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Trans Mountain Expansion Project – Westridge Marine Terminal Visit

Date	2019-10-21	**Time on site**	0945	**Time off site**	1245
DFO attendees	S.W and W.B.				
IAMC attendees	One Indigenous Advisory Monitoring Committee (IAMC) monitor (J.H)				

On-site contractor/equipment	**Role**
Trans Mountain	Site Management
KLTP	Prime construction contractor
Hemmera	Underwater noise monitoring and marine mammal observations
DB General DB Bremerton DB Olympia	Derrick barges (DB) Olympia and Bremerton were conducting preparatory works associated with installing sheet pile cells 8 and 10. DB general was working offshore to install templates for pin piles.
Time	**Inspection Activity**
0930	DFO and the IAMC monitor met representatives from Kiewit-Ledcor Trans Mountain Partnership (KLTP), Trans Mountain (TM), and the TM Environmental Inspector (TM EI) at KASK site and carpooled to the terminal. Formal introductions.
0945-1020	Arrive on site, receive briefing from TM, and watch the Health and Safety Orientation Video -TM EI provided overview of active in-water works including: -installation of template for sheet pile cell 8 using vibratory hammer; and -preparatory works associated with sheet pile cell 10 installation; -preparatory works for installation of pin piles. -No foreshore works were occurring during the site inspection. -TM EI described on-land works (road widening and diversion of small creek) and upcoming works (excavation of remaining riprap; construction of concrete columns to strengthen foreshore prior to moving fuel line; and demolition of the existing dock). -DFO discussed the resumption of monthly site inspections to verify compliance with the new *Fisheries Act* Authorization. -TM confirmed that the Canada Energy Regulatory conducted an inspection at the terminal on October 16, 2019.
1020-1045	Walk along foreshore -Observed yellow turbidity curtain around active works associated with sheet pile cells 8 and 10 (Photo 1). Turbidity curtain appeared to be functioning to minimize the dispersion of sediment-laden water. -The TM EI highlighted the new coco matting and vegetation planting that was completed along the foreshore where riprap was previously excavated (Photo 2). The TM EI indicated that the matting is more effective at reducing erosion, relative to the poly sheeting that was used previously. -Observed vibratory pile driving at sheet pile cell 8 (Photo 3) and works to install the brace frame at cell 10 (Photo 4). -Discussed the incident of turbid water released into Burrard Inlet on October 17, 2019, which was reported by TM through Environment and Climate Change Canada's National Environmental Emergencies Center. The incident stemmed from an equipment failure at the new

	water treatment plant. The TM EI identified remedial measures that have, and will, be taken to reduce the likelihood of similar events in the future. -KLTP highlighted some of the new spill tray technology being used at the terminal to capture contaminated water. The IAMC monitor requested more information from TM about the trays. -The TM EI indicated that no marine fish have been observed since resumption of construction activities the week of October 14, 2019.
1045-1130	Visit to DB Bremerton -Received barge safety orientation. -Observed use of hydrophone to verify underwater noise levels, and observed vibratory pile driving at sheet pile cell 8. -Discussed underwater noise monitoring procedures with Hemmera. -The TM EI indicated that the size of the marine mammal exclusion zone will be re-established using underwater noise monitoring during the first few days of impact pile driving. To date, no impact pile driving has occurred since resumption of construction activities.
1130-1245	Debrief in the meeting room Trans Mountain -TM, KLTP, DFO, and IAMC reviewed key findings from the visit. -In response to a question from Hemmera, DFO confirmed the wording and intention of Condition 2.2.9.9 in the Authorization (i.e., that the size of the marine mammal exclusion zone is set to 1 km and is to be expanded if required based on underwater noise monitoring, as per Condition 2.2.9.9). -DFO and TM discussed reporting procedures after a site inspection.

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GENERAL AND MISCELLANEOUS MITIGATION MEASURES

Measures specified within the Westridge Marine Terminal Fisheries Act Authorization Conditions:

Schedule
2.2.6 All nearshore in-water Project construction activities (within a 50-m horizontal distance seaward of the higher high water large tide level) at the Westridge Marine Terminal shall only be carried out during a work timing window from August 16 to March 15 each year.
☒ Compliant ☐ Non-compliant ☐ Not observed/unknown ☐ Not applicable
Comments
Nearshore works were taking place within the work timing window.
Action Items
N/A
Monitoring
3.1 A qualified environmental professional must be on-site during the carrying on of in-water works, undertakings and activities, and shall monitor the works, undertakings or activities on a systematic and on-going basis to ensure that standards and avoidance measures to avoid impacts to fish and fish habitat are effective, and that unauthorized impacts to fish and fish habitat are avoided.
☒ Compliant ☐ Non-compliant ☐ Not observed/unknown ☐ Not applicable
Comments
Trans Mountain EI and the Trans Mountain Indigenous Monitor (TM IM) were on site at the time of the inspection. DFO communicated with Trans Mountain's IM to understand if he had any concerns or observations to report. He advised that he had no concerns or observations and that Trans Mountain is responsive to addressing his concerns.
Action Items
N/A
Marine Mammal Observations
2.2.7 In-water construction activities must cease if any marine mammal is observed adjacent to or within the project area such that there is risk of direct physical harm to the marine mammal. Construction activities may only resume once the marine mammal has been confirmed to have left the immediate area or has not been sighted for 30 minutes.
☐ Compliant ☐ Non-compliant ☒ Not observed/unknown ☐ Not applicable
Comments
Hemmera was on-site during in-water construction and explained to DFO that monitoring for marine mammals occurs during construction. This activity was not directly observed.
Action Items
N/A
Temporary Structures and Decommissioning of Existing Structures
The application for a *Fisheries Act* authorization states that a floating debris boom will be secured around the work area to collect drifting debris during demolition of the existing utility dock (page 3.1).
☐ Compliant ☐ Non-compliant ☐ Not observed/unknown ☒ Not applicable
2.2.5 Temporary structures installed below the high-water mark shall be decommissioned and removed when they are no longer being used for construction purposes.
☐ Compliant ☐ Non-compliant ☐ Not observed/unknown ☒ Not applicable
Comments

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At the time of the inspection, no temporary structures were installed below the high-water mark and the existing utility dock had yet to be demolished.
Action Items
N/A
Pump Intake Screening
2.2.2 Water intakes of any pumps shall be designed and screened in accordance with specifications outlined in the Addendum, Fisheries and Oceans Canada's *Freshwater Intake End-of-Pipe Fish Screen Guidelines* (Fisheries and Oceans Canada 1995), and Fisheries and Oceans Canada's *Guidelines for Minimizing Entrainment and Impingement of Aquatic Organisms at Marine Intakes in British Columbia* (Fisheries and Oceans Canada 1991).
☐ Compliant ☐ Non-compliant ☒ Not observed/unknown ☐ Not applicable
Comments
DFO did not observe any pumps in operation during the site inspection.
Action Items
N/A
Fish Salvage
2.2.3 Fish salvage and relocation shall be conducted, as appropriate, prior to the start of construction activities so as to avoid and minimize adverse impacts to fish.
☐ Compliant ☐ Non-compliant ☐ Not observed/unknown ☒ Not applicable
Comments
No fish salvage was occurring at the time of the site inspection.
Action Items
N/A
Integrity of Habitat Offsets
4.7 The Proponent shall not carry on any works, undertakings or activities that will adversely disturb or impact the offsetting measures.
☐ Compliant ☐ Non-compliant ☐ Not observed/unknown ☒ Not applicable
Comments
The offsetting measures had yet to be installed at the time of the inspection.
Action Items
N/A

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MITIGATION MEASURES SPECIFIC TO PILE DRIVING

Measures specified within the Westridge Marine Terminal Fisheries Act Authorization Conditions:

Underwater Sound Pressure Level Reduction
2.2.8 A vibratory hammer will be used for pile driving where practical and feasible, and all in-water pile driving activities will be monitored via hydrophone to ensure underwater peak pressures do not result in adverse impacts to fish.
☒ Compliant ☐ Non-compliant ☐ Not observed/unknown ☐ Not applicable
2.2.9.1 To avoid death of fish, mitigation measures (e.g., bubble curtain around the full wetted length of the pile, fish exclusion, etc.) must be implemented.
☐ Compliant ☐ Non-compliant ☐ Not observed/unknown ☒ Not applicable
Comments
Conditions are specific to impact pile driving; impact pile driving was not occurring at the time of the site visit.
Action Items
N/A
Underwater Sound Pressure Level Monitoring
2.2.9.2 Monitoring via underwater noise recordings must be conducted continuously and within 10 meters of the pile being driven to verify that underwater sounds do not exceed the 30 kPa (209.5 dB re: 1 µPa) threshold for injury to finfish.
☐ Compliant ☐ Non-compliant ☐ Not observed/unknown ☒ Not applicable
2.2.9.3. Outside of the least risk window for Burrard Inlet (August 16 – February 28), a more conservative underwater sound threshold of 22.5 kPa (207 dB re: 1 µPa) will be adhered to, and monitored, to prevent injury to finfish. If sound levels exceed this threshold, or a fish kill is observed despite mitigation measures being in place, pile driving activities are to cease immediately and mitigation methods are to be reviewed and modified in consultation with DFO.
☐ Compliant ☐ Non-compliant ☐ Not observed/unknown ☒ Not applicable
2.2.9.4 If underwater noise recordings indicate that sound levels are likely to exceed the applicable thresholds defined in conditions 2.2.9.2 or 2.2.9.3, the Proponent will take appropriate action with the goal of preventing the exceedance from occurring. These actions may include adjusting the force of the hammer, adjusting the mitigation measures already in place to increase their effectiveness, or implementing additional mitigation measures.
☐ Compliant ☐ Non-compliant ☐ Not observed/unknown ☒ Not applicable
2.2.9.5 Upon commencement of pile driving, or recommencement after a delay of 30 minutes or more, pile installation shall ramp-up by starting with less frequent impact strikes of lower force. This ramp-up period is designed to enable any fish that may be in the area time to leave the area prior to the generation of peak pressure and noise levels for pile installation.
☐ Compliant ☐ Non-compliant ☐ Not observed/unknown ☒ Not applicable
Comments
Conditions are specific to impact pile driving; impact pile driving was not occurring at the time of the site visit.
Action Items
N/A
Marine Mammal Monitoring
2.2.9.6 Prior to commencement of pile driving, or recommencement after a delay of 30 minutes or more, visual monitoring must be conducted to determine if marine mammals are present within an exclusion zone of 1 km (except for harbor seals, which will have an exclusion zone of 150 m).

☐ Compliant	☐ Non-compliant	☐ Not observed/unknown	☒ Not applicable
2.2.9.7 Work may only commence if marine mammals and harbor seals are not observed in their respective exclusion zones for 30 minutes.			
☐ Compliant	☐ Non-compliant	☐ Not observed/unknown	☒ Not applicable
2.2.9.8 Exclusion zones must be monitored continuously during impact pile driving. If a marine mammal or marine mammals are observed within their respective exclusion zone, pile driving activities must cease until all marine mammals leave their respective exclusion zone or they have not been sighted for 30 minutes within their respective exclusion zone.			
☐ Compliant	☐ Non-compliant	☐ Not observed/unknown	☒ Not applicable
2.2.9.9 If underwater noise recordings reveal that the threshold of 160 dB is exceeded at the 1 km exclusion zone boundary, the exclusion zone radius must be widened to a new outer limit, where sound recordings demonstrate that the 160 dB threshold is not exceeded. Conditions 2.2.9.6 to 2.2.9.8 will need to be complied with within this new exclusion zone.			
☐ Compliant	☐ Non-compliant	☐ Not observed/unknown	☒ Not applicable
2.2.9.10 Pile driving may only be carried out during daylight hours to enable effective visual monitoring of marine mammal exclusion zones.			
☐ Compliant	☐ Non-compliant	☐ Not observed/unknown	☒ Not applicable
Comments			
Conditions are specific to impact pile driving; impact pile driving was not occurring at the time of the site visit.			
Action Items			
N/A			

Measures specified within the Westridge Marine Terminal Environmental Protection Plan:

Fish Salvage			
35. Immediately following the installation of each sheet pile cell, and prior to excavation and infilling of that cell, conduct a salvage of commercial, recreational and Aboriginal (CRA) fishery species via crab and fish trapping/netting and seines (where appropriate). Release captured CRA fishery species in a suitable habitat at least 500 m away from marine construction activities.			
☐ Compliant	☐ Non-compliant	☐ Not observed/unknown	☒ Not applicable
Comments			
No fish salvage activities were occurring during the site inspection.			
Action Items			
N/A			
Turbidity Monitoring			
43. Should visual monitoring during in-water pile installation indicate concern regarding turbidity levels, the Environmental Inspector will arrange for in situ sampling of turbidity (nephelometric turbidity units). Should turbidity levels exceed specified thresholds, pile driving will temporarily be halted.			
☒ Compliant	☐ Non-compliant	☐ Not observed/unknown	☐ Not applicable
Comments			
Visual monitoring of in-water work taking place at the time of the inspection did not suggest that turbidity levels were cause for concern.			
Action Items			
N/A			

MITIGATION MEASURES SPECIFIC TO FORESHORE CONSTRUCTION

Riparian Planting and Material Handling
Westridge Marine Terminal Fisheries Act Authorization Conditions
2.2.4 Disturbed riparian areas shall be replanted as appropriate, with native non-invasive species of vegetation.
☐ Compliant ☐ Non-compliant ☐ Not observed/unknown ☒ Not applicable
Westridge Marine Terminal Environmental Protection Plan Commitments
30. Unless otherwise approved by DFO, retain all excavated [marine] material and dispose at a land-based facility in accordance with applicable regulations.
☐ Compliant ☐ Non-compliant ☐ Not observed/unknown ☒ Not applicable
Comments
At the time of the inspection, riparian works were not yet completed and no excavation was taking place.
Action Items
N/A

Water Quality Maintenance and Monitoring
Westridge Marine Terminal Fisheries Act Authorization Conditions
2.2.1 Effective sediment and erosion control measures (e.g., a turbidity curtain, etc.) shall be implemented before starting construction and shall be maintained during construction activities, as appropriate, to avoid the deposit and dispersion of sediment into the marine environment.
☒ Compliant ☐ Non-compliant ☐ Not observed/unknown ☐ Not applicable
2.2.10 A turbidity curtain must be used to isolate the work area during the excavation of riprap in order to contain marine sediment suspended in the water column and limit the extent of sediment dispersion. During severe weather conditions that may reduce the effectiveness of, or impede the visual monitoring of, the turbidity curtain (e.g., > 70 km/h winds, or fog), works, undertakings or activities that may increase suspended sediment concentrations within the turbidity curtain or adversely affect the integrity of the turbidity curtain, must be suspended.
☐ Compliant ☐ Non-compliant ☐ Not observed/unknown ☒ Not applicable
Westridge Marine Terminal Environmental Protection Plan Commitments
29. During in-water excavation or rip rap, conduct water quality monitoring (WQM) as per the Water Quality Management Plan during Rip Rap Removal (Appendix H of this EPP). Conduct WQM to assess the effectiveness of the turbidity curtain and modify turbidity curtain deployment, if required.
☐ Compliant ☐ Non-compliant ☐ Not observed/unknown ☒ Not applicable
Westridge Marine Terminal Sediment and Erosion Control Plan Commitments
The in-water sediment curtain will remain intact during Foreshore construction activities to ensure sediment laden water is not discharged into Burrard inlet.
☒ Compliant ☐ Non-compliant ☐ Not observed/unknown ☐ Not applicable
Comments
The poly sheeting that was covering the area where riprap had been previously removed has been replaced with coco matting and planted vegetation. The turbidity curtain remains in place around the sheet pile cells and the foreshore.
Action Items
N/A

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Additional comments or action items
-Trans Mountain to confirm that existing in-water infrastructure associated with the original berth will be removed following its decommissioning. -Trans Mountain to provide details to the IAMC monitor on the specifications of the new spill tray technology being used at the terminal.

Photo 1. Yellow turbidity curtain installed around the foreshore and sheet pile cells.

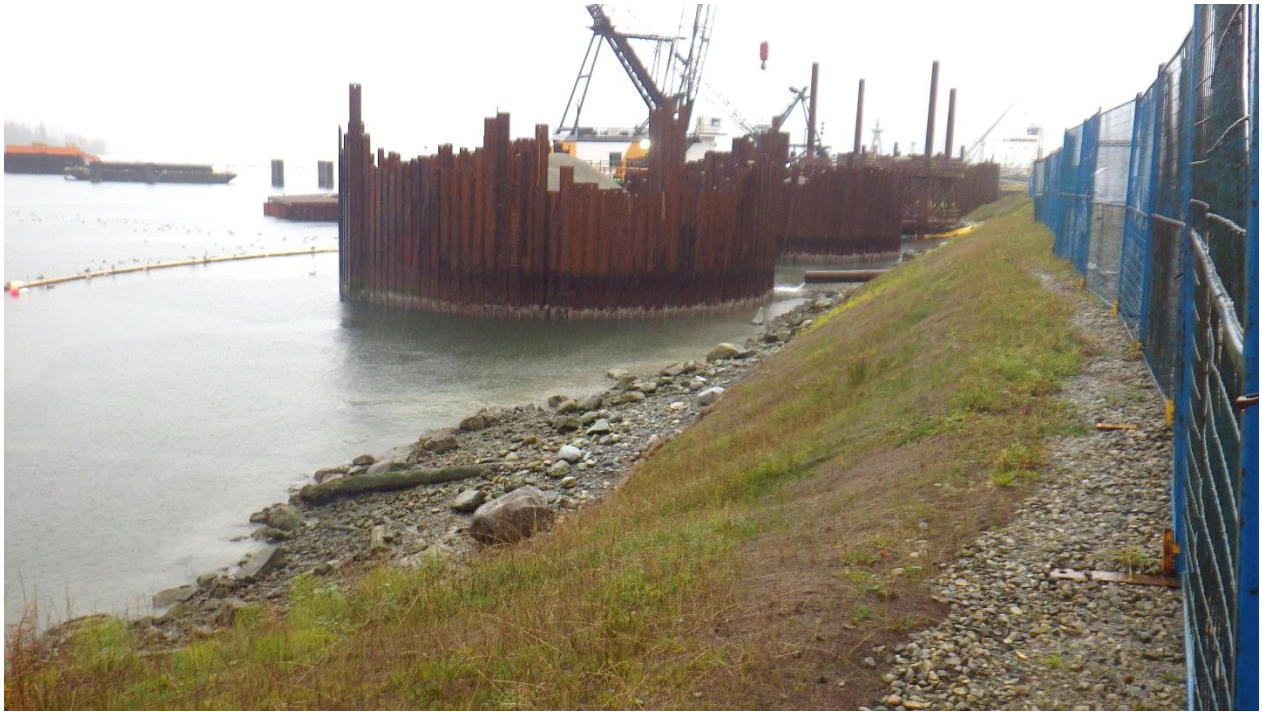

Photo 2. Seeded coco matting has been used to cover areas where riprap has been removed in an effort to reduce erosion.

Photo 3. Installation of the template at sheet pile cell 8 by vibratory pile driving.

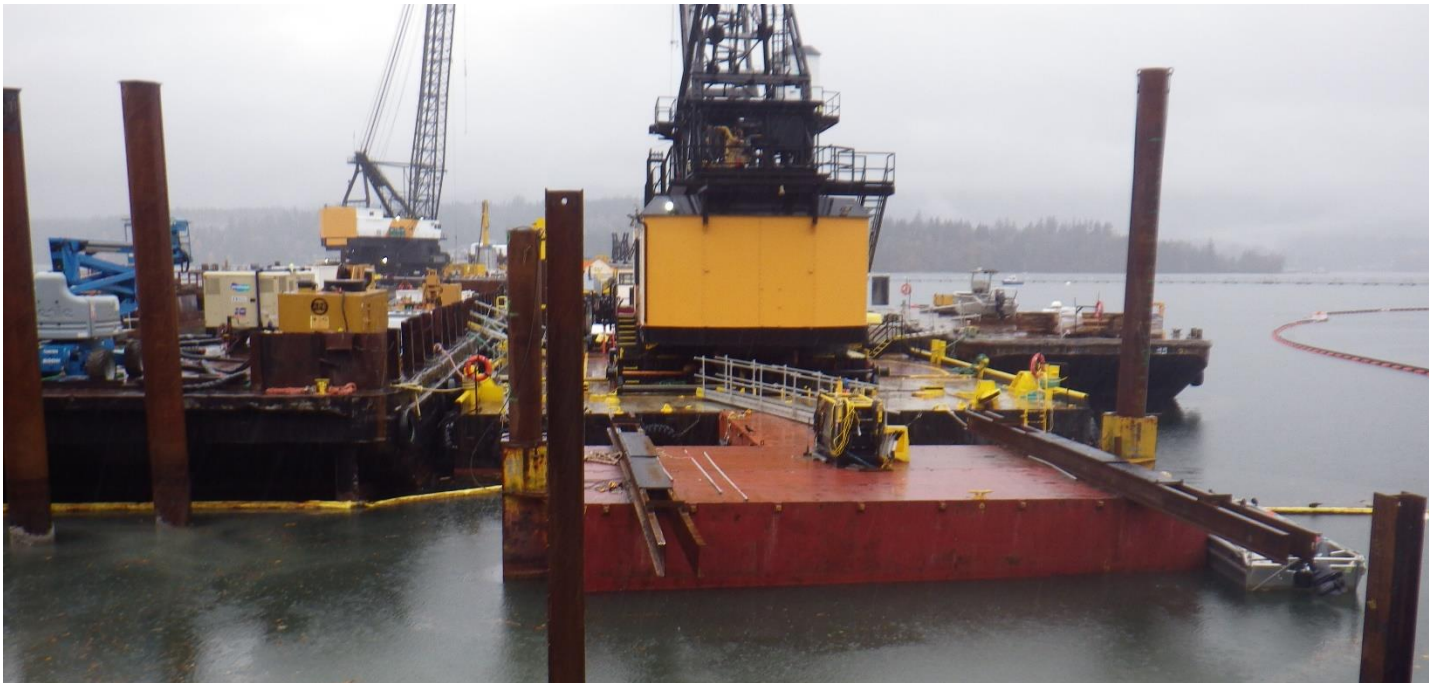

Photo 4. Preparatory works to install the brace frame at sheet pile cell 10.