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November 18, 2013

Millennium Bulk Terminals-Longview EIS
c/o ICF International
710 Second Avenue, Suite 550
Seattle, WA 98104

Dear Co-Lead Agencies' Representatives for Cowlitz County, WA State Department of Ecology, and U.S. Army Corps of Engineers:

As a resident of Washington state, and more specifically the San Juan Islands, please accept the attached Environmental Impact Statement Scoping Comment on *The Risks of Increased Traffic on Species, Critical Habitat, Recreation and Scenic Areas* relevant to the Millennium Bulk Terminals Longview (MBTL) permit application, developed in consultation with Al Gillespie.

Based on the findings of significant and unmitagatable adverse impacts, I ask that you deny the permit for the proposed Millenium Bulk Terminals Longview (MBTL).

Sincerely,

Ms. Sophia M. Shoen

Environmental Impact Statement Scoping Comments for the proposed Millennium Bulk Terminals Longview:

The Risks of Increased Vessel Traffic on Species, Critical Habitat, Recreation and Scenic Areas

Sophia Shoen/Alexander Gillespie

November 5, 2013

1. The base problem and the need for a cumulative view

The Columbia River Bar is a system of sand bars and shoals at the mouth of the Columbia River. The bar, which separates the states of Washington and Oregon, is about 4.8 kilometers wide and 9.7 kilometers long. At its narrowest point, the channel is only 180 meters wide, and at its shallowest point, only 13 meters deep. This piece of ocean is recognized as one of the most dangerous bodies of water to cross in the United States. This is due to a unique combination of winds, wave, current and weather, all of which can hit levels so extreme, within a very short space of time, that crossing of the bar is actually prohibited. Such prohibitions are justified, in part, due to the amount of large vessels (approximately 2,000 since 1792) that have sunk in and around the Columbia Bar ("Bar"). These sinkings have earned the area the epitaph of 'graveyard of ships'.[1]

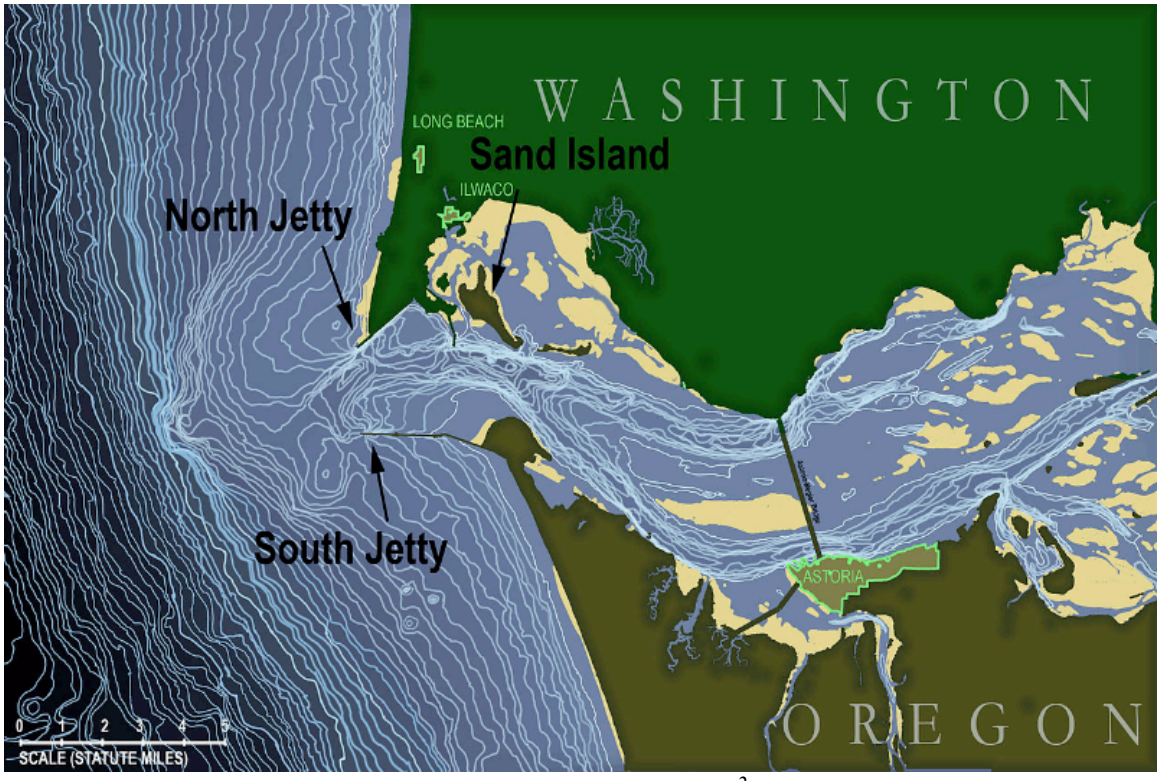

Figure 1: A Bathymetric map of the Columbia River Bar.[2]

[1] For the treacherous nature of the bar see, Jenkins, M. (2013). 'Steering Ships through a Treacherous Waterway'. *Smithsonian*. http://www.smithsonianmag.com/science-nature/Running-the-Bar.html McCoy, J. (2004). 'The Six Deadliest Waters'. *Outdoor Life*. 211(2): 44-47; Gibbs, R. (1954). 'Guarding the Graveyard of Ships'. *Popular Mechanics*. May.128-137. For the ecological conditions that make this area so difficult see, Nowacki, D. (2012). 'Rapid Sediment Removal from the Columbia River'. *Continental Shelf Research* 35: 16-28; Sherwood, C. (1990). 'Historical Changes in the Columbia River Estuary'. *Progress in Oceanography*. 25(1): 299-352; Giese, B. (1989). 'Modelling Tidal Energetics of the Columbia River Estuary'. *Estuarine, Coastal and Shelf Science*. 29(6): 549-571.

[2] A Bathymetric map of the Columbia River mouth. The yellow are sandbars. Source, http://en.wikipedia.org/wiki/File:Columbia_River_Bar-en.svg

In 2012, around 1,428 large (over 300 gross tons) vessels crossed the bar to traverse up the Lower Columbia River. Given that they then return out the same route, the number crossing the bar is actually double that figure. Nevertheless, for accounting purposes, each vessel is only counted once. The 2012 figure includes was made up of 1,311 cargo and passenger vessels, and 117 tankers/articulated tank barges. Although this number of transits is currently below higher levels of transit that existed at the turn of the century (2,283 per year), the volume of cargo has remained the same as the vessels have become larger.[3]

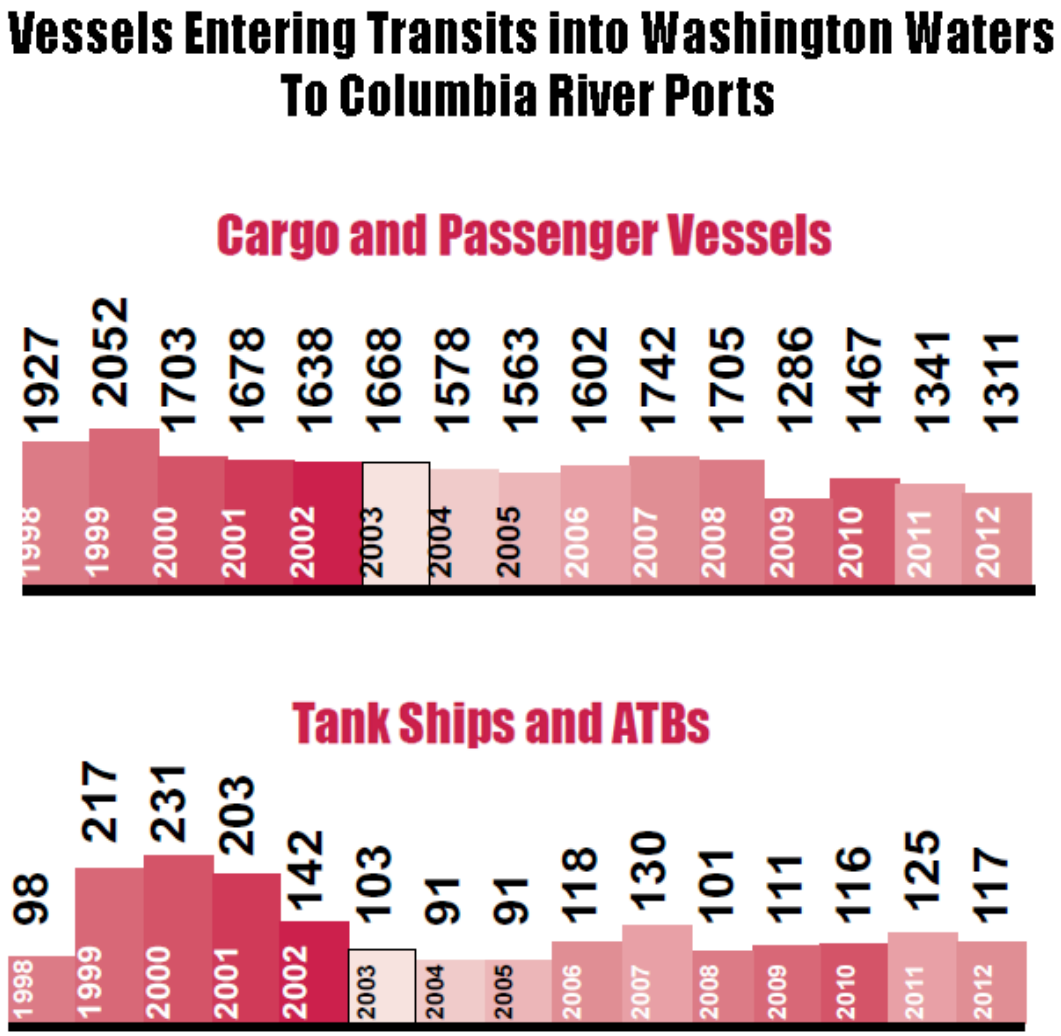

Figure 2: Vessel Entries and Transits for Washington Waters: VEAT 2012. [4]

According to the proposal by Millennium Bulk Terminals (MBT) Longview, when the facility is at capacity and shipping a 'nominal' 44 million metric tons of coal per year, it will be a 24 hour

[3] Washington State Department of Ecology, Spill Prevention, Preparedness and Response Programme. (2013). *Vessel Entries and Transits for Washington Waters: VEAT 2012*. (Washington State Department of Ecology). 1-5. Bradwood Landing (2006). Columbia River User Impact Discussion. . 5-8.

[4] Washington State Department of Ecology, Spill Prevention, Preparedness and Response Programme. (2013). *Vessel Entries and Transits for Washington Waters: VEAT 2012*. (DoE, State of Washington). 4.

operation, running seven days per week. At this point, probably around 2,018 or 'approximately two vessels per day would be loaded'.[5]

The difficulty with the above assertion is that there is uncertainty over exactly what type of vessels may be utilized to sustain this trade in coal. Bulk carriers are divided into four class divisions, based on the dead weight in tons (DWT). Handysize (10,000 to 35,000 DWT), Handyman (35,000 to 50,000 DWT), Panamax (50,000 to 80,000 DWT) and Capesize (80,000 to 200,000 DWT). The last of these vessels are up to 950 feet long and 106 feet wide. These vessels are so big that they (and Panamax) cannot pass through the Panama Canal. The traffic on the Columbia River is currently most aligned with both Handysize and Handyman, although some of the ports (such as Longview) are prepared to deal with Panamax sized vessels. Therefore, two vessel-related questions arise: (i) what will the concentration of Panamax sized vessels (compared to the rest of the vessel traffic) increase by; and (ii) will even larger Capesize vessels be included in this increased traffic? In both instances, these changes in vessel type and concentration need to be modeled against the ecology of the bar, and the safety aspects they may raise.

In as much as the change in type of vessels needs to be examined, so too does the change in density of volume. Working on this estimate of two ship visits per day, and given their need to return back over the Columbia River Bar, this equates to 2 transits over the bar per day (remembering that the returns are not counted). Multiplied by the amount of days in the year, this could work out to, approximately, 700 large vessels crossing the bar each year. The cumulative total of existing traffic, with the addition of new traffic, could take the number of crossing the bar close to 2,100 per year, which would amount to an increase in traffic of one third. This increase will be over and above any future expansion in other shipping operations.

Impacts from the specific increase in shipping from the development of the MBT need to be understood and modeled. By using vessel traffic risk assessments, such as that conducted for the earlier Bradwood Landing application, and including updated projections of ship traffic for the MBT project, it will be possible to quantify the increased risk of accident from the extra transits.[6] It is important for the risk assessment to be updated to account for the additional transits projected for the MBT to be in accordance with legal precedent.[7]

The impact assessment must also evaluate the cumulative risks of all existing and projected transits, including vessels over 300 tons and/or carrying a dangerous cargo, in addition to cruise ships, which are intended to traverse through this area, as only this type of evaluation will reveal the true extent of the significant risk at hand.

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[5] 2010 Washington State, Joint Aquatic Resources Permit Application: Millennium Bulk Terminals Longview. 2012, February 2nd. Available from, < http://www.ecy.wa.gov/geographic/millennium/20120222_JARPAapplication.pdf> Section 6d.

[6] Montewka, J. (2012). 'Determination of Collision Criteria and Causation Factors Appropriate to a Model for Estimating the Probability of Maritime Accidents'. *Ocean Engineering* 40: 50–61.

[7] See Ocean Advocates v. United States Army Corps of Engineers**.** 402 F.3d 846 (9th Cir. 2005). Also, Anon (2004), 'Corps Fail to Take 'Hard Look' Required by NEPA Before Issuing FONSI and Permitting Extension of Oil Refinery Dock'. *Planning and Environmental Law* 56(5): 17.

This type of cumulative assessment is required as it will reveal risks that, while perhaps appearing to be minor on an individual level, once quantified in a cumulative assessment framework, may actually turn out to be highly relevant contributors to the risk profile when placed in the context of the overall risk to the Lower Columbia River.[8]

In addition to the past, present and the currently proposed increases in shipping traffic for the MBT development, the cumulative assessment should also scope the likely, further future additional expansions of vessel traffic in this area (even if they are not yet formal or approved proposals). This requirement is especially important when dealing with inter-related projects each of which will utilize the same limited resource, in this case, all routes of traffic on the river that are likely to increase congestion and, thus, risk. For example, the Morrow Pacific Project, that is aimed at expanding the export of 8 million metric tons of coal annually, via two barge-tows per day down the Columbia River from the Port of Morrow to the Port of St. Helens, will also be transferring coal onto Panamax vessels. Similarly, State agencies are evaluating the environmental impacts of a proposal by Tesoro Savage[9] which seeks to transport 360,000 barrels of oil per day by rail from the Bakken oil fields in North Dakota to Vancouver, where it would be transferred to ships bound for West Coast refineries. As these vessels will be traversing the same route and also increasing the overall volume of traffic, these too should be part of the focus.[10]

That is, a forward projected assessment should also include data in the cumulative equation on traffic increases that can reasonably be foreseen, including general increases in vessel traffic from other sources and also vessel traffic projections for other proposed major developments that will need to use the same shipping route. This will greatly assist the authorities in providing the necessary information to achieve meaningful regional planning at a reasonable cost in which uncertainties can be evaluated and safe, effective, appropriate and sustainable (economic, social,and environmental) choices can be made.[11]

2. The reasonably foreseeable accident

[8] Kern v. United States Bureau of Land Mgmt., 284 F.3d 1062, 1075 (9th Cir. 2002) (quoting Churchill County v. Norton, 276 F.3d 1060, 1072 (9th Cir. 2001).

[9] Permit application is available at http://www.efsec.wa.gov/Tesoro-Savage.shtml

[10] The Morrow figures are from AmbreEnergy (2013). *The Morrow Pacific Project: Powering America and the World*. 7.

[11] Zhao, M. (2012). 'Barriers and Opportunities for Effective Cumulative Impact Assessment Within State-Level Environmental Review Frameworks in the United States'. *Journal of Environmental Planning and Management.* 55(7): 961-978. Senner, R. (2011). 'Appraising the Sustainability of Project Alternatives: An Increasing Role for Cumulative Impact Assessment'. *Environmental Impact Assessment Review.* 31: 502-505. Hegmann, G. (2011). 'Alchemy to Reason: Effective Use of Cumulative Effects Assessment in Resource Management'. 31 *Environmental Impact Assessment Review*. 31: 484-490. Gunn, J. (2011). 'Conceptual and Methodological Challenges to Cumulative Effects Assessment'. *Environmental Impact Assessment Review*. 31: 154-160. Therivel, R. (2007). 'Cumulative Effects Assessment: Does Scale Matter?' *Environmental Impact Assessment Review*. 27: 365-385. Burris, R. (1997). 'Facilitating Cumulative Impact Assessment in the EIA Process'. *International Journal of Environmental Studies*. 53: 1-2, 11-29. Thatcher, T. (1990). 'Understanding Interdependence in the Natural Environment: Some Thoughts on Cumulative Impact Assessment under the National Environmental Policy Act'. 20 *Environmental Law*. 611. Eckberg, D. (1986). 'Cumulative Impacts under NEPA'. 16 *Environmental Law*. 673. http://www.aleutiansriskassessment.com/passing.htm

Substantive shipping accidents, despite being of a low probability, carry with them the possibility of catastrophic consequences. Precedent tells us that these accidents are reasonably foreseeable. For example, since the *Exxon Valdez* accident, in 1989, a succession of large spills have occurred including the *Nakhodka* spill off Japan in 1997, the *Prestige* spill off France in 1999, the *Erika* spill off Spain in 2003 and the *Hebei Spirit* spill off South Korea in 2007. Many spills occur regularly around the world and while other spills may be smaller, their impacts are far from negligible.[12] This same pattern has already been repeated in the Lower Columbia River, where since the 1990s, there has been a series of lesser accidents which have had large economic consequences.[13]

3. Indicators of significant risk

In order to be approved, the MBT development must reconcile a large number of relevant standards of regulatory, legislative and other legal and policy instruments from regional, state, federal and international agencies, all of which address issues of potential significant risk. A summary of some of the more relevant standards are provided below:

- The Endangered Species Act
- The National Historic Preservation Act
- The Migratory Bird Treaty Act
- The Bald and Golden Eagle Protection Act
- The Marine Mammal Protection Act
- Executive Order 13158: Marine Protected Areas
- The Coastal Zone Management Act
- The Fish And Wildlife Coordination Act
- The Magnus-Stevens Fishery Conservation and Management Act-Essential Fish Habitat
- The Pacific Salmon Treaty
- The Oregon Fish and Wildlife Habitat Mitigation Policy
- Columbia River Gorge National Scenic Area Act
- The International Convention on the Regulation of Whaling

4. The significant risk of extinction and/or declining conservation status

[12] For information regarding the most recent significant oil spill from a vessel, see Ministry for the Environment (2011). *Rena: Long-term Environmental Recovery Plan* (MFE, Wellington). 4-7. Note also, Ramseur, J. (2010). Oil Spills in US Coastal Waters: Background and Governance. Congressional Research Service 7-5700.

[13] Anon (2011). ‘ Derelict Davy Crockett Spills in Columbia River’. *Oil Spill Intelligence Report*. 34(7): 1. Chen, M. (2010). ‘Impact Speed of Vessel Collision Inland River Channel Characteristics’. *Journal of Hydrodynamics* 22(5): 692-695. LeBlanc, L. (2001). ‘Pattern Development for Vessel Accidents’. *Expert Witness Applications*. 20(2): 163-171. LeBlanc, L. (1996). ‘A Multiple Discriminant Analysis of Vessel Accidents’. *Accident Analysis and Prevention* 28(4): 501-510.

Although concern has to be shown for all areas of coast along which the vessels en-route to Longview pass by, the foremost risk of accidents in this region is in the Lower Columbia River. The proposal from MBT Longview recognizes that a number of threatened or endangered species, which have critical habitat already designated, are in the vicinity of the proposed site at Longview. The ones they identify as endangered, with critical habitat designated and in the vicinity, are Chinook salmon (of the Upper Columbia River spring) and Sockeye salmon (of Snake River). Those with a threatened status, with critical habitat designated and in the vicinity, include Chinook salmon (Snake Riverfall run, Snake River spring/summer run), Chum salmon (Columbia River), Steelhead trout (Snake River, Upper, Middle and Lower Columbia, and Upper Willamette), as well as Bull Trout (Columbia River) and Eulachon smelt (southern Columbia River). [14]

A large number of other species, not directly in the vicinity of the terminal, are also recognized as may being affected by the proposed work. These species include a number of whales (Killer, humpback, blue, fin, sei and sperm), the Columbia white-tailed deer, marbled murrelet, Northern spotted owl, and Nelson's checker-mallow are also all noted. [15] This wider view of other endangered species which may be threatened by the proposed development is consistent with the standpoint that should be taken in relation to the overall foreseeable risks for the entire transit route of the vessels to and from their destination on the Lower Columbia, which intersects with large amounts of critical habitat for a number of threatened and/or endangered species.[16]

This situation, as the proponents of the MBT have recognized, is a concern. However, the extent of this concern is underestimated. Chinook and Steelhead salmon of the Columbia River are explicitly recognized as endangered and threatened with extinction under the Endangered Species Act.[17] The salmon in this river (and its wider basin) once ran at between 10 to 16 million returning to the basin per year. Currently, less than 1 million adult salmon pass the Bonneville Dam each year. [18] Cumulative impacts over a sustained period of time involving the destruction of their habitat by damming, over-harvesting, persistent pollutants and even disturbance from deep draught vessels.[19] These species, which are also a critical part of the diet of the equally endangered Southern Resident Killer Whales,[20] are also subject to further conservation considerations under the Fish and Wildlife Coordination Act, the Magnus-Stevens

[14] 2010 Washington State, Joint Aquatic Resources Permit Application: Millennium Bulk Terminals Longview. 2012, February 2nd. Available from, < http://www.ecy.wa.gov/geographic/millennium/20120222_JARPAapplication.pdf> Section 9k

[15] 2010 Washington State, Joint Aquatic Resources Permit Application: Millennium Bulk Terminals Longview. 2012, February 2nd. Available from, < http://www.ecy.wa.gov/geographic/millennium/20120222_JARPAapplication.pdf> Section 9e.

[16] See Oregon Biodiversity Information Centre. (2013). Rare, Threatened and Endangered Species of Oregon (OBIC, Portland University). 8-12, 14-18. Also, Garono, R. (2003). 'Critical Habitat on the Lower Columbia River'. *Geospatial Solutions*. 13(11): 36.

[17] See NOAA, *Endangered and Threatened Species; 5-Year Reviews for 17 Evolutionarily Significant Units and Distinct Population Segments of Pacific Salmon and Steelhead*. 50448 Federal Register / Vol. 76, No. 157 / Monday, August 15, 2011 / Proposed Rules.

[18] EPA (2009). Columbia River Basin: State of the River Report for Toxics (EPA, Washington). 3.

[19] Pearson, W. (2011). 'Factors Affecting Stranding of Juvenile Salmonids By Wakes from Ship Passage in the Lower Columbia River'. *River Research and Application*. 27(7): 926-936. EPA (2009). *Columbia River Basin: State of the River Report for Toxics* (EPA, Washington). 4.

[20] National Marine Fisheries Services (2012). *The Effects of Salmon Fisheries on Southern Resident Killer Whales: Final Report of the Independent Science Panel.* (NOAA, Seattle). 3-4. National Marine Fisheries Service (2011). *Southern Resident Killer Whales: Five Year Review* (NMFS, Seattle). 6.

Fishery Conservation and Management Act-Essential Fish Habitat,[21] and international conservation efforts under the 1985 Pacific Salmon Treaty[22] (and its 2008 revision).[23] As species listed under the Endangered Species Act, they also have defined critical habitat that must be protected.[24] These Federal obligations to protect the critical habitat of the endangered and threatened Salmon and Steelhead in the Lower Columbia River have been reiterated by the authorities in both Oregon[25] and Washington,[26] as well as by national organizations such as the National Oceanic and Atmospheric Administration (NOAA) with their most recent 2013 Lower Columbia River Recovery Plan for Salmon and Steelhead.[27]

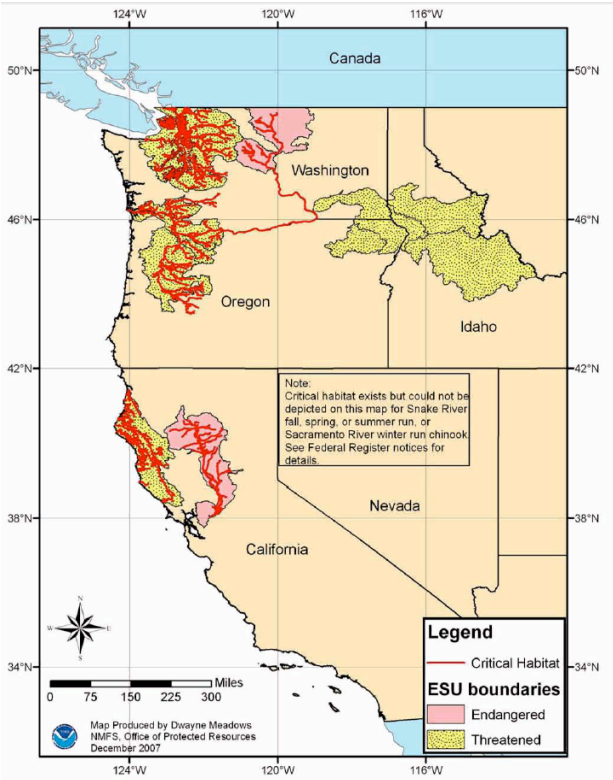

Figure 3:Designated critical habitat for Chinook salmon under the Endangered Species Act[28]

In short, both the Salmon and Steelhead species and their critical habitat - both of which the transit to and from the Longview site will interact with - must be critically examined to ascertain the level of enhanced risk that may be expected.

[21] Public Law 94-265.
[22] *The Treaty between the Government of Canada and the Government of the United States of America Concerning Pacific Salmon*. See, in particular, Article 3.
[23] See Chapter 3 of Annex IV of the Treaty.
[24] *See http://www.nmfs.noaa.gov/pr/pdfs/criticalhabitat/chinooksalmon.pdf*
[25] Oregon Department of Fish and Wildlife (2010). *Lower Columbia River Conservation and Recovery Plan for Oregon Populations of Salmon & Steelhead.* (ODFW, Eugene).
[26] Puget Sound Partnership (2012). *The 2012 State of the Sound: A Biennial Report on the Recovery of Puget Sound.* (PSP, Seattle). 22, 24. National Marine Fisheries Service (2007). *Puget Sound Salmon Recovery Plan* (NOAA, Washington).
[27] NOAA (2013). NOAA (2013). *Lower Columbia River Recovery Plan for Salmon & Steelhead.* (NOAA, Washington).
[28] Source: NOAA (2007). See http://www.nmfs.noaa.gov/pr/pdfs/criticalhabitat/chinooksalmon.pdf

When taking this slightly wider view of significant risks to endangered species that goes beyond the exact location of the proposed loading zone, a much broader array of threatened and endangered species and their associated habitats must be considered, such as the Southern Resident Killer Whale (SRKW). The SRKW represent the smallest of four resident sub-species of Killer Whale within the eastern North Pacific Ocean. The SRKW comprises three pods (termed J, K and L). The SRKW population has fluctuated considerably over the 30 years that it has been studied. All three southern resident pods were reduced in number between 1965 and 1975 because of captures for marine parks. In 1974, the group comprised 71 whales and it peaked at 97 animals in 1996, before falling to 86 as of the end of 2010.[29] Numbers may have fallen since then, as there were estimated to be fewer Killer Whales in the middle of 2012 than there were in the 2010 baseline year (N=83).[30] These animals are protected under both national law by the Endangered Species Act[31] and the Marine Mammal Protection Act,[32] as well as by international law with the International Convention for the Regulation of Whaling.[33] In this particular instance, although the Lower Columbia River is not recognized as being part of their critical habitat, the SRKW are known to frequent the mouth of the river in search of prey.[34]

Similar considerations are in play for endangered and threatened birdlife. As it stands, some 356 species of birds have been recorded around the Lower Columbia River. Of particular note, the Lower Columbia River has the second highest density of wintering and breeding eagles in the state of Oregon. Other regularly occurring hawk species include White-tailed Kite, Northern Harrier, Red-tailed and Rough-legged Hawk, Peregrine Falcon and the Gyrfalcon. At the other end of the avian scale, one of the smallest birds in North America, the Rufous Hummingbird, can also be found in this region. Some protected wetlands are known to hold most, if not all, of these bird populations at key times, and they attract bird watchers from all over the world. Many of the species in the area are migratory and, at certain times of the year, populations can expand five-fold to number in the tens of thousands. A number of these species, while not threatened at the species level, are known to be declining at the regional level.[35]

A number of species which frequent the Lower Columbia River habitats, which forms part of the Pacific Flyway, are listed as protected under the Migratory Bird Treaty Act (MBTA).[36] Therefore, these species require special conservation attention (both for the birds themselves and their habitats) as part of international treaty obligations of the United States. Some species listed under the MBTA have specific management plans, such as snow geese and Canadian geese, and therefore they also require special conservation attention. In addition, the marbled murrelet,

[29] National Marine Fisheries Service (2011). *Southern Resident Killer Whales: Five Year Review* (NMFS, Seattle).
[30] Puget Sound Partnership (2012). *The 2012 State of the Sound: A Biennial Report on the Recovery of Puget Sound.* (PSP, Seattle). 22, 24. NOAA (2008). *Recovery Plan for Southern Resident Killer Whales.* (NOAA, Washington). 2, 56-58.
[31] Department of Commerce, NOAA, *Endangered Status for Southern Resident Killer Whales.* 50 CFR Part 224. Final Rule. As printed in the Federal Register /Vol. 70, No. 222 / Friday, November 18, 2005 /Rules and Regulations 69907.
[32] 68 FR 31980; May 29, 2003.
[33] See Gillespie, A. (2006). *Whaling Diplomacy*. (Edward Elgar, London). Chapter 6.
[34] NOAA (2008). *Recovery Plan for Southern Resident Killer Whales.* (NOAA, Washington). II-67, 76-78. National Marine Fisheries Service (2011). *Southern Resident Killer Whales: Five Year Review* (NMFS, Seattle). 5.
[35] Burrows, R. (2003). *Birds of Oregon*. (LonePine, Eugene). 17-34. Washington Department of Fish and Wildlife Program (2009). *Status and Trends of Marine Birds in Washington's Southern Puget Sound.* (WDFW, Seattle). 7-8. Washington Department of Fish and Wildlife (2006). *Nearshore Birds in Puget Sound* (Washington Department of Fish and Wildlife Technical Report 2006-05, Seattle).
[36] 16 U.S.C. 703. Note also the *North American Waterfowl Management Plan between Canada and the United States*.

although not subject to a specific management plan under the Pacific Flyway Council (the administrative body that forges cooperation among public wildlife agencies for the purpose of protecting and conserving migratory birds in western North America) is actually listed as being threatened with extinction under the Endangered Species Act with the risk of impacts from accidents involving large vessels being recognized as one of the catalysts for its listing. Finally, the bald eagle, also listed under the MBTA, must have its conservation needs considered under both regional and domestic obligations. In relation to the latter, the 1940 Bald and Golden Eagle Protection Act[37] is particularly notable with the need for reconciliation in terms of the foreseeable risks associated with this MBT project and its associated exponential increase in vessel traffic.

In addition to the particular habitats associated with the species of significance at both the national and international levels, are the more generic protected habitats along the route. Of note, on the Washington side, the protected areas include the Julia Butler Hansen National Wildlife Refuge, the refuge for Columbian white tail deer, Skamokawa Vista Park, the Lewis and Clark trail highway, Fort Columbia State Park and Cape Disappointment State Park. On the Oregon side, the areas to be aware of include the Bradley State scenic view point, the Lewis and Clark National Wildlife Refuge, John Day County Park and Fort Stevens State Park. All of the listed protected areas are at risk of losing their integrity (as in, the reasons for which their protected status was originally granted, such as being important habitats for species, special ecosystems, historic areas, aesthetic beauty) and, thus, their status if a substantial vessel accident impacts upon them.[38]

5. The Potential Economic Loss of a Foreseeable Accident

Although economic cost is not an explicit consideration within NEPA, issues such as employment and availability of services are clearly part of the 'human environment' that section 102 of the NEPA requires to be examined. In this regard, although there is an expectation that issues of cost will be considered through processes outside of NEPA, good practice within the application of the NEPA means that economic costs should also be included. This ambiguity as regards economic considerations within the NEPA assessment is not present within the State Environmental Policy Act (SEPA) of Washington. Within the SEPA, the requirement, 'that presently unquantified environmental amenities and values will be given appropriate consideration in decision making along with economic … considerations' is explicit. This requirement is particularly so because it overlaps with the other requirement of the Legislature for an examination of impacts which have a, 'relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity'.[39]

[37] 16 U.S.C. 668-668c.
[38] See Gillespie, A. (2008). *Protected Areas and International Law*. (Brill, The Netherlands). Chapter 8.
[39] SEPA, Chapter 43.21C RCW.

In this regard, the potential economic loss caused by an accident involving a vessel transiting to Longview could be vast, and is probably already underestimated. The first estimates of the all-in cost to British Petroleum (BP) for the *Deepwater Horizon* spill in the Gulf of Mexico were below $5 billion (USD). These original estimates, like all of those prior to the *Deepwater Horizon* spill, were based on the earlier cost-estimation methodologies used to quantify costs of the *Exxon Valdez* spill. These estimates were quickly eclipsed as the scale of the oil leaking out became apparent. By the end of 2012, the direct costs of the clean-up, compensation/damages for lost economic activity (collectively about $21 billion) and fines (based on the amount of oil spilt, by barrel, at around $17 billion) had taken the total closer to $38 billion.[40] However, these figures could climb even higher as, while the cost of fines and compensation are relatively quantifiable and negotiable, the costs for restoration of the damaged environment (assuming this is possible and species are not made extinct) are proving much more difficult to conclude. [41] Either way the equation is cut, the base problem remains that the economic costs of this (and similar) accidents tend to be much greater than what is expected.[42]

A 2004 Report concluded that a major oil spill could cost Washington State's economy $10.8 billion and impact 165,000 jobs.[43] This predicted figure is problematic both because of its age but also because it is likely to be an underestimate. Even relatively small oil spills – in high value areas – are proving increasingly difficult and expensive to clean up. For example, the most recent spill of note involved some 360 tons of bunker oil which escaped when the container ship *Rena* grounded off the east coast of New Zealand. This spill has already cost approximately $30 million in clean-up but the expectations are that it could cost as much as $110 million [USD]. Regrettably, the vast majority of this cost will fall upon the New Zealand taxpayer as the legal cap for the ship owners had been set at $29 million.[44]

The most obvious manifestation of direct economic risk from a large vessel accident is its impact upon tourism. Tourism is one of the economic powerhouses of the modern global economy. In 2011, the total for international tourist arrivals declined by 4.2% to 880 million due to the recession. These 880 million people spent some $852 billion on their travel. It is expected that this number will grow in the future to an estimated 1.6 billion international tourist arrivals by 2020. This growth in numbers is particularly noticeable with nature and eco-tourism and it is estimated that somewhere between 20-40% of all tourists are interested in some form of wildlife

[40] Goldenberg, S. (2012). 'BP adds $847m to Deepwater Horizon Costs'. *The Guardian*. July 31. A6. Goldenberg, S. (2012). 'Deepwater Horizon Aftermath: How Much is a Dolphin worth?'. *The Guardian*. April 12 A7. Anon (2010). 'The Oil Well and the Damage Done: BP Counts the Political and Financial cost of Deepwater Horizon'. *Economist.* June 17. 54-56.

[41] Williams et al (2011). Underestimating the Damage: interpreting cetacean carcass recoveries in the context of the Deepwater Horizon/BP incident. *Conservation Letters*. 4: 228–233.

[42] Whitehead, A. (2012). 'Genomic and Physiological Footprint of the Deepwater Horizon Oil Spill on Resident Marsh Fishes'. *Proceedings of the National Academy of Sciences*. doi:10.1073/pnas.1109545108. Helen K. White , (2012). 'Impact of the Deepwater Horizon Oil Spill on a Deep-water Coral Community in the Gulf of Mexico'. PNAS 2012. doi:10.1073/pnas.1118029109.

[43] Department of Ecology/Puget Sound Partnership (2011). *Improving Oil Spill Prevention and Response in Washington State: Lessons Learned From the BP Deepwater Horizon Oil Spill.* (DoE, Publication Number: 11 - 08 - 002). 7, quoting an earlier 2004 study.

[44] Ministry for the Environment (2011). *Rena: Long-term Environmental Recovery Plan.* (MFE, Wellington). 4-7.

watching.[45] This figure is broadly comparable with the United States as 82 million, or 39% of all Americans, participate in some kind of non-consumptive wildlife-related recreation, with an annual economic impact of $110 billion, or 1.1 % of the Gross Domestic Product.[46]

All of these figures are directly applicable to the areas by which the additional vessel traffic to MBT at Longview will pass, and at base, put at risk if there is a significant accident. This is a particular concern in both Washington State and Oregon, where the lion's share of tourism is based on the natural environment. For example, a value of $8.5 billion per year is generated in Washington State, buttressed by 115,000 directly dependent jobs, purely on the outdoors industry. Similarly, outdoor recreation in Oregon already generates $6.6 billion in consumer spending per year. This is not surprising given that nearly 3 million residents and non-residents engage in some forms of nature based activities each year. Within the Gorge/Mount Hood region, despite being a geographically very small part of Oregon in terms of overall size, nearly $50 million per year is generated in travel related expenditure. [47]

Many of the tourism related jobs are based directly, or indirectly, around high-value eco-tourism, such as low impact activities (including fishing, sailing, wind-surfing, kite-boarding and hiking) or wildlife based activities such as whale-watching or bird-watching. Bird watching, the most accessible form of wildlife watching, continues to be the fastest growing outdoor recreational activity in the United States.[48] In addition to the indirect values that these birds bring, from controlling pests to performing key roles in ecosystems, they often have a direct economic value related to tourism.[49] On average, a day tripper focused on bird-watching will spend somewhere between $32 and $142 in a local community. However, this figure may be higher depending on the type of bird, its conservation status and the time of year.[50]

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45 World Tourist Organisation (2012) *World Tourism Barometer* (NYC, WTO) 3-4; Convention on Migratory Species (2006) *Wildlife Watching and Tourism* (Bonn, CMS). 12-14; IUCN (2003) 'Protected Areas as Engines for Development.' *Parks* 13 (3), 1-71.

[46] Dolesh, R. (2011). 'Assessing the Value of Feathered Workers: Birds Perform a Multitude of Services that Contribute to Our Well-Being'. *Birder's World* 25(4): 12-20.

[47] Outdoors Industry Association (2013). The Outdoor Recreation Economy: Oregon (OIA, Boulder). 2-3. *New York Times*, The 41 Places to Go in 2011; National Geographic Traveller, *The Best Trips for Summer 2011*; Lonely Planet: *US Islands That Won't Break the Bank*. For the figures, see Dean Runyan Associates (2009). *The Economic Impacts to Visitors of Washington State Parks*. (DRA, Portland). Dean Runyan Associates (2009). Fishing, Hunting and Wildlife Viewing and Shellfish Gathering in Oregon. (DRA, Portland). i-iii, 5-11.

[48] Baicich, R (2003). Parks and Birders: A Natural Pair. *Parks & Recreation* 38. 2 (Feb 2003): 48-56.

[49] Dolesh, R. (2011). 'Assessing the Value of Feathered Workers: Birds Perform a Multitude of Services that Contribute to Our Well-Being'. *Birder's World* 25(4): 12-20.

[50] Edwards, P. (2011). 'The Economic Value of Viewing Migratory Shorebirds on the Delaware Bay: An Application of the Single Site Travel Cost Model Using On-Site Data'. *Human Dimensions of Wildlife*, 16:435–444. Lee, C. K. et al.. (2009). Assessing the Economic Value of a Public Birdwatching Interpretive Service Using a Contingent Valuation Method. *International Journal of Tourism Research*, 11, 583–593. Glowinski, S. L. (2008). 'Bird-Watching, Ecotourism, and Economic Development: A Review of the Evidence'. *Applied Research in Economic Development*, 5(3), 65–77. Eubanks, T. L., Stoll, J. R., & Ditton, B. (2004). Understanding the Diversity of Eight Birder Sub-Populations: Sociodemographic Characteristics, Motivations, Expenditures and Net Benefits. *Journal of Ecotourism*. 3: 151–172. MacMillan, D., (2004). Costs and Benefits of Wild Goose Conservation in Scotland. *Biological Conservation*, 119: 475–485.

6. Alternatives

The most obvious alternative available in attempting to reduce the impact of increased shipping traffic and the related risk of accidents is the selection of routes which do not threaten either endangered species, their associated critical habitats and/or protected areas. In this regard, alternate shipping routes which avoid designated critical, sensitive and protected areas should be investigated.

7. Mitigation

Mitigation actions should, ideally, render potentially significant impacts insignificant. This is not possible in this situation. What is possible, however, is reducing the magnitude of the scale, and likelihood, of the significant risks.[51] This reduction of risk, but not its elimination, may be found in two areas: advanced preparedness and enhanced vessel controls.

(i). Advanced Preparedness

Following the National Commission on the *Deepwater Horizon* disaster report, which came out in 2011, State reports have also been produced to deal with preparedness for accidents from large scale vessels and related sources in both Washington[52] and Oregon.[53] In both instances, sensible and robust recommendations have been advanced which should form the first level of mitigation against the significant risks posed by shipping in the proposed MBT area. In particular, the reports identified a need to increase research and development to improve accident response, strengthen state and local involvement, ensure there are adequate financial resources to cover the costs of any accidents, develop new regulations to govern the use of the tools necessary to address the accident, and to improve accident response planning. All of these recommendations should be applied to the consideration of the MBT proposal.[54]

(ii). Enhanced Vessel Controls

The Lower Columbia Region already possesses a highly developed Harbour Safety Plan.[55] This plan, supplementing existing federal, state and local regulations, is the document that has evolved from the recognized positions of the Washington Department of Ecology and the Oregon Department of Environmental Quality, as well as the interests of the various port zones. The rules, which set down the basic standards of care that are required, include, *inter alia*, rules on aids to navigation, anchorage, bunkering, lighting, navigation, visibility, severe weather rules, and requirements for pilots and tugs etc. However, in addition to all of these rules these being

[51] See Eccleston, C. (2012). *Preparing NEPA Environmental Assessments*. (Taylor and Francis, NYC). 47.
[52] Department of Ecology/Puget Sound Partnership (2011). *Improving Oil Spill Prevention and Response in Washington State: Lessons Learned From the BP Deepwater Horizon Oil Spill.* (DoE, Publication Number: 11 - 08 - 002).
[53] Department of Environmental Quality (2012). *Oil Spill Planning Annual Report.* (DEQ, Oregon).
[54] The original recommendations of the National Commission can be found in chapter 9, pages 265-269.
[55] Lower Columbia Region Harbour Safety Committee (2013). *Lower Columbia Region Harbour Safety Plan*.

evaluated in relation to their suitability as regards the increased traffic flow with a new class of vessel, a few points deserve specific mention as they are the most important mitigations that could be undertaken to reduce the risk of accidents in this area. Many of these points are not novel and were already drawn out by the authorities in a similar application five years ago, which also looked likely to increase the amount of traffic of large vessels on the river.[56]

These specific points are namely:

1. The compulsory use of pilots (and only those familiar with the particular vessels on hand) consistent with best practice in this area already, although potentially expanding their compulsory utilization to cover greater lengths of the river due to the increased congestion.
2. The use of at least two tugs and a third for docking assistance (with the third in use in extreme conditions).
3. Robust camera systems capable of monitoring the entire transit route and detectors capable of monitoring in wind, rain and fog conditions. These systems should be synchronized with a full vessel management and monitoring scheme for the region.
4. A dynamic under-keel system whereby real time systems for data collection on bar conditions are collected to help safely navigate the Columbia River Bar during marginal conditions
5. Daylight transits only, until a safe pattern is established.
6. Operations carried out only at speeds which are conducive to safe transit.
7. An assessment of the definition of 'high risk' and/or 'potentially dangerous' cargoes requiring elevated levels of risk preparedness.

8. Recommended research programs

Based on the assessment of the various risks posed by increased shipping from the proposed MBT and the consideration of potential mitigation options that are identified in this report, 10 research programs are recommended to assist in developing an understanding and evaluation of the impacts of the MBT. Five research programs are required for decision makers to reach a full and informed decision with regards to assessing the significant risk of a substantial vessel accident in this region to endangered species and protected areas and a further five studies are required to assess the possibilities and potential effectiveness of the different mitigation options in this area.

Research programs to support decision makers

i. Create a cumulative risk assessment for all vessels over 300 tons and/or carrying a dangerous cargo transiting through the area. This study should establish what the baseline

[56] United States Coastguard (2007). Waterways Suitability Report for Bradwood Landing LNG. (Feb 28, Ref 16611).

is, how the proposed expansion will impact upon the baseline and what additional reasonably foreseeable growth in this area would look like in terms of:
(a). Increased volume (drawing out the differences of impacts for different types of other vessels in the same areas, such as recreational boaters, fishing vessels and cruise ships);
(b). Different types of vessels, and whether the MBT proposal seeks to use Panamax and/or Capesize vessels and what risk this change in vessel type represents in terms of the ecological limits and safety concerns for the Columbia River Bar; and
(c). Congestion (especially at key choke points such as the Bar) due to the increased number and types of vessels, their impact upon navigation (current and foreseeable) and associated enhanced risks.

ii. Create a clear and accurate map of all of the critical habitats of threatened and endangered species and all of the established protected areas in the Lower Columbia River which are at risk from the impact of a vessel accident bearing in mind that impacts can be regional in scope.

iii. Explore the possibility of identifying alternative routes and anchorages for the vessels to be charted which do not pose, or significantly reduce, risks to either endangered species, their critical habitat or established protected areas.

iv. Investigate how a substantial vessel accident could potentially impact upon one or more endangered species (and their associated critical habitat) including Chinook salmon and Steelhead, as well as other species of conservation concern.

v. Complete an economic analysis of the potential costs of a substantial vessel accident. The particular areas to draw out are the potential impacts upon the fishing industry, the tourism industry, especially the high value eco-tourism areas. The costs associated with cleanup operations, compensation and damages, fines and also long-term habitat and environmental restoration should also be assessed. Within this study, it would also be commendable to examine the question of the adequacy of the existing liability regime for vessel accidents within the region, and upon whom, in particular, the costs of an accident would fall. [57]

vi. Evaluate whether existing, and proposed, accident response strategies, including financial coverage, are adequate to cover the enhanced risks of the greater volume, and changed types of traffic.

Research programs to investigate mitigation options

vii. The compulsory use of pilots and tugs (and how many are ideally required for safe handling) for both empty and full coal vessels.

viii. The use of enhanced navigation aids and monitoring systems.

[57] Davis, A. (2011). 'Pure Economic Loss Claims Under the Oil Pollution Act: Combining Policy and Congressional Intent'. *Columbia Journal of Law and Social Problems* 45 (1): 1-44. Rogers, C. (2011). 'Under Extraordinary Circumstance: NEPA Practice Post Deepwater Horizon'. *Natural Resources and Environment.* 26(2): 15-26. Gaskell, N. (2008). 'Marine Pollution Damage in Australia: Implementing the Bunker Oil Convention 2011 and the Supplementary Fund Protocol 2003'. *The University of Queensland Law Journal.* 27(2): 104-130. Ganten, R (2008). 'Developments in Oil Pollution Liability'. *Environmental Policy and Law* 38 (6): 312-315. Faure, M. (2008). 'Financial Caps for Oil Pollution Damage: A Historical Mistake?'. *Marine Policy* 32: 592–606. Faure, M. (2006). 'An Economic Analysis of Compensation for Oil Pollution Damage'. *Journal of Maritime Law and Commerce* 37(2): 179-217. National Commission, Chapter 9, pages 283 and 285.

Assessment of whether cargo, including tar sands/bitumen and coal, should be classified as high risk and/or potentially dangerous and therefore requiring additional measures to ensure their safe transit.