

June 12, 2018

Tracey Sandgathe
Regional Manager
Fisheries Protection Program
Fisheries and Oceans Canada / Government of Canada
200 – 401 Burrard Street
Vancouver, BC V6C 3S4

IAMC
c/o Chief Ernie Crey and Ms. Naina Sloan
Attention of Indigenous Partnerships Office West
Natural Resources Canada
Suite 219, 800 Burrard Street
Vancouver, BC V6Z 0B9

Dear Ms. Sandgathe:

**Re: Response to June 6 Written Warning Letter for Failure to Comply with *Fisheries Act* Authorization (17-HPAC-00071)
Trans Mountain Expansion Project, Westridge Marine Terminal Expansion.**

On June 6, 2018, Trans Mountain Pipeline ULC (“Trans Mountain”) received a written warning letter (the “Letter”) for failure to comply with prescribed conditions of *Fisheries Act* Authorization 17-HPAC-00071 (the “Authorization”) from Fisheries and Oceans Canada (“DFO”). At the outset, and in response to the Letter, Trans Mountain confirms its commitment to compliance with its environmental and regulatory obligations, and we are aggressively implementing measures to avoid future non-compliance with the Authorization. Trans Mountain firmly believes it has engaged with DFO directly, transparently and collaboratively through ongoing site inspections, information request (“IR”) exchanges and required reporting. In addition to the site inspection discussions, information attached as Appendix 1 demonstrates the transparent and collaborative approach that Trans Mountain has taken in dealing with DFO.

Trans Mountain was surprised to receive the Letter pertaining to matters dating back to January, February and April of 2018, particularly, given the many written and face-to-face exchanges that have occurred since.

With respect to the specific non-compliances identified in the Letter, Trans Mountain offers the following information which supports Trans Mountain’s continued commitment to compliance.



**Compliance with Condition 2.2.9.3**

The Trans Mountain process for responding to underwater noise exceedances is based on a systems approach. When an exceedance is identified, work is stopped, the situation is assessed and appropriate mitigation is taken. Upon recommencement of the work, if noise levels exceed applicable thresholds, further steps are taken with ever-increasing attention to reducing noise levels. In general, hammer force is reduced and air curtain modifications are made to reduce the noise levels before restarting. In the case described in the April monitoring report, it is key to note that each exceedance resulted in an immediate response by Trans Mountain. In each instance, pile driving was stopped, the situation was assessed and further mitigation was undertaken.

The Trans Mountain team will contact DFO in the near future to agree on an appropriate and practical process for ensuring compliance with the Authorization as well as a standard process for communication of mitigation measures implemented in the case of an exceedance.

Trans Mountain submitted the April report to DFO on May 18, 2018 and responded to questions on this process during the field inspection on May 29, 2018 and, to date, no further IRs were received.

Trans Mountain's April report is attached as Appendix 2.

Compliance with Condition 2.2.9.8

Trans Mountain regrets that condition 2.2.9.8 of the Authorization was not properly implemented, in part due to defective equipment, during the execution of pile driving work over a short period in April. Site workers mistakenly believed the mitigation actions taken in response to the broken hydrophone met the intent of the condition and that adequate measures were taken to mitigate risk to marine life. DFO sent an IR on April 3, 2018 to which Trans Mountain responded on April 13, 2018. Trans Mountain further summarized the implementation of its corrective actions on April 22, 2018 in its response to DFO's follow up IR on April 18, 2018. As indicated in the response and in discussions with DFO during the May 29, 2018 site inspection, Trans Mountain now has back-up hydrophones available in the local area. In addition, Trans Mountain revised its internal processes to ensure that, where an equipment failure occurs during impact piling, the piling work will stop until the replacement hydrophone is deployed and all other conditions of the Authorization are met. Trans Mountain's responses to both IRs are attached as Appendix 3.

As requested in the Letter, Trans Mountain will continue to provide the requested information on pile diameter, seabed depth and hammer size in relation to its pile driving activity.

Compliance with Condition 6.1

Trans Mountain apologizes for the initial oversight in not supplying concurrent copies of the monthly reports to IAMC in accordance with condition 6.1 of the Authorization. Once it was brought to Trans Mountain's attention on April 26, 2018 that IAMC was not receiving the





reports, Trans Mountain responded immediately and previous reports were provided to IAMC in an email on April 26, 2018 on which DFO was copied. Subsequent reports have since been submitted to both organizations.

Trans Mountain has communicated this requirement to appropriate personnel and will continue to submit these reports to both DFO and IAMC.

The email sent to IAMC on April 26, 2018 is attached as Appendix 4.

Compliance with Condition 6.3

Trans Mountain is disappointed that, despite the corrective actions taken and the extensive information provided by Trans Mountain through responses to IRs and through its monthly reporting, DFO maintains that Trans Mountain is in non-compliance with the reporting requirements outlined in condition 6.3 of the Authorization.

Trans Mountain was not interpreting the noise threshold exceedances as a non-compliance with the Authorization. Trans Mountain recognized and reported exceedances of the thresholds and followed a mitigation plan which included providing the occurrence details, mitigative actions taken and results in the reports and responses to IRs from DFO. No IR or site inspection request was ever made that outlined DFO's concern with this approach or format.

In order to clarify DFO's expectation for the communication required under the Authorization, Trans Mountain has attached a "Non-Conformance Assessment and Action Plan" report to address the past exceedances and DFO's reporting requirement under condition 6.3 of the Authorization. In the future, in order to meet the requirement under condition 6.3, Trans Mountain will provide a separate Non-Conformance Assessment and Action Plan to both DFO and IAMC to summarize instances of non-conformance with the Authorization.

In addition to the actions described in the "Non-Conformance Assessment and Action Plan", Trans Mountain will be reinforcing the requirements of the Authorization and the importance of compliance with the Authorization, with Trans Mountain contractors and onsite personnel.

For future cases where general issues and site response plans require discussion with DFO, Trans Mountain requests that DFO confirm a designated representative, as well as an alternate contact, authorized to receive communications in respect of the Authorization. Trans Mountain is committed to continue the collaborative and transparent engagement with DFO that it has experienced to date and to communicate to DFO's designated representative any future events regarding compliance with the Authorization in a timely manner.

As stated earlier, Trans Mountain firmly believes it has engaged with DFO directly, transparently and collaboratively through ongoing site inspections, IR exchanges and required reporting. Trans Mountain also looks forward to DFO's collaboration in practice, moving forward as we embark on the construction of a project of national importance.





If you have questions or concerns, please do not hesitate to reach out to the Director of Environment, Cyril Jenkins, at 403-514-6679 or via email at cyril_jenkins@kindermorgan.com or directly to me at 403-514-6767 or via email at david_safari@kindermorgan.com.

Sincerely,

TRANSMOUNTAIN PIPELINE ULC

David Safari, P.Eng
VP – Trans Mountain Expansion Project

cc: compliance@transmountain.com

Appendices:

1. April monthly report under DFO Authorization 17-HPAC-00071
2. IR response submitted April 13, 2018
3. IR response submitted April 22, 2018
4. Email with submission of monthly reports to IAMC
5. Non-Conformance Assessment and Action Plan Report



Appendix 1

Fisheries and Oceans Canada – Monthly Report

01-13283-TW-WT00-RG-RPT-0022– DFO Authorization #17-HPAC-00071 Monthly Report

Project and Contact Information	
Authorization No.: 17-HPAC-00071	
Project Name: Westridge Marine Terminal Upgrade and Expansion Project	
Project Location: 7065 Bayview Drive, Burnaby	
Lat/long: 49°17'22.15"N and 122°57'16.09"W	
Proponent: Trans Mountain Pipeline ULC	
Proponent Address: Suite 2700, 300 - 5 Avenue S.W., Calgary, Alberta T2P 5J2	
Report Date: May 18, 2018	Reporting Period: April 1 to 30, 2018
Report Overview: Pursuant to condition 3.2 of Fisheries and Oceans Canada (DFO) Authorization No. 17-HPAC-00071, the following report satisfies the requirement to provide monthly construction monitoring reports for the works, undertakings or activities that are subject to the Authorization.	

Area	Work and Activities for the Reporting Period	Environmental Comments/Observations
Marine, nearshore	<ul style="list-style-type: none"> No nearshore in-water Project construction activities were conducted within 50 m of the shoreline due to the end of the least-risk fish window on March 15, 2018. Template modifications for Cells 7 and 9. 	<ul style="list-style-type: none"> Weather was a mix of overcast with rain and clear with sun, with total precipitation of 79mm. Average lows were around 6°C, and highs were around 14°C. The maximum high was 25°C on April 20 and the minimum low was 3°C on April 18-20. Tidal levels during the approximate hours of daylight (7 am to 8 pm) ranged between a low of 1.2 m (between 3:00 pm and 3:30 pm on April 3 and 4, 2018) and a high of 4.5 m (between 7:00 am and 7:30 am on April 1 and 2, 2018).
Marine, offshore	<ul style="list-style-type: none"> Vibratory pile driving occurred throughout the month, on April 12, 13, 16 and 27 (LP 1/2 – pin piles, Piles H, I, J, K, L). Impact pile driving occurred throughout the month on April 3, 9, 19, 20 and 23 (LP 1/2 – Pile J, K, L, M, N). Templates installed on pin piles. Weld shackles installed on templates. Piles H, I, J, K and L were spliced, sandblasted and coated. The tops were cut off piles J, K, and L. Additional piles were delivered. Prepared piles for future splicing. Piles J, K, L, M and N were driven to depth. 	<ul style="list-style-type: none"> No impact pile driving could be performed on April 6 due to the presence of a marine mammal (California sea lion) within the exclusion zone for cetaceans and marine mammals at risk. All re-deployed anchors for the turbidity curtain re along western foreshore were confirmed to be >50m from the shoreline. Pile driving activities delayed the morning of April 9th due to one or more harbor seals observed within the exclusion zone.

Area	Work and Activities for the Reporting Period	Environmental Comments/Observations
	<ul style="list-style-type: none"> Performed maintenance and housekeeping, including welding flexi-floats, maintenance of Menck impact hammer, replacement of hydraulic hoses on deck winches and installation of secondary containment (steel berm) around deck winches. Segments of turbidity curtain were towed into position off western foreshore and anchors re-deployed. 	
Terrestrial, Foreshore Area	<ul style="list-style-type: none"> Site maintenance including maintenance of poly along foreshore to prevent erosion. 	<ul style="list-style-type: none"> No comments or observations.

Fish and Marine Mammal Observations			
Date	Species observed	Location	Construction Activity
April 3	Harbour seal	Near DB Columbia	Pile driving stopped until the seal cleared the 150m exclusion zone. No in-water work occurring in the area.
April 4	Juvenile salmon	Offshore end of Dock 59	School of approximately 100 juvenile salmon schooling off the end of Dock 59. Parr marks observed, suggesting chum. No in-water work occurring in the area.
April 6	Juvenile salmon	E of Dock 61	Large school of 1,000 + juvenile salmon (pink or chum) within 5 m of shore immediately east of Dock 61. No in-water work occurring in the area.
April 6	California sea lion	Marine construction safety boom pontoon, NW side	One California sea lion hauled out on pontoon. No in-water work occurring in the area.
April 6	Harbour seal	10m N of DB General	One Harbour seal, surfaced briefly. No in-water work occurring in the area.
April 6	River Otter	50 m SE of DB Olympia	One river otter swimming on surface. No in-water work occurring in the area.
April 9	Harbour seal	Within exclusion zone of piling for LP ½	Impact piling of Piles N and M were delayed due to the presence of one or more Harbor seals within the exclusion zone. Once impact driving started, no additional seals were documented within the exclusion zone and no work stoppages were required.
April 9	Harbour seal	W of Dock 59, approx. 180 m from pile driving activity	Seal presence was identified and actively monitored. Pile driving conducted outside the exclusion zone approximately 180m from Harbour seal.
April 9	Juvenile salmon	Immediately off aft starboard corner of DB Olympia	Approximately 15 individuals (pink or chum) swimming in eddy (out of current). No in-water work occurring in the area.
April 9	Juvenile salmon	E of Dock 59	Loose aggregation of approximately 200 individuals (pink or chum). No in-water work occurring in the area.

Fish and Marine Mammal Observations			
Date	Species observed	Location	Construction Activity
April 9	Juvenile salmon	North end of Dock 59.	Dense school of approximately 20 individuals (pink or chum). No in-water work occurring in the area.
April 11	Juvenile salmon	West end of Dock 59.	Loose aggregation of approximately 250 individuals (pink or chum). No in-water work occurring in the area.
April 11	Harbour seal	25m W of DB General	Surfaced briefly. No in-water work occurring in the area.
April 12	Sea otter	Cell 9	Swimming around the DB Columbia. No in-water work occurring in the area.
April 13	Juvenile salmon	E of Dock 61	Loosely aggregated school of approximately 100 individuals (pink or chum). No in-water work occurring in the area.
April 13	Juvenile salmon	W of Dock 59	Loosely aggregated school of approximately 300 individuals (pink or chum). No in-water work occurring in the area.
April 18	Juvenile salmon	W of Dock 59	Large school of juvenile salmon (pink or chum) estimated at 1,000 or more individuals. No in-water work occurring in the area.
April 19	Harbour seal	Within exclusion zone of piling for LP ½	Impact piling of Piles J and L were delayed due to the presence of single Harbor seal within the exclusion zone. Once impact driving started, no additional seals were documented within the exclusion zone and no work stoppages were required.
April 20	Juvenile salmon	W of Dock 59	School of approximately 200 individuals (pink or chum). No in-water work occurring in the area.
April 23	Harbour seal	Approximately 30 m off bow (west) of DB General	One individual, swimming toward barge, then dove. No in-water work occurring during observation.
April 23	Harbour seals	Within exclusion zone of piling for LP ½	Harbour seals were observed within and near the exclusion zone on April 23, 2018 prior to impact pile driving activities and resulted in multiple delays to the start of activities. However, once impact driving started, no seals were documented within the exclusion zone and no work stoppages were required.
April 25	Juvenile salmon	W of Dock 59	One individual (pink or chum) swimming on the surface. No in-water work occurring in the area.
April 25	Juvenile salmon	Off stern of DB Columbia	School of approximately 150 juvenile salmon (pink or chum). No in-water work occurring in the area.
April 26	Juvenile salmon	E of Dock 59	Eight individuals (pink or chum), swimming near surface.
April 26	Juvenile salmon	Off stern of DB Olympia	One individual (pink or chum) swimming on the surface. No in-water work occurring in the area.
April 30	Juvenile salmon	Dock 59	Two individuals (pink or chum) swimming into current just west of Dock 59. No in-water work occurring in the area.

Summary of Implementation and Effectiveness of Mitigation Measures and Standards Applied to Limit Serious Harm to Fish (per Condition 2 of DFO Authorization No. 17-HPAC-00071)

- Bubble curtains deployed around full wetted length of piles during impact driving.
- Underwater noise monitoring conducted during all vibratory and impact pile driving. Impact pile driving stopped on April 3, 9 and 23, 2018, due to exceedances of the 22.5 kPa summer threshold for injury to finfish (at 10 m from the pile). Adjustments made to bubble curtain or hammer force before recommencing impact pile driving.
- Marine mammal observation conducted during all impact pile driving. Impact pile driving activities incurred work stoppages on April 3, 2018, due to the presence of a Harbour seal in the marine exclusion zone. Impact pile driving was delayed on April 9, 19, and 23 due to the presence of a Harbour seal in the exclusion zone and postponed altogether on April 6, 2018 due to the presence of a California sea lion.
- No in-water work performed within 50 m of the shoreline.

Underwater Noise Measurements

- Impact pile driving was conducted on April 3, 2018, during which six exceedances of the 22.5 kPa threshold for injury to finfish were documented (Appendix A). Exceedances were identified immediately to the superintendent, who responded each time by stopping all pile driving activities and adjusting hammer strike force and bubble curtains before restarting. Generally, these mitigation measures helped to reduce underwater noise levels; however, the crew stopped all pile driving activities at 18:47 due to a final exceedance, which was identified immediately to the superintendent.
- On April 3, 2018, underwater noise levels were measured at the boundary of the cetacean and marine mammal exclusion zone during impact pile driving. At 1,570 m from the pile (Pile N at LP1/2, 1,550 mm diameter, -21 m seabed elevation [geodetic]), the maximum noise level was 157.0 dB (0.0704 kPa).
- Impact pile driving was conducted on April 9, 2018, during which one exceedance of the 22.5 kPa summer threshold for injury to finfish was documented (Appendix A). The exceedance occurred on the last strike and impact piling did not resume.
- Impact pile driving was conducted on April 19 and 20, 2018, during which there were no exceedances of the 22.5 kPa summer threshold for injury to finfish documented (Appendix A.)
- Impact pile driving was conducted on April 23, during which one exceedance of the 22.5 kPa (207 dB re: 1 µPa) summer threshold for injury to finfish was documented. Piling was stopped, the bubble curtains were adjusted, the force of the impact hammer was adjusted, and no exceedances were recorded after restart (Appendix A).
- Vibratory pile driving was conducted on April 12, 13, 16 and 27, 2018, during which noise levels were documented to be well below the 22.5 kPa summer threshold (Appendix A).

Inspection Reports

Daily environmental inspection reports are available upon request.

Environmental Events (e.g., potential non-compliance events) or Impacts and Contingency Measures Taken for Fish and Fish Habitat

Summary of Environmental Events or Impacts	Contingency Measures Taken
None for this reporting period.	N/A

Photos

Location	Activity	Description	Direction	Photo Number
DB General	Pile driving	Crew installing bubble curtains around Piles J and K.	SE	004_20180418
DB General	Pile driving	Active bubble curtain during impact pile installation of Pile I.	NE	001_20180502
Foreshore	Erosion and Sediment Control	Poly sheeting installed along shoreline to protect backshore sediment.	SE	002_20180501
DB Olympia	Secondary	Crew installing secondary	SE	002_20180503

	containment	containment around deck winch on DB Olympia.		
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Summary of compliance with relevant Environmental Protection Plans (EPPs) pertaining to fish and fish habitat.

- Bubble curtains deployed around full wetted length of piles during impact driving.
- Underwater noise monitoring conducted during all vibratory and impact pile driving.
- Marine mammal observation conducted during all impact pile driving.
- Additional spill response supplies deployed to DB General and DB Olympia to restock spill kits.
- Additional spill response supplies deployed to Anchor barge and spud barge Burrard.
- Crew will be replacing all hydraulic hoses on all winch engines as a precautionary measure to reduce the likelihood of spills.
- Hydraulic hoses replaced on deck winches aboard DB Olympia.
- Secondary containment was installed around deck winches aboard DB Olympia.
- All portable toilets were replaced on barges with toilets that contain non-toxic liquids.

Fish and Fish Habitat – Outstanding Unforeseen Issues and Corrective Actions (i.e., those without on-the-spot solutions or those requiring follow-up to ensure corrective measures are being taken)

Issue ID	Priority (High/Med/Low)	Description of Issue	Proposed Mitigation and Corrective Actions	Anticipated Date of Implementation/Completion
N/A	N/A	N/A	N/A	N/A

REPORT PREPARED BY: Stantec Consulting Ltd.

PHOTOLOG



Photo 004_20180418: Crew installing bubble curtains around Piles J and K.

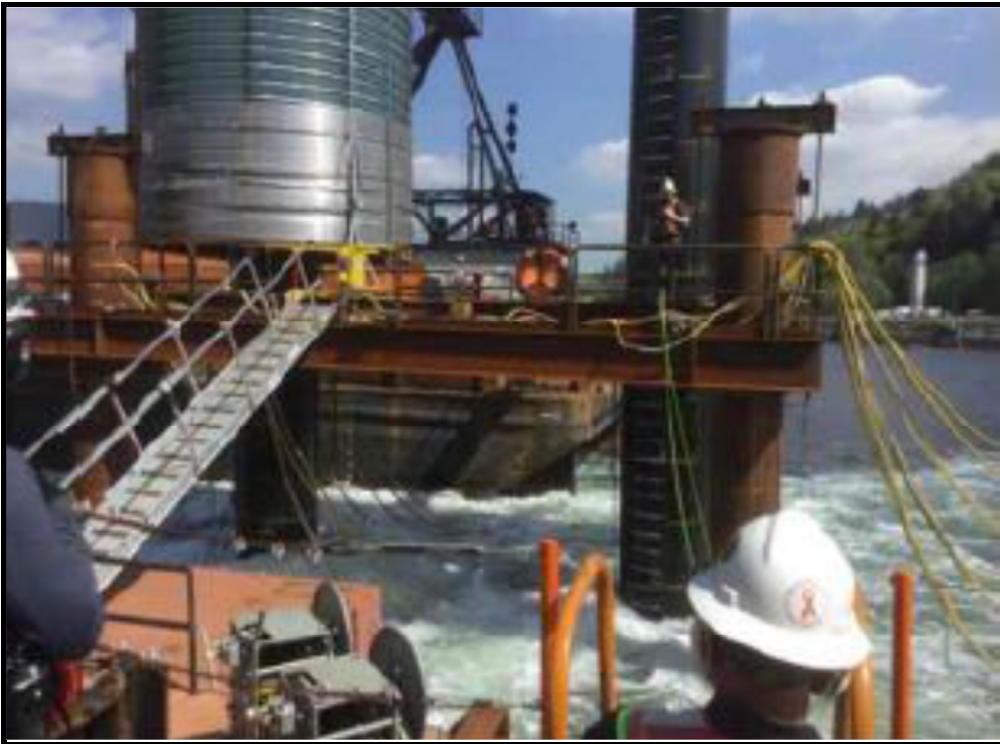


Photo 001_20180502: Active bubble curtain during impact pile installation of Pile I.



Photo 002_20180501: Poly sheeting installed along shoreline to protect backshore sediment.



Photo 002_20180503: Crew installing secondary containment around deck winch on DB Olympia.

Appendix 2

TRANSMOUNTAIN EXPANSION PROJECT
Westridge Marine Terminal Expansion Project

Response to IR from DFO RE: February 2018 Fisheries Act Authorization Monitoring Report
April 13, 2018

QUESTION 1:

During the DFO site inspection on March 20th, DFO requested that the February 2018 report (and subsequent reports) link the pile numbers (as shown in the column "Pile #" in Appendix A) to a location (using a map) to better understand where underwater noise exceedances during pile driving activities are occurring. TMEP/KLTP indicated that this request would be incorporated into the February 2018 monthly report. However, based on our review, this request has not been incorporated into the report. The "Pile #" in Appendix A remains as "Pile 1", "Pile 2", "Pile 3" etc. for each day. Please incorporate this request into future monthly construction monitoring reports.

RESPONSE 1:

Please find enclosed an updated Westridge Marine Terminal Construction Monitoring Report for February 2018 that incorporates the requested pile numbers as well as a figure identifying the location of each of the piles referenced.

QUESTION 2:

Appendix A of the February 2018 construction monitoring report identifies two exceedances of the 30 kPa (209.5 dB re. 1 uPa) underwater noise threshold (measured @10 m from the pile) on February 19 associated with impact pile driving at Pile #1 and at Pile #2. However, on Page 2 of the report, there is only reference to one exceedance on February 19. Please confirm the number of exceedances that occurred during impact pile driving on February 19 and the actions that were taken to address any exceedances.

RESPONSE 2:

The attached updated Westridge Marine Terminal Construction Monitoring Report for February 2018 has been updated to address this question.

QUESTION 3:

The January 2018 construction monitoring report indicated that the 160 dB noise threshold was exceeded on January 12th at the boundary of the marine mammal exclusion zone (i.e., at 1 km from the pile). As per Condition 2.2.9.8 of the Authorization, the 1 km marine mammal exclusion zone must be expanded to a new limit following an exceedance of 160 dB. During the DFO site inspection on March 20th, DFO confirmed with TMEP that the marine mammal exclusion zone was expanded to 1.6 km from the pile as





per Condition 2.2.9.8. However, the February 2018 monitoring report includes an underwater noise measurement on February 17 at 1 km from the pile (and not at the new outer limit of 1.6 km). Please confirm when the marine mammal exclusion zone was expanded to 1.6 km.

RESPONSE 3:

Underwater noise monitoring conducted on January 12th at the cetacean exclusion zone (1000 m) resulted in a small exceedance (approximately 2.3 dB) of the 160 dB threshold. However, the piling event for which this exceedance was documented was only two minutes in duration. As a result, it was not possible to collect sufficient data to make any determination about the 160 dB isopleth (i.e., cetacean exclusion zone) distance. On February 17th, noise levels were measured once again at the 1000 m exclusion zone to confirm previous measurements. At this time, enough data was collected to confidently make a determination about the 160 dB isopleth distance. It was at this point that the recommendation was made to extend this zone to 1570 m from the source of sound. It should be noted that although the cetacean exclusion zone distance was not extended after the January 12th monitoring event due to insufficient data, the Project's marine mammal observers have taken (both before and after January 12th) a precautionary approach with their monitoring, observing not only within the 1000 m zone, but rather the entire area of Burrard Inlet visible from the Project site. Despite this, no cetaceans were observed within or outside of the cetacean exclusion zone at any point before or after the exclusion zone was extended to 1570 m. Moving forward, the marine mammal observers will continue to use this precautionary approach and underwater noise monitors will continue with periodic monitoring at the 160 dB isopleth, adjusting as necessary.

QUESTION 4:

Between February 23 and March 4, it appears that underwater noise measurements were taken at distances greater than 10 m from the pile (as identified in Appendix A of the February 2018 report). As per Condition 2.2.9.2 of the Authorization, underwater noise recordings must be taken within 10 m of the pile being driven to verify that underwater noise does not exceed injury noise thresholds for finfish. Please provide the underwater noise measurements at 10 m from the pile associated with the following events:

- a. February 23 – Pile # 1
- b. February 24 – Pile # 3
- c. February 24 – Pile # 4
- d. February 28 – Pile # 1
- e. February 28 – Pile # 2
- f. February 28 – Pile # 3
- g. March 3 – Pile # 1

RESPONSE 4:

Section 2.2.9.2 of the Fisheries Act Authorization (17-HPAC-00071) requires that underwater noise be monitored continuously during impact pile driving within 10 m of the pile being driven. Section 2.2.8 of the Fisheries Act Authorization requires that underwater noise also be monitored during vibratory pile driving; however, there is no requirement vibratory pile driving monitoring to be conducted at a specific distance





from the pile. The underwater noise measurements taken between February 23 and March 4 at distances greater than 10 m from the pile were all taken during vibratory pile driving. For impact pile driving, all underwater noise measurements are taken at 10 m from the pile.

QUESTION 5:

Page 1, page 2, and page 3 of the report mention that turbidity curtains associated with riprap removal are still in place. However, during the DFO site inspection on February 8, the only turbidity curtains in place were associated with isolation of Cells 6 and 9 (and not isolation of the foreshore area where riprap was removed). Please clarify.

RESPONSE 5:

The attached updated Westridge Marine Terminal Construction Monitoring Report for February 2018 has been revised to address this question.



Appendix 3

TRANSMOUNTAIN EXPANSION PROJECT
Westridge Marine Terminal Expansion Project

Response to Follow-up IR from DFO RE: February 2018 Fisheries Act Authorization Monitoring Report
April 22, 2018

PREAMBLE:

On April 13, 2018, Trans Mountain provided the following information request response to DFO:

QUESTION 3:

The January 2018 construction monitoring report indicated that the 160 dB noise threshold was exceeded on January 12th at the boundary of the marine mammal exclusion zone (i.e., at 1 km from the pile). As per Condition 2.2.9.8 of the Authorization, the 1 km marine mammal exclusion zone must be expanded to a new limit following an exceedance of 160 dB. During the DFO site inspection on March 20th, DFO confirmed with TMEP that the marine mammal exclusion zone was expanded to 1.6 km from the pile as per Condition 2.2.9.8. However, the February 2018 monitoring report includes an underwater noise measurement on February 17 at 1 km from the pile (and not at the new outer limit of 1.6 km). Please confirm when the marine mammal exclusion zone was expanded to 1.6 km.

RESPONSE 3:

Underwater noise monitoring conducted on January 12th at the marine mammal exclusion zone (1000 m) resulted in a small exceedance (approximately 2.3 dB) of the 160 dB threshold. However, the piling event for which this exceedance was documented was only two minutes in duration. As a result, it was not possible to collect sufficient data to make any determination about the 160 dB isopleth (i.e., cetacean exclusion zone) distance. On February 17th, noise levels were measured once again at the 1000 m exclusion zone to confirm previous measurements. At this time, enough data was collected to confidently make a determination about the 160 dB isopleth distance. It was at this point that the recommendation was made to extend this zone to 1570 m from the source of sound. It should be noted that although the cetacean exclusion zone distance was not extended after the January 12th monitoring event due to insufficient data, the Project's marine mammal observers have taken (both before and after January 12th) a precautionary approach with their monitoring, observing not only within the 1000 m zone, but rather the entire area of Burrard Inlet visible from the Project site. Despite this, no marine mammals were observed within or outside of the cetacean exclusion zone at any point before or after the exclusion zone was extended to 1570 m. Moving forward, the marine mammal observers will continue to use this precautionary approach and underwater noise monitors will continue with periodic monitoring at the 160 dB isopleth, adjusting as necessary.

On April 18, 2018, DFO made the following follow-up request.





FOLLOW-UP QUESTION:

DFO has reviewed the information provided and is seeking further clarification regarding Trans Mountain's response to Question # 3. It is DFO's understanding that the marine mammal exclusion zone was not expanded following the initial underwater noise threshold exceedance of 160 dB on January 12, 2018, due to what is deemed by Trans Mountain as a lack of sufficient data. Following this initial exceedance on January 12, DFO understands that subsequent noise measurements were not collected at the boundary of the marine mammal exclusion zone for another ~6 weeks (i.e., on February 17th), when underwater noise levels were once again exceeded at the 1 km exclusion zone. During this time, it is our understanding that impact pile driving occurred on January 30, February 1, and February 2, and that a marine mammal observer was onsite conducting visual monitoring for marine mammals.

The intent of Condition 2.2.9.8 is to ensure that a suitable exclusion zone is defined and maintained to ensure that marine mammals (e.g., Harbor porpoise, Southern resident killer whale, Steller sea lion) are not exposed to underwater noise levels exceeding the 160 dB behavioral threshold during impact pile driving. DFO would like to understand Trans Mountain's rationale for the current frequency of collecting underwater noise measurements at the boundary of the marine mammal exclusion zone (i.e., ~6 weeks apart), and how this monitoring frequency is effective in meeting the intent of Condition 2.2.9.8 given observed exceedances (i.e., January 12 and February 17) at the boundary, and the delayed expansion of the exclusion zone.

RESPONSE:

DFO is correct in its understanding that the marine mammal exclusion zone was not expanded following the initial underwater noise threshold exceedance of 160 dB on January 12, 2018 due to a lack of sufficient underwater noise data. DFO is also correct in its understanding that subsequent noise measurements were not collected at the boundary of the marine mammal exclusion zone until February 17, despite impact pile driving events occurring on January 30, February 1, and February 2.

Trans Mountain's monitors were scheduled to measure underwater noise at both 10 m from the pile and at the boundary of the marine mammal exclusion zone (i.e., 1000 m and beyond) during the events on January 30 and February 1 and 2. Two hydrophone units were deployed on site to perform this monitoring. On the morning of January 30 the hydrophone at 10 m was damaged while deployed and was unable to monitor in real time or collect data. The damaged hydrophone was removed from site for repair. The second hydrophone, which was intended for monitoring at 1000 m, was immediately deployed at the 10 m monitoring location, which meant that monitoring at the 1000 m could not be conducted. Additional hydrophones were unavailable to deploy to the 1000 m exclusion zone. To mitigate this, marine mammal observers extended their monitoring efforts beyond the 1000 m zone to the entire area of Burrard Inlet visible from the Project site.

The damaged hydrophone was repaired and returned to the Project site on the following week and was used to monitor at the exclusion zone boundary during the next impact piling event on February 17. Trans Mountain notes that measures have been taken to prevent any potential future instances where our noise monitors are unable to monitor at the exclusion zone boundary due to an equipment malfunction. Namely,





the underwater noise monitors now have access to multiple backup hydrophones in case one is damaged or lost while in the field.

Trans Mountain acknowledges that permit conditions require that a suitable exclusion zone is defined and maintained to ensure that marine mammals (e.g., Harbor porpoise, Southern resident killer whale, Steller sea lion) are not exposed to underwater noise levels exceeding the 160 dB behavioral threshold during impact pile driving. It is important to note that although the marine mammal exclusion zone distance was not formally extended after the January 12 monitoring event, marine mammal monitoring efforts were revised to a more conservative approach with respect to marine mammals entering the exclusion zone. Namely, monitoring would be undertaken within the 1000 m zone and beyond the 1000 m zone to the entire area of Burrard Inlet visible (with binoculars) from the Project site. Trans Mountain's marine mammal observers applied this approach while monitoring during impact pile driving activities on January 30, February 1, and February 2. No cetaceans or marine mammal species at risk were observed during this period. One marine mammal, a harbour seal, was observed on February 1, 2018 and piling stopped until the seal left the area.

Moving forward, Trans Mountain's environmental monitoring team will conduct additional underwater noise monitoring to verify the exclusion zone boundary when there are changes in pile driving equipment that could drive an increase in noise levels (e.g., hammer size, pile size) and when there are substantial changes to pile driving locations. Trans Mountain's marine mammal observers will continue monitoring within the marine mammal exclusion zone and beyond the marine mammal exclusion zone to the entire area of Burrard Inlet visible (with binoculars) from the Project site.



Appendix 4

From:

Sent: Thursday, April 26, 2018 4:54 PM

To: 'christopher.sheppard2@canada.ca'

Cc: Compliance; 'Warren, Sandra';

Subject: Trans Mountain Expansion Project Construction Monitoring Reports

Hello Chris,

Please find attached Trans Mountain's construction monitoring reports for Westridge Marine Terminal for December 2017 – March 2018 for distribution to IAMC.

Condition 3.2 of Trans Mountain's Fisheries Act Authorization for Westridge Marine Terminal requires us to produce and submit to DFO a monthly construction monitoring report for work at Westridge. Condition 6.1 requires Trans Mountain to share a copy of this report with IAMC at the time it is filed with DFO.

While Trans Mountain did provide IAMC with the December 2017 construction monitoring report, we have become aware that the January, February and March 2018 construction monitoring reports were not provided to IAMC when they were filed with DFO. We have attached all reports produced to date to ensure you have a complete record. Going forward, we will include you on the distribution of the construction monitoring reports each month.

Please let me know if you have any questions.

Regards,

Regulatory Advisor

Trans Mountain Expansion Project

T: 403-514-xxxx | C: 403-863-xxxx | E: xxxx@transmountain.com



Appendix 5

Fisheries and Oceans Canada
Non-Conformance Assessment And Action Plan Report
DFO Authorization #17-HPAC-00071 (Section 6.3)

Project and Contact Information	
Authorization No.: 17-HPAC-00071	
Project Name: Westridge Marine Terminal Upgrade and Expansion Project	
Project Location: 7065 Bayview Drive, Burnaby	
Lat/long: 49°17'22.15"N and 122°57'16.09"W	
Proponent: Trans Mountain Pipeline ULC	
Proponent Address: Suite 2700, 300 - 5 Avenue S.W., Calgary, Alberta T2P 5J2	
Report Date: 8 June 2018	Reporting Period: January – April 2018
Report Overview: This report addresses non-compliances identified in the 6 June 2018 letter from Tracey Sandgrathe (DFO) to David Safari (TMEP)	

Non-Compliance ID
NC-1
Date
April, 2018
Condition
Condition 2.2.9.3: Outside of the least risk windows 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 measures are to be reviewed and modified in consultation with DFO.
Reason for Non-Compliance
During impact pile driving in April 2018, Trans Mountain recorded several exceedances of the underwater noise threshold. Upon each exceedance, Trans Mountain immediately stopped pile driving. Mitigation measures were reviewed and modified before pile driving resumed. Non-compliance resulted when Trans Mountain did not contact DFO to advise them of the exceedance and review and modify mitigation measures in consultation with DFO. Site personnel were of the opinion that DFO interaction was not required since they were following the protocols developed to ensure a management systems approach, that each exceedance was identified and mitigated before restarting and that these details were reported monthly.
Remedial Measures

A detailed review and discussion of the DFO Authorization conditions has occurred with the team on site and in the office. In the future if exceedances occur, Trans Mountain personnel will contact the designated DFO representative to discuss the exceedance and the proposed mitigation plan to reduce noise levels and recommence piling.

In addition, the Trans Mountain team will reach out to DFO in the near future to agree on an appropriate and practical process for ensuring compliance by discussing and mitigating exceedances including the designated contacts at DFO and Trans Mountain, agreement on reasonable process details, and discussion of Trans Mountain standard processes for mitigation and communication in such cases.

NC-1

Timeline for Implementation of Remedial Measures

The remedial measures are effective immediately.

Effectiveness of Remedial Measures

Remedial measures to ensure compliance with Condition 2.2.9.3 are in place and expected to result in immediate and continued compliance with this condition.

Non-Compliance ID
NC-2
Date
January – February, 2018
Condition
Condition 2.2.9.8: 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 2.2.9.5 to 2.2.9.7 will need to be complied with within this new exclusion zone.
Reason for Non-Compliance
Site workers mistakenly believed the mitigation actions taken in response to the broken hydrophone met the intent of the conditions, mitigated risk to marine life and was not out of compliance.
Remedial Measures
As indicated in the response and in discussion with DFO during the May 29 site inspection, Trans Mountain now has back up hydrophones available in the local area if one of the hydrophones in use were to fail. In addition, Trans Mountain revised its internal processes to ensure that in a case where such failures occur during future impact piling, piling work will stop until the replacement hydrophone is deployed and all other conditions are met.
Timeline for Implementation of Remedial Measures
The remedial measures have been implemented.
Effectiveness of Remedial Measures
Remedial measures taken on February 17, 2018 were effective at restoring compliance with Condition 2.2.9.3. Trans Mountain is conducting ongoing verification monitoring to ensure compliance with Condition 2.2.9.3.

Non-Compliance ID
NC-3
Date
January – March, 2018
Condition
Condition 6.1: In recognition of the high importance of the health of the Fraser River, Burrard Inlet, and the Salish Sea, and their salmon fisheries, to Indigenous communities for subsistence and cultural reasons, monitoring reports submitted to DFO under Conditions 2.2.12, 3, 4.6.2, and/or 5 of this Authorization shall be shared concurrently by the Proponent with the IAMC and DFO.
Reason for Non-Compliance
Trans Mountain did not provide copies of all monthly construction monitoring reports directly to IAMC when they were submitted to DFO. Mistaken assumption was that DFO was providing the report and that it was not required for TMEP to also submit to IAMC.
Remedial Measures
Trans Mountain was advised of the oversight by on April 26 2016. On April 26 2018, Trans Mountain provided the missed reports to IAMC via email. Trans Mountain committed via email on April 26, 2018 to share future monthly reports with the IAMC at the same time as these reports are filed with DFO.
Timeline for Implementation of Remedial Measures
The remedial measures have been implemented.
Effectiveness of Remedial Measures
Remedial measures taken on April 26, 2018 were effective at restoring compliance with Condition 6.1.

Non-Compliance ID
NC-4
Date
January – April, 2018
Condition
Condition 6.3: If monitoring activities and/or reports indicate non-compliance with any conditions of this Authorization and/or the provisions of the <i>Fisheries Act</i> , the Proponent must identify the reasons for non-compliance, remedial actions or measures taken or to be taken, a timeline for their implementation and the effectiveness of any implemented remedial measures. This information shall be provided in a report to DFO and the IAMC concurrently, and in a timely manner.
Reason for Non-Compliance
Trans Mountain did not provide a report to DFO addressing non-compliances NC-1, NC-2, and NC-3, as required by Condition 6.3.
Remedial Measures
This report is provided to DFO and the IAMC to address fully the reporting requirements associated with non-compliances NC-1, NC-2, and NC-3. This report describes the reasons for the non-compliance, remedial actions taken or to be taken, the timeline for implementation of remedial actions, and effectiveness of the remedial actions.
Timeline for Implementation of Remedial Measures
The remedial measure has been implemented and will be used going forward to identify issues and exceedances identified under the Authorization.
Effectiveness of Remedial Measures
The remedial measure is effective at restoring compliance with Condition 6.3.