



November 28, 2016

Millennium Bulk Terminals NEPA EIS
c/o ICF International
710 Second Ave, Suite 550
Seattle, WA 98104

Subject: Comments on the Millennium Bulk Terminals-Longview NEPA Draft EIS

Dear Lead Agency:

Please accept these comments from the Washington State Department of Natural Resources (DNR) regarding the Millennium Bulk Terminals-Longview NEPA Draft Environmental Impact Statement. DNR is the manager of over 3 million acres of state trust lands comprised of forest, range, commercial, and agricultural lands, and 2.6 million acres of state-owned aquatic lands. In addition, the DNR administers the state Forest Practices Rules on more than 12.7 million acres of non-federal, public, and private lands.

DNR is committed to sustainably managing the state's resources, relying on best available science, and making decisions that advance the public's interest and reflect a transparent environmental review process. I have directed my staff to provide technical support to the co-lead agencies towards ensuring a robust, science-based, and comprehensive environmental review process. DNR is regarded as possessing special expertise under Washington State's Environmental Policy Act rules (SEPA), Chapter 197-11-920, Washington Administrative Code (WAC) related to the following areas: water resources and water quality of state-owned aquatic tidelands, shorelands, harbor areas, beds of navigable waters; natural resources development; energy production, transmission, and consumption (geothermal, coal, and uranium); land use and management of state-owned or managed lands; recreation; and burning in forests. DNR is also an agency with jurisdiction for this project under Chapter 197-11-714(3), WAC.

The proposal involves construction of an export terminal that would receive coal by rail, stockpile coal on site, and load ocean-going vessels for transport through the lower Columbia River corridor to overseas markets. The facility is projected to support a maximum annual throughput of 44 million metric tons of coal. The Draft EIS evaluates two alternatives for dock alignment supporting two new ship loaders, an access trestle, and dredging of a new berthing area. Portions of the "On-Site Alternative" are currently leased for an existing dock and related facilities, and would require DNR's approval under the lease. Additional authorization would be required for any dredging landward of the federal navigational channel whether inside or outside the existing lease footprint and any geotechnical studies or other pre-construction activities requiring entry onto state-owned aquatic lands. The "Off-Site Alternative" at Barlow Point would require a new lease. DNR's decision on whether to approve construction of the proposed

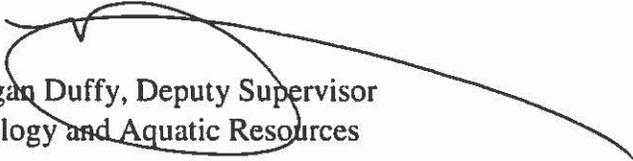
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export terminal on state-owned aquatic lands will be based on a comprehensive review of the potential project impacts documented through the environmental review, permitting, and associated public comment processes and any additional information pertinent to its review under the lease.

DNR appreciates the opportunity to submit comments on the DEIS which are provided in the attachment to this letter. The attachment identifies where DNR has identified probable significant adverse impacts needing further analysis and identification of potential mitigation measures, or impacts that have not been addressed in the DEIS. DNR would appreciate being treated as a cooperating agency as defined in 40 CFR 1506 throughout the NEPA process.

Should you have any questions regarding this letter, please do not hesitate to contact me at (360) 902-1034.

Sincerely,



Megan Duffy, Deputy Supervisor
Geology and Aquatic Resources

Attachment

Site Level Impacts

Chapter 5 Natural Environment: Affected Environment and Project Impacts

Geology & Soils

Seismic Hazards, 5.1:7-9

The DEIS understates the likelihood of a subduction earthquake event. The average recurrence interval of a magnitude 8 to 9 earthquake on the Cascadia subduction zone is estimated at 240 years, and the last major earthquake occurred in 1700. A recent study estimates a 37% probability (i.e., greater than 1 in 3) that a magnitude 8 to 9 or greater earthquake will occur somewhere along the Cascadia fault in the next 50 years.¹ Direct impacts as a result of ground shaking, landslides, and liquefaction should be analyzed in the Operations-Direct Impacts section of the FEIS. The FEIS should also evaluate potential mitigation measures to address facility resilience and potential train derailments to minimize adverse impacts in the event of a magnitude 8 to 9 earthquake along the Cascadia fault.

Sea-Level Rise, 5.1:10

The DEIS states existing levees were built to a height of 36 feet above sea level. The FEIS should clearly identify the lowest elevation of the levee and evaluate the probability of flooding given regional projections for sea level rise, storm surge, erosion, and seismic uplift or subsidence. The FEIS should disclose whether these levees are certified by FEMA to withstand a 1% annual chance of flood. If levees are not FEMA certified, the levees should not be considered to provide adequate protection against inundation and additional mitigation measures should be evaluated to mitigate flood risks. The Project area is currently in Zone X, which is projected to be inundated by up to 1 foot of water in the event of a 100 year flood. The FEIS should disclose how current inundation projections could change through the life of the facility given best available climate change projections and evaluate whether additional mitigation measures are necessarily to mitigate potential increase in flood risk.

Bank Erosion/Failure, 5.1:17-18

The DEIS states that neither the on-site or off-site alternative would have any indirect operational impacts on site level geology or soils. The FEIS should evaluate the potential for indirect impacts to project area as a result of the potential increased risk of bank failure, slumping and erosion along the Columbia River as a result of increased waves generated from a projected increase in large ship transport. The FEIS should also disclose the potential need for additional shoreline armoring to stabilize vulnerable banks. This is a continuing issue along the lower Columbia (Babcock 1989).

¹ Goldfinger, C. et al. 2012. Turbidite Event History: Methods and Implications for Holocene Paleoseismicity of the Cascadia Subduction Zone. USGS Prof. Pap. 1661-F. USGS, Reston, Virginia.

The FEIS should provide more detailed information on potential impacts of initial construction, ongoing dredging, and prop wash impacts to dredge prism stability and in-turn potential affects to beach geomorphology and stability.

Water Quality

Spills, 5.5:14

The DEIS estimates of any fuel spills “to be relatively small (typically less than 50 gallons)” is not supported by any evidence or reasoning, particularly since trucks have a capacity of 3,000 – 4,000 gallons. The FEIS should reference data from the Washington Department of Ecology Spills Program for average size of fuel spills during construction over the last ~20 years with the caveat that spills are generally underreported

(<http://www.ecy.wa.gov/programs/spills/other/reportaspill.htm>).

Coal Deposition, 5.5:18

The estimated max coal deposition rate of 1.45 g/m²/year presented is more than 30 percent below the estimated 1.88 g/m²/year rate presented in SEPA DEIS. The FEIS should clarify the rationale for the discrepancy in these estimates and clarify whether these estimates account for potential spills during operations. It should also reconcile these estimates with the fact that coal was shown to compose 10-12% of the sediments in the vicinity of the BC Canadian Roberts Bank coal terminal after 22 years of operations resulting in anoxic conditions beneath the coating of oxidized coal (Johnson & Bustin 2006). A recent examination of coal dust emissions from coal rail cars traveling through Washington indicate higher than anticipated emissions of coal dust despite application of surfactants to control dust (Burlington Northern and Santa Fe 2013, Jaffe et al 2015). It is unclear whether the FEIS accounted for these findings in its estimates of coal deposition.

5.1:19

Depending on the abundance of sulfide minerals in the coal, local acidification can result from coal dust entering water along Columbia River. Although sulfur is not listed in Table 5.5-4 as a trace element, the Powder River Basin and Wyodak coal beds do contain sulfur (Stricker and Ellis 1999). The FEIS should evaluate the risk of coal deposition contributing to localized acidification of waters at the project site.

5.1:21

In order to fully address “water quality concerns” and other environmental issues, long term effects need to be evaluated; including the potential for bioaccumulation. Coal dust surfactants should be evaluated in both freshly applied as well as aged and weathered forms. The potential for synergistic effects with coal dust should be examined (Tien and Kim 1997, U.S. EPA January 2013)).

Dredging, 5.5:15

The DEIS provides minimal description of the effects of dredging on contamination accumulation and/or distribution as a result of increased size of dredge prism and frequency with

which it will be dredged. The analysis should elaborate on known contaminant sources in the area and the potential for accumulation of contaminants in the dredge prism and also assess risk posed by redistribution of contaminants to benthic environment in the study area.

The analysis should include spatially explicit mapping of sediment characteristics, riverine and beach geomorphology, bathymetry, and stability. The FEIS should include an analysis of impacts to contaminated sediment transport from waves and prop scour associated with vessels and tugs assisting with docking at the proposed facility.

Vegetation

Aquatic Vegetation, 5.6:20-32

The DEIS does not discuss direct or indirect impacts as a result of construction and operations to aquatic vegetation from reduced lighting at either the on-site or off-site locations. Shading from overwater structures and moored vessels will eliminate suitable habitat for submerged and emergent vegetation in the nearshore. Riverine macrophytes provide many of the same benefits to trout and salmon that seagrasses and algae provide in estuaries. Permanent removal of this habitat will impact fish, invertebrates, birds and mammals that feed and find refuge there (Rondorf et al 2010, Barko et al 1986).

Aquatic vegetation surveys are listed as potential mitigation measures in Chapter 8. DNR will require an aquatic revegetation and monitoring plan that will need to be reviewed and approved by DNR. The survey must be completed prior to commencing any approved in-water work associated with construction of the docks and construction-related dredging, including all areas within the shallow water zone adjacent to the proposed docks. If areas of aquatic vegetation are identified, the Applicant should work with DNR, Cowlitz County, and USFWS to develop appropriate avoidance and mitigation measures and/or a mitigation plan before beginning any in-water work. DNR recommends that Department of Ecology's "Aquatic Plant Sampling Protocols" (2001) be used for pre-construction aquatic vegetation surveys.

Shoreline Erosion, 5.6:27

The NEPA DEIS acknowledges there is potential for erosion of shoreline vegetation along the northern end of Lord Island from large wakes, or wakes oriented perpendicular to the main navigation channel and along the shoreline of the lower Columbia River. The document further states "measures that could be implemented to reduce shoreline erosion and impacts on vegetation could include actions outside the control of the Applicant." The FEIS should comprehensively assess available mitigation measures necessary to reduce shoreline erosion. If more extensive shoreline armoring would be necessary to prevent significant erosion, the impacts of such indirect impacts should be disclosed. If mitigation is not proposed by the applicant, the impacts should be considered unmitigated.

Fish

Lamprey, 5.7:22

The DEIS states that the majority of benthic, epibenthic, and infaunal organisms within the proposed dredge prism would be removed during dredging and claims "...disturbed habitats

would return to reference conditions following recolonization...” within 30 -45 days. This statement does not account for the potential for lamprey ammocoetes to occur within the dredge prism. This larval stage of the lamprey remain in sediment for 3-8 years. The environmental factors that trigger metamorphosis to juvenile life history stages are unknown. Rapid recovery of ammocoetes lost to dredging is unlikely (USFW 2008, Jolley et al 2010). The applicant should conduct fish/larval presence/absence surveys prior expanding dredging operations and work to mitigate impacts to fish (e.g., lamprey ammocoetes and eulachon) in cooperation with the USFWS and WDFW. Moreover, the potential mitigation measures should be described in the EIS. Without a description of what potential mitigation would be agencies with jurisdiction cannot evaluate whether proposed mitigation would be sufficient, permissible, or otherwise capable of being accomplished.

Coal Spills, 5.7:29

The DEIS states that ‘direct impacts resulting from a spill ... would likely be minor because the amount ... spilled would be relatively small.’ The FEIS should provide additional details on the assumptions behind projected coal spill frequency and magnitude. Studies have shown both lethal and sublethal impacts from dust clogging or abrading gills or increased turbidity impacting feeding, prey aversion and movement (Gregory 2011, Bash et al 2001). An increase in concentration of suspended material from a spill or accumulated over time can also impact benthic and epibenthic invertebrates that are important prey for fish species (Newcomb and MacDonald 1991).

Chapter 5.8 Wildlife

Freshwater Mussels, 5.8:10

Aquatic wildlife occurring within the proposed project impact area includes species beyond the list of “common species of invertebrates and amphibians” described in the DEIS. Freshwater mussels including *Anodonta nuttalliana*, *Anodonta californiensis*, *Anodonta oregonensis* occur in the lower reaches of the Columbia and are important species in the ecosystem providing food for fish, mammals and water birds. These filter feeders are sensitive to levels of turbidity and dissolved oxygen. Mussels require host fish as part of the reproduction cycle (Nedeau et al 2004). The DEIS should address all potential direct and indirect impacts to these mussels.

Coal Dust, 5.8:30-31

The analysis of coal dust does not provide adequate scientific documentation to support the conclusion that toxic constituents of coal are likely to have minimal toxic impacts on aquatic organisms. It is noted in the report that little is known regarding the chronic impacts of coal deposition to benthic environment and aquatic species in the area yet there are no studies proposed to assess these ongoing impacts to affirm this speculation. DNR requests that the FEIS include a proposal to properly measure potential effects of coal dust on aquatic food chains. Impacts should be quantified in such a way that proposals for remediation and damage assessments can be assessed rapidly as appropriate. This study should take the form of a Damage Assessment Contingency Plan funded by the proponent and approved by Natural Resource Trustees, including DNR. The FEIS should also include a plan to assess, address and mitigate for

acute and chronic impacts from large coal spills to provide for transparent and sustainable management.

Greenhouse Gas Emissions

Impact Analysis Methodology, 6.8-7

Carbon is not only stored in terrestrial systems but can also be stored in marine and aquatic sediments and associated marine and aquatic ecosystems. While the draft EIS considers the impact of “Upland and wetland land-cover change” in its estimate of greenhouse emissions from construction, it does not currently consider the potential greenhouse emissions that could arise from periodic dredging.

Required Plans, Permits and Approvals

DNR Use Authorization, 12-1

Table 12.1 should include the requirement for a DNR authorization for use of state-owned aquatic lands under the heading required state plans, permits and/or approvals. As stated in the introduction to this letter, both the on-site and off-site alternative will require DNR authorization under a lease. In addition to authorization required under a lease agreement, additional authorizations would be needed for dredging and preliminary site investigations. Accordingly, reference to DNR lease approval and the necessary authorization for dredging on state owned aquatic lands (both within and outside the lease area) should be included in the table

IMPACTS TO STATE-MANAGED LANDS IN THE LOWER COLUMBIA REGION

Fish

Fish Stranding, 5.7:30-31, 7:26-28

Projected project related and cumulative increases (44% and 105% increase above 2014 levels) in deep draft vessel traffic within the Lower Columbia River present potentially significant challenges for juvenile salmon. Existing levels of deep draft vessel wakes currently contribute to stranding of juvenile salmonids within the lower estuary and are identified as a limiting factor in the Lower Columbia River Recovery Plan for Salmon and Steelhead. Approximately 33 miles of the lower river have been identified as having shoreline characteristics that suggest vulnerability to wake induced stranding events. The Recovery Plan classifies the level of impact to juvenile ocean-type fry as a moderate population level effect; however, this is prior to projected increases in deep draft vessel transits. No estuary-wide estimates of mortality have been completed and additional research is needed to understand the full extent of this issue.

Given that deep draft vessel wakes are identified as a limiting factor to Lower Columbia River salmon recovery, the Final EIS should attempt to quantify population level impacts to ESA listed salmonids. It should clearly differentiate between deep-draft vessel trips and total commercial vessels under both projected and baseline conditions. The Final EIS should also evaluate the feasibility of potential mitigation measures to reduce impacts to salmonids – especially ESA listed ESUs. The Lower Columbia Recovery Plan suggests that options for limiting the impact of vessel wake stranding are limited due to (1) potential loss of revenue that would result from speed reductions; and (2) the high costs associated with potential habitat modifications. If no mitigation is proposed – none is currently identified in the Draft EIS – then vessel wake induced stranding should be disclosed as an “unavoidable and significant adverse environmental impact.” At a minimum, juvenile salmon stranding events should be monitored as vessel traffic increases in the lower Columbia.

Page 5.7-11 states; “*Adult anadromous salmonids travel through the estuary and lower river relatively quickly during their migration to upriver spawning grounds, remaining primarily in offshore deepwater habitats.*” Page 5.7-15 states; “*Adult eulachon could arrive in the study area as early as November, although most adults would migrate through the study area during peak spawning between February and March.*” Page 5.7-16 states; “*Both green and white sturgeon may be present in the deepwater habitats of the study area as adults and subadults. Two green sturgeon DPSs occur in in the lower Columbia River. They are most commonly found at depths greater than 33 feet (Independent Scientific Review Panel 2013).*” Yet the projected project related and cumulative increases in deep draft vessel traffic with the Lower Columbia River and at the site-specific activities at the two alternative sites does not address the potential impacts to these ESA listed adult fish in chapters 5.7 or 6.4. The potentially impacts to adult fish from the projected increases in ship traffic as a result of this project should be analyzed in the FEIS. This should include at a minimum direct and indirect impacts from ship movement, prop strike and increased noise levels among other factors.

Vessel Transportation

Loading Operations, 6.4-21

The DEIS claims an average of 70 vessels per month would be loaded at Docks 2 and 3. To meet this standard, two vessels will need to be loaded per day, 365 days a year. The FEIS should assess how malfunctions in and/or maintenance to loading mechanisms might slow this process and affect vessel traffic congestion. Congestion should be factored in when running the VTRA for this facility.

Vessel Draft Limitations, 6.4-21

The DEIS states that 80 percent of the vessels calling at the facility would be Panamax-class vessels, which are described as having a draft of either 39.5 feet (Table 6.4-4) or 43.6 feet (Table 6.4-10). The federal navigation channel in Columbia River is currently maintained at 43 feet except as limited by temporary shoaling. The Columbia River Harbor Safety Plan calls for all vessel movements to be planned to maintain an under keel clearance of at least 2 feet. As a result, the Columbia River Pilots' Vessel Movement Guidelines note that ships with a draft of 43 feet may be subject to substantial delays while transiting the river and at the Columbia River bar awaiting the proper tide and river levels to be present. Given that the proposal calls for 840 additional Panamax-class vessel trips per year, the FEIS should examine the effect of scheduling the transits of largest vessels expected to call on the facility and the likely delays in those transits on vessel congestion on the river and associated risk of congestion related allisions, collisions, and groundings. The DEIS should also describe any indirect air quality impacts related to congestion and how the risk of vessel congestion will be mitigated.

Vessel Traffic Management System, 6.4:14

The DEIS does not address the capacity of the existing vessel traffic management system to manage the risks associated with the projected significant cumulative increases in deep-draft vessel transits in the lower Columbia River. The 1,680 deep draft vessel transits associated with the proposal represent a 44 percent increase over 2014 baseline levels. When viewed cumulatively with other land use proposals within the lower Columbia River, vessel traffic levels are projected to increase to 7,834 vessel transits annually by 2038 – a more than 100 percent increase from observed 2014 volumes. Vessel traffic levels in 2038 are modeled to contribute to a 127 and 47 percent increase in annual frequency of collisions and powered groundings, respectively. Table 6.4-13 and 6.4-14 should be updated to include 2014 baseline data for risk of oil spill by volume to allow a similar comparison with projected 2028 and 2038 data. The risk associated with a significant increase in large commercial vessels transits is magnified by the proposed parallel increase in oil transportation in the Columbia River system. Although the “return period” for significant spills as a result of collisions and groundings is modeled to be relatively low, a large scale oil spill would have significant and long-term adverse impacts to state-owned aquatic lands and the larger lower Columbia estuary ecosystem.

The recent Tesoro Savage Vancouver Energy Project Draft EIS indicated that the current lower Columbia navigation system had capacity to handle approximately 3,644 annual deep draft

vessel transits.² Both the cumulative 2028 and 2038 projections associated with the Millennium Draft EIS significantly exceed this figure. The FEIS should clearly address existing vessel traffic management system capacity and identify necessary mitigation/improvements to expand capabilities (e.g., available pilots, tug escorts requirements) to ensure appropriate safeguards are in place. The Final EIS should also acknowledge the pending Department of Ecology evaluation of the vessel traffic management and safety within and near the mouth of the Columbia River (RCW 90.56.568, Laws of 2015, ch. 274 § 11)). It is speculative to imply that existing systems and capabilities are adequate until this study is completed. Although many recommendations from this study may pertain specifically to oil transportation, the FEIS should adopt all relevant recommendations of this evaluation. The final report is anticipated in June 2018.

Vessel Incidents, 6.4:24-27

The vessel traffic assessment in the DEIS does not evaluate the increased risk of collisions with smaller vessels such as fishing vessels, tribal vessels, service vessels, and/or personal watercraft. These types of vessels do not appear to be included in the assessment and may result in under estimating the number vessel collisions and projected frequency of spills that could occur as a result of this proposal.

Bunkering Spills, 6.4-23

Regardless of where vessels refuel, the risk of spills while bunkering is significant and the increased risk posed by increased bunkering required as a result of this proposal should be identified and quantified. Furthermore, potential mitigation measures should be identified to mitigate and reduce risk of spills during bunkering operations.

Cumulative Impacts - Vessel Traffic Study, 7:39-44

The FEIS should provide additional statistics on risk of fuel spills posed by this action as well as mitigation measures that could be implemented to reduce the risks. Although the DEIS states that risks were quantified, specific results from this quantification are not consistently expressed throughout document and very few statistics are referenced. The DEIS uses broad terms such as 'low risk' and 'low probability' of a spill. Risk should be described in specific terms of return period and magnitude of spill. Generalizations, such as "low risk" trivialize the catastrophic impact a spill from these large vessels could have on the lower Columbia ecosystem. As previously mentioned, measures are being developed for consideration as part of the Columbia River Vessel Traffic Risk Assessment (VTRA). At a minimum the DEIS should acknowledge this work and commit to ensure vessels accessing the facility will adhere to all current and future requirements and/or voluntary measures shown through Columbia River VTRA to reduce risk.

² Tesoro Savage Vancouver Energy Distribution Terminal Facility Draft Environmental Impact Statement, November 2015; Ch3.14-31.

IMPACTS TO STATE-MANAGED LANDS STATEWIDE

The scope of the DEIS is inadequate to capture the full extent of impacts associated with the proposed Millennium coal export terminal. The decision to narrowly define the study area improperly segments the environmental review process and fails to disclose indirect impacts associated with increased coal-by-rail transport through Washington State and the eventual combustion of coal in overseas markets. Ignoring these reasonably foreseeable impacts results in a failure to disclose potentially significant impacts to state-owned natural resources throughout the state. DNR highlights the following omissions from the DEIS to emphasize the full scope of project-related impacts that should be evaluated prior to project approval.

Rail Transportation

Rail Line Capacity, 6.1-8

The DEIS does not analyze the impacts of the proposed increase in rail traffic on rail lines beyond the Reynolds Lead and BNSF Spur, despite known capacity limitations in Washington State that are identified in the parallel SEPA analysis. Approximately 1.1 million acres of lands managed by the Department of Natural Resources are leased for grazing and agriculture. In managing these leases, DNR is guided by its fiduciary trust obligations, originating in Washington State's Enabling Act and the State Constitution. The revenue generated on these trust lands is distributed to trust beneficiaries, including the state's K-12 "common" schools, universities, state capitol buildings, and other public institutions. The trust is highly dependent on the agricultural industry's ability to get products to market, which in turn is reliant on rail transport. The economic effects of these impacts on the ability of state agriculture products to get to market is not considered in the DEIS analysis. The FEIS should disclose how current and future rail line capacity needs will affect current state agricultural markets and the ability for getting Washington's agriculture crops to market using the current rail infrastructure. The FEIS should identify potential infrastructure improvements to ensure state-wide rail capacity limitations are addressed.

Rail Safety, 6.2:3-5

The study area does not consider potential rail safety impacts beyond the immediate project area and the adjacent rail corridor within the Longview industrial area. Existing rail transportation is a consistent cause of wildland fires due to sparks emitted from train wheels in contact with rail tracks. Rail spark emissions can – and regularly do – ignite fires in vegetation adjacent to rail lines. The DEIS does not address the increase in numbers of wildfire starts that are likely due to the additional 16 "unit trains" (125 rail cars each) per day. The rail lines designated for transporting coal from markets and for empty-car backhauls traverse areas of the state that are particularly wildfire-prone, especially during extended periods of hot dry conditions. The empty backhaul route for BNSF trains moves east over Stampede Pass, an area that is remote and difficult to access for wildfire response. The DEIS should address likely increases in wildfires and potential mitigation for wildfire risk throughout Washington due to the increase in rail traffic.

The DEIS does not evaluate emergency response demands in the event of a derailment, accident, or spill along rail transportation routes throughout Washington State. DNR's Wildfire Program

serves a statewide Emergency Support Function (ESF 4) for not only wildfires, but all-hazards emergency response with incident command and response resources if needed. The potential increase in emergency response (in which DNR and other emergency response agencies may have significant roles) along the rail transportation routes should be acknowledged, and potential mitigation should be addressed in the FEIS.

Coal Dust, 6.7:8-11

The DEIS does not disclose potential indirect impacts associated with coal dust emissions and spills along rail corridors throughout Washington State. Even where evaluated, modeled emissions were lower than those measured from the coal trains passing through the Columbia River Gorge (Jaffe et al 2015). The limited scope of the coal dust emissions analysis is not supported by the observation of coal dust 5-miles from the Point Roberts terminal in Canada. The FEIS should disclose all risks associated with fugitive coal dust emissions along the entire rail corridor as well as the risk to aquatic ecosystems in the event of a significant spill into adjacent state-owned aquatic lands. The analysis should not be limited to impacts of coal dust, but should also characterize the pathways through which surfactants, used to control coal dust, may reach aquatic lands. Potential risks to sensitive aquatic ecosystems from surfactants need to be characterized (Johnson & Bustin 2006).

Greenhouse Gas Emissions

Scope of Analysis, 6.8:6-7

The Final EIS should disclose all upstream and downstream greenhouse gas emissions associated with the proposed coal export terminal. The NEPA greenhouse gas emissions analysis does not provide a comprehensive assessment of upstream and downstream emissions associated with extraction and combustion of coal despite being “reasonably foreseeable” indirect impacts of the proposed export terminal. The projected total 20-year emissions associated with construction and operation of the facility is estimated to be 926,866 metric tons of CO₂e. This represents less than 3 percent of the 37.6 million metric tons of CO₂e of emissions disclosed in the parallel SEPA analysis. Such large-scale emissions are inconsistent with federal³ and state⁴ policy to reduce fossil fuel dependence, promote clean energy technologies, and mitigate the potential for catastrophic and irreversible impacts to natural resources. Global climate change presents serious environmental challenges including, but not limited to, ocean acidification, sea level rise, warming water temperatures, decreased snowpack, and increased wildfire danger.

Climate change is already having profound cultural, ecological, and economic consequences in the region. Human contributions to ocean acidification in the Pacific Northwest are quantifiable and have increased the frequency, intensity, and duration of harmful conditions. Washington marine waters and ecosystems are identified as “particularly vulnerable” to the effects of ocean acidification – a fact emphasized by recent larvae production failures at Pacific Northwest oyster hatcheries. These waters support a \$270 million aquaculture industry and a larger \$1.7 billion

³ Executive Order 13693 Federal Leadership on Climate Change and Environmental Sustainability.

⁴ Executive Order 14-04 *Washington Carbon Pollution Reduction & Clean Energy Action* and Executive Order 12-07 *Washington Response to Ocean Acidification*.

seafood industry^{5,6}. Failure to disclose the full range of emissions associated with coal terminal proposal precludes the NEPA analysis from evaluating the financial and technological feasibility of potential mitigation options. All unmitigated large-scale greenhouse gas emissions associated with coal exports will be at odds with the 2012 Washington State Blue Ribbon Panel on Ocean Acidification recommendations to address the causes and consequences of ocean acidification.

Methodology, 6.8:7-15

The calculations for this section should reflect the proposed project's increasing percentage of the state's carbon emissions over time, and thus the increasing mitigation rate that is necessary to mitigate for it. NEPA draft guidelines provide a frame of reference into important issues that should be analyzed in an environmental review process. Agencies can incorporate by reference applicable agency emissions targets such as applicable federal, state, tribal, or local goals for GHG emission reductions to provide a frame of reference and make it clear whether the emissions being discussed are consistent with such goals.

For proposed projects emitting more than 25,000 metric tons of carbon dioxide equivalent, federal NEPA greenhouse gas and climate change draft guidance (Dec 2014) supports quantitative assessments of both the potential effects of a proposed action on climate change as indicated by its GHG emissions and the implications of climate change for the environmental effects of a proposed action. Although the NEPA analysis does not exceed this threshold, the SEPA DEIS estimates that the total net emissions related to the proposed project from 2018 to 2038 would be 37.6 million metric tons of CO₂e, indicating that climate change should be considered by the DEIS provided the full scope of emissions associated with the proposal were evaluated.

Monetizing costs and benefits is appropriate in some cases and is not a new requirement. For DNR and Washington State the cost of climate change is considered a contributing factor to the 2015 Wildfire season, during which more than 1 million acres burned in Washington and the total firefighting cost was at least \$347 million. Additional climate related costs to the state include losses due to the 2015 drought, losses from flooding due to increased peak flows, and protections from sea level rise. The DEIS does not provide an assessment of the social costs of carbon for the proposed project. The "Federal social cost of carbon" offers a harmonized, interagency metric that can provide decision makers and the public with some context for meaningful NEPA review.

Cumulative Impacts

Climate Change, 7:48-49

The DEIS does not adequately disclose the cumulative impacts of burning 44 metric tons of coal per year on greenhouse gas emissions and climate change. This analysis should assess the

⁵ Washington Shellfish Initiative white paper, December 2011, http://www.governor.wa.gov/news/shellfish_white_paper_20111209.

⁶ U.S. Department of Commerce, National Atmospheric and Oceanographic Administration. (2011). Fisheries Economics of the U.S. 2009: Economic and Sociocultural Status and Trends Series.

cumulative effects of greenhouse gas emissions on climate conditions and associated impacts through the end of the project's life to assess risks from the following:

- Increased landslides due to climate change impacts, including increased wet season precipitation and increased frequency and magnitude of extreme storms.
- Effects on hydrological dynamics due to sea level rise, increased peak flow, reduced low flow, increased wave energy, increased scouring, and other water related changes to impact hydrological dynamics over the life of the project
- Effects on point and non-point discharge due to increased frequency and magnitude of extreme storms over the life of the project
- Effects on stormwater and wastewater discharge related to seasonal flow changes due to climate change over life of project. Increased extreme storms can flush toxics in large plumes. Seasonal low flows can reduce dilution, causing increased toxicity.
- Effects on wildfire related to 1) increased ignitions due to increased sparks from rail lines (due to increased rail traffic) and 2) longer, hotter, drier fire season due to climate change.
- Overall, consider changing risk profiles (usually increasing risk) over the life of the project. If the facility may persist beyond the currently defined life of the project, what modifications will be needed to prevent future harm?
- Cumulative state and worldwide social, economic and environmental effects of greenhouse gas emissions that will result from the operation of this facility and the coal that will be burned as a result of this project.
- Impacts of rising water temperatures on salmon freshwater habitat and the potential for migration barriers. Anthropogenic climate change will likely cause moderate to severe declines in most west coast salmon, especially when interacting factors are incorporated into the analysis (e.g., existing threats to populations, water diversion, accelerated mobilization of contaminants, hypoxia, and invasive species) (NMFS, August 2015).
- Cultural, economic, and ecological effects of ocean acidification, including, but not limited to, impacts to salmon, pteropod, shellfish, and harmful algal bloom forming species of diatoms and dinoflagellates.

In summary, the FEIS should establish reliable social and economic cost of greenhouse gases projected to be generated during the life of this project resulting from the transport and burning of the coal. It should also evaluate potential mitigation measures to offset associated greenhouse emissions.

ADDITIONAL COMMENTS TO THE DEIS FOR CONSIDERATION:

Section 2.2 Purpose and Need: According to sources other than the applicant, there is great uncertainty in the Asian Markets for imported coal. The basic assumption on which the project need is based, "...that there is sufficient Asian market demand for western U.S. low-sulfur subbituminous coal to warrant development of a terminal in the western United States to export coal." is no longer valid and the long term economic benefits to the community should be reassessed and not based entirely on current market conditions, but also on projected future market conditions. According to the Energy Information Administration coal exports from the United States are projected to decline significantly over the next few years. According to the EIA, lower overseas mining costs, cheaper overseas transportation costs, and favorable exchange rates are expected to continue to provide a competitive advantage to mines in other major coal-exporting countries. Coal exports in February 2016 were 31% lower than in February 2015. The EIA forecasts U.S. coal exports to decline by 20% in 2016 and by an additional 4% in 2017. Forecast coal production is expected to decrease by 17% in 2016 alone, which would be the largest decline in terms of both tons and percentage since data collection started in 1949. (EIA Short Term Energy Outlook, May 2016). These factors have had a significant impact on coal production in the United States. In January 2016, Arch Coal Inc. which owned 38% of the proposed Millennium facility, filed for bankruptcy (The Wall Street Journal, January 11, 2016) as a result of a major decline in the demand for coal in the Asian market. As noted in its bankruptcy filings, to rid itself of the significant costs associated with the proposal, Arch subsequently sold its stake in the project for nothing more than a commitment for an option to use of a limited portion of the project's export capacity if it is constructed. Peabody Energy, the largest coal company in the U.S. has also filed for bankruptcy. This followed bankruptcy filings by Alpha Natural Resources Inc., Patriot Coal Corporation and Walter Energy Inc. (The Wall Street Journal, April 14, 2016). Reuters (January 11, 2016) stated; "*Producers accounting for more than 25 percent of U.S. coal are currently in bankruptcy, based on 2013 government figures of major U.S. coal companies' production.*" China and India, both projected to be larger consumers of the coal, have lost interest in importing coal and will increase reliance on domestic coal (Crosscut, May 5, 2016).

The projection of potential direct, indirect, and induced economic and fiscal benefits of the proposal are based on the 2012 study *Economic and Fiscal Impacts of Millennium Bulk Terminals Longview* prepared by BERK. (DEIS 4.2-6). The potential direct, indirect and induced economic and fiscal benefits of the proposal should be reassessed based on current information. As noted above, the downturn since 2012 in the outlook for U.S. coal exports and the domestic coal industry generally is well documented and expected to continue for the foreseeable future. According to the Energy Information Administration, for example, there was a 24% decline in coal exports from the United States between 2014 and 2015 alone. (EIA, Quarterly Coal Report, October-December 2015). The following referenced article also document decline in the world-wide demand for coal:

- “Fading fortunes: China’s demand for big coal wanes,” Financial Times, July 17, 2012, <http://www.ft.com/intl/cms/s/0/93ce23f2-cb3d-11e1-916f-00144feabdc0.html#axzz25bwXXdur>.
- “The Bother of Dealing with Low-Rank Coal Exports,” Indonesian Mining Association, June 25, 2012, <http://www.ima-api.com/index.php>
- Bradsher (2012) Chinese Data Mask Depth of Slowdown, Executives Say” New York Times, June 22, 2012;
- Mollie Bloudoff-Indelicato, “China Not Keen on U.S. Supplies, Experts Say,” E&E News, July 25, 2012, <http://www.eenews.net>.

As discussed above, the rapid decline in coal prices has resulted in a succession of bankruptcy filings by the top coal producers in the United States in 2015 and 2016. Accordingly, projections of benefits from the project based on the substantially more favorable economic outlook for coal in 2012 are misleading and should be reassessed based on a realistic evaluation of projected future declining market conditions. These arguments should also be factored into the analysis in DEIS chapter 4.2 Social and Community Resources; Operations-Direct Impacts – Economic Output; page 4.2-22 & Construction-Indirect Impacts – Economic Output: page 4.2.25

Chapter 3: Alternatives

If the “Off-Site Alternative” at Barlow Point is proposed for development a more in-depth evaluation of the potential environmental impacts would be required for this site.

Built Environment: Affected Environment and Project Impacts

Cultural Resources, 4.4:1-17

The DEIS does not provide adequate information for determining the potential impacts to cultural resources, as required by the National Historic Preservation Act (NHPA) Section 106. In addition, Table 4.4.1 does not comprehensively define the regulatory environment. The list of federal laws is limited to the National Register of Historic Places (NRHP), which is a component of the NHPA, but not the entirety. The list omits other potentially relevant laws, including: 36 CFR 800, Archaeological Resources Protection Act, Native American Graves Protection and Relocation Act, American Indian Religious Freedom Act, Abandoned Shipwreck Act, and various Executive Orders.

Overarching issues with the DEIS can be categorized as follows:

(1) Unclear Terminology: Using terminology consistent with the National Historic Preservation Act Section 106 and 36CFR800 is important to ensure all consulting and commenting parties having a common, accurate, and precise understanding of cultural resources and potential impacts to them. The EIS substitutes terms such as “study area” and “culturally significant properties” in place of “area of potential effect” and “traditional cultural properties,” respectively. The DEIS also does not explain why the “traditional cultural property” category has been split into “culturally significant property” and “tribal resources,” the latter being addressed in a different section.

(2) *Unclear Area of Effect (APE)*: Imprecise descriptions of where various ground disturbing and compacting actions will occur, discrepancies between text and associated maps, and apparent absence of consideration for operations impacts beyond the immediate construction footprint make it difficult to determine whether the study area adequately reflects a valid APE as intended in Section 106 reviews.

(3) *Insufficient Data*: The cultural resource analysis does not provide sufficient data to assess the probability that archaeological resources are present, the potential adverse impacts to both archaeological resources and to traditional cultural properties, or potential mitigation measures that may be appropriate. Despite the absence of site-specific cultural resource data, the proponent appears to have not completed any archaeological investigation at the proposed off-site location. The DEIS relies on reports not included in the Appendix and subsequent examination of referenced reports in combination with DEIS clearly demonstrates more archaeological study is necessarily in order to characterize potential impacts.

(4) *Mischaracterization of Archaeological Potential*: A comparison of methodologies and conclusions as described in the original reports (on file at DAHP) and as characterized in the DEIS shows that the errors and misinterpretations within the DEIS may result in under-estimating the potential for potential adverse impacts to archeological resources. Based on the AECOM archaeological report, there is potential for archaeological deposits as shallow as 1 foot beneath the modern ground surface with the on-site alternative, well within the reach of conventional archaeological methods.

(5) *Off-Site Option cannot be evaluated with existing information*: The absence of historical or archaeological studies for the off-site project area precludes evaluation of potential impacts, because there is no inventory or even research-based expectations for this area.

Section specific comments:

Study Area, 4.4:2

Since this is a federal undertaking subject to Section 106 of the NHPA, the “study area” should be formally defined as an “area of potential effect” (APE). The APE should be described and mapped in more detail, indicating where grading, excavation, pile-driving, and other ground-disturbing activities will occur. The description of the study area mentions areas of dredging and viewsheds that are not depicted on the maps. The study area in the DEIS does not include areas subject to potential impacts due to terminal construction, spoils disposal areas, fill sources (for example, borrow pits or quarries), and haul routes. If there are in fact no such areas beyond the mapped polygon, this should be stated clearly. The study area does not address potential impacts within associated coal transportation corridors. Train traffic will increase if the bulk terminal becomes operable, increasing risk of derailments, coal dust accumulation, and wildfire, all of which can affect cultural resources between the coal source and the terminal. Likewise, shipping traffic may result in wake-caused erosion, prop wash, and spills that can affect cultural resources from the terminal to the mouth of the Columbia River.

Information Sources, 4.4:5-7

Additional information sources should be consulted and included in the FEIS to support a comprehensive review of potential impacts to cultural resources. The DEIS frequently cites an

AECOM report that is not included in the appendix, making it difficult to evaluate relevant summaries and characterizations. The AECOM report shows that geotech corings are unevenly distributed, and do not cover many areas within the study area – including the entire off-site alternative location. Geotech cores alone are not sufficient to evaluate archaeological potential. The AECOM report mentions shovel probes that provide more useful archaeological data than geotech cores, but these results are omitted. All maps used in the review should be cited; without knowing which maps were examined, it is impossible to identify possible gaps. An “archaeological work plan” (McDaniel 2015) is mentioned, but specific elements are not described and therefore its adequacy cannot be assessed. A series of 1942 aerial orthophotos of both on-site and off-site areas exists and should be examined.

Impact Analysis, 4.4:7-8

The statement that “traditional archaeological methods” cannot be used in the study area contradicts the AECOM report, which mentions that shovel probes were in fact dug and that potential cultural layers occur within 1 foot of the current ground surface. Even where fill is 5-10 feet thick, excavator trenches (a common tool in archaeological inventory investigations) are possible. The DEIS information is insufficient to address effects in the water and in certain portions of the study area due to absence of geotech coring data in those areas. The phrase “indicated potential for direct impacts on cultural resources” is unexplained and leaves wide latitude for concern. Potential adverse effects to cultural resources cannot be assessed in the absence of an inventory.

Agency and Tribal Consultation, 4.4:8

The FEIS should disclose specific tribes that were consulted. Also, why were landowners not included in the consultation list?

Setting/Context, 4.4:8-11

The DEIS does not relate the described precontact, ethnographic, and historic contexts to the defined project areas. The FEIS should clearly explain how prehistoric, ethnographic, and historic contexts define archaeological expectations within the project area. What kinds of artifacts and features might be expected, and from which time periods? The AECOM report contains information that would provide additional context that should be included in the FEIS.

The prehistoric context lists several phases based on lithic artifacts, but fails to mention that the Columbia River was one of if not the most heavily populated areas in prehistoric North America. The full range of site types could be present, dating back to over 14,000 years ago. The historic context fails to mention the presence of two Donation Land Claims in the study area, or the fact that the 1858 GLO map shows a trail beginning at the river bank in the study area (trails that begin at river banks often indicate crossings, which increase potential for significant sites; trails marked at this early date often represent continued use of prehistoric routes, further increasing potential significance).

There is no discussion of the possible effects of the 1894 flood, which should be apparent in the geotech cores. This event may have buried, eroded, or transported archaeological sites, and could significantly affect site integrity. The discussion of diking and the Reynolds facility focus on administrative history, without discussion of what features may have been created or what

previous archaeological resources may have been affected. Please explain how industrial fill can be a contributing element of Criteria A and C NRHP eligibility.

Archaeological Resources, 4.4:11-12

The DEIS mentions that USGS and GLO maps support the interpretation that the project area was formerly a wetland, but fails to provide georeferenced overlay maps. The 1858 GLO map provides environmental information from that time, but references prairies - not wetlands. There is a departure from the AECOM report with regard to the potential for buried soil horizons, which are settings in which archaeological materials are more likely, and where impacts could be most adverse. The AECOM report mentions layers that appear to be buried stable surfaces at 1-2 feet below current ground surface, but the DEIS omits these references and states that the shallowest expressions of native (non-fill) sediment are 5-10 feet below current ground surface.

The AECOM report and the DEIS state there is a diminished potential for cultural resources in the area based on the conclusion that it was a wetland, but they do not address two key questions: Was the area a seasonal or year-round wetland? Is there evidence that the wetland was present throughout the span of potential human presence in the area? Seasonality and antiquity of a wetland have implications for archaeological expectations. Additionally, wetlands do contain certain types of archaeological features (acorn processing pits, fish traps, etc), and can be extremely valuable archaeologically because of the potential for anaerobic conditions that preserve organic artifacts that normally decompose. Although some organic layers were apparently dated radiometrically, the results are not provided.

Impacts On-Site Alternative, 4.4:14-15

This section contradicts the AECOM archaeological report that identifies soil layers with possible archaeological resources within 1 foot of the soil surface. These layers would be subject not just to compaction, but direct disturbance. The absence of an archaeological inventory prevents a determination of possible adverse impacts. This section mentions an Inadvertent Discovery Plan (generally in lieu of archaeological monitoring); however, without an adequate archaeological inventory or monitoring, there is limited knowledge of what archaeological resources may be present. There is also no mention of wake erosion, propeller wash disturbance, or other effects of shipping.

Impacts Off-Site Alternative, 4.4:15-17

DNR strongly agrees with the statement that the off-site alternative requires an archaeological inventory investigation. The absence of an adequate inventory survey precludes an accurate characterization of the risk of impacts to cultural resources. This section states "it is possible construction of the off-site alternative could inadvertently affect yet unidentified cultural resources." Inadvertent discovery in Section 106 typically refers to the unexpected find of artifacts in an area that was subject to adequate archaeological study, or where potential for archaeology is so low that a study was determined unnecessary following initial tribal and SHPO consultations – neither of which is supported by the DEIS. Archaeological subsurface investigation is critical prior to construction, and archaeological monitoring may be necessary during construction. Inadvertent discovery implies that professional archaeologists will not be involved until after the fact.

As previously mentioned, the APE in the DEIS is inadequate to capture operational impacts. The scope potential operational impacts should be expanded to include wakes, prop wash, erosion, and spills. The FEIS should also evaluate the potential for coal dust to introduce carbon into archaeological sites and complicate or potentially preclude radiometric dating.

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