



Ocean Ecology

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Pacific Northwest LNG Project
Canadian Environmental Assessment Agency
410-701 West Georgia Street
Vancouver, BC V7Y 1C6

Re: Public comments on the Pacific Northwest LNG Project

Dear sir/madam:

I am writing this letter in response to your invitation for public comments on the Pacific Northwest LNG Project. I believe that a full federal environmental assessment should be required for this project. As an oceanographer and a biologist who has worked in the Skeena River estuary region since 1994, I have significant concerns regarding this proposed project on two counts:

1. ***A lack of understanding about and/or research on the estuarine region in which the project is proposed to be situated as demonstrated in the document "Pacific Northwest LNG: Project Description Executive Summary" by Stantec in February, 2013.***

I am particularly concerned with the lack of knowledge regarding the extent, ecological importance, and vulnerability of the eelgrass bed associated with Flora Bank. Flora Bank is recognized as one of the largest eelgrass beds in British Columbia and a region of high habitat value. In 1997, the amount of eelgrass on Flora Bank was estimated from a CASI (Compact Airborne Spectrographic Imager) survey to be approximately 0.80 square kilometers¹, almost all exclusively located within the intertidal zone. This survey may not have adequately measured the spatial extent of subtidal eelgrass in the region.

Estuaries provide essential nursery and juvenile rearing habitats, with up to 80% of coastal wildlife species relying on estuaries during at least one stage of their life history.² While the processes affecting the health and spatial extent of eelgrass in the Skeena River estuary remain poorly understood, these regions of eelgrass have been identified by the North Coast Wetlands Program as important migratory/wintering waterfowl habitat. Several rare species, including the yellow-listed trumpeter swan, which has suffered a significant reduction in range, the blue-listed brant, old squaw and great blue heron, and the red-listed western grebe, have all been recorded in the wetlands. A Department of Fisheries and Oceans fisheries habitat study identified Inverness Passage, Flora Bank, and DeHorsey Passage, in that order, as critical habitats for Skeena River juvenile salmon, as well as important eulachon habitat.³ Eelgrass beds are both ecologically valuable and potentially threatened. In addition to

¹ Forsyth, F., Borstad, G., Horniak, W., & Brown, L. 1998. Prince Rupert intertidal habitat inventory project. Unpublished report to the Prince Rupert Port Corporation, the Canadian Department of Fisheries and Oceans, and the City of Prince Rupert. 33 pp.

² BC Ministry of the Environment (BCMOE). 2006. Estuaries in British Columbia. http://www.env.gov.bc.ca/wld/documents/Estuaries06_20.pdf.

³ Higgins, R.J. & Schouwenburg, W.J. 1973. A biological assessment of fish utilization of the Skeena River estuary, with special reference to port development in Prince Rupert. Dept. of Envir., Fish. & Mar. Ser. Tech. Rep. 1973-1.

providing rearing habitats for the juvenile stages of many species of fish and foraging habitats for both migratory and resident bird species, they play an important role in carbon sequestering, which may make eelgrass conservation vitally important in the future. Several of the fish species which rely on eelgrass habitats are important for commercial, recreational, and subsistence fishing. Eelgrass beds fall within the “critical” category of DFO’s habitat rating system, and are considered a “*habitat essential because of its rarity, productivity and sensitivity*” and/or a “*habitat essential to sustaining a subsistence, commercial or recreational fishery or species at risk*”. Furthermore, they may have the “*presence of high-value spawning or rearing habitat*” and/or “*areas high in primary productivity*”⁴. Recent studies on eelgrass in the Skeena River estuary have further emphasized the importance of this habitat and the need to do further research on the processes impacting eelgrass in the region.⁵⁶⁷ All of these factors strongly support the need to have a full federal environmental assessment for any project proposing development that may impact eelgrass in the Skeena River estuary.

By contrast, the Stantec report for the Pacific Northwest LNG Project only referred to eelgrass three times:

- *Flora Bank is a shallow eel-grass bed (< 1 m deep)* (pg. 14)
- *Important marine fish habitats found in the Port Edward area include bull kelp beds (*Nereocystis luetkeana*) and eelgrass beds (*Zostera marina*)* (pg. 15)
- *Potential impacts to Flora Bank, which supports a large eelgrass bed and provides important habitat to crab and juvenile salmon* (pg. 17)

To a reviewer unfamiliar with the area, these brief references would hardly convey the significance of the ecological importance of the region, and could be seen as potentially, albeit unintentionally, misleading. While one would assume that it was not the intent of the authors to mislead, their brief description of the issue certainly indicates a lack of both understanding and knowledge regarding the eelgrass in the Skeena River estuary.

2. A need to more strongly address the potential cumulative impacts of several proposed projects scheduled to be developed in the Skeena River estuary region.

At present, there are four proposed development projects within a 4 km alongshore distance in the Skeena River estuary - the Ridley Terminal Inc. coal port expansion, the Pacific Northwest LNG terminal, the BG Group LNG terminal, and the Canpotex Potash export terminal. While it is possible that each of these projects may be able to individually justify its potential environmental impacts, a means of measuring the overall cumulative impacts of all four projects in close proximity within a ecologically valuable and highly sensitive habitat has not yet been suggested. Although the various proponents have admitted that cumulative impacts may be an issue (for example, there is a single reference to cumulative impacts in the Stantec report for the Pacific Northwest LNG Project - “*Cumulative effects—including other LNG facilities and natural gas pipelines*” [pg. 19]), no overarching planning process that includes cumulative impact assessment has been put in place.

⁴ G3 Consulting Ltd. 2003. Guidebook: Environmentally Sustainable Log Handling Facilities in British Columbia. Report prepared for Fisheries and Oceans Canada, Pacific and Yukon Region, Habitat and Enhancement Branch by G3 Consulting Ltd., Burnaby BC. 72 pp. + appendices.

⁵ Faggetter, B.A. 2009. Flora Bank Eelgrass Survey. Prepared for WWF. http://www.oceanecology.ca/Flora_bank.htm.

⁶ Faggetter, B.A. 2011. Lucy Islands Eelgrass Study. Prepared for WWF. http://www.oceanecology.ca/Lucy_Islands.htm.

⁷ Faggetter, B.A. 2013. Chatham Sound Eelgrass Study Final Report. Prepared for WWF. In press.

Cumulative impacts have the potential to cause significant harmful alterations to the estuarine environment, including, but not limited to:

- changes in current patterns in the estuary resulting from marine structures and foreshore alterations which could lead to detrimental erosion and deposition processes. There are many classic coastal engineering studies showing adverse environmental and human economic affects resulting from marine structures which impede or alter the natural coastal currents.
- reduction of shoreline complexity and areas of soft substrate which form "refugia" for organisms moving along the shoreline of the harbour as a result of shoreline infilling and straightening. These areas of shoreline complexity create eddies and "resting" areas for juvenile fish as they move out of their rearing grounds in the estuary to more oceanic environments, spawning sites for some forage fish species, and "corridors" for the movement of individuals and species, thus maintaining biodiversity throughout the harbour.
- loss of valuable and/or sensitive habitat as a result of dredging, pile driving, and dredgeate disposal.
- increased turbidity and an ensuing reduction of photosynthesis as a result of construction and operational activities from these proposed projects.
- increased possibility of spills and other marine accidents resulting from increased vessel traffic associated with these proposed terminals, as well as potential oil tanker activity from proposed projects such as the Enbridge Northern Gateway.
- increased environmental sound levels resulting from construction and operation of these proposed terminals, as well as increased vessel traffic. Anthropogenic noise can affect marine organisms by interfering with normal sound production and reception, resulting in impacts on feeding, breeding, community bonding, schooling synchronization, and other acoustically-mediated behavior.

Currently, development in the Skeena River estuary has involved a site-by-site approach to habitat protection, which often saves sensitive habitat from destruction by one project only to have the same piece of habitat threatened by a neighboring project. A more holistic approach to habitat protection is required, one which is based on a comprehensive and scientifically rigorous understanding of the roles and vulnerabilities of the different species and habitats in the estuarine environment. In order to implement this approach, there is a need to better understand the cumulative, and often complex, anthropogenic impacts on estuarine environments.

Sincerely yours,



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