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January 21, 2013

RE: Gateway Pacific Terminal/Custer Spur EIS Scoping Comments

On behalf of the Whatcom County Marine Resources Committee (MRC), I respectfully submit the enclosed comments we would like to see addressed during the scoping process of the Environmental Impact Statement (EIS) for the proposed Gateway Pacific Terminal/Custer Spur project.

The MRC was established by the Whatcom County Council in 1999 to enhance the local marine resources and contribute to the protection of the marine environment of the Puget Sound/Salish Sea. The Whatcom MRC is one of seven MRCs in the state and is comprised of 18 representatives from diverse backgrounds and interests representing conservation, business, recreation and scientific perspectives, as well as city, county, and tribal governments. The MRC provides both local insight and a regional perspective through its alliance with the Northwest Straits Commission. The overarching goal of the MRC is therefore, not only to protect, but to restore the marine waters, habitat and species of the Northwest Straits region to achieve ecosystem health and sustainable resource use.

It is with this goal in mind that the MRC has reviewed the proposal for the Gateway Pacific Terminal/Custer Spur project and offers the following consensus-based comments to be addressed in the scope of the project's EIS. *It should be noted however, that due to the potential for conflicts of interest to arise, the Whatcom County Council representative to the MRC recused himself from any and all discussions regarding this project, as well as all participation in drafting, reviewing, approving, and submitting these comments.*

The MRC recognizes that although there are many areas of concern that should be addressed through an EIS process for a project of this magnitude, we have identified the five main topics we consider to be the most important, given their potential to adversely affect the marine ecosystem at the Cherry Point region. The topics are presented in the enclosed document in alphabetical order.

We hope the comments provided are constructive to the EIS process and contribute to a comprehensive assessment of the potential environmental impacts of the proposed project. We

thank the co-leads for the tremendous amount of effort that has and will go into developing the most comprehensive, science-based EIS possible.

Sincerely,

Wendy Steffensen

Wendy Steffensen, Chair
On behalf of the Whatcom MRC

Enclosure: Whatcom County Marine Resources Committee Gateway Pacific Terminal/Custer Spur EIS Scoping Comments

Whatcom County Marine Resources Committee

Gateway Pacific Terminal EIS Scoping Comments

January 21, 2013

The Whatcom County Marine Resources Committee (MRC) has identified five topics of concern that it would like addressed in the Environmental Impact Statement (EIS) Scoping process for the proposed construction of the Gateway Pacific Terminal at Cherry Point, WA. Each of the five topics (Artificial Night Lighting, Coal Dust/Cargo Spillage, Habitat Impacts, Underwater Noise, and Vessel Traffic) is presented in alphabetical order as separate sections. Each section contains a Statement of Concern, Rationale for Concern, Applicable Regulations, Recommendations, and Citations/Reference Documents.

Artificial Night Lighting

Statement of Concern: Many of the ecological consequences of artificial night lighting associated with the construction and operation of the proposed Gateway Pacific Terminal are potentially disruptive to valued marine resources that depend on little-studied and poorly understood ways on natural levels and rhythms of light from stars, moon, and bioluminescence.

Rationale for Concern: Artificial lighting at night has been shown to adversely affect salmonid behavior, distribution, migration, and survival with ramifications for impacts to other marine organisms (Tabor et al., 2004). Moreover, some prey species including forage fish have been found to be attracted to lighted areas at night; a phenomenon utilized by natural predators such as dogfish and hake (Royal Commission on Environmental Pollution, 2009). With our limited understanding of the ecological functioning of the Cherry Point Reserve we cannot know how much artificial night lighting will have a deleterious effect on marine organisms that use this area including, but not limited to forage fish, other fishes, plankton, marine birds, shore birds, mammals, and migrating birds.

We know that some marine birds prey on vertically migrating bioluminescent zoo-plankton, and for those birds, bioluminescence is only visible in near-total darkness (Haddock et al., 2010). Skaret et al. (2003) found that Norwegian spring spawning herring had distinctive schooling patterns and vertical distribution in the water column in relation to diurnal variations. After dark they found herring descended to the bottom to evade visual predators, whereas during daylight hours the herring ascended into the water column in schools. The Cherry Point Reach shoreline and its waters has been relatively undeveloped except for sky-glow from refinery lighting along with relatively widespread lights from piers and anchored ships. Construction and operation of an additional pier will significantly increase artificial lighting in the Reach and potentially impact diurnal movements of fish making them more susceptible to predation.

Applicable Regulations:
Chapter 90.58 RCW Shoreline Management Act of 1971

Chapter 173-26 WAC State Master Program Approval/Amendment Procedures and Master Program Guidelines.
Washington Department of Ecology Shoreline Management. Accessed January 10, 2013 at http://www.ecy.wa.gov/programs/sea/sma/laws_rules/173-16.html

Recommendations: Disruption of natural daytime and nighttime lighting may result in altering or overwhelming the intensity and regularity of ambient light, potentially causing adverse effects to the marine biota, including but not limited to, disruption of growth, feeding, spawning/reproduction, and migration patterns linked to circadian and lunar rhythms. To begin to fill some of the gaps in our knowledge and understanding of the Cherry Point ecosystem, it is recommended that the following studies be required:

1. Conduct in situ and/or laboratory studies of the effects of artificial lighting on forage fish sensory perceptions, migration, foraging behavior, and spawning similar to the research by Prinslow et.al (1979) for the U.S. Navy on the effects of wharf lighting on salmon.
2. Conduct in situ and/or laboratory studies of the effects of artificial lighting on the water column migrations of bioluminescent organisms under artificial lighting.
3. The studies should also investigate the potential changes in species abundance and dominance resulting from increased prey access under artificial lighting
4. Evaluate reducing artificial light intensity, restricting spectral output and planning physical arrangement to minimize skyward and seaward projection.
    a. It would include filtering the light, directing it downward and away from waters, turning off unused lighting, and shading or covering windows.
    b. Alternative types of lighting to control spectral output should also be used, such as low-pressure sodium lighting (LPS) rather than high-pressure sodium, metal halide, light emitting diodes (LEDs) or mercury vapor lighting. Since the more natural the lighting the more plausible that organisms will respond more strongly, LPS lighting will ensure the response is minimized (The Royal Commission on Environmental Pollution, 2009).

The U.S. Coast Guard, Washington Dept. of Labor and Industries, and Cherry Point industry pier operators will need to be involved as cooperators in the research to assure realistic operational solutions are developed.

Citations/Reference Documents

Haddock, S.H.D., M.A. Moline, and J.F. Case. 2010. Bioluminescence in the Sea, Annual Review of Marine Science, Vol. 2: 443-493.

Prinslow, T.E., C.J. Whitmus, J.J. Dawson, N.J. Bax, B.P. Snyder, and E.O. Salo. 1979. Effects of wharf lighting on outmigrating salmon. Technical report, U.S. Department of the Navy.

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Coal Dust and Cargo Spillage

Statement of Concern: Coal dust and cargo spillage of coal may impact marine resources in and around Cherry Point.

Rationale for Concern: Coal and coal dust have the potential to affect marine and estuarine organisms and habitats through "abrasion, smothering, alteration of sediment texture and stability, reduced availability of light, and clogging of respiratory and feeding organs" (Ahrens and Morrisey, 2005). The potential for toxicity of coal dust and coal leachates also exists and needs to be further refined, as studies done to date have variously shown toxicity, no toxicity or been equivocal. It is likely that significant coal and coal dust from transfer activity and cargo spills will become deposited in the marine/estuarine environment (Johnson and Bustin, 2006).

Given the fact that the Gateway Pacific project is proposed in an aquatic reserve with extensive eelgrass and kelp habitat and the unique Cherry Point herring population, it is imperative that any activities associated with the new industry be scrutinized closely before it is permitted. Studies and analysis should ensure that bulk cargo commodities planned for the Cherry Point region, i.e., coal and its associated dust do not adversely impact the Cherry Point herring, eelgrass, kelp, and other macroalgae, as well as the diverse food prey communities from small plankton species to Chinook salmon. This level of scrutiny and analysis is essential because Cherry Point herring are a unique sub-population that has declined significantly in the last 30 years. Their distinctively timed spawning cycle comprises an essential part of the food chain for salmonids and migratory seabirds so any adverse effects to that population will have ramifications on survival of these predator populations.

Applicable Regulations
The U.S. Environmental Protection Agency's (EPA) Clean Water Act (CWA)

The CWA has recently been successfully used in a lawsuit in Seward, Alaska against coal exporters and rail companies for failing to contain coal dust and allowing it to pollute adjacent water bodies (Jensen, 2011; Pemberton, 2010). In addition to coal and coal particulates, the CWA also regulates point source discharges through the National Pollutant Discharge Elimination System (NPDES). The facility will be required to get a NPDES permit for discharge of stormwater, and potentially for dust loading impacts to the water.

Recommendations: The following studies should be conducted to determine appropriate BMPs for containing leachate and coal dust and to assess the severity of the impact from leachate, coal dust, and coal spillage. The suggestions for many of these studies derive from Ahrens and Morrissey (2005).

1. Chemical Tests: Characterize all potential coal dusts, coal leachates, and chemical dust suppressants/topper agents or other chemical that may be used or exported from the facility. These tests should include, but not be limited to assessment of the following:
    a. Quantify the amount of polycyclic aromatic hydrocarbons (PAHs), sulfur, phosphorus, nitrogen, and metals, including copper and chemical oxygen demand (COD) within the materials.
    b. Determine the ability of PAHs, sulfur, phosphorus, nitrogen, and metals, including copper to dissolve, leach out, or otherwise be released from the coal, i.e., become bioavailable, in sea water under the conditions of the current pH and the pH expected from ocean acidification, 50 or 100 years hence.
    c. Identify the type and chemical composition of coal dust suppressants/topper agents, or other chemicals used on coal.

These tests are important because coal is known to contain the aforementioned harmful constituents and these may be leached (Ahrens and Morrisey, 2005). This study may indicate that certain types of coal should be restricted from export at the proposed facility.

2. Bioassays: Characterize potential coal dusts, coal leachates, chemical dust suppressants/topper agents, and mixtures thereof utilizing standard and others bioassays, as well as the recently developed herring bioassays (Dinnel et al., 2011; Marshall, 2012). Bioassays should test, but not be limited to the following:
    a. Growth inhibition of exposed eelgrass and macroalgae species,
    b. Survivability of herring eggs and larvae and juvenile salmon, and
    c. Alterations in diversity and biomass of plant and animal species, such as, but not limited to algae, burrowing invertebrates, and filter feeders.

    Additionally, studies should use various amounts of coal dust, coal dust suppressants/topper agents, and coal based on a variety of scenarios, such as where:
    d. Best Management Practices are employed 0, 25, 50, 75, and 90% of the time
    e. For time periods of 5, 25 and 50 and 100 years, and
    f. For small, medium, large and repeated coal cargo spillage

    Ahrens and Morrisey (2005) reported that particles of coal in suspension in the water column reduced the amount and possibly the spectral quality of light reaching the sea bed. Moreover, deposition of coal dust on plants decreased photosynthesis, and killed eggs of fish and invertebrates by smothering them. Species richness and biomass were also found to decline with the change of sediment composition.

3. Bioaccumulation: Test the bioaccumulation and bioaccumulative effect of coal particulates, coal dust suppressants/topper agents (fresh and weathered), and leachates on key species, using available models and bioassays. Key species which should be considered include eelgrass, Pacific herring, and salmonids, as well as, sediment-dwelling invertebrates and fish such as annelid worms, burrowing anemones, amphipods, cockles, littleneck clams, butter clams, and sand lance. Sanddabs, English sole, and flounder that actively feed on sediment-dwelling organisms and are found in close proximity to the sediment are therefore exposed through both ingestion and dermal contact to sediment-bound contaminants. As such, bioaccumulation in these key species should be considered as well. The need for this line of experimentation draws from the current knowledge and identified data gaps in the field.

   We know, for example, that unburnt coal contains many toxic components which are leachable and there is evidence that benthic organisms near coal plants accumulate PAHs, although the exact source of those PAHs is unknown (Ahrens and Morrisey, 2005). In a series of articles by Mayer et al. (1996, 2001), there is evidence that metals and PAHs attached to sediment particles can be mobilized by digestive fluids of benthic invertebrates. In order to determine the effect of coal dust component bioaccumulation, it is thus important to quantify the extent of bioaccumulation of metals and PAHs from representative types of coal on different benthic feeding species which may have different gut solubilization abilities and sensitivities.

4. Water and Sediment Quality Models: Determine the bioavailability of coal-associated chemicals and the potential loading of coal at Cherry Point and then compare these amounts via water and sediment modeling to established water and sediment quality standard levels above which are known to cause harm to significant sensitive endemic species, such as eelgrass, herring, salmon, English sole, and flounder. Modeling will assist in assessing the potential harm of these chemicals over time at different loading rates.

5. Ecosystem Modeling: There are strong indications that coal deposition in marine environments can adversely impact biodiversity. Numerous observations have shown decreased biodiversity, although the exact reason for that decline is not known with certainty, but is postulated to have been precipitated by physical changes, abrasion, and to a lesser extent, toxicity (Ahrens and Morrisey, 2005). To assess biodiversity and the impact of coal on the ecosystem at Cherry Point, modeling of the effects of coal dust and coal spillage effects, using up to date relevant models should be conducted. One such Puget Sound model to be considered is described in Harvey et al (2010, 2012). Modeling should consider the following factors:

   a. Varied amounts of coal dust/ spillage over time,

   b. Toxicity, smothering, or abrasive effects on marine species at Cherry Point, including, but not limited to herring, eelgrass, kelp, Dungeness crab, and other species which may be particularly sensitive to toxicity, smothering or abrasion,

   c. Ecosystem effects including, but not limited to altered interactions of primary and secondary productivity, spawning, predator-prey, mutualism, and competition, and

d. Impacts on significant endemic species such as Cherry Point herring, Chinook salmon, Dungeness crab, western grebe, surf scoter, English sole, starry flounder, marbled murrelet, and orca.

6. Scouring Potential: Conduct biological tests on the scouring potential of coal dust and particulate matter on the growth of submerged aquatic vegetation. Ahrens and Morrisey (2005) reference a study by Hyslop and Davies (1998) showing that algal growth was reduced by the physical scouring of coal mine waste.

7. Feeding and Respiration Tests: Conduct biological tests on the feeding and respiration of Dungeness crabs and endemic filter feeders, including mollusks in response to coal dust and particulate matter in suspension. Suspended particulate matter has been shown to clog feeding or respiratory organs or reduce the rate or efficiency of feeding (Ahrens and Morrisey, 2005).

8. Metal Leaching Tests: Test whether the combination of acidic and low redox conditions in sediments could favor metal leaching from coal and subsequent uptake by benthic organisms. If this hypothesis is true, the effect of additional metals loading would need to be factored into water and sediment quality modeling, bioassays, and bioaccumulation tests for the key organisms, as outlined above.

Citations/Reference Documents

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BNSF (Burlington Northern and Santa Fe) Railway. 2012. BNSF Railway Statement on STB Coal Dust Decision. Accessed online January 4, 2013 at http://www.bnsf.com/customers/what-can-i-ship/coal/coal-dust.html#2

Dinnel, P. A., D.P. Middaugh, N. T. Schwarck, H.M. Farren, R.K. Haley, R.A. Hoover, J. E.,K. Tobiason, and R.R. Marshall. 2011. Methods for conducting bioassays using embryos and larvae of Pacific herring, *Clupea pallasi*. *Arch Environ Contam Toxicol.* 60:290-308.

EPA (U.S. Environmental Protection Agency). 2013. Particulate Matter (PM). Accessed January 7, 2013 at http://www.epa.gov/air/particlepollution/basic.html.

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Harvey, C.J., G.D. Williams and P. S. Levin. 2012. Food Web Structure and Trophic Control in Central Puget Sound Estuaries and Coasts.

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Johnson, R and R.M. Bustin. 2006. Coal dust dispersal around a marine coal terminal (1977-1999), British Columbia: The fate of coal dust in the marine environment. *International Journal of Coal Geology*, 68:57-69.

Marshall, R. 2012. Final Report on Pacific Herring (*Clupea pallasi*) Test Development and Validation with an Appendix on Herring Embryo Temperature Tolerance Comparisons between West Coast Stocks. Washington State Department of Ecology Publication No. 11-10-086

Mayer, L.M., Z. Chen, R.H. Findlay, J.S. Fang, S. Sampson, R.F.L. Self, P.A. Jumars, C. Quetel, and O.F.X. Donald. 1996. Bioavailability of sedimentary contaminants subject to deposit-feeder digestion. *Environmental Science and Technology* 30:2641-2645.

Mayer, L.M., D.P. Weston, and M.J. Brock. 2001. Benzo a pyrene and zinc solubilization by digestive fluids of benthic invertebrates – a cross-phyletic study. *Environmental Toxicology and Chemistry* 20:1890-1900.

Pemberton, M. 2010. Lawsuit filed over coal dust, water pollution in Seward, Anchorage Daily News. January 6, 2010. Accessed January 15, 2013 at http://www.adn.com/2010/01/06/1082468/lawsuit-filed-over-coal-dust-water.html.

Habitat

Statement of Concern: Construction and operational activities of the proposed Gateway Pacific Terminal project may alter wave energy, hydrology, and nearshore sediment drift processes that sustain critical habitat structure and functions in the Cherry Point region. These alterations may directly and/or indirectly impact valued marine biota that rely on those habitats for shelter, food, and reproduction, resulting in detrimental changes to the coastal ecosystem. Proposed activities may include, but are not limited to the construction of the pier, physical structure of the pier extending from the shore across the intertidal and nearshore habitats, shoreline armoring structures along with filled intertidal areas, increased vessel traffic and anchored vessels, vessel prop wash, bulk commodity shipping and handling, and loading/offloading of cargo that may lead to spills or release of cargo into the marine environment.

Rationale for Concern: Nearshore drift processes are essential in providing and sustaining critical habitats vital for supporting not only marine biota, but the waterfowl, wildlife, and other organisms (including humans) that utilize the marine environment as well. Overwater structures, armored shorelines, and filled/excavated intertidal areas create diversions to wave energy and alter natural hydrology, drift cells, and sediment transport/depositional processes resulting in altered habitat structure and function to support marine biota. Potential ecological impacts to the marine nearshore and intertidal habitats, as well as their associated species include, but are not limited to the following:

- Changes in rates, direction, and particle load in nearshore sediment transport/drift from the proposed pier, shoreline armoring and vessel traffic/movement that can cause:
    - Physical removal of established intertidal and nearshore habitats due to wave scouring.

    - Depositional changes in nearshore sediment drift that buries established marine nearshore and intertidal habitats, and in turn smothers their associated biota.
    - Alteration of sediment substrate/matrix (e.g., from fine sand to coarse rock/boulder) that alters habitat type and function, which in turn changes biological community structure and functional processes.

- Light attenuation in the water column (i.e., changing the area and transparency of the photic zone), as well as smothering of benthic organisms and vegetation due to increased suspended particulate matter loadings. Sources include, but are not limited to the following:
    - Pier construction displacing sediment beds and mobilizing upland soils
    - Vessel propeller wash re-suspending sediment
    - Bulk commodity cargo spills into the marine environment
    - Cargo loading and offloading activities releasing particulates/dust
    - Increased erosion of the shoreline and/or feeder bluffs from changes in wave energy and direction
    - Inputs of soil from the adjacent upland areas mobilized and transported by onshore activities/vehicles that increase soil disturbance/erosional processes.

- Alteration of sediment substrate and submerged aquatic vegetation (eelgrass and macroalgae) (SAV) populations and habitat due to vessel propeller wash and shading from the pier structure and docked vessels.
- Burying/smothering of established marine nearshore and intertidal habitats, and associated marine biota from cargo spills.
- Alteration of bivalve habitat due to siltation and turbidity caused by pier construction, pier operations, and wave shading.
- Alteration of Dungeness crab habitat, including the female refuge area identified off the shelf at Cherry Point.
- Alteration of nearshore migration routes for juvenile salmonids due to pier construction, pier structure, and potential loss of SAV habitat.
- Alteration or degradation of forage fish spawning habitat due to changes in intertidal beach characteristics, loss or alteration of SAV, and removal of marine riparian vegetation.
- Alteration/destruction of the salt marsh at Gulf Rd.

Applicable Regulations:

Chapter 90-56 RCW	Oil and Hazardous Substance Spill Prevention and Response
Chapter 90.58 RCW	Shoreline Management Act of 1971
Chapter 173-182 WAC	Oil Spill Contingency Plan
Chapter 173-26 WAC	State Master Program Approval/Amendment Procedures and Master Program Guidelines
Chapter 220-110 WAC	Hydraulic Code Rules:

Chapter 220-110-230 Saltwater technical provisions.
Chapter 220-110-240 Tidal reference areas.
Chapter 220-110-250 Saltwater habitats of special concern.
Chapter 220-110-270 Common saltwater technical provisions.
Chapter 220-110-271 Prohibited work times in saltwater areas.
Chapter 220-110-280 Bulkheads and bank protection in saltwater areas (non-single family residence).
Chapter 220-110-290 Saltwater boat ramps and launches.
Chapter 220-110-300 Saltwater piers, pilings, docks, floats, rafts, ramps, boathouses, houseboats, and associated moorings.
Chapter 220-150 WAC Ballast Water Management

Recommendations:

1. Address potential impacts to the marine habitat as itemized above in the EIS scoping process.
    a. Use best available technical information to design proposed structures that do not impact wave energy, nearshore sediment drift, and aquatic and riparian vegetation. Include specifications that minimize impacts to marine vegetation and species to ensure that there is no net loss of valued marine habitat resources.
    b. Utilize or create shore forms that promote natural marine ecosystem processes.

2. Reassess the effects of the proposed terminal on long-shore sediment processes in light of recent studies along the Cherry Point shoreline and the demonstrated long-term effects of the BP terminal in the Cherry Point region.

3. Consider climate change in all plans and designs for the proposed GPT facility.
    a. Current and storm frequency and energy can potentially be altered compared to historical conditions, resulting in changes in the rates and direction of sediment transport.
    b. Sea levels and water chemistry will also be altered, resulting in potential impacts to overwater structures, shoreline armoring, and fill.

4. Data from the overall monitoring program should be used to track changes in sedimentation and filling due to changes in currents or storm frequencies. If necessary mitigation plans should be developed to reduce the undesired impacts to the Cherry Point region.

5. Ongoing monitoring studies should also be conducted of the sediment and water quality, SAV, shellfish, fish, and other biota associated with the marine nearshore and intertidal environments. These studies should be conducted before, during and after construction of the GPT facility if it is allowed to be built.

Citations/Reference Documents

British Petroleum. 2003. Draft Environmental Impact Statement. BP Cherry Point Cogeneration Project. Volumes 1 and 2. Prepared for BP West Coast Products, LLC. Submitted by Golder Associates, Inc. March 2003.

EVS. 1999. Cherry Point Screening Level Ecological Risk Assessment. Proj. No. 2/868-01.1 Prepared for Washington Department of Natural Resources, Olympia, WA. EVS Environmental Consultants, Seattle WA.

WDNR (Washington State Department of Natural Resources). 2010. Cherry Point Environmental Aquatic Reserve Management Plan. Washington State Department of Natural Resources, Olympia, WA. 187 pgs. Published online: www.dnr.wa.gov/Publications/aqr_cp_mgmt_plan_2010.pdf.

Underwater Noise

Statement of Concern: Construction and operations of the proposed Gateway Pacific Terminal project and associated vessel traffic will generate surface and underwater noise. This noise will be an incremental increase over existing noise levels in the Cherry Point Reach, Aquatic Reserve, SE Georgia Strait, and along the route of associated vessel traffic. Actions that will generate surface and underwater noise include, but are not limited to, short-term construction of the pier, increased vessel traffic, vessel propulsion, and vessel loading.

Rationale for Concern:

- Underwater noise is known to adversely affect marine mammals and finfish.
- Underwater noise levels in the SE Georgia Strait are already at levels known to affect marine mammals and fish.
- Southern Resident Killer Whales listed as endangered under the Endangered Species Act (ESA) use the SE Georgia Straits and the Cherry Point Reach and are known to be adversely affected by underwater noise.
- Pacific Herring, specifically the Cherry Point stock, use and depend on nearshore and intertidal zone habitats within the Cherry Point Reach and Aquatic Reserve for reproduction.
- Underwater noise is known to disturb Pacific Herring.
- Surf smelt use the vicinity of the Gateway Pacific terminal proposed site for spawning and may be affected by underwater noise.
- Bull trout, Puget Sound Steelhead trout, Chinook salmon, and three species of protected rockfish are known to use the SE Georgia Straits and vessel traffic routes.
- All the above fish species are listed either as Threatened or Endangered under ESA.
- Underwater noise is known to adversely affect juvenile salmonids, which use the Cherry Point Reach and nearshore portions of the proposed Gateway Pacific Terminal site for migration, feeding, and shelter.
- Above water or surface noise could affect marine and terrestrial birds and mammals using the water surface, shorelines, and adjacent upland areas.
- Surface noise is known to disrupt the foraging behavior of the listed marbled murrelet that forages in the Cherry Point Reach.

Applicable Regulations:
U.S. Endangered Species Act: http://www.nmfs.noaa.gov/pr/laws/esa/, http://www.fws.gov/endangered/.
Marine Mammal Protection Act: http://www.nmfs.noaa.gov/pr/laws/mmpa/
Magnuson-Stevens Fishery Conservation and Management Act: http://www.nmfs.noaa.gov/sfa/magact/
Chapter 70.107 RCW Noise Control.
Chapter 90.58 RCW Shoreline Management Act of 1971
Chapter 173-26 WAC State Master Program Approval/Amendment Procedures and Master Program Guidelines
See Washington Department of Ecology, Noise Pollution: http://www.ecy.wa.gov/laws-rules/noise.html.

Recommendations:
1. Compile existing information on ambient underwater and surface noise levels along the Cherry Point shoreline and within the Aquatic Reserve. Conduct a study to gather information on existing noise levels if necessary. Compare these to projected noise levels generated by the proposed terminal and associated vessel traffic.

2. Address in the EIS scoping process and Draft EIS potential impacts by surface and underwater noise to the marine habitat as itemized above.

3. Conduct a study or model to predict the intensity and frequency of noise generated by construction and operations at GPT.

Citations/Reference Documents:
The following reports are examples and do not represent a comprehensive literature search. Additional effort should be made to do a comprehensive literature search, acquisition, and review.

Biological Review Team. 2005a. Summary of Scientific Conclusions of the Review of the Status of Cherry Point Herring (*Clupea pallassii*) and the Updated Status Review of the Georgia Basin Distinct Population Segment of Pacific Herring under the U.S. Endangered Species Act. Predecisional ESA Document prepared by the Biological Review Team, Northwest Fisheries Center, National Marine Fisheries Service, Seattle, WA. 33 pages. 21 January 2005.

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Vessel Traffic

Statement of Concern: Recent studies by van Dorp et al. (2008), WDNR (2010), and Hass (2012) estimate that by 2016 the Gateway Pacific Terminal would increase arrivals of vessel per year in the Cherry Point region by over 450 vessels. This significant increase in foreign and domestic shipping activities in the region greatly enhances the risk of adverse impacts occurring to the marine ecosystem. Potential sources of risk are from vessel traffic activities, including, but not limited to, noise, lights, loading and off-loading operations, prop wash, fuel and cargo spills, collisions, allisions, and groundings (WDNR, 2010). Potential adverse impacts to the physiochemical properties of the marine sediment and water, and nearshore and intertidal habitat, as well as deleterious effects on resident and migratory species increase in likelihood. Moreover, even with added precautions in place, foreign vessel traffic may pose an added risk due to the potential for miscommunications to occur. Interactions with other traffic in the already busy shipping routes may also compound risks.

Rationale for Concern: Per year there are 4900 covered vessels that enter the Puget Sound region through the Strait of Juan de Fuca, of which 2,700 are destined for Washington ports (Hass, 2012). Van Dorp et al. (2008) estimated that over a 10-year period from 1995-2005 there were 2,705 maritime accidents and incidents in Puget Sound. The vessel traffic at Cherry Point over the same time period accounted for 4 of those accidents and 59 incidents. Though the percentage is relatively low when averaged over a 10-year period, it stands to reason that increasing the arrivals to the Cherry Point region by an additional 450 vessels will increase the percentage of accidents and incidents occurring (Hass (2012).

Salish Sea vessel traffic is managed by the Vessel Traffic System (VTS), jointly administered by the U.S. and Canada. Conditions under which there would be an increased probability of an accident and/or incident to occur in conjunction with increased vessel traffic in the Cherry Point region, include but are not limited to the following:

- Severe weather conditions: At various times of the year the Salish Sea is subject to hurricane force winds, sometimes accompanied by heavy icing, dense fog, high energy waves, and variable tidal currents.
- Unintentional human errors: van Dorp et al. (2008) found that of the 2,705 vessel traffic events that occurred over the 10-year period, 79% were due to unintended human errors. Fifty-two percent were due to perceptual errors, 27% were due to skill-based errors, and 21% to decision errors. Perceptual errors included misjudging distance, speed, spatial disorientation, and visual illusion. Skill-based errors included attention failure, memory failure. Decision errors included rule-based (i.e., misapplication of a good rule or application of a bad rule) and knowledge-based (i.e., inaccurate or incomplete knowledge of the problem) errors (Hass, 2012).
    - Delayed and/or conflicting communications: At various points during transit, VTS monitoring and control may pass back and forth between the U.S. and Canada, between different shore stations, shore relay sites, and pilotage areas, resulting in delayed or conflicting communication.
    - Communication errors: Vessel traffic communications are conducted in English, however the majority of the ocean-going traffic is foreign-flag and English is a second language. Pilots must be able to understand English and an interpreter is required to be on board the vessel; however translation errors may still occur.
- Interpretation of rules and regulations: The US and Canada also have their own slightly, or radically, different interpretations of the International Rules for the Prevention of Collision at Sea (COLREGs) and the IALA navigation buoyage system ('A' or 'B') than much of the rest of the world.
- Vessel type: Based on data compiled by WDNR (2010) and Hass (2012) cargo vessels have significantly greater accident and incident rates per transit compared to other vessels (**Figure 1**).
- Vessel size, ownership, and maneuverability: The vessels likely to access Cherry Point are known as deep draft "bulk carriers" or "bulkers". Various size classes of bulkers exist, from "Handysize" <40,000 tons dwt up to "Cape Class" >250,000 tons dwt, some of the largest ships in the world. For their size bulkers are typically amongst the lowest powered, least maneuverable ships; generally single screw with no bow thruster. Their long stopping distance, low power and immense weight mean that in confined waters they must "pick a line" and follow it. Without tugs, they can only come to anchor in unconfined waters.
    - Escort tug availability: There are few tugs in the U.S. with the power to assist large bulk carriers. These tugs are dedicated to tanker traffic and fully employed. Increased bulk carrier traffic will necessitate more tugs for escort, as well as emergency assistance/response.

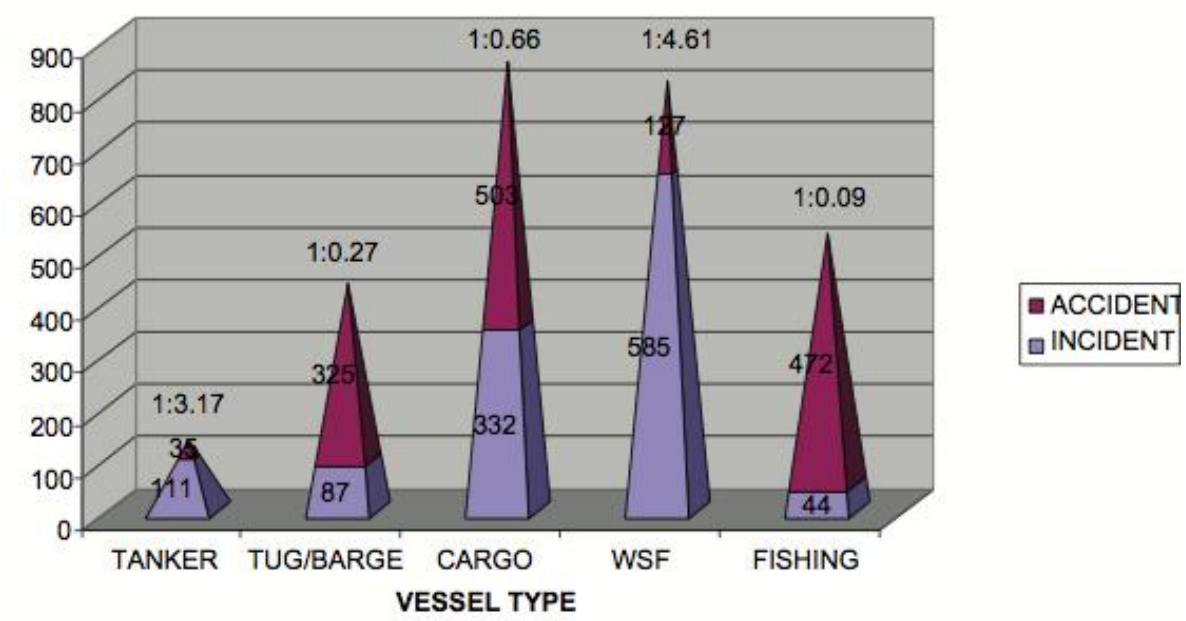

Figure 1. Puget Sound vessel accident to incident ratios (Hass, 2012)

Vessel ownership/operators: Bulk vessels are generally operated by small shipping companies owning 1-10 vessels. Crew staffing levels, training, and competencies, as well as vessel maintenance/repair may not be at the same level as larger vessel operations.

- Potential conflicts with other vessels types:
    - Ferry traffic: Besides other shipping bound to Canadian and other Puget Sound shipping terminals, there are many busy ferry routes crossing and intersecting traffic bound for Cherry Point.
    - Fishing/shellfishing fleets: Many fisheries take place, often with many boats confined to specific areas with limited ability to maneuver. Several fisheries employ 'fixed gear' such as crab pots, or passive gear such as drift nets, and rely heavily on areas and passages approaching Cherry Point. Besides the risks posed by and to traffic, loss of access and gear is a significant issue.
    - Recreational vessels: Recreational traffic ranges from large yachts down to kayaks and personal watercraft. Many of these recreational vessel operators have limited skills and knowledge. Moreover, due to the small size and lack of radios in many of them, there is the potential for them not to be seen by bulk carriers in time to make course adjustments.

Increased vessel traffic poses significant potential risks to the habitat and biota that live in and/or utilize the marine environment at Cherry Point. Specific concerns related to noise, artificial light, cargo spillage, and habitat impacts are addressed in the other sections. Ballast water and invasive species, however are not addressed and have the potential to displace, replace, outcompete resident species for resources or consume them.

- Ballast water and invasive species: Potential consequences of invasive species transported to the Cherry Point region in ballast water can include alteration of habitat, local extinctions of valued or threatened/endangered species through competition for resources or predation, and recruitment/establishment of unwanted noxious species. Progress has been made in recent years with ballast water regulations (WAC 220-150 Ballast Water Management), but there is widespread acknowledgment that much more progress is needed. The latest standard proposed by U.S. Coast Guard (USCG) allows for any 'experimental' ballast water treatment option with a five year evaluation period. Standards for other discharges, as well as hull coating and hull fouling treatments to prevent so-called "aquatic hitchhikers" are minimal and unenforced. These risks will increase proportionally to increases in traffic.

Recommendations:
It is understood that a Vessel Traffic Study of the Cherry Point region is being conducted as part of the EIS Scoping process. In addition to that study the following studies and considerations should also be included/addressed:

1. Strategies for dealing with ballast water from ships that call at Cherry Point terminals must be part of the operations of the GPT terminal and consistent with Chapter 77.120, RCW implemented by the Washington Department of Fisheries and Wildlife, and Chapter 220-150 WAC. Additional management strategies should be investigated to minimize the introduction of pollutants and non-indigenous species from ballast water discharge.

2. Strategies for controlling the introduction of non-indigenous plant and animal species and their management and eradication in a manner that protects native plant and animal communities. The exchange or treatment of ballast water at the pier may mitigate this exposure.

3. Institute a study to characterize the occurrence and dynamics of non-indigenous species currently at Cherry Point and sources of non-indigenous species that can immigrate to the region. The study would also evaluate the probability of the introduction of invasive species by vector.

4. Development of monitoring protocols to track likely vectors (sources for introduction) for non-native organisms and support methods of treatment that reduce risks and avoid impacts to the aquatic reserve ecosystem. Where invasive species have become established, all efforts will be encouraged to investigate and scientifically study measures to safely eradicate the invaders, and/or mitigate impacts.

Prevention:

5. Deep draft cargo vessel traffic at the Gateway Pacific Terminal should be have a double hull and dual propulsion to enhance maneuverability. The existing structure of accident prevention; pilotage, monitoring, assistance and oversight still results in vessel traffic accidents and incidents that will only increase should the terminal be built. Resources should be invested by all shipping industries in the Cherry Point region, including the GPT owners to upgrade existing technologies and facilities to minimize risks of additional accidents and incidents associated with increased vessel traffic.

6. Cargo vessels should also have tug escort to and from the terminal.

Principle International Conventions:

International Convention for the Safety of Life at Sea (SOLAS). 1974.
International Convention for the Prevention of Pollution form Ships (MARPOL). 1973.
International Convention on Standards of Training, Certification and Watchkeeping for Seafairers (STCW). 1995.
International Convention on Maritime Search and Rescue (SAR). 1979.
Convention on the International Regulations for Preventing Collisions at Sea (COLREG). 1972.
Convention on Facilitation of International Maritime Traffic (FAL). 1965.
International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC). 1990
International Convention for the Control and Management of Ships' Ballast Water and Sediments . 2004.
International Convention on Salvage (SALVAGE). 1989

Applicable Regulations;

Clean Water Act.
Oil Pollution Act of 1990.
Endangered Species Act.
Migratory Bird Act.
Chapter 220-150 WAC Ballast Water Management. Accessible online at http://apps.leg.wa.gov/wac/default.aspx?cite=220-150
Chapter 77.120 RCW Ballast Water Management. Accessible online at http://apps.leg.wa.gov/rcw/default.aspx?cite=77.120

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