ROBERTS BANK TERMINAL 2 PROJECT
ADDENDUM TO THE ENVIRONMENTAL IMPACT STATEMENT

MARINE SHIPPING SUPPLEMENTAL REPORT

EXECUTIVE SUMMARY

PORT METRO vancouver

OCTOBER 2015

ABOUT THE EXECUTIVE SUMMARY

The Executive Summary provides the key findings of the Marine Shipping Supplemental Report for the proposed Roberts Bank Terminal 2 Project.

The Marine Shipping Supplemental report fulfills the requirements of Section 17 of the "Updated Guidelines for the Preparation of an Environmental Impact Statement" (issued April 17, 2015) regarding the assessment of marine shipping associated with the Roberts Bank Terminal 2 Project beyond Port Metro Vancouver's care and control and extending to the 12 nautical mile limit of Canada's territorial sea.

The complete Marine Shipping Supplemental Report can be found on the Canadian Environmental Assessment Registry at www.ceaa-acee.gc.ca, Reference Number: 80054.

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MARINE SHIPPING SUPPLEMENTAL REPORT – HIGHLIGHTS

- An assessment of potential effects on physical, biophysical, and human environments resulting from marine shipping associated with the Roberts Bank Terminal 2 Project (the Project) was undertaken.
- The conclusion of the assessment is that marine shipping associated with the Project is not expected to result in any significant adverse residual effects to any of the valued components assessed.
- No adverse cumulative effects are anticipated, with the exception of potential effects to southern resident killer whales. Consistent with the conclusions reached in the Environmental Impact Statement, the Marine Shipping Supplemental Report concludes that southern resident killer whales have already been significantly adversely affected by past projects and activities; therefore, cumulative effects are expected to remain significant.
- In addition to the assessment of routine marine shipping activities, the potential for accidents or malfunctions was also considered, including the hypothetical consequences of plausible worst-case scenario accidents. A comprehensive avoidance and response framework exists within the study area, and the likelihood of accidents or malfunctions has been assessed as very low.

1 INTRODUCTION

The Roberts Bank Terminal 2 Project (the Project) is a proposed new three-berth container terminal at Roberts Bank in Delta, B.C., on Canada's west coast. The Project would provide 2.4 million twenty-foot equivalent units (TEUs) of container capacity.

The Project is required to meet forecasted growth in container capacity demand. It is a key component of Port Metro Vancouver's Container Capacity Improvement Program (CCIP), a long-term strategy to deliver transportation infrastructure in support of Canada's trade objectives.

The Project would play a vital strategic role in Canada's trade through the Asia-Pacific Gateway and is aligned with federal and provincial government strategies to strengthen Canada's trade links with Asia. Delivery of the Project is consistent with Port Metro Vancouver's mandate under the *Canada Marine Act*. The Project is subject to a federal environmental assessment pursuant to the *Canadian Environmental Assessment Act, 2012* (CEAA 2012). The Canadian Environmental Assessment Agency (CEA Agency) issued the "Guidelines for the Preparation of an Environmental Impact Statement" (EIS Guidelines) in January 2014. The EIS Guidelines established the scope of the environmental assessment, including the scope of the Project, and specified the minimum information requirements for the proponent's Environmental Impact Statement (EIS). The Project is also reviewable under the British Columbia *Environmental Assessment Act*. The information presented in the EIS is intended to satisfy both federal and provincial environmental assessment requirements. Port Metro Vancouver submitted the EIS on March 27, 2015, and it was posted on the Canadian Environmental Assessment Registry in April 2015.

REQUIREMENT FOR A SUPPLEMENTAL REPORT

On April 17, 2015, the CEA Agency issued "Updated Guidelines for the Preparation of an Environmental Impact Statement" (Updated EIS Guidelines) that included the addition of two factors to be considered:

- Section 17: environmental effects of marine shipping associated with the Project, which is beyond the care and control of Port Metro Vancouver and extending to the 12 nautical mile limit of Canada's territorial sea; and
- Section 18: potential economic, social, heritage, and health effects of the Project, including cumulative effects, which may not be encompassed by the definition of environmental effects under the CEAA 2012, and practicable means to mitigate such potential adverse effects.

The Marine Shipping Supplemental Report addresses the requirements of Section 17 of the Updated EIS Guidelines regarding the environmental effects of marine shipping associated with the Project beyond Port Metro Vancouver's care and control and extending to the 12 nautical mile limit of Canada's territorial sea.

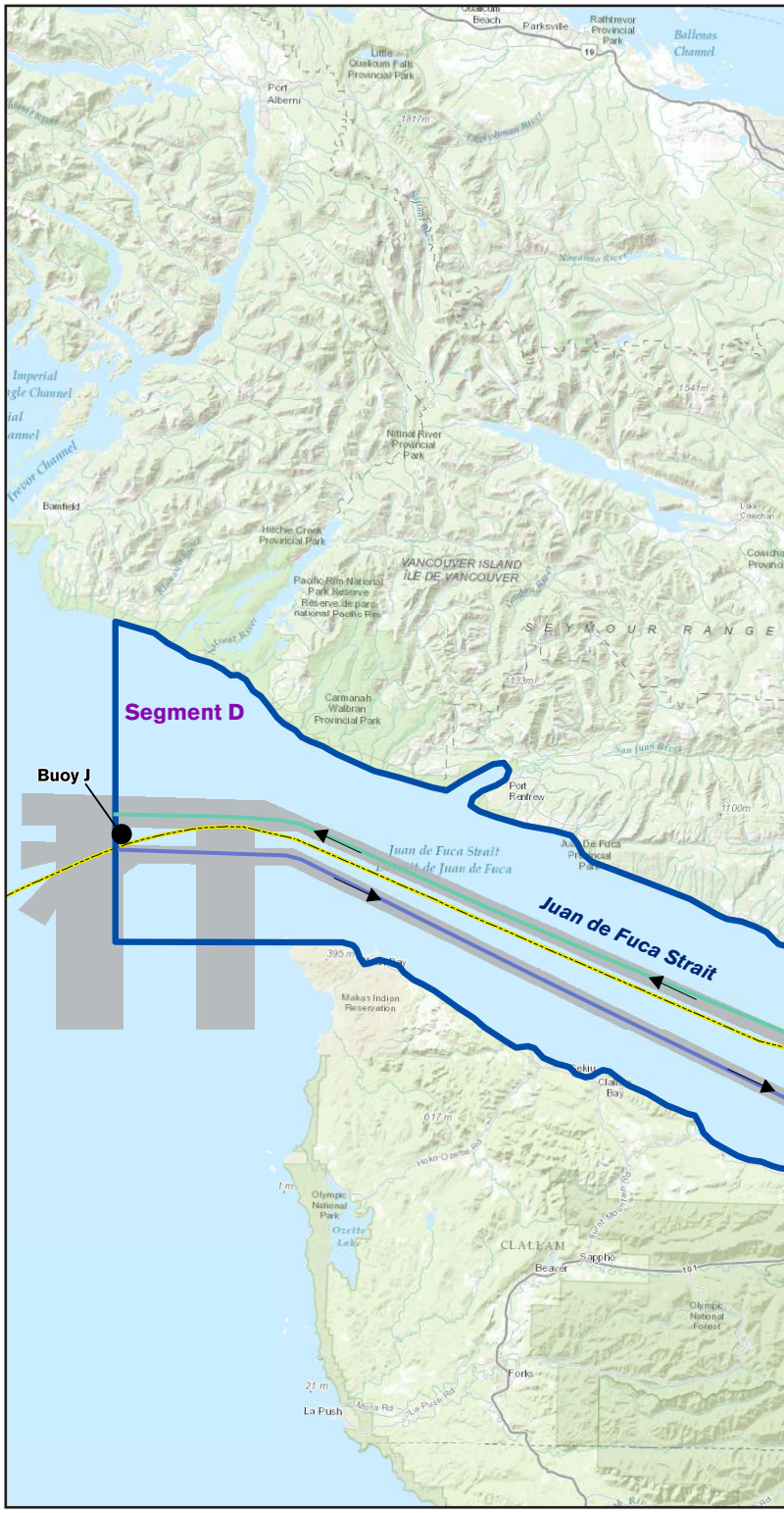
Although marine shipping associated with the Project outside of Port Metro Vancouver's jurisdiction is not within the scope of the Project, as established in the Updated EIS Guidelines, the Marine Shipping Supplemental Report will allow the federal government to collect information on the potential effects of marine shipping associated with the Project for use by programs or activities within federal jurisdiction.

On April 29, 2015, Port Metro Vancouver advised the CEA Agency that the EIS submitted on March 27, 2015 was intended to meet both federal and provincial requirements and therefore addresses provincial socio-economic matters (Section 18).

2 ACTIVITY DESCRIPTION

MARINE SHIPPING AREA

For the purposes of this report, the marine shipping area (MSA) is defined as the area outside Port Metro Vancouver's jurisdiction to the 12 nautical mile limit of Canada's territorial sea, in which container ships transit to and from the proposed Roberts Bank Terminal 2 Project. The figure to the right shows established international shipping lanes and Project-associated inbound and outbound shipping routes, as well as Segments A through G of the MSA delineated for the purposes of supporting the assessment.

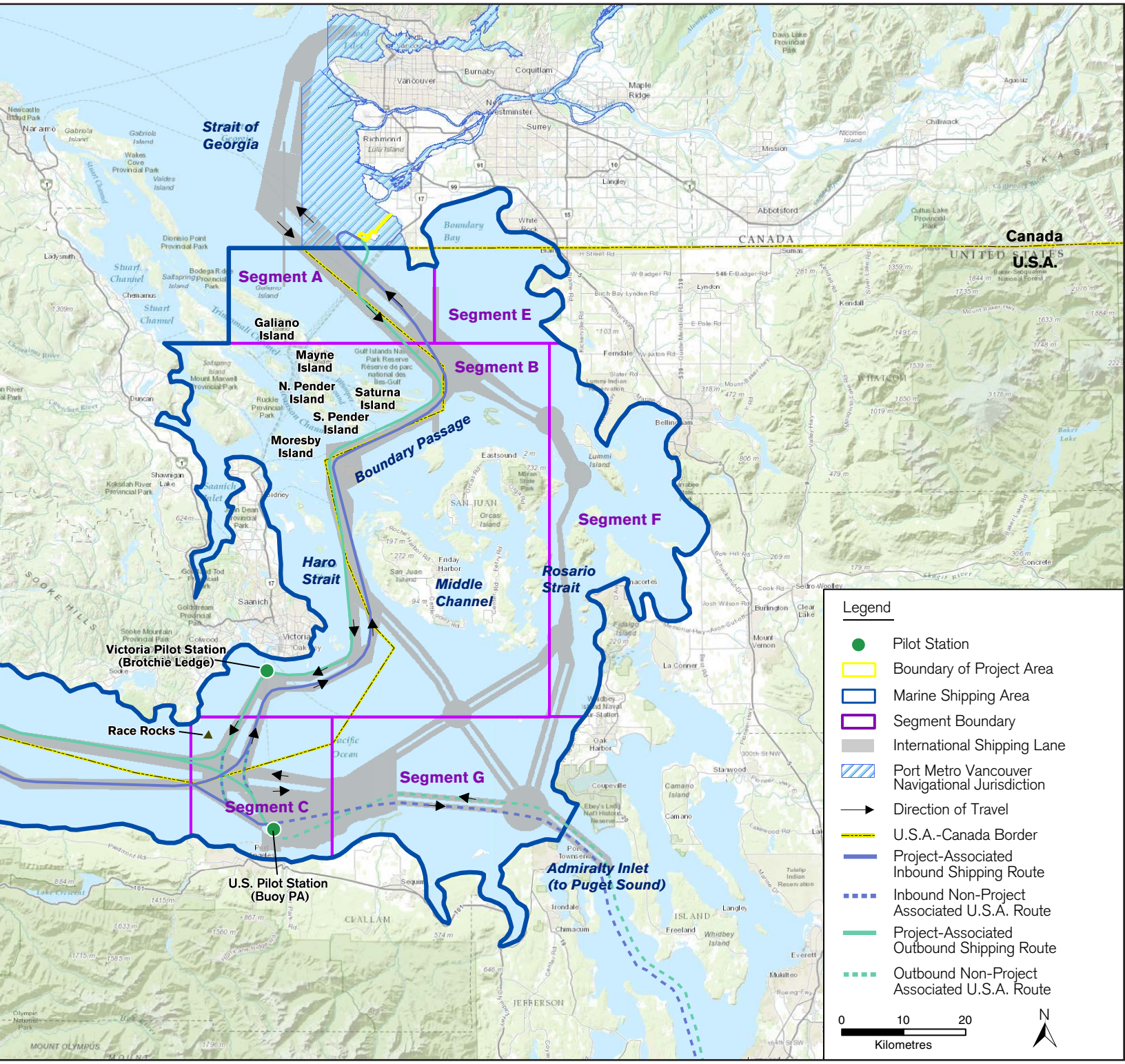


CHARACTERISTICS OF MARINE SHIPPING ASSOCIATED WITH THE PROJECT

Vessel traffic associated with the Project is anticipated to consist of up to 260 container ship calls per year when the terminal reaches its design capacity, between 2025 and 2030. This would result in an average of approximately three ship movements every two days. This represents an increase of approximately 6 per cent over current vessel traffic volume in Segment B, for example. It is estimated that, by 2030, 65 per cent of the container ships calling at the terminal will be in the 9,000 to 9,500 TEU range; as a result, a vessel of this size has been chosen as the representative vessel for the purposes of the assessment. If the trend of increasing container ship capacity occurs faster than currently predicted, the number of vessel calls at the terminal in 2030 would be even less.

International commercial shipping vessels bound for U.S. and Canadian ports utilize established international shipping lanes within the MSA. International commercial shipping vessels bound for the existing terminals within Port Metro Vancouver's jurisdiction and for U.S. ports enter and exit Juan de Fuca Strait north of Cape Flattery at Buoy J. Inbound and outbound shipping lanes in Juan de Fuca Strait (Segment D) are on the south and north sides of the Canada-U.S.A. border, respectively.

Inbound vessels travelling directly to Canadian ports in the Strait of Georgia diverge from the shipping lane south of Race Rocks (Segment C), and travel north towards the Victoria Pilot Station located off of Brotchie Ledge (Segment B). U.S.-bound vessels enter Segment G after picking up a U.S. pilot at Buoy PA. Similarly, Canada-bound vessels coming from the Pacific Northwest U.S. ports of Seattle and Tacoma enter Segment C from Segment G, drop off the U.S. pilot at Buoy PA, and proceed to the Victoria Pilot Station in Segment B.



Pilotage is required for container ships moving in either direction in Segments B and A between the Victoria Pilot Station and the Project. Aside from transiting and picking up or dropping off marine pilots, there is no additional manoeuvring required by Project-associated container ships going through Segments A to D. Container ships do not require tugboat escort while transiting through Segments A to D.

There are no plans, or foreseen terminal operating requirements, for off-terminal anchoring of container ships waiting to berth at the terminal. Exceptions to this could occur in the event of an extreme storm event, when ships would temporarily anchor for safety reasons, or to accommodate unexpected ship-specific maintenance, personnel issues, or operation issues that may arise.

Ballasting, de-ballasting and bunkering are not anticipated to occur within the MSA.

The assessment did not consider an alternative route within the MSA since the international inbound and outbound shipping lanes are well established and jointly managed by Canada and the U.S.A.

3 ABORIGINAL GROUPS ENGAGEMENT AND CONSULTATION

Port Metro Vancouver has engaged with 25 Aboriginal groups regarding the potential effects of marine shipping associated with the Project on current use of lands and resources for traditional purposes, and potential impacts on asserted or established Aboriginal or treaty rights. This includes nine groups that were consulted during the development of the EIS and 16 Aboriginal groups associated with this marine shipping assessment, as specified by the CEA Agency in the Updated EIS Guidelines.

Concerns and interests raised by Aboriginal groups were documented during the engagement and consultation process. The concerns and interests include:

- Potential for marine shipping activities to affect marine birds, mammals, fish, and other species used for traditional purposes or holding cultural significance;
- Potential for marine shipping activities to alter land or waters used for traditional or cultural purposes;
- Potential for marine shipping to restrict access to, or affect the safety of, areas used for traditional or cultural purposes;
- Potential for ship wake to erode the shoreline and alter archaeological sites and other areas of cultural significance;
- Potential for an accident or malfunction involving a spill of potentially hazardous cargo into the ocean, leading to contamination of the food chain, potential health impacts, or potential impacts to Aboriginal rights, title, and culture;
- Potential cumulative effects to the environment or Aboriginal rights as a result of increased shipping associated with multiple proposed projects in the region;
- Interest in participating in the Project, including benefits, employment, and contracting opportunities; and
- Concern with the scope of the marine shipping study and consultation, including timelines and funding.

Port Metro Vancouver has responded to concerns and issues raised in meetings, by email, and by phone. Furthermore, a summary of the concerns and responses are included in the full Marine Shipping Supplemental Report.

4 EFFECTS ASSESSMENT APPROACH

The Marine Shipping Supplemental Report provides the assessment of potential changes to the physical, biophysical, and human environment resulting from marine shipping associated with the Project in the MSA. The methodological approach for the assessment is consistent with the approach used in the EIS and is based on guidance materials issued by the CEA Agency and the British Columbia Environmental Assessment Office, including the Updated EIS Guidelines.

Intermediate components (ICs) considered in this assessment are components of the physical environment that may be changed by marine shipping associated with the Project. Changes to these intermediate components may then subsequently result in an effect on a valued component.

The six intermediate components included in the assessment of Project-associated marine shipping are:

- Air Quality
- Wave Environment
- Marine Water Quality
- Atmospheric Noise
- Light
- Underwater Noise

Valued components (VCs) are the focus of the environmental assessment for the purposes of evaluating effects of marine shipping associated with the Project. The seven valued components included in the assessment of Project-associated marine shipping are:

- Marine Fish and Fish Habitat
- Marine Mammals
- Marine Birds
- Human Health
- Marine Commercial Use
- Outdoor Recreation
- Archaeological and Heritage Resources

The potential effects of marine traffic associated with the Project transiting through the MSA are considered for each IC and VC. Where appropriate, mitigation measures are suggested, residual effects and cumulative effects are characterized, the significance of residual and cumulative effects is determined, and follow-up program requirements are considered. An assessment of residual and cumulative effects on current use of lands and resources for traditional purposes is also included, along with an assessment of potential impacts on asserted or established Aboriginal or treaty rights.

The potential effects of two plausible worst-case accident or malfunction scenarios are considered for intermediate and valued components, where relevant, as well as for current use of lands and resources for traditional purposes.

5 SUMMARY OF EFFECTS ASSESSMENTS FOR MARINE SHIPPING ACTIVITIES

AIR QUALITY, SECTION 7.1 (INTERMEDIATE COMPONENT)

An assessment was conducted to determine the potential changes to air quality from marine shipping associated with the Project. The assessment considered air emissions associated with vessel transit activities. Within the MSA, ship emissions are the primary source of nitrous oxides, sulphur dioxide, and particulate matter emissions, and a relatively small source of gaseous volatile organic compound emissions.

Criteria air contaminants due to emissions from large marine vessels will be lower in 2030, with or without Project-associated vessel emissions, compared to existing conditions, due to the implementation of fuel and technology standard improvements through the North American Emission Control Area (under the responsibility of the International Maritime Organization). Air quality objectives and standards for nitrogen dioxide, sulphur dioxide, and fine particulate matter will not be exceeded with ship emissions in the MSA under future cumulative conditions, including Project-associated vessel emissions. The emissions of these criteria air contaminants from Project-associated ships are expected to represent less than 8 per cent of the total annual cumulative emissions from large marine vessels along the vessel routes, and approximately 6 per cent of total annual cumulative greenhouse gas emissions.

Trace particulate organic matter emissions (the organic fraction of particulate matter emissions) are projected to decrease substantially compared to existing conditions, due to emission reduction requirements set out for ships operating within the North American Emission Control Area. This assessment predicted that emissions of other trace gaseous volatile organic gas compounds will increase by more than 20 per cent with large marine vessel activity in the future, although some trace organics may decrease with the implementation of the North American Emission Control Area. Vessel traffic associated with the Project is expected to represent eight of the 20 percentage points of this increase. While there are no criteria for diesel particulate matter in Canada, concentrations within the MSA are currently above acceptable source impact limits for Washington state and are projected to remain above this limit in the future. The levels of other trace organics are projected to be below air quality objectives and limits in the future.

WAVE ENVIRONMENT, SECTION 7.2 (INTERMEDIATE COMPONENT)

An assessment of the wave environment was conducted to determine potential changes from vessel transits associated with the Project on wake-generated waves. The existing wind-wave climate varies greatly across the local study area in response to differences in local wind conditions, variations in fetch length, and incoming swell from Juan de Fuca Strait. The majority of wind-generated wave heights are in the range of 10 to 50 centimetres, but they can reach up to 200 centimetres.

Vessel wake is a small component of the existing wave climate. Wake waves generated by a representative-size container ship travelling at typical speeds through the MSA were calculated. The results showed that wake waves larger than 10 centimetres (wave heights smaller than this height are considered to reflect calm conditions) would reach shorelines adjacent to the shipping lanes only in Segment B of the MSA in three zones – near Tumbo and Saturna Islands, at the western end of Stuart Island, and in the vicinity of Victoria, including Discovery Island. Based on the spectrum of wind-generated waves, ship wake would be indistinguishable from wind-generated waves except during calm conditions. Calm conditions are experienced 40 per cent, 46 per cent, and 25 per cent of the time within these three identified zones in Segment B. Therefore, container ship wake waves are expected to be exceeded by (and

indistinguishable from) natural waves 60 per cent, 54 per cent, and 75 per cent of the time in these Segment B zones. Vessel wake height calculations indicate that the majority of wake-related waves approaching shorelines in the three zones would be between 10 centimetres and 12.5 centimetres in height.

Project-associated traffic is expected to increase vessel traffic through Segment B by 6 per cent compared to existing conditions; therefore, the potential for wake-generated waves to occur during calm conditions is also expected to increase by 6 per cent. With all future vessels transiting the MSA, including Project-associated traffic (a cumulative vessel traffic increase of 36 per cent), the potential for these small wake-related waves (10 centimetres to 12.5 centimetres) is anticipated to cumulatively increase by 36 per cent.

The length of shoreline that falls within the zone of influence of existing vessel wake is not anticipated to change with future increases in the number of vessel movements.

MARINE WATER QUALITY, SECTION 7.3 (INTERMEDIATE COMPONENT)

Marine water quality in the MSA is influenced by many factors, including freshwater inputs, tidal currents, seasonal influences, and other natural physical factors that affect temperature, dissolved oxygen levels, salinity, and other parameters. Due to federal and international pollution prevention provisions and regulations, discharges of bilge water or ballast water are not expected to alter marine water quality within the MSA. Routine Project-associated shipping activities are therefore not expected to affect marine water quality.

ATMOSPHERIC NOISE, SECTION 7.4 (INTERMEDIATE COMPONENT)

An assessment was conducted to determine the potential changes to atmospheric noise levels associated with vessel transit activities. The existing noise levels on land along the shorelines adjacent to the shipping lanes were estimated to be 45 A-weighted decibels (dBA) during the day (similar to noise levels in agricultural areas) and 35 dBA at night (similar to ambient noise in wilderness areas).

The container ships associated with the Project are expected to result in minor and mostly imperceptible (less than 1 dBA) changes in the noise environment. At a setback of approximately 800 metres, ship pass-by noise levels are predicted to be lower than the ambient daytime noise level, and lower than the ambient nighttime noise level at a setback of approximately 2 kilometres. Most populated land areas within the MSA are located further than 2 kilometres from the shipping routes.

As a result of future marine vessel activity in the MSA, in combination with vessel activity associated with the Project, cumulative average daytime and nighttime atmospheric noise levels due to vessel transit are expected to increase imperceptibly by approximately 1 dBA.

LIGHT, SECTION 7.5 (INTERMEDIATE COMPONENT)

An assessment was conducted to determine the potential changes to the light environment related to vessel transit activities for representative points of reception along the shipping lanes throughout the MSA. Existing light conditions vary within the study area, depending on surrounding sources of light. Existing light trespass characteristics at assessed points of reception in the study area are similar to those in residential rural areas, whereas sky glow characteristics range from areas of low district brightness to areas of high district brightness.

The incremental light from vessel transit activities is not expected to result in a change in light trespass classifications. Sky glow classifications are expected to temporarily change during the nighttime at two points of reception: Saturna Island and Stuart Island. However, these predicted changes are overestimated, based on the conservative assumption of two ships passing at the same time.

The anticipated changes in light conditions related to Project-associated vessel transit activities are representative of a cumulative case (two ships passing at the same time). Although there would be more marine shipping activity in the future, it is highly unlikely that there would ever be more than two vessels passing in the shipping lanes at any given time.

UNDERWATER NOISE, SECTION 7.6 (INTERMEDIATE COMPONENT)

Potential changes to underwater noise in the MSA from Project-associated vessels were assessed in the EIS to understand the potential effects of changes to the acoustic environment in southern resident killer whale critical habitat. This assessment in the Marine Shipping Supplemental Report expanded on the assessment in the EIS to characterize potential changes to underwater noise levels associated with Project-associated vessel transit activities in the MSA. Existing underwater noise levels at all locations in the MSA are dominated by human-generated sounds, primarily from vessel traffic, including large commercial vessels, small private boats, whale-watching vessels, and depth sounders.

Underwater noise levels from marine shipping associated with the Project and future cumulative marine traffic will generally be comparable, although they may at times exceed current existing levels, based on conservative assumptions. During future conditions with Project-associated vessel transits, and other existing and future vessel transits in the MSA, cumulative changes to the mean underwater noise levels are predicted to increase, but by a relatively small contribution compared to overall underwater noise levels in the MSA. This is due to the existing high levels of vessel traffic and the already dominant contribution of commercial vessel traffic noise to the acoustic environment.

MARINE FISH AND FISH HABITAT, SECTION 8.1 (VALUED COMPONENT)

An assessment was undertaken to evaluate the potential effects of Project-associated marine shipping on marine fish and fish habitat (including marine vegetation and marine invertebrates) within the MSA and located within the Salish Sea. Approximately 247 species of fish and thousands of species of invertebrates have been documented in the Salish Sea, including 23 species of conservation concern (21 fish and two invertebrate species). Intertidal habitat (including shorelines and marine vegetation), shellfish (including bivalves and Dungeness crab), Pacific herring, and Pacific salmon were selected as sub-components.

Potential effects of vessel wake-generated waves on marine fish and fish habitat were characterized as negligible, because only 2 per cent of coastline in the local assessment area is within the wake-related zone of influence, and because wake-generated wave heights at shorelines are predicted to be well within the range of natural wave conditions. Fish and fish habitat are already adapted to the natural conditions; therefore, any wake-related influences would not be distinguishable from existing conditions. Similarly, potential effects of underwater noise were also considered to be negligible because noise associated with Project-associated marine vessel activity and future cumulative shipping activities would not exceed injury thresholds for fish species or the Pacific salmon species behavioural threshold. Further, while noise-induced behavioural changes are possible for Pacific herring, potential effects would be localized to within 20 metres of a container ship and of short duration (as the ship passes by) and are therefore not anticipated to affect the integrity of populations within the local assessment area.

MARINE MAMMALS, SECTION 8.2 (VALUED COMPONENT)

The potential effects of marine shipping associated with the Project on southern resident killer whales throughout federally designated critical habitat was assessed in the EIS. The assessment in the Marine Shipping Supplemental Report expanded on the EIS to assess potential effects of marine shipping associated with the Project on all marine mammals and their habitat within the MSA.

A total of 22 marine mammal species, including 13 species of conservation concern under the *Species at Risk Act*, have been observed in the assessment area. Southern resident killer whales were selected as the representative species for the marine mammal sub-component of toothed whales, North Pacific humpback whales were selected as the representative species for the sub-component of baleen whales, and Steller sea lions were selected as the representative species for seals, sea lions, and sea otters.

Potential effects on marine mammals related to Project-associated vessel transit activities include behavioural disturbance and acoustic masking due to changes to the acoustic environment and physical disturbance from vessel strikes. These effects are expected to be not significant for marine mammals.

Incremental marine shipping associated with the Project is not anticipated to have an adverse effect on either southern resident killer whales or North Pacific humpback whale critical habitat features when needed for life functions, or on the survival or recovery of southern resident killer whales, North Pacific humpback whales, or Steller sea lions.

Cumulative effects are expected to be not significant for seals, sea lions, baleen whales, and toothed whales, other than southern resident killer whales. Port Metro Vancouver has assumed that past activities and projects, including those described in the recovery strategy issued by Fisheries and Oceans Canada, have had a significant adverse effect on southern resident killer whales. As such, Project-associated vessel activity, in combination with existing and future vessel activity, is expected to continue to result in a significant cumulative effect to southern resident killer whales.

Regional efforts are underway through the Port Metro Vancouver-led Enhancing Cetacean Habitat and Observation (ECHO) Program to better understand and manage the potential effects of marine shipping on marine mammals throughout the southern coast of British Columbia.

MARINE BIRDS, SECTION 8.3 (VALUED COMPONENT)

An assessment was conducted to evaluate the potential effects of marine shipping associated with the Project on marine birds within the MSA. At least 184 bird species rely on the Salish Sea marine ecosystem. Sea ducks, pelagic birds, waterfowl, gulls and terns, and shorebirds were selected as sub-components.

Potential effects of vessel wake-generated waves on marine birds were characterized as negligible, because wake-generated wave heights are predicted to be well within the range of natural wave conditions. Birds and bird habitat are already adapted to the natural wave conditions; therefore, any wake-related influences would not be distinguishable from existing conditions. Potential effects from vessel-related auditory and visual disturbance, which would be localized and of short duration (as the ship passes by), are considered to be negligible, as birds have habituated to existing conditions. Project-related vessel activity is not expected to have a measurable effect on bird populations.

Collisions with ships resulting in bird mortality are anticipated to result in a residual effect of loss of productivity, although there are no known reports of such mortalities from vessels transiting shipping lanes within the MSA. This effect, therefore, is not widespread and collisions with vessels are most likely infrequent and, if they occur, are expected to be limited to a small proportion of the population. When considering cumulative effects of increased vessel activity in the MSA, including marine vessel traffic associated with the Project in combination with other existing and future projects and activities, individual mortalities are likely to increase. However, the loss of productivity would not compromise long-term population integrity, and the residual effect is expected to be not significant and unlikely to occur. Cumulative effects are also unlikely to occur.

HUMAN HEALTH, SECTION 9.1 (VALUED COMPONENT)

An assessment of potential effects of Project-associated marine vessel traffic on human health was conducted, focusing on exposure to air emissions from vessel transit activities, and on exposure to atmospheric noise from vessel transit activities.

The health of communities in the local assessment area is generally good and comparable to provincial and national averages. The health of some Aboriginal communities may diverge from that of the general population, in that the incidence of some illnesses is higher. This may make the health of Aboriginal communities less resilient than that of non-Aboriginal communities to future changes that affect environmental quality or social determinants of health.

All potential incremental health effects related to routine Project-associated vessel transit activities that increase air and noise emissions were determined to be negligible because predicted changes are below thresholds for human health effects. Cumulative changes in air quality and noise due to Project-associated marine shipping, in combination with other existing and future marine shipping, are also not expected to result in any measurable human health effects. This finding applies to both Aboriginal and non-Aboriginal groups.

MARINE COMMERCIAL USE, SECTION 9.2 (VALUED COMPONENT)

An assessment of marine commercial use was conducted to evaluate the potential effects of Project-associated marine shipping on commercial fish and seafood harvesting (including Aboriginal marine fish and seafood harvesting), guided sport fishing, marine-based tourism, and marine transportation. Existing marine commercial use within the MSA includes fishing and seafood harvesting of crab, shrimp, salmon, rockfish, red sea urchin, and a variety of other marine resources. Guided sport fishing activities focus on various salmon species, and whale-watching activities focus on southern resident killer whales, humpback whales, and Steller sea lions. Commercial marine transportation activities in the MSA include cargo and container ships, tankers, tugs and barges, and ferries.

Potential effects on all types of marine commercial use assessed were determined to be negligible. These negligible effects include changes in each of: area use and access; biophysical conditions for marine fish, invertebrates, and mammals; availability of fish and seafood; marine mammal presence; and environmental setting due to marine shipping associated with the Project.

OUTDOOR RECREATION, SECTION 9.3 (VALUED COMPONENT)

An assessment of outdoor recreation was conducted to evaluate the potential effects on recreational fishing and seafood harvesting, as well as recreational boating and other marine recreational activities in the MSA related to Project-associated vessel transit activities. Existing outdoor recreation activities in the MSA vary by segment. Recreational fishing activities target a variety of fish including salmon, halibut, lingcod, and rockfish. Recreational seafood harvesting includes Dungeness crab, shrimp, and spot prawns. Recreational boating includes sailing, motorboating, kayaking, and canoeing. Other recreational marine activities include surfing, kiteboarding, windsurfing, diving, and shore-based activities.

Potential effects to all types of outdoor recreation assessed were determined to be negligible. These negligible effects include changes in each of: area use and access; biophysical conditions, and availability of fish and seafood; and environmental setting due to marine shipping associated with the Project.

ARCHAEOLOGICAL AND HERITAGE RESOURCES, SECTION 9.4 (VALUED COMPONENT)

An assessment of archaeological and heritage resources was conducted to evaluate the potential effects on physical heritage in the MSA related to Project-associated vessel transit activities.

The MSA includes submerged shoreline areas that were above sea level 12,000 to 3,000 years ago. These areas have potential for archaeological sites, based on human use of these areas in the past. Known archaeological sites in the MSA include shell middens, fish traps, house platforms, burial sites, rock art panels, shipwrecks, and a variety of other features. The sensitivity of shoreline archaeological sites to potential effects from marine shipping activities depends in part on the geological composition (rock or erodible sediment) of the shoreline, and the extent to which the area is exposed to or protected from waves. The shorelines of islands in the local assessment area facing the marine shipping lanes are largely bedrock, resistant to erosion, and have medium to high wave exposures; however, there are pockets of sensitive shoreline, some of which contain archaeological sites. Many of these sites have been, and continue to be, disturbed by wave erosion.

All potential incremental effects on archaeological and heritage resources related to Project-associated vessel transit activities, including shoreline erosion from vessel wake, were determined to be negligible, as wake waves predicted from Project-associated marine vessel traffic are predicted to be within the range of natural conditions.

CURRENT USE OF LANDS AND RESOURCES FOR TRADITIONAL PURPOSES AND ABORIGINAL AND TREATY RIGHTS ASSESSMENTS, SECTION 9.5

An assessment of potential effects on the current use of lands and resources for traditional purposes (current use) and potential impacts to the exercise of asserted or established Aboriginal and treaty rights that may result from marine shipping associated with the Project was undertaken.

The assessments considered the following groups:

- Tsawout First Nation
- Pauquachin First Nation
- Tsartlip First Nation
- Tseycum First Nation
- Malahat First Nation
- Beecher Bay First Nation
- Esquimalt Nation
- Songhees First Nation
- T'Sou-ke First Nation
- Pacheedaht First Nation
- Ditidaht First Nation
- Maa-nulth First Nations (Huu-ay-aht First Nations, Ka:'yu:'k't'h'/Che:k'tles7et'h' First Nations, Toquaht Nation, Uchucklesaht Tribe, and Ucluelet First Nation)
- Tsawwassen First Nation
- Semiahmoo First Nation
- Stz'uminus First Nation
- Cowichan Tribes
- Halalt First Nation
- Penelakut Tribe
- Lake Cowichan First Nation
- Lyackson First Nation
- Métis Nation British Columbia

The assessments of current use and Aboriginal and treaty rights were informed by information pertaining to each Aboriginal group's traditional use in the MSA and assessments on marine fish and fish habitat, marine mammals, marine birds, marine commercial use, and outdoor recreation, as well as archaeological and heritage resources. Potential changes to air quality, wave environment, marine water quality, atmospheric noise, and light were also considered.

Current Use of Lands and Resources for Traditional Purposes Effects Assessment

The current use assessment considered potential effects occurring in Canada on:

- Access to preferred current use locations;
- Availability of preferred current use resources;
- Quality of preferred current use resources; and
- Quality of current use experience.

Current use activities examined include marine resource use, terrestrial resource use in marine areas, and other cultural practices and considerations relative to current use activities in or adjacent to the MSA.

Potential effects on current use as a result of Project-associated vessel transit activities are considered negligible before mitigation for access to preferred current use locations, due to Project-associated ship wake, the availability and quality of preferred current use resources, and the quality of the current use experience (i.e., cultural practices) tied to those aspects of current use. Residual effects on access to preferred current use locations due to Project-associated container ship pass-bys, and on cultural practices tied to that aspect of current use, are considered negligible after the implementation of mitigation mentioned in the next section.

Aboriginal and Treaty Rights Effects Assessment

Taking a precautionary approach, the assessment of potential impacts to Aboriginal groups' ability to exercise asserted or established Aboriginal and treaty rights as a result of Project-associated shipping was based on the assumption that traditional use presently occurring in the MSA (i.e., current use) is an expression of the exercise of Aboriginal or treaty rights. Where traditional use was not identified as occurring at present within the MSA, but similar use was identified as practiced in the past in the MSA, asserted as an Aboriginal right, or protected under treaty, this use was assumed to be potentially exercisable as an Aboriginal or treaty right, and subject to potential impacts as a result of Project-associated shipping in much the same way as potential effects on current use.

Considering the conclusions of the current use assessment, marine shipping associated with the Project is expected to result in a minor incremental adverse impact on the ability of Aboriginal groups to exercise Aboriginal or treaty rights within the MSA without mitigation. This minor impact is expected because of the potential overlap of asserted or established rights-based activities with the incremental increase in Project-associated container ship pass-bys.

Suggested mitigation includes development of a marine shipping activities communication plan and consultation with affected Aboriginal groups concerning the outbound international shipping lane location. These mitigation measures for addressing potential incremental effects on current use are expected to also be effective at addressing the potential incremental impact to the exercise of Aboriginal and treaty rights. No additional mitigation measures have therefore been suggested for the potential incremental impact to the exercise of Aboriginal and treaty rights.

6 SUMMARY OF EFFECTS ASSESSMENT OF POTENTIAL ACCIDENTS OR MALFUNCTIONS

The potential changes to intermediate components and potential effects on valued components were assessed. Potential effects on current use and impacts on the exercise of established and asserted Aboriginal and treaty rights due to accidents or malfunctions arising from marine shipping associated with the Project were also assessed.

Several independent studies informed the assessment, including a quantitative risk assessment that estimated probabilities for different types of potential marine vessel accidents from a container ship in transit in the MSA.

Two plausible worst-case scenarios were selected for the assessment, based on the analyzed probabilities of occurrence, higher risk areas, and possible consequences:

- A powered grounding of a container ship on a hard substrate, resulting in a spill of 7,500 m^3 of heavy fuel oil; and
- A collision between a container ship and a small vessel within an existing shipping lane, resulting in damage to the vessel and/or gear as well as serious injury or fatality.

In both cases, the identified residual adverse effects are unlikely to occur, because of the very low probability of the accident scenarios.

MITIGATION MEASURES FOR POTENTIAL ACCIDENTS OR MALFUNCTIONS

The southern B.C. coast is a mature marine vessel traffic area that is regularly used by deep-sea vessels. Risk mitigation measures currently being implemented in the MSA include a vessel traffic management system (using radar surveillance and traffic separation zones), mandatory pilotage for large vessels, navigational aids, and precautionary areas. Around Roberts Bank, large ships underway have radio communication with BC Ferries and have the option to use anchorages if inclement weather makes berthing unsafe.

Federal legislation provides a regulatory framework for the prevention and management of, and response to, shipping-related accidents and malfunctions in the MSA, including fires, spills, and collisions.

APPROACH TO SPILL PREPAREDNESS AND RESPONSE

Transport Canada is the federal lead for legislative oversight and regulation for spill preparedness and response, while the Canadian Coast Guard and Environment Canada are key partners in implementing relevant programs under their mandates. Canada's approach to dealing with ship-source oil spills is based on three pillars:

- Prevention: taking all reasonable steps to prevent marine incidents from happening;
- Preparedness and Response: preparing for and responding to a marine incident quickly and effectively; and
- Liability and Compensation: in the event of a ship-source oil spill, ensuring that the polluter (responsible party) is held liable and that there is adequate compensation to cover cleanup costs and any damages.

These pillars form the foundation of Canada's Marine Oil Spill Preparedness and Response Regime, which sets out the guidelines and regulatory structure for preparedness and response to marine oil spills.

Western Canada Marine Response Corporation (WCMRC) is the Transport Canada-certified response organization for the west coast of Canada. Upon request of a responsible party or upon direction of the designated authorities (e.g., the Canadian Coast Guard), WCMRC would deploy resources to contain and recover spilled product. A number of mutual aid agreements are in place with Canadian and U.S. counterparts that enable WCMRC to call on those resources for assistance and equipment in the event of a large transboundary oil spill.

Response to spills in U.S. territorial waters within the MSA is covered by the Northwest Area Contingency Plan and actioned by the Region 10 Regional Response Team and the Northwest Area Committee.

Spill response procedures, capacities, equipment, response times, and areas of response are described in the full Marine Shipping Supplemental Report.

SUMMARY OF EFFECTS OF PLAUSIBLE WORST-CASE SCENARIOS

The assessment of plausible worst-case scenarios considered the mitigation measures described above, as well as additional measures suggested where relevant, and evaluated the residual adverse effects remaining after the implementation of those measures.

The assessment for the plausible worst-case spill scenario concluded that, with the exception of human health, measurable residual adverse effects are predicted for all valued components. In all cases, the identified residual adverse effects of a spill are unlikely to occur, because of the very low probability of an accident or malfunction that could result in a spill. With the exceptions of residual effects on marine mammals (southern resident killer whale), marine commercial use (guided sport fishing and marine-based tourism sub-components), outdoor recreation, archaeological and heritage resources, and current use, adverse residual effects were considered not significant. A serious residual adverse impact on the ability of Aboriginal groups to exercise Aboriginal and treaty rights in areas overlapping or near the hypothetical spill area would be expected in the event of such a spill.

The plausible worst-case collision scenario has the potential to result in measurable residual adverse effects on human health, marine commercial use, outdoor recreation, current use, and asserted or established Aboriginal and treaty rights. In all cases, the identified residual adverse effects of a collision are unlikely to occur, because of the very low probability of collision. The assessment concluded that residual adverse effects are expected to be not significant for marine commercial use and outdoor recreation, but significant for human health. For current use, the residual effect could range from not significant to significant, depending on the capacity of the affected Aboriginal group to continue to undertake current use. In the event of a collision between a vessel engaged in traditional use activities and a container ship, a minor to serious adverse residual impact on the ability of the affected Aboriginal group to exercise Aboriginal and treaty rights associated with those activities would be expected.

7 CONCLUSIONS OF THE MARINE SHIPPING SUPPLEMENTAL REPORT

The Marine Shipping Supplemental Report has been developed in accordance with the "Updated Guidelines for the Preparation of an Environmental Impact Statement" issued by the Canadian Environmental Assessment Agency on April 17, 2015. It summarizes the work completed to assess marine shipping associated with the Roberts Bank Terminal 2 Project outside of Port Metro Vancouver's jurisdiction to the 12 nautical mile limit of Canada's territorial sea.

The conclusion of the Marine Shipping Supplemental Report is that marine shipping associated with the Project is not likely to result in any significant adverse residual effects to any of the valued components assessed. In addition, no adverse cumulative effects are anticipated, with the exception of potential effects to southern resident killer whales. As with the conclusions in the Environmental Impact Statement, submitted in March 2015, the Marine Shipping Supplemental Report concludes that southern resident killer whales have already been significantly adversely affected by past projects and activities; therefore, cumulative effects are expected to remain significant.

Port Metro Vancouver understands that marine shipping associated with the Project outside of Port Metro Vancouver's jurisdiction is not considered to be part of the Project for the purposes of the environmental assessment. However, the Marine Shipping Supplemental Report provides information to the federal government regarding the potential effects of marine shipping associated with the Project, which can be used to inform programs or activities within federal jurisdiction.

PORT METRO vancouver

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