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MEMORANDUM

Attention	Ben Tanasichuk, MOTI Representative, Environmental Coordinator
CC	Chad Bengert, Project Manager
From:	P. Troffe, Sr. Fisheries Biologist, Ausenco Sustainability
Subject	Temporary Use Barge Landing Boundary Pass - Fisheries Self Assessment Recommendations
Date	May 15, 2023
Document Ref:	103041-07

Following extreme rainfall events in November 2021 a section of Canal Road on South Pender Island experienced significant damage and is subject to potential landslide or slope failure. The current roadway is unstable and was not built for long-term sustainable use or current traffic volumes. The BC Ministry of Transportation and Infrastructure (MOTI) will realign a portion of Canal Road to provide a safe and stable roadway and to minimize the possibility of future failures occurring.

The objective of this memorandum is to provide a professional option on the risk to fish and fish habitat from the use of a temporary barge landing location at Boundary Pass on South Pender Island to offload heavy equipment to support the Canal Road realignment works (**Figure 1**). The location of the temporary barge landing site was selected by MOTI after several alternative locations were considered with respect to engineering utility, archaeological interactions and impacts on the community.

This fisheries self assessment and mitigation recommendations report is specific to the temporary use of a barge landing location at Boundary Pass on South Pender Island to offload heavy equipment to support the Canal Road realignment works (the Project). Further assessment and permitting for the ongoing one-year long use of the barge landing site, including the placement of temporary in-water infrastructure will be addressed in subsequent documentation and permitting applications.

1 Summary of Existing Conditions

A desktop review of existing information was conducted using publicly available databases and mapping services to characterize the vegetation, wildlife habitat, aquatic resources, and fish and fish habitat at the Project site (Ausenco 2022). An additional field visit was conducted on March 23, 2023 by a registered professional biologist to ground truth the area where the temporary barge landing and offloading will occur. Representative photographs from the field visit are provided in **Attachment 1**. The shoreline of the temporary landing site is characterized by mix of large boulders and cobbles that provide substrate for intertidal marine species. The intertidal habitat does not support species of special significance or listed marine species; however the boulders and cobble do provide high rugosity habitat that supports macro - invertebrates, populations of fin fish and an assemblage of brown and red seaweeds (**Table 1**).

Forage Fish and Intertidal Habitat

A review of forage fish spawning locations on South Pender Island was completed during 2013 (deGraaf, 2013). The study identified habitat characteristics required for successful beach spawning activities and highlighted that Pacific sand lance and surf smelt spawn in sand /pebble substrates at higher elevations on beach slopes. A total of 48 beaches on South Pender Island were assessed for their potential to support forage fish spawning. The survey results suggest the temporary barge landing site does not contain the substrate grain size, or habitat conditions necessary for forage fish spawning (**Figure 1**).

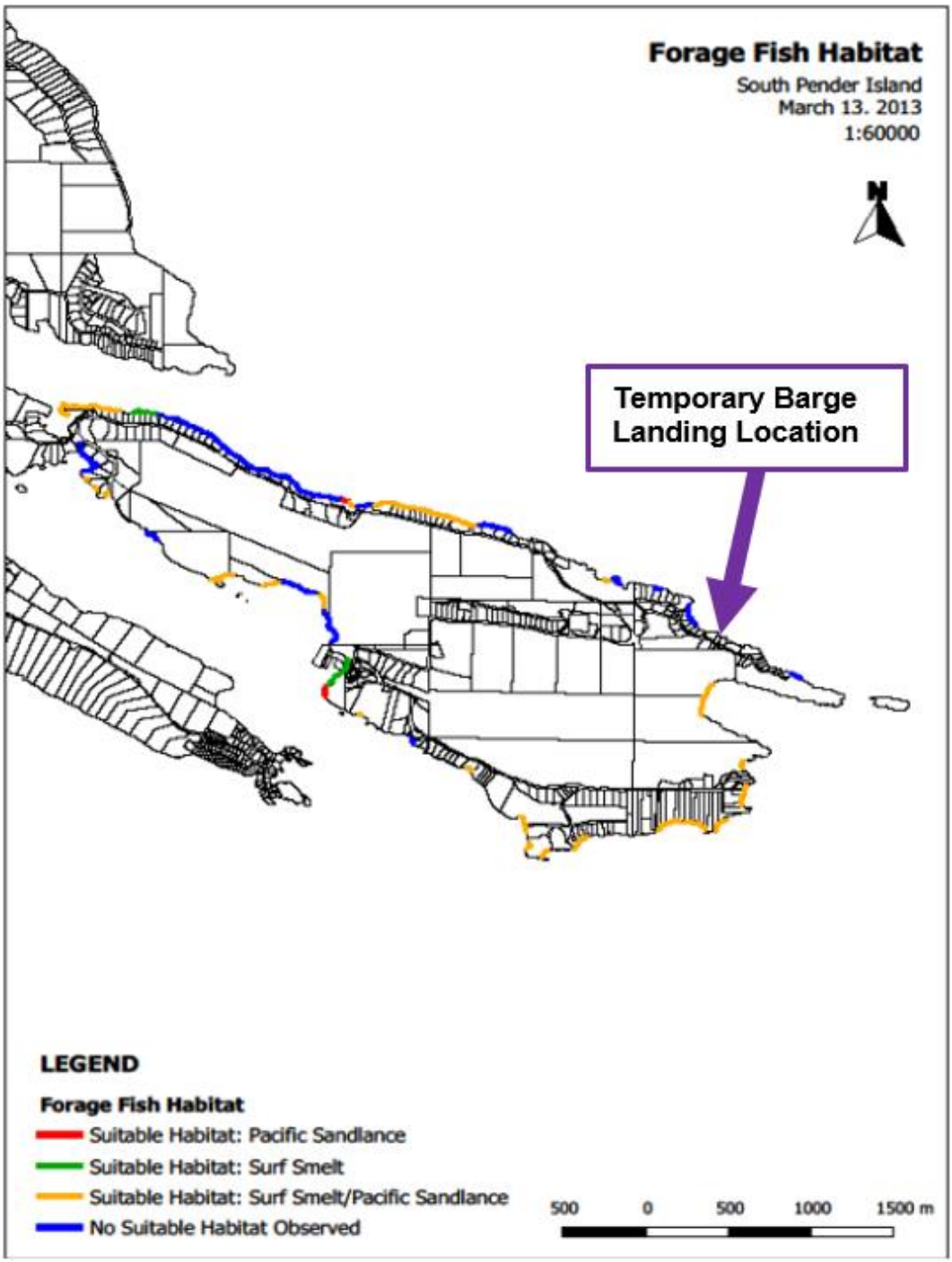

Figure 1 **Potential Beach Spawning Forage Fish Spawning locations on South Peder Island in Relation to the Temporary Barge Landing Site (de Graaf, 2013[1])**

Table 1 **Location and Physical Habitat Description of the Temporary Barge Landing site, South Pender Island.**

General Description	Location	Physical Habitat Description			Algal Community and Quality	Fish Habitat Quality	Species of Concern (SARA)
		Foreshore	Intertidal	Subtidal			
South Pender Island	Lat/long: 48.749844°; 123.188330°	Large boulder and cliff above intertidal area, Mature trees and well-defined upland vegetation with overhanging cover	Large boulder field and steep drop off	Mix of cobble boulder, bedrock > 5% gradient	Moderate: Sea Lettuce (Ulva sp.), Rockweed (Fucus sp.), Red filamentous algae	Moderate, no identified forage fish spawning locations (Surf Smelt, Pacific Sand Lance, and Pacific Herring)	No Marine Species of Special Concern noted at site

2 Description of Potential Effects

In general the temporary use of a barge landing location poses little risk to marine habitat. No significant environmental impacts are anticipated (i.e., sedimentation and / or destruction of habitat) (**Table 2**). Despite the low risk, some potential effects remain including:

- The operation of vehicles and machinery near the intertidal zone does present the risk of fuel spills and the release of other hazardous materials.
- The use of barge spuds and anchors will not occur, and the barge will be held in place by a tug boat. Barge landing will occur from August 2023 through to October 2023. Up to three barge trips are anticipated, and the landings will occur during high tide to avoid grounding.
- The foreshore has potential to be affected by vehicle mobilization and machinery movements. Rig mats will be deployed in the upper portion of the landing site, and offloading of machinery and construction material will occur on top of these protective mats to protect the substrate.

[1] de Graaf, R. 2013. North and South Pender Islands beach spawning forage fish habitat assessments. Prepared by British Columbia Marine Conservation and Research Society. Prepared for the Islands Trust and Islands Trust Fund. 32p.

Table 2 Location and Physical Habitat Description of the Temporary Barge Landing site, South Pender Island.

Activity	Potential Effect	Timing of Work	Duration of Work	Habitat		
				Habitat Altered or Removed (m^2)		Description of Changes
				Temporary	Permanent	
Temporary Barge Landing	Intertidal and Foreshore Encroachment.	August – October 2023	Intermittent offloading of heavy equipment from barge	0.0	0.0	Barge will approach the intertidal area during high tide. Barge to be held in place with assistance of a tug or tender until departure.

3 Mitigation Measures

The Project will conform to MOTI's Standard Specifications for Construction, *Section 165, Specifications for Protection of the Environment,* unless otherwise stated in the Special Provisions of the tender package.

1. The transportation barge will approach the intertidal area during high tide to gain access for loading ramp. Barge to be held in place with assistance of a tug or tender until offloading is completed.
2. Avoid utilizing the temporary barge landing site during poor weather conditions.
3. The Contractor will be required to include the following industry best practices and will comply with all applicable federal and provincial legislation during use of the temporary barge landing.
4. An appropriately qualified professional (QEP) will be retained as an Environmental Monitor (EM) to provide guidance on implementing the recommended mitigation measures and, if necessary, to develop additional mitigation measures if the need arises. The Contractor is responsible for undertaking environmental monitoring and follow up reporting of an additional mitigation that was deemed necessary. For this Project full-time environmental monitoring by the EM is likely not necessary based on the observed site conditions.
5. The EM will have the authority to halt any work that does not comply with regulatory requirements or causes adverse environmental impacts. Failure to comply with or observe environmental protection procedures may result in the work being suspended pending rectification of the problems.
6. All Project works will be conducted in accordance with all applicable legislation, regulations and/or approvals including, the Fisheries Act, Migratory Birds Convention Act, Species at Risk Act and Canada National Parks Act. Project activities are not anticipated to contravene any of these acts if appropriate mitigation is applied.
7. The Contractor must obtain all necessary permits prior to the commencement of Project activities.

4 Conclusion

The potential for harmful alteration, disruption, or destruction (HADD) of fish habitat was assessed as unlikely, with the application of the mitigation measures listed in section 3, and given the following considerations:

- There is no permanent footprint in the foreshore, intertidal or subtidal areas.
- Arrival and departure of the barges will be conducted during high tide to avoid grounding.
- Use of the landing site is infrequent (three times) and for short duration (~3 hours each).
- Use of the temporary landing site avoids the deployment of spuds and other anchoring equipment into the inter / sub-tidal environment.
- An appropriately qualified professional will be retained as an Environmental Monitor to verify the application of mitigation as listed in section 3.

5 Closure

This work was performed in accordance with Contract No. 851CS1160 between Ausenco (formerly Hemmera Envirochem Inc.; Hemmera), and the BC Ministry of Transportation and Infrastructure (Client), dated April 21, 2021 (Contract). This report has been prepared by Ausenco, based on work conducted by Ausenco, for sole benefit and use by the Client. In performing this work, Ausenco has relied in good faith on information provided by others and has assumed that the information provided by those individuals is both complete and accurate. This work was performed to current industry standard practice for similar environmental work, within the relevant jurisdiction and same locale. The findings presented herein should be considered within the context of the scope of work and project terms of reference; further, the findings are time sensitive and are considered valid only at the time the report was produced. The conclusions and recommendations contained in this report are based upon the applicable guidelines, regulations, and legislation existing at the time the report was produced; any changes in the regulatory regime may alter the conclusions and/or recommendations.

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Ausenco Sustainability

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Report reviewed by:
Ausenco Sustainability

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Director Environmental Planning and Management

ATTACHMENT 1

Site Investigation Photos 03/23/23

Photo 1 – Riparian habitat typical of the upland area near the tempoary barge landing location.

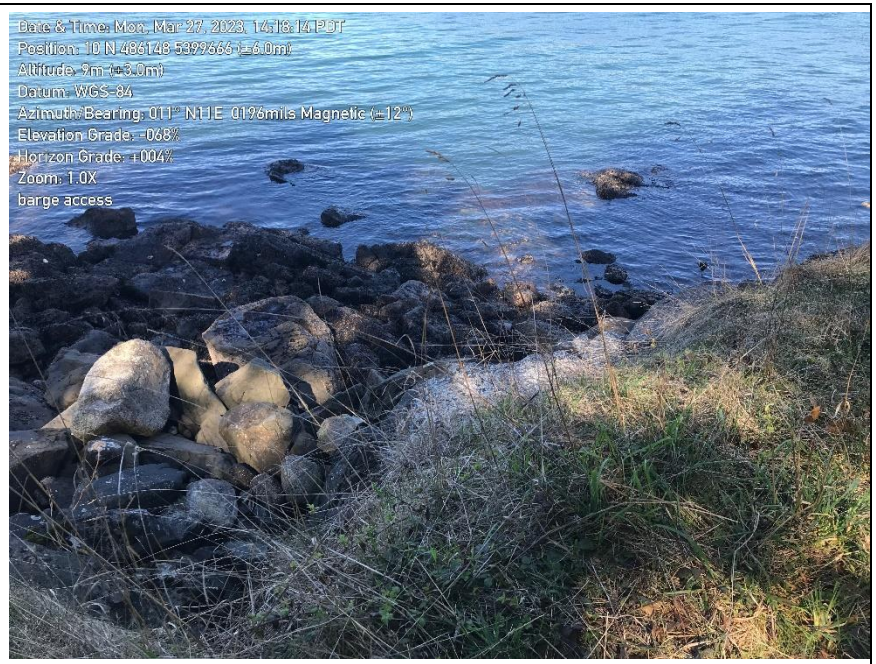

Photo 2 – View of intertidal habitat at the temporary barge landing site (approxiatley 1.5 m above HHWL).

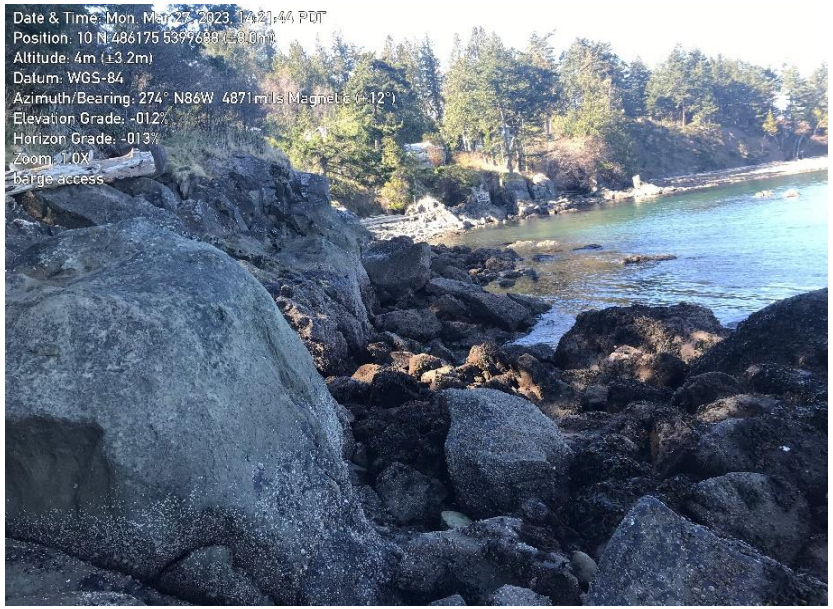

Photo 3 – View of temporary barge landing site (elevation near HHWL).

Photo 4 – View of large bouder and cobble intertidal habitat at the temporary barge landing site (elevation below HHWL).

Photo 5 – View of high elevation intertidal habitat with algal species (*Fucus sp, Ulva sp*), distrubuted along the temporary barge landing site (elevation below HHWL)

Photo 6 – View of lower elevation intertidal habitat at the toe of the foreshore slope (elevation below HHWL)