state or local agency. Because implementation of the Westway Terminal Expansion Project (proposed action) would require state and local permits, the proposed action is subject to SEPA review.

There are two agencies designated as co-leads responsible for the SEPA review, the City of Hoquiam and the Washington State Department of Ecology (Ecology). The co-lead agencies issued a determination of significance on April 10, 2014, providing notice of the intent to develop an EIS for the proposed action.

A third-party contractor was hired to prepare the EIS. The cost of the analysis, document preparation, and public outreach activities are paid for by the applicant; however, the City of Hoquiam administers the contract and the City and Ecology oversee and direct the contractor's work and the development of the Draft and Final EIS. The applicant reviewed and commented on the Draft EIS at the same time as the public.

The environmental review process under SEPA is designed to work with other regulations to provide a comprehensive review of a proposal. SEPA review is intended to ensure that environmental values are considered during decision-making by state and local agencies. WAC 197-11-444 lists the elements of the environment that may be analyzed in an EIS. These include the natural environment (earth, air, water, plants and animals, energy, and natural resources) and the built environment (environmental health, land and shoreline use, transportation, public services, and utilities). The rule requires that elements of the environment that are evaluated in the EIS should be narrowed to just those that may be significantly affected by the proposed action and alternatives. Elements of the environment that are not significantly affected need not be discussed (WAC 197-11-440)(6)(a). These elements and related topics of interest are considered to be outside the scope of this EIS.

The SEPA EIS process provides opportunities for public input during scoping and public review and comment on the Draft EIS. Information collected during the SEPA review process, including information provided by the public, organizations, tribes, and other agencies, helps to inform the analysis of environmental impacts and to develop the Draft and Final EISs.

The Final EIS is then used by agency decision-makers, applicants, and the public to understand the potential environmental impacts associated with the proposal, the mitigation measures that could be implemented to reduce those impacts, and, ultimately, whether the proposal would result in significant unavoidable adverse impacts.

The purpose of the EIS is to provide information for decision-makers to consider; the purpose is not to recommend that a proposed action be approved or denied. Although SEPA gives agencies the authority to condition or deny permits based on the agency's adopted SEPA policies and environmental impacts identified in a SEPA document consistent with WAC 197-11-660, decisions related to an underlying action, such as a decision to permit the proposed action, are addressed through procedures specific to the permitting agency. Therefore, while comments that express favor or opposition to the proposed action are acknowledged, expressly addressing these types of comments is outside the scope of the EIS.

Refer to the Master Response for Geographic Scope of the EIS for more information about the scope of the EIS. Refer to the Master Response for Mitigation Framework for more information about the use of SEPA substantive authority to condition or deny a permit. Refer to the Master Response for Connected or Similar Actions for more information about how other actions were evaluated for considered in this EIS,

2.2 Geographic Scope of the EIS

2.2.1 Comment

In general, commenters indicated that the Draft EIS should expand the study area and analyze in detail the impacts associated with transportation from the source of the crude oil to its final point of delivery.

2.2.2 Response

Numerous provisions in the SEPA Rules clarify and emphasize that the purpose of the EIS process is to (a) identify and address the significant impacts of the proposed action and (b) either avoid or minimize discussions of insignificant impacts. The following excerpt of the rules provides relevant examples.

- The purpose of an EIS is to provide an impartial discussion of "significant environmental impacts" (197-11-400(2)).
- Discussion of insignificant impacts is not required; if included, such discussion shall[1] be brief and limited to summarizing impacts or noting why more study is not warranted (197-11-402(3)).
- The description of the existing environment and the nature of the environmental impacts shall be limited to the affected environment (197-11-402).
- For purposes of deciding what an EIS must cover, affecting refers to "having probable, significant adverse environmental impacts" (197-11-712).
- Probable means likely or reasonably likely to occur as in a reasonable probability. Probable is used to distinguish likely impacts from those that merely have a possibility of occurring but are remote or speculative (197-11-782).

[1] The SEPA Rules use of the term "shall" to mean that it is a "mandatory" provision (197-11-700(3) (a)).

Consistent with this guidance, as noted in Draft EIS Chapter 3, Section 3.0, *Introduction*, the study area for the analysis of impacts is tailored specifically to each resource area; however, in general, the study area includes resources with the potential to be affected in three areas:

- At the project site.
- Along the Puget Sound & Pacific Railroad (PS&P) rail line between the project site and Centralia, Washington, where the PS&P rail line connects to the national main line railroad system.
- In and around Grays Harbor out to 3 nautical miles from the mouth of the harbor.[2]

This study area is the focus of the analyses of potential impacts associated with construction and routine operations presented in Chapter 3, *Affected Environment, Impacts, and Mitigation*, and risk-related impacts presented in Chapter 4, *Environmental Health and Safety*. Beyond this area, the Draft EIS qualitatively discusses the potential for any offsite impacts associated with rail and vessel transport to and from the project site from the likely source of the crude oil to its final destination, as presented in Chapter 5, *Extended Rail and Vessel Transport*. The reasons for taking this approach are described below.

Routes

As noted in Draft EIS Section 3.0, *Introduction*, all rail and vessel traffic traveling to and from the project site must travel from Centralia to 3 nautical miles from the mouth of Grays Harbor. In other words, there is complete certainty that rail and vessel traffic associated with the proposed action would travel along these corridors. As described in Final EIS Chapter 5, Section 5.4.2.1, *Mainline Routes, Traffic, and Commodities*, routes are less certain in the extended study area. While current BNSF rail operations in Washington State point to loaded unit trains traveling westbound from Spokane to Vancouver, Washington, on the Columbia River Gorge route, and empty trains traveling eastbound on the Stevens Pass and the Columbia River Gorge routes, BNSF has not specified a route. Rail corridors beyond Washington State would depend on the source of the crude oil, which is assumed the Williston Basin, as described in Final EIS Chapter 5. Chapter 5 considers the northern route from Williston Basin through western North Dakota and Montana, but trains could travel on the more southerly routes through these areas. Vessels travelling to and from the waters outside 3 nautical miles of the mouth of Grays Harbor would likely travel either north or south along the West Coast to U.S. ports. Although vessels could also travel to international ports, this is unlikely for economic reasons; refer to the Master Response for Crude Oil Extraction, Transport, and Combustion.

Traffic Volume

Within the study area, rail and vessel traffic related to the proposed action—approximately 1.25 rail trips per day and 0.7 vessel trip per day at maximum throughput operations—would represent a substantial increase compared to both existing conditions and the no-action alternative. In the extended study area, rail and vessel trips generated by the proposed action would be minimal compared to existing and projected (where available) traffic volumes.

[2] As discussed in the Master Response for Crude Oil Extraction, Transport, and Combustion, greenhouse gas emissions are an exception and are addressed in a broader study area for the reasons described in that master response.

As shown in Table 2-1, rail trips under the proposed action (approximately 1.25 per day) represents a substantial percentage (40%) of baseline[3] rail traffic in the study area.

Table 2-1. Proposed Action Rail Trips as a Percentage of Existing and Projected Rail Trips—Study Area

Route	Proposed Action Trips per Day	Projected 2017 and 2037 Trips per day without Proposed Action	Proposed Action Trips as a Percentage Increase
PS&P Rail Line	1.25	3.1	40.3%

As shown in Table 2-2, trips related to the proposed action represent between 1.3 and 8.9% of 2015 traffic estimates along the assumed routes; along the assume routes for loaded trains, proposed action trips represent between 1.3 and 3.2% of 2015 estimates. Proposed action trips represent between 0.7 and 4.8% of 2035 projections along the assumed routes; along the assumed routes for loaded trains, proposed action trips represent between 0.7 and 1.9% of 2035 estimates.

Table 2-2. Proposed Action Rail Trips as a Percentage of Existing and Projected Rail Trips—Extended Study Area (Washington State)

Route Segment	Subdivision	Proposed Action Trips Per Day	Estimated 2015 Trips Per Day[a]	Proposed Action Trips as a Percentage	Projected 2035 Trips per Day[b]	Proposed Action Trips as a Percentage
Idaho/ Washington State Line-Spokane	Spokane	1.25	70	1.8%	125	1.0%
Spokane-Pasco	Lakeside	1.25	39	3.2%	66	1.9%
Pasco-Vancouver	Fallbridge	0.625	34	1.8%	56	1.1%
Vancouver-Centralia[c]	Seattle	0.625	50	1.3%	85	0.7%
Centralia-Auburn[d]	Seattle	0.625	50	1.3%	85	0.7%
Auburn-Yakima[d]	Stampede	0.625	7	8.9%	13	4.8%
Yakima-Pasco[d]	Yakima Valley	0.625	7	8.9%	13	4.8%

[a] Extrapolated to 2015.
[b] Numbers do not include crude oil unit trains or rail traffic related to coal export terminal proposals in Washington State.
[c] Assumed loaded trains only
[d] Assumed empty trains only
Source: Washington State Department of Transportation. 2014. *Washington State Freight Mobility Plan*. October. Available: http://www.wsdot.wa.gov/freight/freightmobilityplan.htm.

As shown in Table 2-3, tank vessels trips (0.7 per day) under the proposed action represent a substantial percentage (55 to 70%) of large commercial vessel traffic in the study area as projected

[3] No increase in rail traffic is projected in the study area under the no-action alternative in 2017 and 2037.

for 2017 and 2037. Table 2-4 presents proposed action trips as a percentage of large commercial vessel[4] trips in 2015 to and from selected West Coast destinations in the extended study area where proposed action vessel trips may occur. As shown in the table, proposed action vessel trips would represent the following percentage of 2015 large commercial vessel traffic in major West Coast destinations: 4.5% of Puget Sound traffic, 4.0% of San Francisco Bay area traffic, and 3.2% of Los Angeles area traffic.[5]

Table 2-3. Proposed Action Vessel Trips as a Percentage of Projected Large Commercial Trips—Study Area

Route	Proposed Action Trips Per Day	Projected 2017 Trips	Proposed Action Trips as a Percentage	Projected 2037 Trips	Proposed Action Trips as a Percentage
Grays Harbor Navigation Channel	0.7	0.9	70%	1.2	55%

Table 2-4. Proposed Action Vessel Trips (238 trips per year) as a Percentage of Existing Large Commercial Vessel Trips Calling at Major West Coast Port Areas

Selected West Coast Destinations	Estimated Annual Trips (2015)[a]	Proposed Action Trips as a Percentage
Washington		
Puget Sound	5,196	4.5%
California		
San Francisco Bay Area Ports[b]	5,936	4.0%
Los Angeles–Long Beach Ports[c]	7,376	3.2%

[a] Based on number of calls of vessels over 1,000 gross tons; a call is assumed to equal two trips (one inbound and one outbound).
[b] Includes major ports accessed via the San Francisco Bay.
[c] Ports of Los Angeles and Long Beach are adjacent to each other.
Source: U.S. Maritime Administration 2015 (California ports); Washington State Department of Ecology 2016b (Puget Sound).

For these reasons, Chapter 5 acknowledges the types of potential impacts associated with routine rail and vessel traffic in qualitative terms. As noted in the draft and final version of Chapter 5, the routine impacts are likely to be similar in nature to those described in Chapter 3.

Baseline Risk

For risk, an additional consideration applies to the decision to address impacts qualitatively in the extended study area. While the proposed action would introduce the transport of crude oil by rail and vessel to the study area, crude oil and a broad range of other flammable and toxic materials are already transported by unit train and tank vessel in the extended study area. Likewise, the potential consequences associated with an incident involving a crude oil unit train or tank vessel would be new to the study area, whereas these potential consequences already exist in the extended study

[4] Based on vessels of more than 1,000 gross tons.
[5] The Ports of Los Angeles and Long Beach, which are adjacent to each other.

area. Existing risks in the extended study area also include those associated with the transportation of a wide variety of flammable and toxic materials.

Although the proposed action could result in an increase in the likelihood of an incident involving the release of crude oil, individually and cumulatively, the potential consequences would be similar in nature and magnitude to those that could occur under existing conditions and the no-action alternative. As clarified in Final EIS Chapter 5, *Extended Rail and Vessel Transport,* and Chapter 6, *Cumulative Impacts,* these impacts would be similar to those described in Section 4.7, *Impacts on Resources*.

Chapters 4, 5, and 6 of the Final EIS reflect updated information about ongoing efforts to address existing safety concerns in the extended study area. These efforts would also help to reduce any risks related to the proposed action.

2.3 Connected or Similar Actions

2.3.1 Comment

Commenters indicated that the Draft EIS should evaluate the potential impacts associated with other proposals that would result in increased levels of rail and vessel traffic in Washington State.

2.3.2 Response

In determining the scope of a SEPA EIS, an agency must consider the proposed action and determine if there are any connected actions[6] and similar actions[7] to be evaluated in the EIS (SEPA Rules at 197-11-792). Unlike connected actions, which are expected to be analyzed in the same SEPA document, the inclusion of similar actions is optional; i.e., "Agencies may wish to analyze similar actions in a single document" (197-11-060(3) (c)).

Because the proposed action is neither part of a larger proposal or dependent on the implementation of any other new projects in order to proceed, it has independent utility. The proposed action is solely dependent on the approval of the site-specific permits and requirements identified in the Draft EIS. The proposed action does not require any offsite rail line improvements to receive the crude oil by rail or any offsite port improvements to load crude oil for transport to refineries. The proposed action is not dependent on new sources of crude or increased well drilling. Therefore, no connected actions require evaluation in the Draft EIS.

The cumulative impacts analysis in Draft EIS Chapter 6, *Cumulative Impacts*, includes two proposed projects in the study area, each with the potential to be considered similar actions under SEPA: the Grays Harbor Rail Terminal Expansion Project and the REG (formerly Imperium Terminal Services)

[6] Connected actions are proposals or parts of proposals that are closely related (197-11-060(3) and 197-11-305(1)) and should be evaluated in the same environmental document. Proposals or parts of proposals are closely related if either (1) they cannot or will not proceed unless the other proposals (or parts of proposals) are implemented simultaneously with them; or (2) are interdependent parts of a larger proposal and depend on the larger proposal as their justification or for their implementation.

[7] Similar actions are those actions that, when viewed with other reasonably foreseeable actions, have common aspects that provide a basis for evaluating their environmental consequences together, such as common timing, types of impacts, alternatives, or geography (197-11-060(3)(c)(1).

Expansion Project. Because the three projects are located near each other and would use the same transportation corridors in the study area, their potential cumulative impacts are addressed in Chapter 6. For more information about analyzing impacts in the extended study area, refer to the Master Response for Geographic Scope of the EIS.

2.4 Project Objective and Alternatives

2.4.1 Comment

Commenters indicated that the objective of the proposed action does not serve as the appropriate basis for selecting alternatives and that the EIS should articulate the purpose and need for the proposed action.

2.4.2 Response

Final EIS Chapter 2, *Proposed Action and Alternatives*, has been revised to more clearly highlight the objective of the proposed action, including the purpose and need to which the proposal is responding consistent with WAC 197-11-44-(4). As stated in the Draft EIS *Summary* and described in the Final EIS Chapter 2, *Proposed Action and Alternatives*, the proposed action objective is to expand the existing bulk liquid storage terminal to receive crude oil by train, store the crude oil, and load crude oil onto tank vessels at the Terminal 1 dock for shipping to refineries on the West Coast and potentially abroad.

For a private project on a specific site, under SEPA, the lead agency is required to evaluate only the no-action alternative plus other reasonable alternatives for achieving the proposal's objective on the same site (WAC 197-11-440(5) (d)). Reasonable alternatives are thereby limited to those that (1) can be feasibly attained or approximate a proposal's objective but at a lower environmental cost or decreased level of environmental degradation; (2) can be implemented on the same site as proposed; and (3) when the agency with jurisdiction can control the private project's impacts by means of required mitigation measures (197-11-786). Consequently, alternatives that involve components beyond the applicant's site controls (e.g., delivery pipeline to the project site, an offsite alternative) are not reasonable alternatives to the proposed action. No reasonable alternatives to the proposed action with lower environmental costs were identified. Therefore, the Draft EIS analysis considers the no-action alternative and the proposed action.

2.5 Crude Oil Extraction, Transport, and Combustion

2.5.1 Comment

Commenters indicated that the Draft EIS lacked analysis to support a conclusion that the proposed action would not cause an increase in crude oil extraction and combustion, and that in the absence of such analysis the Draft EIS should assess greenhouse gas emissions from extraction and combustion of the proposed throughput as additive emissions. Commenters also questioned whether lifting the ban on the export of crude oil would result in shipments of crude oil to foreign markets.

2.5.2 Response

As described in Draft EIS Chapter 2, *Proposed Action and Alternatives*, crude oil would arrive at the proposed facility by unit train. The oil is expected to originate as Bakken oil from the Williston Basin in North Dakota,[8] but could be diluted bitumen derived from oil sands in Alberta, Canada. The crude oil would be unloaded and transferred to onsite storage tanks to be loaded to tank vessels for transport to refineries.

A crude oil market analysis (Final EIS Appendix Q, *Crude Oil Market Analysis*) evaluated the potential destinations of the oil. It considered the lifting of the Energy Policy and Conservation Act of 1975 that banned the export of crude oil from the United States (December 2015) and the potential for the proposed action to affect crude oil production in the Williston Basin and Alberta oil sands. The results of this analysis are summarized in Final EIS Chapter 5, Section 5.3, *What are the likely sources and destinations of crude oil?*

For Bakken crude oil, the capacity to move crude oil out of the Williston Basin via rail, pipelines, and trucks, referred to as *takeaway capacity*, is well above current production levels. Moreover, additional takeaway capacity has been planned for the coming years. Because takeaway capacity is not constrained out of Williston Basin, additional takeaway capacity provided by the proposed action would not induce production of Bakken crude oil. For Canadian crude, oil production growth may be more constrained by takeaway capacity than Bakken growth. Therefore, the proposed action would have a slightly greater likelihood of increasing Canadian oil production. However, transloading of diluted bitumen at the proposed facility would depend on several factors. If the proposed facility is transshipping Bakken crude oil, capacity may be insufficient to handle Canadian crude oil. Moreover, to handle the heavy, viscous diluted bitumen, additional investment in storage tanks and other equipment would be required. Lastly, rail transport to the West Coast would need to be more economically favorable than rail transport to the Gulf Coast.

Despite the lifting of the Energy Policy and Conservation Act of 1975 banning the export of crude oil from the United States (December 2015), the likely destination for crude oil from the project site remains West Coast refineries in Puget Sound and California. As described in Appendix Q and Section 5.3, the oil pricing, freight costs, vessel size, and transportation costs of exporting to likely foreign markets make shipment to West Coast ports more favorable.

Because the proposed action would not be likely to affect oil production, greenhouse gas emissions related to extraction activities of crude oil are not quantified in the EIS.

Final EIS Chapter 3, Section 3.2.5.2, *Proposed Action*, and Chapter 6, Section 6.5.1.2, *Air*, *Cumulative Impacts*, reflect the additional greenhouse gas emission estimates related to rail and vessel transport beyond the state—from the likely source (Williston Basin) to the furthest likely destination (Port of Long Beach, California). As noted in the Final EIS, it is anticipated that much of this crude oil transloaded via the proposed action and cumulative projects would replace crude oil that was previously transported to these refineries by other means. To the extent that the crude oil would replace oil shipped from other sources, transport emissions would not be entirely additive. The Final EIS presents net greenhouse gas emission estimates from offsite transportation, based on rail and vessel transport emissions from source to final destination, as described above, offset by vessel transport emissions between Valdez, Alaska, and Long Beach, California.

[8] The Williston Basin rail terminals are primarily in North Dakota but extend into Montana, South Dakota, and Saskatchewan, Canada.

2.6 Baseline and No-Action Alternative

2.6.1 Comment

Commenters indicated that the Draft EIS should compare the impacts of the proposed action to the existing condition and not to the no-action alternative. Commenters stated that it is inappropriate to assume the no-action alternative would include development of another project at the project site because it is not reasonable to conclude that potential impacts could be the same even if the proposed action is not approved. Commenters also indicated that the EIS should consider the potential for impacts over the lifetime of the proposed action.

2.6.2 Response

The baseline for the analysis in the Draft EIS considers both existing conditions (i.e., affected environment) and the no-action alternative, except for impacts that were evaluated quantitatively. This is particularly relevant for transportation- and risk- related impacts, which can evolve over time because of reasonably foreseeable increased growth, planned infrastructure changes, and phased regulatory requirements for improved transportation efficiency and safety. For these resource areas, the no-action alternative provides a more realistic baseline and serves to indicate how environmental conditions are likely to change in the absence of the proposed action.

Final EIS Chapter 3, Section 3.0, *Introduction*, clarifies that the analysis considers the potential for impacts over the lifetime of the proposed facilities. For impacts that are evaluated quantitatively, the analysis considers the potential for impacts in 2017— the anticipated first year of operation—and 2037 to account for future growth and development. The impacts identified for 2037 would exist throughout the lifetime of the proposed action. This approach provides context to decision-makers about how the impacts of operations would evolve over a reasonably foreseeable period.

Draft EIS Chapter 3, Sections 3.15, *Rail Traffic*, 3.16, *Vehicle Traffic and Safety*, and 3.17, *Vessel Traffic*, provide detailed explanations of how the no-action baseline was developed to account for increased growth, increased efficiency, and improved management and infrastructure planning for transportation-related impacts over time. These assumptions serve as the basis for the analysis of risks presented in Chapter 4, *Environmental Health and Safety*. In many cases, the potential for increased impacts are also comparable to the existing condition, which is presented in the *Affected Environment* sections of Sections 3.15, 3.16, and 3.17, and in Sections 4.4.1, 4.5.1, and 4.6.1, *What are existing risks*?. For more information about how the baseline for the evaluation of impacts on vessel traffic was developed, see Master Response for Vessel Traffic Baseline and Projections.

The analysis of the no-action alternative does not assume that a future development similar to the proposed action would occur at the project site but rather that over the 20-year period, another project *could* be developed. Depending on the nature of the proposed activities, some of the impacts could be similar. However, the statement in each resource section of Draft EIS Chapter 3 that introduces the impacts related to the no-action alternative—which refers to the possibility that another project could be developed at the project site over the 20-year period—has led to misinterpretation of the baseline used in the Draft EIS analysis and has, therefore, been removed in the Final EIS.

2.7 Vessel Traffic Baseline and Projections

2.7.1 Comment

Commenters questioned the basis for determining the baseline (no-action) vessel traffic volumes used in the Draft EIS for the analysis of impacts related to vessel traffic. In some cases, commenters indicated that the baseline for comparison was overstated and resulted in underestimating the potential impacts; in other cases, commenters indicated that the baseline was understated and resulted in overestimating impacts.

2.7.2 Response

The large commercial vessel traffic volumes projected for the no-action alternative use as a basis historical data for the most recent 5-year period available at the time of the analysis (2008–2012). Although vessel traffic levels were higher prior to this 5-year period, the type and size of the vessels, drafts, commodities, and origins and destinations were highly variably and not as comparable to existing and projected traffic in the harbor. For example, from 1999 through 2006, no tanker and tank barge traffic occurred in Grays Harbor.[9] The 5-year period used in the Draft EIS accounts for year-to-year variability and represents current vessel traffic at the port. Future vessel traffic was determined by applying moderate compound annual growth rates to vessel trips associated with the present commodity volumes shipped from the port as described in Draft EIS Chapter 3, Section 3.17.3.2, *Impact Analysis*.

2.8 Mitigation Framework

2.8.1 Comment

Commenters raised many issues related to mitigation, including general concerns about how it was developed and how the measures would be enforced. Commenters raised concerns that, in many cases, there is not a clear mechanism for implementing or enforcing the proposed mitigation and that implementation may not eliminate the impact. Commenters further stated the applicant should be made responsible for addressing the indirect impacts of the proposed action, particularly those associated with rail operations (e.g., increased safety risks and vehicle congestion and delay).

2.8.2 Response

As noted in Draft EIS, Chapter 3, Section 3.0.5, *How was mitigation identified*? mitigation measures are considered when applicable regulations, permit conditions, and required plans did not adequately reduce potentially significant impacts. The specific regulations, permits, or plans are identified in each resource section of Final Chapter 3, *Affected Environment, Impacts, and Mitigation*,

[9] Washington State Department of Ecology. 1999 to 2006. *Vessel Entries and Transits for Washington Waters 1999–2006.* Spill Prevention, Preparedness and Response Program. Available: https://fortress.wa.gov/ecy/publications/UIPages/PublicationList.aspx?IndexTypeName=Program&NameValue=Spills&DocumentTypeName=Publication.

and in Chapter 4, Section 4.2, *Applicable Regulations*. Additional information is provided in Final EIS Appendix B, *Applicable Regulations.*

As described in the Draft EIS and Final EIS, mitigation measures include voluntary measures and design features, applicant mitigation, and other measures to be considered.

- **Voluntary measures and design features.** Voluntary measures and design features would be voluntarily implemented by the applicant and are not otherwise required by law. These voluntary measures and design features are considered elements of the proposed action.
- **Applicant measures.** Applicant measures are proposed to reduce potentially significant impacts remaining after regulatory compliance and voluntary commitments are considered. These measures are not required by inclusion in the EIS but could be incorporated into permit decisions informed by this EIS. SEPA requires that mitigation measures be reasonable and capable of being accomplished (Revised Code of Washington [RCW] 43.21C.060). Mitigation measures would be enforceable through a permit specific to the applicant's proposal.

  Under SEPA, agencies responsible for taking government action on a proposal, such as the proposed action, have the authority to require mitigation to address potentially significant impacts if the following criteria are met (WAC 197-11-660).

  1. Any governmental action on public or private proposals that are not exempt may be conditioned or denied under SEPA to mitigate the environmental impact subject to the following limitations:
     a. Mitigation measures or denials shall be based on policies, plans, rules, or regulations formally designated by the agency (or appropriate legislative body, in the case of local government) as a basis for the exercise of substantive authority and in effect when the DNS or DEIS is issued.
     b. Mitigation measures shall be related to specific, adverse environmental impacts clearly identified in an environmental document on the proposal and shall be stated in writing by the decision maker. The decision maker shall cite the agency SEPA policy that is the basis of any condition or denial under this chapter (for proposals of applicants). After its decision, each agency shall make available to the public a document that states the decision. The document shall state the mitigation measures, if any, that will be implemented as part of the decision, including any monitoring of environmental impacts. Such a document may be the license itself, or may be combined with other agency documents, or may reference relevant portions of environmental documents.
     c. Mitigation measures shall be reasonable and capable of being accomplished.
     d. Responsibility for implementing mitigation measures may be imposed upon an applicant only to the extent attributable to the identified adverse impacts of its proposal. Voluntary additional mitigation may occur.
     e. Before requiring mitigation measures, agencies shall consider whether local, state, or federal requirements and enforcement would mitigate an identified significant impact.

  An applicant must be reasonably able to implement required mitigation. An applicant cannot be required to act beyond its legal authority or jurisdiction. For example, the applicant has no ability to make railroad improvements or set operational standards for trains which are the responsibility of PS&P under federal regulations.

  Other measures to be considered. Other actions implemented by parties other than the applicant could further reduce potentially significant impacts associated with the proposed action. These measures are outside the control or authority of the applicant. In some cases, other

measures may be part of ongoing efforts to address existing problems (unrelated to the proposed action) or related to existing requirements or regulations that protect public resources and safety. The recommended actions would not be enforceable through a permit specific to the applicant's proposal. The Draft EIS identifies these measures to disclose additional actions or processes that could address potentially significant impacts associated with the proposed action. These types of actions can help decision-makers and planners to establish priorities for actions within their authority and jurisdiction to implement.

The mitigation presented in the Final EIS has been developed within the limits of this regulatory framework. In general and to the extent practicable, measures have been revised to provide greater specificity (e.g., timing of initiation and completion) with the intent of improving the effectiveness of the measures. As appropriate, measures have been revised to clarify parties who should participate in their execution and, to the extent possible, those who would be responsible for each measure.

Any agency issuing a permit decision related to the proposed action must provide in writing the reasons for either conditioning or denying the permit consistent with its own policies (WAC 187-11-660, RCW 42.21C.060). If the proposal is approved and a permit is issued, the deciding agency can condition the permit and identify specific measures deemed necessary to minimize potentially significant impacts within the limitations of SEPA substantive authority. These measures would become legal requirements that must be met by the applicant and would be enforceable by the conditions of a permit. If the deciding agency so chooses, monitoring and reporting requirements can also be imposed on the applicant to provide proof of compliance with the requirements. Draft EIS Chapter 7, *Economics, Social Policy, and Cost-Benefit Analysis,* includes a proposed mitigation measure specifying monitoring and reporting requirements. These reports would be part of the public record. The City of Hoquiam will be the first agency to take action on the proposal through consideration of the application for a shoreline substantial development permit.

2.9 Seismic Risk and Design Requirements

2.9.1 Comment

Commenters indicated that the current Washington State Department of Natural Resources Tsunami Inundation Map for the study area does not incorporate the latest information regarding tsunami risks and should not be relied on for assessing hazards related to tsunamis. Commenters also indicated that the Draft EIS does not adequately address risks related to earthquakes, tsunamis, and liquefaction.

2.9.2 Response

Draft EIS Chapter 3, Section 3.1.4.3, *Geological Hazards*, describes geologic conditions that could affect the project site, including earthquake and earthquake-related hazards such as tsunami and liquefaction. Section 3.1.5.2, *Proposed Action*, *Operations, Earthquakes and Related Hazards*, describes the potential impacts on the proposed facilities in the event of an earthquake. To inform the risk of tsunamis at the project site, a site-specific tsunami model was completed and an assessment of tsunami risks specific to the project site was completed as presented in Draft EIS Appendix C, *Tsunami Impact Modeling and Analysis.* As noted, although the potential for earthquakes

and earthquake-related impacts would remain the same compared to the no-action alternative, there is an increase in the potential for environmental damages from spilled oil.

As described in Section 3.1.5.2, prior to construction, the applicant would be required to undergo City of Hoquiam and City of Aberdeen Critical Areas Reviews for geologically hazardous areas and to obtain building permits from the two cities. During the application process, detailed reports would be prepared, including a critical areas review and a geotechnical report. Sufficient detail would be developed to establish project design elements that would withstand applicable earthquake magnitudes and associated liquefaction consistent with current building codes and design standards.

Current building codes and applicable design standards do not address site-specific tsunami risks. For this reason, the tsunami impact modeling and analysis (Draft EIS Appendix C, *Tsunami Impact Modeling and Analysis*) was conducted to evaluate tsunami risks at the project site. The models evaluated tsunami risks using the latest tsunami analysis method that includes a more recent full-margin rupture model for Cascadia Subduction Zone (CSZ) earthquakes than the state's tsunami hazard maps.[10] The tsunami analysis used an earthquake source model and hydrodynamic modeling method described in the Oregon Department of Geology and Mineral Industries' Special Paper 43 (Witter et al. 2011).[11] The analysis assumed a large rupture of the CSZ, which is about 30% larger than the most likely CSZ rupture scenario. This correlates to an estimated inundation depth of 21 to 33 feet at various locations at the project site. Moreover, the analysis included specific wave and debris forces calculated based on guidance from the Federal Emergency Management Agency's *Guidelines for Design of Structures for Vertical Evacuation from Tsunamis.*[12] The guidance for refuge facilities is intended to be protective of human life during a tsunami and as such provides as much certainty as possible that the proposed facilities would withstand potential tsunami and debris forces without allowing spillage of crude oil to the environment.

Draft EIS Chapter 3, Section 3.1.7.1, *Applicant Mitigation*, proposes applicant mitigation measures to further reduce potential impacts of earthquakes and to address site-specific tsunami risks based on the tsunami impact modeling and analysis.

Draft EIS Section 3.1.8, *Would the proposed action have unavoidable and significant adverse impacts on earth resources and conditions?* acknowledges that a large-scale tsunami would likely cause unavoidable and significant adverse environmental effects at or near the site if the facility was not constructed to withstand it. Final EIS Section 3.1.8 clarifies that implementation of the design and construction measures described in Section 3.1.71 would minimize these risks by designing the storage tanks to withstand expected forces and provide full containment of contents during and after seismic and tsunami events. The potential for the release of oil to the environment from the oil transfer and collection system, unloading rail cars on site, and onloading vessels at dock would remain.

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[10] Since the publication of the state's hazard mapping in 2000, recent tsunami events and advancements in the understanding and methods applied to tsunami modeling have provided for refinement of these estimates.

[11] Witter, R. C., Y. Zhang, K. Wang, G. R. Priest, C. Goldfinger, L. L. Stimely, J. T. English, and P. A. Ferro. 2011. Special Paper 43. Simulating Tsunami Inundation at Bandon, Coos County, Oregon, Using Hypothetical Cascadia and Alaska Earthquake Scenarios.

[12] Federal Emergency Management Agency. 2012. *Guidelines for Design of Structures for Vertical Evacuation from Tsunamis.* National Earthquake Hazard Reduction Program. 2nd Edition. FEMA P-646. April.

Earthquake risk assessment and design are iterative and ongoing processes during which varying levels of investigation and analysis are performed to identify and address the potential impacts associated with a project commensurate with its stage in development. Implementation of measures identified during investigations specific to the proposed action and any others identified during subsequent investigations would be required to adequately reduce the risks of the proposed action.

2.10 Earthquake Probabilities

2.10.1 Comment

Commenters indicated that the probabilities of strong earthquakes reported in the Draft EIS do not match other available information regarding probabilities of strong earthquakes.

2.10.2 Response

Draft EIS Table 3.1-2 reports the probabilities of strong earthquakes occurring at the project site within a 50-year period and within 31 miles (50 kilometers). It is based on 2009 U.S. Geological Survey information. More current information has been incorporated into 2014 U.S. Geological Survey maps (Petersen et al. 2014),[13] including information on turbidite event history (Goldfinger et al. 2012).[14] Estimates of large earthquake (9.0 M_W or greater) probabilities in Petersen et al. (2014) still fall within the range reported in Table 3.1-2 and are valid based on the most up-to-date information.

Lower-intensity earthquakes may cause damage to storage tanks at the project site. However, in accordance with the International Building Code and Petroleum Institute 650, the Maximum Credible Earthquake (MCE) will be used for design based on code requirements. For the Draft EIS, the MCE is defined as the CSZ L1 Mw 9.0. This would reduce impacts from all magnitudes of earthquakes 9.0 Mw or smaller. The Draft EIS considers the impacts related to a large and intense earthquake, and smaller events are considered by inclusion

2.11 Environmental Health and Safety Analysis

2.11.1 Comment

Commenters indicated that different approaches should have been used to analyze risks and that the risk of incidents, including spills, fires, or explosions should have been identified for specific resources along rail and vessel transportation routes. Commenters also stated that a broader range of scenarios that included the worst-case outcome from onsite (terminal) operations and rail and vessel transport should have been addressed.

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[13] Petersen, M. D. and 16 others. 2014. Documentation for the update of the United States national seismic hazard maps. U.S. Geological Survey Open-File Report 2014-1091.

[14] Goldfinger, C., Nelson, C.H., Morey, A.E., Johnson, J.E., Patton, J.R., Karabanov, E., Gutiérrez-Pastor, J., Eriksson, A.T., Gràcia, E., Dunhill, G., Enkin, R.J., Dallimore, A., and Vallier, T., 2012, Turbidite event history—Methods and implications for Holocene paleoseismicity of the Cascadia subduction zone: U.S. Geological Survey Professional Paper 1661–F, 170 p. (Available at http://pubs.usgs.gov/pp/pp1661f/).

2.11.2 Response

Draft EIS Chapter 4, *Environmental Health and Safety*, notes that spills of oil related to the proposed action could occur on land or in water, at any time of day or night, and in any weather condition. It is impossible to know exactly when and where a spill would occur and how much oil would be spilled. Therefore, the risk analysis in the Draft EIS focuses on determining the likelihood and possible spill volumes associated with a representative set of potential spill scenarios related to the proposed action. This approach is consistent with federal and state oil spill planning by identifying potential risks and requiring planning for worst-case spills. By providing this risk information, planners and emergency responders gain a broader understanding of the variety of outcomes and the types of risks that could occur, can identify mitigation measures and response planning and preparedness resources.

As part of the required facility prevention and oil spill contingency plan, which is subject to approval by Ecology, additional detail related to operations and engineering designs would be required from the applicant. Design and planning requirements for facilities, vessel operators, and railroads are described in Chapter 4.

The details about the analysis and results of the risk assessment are presented in Appendix M, *Risk Assessment Technical Report*. The consequences associated with a subset of the spill scenarios were modeled and the detailed results are presented in Appendix N, *Oil Spill Modeling*. Both the risk assessment and oil spill modeling were completed by a third-party contractor in coordination with the co-lead agencies to support evaluation of the proposed action under SEPA.

Selection of the spill scenarios analyzed in Appendix M and presented in Chapter 4 was informed by regulatory reporting requirements and activities specific to the proposed action to identify a range of possible outcomes. The scenarios considered various sizes of potential spills based on the activity (such as transport or transferring oil) and size of tank, rail cars, and vessels. Spill scenarios are characterized by the amount of material spilled. The potential impacts are dependent on the amount spilled, location, and other conditions present at the time of the incident.

The selected scenarios cover the spectrum of release sizes, from smaller (and typically more frequent) spills associated with onsite unloading of rail cars and loading of vessels that may result from mechanical failures or human errors, to the potential for more significant spills from storage tanks, rail cars, or vessels while in transit. The onsite (terminal) spill scenarios represent the types of incidents that could occur specific to the proposed action based on available site-specific data, secondary containment requirements, and the physical separation of the site from the public and the natural environment. Worst-case transportation releases (very large rail and vessel spills) are also considered. Both loaded and unloaded rail and vessel movements are evaluated, although only the loaded movements can result in oil spills (beyond small residual heels in the transport containers). The Draft EIS focuses on the loaded movements when reporting the frequencies of a release.

Scenarios were chosen using expert opinion on locations where spills typically could occur, such as during fuel transfers, or where worst-case spills could occur, such as a vessel incident at the entrance to Grays Harbor. The quantity of oil spilled for these scenarios was based on the definition of worst-case spill for an onshore facility, a vessel, and for rail transport (WAC 173-182-030 and 480-62-300). For an onshore facility, the worst-case spill would involve the entire volume of the largest aboveground storage tank (approximately 8.4 million gallons or 200,000 barrels of crude oil for the proposed action). The spill scenario during vessel loading was estimated taking into account the proposed transfer rate to the vessel multiplied by approximately 1 minute and 25 seconds to

account for the maximum shutdown response time. For rail transport, the worst-case spill on the PS&P rail line would involve approximately 17.75 rail cars. For a vessel, the worst-case spill would involve the vessel's entire cargo and fuel. The largest tankers would be Panamax class with the capacity to hold up to 15.1 million gallons (360,000 barrels). An additional 420,000 gallons (10,000 barrels) was added to represent the fuel onboard the vessel.

While the general approach in the Draft EIS is similar to more detailed risk assessments noted in many of the comments, the approach does not predict when or where an incident would occur, nor does it predict the resulting consequences. As such it is not a quantitative or probabilistic risk assessment. By extension, the Draft EIS does not evaluate in detail the site conditions or predict the specific consequences that would affect individual resource areas or populations along rail and vessels transportation corridors. Therefore, Section 4.7, *Impacts on Resources*, describes the general types of impacts that could occur because of an incident. Final EIS Section 4.7 has been revised to emphasize that many sensitive resources could be adversely affected in the event of an oil spill, fire, or explosion, including potential adverse impacts on human health, social welfare, and the livelihoods of those affected.

Refer to the Master Response for Risk Assessment Methods for more information on the specific methods used in the analysis of risks (Appendix M, *Risk Assessment Technical Report*) and oil spill modeling (Appendix N, *Oil Spill Modeling*).

2.12 Risk Assessment Methods

2.12.1 Comment

Commenters indicated that the methods used in the risk assessment were flawed and resulted in understating the risks associated with the proposed action. More specifically, commenters stated the underlying methods, data sources, and assumptions should account for the existing rail infrastructure, environmental conditions (i.e., weather, soil conditions, and water flow), and other sources of data and that the risk figures were confusing. Additionally, commenters indicated that risks associated with terminal (onsite) activities and rail and vessel transport should be added together to provide a more complete picture of risks and that the EIS should provide information to compare the risk assessment with other studies evaluating the risks of rail transport around the country.

2.12.2 Response

The detailed methods and assumptions used in the risk assessment are described in Draft EIS Appendix M, *Risk Assessment Technical Report*. As noted in Appendix M, the approach to the risk assessment was to determine an appropriate rate for an incident (i.e., likelihood an incident would occur) and to determine the chance of a release (i.e., likelihood that a release would occur because of the incident) relevant to the selected spill scenarios. These values were then applied to the proposed action to calculate the overall chance per year that each spill scenario would occur.

More specifically, the results of the risk assessment are presented in Draft EIS Chapter 4, *Environmental Health and Safety,* in terms of the expected number of years between incidents to provide an idea of how often spills of different sizes might happen. For example, a spill of up to 2,100 gallons could occur during vessel loading at the facility once every 8 years. The results were

also presented on a per-year basis in Appendix M. For example, the same spill of up to 2,100 gallons could occur at the facility 0.12 time per year. The annual results from Appendix M can be multiplied by any number of years to determine the overall chance of an incident occurring over a longer period, such as the lifetime of the proposed action. For example, over a 50-year period, the same spill of up to 2,100 gallons could occur six times.

This was not a quantitative risk assessment nor a probabilistic risk assessment. The various factors considered in determining the appropriate accident and release rates were not weighted except where they are explicitly captured in available data—such as the track class for rail operations or the type of waterway for vessel operations. This approach was used because there are not sufficient sources of historic incident or failure data within the study area, and is a common approach in risk assessments where broader data sets are applied to specific sites and operating conditions.

As noted in Draft EIS Appendix M, this approach was individually tailored to the primary elements of the proposed action: the applicant's onsite (terminal) operations and transportation undertaken by rail and vessel operators moving the crude oil to and from the project site. The data sources used to develop the incident and failure rates for each element were selected as being most representative of conditions applicable to terminal (onsite) activities, rail transport, and vessel transport relevant to the study area and proposed action.

Predicted failure rates for the identified onsite scenarios were based on a number of past studies that analyzed historical data along with guidance published by the United Kingdom's Health and Safety Executive for use in risk assessments. This latter source is based on a definitive compilation and analysis of numerous databases and past studies from various countries and is not limited to United Kingdom data. (See Appendix M, Section 3.2, *Approach and Data* for details.) The selected sources consider all causes of failure, including construction defects, natural hazards, human error, and material failures. Considering the intent of the risk assessment to inform decision makers and planners, as opposed to final technical designs, these sources were considered appropriate for the Draft EIS.

Both rail derailments or collisions and vessel transit incidents (groundings, collisions, and allisions) were analyzed using a combination of recent data, proposed operations, and local conditions (e.g., speed limits and rail car design). Because Washington State gathers information on accidents but not the associated train miles needed to calculate accident rates, nationwide data available from the Federal Railroad Administration was applied to the calculation of rail accidents. (See Appendix M, Section 4.2 *Approach and Data* for details.) As noted in Appendix M, the Federal Railroad Administration data covered 2011 through 2014 and included more recent derailments and circumstances relevant to crude oil by rail transport. Accordingly, the model used to assess accident rates allows for current accident data to be applied and for different configurations of tank cars (such as thicker walls, jackets, fitting protection, and other factors that will be on the new designs required under the May 2015 final rule) to be taken into account. This model was used to evaluate different numbers of cars derailing and spilling and it did not rely on outdated sources of data. The data used for vessel accidents was based on a review of data from the U.S. Coast Guard, various ports, shipping companies, and from data gathered for other studies, along with analyses of those data. The selected data were from Glosten Associates[15](Appendix M, Section 5.2, *Approach and*

[15] Glosten Associates. 2014. *Vessel Traffic and Risk Assessment Study for Puget Sound.*

Data). Natural hazard-induced accidents are built into the various transportation accident rates because all accidents above the current reporting thresholds are included, regardless of cause.

As noted by many commenters, the graphical presentation of risks in the Draft EIS was confusing and open for interpretation. The figures have been removed and Final EIS Chapter 4, *Environmental Health and Safety*, has been revised to describe each spill scenario terms of the range of spill sizes, the specific activities involved, and potential causal events. The risks across these operations are not combined in the Draft EIS because of differing regulatory and design requirements described in Chapter 4, because the cause of an incident involving the facility or rail or vessel transport would likely be different, and because the proposed facility, rail line, and vessel transport corridor are physically separated.

It should also be noted that the results presented in the Draft EIS are not directly comparable with studies that evaluate risks outside this area (e.g., the BNSF main line). This is mainly because detailed risk analysis presented in the Draft EIS is specific to the PS&P rail line. There are substantial differences between the study area (PS&P rail line) and the extended study area (e.g., BNSF main line) with respect to rail transport conditions. The scale of the nationwide rail system is more than a 1,000 times the length of the 59-mile-long segment of the PS&P rail line in the study area and different classes of rail travel at different speeds and under different regulatory requirements. Many more trains travel each day on the main lines. For these reasons, the likelihood of an incident occurring in the study area is lower than the likelihood of an incident occurring on the entire mainline rail system.

Refer to the Master Response for Oil Spill Modeling Methods for more information about the purpose for, assumptions and methods used in, and the limitations of the oil spills modeling.

2.13 Oil Spill Modeling Methods

2.13.1 Comment

Commenters indicated that the General National Oceanic and Atmospheric Administration (NOAA) Oil Modeling Environment (GNOME) modeling platform and Hydraulic Engineering Center–River Analysis System (HEC-RAS) models used to characterize oil spills in Draft EIS Appendix N, *Oil Spill Modeling*, have significant limitations that should be better explained. Commenters recommended other scenarios, inputs, and methods for modeling oil spills.

2.13.2 Response

The general approach to the analysis of impacts presented in Draft EIS Chapter 4, *Environmental Health and Safety*, focuses on assessing the potential risks associated with a set of release scenarios rather than attempting to predict the precise location of a potential spill. This approach was selected to provide decision-makers and planners with a range of possible spill scenarios that could occur related to terminal (onsite) operations and rail and vessel transportation. As discussed in Appendix N, *Oil Spill Modeling*, a subset of the release scenarios was selected for oil spill modeling consistent with applicable contingency planning requirements as follows.

- Two release scenarios associated with **terminal operations** were modeled using GNOME, including an incident during vessel loading and an incident resulting in the release of the contents of an entire storage tank.
- One release scenario associated with **vessel transport** was modeled using GNOME involving an incident resulting in the loss of an entire vessel.
- Three release scenarios associated with **rail transport** were modeled using HEC-RAS involving incidents resulting in the release of one, three, and five rail cars.

In addition to the spill sizes being informed by existing regulations,[16] the analysis adhered to planning requirements to show spill trajectories in 24- and 48-hour increments (WAC 173-182-405). Consistent with these standards, the oil spill modeling effort assumes that no efforts to respond or mitigate a release are made.

GNOME was selected to complete the oil spill trajectory analyses because it is a commonly accepted industry standard for contingency planning, scenario analysis, and oil spill response used by NOAA, the U.S. Coast Guard, and Washington State Department of Ecology (Ecology). GNOME is designed to give responders and contingency planners a perspective on where an oil spill may travel and forecasts how rapidly the oil weathers (the oil's fate in the environment).

Appendix N also presents information comparing oil properties after 48 hours in the environment for three different types of oils using Automated Data Inquiry for Oil Spills (ADIOS). The ADIOS program was used to further refine the analysis of oil fate by providing more detailed estimates about the change in the spilled oil's properties (such as viscosity and density) and behavior (such as the rate of evaporation and dispersion) over time. ADIOS is also a NOAA program that can be used to supplement a GNOME analysis. The analysis in Appendix N combines specific data from GNOME and ADIOS to provide a more complete picture of the spilled oil's fate.

Oil spill modeling requires consideration of wind, tide, and other site-specific environmental factors that influence the trajectory of oil after a spill. GNOME uses Location Files that contain this type of information about the area being modeled. Each Location File contains generalized information about the tides, currents, and shorelines in the region it covers. For most parameters (e.g., currents), averages of historical data are used in the Location Files. Although actual conditions may vary from historical averages at any particular time, the use of the Grays Harbor Location File was considered the most reasonable approach to representing conditions in the study area.

Although GNOME is a widely accepted model, important limitations have been noted in Appendix N and are summarized below. It is important to acknowledge these considerations to understand the limitations of the oil spill modeling output and to remember that the purpose of the modeling exercise is not to predict the precise location or extent of a spill but rather to provide information to decision-makers and planners about the range of possible outcomes.

- GNOME currently does not consider specifically Bakken crude oil or diluted bitumen. Therefore, medium crude oil was used as a proxy based on discussions with NOAA experts.

[16] Refer to the Master Response for Environmental Health and Safety for more information.

- GNOME does not predict how long different types of oils would persist in the environment. For this reason, the ADIOS analysis was completed to provide a more complete picture of the fate of spilled oil over time.
- GNOME considers estimate of river flow conditions for the Chehalis River based on estimated flow data for rivers of a similar size in the absence of reliable discharge data for the Chehalis River.
- The Location File for Grays Harbor only extends approximately 10 miles north or south of the Grays Harbor entrance and does not include Rennie Island. Most of the environmental conditions associated with Rennie Island are included in the model. In order to predict how oil would travel along the coastline, Attachment A of Appendix N, *Oil Spill Modeling Methods*, discusses two previous large spills that occurred off the Washington State coastline to illustrate the directions that oil can migrate offshore depending on seasonal conditions. These discussions are presented as examples and not predictions of the impacts of potential future oil spills. To provide an idea of the fate of oil spilled along the Chehalis River, the HEC-RAS model was used.

As noted above, the Location File for Grays Harbor contains representative information about environmental conditions in the study area and includes options for high, medium, and low river flow rates. Wind conditions are the only parameter entered manually. Wind speeds and directions were selected after discussion with NOAA and Ecology representatives and were based on a review of 18 years of historical wind data (collected at Hoquiam/Bowerman Airport) to identify average or typical wind speeds and directions during the summer (July) and winter (January). Although a catastrophic accident resulting in a spill could be more likely to occur during periods of extreme weather conditions, including winds with higher than average wind speeds, the wind speeds chosen for the GNOME trajectories were average seasonal wind speeds.

As noted in Appendix N, strong winds can control the GNOME oil spill trajectory and "push" the oil into one area without consideration of other conditions such as tides and currents. By selecting moderate winds representative of average conditions, it was possible to achieve a balanced perspective of the different factors influencing oil movement in Grays Harbor.

To provide information about the potential for movement of spilled oil along the Chehalis River, HEC-RAS was used. It is a one-dimensional hydraulic model that is the benchmark for predicting and reviewing river hydraulics. The model is specific to modeling water and not intended to predict or estimate fate and transport of oil. It has been applied in the technical analysis to predict the expected river volume and flow velocity (e.g., speed of the current) for a range of flows: low, moderate, and high. The low-flow rate was developed by reviewing the 61-year flow gauge record at U.S. Geological Survey Gage 12031000 Chehalis River at Porter, Washington. The 2-year and 100-year flow events are based on the hydrology that has been developed for the Chehalis Basin flood control project.

HEC-RAS is used for two purposes. First, the volume of water present during each flow event was compared to the volume of oil spilled in each scenario. The sum of these two volumes was compared to the available capacity in the river channel to determine if the spill could exceed the river channel capacity. Second, the river velocity at each flow event was calculated to determine the minimum travel time from the spill location to Grays Harbor. As noted in the Appendix N, the model does not have the capacity to determine the fate of the oil while in the river and therefore, creates a reasonable approximation of the volume of oil transported to Grays Harbor.

To address in part the limitations discussed above, Chapter 4, Section 4.4.3, *What mitigation measures would reduce impacts related to terminal operations at the project site?* includes a proposed mitigation measure for the applicant to collect data on tides, currents, wave heights, wind, air and water temperature and barometric pressure at the facility, at Oakville, Washington, on the Chehalis River, and at the entrance to Grays Harbor. In addition, the applicant would purchase and stage a current measuring device that includes direction and velocity at the facility dock. The data would be used to improve the GNOME Location File for Grays Harbor. The data would assist in developing trajectories for the GNOME and TAP oil spill models. The data provided would be sufficient so that the models could have the following capabilities.

- Predict how wind, currents, and other processes might move and spread oil spilled on the water.
- Depict a relative distribution of spilled oil movement in Grays Harbor from the harbor entrance to a point to upstream in the Chehalis River near Oakville, Washington.
- Predict a spill trajectory based on a worst-case spill scenario from spills at the terminal, from vessels transiting to and from the terminal, and from derailments along the PS&P rail line.

2.14 Emergency Response and Planning Gaps Evaluation

2.14.1 Comment

Commenters indicated that the Draft EIS should include a more comprehensive evaluation of emergency response capabilities to respond to potential incidents involving the release of crude oil. Commenters requested that the Final EIS be revised to reflect details about comprehensive updates to emergency response plans (e.g., individual rail plans, Northwest Area Contingency Plan, and individual geographic response plans).

2.14.2 Response

Draft EIS Chapter 4, Section 4.2, *Applicable Regulations*, provides a discussion of the overall framework to prevent, plan for, and respond to an oil spill, fire, or explosion. As noted in Section 4.2.3, *What framework prepares for responses to an incident?* the framework for responding to an incident is a well-established and coordinated system formalized at the national, regional, state, and facility level. Depending on the size of the release, the location, and specific circumstances of the incident, the response efforts and parties involved can vary. However, local and state fire, police, or emergency responders are likely to be the first responders to an incident, regardless of the location.

It is expected that first responders from the local jurisdictions or the railroad emergency response team would assume the same posture for a crude oil or other hazardous material spill on the rail—defensive and protective. The local responders would do what is necessary to evaluate and report on the situation, keep themselves and the public safe, and monitor response and cleanup operations for compliance with local ordinances and permits. Depending on the severity of the incident, when considering impacts on public health and the environment, the U.S. Environmental Protection Agency, U.S. Coast Guard, and Ecology may take a more aggressive role in the initial response operations to ensure that the responsible party is taking appropriate and timely action to mitigate damages to the environment.

As noted in Section 4.2.3, most of the fire departments in the study area do not have specifically designated hazardous materials teams. This information is based on discussions with local emergency service responders. Final EIS Chapter 4 has been revised to clarify existing local response capabilities and potential impacts associated with the demand for these services under the no-action alternative and the proposed action.

To address, in part, the lack of hazardous materials response capabilities at the local level, Draft EIS Sections 4.4.3, 4.5.3, and 4.6.3, include proposed mitigation measures for the applicant to ensure that response equipment is located at key points in the study area and to establish formalized notification protocols at the local level in the case of an incident. To further address these gaps, additional proposed mitigation measures are included in the Final EIS. These measures include providing additional firefighting equipment, spill response and recovery equipment, and other tools, and annual emergency response training opportunities to local jurisdictions. Additionally, the Final EIS proposes a mitigation measure for the applicant to gather data to improve modeling capabilities, which would in turn help to inform response actions in the event of an incident.

Draft EIS Chapter 4 also addresses the existing planning framework that facilitates a coordinated emergency response for facility, rail, and vessel incidents, including as it relates to the proposed action. As noted in Section 4.2.2, *What framework prepares for an incident?* formalized planning is required by federal and state regulations and requires participation by a diverse group of stakeholders.

Broader planning documents include the Northwest Area Contingency Plan, geographic response plans, local emergency plans, and the applicant contingency planning requirements. Each plan is written for a specific area (e.g., the Chehalis River or Grays Harbor) and includes tactical response strategies tailored to a particular shore or waterway at risk of injury from oil. At the broader regional level, these plans help coordinate response efforts by the responsible party and federal and state agencies. Although these plans contain information that would inform emergency preparedness and response planning in the event of an incident associated with the proposed action, review of and comment on these plans is not within the scope of the EIS. As noted in Draft EIS Chapter 3, Section 3.0, *Introduction*, the Draft EIS does consider the effectiveness of existing regulations, plans, and available resources, in the analysis of impacts. And as discussed in Section 4.2, *Applicable Regulations*, the response framework would consider the specific conditions at the time of an incident to inform the best procedure for containing and responding to an oil spill.

Beyond the facility planning required of the applicant, Chapter 4 identifies other measures that would ensure broader prevention, preparedness, and response planning among the appropriate stakeholders and that would ensure updates to any plans applicable to reducing risks related to the proposed action contain appropriate applicant information and participation. To the extent possible, within the regulatory framework for developing mitigation as described in the Master Response for Mitigation Framework, measures addressing the need for more coordinated and focused planning include the role of the applicants as appropriate.

Nonetheless, mitigation would not completely eliminate the possibility of an incident. Depending on the specific circumstances of an incident, there remains a need for improved emergency response capabilities within the study area and the potential for significant environmental impacts.

2.15 Liability and Responsibility for Incidents

2.15.1 Comment

Commenters requested that the Final EIS clarify the limits of liability for oil spills under federal and state regulations; what types of damages responsible parties would be liable for in the event of a spill; requirements for financial assurance or proof of the financial capability of operators to pay damages resulting from a spill; and how cleanup costs would be paid if the responsible party is unable to cover the full cost.

2.15.2 Response

Liability is established through federal and state regulations as discussed in Draft EIS, Chapter 4, Sections 4.4, 4.5, and 4.6 and in detail below. These regulations establish levels of financial responsibility for cleaning up the spilled oil. Additionally, federal and state law provide for recovery of natural resources damages, which extends beyond the immediate costs of clean up and may include the costs to restore and replace the resource, compensation for lost uses of the resource and trustee assessment costs. Revisions related to updated requirements related to the demonstration of financial responsibility have been incorporated into Chapter 4 of the Final EIS.

2.15.2.1 Liability and Levels of Financial Responsibility

In general, the polluter is responsible for costs and damages associated with oil spills, which in the case of the proposed action would be the applicant for incidents at the project site, the rail operator for incidents that occurred during rail transport, or vessel operators for incidents occurring during vessel transport.

Terminal (Onsite) Operations

Washington State law requires owners or operators of facilities to provide evidence of financial ability to clean up and pay for damages that might occur during a reasonable worst-case spill of oil into the navigable waters of the state. A proposed mitigation measures has been included in Section 4.4.3.2, *Applicant Mitigation*, to conduct a study to identify an appropriate level of financial responsibility for the potential costs for response and cleanup of oil spills, natural resource damages, and costs to state and affected counties and cities for their response actions. The study would be conducted consistent with RCW 88.40 and 90.56 as well as the decision in *Quinault Indian Nation v. Imperium Terminal Servs*, 190 Wn. App. 696 (2015). Proof of financial responsibility will be included as documentation in the applicant's contingency plan. This and other mitigation measures would be enforceable through any permits or other approvals issued for the proposed action. The federal government has established limits on the financial responsibility. Washington State places no limits on liability of recovery of cleanup costs and natural damages beyond the federal limit (Table 2-5).

Table 2-5. Federal and State Level of Financial Responsibility for Spill Removal Costs

Reference	Applicability	Level of Financial Responsibility
Onshore facilities		
Title 33 CFR §138.230(c)	Onshore facilities	$633,850,000 (maximum)
RCW 88.40	Onshore facilities	Washington State has not yet established a level of financial responsibility
Tank vessels (double hull only)		
Title 33 CFR §138.230(a)(1)(ii)	For a tank vessel greater than 3,000 gross tons	The greater of $2,200 per gross ton or $18,796,800 (maximum)
Title 33 CFR §138.230(a)(1)(iv)	For a tank vessel less than or equal to 3,000 gross tons, other than a single-hull tank vessel	The greater of $2,200 per gross ton or $4,699,200 (maximum)
RCW 88.40	For all tank ships and tank barges equal to or greater than 300 gross tons	$1 billion (minimum)
RCW 88.40	Tank barges less than 300 gross tons	Greater of $2 million or $3,000 per barrel for persistent oil (minimum)
Rail operators		
RCW 81.04.560 WAC 480-62-300	Rail operators that transport crude oil in Washington	Sufficient amount to cleanup a reasonable worst case spill of oil based on a minimum cost of $16,800 per barrel multiplied by the percentage of the largest train load of crude oil, as measured in barrels, moved by that company in the previous calendar year as described by: [(maximum operating speed/65)^2 = reasonable worst case percent]

[a] Washington state liability amounts that are noted for vessels are minimum requirements although in the event of an oil spill from a vessel or facility the law allows for unlimited liability. Washington does not have its own certification program for financial responsibility, but rather relies on federal and other states' programs to certify vessels for financial responsibility.

Source: http://www.ecy.wa.gov/programs/spills/preparedness/FinancialResponsibility.html

Rail Transport

Response and cleanup of spills from rail cars that threaten the navigable waters or adjoining shorelines are the responsibility of the owner or operator (also referred to as the *shipper*) of the rail cars carrying the crude oil (RCW 88.40, Transport of Petroleum Products—Financial Responsibility). RCW 81.04.560 requires railroad companies to provide financial assurance of their ability to pay damages in the event of a spill or accident involving crude oil transportation in Washington State. The Washington Utilities and Transportation Commission administers this requirement and recently approved regulations (TR-151079, effective on March 11, 2016) that require rail operators transporting crude oil in Washington State to include a statement in an annual

report that they carry sufficient insurance to cover any losses resulting from a reasonable worst case spill (revised WAC 480-62-300).[17]

If the spill from a train car does not reach or threaten navigable waters, the federal Resource Conservation and Recovery Act (42 United States Code [U.S.C.] 6901) as well as the Federal Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9607), and the Natural Resource Damage Act (43 CFR Part 11) provide mechanisms for the State to obtain compensation from the responsible party for cleanup and environmental restoration, and liability provisions for criminal and civil penalties.

Washington State places no limits on liability of polluters to third parties, allowing recovery of cleanup costs and natural resource damages beyond the federal limit (Table 2-5).

Vessel Transport

Washington State law requires the operators of tankers and tank barges transporting hazardous substances to provide evidence of financial responsibility. Under RCW 88.40.020, Evidence of Financial Responsibility, tank vessels that transport oil in bulk as cargo must demonstrate financial responsibility to pay at least 1 billion dollars. With a few limited exceptions, federal law requires vessel operators (all types of vessels) to have a Certificate of Financial Responsibility for vessels over 300 gross tons using the navigable waters of the United States (33 CFR 138.15). Washington State places no limits on liability of third parties, allowing the state to recover cleanup costs and natural resource damages beyond the federal limit (Table 2-5).

Federal and State Framework Establishing Liability

As noted above, federal and state regulations establish the liability for financial responsibility and the processes for covering costs of clean up and natural resources damages as discussed below.

Federal Regulations

Federal legislation related to liability for oil spills with the potential to reach waters of the United States is contained in the Oil Pollution Act of 1990 (33 U.S.C. 2701-2761).

Oil Pollution Act Section 1002(b)(2) (33 U.S.C. §2702) identifies the costs that spillers are liable for. Covered removal costs and damages are as follows.

1. Removal costs: all removal costs incurred by the U.S., a state, or an Indian tribe; any removal costs incurred consistent with the National Contingency Plan (40 CFR 300).
2. Damages:
    a. Damages for injury to, destruction of, loss of, or loss of use of, natural resources, including the reasonable costs of assessing the damage, which shall be recoverable by a U.S. trustee, a state trustee, an Indian tribe trustee, or a foreign trustee.
    b. Damages for injury to, or economic losses resulting from destruction of, real or personal property.

[17] Revised WAC and rulemaking timeline available: http://www.utc.wa.gov/docs/Pages/RailSafetyRulemaking151079.aspx>).

c. Damages for loss of subsistence use of natural resources, which shall be recoverable by any claimant who so uses natural resources which have been injured, destroyed, or lost.

d. Damages equal to the net loss of taxes, royalties, rents, fees, or net profit shares due to the injury, destruction, or loss of real property, personal property, or natural resources, which shall be recoverable by the U.S., a state, or a political subdivision.

e. Damages equal to the loss of profits or impairment of earning capacity due to the injury, destruction, or loss of real property, personal property, or natural resources.

f. Damages for net costs of providing increased or additional public services during or after removal activities, including protection from fire, safety, or health hazards, caused by a discharge of oil, which shall be recoverable by a state, or a political subdivision of a state.

When the responsible party is not identified or cannot pay, the federal government must step in and cover the costs of an oil spill cleanup and damages using the Oil Spill Liability Trust Fund, as authorized by the Oil Pollution Act. The National Pollution Funds Center administers the fund that can be used to pay for federal and state costs for oil removal when a discharge occurs or for reimbursements related to third-party claims for uncompensated removal costs and damages when a responsible party does not pay.

Claims to the Oil Spill Liability Trust Fund are payable only from the fund, and payments are limited by the available balance. For any single discharge incident, the fund is authorized to pay no more than $1 billion, of which no more than $500 million may be paid for natural resource damages (NPFC 2015: 2).

The Natural Resource Damage Assessment is the legal process that federal agencies, tribes, and states use to assess the impacts of oil spills on natural resources to determine the extent of the natural resources damages and the type and amount of restoration required. This includes restoring the public's lost use of the affected natural resource. In Washington the process for determining damages from an oil spill is defined in the Oil Spill Natural Resources Damage Rule (WAC 173-183).

State Regulations

Washington State law (RCW 88.40 and 81.04.560) requires the party responsible for a spill of oil or hazardous substances to state waters to pay for the following costs.

- Their own costs to cleanup and remove oil spills.
- Damages to persons or property, including natural resources.
- Reimbursement to the state for necessary expenses for investigating, containing, removing, or treating oil related to an incident.

The responsible party may also be required to pay a penalty for violation of state law or rule.

If a spiller is unable to fully pay for cleanup costs and damages to public resources, the State would file a request to recover cleanup and damage costs from the federal fund described above. The State requires industry to describe their damage claims process in the oil spill contingency plans.

2.16 Cumulative Impact Analysis

2.16.1 Comment

Commenters indicated that the Draft EIS should evaluate cumulative impacts on all resources considered in Chapters 3 and 7 and in the context of all crude oil projects in the state.

2.16.2 Response

Chapter 6, *Cumulative Impacts*, presents the analysis of the incremental addition of impacts from the proposed action to impacts from past, present, and reasonably foreseeable future actions—including the REG (formerly Imperium Terminal Services) Expansion Project and the Grays Harbor Rail Terminal Project. In general, the scope of the cumulative impacts analysis is limited to those resources on which the proposed action could have significant impacts in combination with other past, present, and reasonably foreseeable and similar future actions, based on the analyses in Chapter 3, *Affected Environment, Impacts, and Mitigation*, and Chapter 4, *Environmental Health and Safety*. Consequently, the resources analyzed for cumulative impacts in Chapter 6 include air, noise and vibration, tribal resources, rail traffic, vehicle traffic and safety, vessel traffic, environmental health and safety.

The Draft EIS identifies the REG (formerly Imperium Terminal Services) Expansion Project and the Grays Harbor Rail Terminal Project as reasonably foreseeable future actions; therefore, these projects along with the proposed action are considered cumulative projects for the analysis in Chapter 6. As noted in Draft EIS Chapter 5, *Extended Rail and Vessel Transport*, and Chapter 6, the proposed action could result in an incremental increase in the chance of an incident above existing and no-action risk levels in the extended study area, individually and cumulatively. However, the potential consequences would be similar in nature and magnitude to those that could occur under existing conditions or the no-action alternative, Because the potential adverse environmental impacts related to rail and vessel transport in the extended study area under existing and no-action conditions are not expected to change as the result of the proposed action, the Draft EIS considers the potential impacts in qualitative terms and acknowledges the potential for impacts to be similar to those that could occur related to the proposed action as described in Chapter 4, Section 4.7, *Impacts on Resources*.

Project-specific impacts of the REG Expansion Project are presented in the Draft EIS for that project; project-specific impacts of the Grays Harbor Terminal Expansion Project or any other future project proposed at that site would be assessed as appropriate under that proposed action's SEPA review process.

2.17 Economics, Social Policy, and Cost-Benefit Analyses

2.17.1 Comment

Commenters indicated that the scope of the analysis for the resources in Chapter 7, *Economics, Social Policy, and Cost-Benefit Analysis*, was too narrow and should be expanded. Commenters said

the economic analysis should be more detailed and include potential costs to individuals that could be affected by the proposed action. Commenters indicated that the potential for social policy impacts should also be more detailed and include an assessment of human health impacts. Commenters asked for the cost-benefit analysis to be expanded beyond Hoquiam. Commenters indicated that all elements addressed in Chapter 7 should be expanded to address impacts related to the increased risk of oil spills, fires, and explosions.

2.17.2 Response

SEPA Rules (WAC 197-11-444) do not require that an EIS analyze the economic or social policy impacts of an action. The rules (WAC 197-11-448) state,

> SEPA contemplates that the general welfare, social, economic, and other requirements and essential considerations of state policy will be taken into account in weighing and balancing alternatives and in making final decisions. However, the environmental impact statement is not required to evaluate and document all of the possible effects and considerations of a decision or to contain the balancing judgments that must ultimately be made by the decision makers. Rather, an environmental impact statement analyzes *environmental* impacts and must be used by agency decision makers, along with other relevant considerations or documents, in making final decisions on a proposal.

Additionally, the rules (WAC 197-11-450) state that a cost-benefit analysis is not required. However, the Hoquiam Municipal Code (HMC 11.10) states,

> "the following additional elements are part of the environment for the purpose of EIS content, but do not add to the criteria for threshold determinations or perform any other function or purpose. (1) Economy; (2) Social policy analysis; (3) Cost-benefit analysis."

In other words, this information is provided for informational purposes. Based on this regulatory requirement, the Draft EIS addresses economic considerations, social policy implications, and the costs and benefits associated with the proposed action and the no-action alternative as directed by the co-lead agencies. Therefore, Chapter 7 focuses on the following issues specific to the proposed action alone.

- Section 7.1, *Economics,* provides the regional (state- and countywide) economic context for the proposed action and identifies the employment, income (including benefits), and economic output that would be generated in the region by the proposed action during construction and routine operation.
- Section 7.2, *Social Policy,* considers elements of community and social structure that could be affected by the proposed action, including community cohesion, community welfare, and population growth, and identifies potential disproportionate impacts on minority and low-income communities within the study area.
- Section 7.3, *Cost-Benefit Analysis*, provides an analysis of the costs and benefits of the proposed action, relevant to the City of Hoquiam. Specifically, it considers the costs and benefits that would affect the residents of Hoquiam and the city at large as well as resources in Aberdeen to the extent that job creation in Aberdeen would affect the residents of Hoquiam. Impacts are expressed in monetary terms where feasible and are otherwise presented qualitatively. The cost-benefit analysis is based on the analysis of impacts presented in Chapter 3, *Affected Environment, Impacts, and Mitigation*. Impacts of the proposed action related to increased safety risks (e.g., storage tank failure, train derailments, vessel collisions) are also considered, based on the analysis in Chapter 4, *Environmental Health and Safety* as discussed below.

The general approach to the risk analysis is to consider different potential spill scenarios related to the proposed action. As noted in Draft EIS Chapter 4, *Environmental Health and Safety*, this is because a spill could occur at any location and at any time. Scenarios are based on assumptions about terminal, rail, and vessel operations and locations where spills could occur more frequently, based on expert opinion, or could result in a worst-case spill. Final EIS Chapter 7, Section 7.3.4.2, *Potential Costs Related to Environmental Health and Safety Concerns*, reflects additional information on the economic and social costs of oil spills. This includes information on derailments and other accidents involving trains carrying crude oil and information on a crude oil spill during marine transport. However, because the potential impacts of an incident would vary based on the material spilled, weather, water flows, location and other factors, Section 7.3.4.2, describes the range of impacts that could be expected in general terms.