Appendix A Draft conditions for comment

In these draft conditions, the following terms are defined as:

Trans Mountain	Trans Mountain Pipeline ULC
NEB	National Energy Board
the Project	The proposed Trans Mountain Expansion Project, in all its applied-for components.
for approval	When a condition requires a filing for NEB approval, Trans Mountain must not commence the indicated activity until the NEB issues its written approval of that filing.
including	Use of this term, or any variant of it, is not intended to limit the elements to just those listed. Rather, it implies minimum requirements with the potential for augmentation, as appropriate.

Overarching conditions	
1	**Condition compliance** Trans Mountain must comply with all of the [certificate/order] conditions, unless the NEB otherwise directs.
2	**Compliance with commitments** Unless the NEB otherwise directs, Trans Mountain must implement all of the commitments it made in its Project application, or as otherwise agreed to in the evidence it filed during the OH-001-2014 proceeding, or in its related submissions.
3	**Environmental protection** Trans Mountain must implement or cause to be implemented, at a minimum, all of the policies, practices, programs, mitigation measures, recommendations, and procedures for the protection of the environment included in or referred to in its Project application, its subsequent filings, the evidence it provided during the OH-001-2014 proceeding, or as otherwise committed to during questioning or in its related submissions.
4	**Engineering and safety** Trans Mountain must cause the Project facilities to be designed, located, constructed, installed, and operated in accordance with, at a minimum, the specifications, standards, policies, mitigation measures, procedures, and other information included or referred to in its Project application or as otherwise committed to during the OH-001-2014 proceeding.
5	**Certificate expiration (sunset clause)** Unless the NEB otherwise directs **prior to 30 June 2019,** this [certificate/order] will expire on **30 June 2019**, unless construction of the Project has commenced by that date.
6	**Project completion** Trans Mountain must file with the NEB, **within 30 days after commencing operations**, confirmation, signed by an officer of the company, that the Project was completed and constructed in compliance with all applicable [certificate/order] conditions. If compliance with any of the conditions cannot be confirmed, the officer of the company must include the reason(s) for this and the proposed course of action to achieve compliance. This filing must include a statement confirming that the signatory to the filing is an officer of the company.

Conditions with initial filings due prior to commencing construction	
7	**Landowner complaint records** Trans Mountain must create and maintain records, **for the life of the Project (from pre-construction to the end of operations)**, that chronologically track landowner complaints related to the Project. These records must include: a) a description of each complaint; b) how each complaint was received (e.g., telephone, letter, email); c) the date each complaint was received; d) subsequent dates of all contact or correspondence with each complainant; e) records of any site visits, monitoring, or inspections; f) contact information for all parties involved in each complaint; g) the date of each complaint's resolution; and h) if a complaint remains unresolved, a description of any further actions to be taken or an explanation for why no further action is required. Trans Mountain must maintain these records for audit purposes and make them available to the NEB **upon request.** Trans Mountain must make available to a landowner, **upon request**, the records related to the complaint(s) that landowner made to Trans Mountain, including any investigations, reports, or surveys conducted in relation to the complaint.
8	**Commitments tracking table** Trans Mountain must implement the commitments contained within its commitments tracking table and must: a) file with the NEB, at the following times, an updated commitments tracking table: i) **within 90 days after the [certificate/order] date**; and ii) **at least 30 days prior to commencing construction**; b) update the status of the commitments and file those updates with the NEB **on a monthly basis until commencing operations, and quarterly during operations until all conditions are satisfied (except those that involve filings for the Project's operational life)**; c) post on its company website the same information required by a) and b), **using the same indicated timeframes**; and d) maintain at each of its construction offices: i) the relevant environmental portion of the commitments tracking table listing all of Trans Mountain's regulatory commitments, including those from the Project application and subsequent filings, and conditions from received permits, authorizations, and approvals; ii) copies of any permits, authorizations, and approvals for the Project issued by federal, provincial, or other permitting authorities that include environmental conditions or site-specific mitigation or monitoring measures; and iii) any subsequent variances to any permits, authorizations, and approvals in d)ii).

9	**Route re-alignments** As applicable, Trans Mountain must file with the NEB for approval, **concurrent with its filing of the Plan, Profile and Book of Reference pursuant to section 33 of the *National Energy Board Act***, an environmental and socio-economic assessment for each proposed detailed route re-alignment that extends beyond the applied-for right-of-way width of Trans Mountain's preferred route in proximity to: • Ohamil Indian Reserve 1; • Tzeachten Indian Reserve 13; and • Surrey Bend Regional Park. Any assessment must include: a) environmental alignment sheets at an appropriate scale, clearly depicting the proposed route re-alignments; b) results of any pre-construction surveys within the areas that were not previously subject to such surveys, and an indication of potential residual effects; c) all associated mitigation measures that are beyond those identified during the OH-001-2014 proceeding; d) analysis supporting the use of the measures in c), including any supplementary reports; e) confirmation that Trans Mountain will update the relevant Environmental Protection Plans to include any relevant information based on any supplemental surveys completed; f) details of consultation activities undertaken with appropriate government authorities and potentially affected stakeholders in respect of the proposed route re-alignment, including: i) the name of parties consulted; ii) the methods, dates, and locations of all meetings or consultations; iii) a summary of all issues or concerns raised; and iv) a description of the measures taken, or that will be taken, to address or respond to concerns raised, or an explanation why no further action is required to address or respond to issues or concerns. Trans Mountain must provide a copy of any filing to each party consulted about that filing (and identified in f)) at the same time that it is filed with the NEB.
10	**Design temperatures – above-ground facilities** Trans Mountain must file with the NEB, **at least 90 days prior to ordering pipe for above-ground facilities**, confirmation, with rationale, that: a) the selected maximum and minimum design temperatures for all above-ground facilities are in accordance with CSA Z662-15, Clause 5.2.1; b) the selected design temperatures are based on historical, location-specific extreme daily maximum and minimum temperatures, as opposed to average temperatures; and c) the extent of the historical weather data used is commensurate with the expected operational life of the Project.

11	**Quality Management Plan** Trans Mountain must file with the NEB, **at least 6 months prior to manufacturing any pipe and major components for the Project,** a Project-specific Quality Management Plan that includes: a) material/vendor qualification requirements; b) quality control and assurance of pipe, fittings, and components that ensure all materials meet Trans Mountain's specifications (i.e., processes, procedures, specifications, random testing, inspection, and test reports); c) mandatory documentation of process conditions during manufacture and verification of the conformance of manufacturer material test reports with Trans Mountain's requirements; d) mandatory inspection requirements, inspector competency training, and qualifications; e) non-conformance reporting and correction procedures; f) change management process; g) commissioning requirements; and h) material handling requirements during transportation.
12	**Joining Program** Trans Mountain must develop a Joining Program and file it with the NEB **at least 30 days prior to conducting welding procedure qualification tests** for: a) field circumferential production, tie-in, and repair pipeline welds, including the tie-in welds between existing segments and Line 2; and b) welding of Project facilities. The Joining Program must include: i) welder qualification requirements; ii) requirements for welding inspector qualifications and duties; iii) welding procedure specifications; iv) non-destructive examination (NDE) specifications; v) procedure qualification records for welding procedure specifications and NDE specifications; vi) a quality assurance program for field welds and welding procedures; and vii) any additional information that supports the Joining Program.
13	**Training and Education Monitoring Plan** a) Trans Mountain must file with the NEB for approval, **at least 1 year prior to commencing construction**, a plan for monitoring the implementation and outcomes of Aboriginal, local, and regional training and education measures and opportunities for the Project. The plan must include: i) a description of, and rationale for selecting, the indicators that will be monitored to track the implementation of training and education measures and opportunities; ii) the monitoring methods and schedule, including information and data sources for the indicators being monitored; and iii) plans for consulting and reporting on the implementation and outcomes of training and education measures and opportunities with relevant Aboriginal, local, and regional communities; business; industry; community; and education and training organizations.

	b) Trans Mountain must file with the NEB, **at least 90 days prior to commencing construction**, any updates to the elements of the Training and Education Monitoring Plan described in a)i) through iii) above.
14	**Aboriginal, local, and regional skills and business capacity inventory** a) Trans Mountain must file with the NEB, **at least 1 year prior to commencing construction**, an Aboriginal, local, and regional skills and business capacity inventory for the Project. The skills and capacity inventory must include: i) a description of the information and data sources; ii) a summary of Aboriginal, local, and regional skills and business capacity; iii) an analysis of the Aboriginal, local and regional capacity for employment and business opportunities for the Project; iv) plans for communicating employment and business opportunities to Aboriginal, local, and regional communities; v) a description of identified or potential skills and business capacity gaps, and any proposed measures to address them or to support or increase skills or capacity; and vi) plans for communicating identified gaps regarding skills and business capacity with Aboriginal, local, and regional communities and businesses, and any proposed measures to support or increase skills or capacity. b) Trans Mountain must file with the NEB, **at least 90 days prior to commencing construction**, any updates to the elements of the inventory described in a)i) through vi).
15	**Phased filings** Due to the Project's large spatial extent, Trans Mountain may wish to commence Project construction activities at specific locations at different times (i.e., using a phased approach). This may entail doing so on the basis of pipeline spreads of defined lengths, or by regions, or work areas of Trans Mountain's choosing. If Trans Mountain intends to use a phased approach for Project construction, it must undertake the following: a) Trans Mountain must file with the NEB, **at least 7 months prior to commencing construction**, a complete list of construction spreads, regions, or work areas that, for the duration of Project construction, will serve as the basis by which Trans Mountain may submit condition filings in a phased approach. Each spread, region, or work area must be clearly delineated (e.g., by kilometre posts). b) As part of its filing for a), to aid the NEB in anticipating future submissions, Trans Mountain must indicate the specific conditions where it expects to apply this phased approach. Trans Mountain must file updates to this estimate **as they are available**. c) When submitting a filing for any condition using this phased approach, Trans Mountain must clearly indicate which spread(s), region(s), or work area(s) that filing applies to. d) Construction of a particular spread, region, or work area must not proceed until all pre-construction conditions using this phased approach have been satisfied for that spread, region, or work area. Prior to commencing construction of the initial spread, region, or work area, all applicable conditions with more general pre-construction timing elements must also be satisfied.

16	**Training and education monitoring reports** a) Trans Mountain must file with the NEB, **at least 6 months prior to commencing construction**, **and every 6 months thereafter until completing construction**, monitoring reports for the implementation and outcomes of Aboriginal, local, and regional training and education measures and opportunities for the Project. The reports must include the following: i) A description of each training and education measure and opportunity indicator that was monitored, including duration, participant groups, education and training organization, and intended outcomes. ii) A summary and analysis of the progress made toward achieving intended outcomes of each training and education measure and opportunity, including an explanation for why any intended outcomes were not achieve. iii) A description of identified or potential training or education gaps, and any proposed measures to address them or to support or increase training and education measures and opportunities. iv) A summary of Trans Mountain's consultation with relevant Aboriginal, local, and regional communities; business; industry; community; and education and training organizations regarding the implementation and outcomes of training and education measures and opportunities for the reporting period. This summary must include any issues or concerns raised regarding these measures and opportunities and how Trans Mountain has addressed or responded to them. b) Trans Mountain must file with the NEB, **within 6 months after completing construction**, a final report.
17	**Socio-Economic Effects Monitoring Plan** Trans Mountain must file with the NEB for approval, **at least 6 months prior to commencing construction**, a plan for monitoring potential adverse socio-economic effects of the Project during construction. The plan must include the following: a) The factors or indicators to be monitored. b) The methods and rationale for selecting the factors or indicators. c) A description of the baseline, pre-construction socio-economic conditions. d) The monitoring methods and schedule, including third party data source identification. e) Data recording, assessment, and reporting details. f) A discussion of how measures will be implemented to address any identified adverse effects, including: i) the criteria or thresholds that will require measures to be implemented; ii) how monitoring methods and measures implementation to address adverse effects, as necessary, are incorporated into Construction Execution Plans; and iii) a description of the roles and responsibilities of construction prime contractors, sub-contractors, and community relations staff in monitoring socio-economic effects and implementing measures to address adverse effects. g) A summary of Trans Mountain's consultation with potentially affected communities, Aboriginal groups, local and regional authorities, and service providers regarding the Socio-Economic Effects Monitoring Plan. This summary must include: i) a description of any developed agreements or protocols;

	ii) any issues or concerns raised regarding the plan, and how Trans Mountain has addressed or responded to them; and iii) a list of, and explanation for, outstanding issues or concerns, and the steps that Trans Mountain will take to address or respond to them. h) Plans for regular consultation and reporting on effects during construction with potentially affected communities, Aboriginal groups, local and regional authorities, and service providers.
18	**Worker accommodation strategy** Trans Mountain must file with the NEB for approval, **at least 6 months prior to commencing construction**, a worker accommodation strategy, developed in consultation with appropriate municipal or provincial authorities. The strategy must include: a) a final summary of all proposed accommodations, including the location of any temporary camp(s); b) the number of workers that will be housed; and c) a description of how the strategy addresses any concerns or requests raised in consultation with municipal or provincial authorities. In the event that temporary camp(s) are to be used, the strategy must also include: i) a description of how the potential environmental and socio-economic impacts have been assessed, and a description of all associated mitigation measures; ii) copies of, or reference to, any mitigation or operational plans that will be required or implemented for the camp(s), including a description of how Trans Mountain has incorporated any additional mitigation measures into its Pipeline Environmental Protection Plan (required by Condition No. 63); iii) copies of all appropriate municipal or provincial permits for any camp(s); iv) copies or excerpts of all policies relating to the rules of conduct for workers housed at the camp(s); v) confirmation that all policies relating to the camp(s) will be provided to workers; vi) confirmation that all policies relating to the camp(s) were made available to all local communities and other relevant service providers in proximity to any camp(s) that will be used for the Project; and vii) a description of consultations with potentially affected residents and landowners where any camp(s) will be located: 1) a description of the information provided to local residents and landowners; and 2) a summary of all issues and concerns raised and the steps Trans Mountain has taken or will take to address the issues and concerns.
19	**Air Emissions Management Plan for the Westridge Marine Terminal** Trans Mountain must file with the NEB for approval, **at least 6 months prior to commencing construction**, an Air Emissions Management Plan for the Westridge Marine Terminal that includes: a) a description of the baseline, pre-construction conditions informed by relevant modelling results and recent existing monitoring data; b) locations of air monitoring sites (on a map or diagram), including the rationale for the locations selected; c) the timing for installing air monitoring stations;

	d) the methods and schedule for ambient monitoring of contaminants of potential concern in air (e.g., particulate matter [including diesel particulate matter and speciation of $PM_{2.5}$], carbon monoxide, nitrogen oxide, sulphur dioxide, hydrogen sulphide, and volatile organic compounds); e) procedures for monitoring station data recording, assessment, and reporting details; f) a particulate matter management plan; g) a description of the public and Aboriginal communication and complaint response processes; h) the criteria or thresholds that, if triggered or exceeded, would require implementing additional mitigation measures; i) a description of additional mitigation measures that could be implemented as a result of the monitoring data or ongoing concerns; and j) a summary of consultation with appropriate government authorities and any potentially affected landowners and Aboriginal groups, including any issues or concerns raised with respect to the Air Emissions Management Plan and how Trans Mountain has addressed or responded to them.
20	**Pre-construction caribou habitat assessment** Trans Mountain must file with the NEB for approval, **at least 6 months prior to commencing construction**, a detailed caribou habitat assessment for each caribou range. The framework of the habitat assessment must use the components of critical habitat outlined in the proposed *Recovery Strategy for the Woodland Caribou, Southern Mountain Population in Canada (2014)*. The habitat assessment must include: a) map(s) indicating the location of the habitat; b) a description of the amount of habitat and the existing habitat alteration, in hectares; c) a description of how Trans Mountain has incorporated available and applicable Aboriginal traditional ecological knowledge studies into the assessment; and d) a description of the type of habitat characterized by the biophysical attributes of critical habitat, as defined in the applicable Recovery Strategy.
21	**Caribou Habitat Restoration Plan (CHRP)** Trans Mountain must file with the NEB for approval, in accordance with the timelines below, preliminary and final versions of a CHRP for each caribou range potentially affected by the Project. a) Preliminary CHRP – to be filed **at least 6 months prior to commencing construction of any project component potentially affecting each caribou range**. This version of the CHRP must include the following: i) The CHRP's goals and measureable objectives for each caribou range. ii) A list of criteria used to identify potential caribou habitat restoration sites. iii) Conceptual decision-making tree(s) or decision framework(s) that will be used to identify and prioritize restoration sites, and mitigative actions to be used at different types of sites, including consideration of typical site factors that may constrain implementation. iv) A literature review upon which the decision-making tree(s) or decision framework(s) are based, including: 1) an identification of applicable temporal and spatial caribou habitat restoration methodologies; 2) an assessment of the relative effectiveness of the identified methodologies; and

	3) a detailed methodology of how the literature review was conducted. v) The quantifiable targets and performance measures that will be used to evaluate the extent of predicted residual effects, CHRP effectiveness, the extent to which the goals and objectives have been met, and the need for further measures to offset unavoidable and residual effects on habitat. vi) A schedule indicating when mitigation measures will be initiated and their estimated completion dates. vii) A description of how Trans Mountain has taken available and applicable Aboriginal traditional ecological knowledge studies into consideration in identifying potential caribou habitat restoration sites. viii) A summary of Trans Mountain's consultation with appropriate government authorities and any potentially affected Aboriginal groups regarding the preliminary CHRP. This summary must include any issues or concerns raised regarding the preliminary CHRP and how Trans Mountain has addressed or responded to them. b) Final CHRP – to be filed **on or before 1 November after the first complete growing season after commencing operations**. This version of the CHRP must include the following: i) The preliminary CHRP, with any updates identified in a revision log that includes the rationale for any changes. ii) A detailed decision-making tree(s) or process that will be used to identify and prioritize restoration actions among selected habitat restoration sites. iii) A complete tabular list of caribou habitat restoration sites, including locations, spatial areas, habitat quality descriptions, site-specific restoration activities, and challenges. iv) Maps or updated Environmental Alignment Sheets showing the site locations. v) Specification drawings for the implementation of each restoration method. vi) A quantitative and qualitative assessment of the total area of direct and indirect disturbance to caribou habitat that will be restored, the duration of spatial disturbance, and the area-based extent of the resulting unavoidable and residual effects to be offset. vii) A summary of Trans Mountain's consultation with appropriate government authorities and any potentially affected Aboriginal groups regarding the final CHRP. This summary must include any issues or concerns raised regarding the final CHRP and how Trans Mountain has addressed or responded to them.
22	**Sowaqua Spotted Owl Mitigation Plan** Trans Mountain must file with the NEB for approval, **at least 6 months prior to commencing construction of any Project component within the Sowaqua spotted owl wildlife habitat area**, a Sowaqua Spotted Owl Mitigation Plan that includes: a) a summary of results from supplemental surveys conducted in the Sowaqua spotted owl wildlife habitat area; b) the area of habitat potentially directly and indirectly affected by the Project; c) a description of how an avoidance, mitigation, and offset hierarchy was considered in the plan; d) mitigation measures to be implemented, including all relevant measures committed to throughout the OH-001-2014 proceeding, any new mitigation measures resulting from supplementary surveys, detailed criteria using clear and unambiguous language that describes the circumstances under which each measure will be applied, and measurable goals for evaluating mitigation success;

	e) an evaluation of offset options within or outside of the Sowaqua spotted owl wildlife habitat area, an indication of the selected option, and the rationale for the selected option; f) details on post-construction monitoring of mitigation measures and offset measures, including survey methods, corrective measures, detailed criteria using clear and unambiguous language that describes the circumstances under which each measure will be applied, any adjustments to the offset measures, and a proposed reporting schedule; g) a commitment to include results of the monitoring in the post-construction environmental monitoring reports filed under Condition No. 140; h) a description of how Trans Mountain has taken available and applicable Aboriginal traditional land use and traditional ecological knowledge into consideration in developing the mitigation plan; i) a summary of Trans Mountain's consultation concerning a) to f) with appropriate government authorities, species experts, and any potentially affected Aboriginal groups, including any issues or concerns raised and how Trans Mountain has addressed or responded to them; and j) confirmation that Trans Mountain will update the relevant Environmental Protection Plans to include any relevant information from the mitigation plan.
23	**Air Emissions Management Plan for the Edmonton, Sumas, and Burnaby Terminals** Trans Mountain must file with the NEB for approval, **at least 6 months prior to commencing construction at each of the Edmonton, Sumas, and Burnaby terminals**, an Air Emissions Management Plan for each of those terminals that includes: a) a description of the baseline, pre-construction conditions informed by relevant modelling results and recent existing monitoring data; b) descriptions of the locations of air monitoring sites (on a map or diagram), including the rationale for the locations selected; c) the timing for installing air monitoring stations; d) the methods and schedule for monitoring ambient ground-level concentrations of potential concern (e.g., volatile organic compounds, ozone, hydrogen sulphide, mercaptans, criteria air contaminants, secondary ozone and particulate matter, and reduced visibility) and emissions source tracking; e) procedures for monitoring station data recording, assessment, and reporting details; f) a description of the public and Aboriginal communication and complaint response process; g) the criteria or thresholds that, if triggered or exceeded, will require implementing additional emissions reduction measures; h) possible measures that will be implemented as a result of the monitoring data or ongoing concerns; and i) a summary of consultation with appropriate government authorities, any potentially affected landowners and Aboriginal groups, including any issues or concerns raised with respect to the Air Emissions Management Plan and how Trans Mountain has addressed or responded to them.
24	**Power system protection for pump stations and terminals** Trans Mountain must file with the NEB, **at least 6 months prior to commencing construction**, the following details of its electrical power system design for its pump stations and terminals: a) Descriptions of the overcurrent and ground fault protection schemes including: i) a summary of coordination studies between the upstream and downstream protective devices;

	ii) relay settings and time-current curves; iii) the specification of neutral grounding resistors; iv) specifications of contactors, fuses, and circuit breakers; and v) a description of other electrical protections, relay settings, and trip characteristics. b) Consistent with the NEB's Safety Advisory SA-2015-03, dated 4 May 2015, confirmation that Trans Mountain has performed the ground fault and arcing fault protection designs for each pump station and terminal, including: i) a means to clear ground faults without intentional time delay if the fault currents exceed the design limit set by the neutral grounding resistance; and ii) a means to block the stored energy from other running motors from feeding an electrical fault in another motor running from the same bus. This filing must include a description of the ground fault and arcing fault protection designs including the above measures. c) The electrical configuration of all stations and terminals for which Trans Mountain determined during detailed design that arcing fault could exceed the safe operating limits. This filing must include a list of these stations and terminals, and the additional equipment and devices that will be used to mitigate the adverse effects of such arcing faults. d) Single-line diagrams of the electrical power systems for each pump station and terminal.
25	**Sumas Terminal Geotechnical Report** Trans Mountain must file with the NEB, **at least 6 months prior to commencing construction,** a geotechnical report that provides feasibility-level geotechnical design recommendations for the proposed new tank and related facilities at the Sumas Terminal.
26	**Westridge Marine Terminal Onshore Geotechnical Report** Trans Mountain must file with the NEB, **at least 6 months prior to commencing construction**, a geotechnical report that provides feasibility-level geotechnical design recommendations for the proposed new onshore facilities at the Westridge Marine Terminal**.**
27	**Westridge Marine Terminal Offshore Geotechnical Report** Trans Mountain must file with the NEB**, at least 6 months prior to commencing construction**, the final Preliminary Geotechnical Report on the offshore portion of the Westridge Marine Terminal, based on the selected pile design option.
28	**Existing NPS 24 delivery pipeline location** Trans Mountain must file with the NEB, **at least 6 months prior to commencing construction,** its decision on whether it intends to "relocate" the existing NPS 24 delivery pipeline to the Burnaby Mountain tunnel (i.e., replace it with a new third pipeline in the Burnaby Mountain tunnel) and, if so, provide: a) details of any required changes to the design, construction, and operation of the proposed Burnaby Mountain tunnel; b) a discussion of the factors Trans Mountain considered in deciding to replace/relocate the existing NPS 24 delivery pipeline; and

	c) an indication of when Trans Mountain expects to apply for NEB approval to relocate/replace the existing NPS 24 delivery pipeline.
29	**Updated terminal risk assessments** Trans Mountain must file with the NEB for approval, **at least 6 months prior to commencing construction**, updated risk assessments for the Edmonton Terminal West Tank Area, the Sumas Terminal, and the Burnaby Terminal. The updated risk assessments must quantify and/or include the following: a) the effect of the revised spill burn rates; b) the potential consequences of a boil-over; c) the potential consequences of flash fires and vapour cloud explosions; d) the cumulative risk based on the total number of tanks in the terminal, considering all potential events (pool fire, boil-over, flash fire, vapour cloud explosion); e) the domino (knock-on) effect caused by a release of the contents of one tank on other tanks within the terminal's common impoundment area(s), or other tanks in adjacent impoundment areas; and f) risk mitigation measures, including ignition source control methods. For those risks that cannot be eliminated, Trans Mountain must demonstrate in each risk assessment that mitigation measures will reduce the risks to levels that are As Low As Reasonably Practicable (ALARP) while complying with the Major Industrial Accidents Council of Canada (MIACC) criteria for risk acceptability. The quantitative risk analysis must be based on recognized methodology, models, and software. Product release frequencies and event probabilities must be based on recent, documented data sources. The effect of mitigation measures on the risk results must be justified and documented.
30	**Secondary containment – Edmonton Terminal** Trans Mountain must file with the NEB for approval, **at least 6 months prior to commencing construction**, the final design of the Edmonton Terminal West Tank Area, including a report demonstrating the following: a) The drainage system's capability to rapidly and safely channel a significant release from any tank in the West Tank Area Common Impoundment to the Remote Impoundment Annex and Remote Impoundment at the same time that a design precipitation event is occurring, without overtopping the diked areas. b) The adequacy of the design in mitigating the following consequences of an accidental release and/or ignition of hydrocarbons, both within and beyond the Edmonton Terminal property boundary: • Harm to personnel and the public. • Environmental damage. • Damage to facilities. c) The ability of the Common Impoundment, Remote Impoundment Annex, and Remote Impoundment to contain a release of hydrocarbons from a rupture of the largest tank within the West Tank Area concurrent with a 1-in-100 year, 24-hour storm event. The scenario must include an allowance for water generated from potential firefighting activities and the maximum potential amount of standing water in all areas of the secondary containment system.

31	**Secondary containment – Burnaby Terminal** Trans Mountain must file with the NEB for approval, **at least 6 months prior to commencing construction**, the final design of the Burnaby Terminal, including a report demonstrating the following: a) The drainage system's capability to rapidly and safely channel a significant release from either Tank 96, 97, or 98 to the Partial Remote Impoundment at the same time that a design precipitation event is occurring, without overtopping the diked areas. b) The adequacy of the proposed design in mitigating the following consequences of an accidental release and/or ignition of hydrocarbons, both within and beyond the Burnaby Terminal property boundary: • Harm to personnel and the public. • Environmental damage. • Damage to facilities. c) The ability of the individual containment areas, Common Impoundment areas, Intermediate Stormwater Retention, Partial Remote Impoundment, and Tertiary Containment to contain a release of hydrocarbons from a multiple-tank rupture scenario concurrent with a 1-in-100 year, 24-hour storm event. The scenario must include an allowance for water generated from potential firefighting activities and the maximum potential amount of standing water in all areas of the secondary containment system.
32	**Secondary containment – Sumas Terminal** Trans Mountain must file with the NEB for approval, **at least 6 months prior to commencing construction**, the final design of the Sumas Terminal, including a report demonstrating the following: a) The adequacy of the proposed design in preventing the following consequences of an accidental release and/or ignition of hydrocarbons, both within and beyond the Sumas Terminal property boundary: • Harm to personnel and the public. • Environmental damage. • Damage to facilities. b) The ability of the secondary containment system to contain a release of hydrocarbons from a multiple-tank rupture scenario concurrent with a 1-in-100 year, 24-hour storm event. The scenario must include an allowance for water generated from potential firefighting activities and the maximum potential amount of standing water in all areas of the secondary containment system.
33	**Transient hydraulic analysis on the existing delivery pipeline** Trans Mountain must file with the NEB, a**t least 6 months prior to commencing construction**, the conclusions of the transient hydraulic analysis undertaken on the existing NPS 24 delivery pipeline from the Burnaby Terminal to the Westridge Marine Terminal. The filed conclusions must: a) demonstrate that the analysis considered the occurrences of maximum surge pressure in the existing NPS 24 delivery pipeline; and b) support Trans Mountain's decision to either retain or eliminate the proposed relief tank at the Westridge Marine Terminal.

34	**Valve locations on Line 2**[1] Trans Mountain must file with the NEB for approval, **at least 6 months prior to commencing construction**, its final valve location assessment for Line 2. This assessment must include: a) A table showing each valve's location, function, and description (the description must include valve type, valve closure time, and whether the valve can be remotely controlled by the control center); b) confirmation that the valve closure times provided in a) will not cause unsafe transient pressures according to the final transient analysis, along with a summary of the analysis; c) calculated volume release and elevation plots in a format similar to that provided by Trans Mountain in its Oil Spill Outflow Model Results for Line 2 for May 2014 Route (Filing A3Z8G6); d) clarification of how the Outflow Volume Score for Non-Watercourse Intersects ($S_{v,Nonwatercourse}$) is considered in identifying and prioritizing pipeline segments for valve optimization; e) for each 5-kilometre-long section of Line 2, information demonstrating that the risks within that section are managed to levels that are As Low As Reasonably Practicable (ALARP), based on the valve locations provided in a); f) an outflow volume versus chainage graph illustrating the effectiveness of the valve locations provided in a) showing the outflow limit in a format similar to that provided in Figure 4 of Attachment 2 to Trans Mountain's response to NEB Information Request No. 3.050b) (Filing A4H2D7); g) mitigation measures for the locations shown to exceed the outflow limit in the graph provided in f); and h) full-bore release and spill extent mapping that identifies and plots all geohazards identified by Trans Mountain at the time of its submission, in a format and scale similar to the maps provided by Trans Mountain in Filing A3Z8G7.
35	**Valve locations and upgrades – Line 1**[2] Trans Mountain must file with the NEB for approval, **at least 6 months prior to commencing construction**, its final valve location assessment for Line 1. This assessment must include: a) a plan for upgrading existing manual block valves to automated valves, remotely operable valves, or new valves in order to control consequences, including initiation and completion dates for the required activities; b) a table showing each valve's location, function, and description (the description must include valve type, valve closure time, and whether the valve can be remotely controlled by the control center); c) confirmation that the valve closure times provided in a) will not cause unsafe transient pressures according to the final transient analysis, along with a summary of the analysis; d) calculated volume release and elevation plots in a format similar to that provided by Trans Mountain in its Oil Spill Outflow Model Results for Line 2 for May 2014 Route (Filing A3Z8G6); e) for each 5-kilometre-long section, information demonstrating that the risks within that section are managed to levels that are As Low As Reasonably Practicable (ALARP), based on the valve locations provided in a);

[1] In these conditions, "Line 2" refers to, combined, the new pipeline segments and the two currently operating Trans Mountain Pipeline System segments transferring to Line 2 service.

[2] In these conditions, "Line 1" refers to, combined, the pipeline segments to be reactivated and the currently operating Trans Mountain Pipeline System segments.

	f) an outflow volume versus chainage graph illustrating the effectiveness of the valve locations provided in a), in a format similar to that provided in Figure 4 of Attachment 2 to Trans Mountain's response to NEB Information Request No. 3.050b) (Filing A4H2D7); and g) full-bore release and spill extent mapping that identifies and plots all geohazards identified by Trans Mountain at the time of its submission, in a format and scale similar to the maps provided by Trans Mountain in Filing A3Z8G7.
36	**Burnaby Mountain tunnel option – design, construction, and operation** Trans Mountain must file with the NEB, **at least 6 months prior to commencing construction**, the following details for the tunnel between the Burnaby Terminal and the Westridge Marine Terminal and related delivery pipelines: a) for NEB approval: i) A description of the selected tunnel lining method with rationale for its selection. ii) Tunnel confined space entry procedures during construction and, if applicable, following construction. b) for NEB review: i) The results of any geotechnical or geophysical feasibility surveys completed since the evidence filed in the OH-001-2014 hearing. ii) A description of the tunnel portals and permanent road access, if applicable. iii) A description of the selected tunnel excavation method with rationale for its selection. iv) A description of the tunnel backfilling method with rationale for its selection. v) A description of the methods to be used for pipe handling and welding. vi) A discussion on the adequacy of the pipe support methods for the new delivery pipelines during construction and commissioning, including hydrostatic testing and operation, if applicable. vii) A discussion on the adequacy of the selected leak detection methods. viii) Information demonstrating how the precautionary design of the new delivery pipelines would mitigate issues related to limited accessibility for future maintenance and repairs. ix) The final tunnel cross-sectional design drawings.
37	**Burnaby Mountain tunnel option – backfilling** Trans Mountain must file with the NEB, **at least 6 months prior to commencing construction**, the following information on backfilling the tunnel between the Burnaby Terminal and the Westridge Marine Terminal: a) A discussion of the adequacy of the measures to be taken during tunnel backfilling to eliminate or mitigate potential damage to the delivery pipelines. b) The method(s) that will be used to confirm the consistency and continuity of the tunnel backfill (i.e., backfilling is completed without any spatial gaps). c) The method(s) that will be used to confirm holiday detection and coating repair methodology prior to backfilling. d) The methods that will be used to confirm the integrity of the delivery pipelines in the tunnel, both prior to and after backfilling, but prior to commissioning.

	e) The methods that will be used for monitoring, maintaining, and repairing backfill during operations, considering conditions such as fill deterioration and a potential increase in permeability.
38	**Burnaby Mountain tunnel option – cathodic protection** Trans Mountain must file with the NEB, a**t least 6 months prior to commencing construction**, the following information on the cathodic protection system for the delivery pipelines in the tunnel between the Burnaby Terminal and the Westridge Marine Terminal: a) A description of the cathodic protection system design. b) Risk mitigation measures for all potential cathodic protection performance issues, such as shielding from the backfill material. c) A method for verifying the effectiveness of the cathodic protection system during operations.
39	**Burnaby Mountain tunnel option – rock mass** Trans Mountain must file with the NEB for approval, **at least 6 months prior to commencing construction,** the following details on rock mass quality expected to be encountered during construction of the tunnel between the Burnaby Terminal and the Westridge Marine Terminal: a) The characterization of the rock mass quality. b) Waste rock managing methods during construction and operations, if applicable. c) Proposed acid rock mitigation measures, such as the treatment or disposal of acid rock, if encountered. d) The locations, sizes, and designs of all confirmed waste rock disposal areas. e) Plans for disposing any waste rock that is not expected to be stored in the confirmed waste rock disposal areas.
40	**Pipeline segment reactivation (Hinton to Hargreaves; Darfield to Black Pines)[3] – engineering assessment and certificate** Trans Mountain must file with the NEB for approval, **at least 6 months prior to commencing construction**: a) an engineering assessment for the above two pipeline segments, in accordance with Canadian Standards Association (CSA) Z662-15, Clauses 3.3 and 10.15.2; and b) a certificate with a supporting report issued by an independent certification body,[4] stating unconditionally that the above two pipeline segments: i) are fit for service for the specified operating conditions;[5]

[3] Hinton, Alberta, to Hargreaves, British Columbia: 150 kilometres long; 609.6 millimetres (NPS 24) in outside diameter; built in 1953; deactivated in 2008.

Darfield to Black Pines, British Columbia: 43 kilometres long; 609.6 millimetres (NPS 24) in outside diameter, built in 1953; deactivated in 2004.

[4] In these conditions, an" independent certification body" is an internationally recognized company or organization, such as Lloyd's Register or Det Norske Veritas, which is able to certify compliance to statutory requirements. The independent certification body must have expertise in pipeline integrity. The NEB reserves the right to accept or reject the certificate. In addition, the NEB's decision is not contingent on the results of the certificate.

	ii) meet all applicable requirements of CSA Z662-15; and iii) will meet the hydrostatic test requirements outlined in CSA Z662-15, Clause 8, at any time during the certified period. The certificate must be valid for at least 5 years and be validated on an annual basis during the certified period. The supporting report must include the qualifications of the independent certification body, the justification used to grant the certificate, and the expiry date of the certificate.
41	**Pipeline segment reactivation (Hinton to Hargreaves; Darfield to Black Pines) – new certificate and certificate validation** Trans Mountain must file with the NEB**, before expiry of the previous certificate identified in Condition No. 40**, a new certificate with a supporting report issued by an independent certification body for the two pipeline segments identified in Condition No. 40. The certificate and report must demonstrate that the two pipeline segments: a) are fit for service for the specified operating conditions; b) meet all applicable requirements of CSA Z662-15; and c) will meet the hydrostatic test requirements outlined in CSA Z662-15, Clause 8, at any time during the certified period. The certificate must be valid for at least 5 years and be validated on an annual basis during the certified period. The supporting report must include the qualifications of the independent certification body, the justification used to grant the certificate, and the expiry date of the certificate.
42	**Changing pipeline segment operating conditions (Hinton to Hargreaves; Darfield to Black Pines)[6]** Trans Mountain must file with the NEB for approval, **at least 6 months prior to commencing construction**, the following: a) An engineering assessment in accordance with CSA Z662-15, Clauses 3.3 and 10.1, for the above two pipeline segments for which Trans Mountain proposes to change from operating on the existing Line 1 to the proposed Line 2. The engineering assessment must demonstrate that the two pipeline segments are fit for their intended service under the operating conditions of Line 2, and that they meet all relevant requirements of CSA Z662-15. The engineering assessment must include a schedule of planned integrity monitoring activities. b) A certificate with a supporting report issued by an independent certification body, stating unconditionally that the 43-kilometre-long, 762 millimetre outside diameter (NPS 30) pipeline segment from Darfield to Black Pines, British Columbia is fit for its intended service under the operating conditions of Line 2.

[5] In these conditions, "operating conditions" must include the Project-specific operating conditions, possible transient flow conditions, slack flow conditions, and effects on operating pressure due to temperature changes.

[6] Hinton, Alberta, to Hargreaves, British Columbia: 151 kilometres long; 914 millimetres (NPS 36) in outside diameter; built in 2008.

Darfield to Black Pines, British Columbia: 43 kilometres long; 762 millimetres (NPS 30) in outside diameter; built in 1957.

	The supporting report must include the qualifications of the independent certification body and the justification used to grant the certificate.
43	**Reactivation of the Niton Pump Station** Trans Mountain must file with the NEB for approval, **at least 6 months prior to commencing construction,** an engineering assessment for the Niton Pump Station, in accordance with CSA Z662-15, Clauses 3.3 and 10.15.2. The engineering assessment must demonstrate that the pump station is fit for its intended service, and meets all applicable requirements of CSA Z662-15.
44	**Wildlife Species at Risk Mitigation and Habitat Restoration Plans** Trans Mountain must file with the NEB for approval, **at least 4 months prior to commencing construction**, Wildlife Species at Risk Mitigation Plans for each species whose draft, candidate, proposed, or final critical habitat is directly or indirectly affected by the Project. Each plan must include a) a summary of supplementary pre-construction survey results, including surveys for biophysical attributes of critical habitat; b) the area and type of critical habitat, including biophysical attributes, potentially directly and indirectly affected by the Project footprint; c) mitigation and habitat restoration measures to be implemented, including all relevant measures committed to throughout the OH-001-2014 proceeding, any new mitigation measures resulting from supplementary surveys, detailed criteria using clear and unambiguous language that describes the circumstances under which each measure will be applied, and measurable goals for evaluating mitigation success; d) details on post-construction monitoring of mitigation measures and habitat restoration measures, including survey methods, corrective measures, detailed criteria using clear and unambiguous language that describes the circumstances under which each measure will be applied, and a proposed reporting schedule; e) a commitment to include the results of the monitoring in the post-construction environmental monitoring reports filed under Condition No. 140; f) a description of how Trans Mountain has taken available and applicable Aboriginal traditional land use and traditional ecological knowledge into consideration in developing the plans; g) a summary of Trans Mountain's consultation concerning a) to f) with appropriate government authorities, species experts, and any potentially affected Aboriginal groups, including any issues or concerns raised and how Trans Mountain has addressed or responded to them; and h) confirmation that Trans Mountain will update the relevant Environmental Protection Plans to include any relevant information from the Wildlife Species at Risk Mitigation and Habitat Restoration Plans.
45	**Grizzly Bear Mitigation Plan** Trans Mountain must file with the NEB for approval, **at least 4 months prior to commencing construction**, a Grizzly Bear Mitigation Plan that includes: a) a summary of results from any supplemental surveys conducted; b) potential direct and indirect effects of Project activities on vulnerable grizzly bear population units;

	c) mitigation measures to be implemented, including all relevant measures committed to throughout the OH-001-2014 proceeding, any new mitigation measures resulting from supplementary surveys, detailed criteria using clear and unambiguous language that describes the circumstances under which each measure will be applied, and measurable goals for evaluating mitigation success; d) details on post-construction monitoring of mitigation measures, including survey methods, corrective measures, detailed criteria using clear and unambiguous language that describes the circumstances under which each measure will be applied, and a proposed reporting schedule; e) a commitment to include results of the monitoring in the post-construction environmental monitoring reports filed under Condition No. 140; f) a description of how Trans Mountain has taken available and applicable Aboriginal traditional land use and traditional ecological knowledge into consideration in developing the plan; g) a summary of Trans Mountain's consultation concerning a) to d) with appropriate government authorities, species experts, and any potentially affected Aboriginal groups, including any issues or concerns raised and how Trans Mountain has addressed or responded to them; and h) confirmation that Trans Mountain will update the relevant Environmental Protection Plans to include any relevant information from the Grizzly Bear Mitigation Plan, including confirmation that the mitigation, monitoring, and corrective measures in this plan will be implemented in the case of discovery via their inclusion in Trans Mountain's Wildlife Species of Concern Discovery Contingency Plan.
46	**Navigation and navigation safety** Trans Mountain must file with the NEB, **at least 4 months prior to commencing construction**: a) an updated list of navigable waterways that may be affected by the Project (including the pipeline, power lines, marine terminal, temporary or permanent bridge crossings, or other ancillary works that are physically or operationally connected to the Project); b) an updated assessment of Project effects on navigation and navigation safety for each of the identified waterways identified in a); c) proposed mitigation measures to address Project effects on navigation and navigation safety for each of the identified waterways, including adherence to codes and standards (such as the Canadian Standards Association); d) any issues or concerns raised by waterway users and any potentially affected Aboriginal groups regarding their navigational use of each of the identified waterways and how Trans Mountain has addressed or responded to those issues or concerns; and e) an assessment of the potential effects of proposed fish habitat offsets (those included in the offsetting plan required by Condition No. 98) on navigation and navigation safety and any mitigation measures proposed to reduce or avoid those effects.
47	**Fugitive Emissions Management Plan for Edmonton, Sumas, and Burnaby Terminals** Trans Mountain must file with the NEB for approval, **at least 4 months prior to commencing construction**, a Fugitive Emissions Management Plan for the Edmonton, Sumas, and Burnaby Terminals. This plan must include: a) a description of the fugitive emission sources within the terminals during construction and operations; b) a description of the emission and odour controls that will be employed to reduce fugitive emissions from the tanks, and any other sources identified in a);

	c) procedures for verifying the capture and destruction efficiency of tank vapour activation units or any other emission or odour control units at the terminals; d) quantification of fugitive emissions during operations, including the methods used; e) any additional mitigation measures that will be employed to further reduce the fugitive emissions; f) a description of Trans Mountain's program for addressing complaints with respect to fugitive emissions, including a public and Aboriginal communication and complaint response process; and g) a summary of consultation with appropriate government authorities and any potentially affected landowners and Aboriginal groups, including any issues or concerns raised with respect to the Fugitive Emissions Management Plan and how Trans Mountain has addressed or responded to them.
48	**Fugitive Emissions Management Plan for pump stations** Trans Mountain must file with the NEB for approval, **at least 4 months prior to commencing construction**, a Fugitive Emissions Management Plan for the pump stations associated with the Project that includes: a) a description of the procedures implemented for leak detection and the criteria used in selecting target leaking components; b) quantification methods considered and the rationale for the selected method(s); c) monitoring frequency for each target leaking component and the parameters that will be measured; d) a decision framework that will be implemented to repair or replace leaking components; e) a description of record-keeping procedures; and f) a discussion of additional mitigation measures that will be employed to minimize fugitive emissions.
49	**Contamination Identification and Assessment Plan** Trans Mountain must file with the NEB for approval, **at least 4 months prior to commencing construction**, a Contamination Identification and Assessment Plan that includes: a) a description of the procedures that have been implemented to-date, and that will be implemented prior to or during construction, to identify and assess pre-existing contamination that could be disturbed by, or affect, the Project, including whether site investigations have been or will be undertaken; b) a demonstration of the adequacy of the procedures in a) with reference to relevant standards, guidelines, and best practices, including how historical land use has been taken into account and a discussion of the potential for chemicals of concern to not be detectable by smell or by sight; c) the information that has been or will be reported by Trans Mountain, including to whom and when, concerning pre-existing contamination; d) a summary of Trans Mountain's consultation concerning a) to c) with appropriate government authorities, landowners, and any potentially affected Aboriginal groups, including any issues or concerns raised and how Trans Mountain has addressed or responded to them; and e) confirmation that the relevant Environmental Protection Plans will be updated to include any relevant information from the Contamination Identification and Assessment Plan.

50 **Rare Ecological Community and Rare Plant Population Management Plan**

Trans Mountain must file with the NEB for approval, **at least 4 months prior to commencing construction**, an updated Rare Ecological Community and Rare Plant Population Management Plan that includes ecological communities of concern; rare plants and lichens; and draft, candidate, proposed, or final critical habitat for plant and lichen species under the *Species at Risk Act* that are potentially affected by the Project during construction or operations. The plan must include the following:

a) A summary of supplementary survey results.

b) Mitigation measures to be implemented, including all relevant measures committed to throughout the OH-001-2014 proceeding, any new mitigation measures resulting from supplementary surveys, detailed criteria using clear and unambiguous language that describes the circumstances under which each measure will be applied, and measurable goals for evaluating mitigation success.

c) A description of how the avoidance, mitigation, and offset hierarchy was considered in developing the plan.

d) Details on post-construction monitoring, including survey methods, corrective measures, and detailed criteria using clear and unambiguous language that describes the circumstances under which each measure will be applied.

e) A Preliminary Rare Ecological Community and Rare Plant Population Offset Plan for ecological communities and rare plant and lichen species that have an at-risk status of S1 or S1S2 or that are listed under federal or provincial legislation for protection and that, after five years of operations, have not achieved reclamation success. This preliminary plan must include the following:

   i) A discussion of whether the community, species, or critical habitat can be avoided by a sufficient distance to avoid both direct and indirect residual effects.

   ii) If avoidance by a sufficient distance is not feasible:

      1) the expected residual effects on that community, species, or critical habitat, taking into account the success on past projects of the proposed mitigation and corrective measures in b) and d) above;

      2) an explanation of how the need for offset measures will be determined and quantified, including offset ratios;

      3) the potential offset measures, the process for selecting which will be implemented, and an evaluation of the probability of their success; and

      4) a discussion of how the effectiveness of offsets measures will be monitored, assessed, and reported on.

f) A description of how Trans Mountain has taken available and applicable Aboriginal traditional land use and traditional ecological knowledge into consideration in developing the plan;

g) A summary of Trans Mountain's consultation concerning a) to f) with appropriate government authorities, species experts, and any potentially affected Aboriginal groups, including any issues or concerns raised and how Trans Mountain has addressed or responded to them.

h) Confirmation that the relevant Environmental Protection Plans will be updated to include any relevant information from the Rare Ecological Community and Rare Plant Population Management Plan, including confirmation that the mitigation, monitoring, corrective, and offset measures in the Rare Ecological Community and Rare Plant Population Management Plan will be implemented in the case of discovery via their inclusion in the Rare Ecological Communities or Rare Plant Species Discovery Contingency Plan.

51	**Old Growth Management Areas Mitigation and Replacement Plan** Trans Mountain must file with the NEB for approval, **at least 4 months prior to commencing construction**, an Old Growth Management Areas Mitigation and Replacement Plan that includes: a) a description (including quantification) of all old growth management areas intersected by the final Project footprint; b) mitigation to be implemented to avoid and reduce the effects on old growth management areas; c) replacement or other offset measures that will be implemented to compensate for unavoidable residual effects; d) a summary of Trans Mountain's consultation concerning a) to c) with appropriate government authorities, and any potentially affected Aboriginal groups, including any issues or concerns raised and how Trans Mountain has addressed or responded to them; and e) confirmation that the relevant Environmental Protection Plans will be updated to include any relevant information from the Old Growth Management Areas Mitigation and Replacement Plan.
52	**Wetland Survey and Mitigation Plan** Trans Mountain must file with the NEB for approval, **at least 4 months prior to commencing construction**, a pre-construction Wetland Survey and Mitigation Plan that includes: a) A summary of supplementary survey results for wetlands potentially affected by the Project. b) A description of any wetlands for which ground-based surveys were not possible, an explanation as to why not, attempts made to obtain access, and what further information on each wetland will be collected immediately prior to or during construction. c) A description of the functional condition of each wetland for comparison during post-construction monitoring, including individual functional conditions (e.g., habitat, hydrology and biogeochemistry) and a description of the methods used to determine functional conditions. d) A description of the crossing methods, mitigation measures, and reclamation measures to be implemented for potentially affected wetlands, including clear and unambiguous criteria, and rationales for such criteria, explaining under what circumstances such methods and measures will be applied. e) Measurable goals for evaluating wetland mitigation and reclamation success. f) A description of how the avoidance, mitigation, and offset hierarchy, and the goal of no net loss of each individual wetland function, were considered in developing the plan. g) Details of the monitoring plan for wetlands for the first five years of operations, including corrective actions that might be necessary and the circumstances under which each such action would be taken. h) A Preliminary Wetland Offset Plan for those wetlands that will have a temporary loss in any individual functional condition and for those wetlands that, after five years of operations, have not achieved reclamation success. This plan must include: i) an explanation of how the need for offset measures will be determined and quantified, including offset ratios; ii) the potential offset measures, the process for selecting which will be implemented, and an evaluation of the probability of their success; iii) a discussion of how the effectiveness of offsets measures will be monitored, assessed, and reported on; and

	iv) the offset measures that will be implemented during the first five years of operations to compensate for expected temporary losses to individual functional conditions, including a timeline for their implementation and monitoring. i) A description of how Trans Mountain has taken available and applicable Aboriginal traditional land use and traditional ecological knowledge into consideration in developing the plan. j) A summary of Trans Mountain's consultation concerning a) to i) with appropriate government authorities, and any potentially affected Aboriginal groups, including any issues or concerns raised and how Trans Mountain has addressed or responded to them.
53	**Weed and Vegetation Management Plan** Trans Mountain must file with the NEB for approval, **at least 4 months prior to commencing construction**, an updated Weed and Vegetation Management Plan for the Project that includes: a) a summary of supplementary survey results, including pre-construction weed surveys, and a justification of the adequacy of such surveys; b) measurable goals; c) criteria describing when and where problem vegetation will be managed for each project phase, including pre-construction, construction, post-construction, and operations; d) management procedures and a decision-making framework for selecting the appropriate treatment measures, including how stakeholder concerns and potential adverse effects of treatment measures will be considered; e) short- and long-term vegetation monitoring; f) a summary of Trans Mountain's consultation concerning a) to e) with appropriate government authorities, landowners, invasive plant councils or committees, and any potentially affected Aboriginal groups, including any issues or concerns raised and how Trans Mountain has addressed or responded to them; and g) confirmation that the relevant Environmental Protection Plans will be updated to include any relevant information from the Weed and Vegetation Management Plan.
54	**Fugitive Emissions Management Plan for the Westridge Marine Terminal** Trans Mountain must file with the NEB for approval, **at least 4 months prior to commencing construction**, a Fugitive Emissions Management Plan for the Westridge Marine Terminal that includes: a) a description of the sources of the fugitive emissions that will be generated from the Westridge Marine Terminal during construction and operations; b) a description of the emission and odour controls that will be employed to reduce fugitive emissions during tanker loading and other sources identified in a); c) procedures for verifying, tracking, and reporting on: i) volatile organic compound collection efficiency; ii) the vapour recovery unit's hydrogen sulphide and mercaptan removal efficiency, as well as its BTEX reduction efficiency; and iii) the vapour combustion unit's hydrogen sulphide and mercaptan removal efficiency, as well as its combustion efficiency; d) procedures for identifying any leaks or equipment malfunctions during operation of the vapour recovery and vapour combustion units;

	e) methods for quantifying emissions (with vapour recovery and vapour combustion units in operation); f) any additional mitigation measures that will be employed to further reduce fugitive emissions; g) a description of Trans Mountain's program for addressing complaints with respect to fugitive emissions, including a communication and notification plan; and h) a summary of consultation with appropriate regulatory or government authorities and any potentially affected landowners and Aboriginal groups, including any issues or concerns raised with respect to the Fugitive Emissions Management Plan and how Trans Mountain has addressed or responded to them.
55	**Access Management Plan(s)** Trans Mountain must file with the NEB for approval, **at least 4 months prior to commencing construction**, an Access Management Plan(s) to be included within the updated Facilities Environmental Protection Plan and Pipeline Environmental Protection Plan (required by Condition Nos. 62 and 63, respectively). Each plan must address issues related to soil, vegetation, fish and fish habitat, and wildlife and wildlife habitat. Each plan must also describe access control measures proposed to control both human and predator access during construction and operations, and include: a) objectives of the plan; b) measurable goals for evaluating the plan's success in achieving its objectives; c) a summary of any related baseline information that has been or will be collected to aid in evaluating the plan's success, and justification of the adequacy of this baseline information, or a rationale if no baseline information has or will be collected; d) a list of sites where access control measures will be implemented for construction and those that will remain in place throughout operations, the control measure(s) proposed at those sites, and the rationale for selecting those sites and measures; e) the methods for monitoring the effectiveness of access control measures implemented during construction and operations, and justification of the adequacy of such monitoring; f) a description of available adaptive management measures and of the criteria Trans Mountain will use to determine if and when adaptive management measures are warranted based on monitoring results; g) a commitment to report, as part of Trans Mountain's post-construction environmental monitoring reports (required by Condition No. 140), on the control measures implemented, monitoring undertaken, and the success of control measures in meeting Access Management Plan goals and objectives, as well as a schedule, with rationale, for reporting throughout operations; h) a description of how Trans Mountain has taken available and applicable Aboriginal traditional land use and traditional ecological knowledge studies into consideration; and i) a summary of Trans Mountain's consultation with appropriate government authorities and any potentially affected Aboriginal groups and stakeholders, including any issues or concerns raised and how Trans Mountain has addressed or responded to them.
56	**High-voltage alternating current (AC) interference** Trans Mountain must file with the NEB, **at least 4 months prior to commencing construction**, a report confirming that Trans Mountain has achieved an engineered solution to mitigate the induced voltages on pipeline segments resulting from the steady state and transient conditions of BC Hydro's unshielded power lines that are located less than 10 metres from those segments. The report must also include: a) a summary of the above-mentioned engineered solution;

	b) a list of the pipeline segments where mitigation will be applied; and c) an explanation of how Trans Mountain reached an agreement with BC Hydro towards implementing the engineered solution. Trans Mountain must provide a copy of the report to BC Hydro at the same time that it is filed with the NEB.
57	**List of infrastructure sites** Trans Mountain must file with the NEB, **at least 90 days prior to commencing construction**, and any **updates as they are available**, a complete list of all infrastructure sites to be constructed for the Project. This list must include information on each site's location, structures to be installed, the anticipated date for commencing construction, and activities involved in its construction. The initial list and updates must also include the condition numbers (those under the "prior to commencing construction" phase heading) that are applicable to each site and an indication of whether each of those conditions has been or remains to be satisfied.
58	**Construction schedule** Trans Mountain must file with the NEB, **at least 90 days prior to commencing construction**, a construction schedule identifying the major construction activities expected and, **on a monthly basis from the start of any clearing until commencing operations**, updated detailed construction schedules.
59	**Security Programs** Trans Mountain must confirm with the NEB in writing, in accordance with the timelines below, that it has developed Security Programs for the construction and operations phases of the Project, pursuant to the *National Energy Board Onshore Pipeline Regulations* (as amended from time to time) and CSA Z246.1: a) **at least 90 days prior to commencing construction** for the construction phase Security Program; and b) **at least 90 days prior to commencing operations** for the operations phase Security Program.
60	**Safety manuals** Trans Mountain must file with the NEB, **at least 90 days prior to commencing construction**: a) the Health and Safety Management Plan for the Project; and b) Construction Safety Manuals (Project-Specific Safety Plans) for the applicable Project components. These must include separate Construction Safety Manuals for pipeline construction, facilities construction, Burnaby Mountain tunnel construction, and Westridge Marine Terminal construction. These manuals must address routine construction activities, as well as blasting, tunneling, avalanche safety, and special access procedures that may be required in areas subject to activities other than Project construction.
61	**Traffic Control Plans for public roadways** Trans Mountain must file with the NEB, **at least 90 days prior to commencing construction**, traffic control plans for the use of public roadways for the Project. The plans must include: a) information regarding the timing and location of key construction activities (including equipment mobilization and staging, pipe stockpiling, pipeline and pump station construction, and equipment demobilization);

	b) current traffic volumes and anticipated traffic volumes during the construction period for both day and night times; c) a description of the predicted traffic flows, including vehicle types and volumes, at key construction points, marshalling areas, access roads, and public roadways; d) an assessment of the potential impacts associated with the increased volume of construction-related traffic (e.g., safety hazards, noise, light, dust, etc.) and associated mitigation measures; and e) evidence of consultation with potentially affected municipal or provincial authorities regarding the Traffic Control Plans, including a summary of the results of these discussions, and, where concerns remain outstanding, an explanation of how Trans Mountain proposes to resolve them.
62	**Facilities Environmental Protection Plan** Trans Mountain must file with the NEB for approval, **at least 90 days prior to commencing construction**, an updated Project-specific Facilities Environmental Protection Plan for the construction of the facilities, including supporting infrastructure. The updated Environmental Protection Plan must be a comprehensive compilation of all environmental protection procedures, mitigation measures, and monitoring commitments, as set out in Trans Mountain's Project application, its subsequent filings, the evidence it provided during the OH-001-2014 proceeding, or as otherwise committed to during questioning or in its related submissions. The updated plan must describe the criteria for implementing all procedures and measures using clear and unambiguous language that confirms Trans Mountain's intention to implement all of its commitments. The updated Environmental Protection Plan must include the following: a) Environmental procedures (including site-specific plans), criteria for implementing these procedures, mitigation measures, and monitoring applicable to all Project phases and activities. b) Policies and procedures for environmental training and the reporting structure for environmental management during construction, including the qualifications, roles, responsibilities, and decision-making authority for each job title identified in the updated Environmental Protection Plan. c) Any additional measures arising from supplemental pre-construction studies and surveys. d) Updated contingency plans and management plans. e) Updated alignment sheets. f) A description of how Trans Mountain has taken available and applicable Aboriginal traditional land use and traditional ecological knowledge studies into consideration. g) A summary of Trans Mountain's consultation with appropriate government authorities and any potentially affected Aboriginal groups and stakeholders, including any issues or concerns raised and how Trans Mountain has addressed or responded to them.
63	**Pipeline Environmental Protection Plan** Trans Mountain must file with the NEB for approval, **at least 90 days prior to commencing construction**, an updated Project-specific Pipeline Environmental Protection Plan for the construction of the pipeline. The updated Environmental Protection Plan must be a comprehensive compilation of all environmental protection procedures, mitigation measures, and monitoring commitments, as set out in Trans Mountain's Project application, its subsequent filings, the evidence it provided during the OH-001-2014 proceeding, or as otherwise committed to during questioning and in its related submissions. The updated plan must describe the criteria for implementing all procedures and measures using clear and unambiguous language

	that confirms Trans Mountain's intention to implement all of its commitments. The updated Environmental Protection Plan must include the following: a) Environmental procedures (including site-specific plans), criteria for implementing these procedures, mitigation measures, and monitoring applicable to all Project phases and activities. b) Policies and procedures for environmental training and the reporting structure for environmental management during construction, including the qualifications, roles, responsibilities, and decision-making authority for each job title identified in the updated Environmental Protection Plan. c) Any additional measures arising from supplemental pre-construction studies and surveys. d) Updated contingency plans and management plans, including a plan that includes procedures for protecting identified vulnerable aquifers along the pipeline route and specific measures to mitigate any construction or operation impacts to these aquifers. e) Updated alignment sheets. f) A description of how Trans Mountain has taken available and applicable Aboriginal traditional land use and traditional ecological knowledge studies into consideration. g) A summary of Trans Mountain's consultation with appropriate government authorities and any potentially affected Aboriginal groups and stakeholders, including any issues or concerns raised and how Trans Mountain has addressed or responded to them.
64	**Westridge Marine Terminal Environmental Protection Plan** Trans Mountain must file with the NEB for approval, **at least 90 days prior to commencing construction**, an updated Project-specific Westridge Marine Terminal Environmental Protection Plan. The updated Environmental Protection Plan must be a comprehensive compilation of all environmental protection procedures, mitigation measures, and monitoring commitments, as set out in Trans Mountain's Project application, its subsequent filings, the evidence it provided during the OH-001-2014 proceeding, or as otherwise committed to during questioning and in its related submissions. The updated plan must describe the criteria for implementing all procedures and measures using clear and unambiguous language that confirms Trans Mountain's intention to implement all of its commitments. The updated Environmental Protection Plan must include the following elements: a) Environmental procedures (including site-specific plans), criteria for implementing these procedures, mitigation measures, and monitoring applicable to all Project phases and activities. b) Policies and procedures for environmental training and the reporting structure for environmental management during construction, including the qualifications, roles, responsibilities, and decision-making authority for each job title identified in the Environmental Protection Plan. c) Any additional measures arising from supplemental pre-construction studies and surveys. d) Updated contingency plans and management plans. e) Updated alignment sheets. f) A description of how Trans Mountain has taken available and applicable Aboriginal traditional land use and traditional ecological knowledge studies into consideration. g) A summary of Trans Mountain's consultation with appropriate government authorities and any potentially affected Aboriginal groups and stakeholders, including any issues or concerns raised and how Trans Mountain has addressed or responded to them.

65	**Marine Sediment Management Plan** In the event that dredging is required during the expansion of the Westridge Marine Terminal, Trans Mountain must file with the NEB, **at least 90 days prior to commencing construction,** and also include as part of its Westridge Marine Terminal Environmental Protection Plan, a Marine Sediment Management Plan. This plan must include: a) a summary of any supplemental marine sediment survey results; b) quantification of the area and the volume of marine sediment to be dredged; c) results of sediment plume modelling for any areas to be dredged; d) disposal options for dredged sediment, including the volumes of sediment that will be re-used or disposed of at sea or on land, as well the criteria and methods for determining how the dredged sediment will be disposed of; e) an update to any site-specific mitigation identified in the Westridge Marine Terminal Environmental Protection Plan; f) details of monitoring that will be undertaken during construction; g) a summary of consultation with appropriate government authorities and potentially affected stakeholders and Aboriginal groups; and h) details of monitoring (both abiotic and biotic parameters) that will be undertaken during operations, including a discussion on evaluating the level of contaminants in the marine environment and any changes from pre-construction levels, as well as a proposed reporting schedule.
66	**Light Emissions Management Plan for the Westridge Marine Terminal** Trans Mountain must file with the NEB**, at least 90 days prior to commencing construction**, a Light Emissions Management Plan for the Westridge Marine Terminal that includes: a) a summary of the results of an area lighting study, including how potential impacts on surrounding communities and safety and operational requirements were considered; and b) a description of the mitigation and best practice measures considered for the terminal lighting design and how the proposed design and operation will minimize the impacts from light on land-based residents and marine users; and c) a plan for how Trans Mountain will communicate its proposed terminal lighting design and associated mitigation measures to limit any nuisance lighting disturbances to land-based residents and marine users.
67	**Hydrology – notable watercourse crossings** Trans Mountain must file with the NEB, **at least 90 days prior to commencing construction,** revised flood frequency estimates for all notable watercourse crossings. These estimates must incorporate the results of field investigations and bathymetric surveys completed since the Project application was filed, and be presented in a format similar to that presented in Application Volume 4A, Appendix I – Route Physiography and Hydrology Report, Appendix B – Notable Water Crossing Catchment Details (Filing A56000).

68	**Quantitative Geohazard Frequency Assessment** Trans Mountain must file with the NEB, **at least 90 days prior to commencing construction**, an updated Quantitative Geohazard Frequency Assessment for the new Line 2 and delivery pipeline segments that contains a re-assessment of the Frequency of Loss of Containment (FLoC) values based on the results of site-specific field assessments and any required mitigation as determined in the detailed engineering and design process. Trans Mountain must provide a detailed justification or a plan for further mitigation for any location where the FLoC value is greater than 10^{-5}.
69	**Risk Management Plan for geohazards** Trans Mountain must develop and file with the NEB**, at least 90 days prior to commencing construction,** an updated Risk Management Plan for addressing the threats of existing and potential geohazards during construction of the new Line 2 and delivery pipeline segments, and related facilities. This plan must be updated as additional site-specific geotechnical information is obtained through detailed investigations, and modified as geohazards are encountered during construction. Trans Mountain must make any updates or modifications available to the NEB **upon request.**
70	**Outstanding horizontal directional drilling geotechnical and feasibility reports** Trans Mountain must file with the NEB, **at least 90 days prior to commencing construction**, Geotechnical Reports and Horizontal Directional Drilling Feasibility and Design Reports, along with final design drawings, for each of the following river crossings: a) Coldwater River 4 crossing. b) North Thompson River 6 crossing. c) North Thompson River 7 crossing. d) Pembina River crossing. e) Raft River crossing. f) Sumas River crossing (suitability for Direct Pipe® installation). g) Any additional river crossing along the new Line 2 pipeline segments where horizontal directional drilling or other trenchless crossing method is being considered.
71	**Seismic reports – liquefaction potential** Trans Mountain must file with the NEB, **at least 90 days prior to commencing construction,** a final report that identifies all sites on the new Line 2, delivery pipeline segments, transmission pipeline segments to be reactivated, and related facilities, that have “Very High,” “High,” and “Moderate” liquefaction-triggered ground movement potential, and that describes how the potential for liquefaction-triggered ground movement will be mitigated at each site.
72	**Fault studies** Trans Mountain must file with the NEB**, at least 90 days prior to commencing construction**, the results of fault-mapping studies that were ongoing during the OH-001-2014 proceeding, or undertaken after its conclusion, for use in the detailed design of the Project. This filing must include conclusions regarding possible seismic activity during the Holocene for Sumas Fault, Vedder Mountain Fault, Fraser River-Straight Creek Fault, and Rocky Mountain Trench, as well as other possible hidden faults.

73	**Field changes manual for geohazard mitigation** Trans Mountain must file with the NEB for approval, **at least 90 days prior to commencing construction**, a field changes manual for geohazard mitigation. This manual must include: a) decision criteria for implementing mitigation for any geohazards identified during construction; b) specific criteria for implementing changes to the designs, grading, special materials, protective structures, increased burial depth, installation procedures, erosion mitigation measures, and monitoring; and c) details regarding the required qualifications of the field staff that will implement the manual.
74	**Westridge Marine Terminal (offshore) – pile design** Trans Mountain must file with the NEB, **at least 90 days prior to commencing construction**, the final design basis for the offshore pile foundation layout of the Westridge Marine Terminal.
75	**Strain-based design** Trans Mountain must file with the NEB, **at least 90 days prior to commencing construction**, the following information related to strain-based design, where it is applied: a) The location and rationale for selecting strain-based design in each location. b) A report summarizing the adequacy of the strain-based design for various loading scenarios during pipeline construction and operation for each location provided in a). c) A list of standards and specifications, including testing procedures, that are used in the strain-based design.
76	**Emergency release system at the Westridge Marine Terminal** Trans Mountain must file with the NEB, **at least 90 days prior to commencing construction**, its conclusions on the necessity of an emergency release system for the loading arms at the Westridge Marine Terminal. The conclusions must be supported by a comprehensive study describing the advantages and disadvantages of incorporating an emergency release system. This study must: a) consider the application of i) emergency release couplers; and ii) an emergency release system, during both normal operating conditions and under abnormal conditions such as seismic events; and b) include a description of the final emergency release system design, if applicable.
77	**Plan for implementing, monitoring, and complying with marine shipping-related commitments** Trans Mountain must file with the NEB, **at least 60 days prior to commencing construction**, a plan describing how it will implement, monitor, and ensure compliance with its marine shipping-related commitments identified in Condition No. 114. The plan must be prepared in consultation with Transport Canada, the Canadian Coast Guard, the Pacific Pilotage Authority, Port Metro Vancouver, British Columbia Coast Pilots, Western Canada Marine Response Corporation, and Fisheries and Oceans Canada. Trans Mountain must provide the plan to the above-mentioned parties at the same time as it is filed with the NEB.

78	**Updates under the *Species at Risk Act*** Trans Mountain must file with the NEB, **at least 60 days prior to commencing construction,** a summary of any relevant updates under the *Species at Risk Act*, including new Schedule 1 listings and new or amended Recovery Strategies, Action Plans, and Management Plans for species that have the potential to be affected by the Project. For each species-specific update, the summary must include: a) a discussion of the Project activities' potential effects on the listed species or its critical habitat; b) identification of all reasonable alternatives to the Project activities referred to in a), including avoidance measures, and a discussion on the potential effects of the alternatives, the chosen approach, and the rationale for selecting the chosen approach; c) any additional site-specific mitigation; d) any monitoring to be undertaken and a commitment to include monitoring results as part of the post-construction environmental monitoring reports filed under Condition No. 140; e) confirmation that Trans Mountain, throughout the life of the Project, will continue to track (under its Environmental Protection Program) updates under the *Species at Risk Act*, to consult with the appropriate government authorities, and to consider changes to construction and operational measures, plans, and procedures; and f) a summary of Trans Mountain's consultation concerning a) to d) with appropriate government authorities, species experts, and any potentially affected Aboriginal groups, including any issues or concerns raised and how Trans Mountain has addressed or responded to them.
79	**Riparian Habitat Management Plan** Trans Mountain must file with the NEB for approval, **at least 60 days prior to commencing construction,** a Riparian Habitat Management Plan for any riparian areas that will be impacted by Project construction. This plan must include: a) a pre-construction assessment of riparian habitat functionality (e.g., for fish, wildlife, and rare plants) and a quantification of the riparian habitat within the Project footprint; b) measureable goals to determine that riparian habitat has returned to pre-construction functionality; c) site-specific reclamation plans, including a discussion on the length of time it will take to return riparian habitat to pre-construction functionality; d) details of monitoring that will be undertaken; e) a Preliminary Riparian Habitat Enhancement and Offset Plan for any riparian habitat that has not returned to pre-construction functionality, which must include: i) how the need for enhancement and offset measures will be determined and quantified, including offset ratios; ii) potential enhancement and offset measures, the process for selecting which will be implemented, and an evaluation of the probability of their success; and iii) how the effectiveness of enhancement and offset measures will be monitored, assessed, and reported on; f) a description of how Trans Mountain has taken available and applicable Aboriginal traditional land use and traditional ecological knowledge into consideration in developing the plan; and g) a summary of Trans Mountain's consultation concerning a) to e) with appropriate government authorities, species experts, and any potentially affected Aboriginal groups, including any issues or concerns raised and how Trans Mountain has addressed or responded to them.

80	**Water well inventory** Trans Mountain must file with the NEB, **at least 60 days prior to commencing construction**, an inventory of physically verified ("ground-truthed") water wells that are within 150 metres of either side of the centre of the pipeline right-of-way. The inventory must include a description of the methods used to identify and physically verify wells, including: a) each well's location in proximity to the right-of-way, including its GPS coordinates; b) a description of each well's type or use (e.g., drinking water, agricultural use, use by Aboriginal groups, any other uses); c) each well's tenure or ownership (e.g., private, municipal, Aboriginal community); d) each well's operational status, including abandoned or decommissioned wells; e) a plan for updating the inventory over the life of the Project, including: i) the methods for identifying and verifying abandoned or decommissioned wells, and new or replacement wells; and ii) the frequency of inventory updates; f) a list of any properties or sections of the right-of-way that were not physically verified, including; i) the reason why properties or right-of-way sections were not physically accessed; ii) an estimate of the potential number of wells that have not been physically verified; and iii) a proposed schedule for accessing properties or right-of-way sections; and g) a description of Trans Mountain's plans for communicating information about the locations of water wells to owners or affected users. Trans Mountain must continue to update this inventory for audit purposes for the operational life of the Project, **according to the frequency specified in e)**. Trans Mountain must make the inventory available to the NEB **upon request.**
81	**Consultation reports – protection of municipal water sources** Trans Mountain must file with the NEB, **at least 60 days prior to commencing construction**, **and on or before 31 January of each year during construction and of the first 5 years after commencing Project operations,** a report on Trans Mountain's consultations with municipalities, communities, and Aboriginal groups related to the protection of municipal and community water sources. Each report must include: a) The name of the municipality, community, or Aboriginal group consulted. b) The methods, dates, and locations of all meetings or consultations. c) A summary of all issues or concerns raised. d) A description of the measures taken, or that will be taken, to address or respond to concerns raised, or an explanation why no further action is required to address or respond to issues or concerns. e) A summary of any steps or measures that have been or will be undertaken, including groundwater modelling or monitoring, as a result of consultations with municipalities, communities, or Aboriginal groups. This summary must include: i) any updates or amendments to maintenance policies, systems, programs, procedures, practices, and activities aimed at preventing pipeline releases; ii) the criteria used to identify and select modelling or monitoring locations and parameters; iii) results of any modelling or monitoring; and

	iv) any measures that have been taken to address modelling or monitoring results.
82	**Heritage resources** Trans Mountain must file with the NEB, **at least 60 days prior to commencing construction**: a) confirmation, signed by an officer of the company, that it has obtained all of the required archaeological and heritage resource permits and clearances from the Alberta Department of Culture and the British Columbia Ministry of Forests, Lands and Natural Resource Operations; b) a description of how Trans Mountain will meet any conditions and respond to any comments and recommendations contained in the permits and clearances referred to in a); and c) a description of how Trans Mountain has incorporated any additional mitigation measures into its Environmental Protection Plans as a result of any conditions or recommendations referred to in b).
83	**Reports on engagement with Aboriginal groups – construction** Trans Mountain must file with the NEB, **at least 60 days prior to commencing construction and every 6 months thereafter until commencing operations,** a report on the engagement activities it has undertaken with potentially affected Aboriginal groups. Each report must include, at a minimum, for each Aboriginal group engaged: a) the name of the group; b) the method(s), date(s), and location(s) of engagement activities; c) a summary of any issues or concerns raised; and d) the measures taken, or that will be taken, to address or respond to issues or concerns, or an explanation why no further action is required to address or respond to issues or concerns. Trans Mountain must provide a copy of each report to each group engaged (and identified in a) above) at the same time that it is filed with the NEB.
84	**Traditional Land Use (TLU) and Traditional Marine Resource Use (TMRU) Investigation Report** Trans Mountain must file with the NEB for approval, **at least 60 days prior to commencing construction,** a report describing pre-construction TLU and TMRU investigations that were not reported during the OH-001-2014 proceeding. The report must include: a) the name of the potentially affected Aboriginal group to which each investigation pertains; b) a description of any identified potentially affected TLU or TMRU sites, resources, or activities; c) the methods used to identify the potentially affected TLU or TMRU sites, resources or activities; d) a summary of any mitigation measures that Trans Mountain will implement to reduce or eliminate (to the extent possible) Project effects on TLU or TMRU sites, resources or activities; e) a description of how Trans Mountain has incorporated mitigation measures into its Pipeline Environmental Protection Plan and/or Facilities Environmental Protection Plan (required by Condition Nos. 62, 63, and 64); f) a description of any outstanding concerns raised regarding potential Project effects on the current use of lands and resources or marine resource use for traditional purposes, including a description of how Trans Mountain will or address or respond to them, or an explanation why it will not address or respond to them; and

	g) a summary of any outstanding TLU or TMRU investigations or follow-up activities that will not be completed prior to commencing construction, including estimated completion date(s), if applicable, and a description of how Trans Mountain has already identified, or will identify, any potentially affected TLU and TMRU sites, resources or activities for these outstanding investigations. Trans Mountain must provide a copy of the report to each potentially affected group identified in a) at the same time that it is filed with the NEB.
85	**Plan for Aboriginal group participation in construction monitoring** Trans Mountain must file with the NEB, **at least 60 days prior to commencing construction,** a plan describing participation by Aboriginal groups in monitoring activities during construction for the protection of traditional land and resource use for the pipeline and facilities and traditional marine resource use at the Westridge Marine Terminal. The plan must include: a) a summary of engagement activities undertaken with Aboriginal groups to determine opportunities for their participation in monitoring activities; b) a list of potentially affected Aboriginal groups, if any, that have reached agreement with Trans Mountain to participate in monitoring activities; c) the scope, methodology, and justification for monitoring activities to be undertaken by Trans Mountain and each participating Aboriginal group identified in b), including those elements of construction and geographic locations that will involve Aboriginal Monitors; d) a description of how Trans Mountain will use the information gathered through the participation of Aboriginal Monitors; and e) a description of how Trans Mountain will provide the information gathered through the participation of Aboriginal Monitors to the participating Aboriginal group. Trans Mountain must provide a copy of the report to each potentially affected group identified in b) above at the same time that it is filed with the NEB.
86	**Landowner consultation records** Trans Mountain must maintain records of its landowner consultations that include: a) a description of landowner consultations, including the consultation methods, dates, and a summary of any issues or concerns raised by landowners; and b) a summary of actions that Trans Mountain has undertaken to address or respond to each of the issues or concerns raised, or an explanation for why no actions were taken, and any outstanding concerns. Trans Mountain must file with the NEB, **beginning at least 60 days prior to commencing construction, and every 6 months thereafter until completing construction,** its landowner consultation records. Trans Mountain must continue to file its landowner consultation records with the NEB **every 6 months for 5 years after commencing Project operations**.
87	**Emergency Response Plan for construction** Trans Mountain must file with the NEB**, at least 60 days prior to commencing construction**, a Project-specific Emergency Response Plan that would be implemented during the construction phase. The plan must include spill contingency measures that Trans Mountain will employ in response to accidental spills attributable to construction activities, 24-hour medical evacuation, fire response, and security.

88	**Consultation on improvements to Trans Mountain's Emergency Management Program** Trans Mountain must file with the NEB, **at least 60 days prior to commencing construction**, a consultation plan for its review of its Emergency Response Plans and equipment (including its availability), as referenced in Volume 7, Section 4.8.2 of its Project application (Filing A3S4V5). This plan must include: a) The consultation plan's scope; b) The consultation plan's objectives; c) A preliminary list of federal, provincial, and municipal authorities and other agencies that Trans Mountain will consult with; d) A preliminary list of communities and Aboriginal groups that Trans Mountain will consult with; e) A preliminary list of consultation locations and timing; and f) The methods that will be used to track commitments made during consultations and to incorporate them into Trans Mountain's Emergency Management Program, including its Emergency Response Plans.
89	**Uninterruptible Power Supply (UPS) and battery systems** Trans Mountain must file with the NEB, **at least 60 days prior to commencing construction**, confirmation that the UPS system design and operation is in compliance with the requirements of Canadian Standards Association (CSA) 22.1 – No. 15 or other applicable standard(s) that exceeds the requirements of CSA 22.1 – No. 15. If another standard is used, this filing must include the name of the standard and an explanation of why the standard was used and how it meets or exceeds the requirements of CSA 22.1 No. 15.
90	**Project organizational structure** Trans Mountain must file with the NEB, **at least 60 days prior to commencing construction**, a diagram of the Project's organizational structure (i.e., project management, design, and field staff) that clearly identifies roles, accountabilities, responsibilities, and reporting relationships for the applicable Project component.
91	**Authorization under paragraph 35(2)(b) of the *Fisheries Act* – Westridge Marine Terminal** If Fisheries and Oceans Canada determines that the Westridge Marine Terminal expansion requires an Authorization under paragraph 35(2)(b) of the *Fisheries Act* and it issues an Authorization, Trans Mountain must file with the NEB, **at least 10 days prior to commencing construction,** a copy of the Authorization.
Conditions with initial filings due prior to commencing operations / during construction	
92	**Quality assurance verification** Trans Mountain must file **monthly summary reports during construction** outlining non-conformances with its design, materials, and construction specifications and the disposition of these non-conformances.

93	**Construction progress reports** Trans Mountain must file with the NEB **monthly construction progress reports from the start of clearing until commencing operations**. The reports must include information on the progress of activities carried out during the reporting period. These reports must include safety, environmental, and security non-compliances that occurred during each reporting period and the measures undertaken to resolve them. These reports must also include a description and the locations of any changes made to geohazard mitigation measures (required by Condition No. 73), the location of any pressure tests carried out during the reporting period, and a description of any unsuccessful pressure tests and their cause.
94	**Aboriginal, local, and regional employment and business opportunity monitoring reports** a) Trans Mountain must file with the NEB, **within 90 days after commencing construction**, **and every 6 months thereafter until completing construction**, monitoring reports for Aboriginal, local, and regional employment and business opportunities for the Project. The reports must include: i) a summary of the elements or indicators monitored; ii) a summary and analysis of Aboriginal, local, and regional employment and business opportunities during the reporting period; and iii) a summary of Trans Mountain's consultation with relevant Aboriginal, local, and regional communities, and industry groups or representatives regarding employment and business opportunities for the reporting period. This summary must include any issues or concerns raised regarding employment and business opportunities and how Trans Mountain has addressed or responded to them. b) Trans Mountain must file with the NEB, **within 6 months after completing construction**, a final report on employment during the construction phase.
95	**Air Emissions Management Plan – Burnaby Mountain tunnel construction** Trans Mountain must file with the NEB for approval, **at least 4 months prior to commencing construction of the Burnaby Mountain tunnel**, an Air Emissions Management Plan for tunnel construction. The plan must include: a) proposed hours for daytime and nighttime work; b) sources that would generate air emissions; c) an Air Emissions and Dust Emissions Management Plan that includes mitigation measures, their predicted effectiveness, and implementation timeframes; d) a summary of consultation with appropriate government authorities and with potentially affected residents and businesses regarding tunnel construction air emissions, including any concerns raised and how Trans Mountain has addressed or will address those concerns; and e) a description of Trans Mountain's program for addressing complaints received during tunnel construction with respect to air and dust emissions, including a communication and notification plan.
96	**Tunnel Construction Noise Management Plan for Burnaby Mountain** Trans Mountain must file with the NEB for approval, **at least 90 days prior to commencing construction of the Burnaby Mountain tunnel**, a Tunnel Construction Noise Management Plan for Burnaby Mountain that includes: a) proposed hours of daytime and nighttime work;

	b) baseline daytime and nighttime ambient sound levels at noise sensitive areas within 500 metres of the entry and exit sites for the tunnel; c) predicted noise levels at the most affected residences and businesses caused by tunnel construction without mitigation; d) proposed noise mitigation measures, including all technologically and economically feasible mitigation measures; e) predicted noise levels at the most affected residences and businesses with mitigation measures implemented, including noise contour map(s) showing the potentially affected residences and businesses; f) a tunnel construction noise monitoring program, including locations, methodology, and schedule; g) criteria that will be used to determine when tunnel construction would be shut down due to noise; h) a summary of consultation with appropriate government authorities and potentially affected residents and businesses regarding tunnel construction noise, including any concerns raised and how Trans Mountain has or will address those concerns; i) a description of Trans Mountain's program for addressing complaints received during tunnel construction with respect to noise, including a communication and notification plan; and j) a contingency plan that contains proposed mitigation measures for addressing noise complaints, which may include the temporary relocation of specific residents.
97	**Groundwater Seepage Management Plan** Trans Mountain must file with the NEB for approval, **at least 45 days prior to commencing construction of the Burnaby Mountain tunnel**, a Groundwater Seepage Management Plan for tunnel construction. The plan must include: a) an estimate quantifying the anticipated average and maximum amounts of groundwater seepage into the tunnel, and an assessment of any potential impacts on the water table; b) a discussion of Trans Mountain's proposed pumping, treatment, and disposal options; and c) a description of measures that Trans Mountain would implement during the operations phase in the event that there is groundwater seepage into the tunnel.
98	**Authorizations under paragraph 35(2)(b) of the *Fisheries Act* and *Species at Risk Act* permits – pipeline** a) For those watercourse crossings that will require Authorization under paragraph 35(2)(b) of the *Fisheries Act*, Trans Mountain must file with the NEB, **at least 5 months prior to commencing their construction,** the following: i) A draft *Application Form for Paragraph 35(2)(b) Fisheries Act Authorization*; ii) A draft application package for authorization that includes all the information detailed in Fisheries and Oceans Canada's *Applicant's Guide to Submitting an Application for Authorization under Paragraph 35(2)(*b*) of the Fisheries Act*, including (as per the guide): • contact information; • a description of the proposed work, undertaking, or activity; • detailed design; • the timeline;

	• location; • a description of fish and fish habitat (aquatic environment); • a description of effects on fish and fish habitat; • measures and standards to avoid or mitigate serious harm to fish; • a description of the monitoring measures; • residual serious harm to fish after implementing avoidance and mitigation measures and standards; • an offsetting plan; and • proof of a letter of credit. iii) A summary of Trans Mountain's consultation with appropriate government authorities and any potentially affected Aboriginal groups and stakeholders regarding the works proposed to be authorized, as well as any offsetting measures proposed. This summary must include any issues or concerns raised regarding these works and how Trans Mountain has addressed or responded to them. b) Trans Mountain must file with the NEB, **at least 10 days prior to commencing construction of each of the watercourse crossings identified in a),** a copy of the *Fisheries Act* paragraph 35(2)(b) Authorization and any *Species at Risk Act* permits issued by Fisheries and Oceans Canada.
99	**Nooksack Dace and Salish Sucker Management Plan** Trans Mountain must construct all watercourse crossings located within nooksack dace and salish sucker critical habitat using trenchless crossing methods. For those watercourse crossings where a trenchless crossing method is not feasible, Trans Mountain must file with the NEB, **at least 90 days prior to commencing their construction,** the following: a) A summary of the feasibility studies completed and a discussion of the risks and constraints associated with the trenchless watercourse crossing. b) Any updates to the primary and contingency watercourse crossing methods proposed in the Project application and the rationale for not employing a trenchless method. c) Any site-specific mitigation and a commitment to include it in the relevant Environmental Protection Plans. d) A discussion on how the site-specific mitigation relates to Fisheries and Oceans Canada Recovery Strategies and Action Plans. e) Details on any monitoring to be undertaken and a commitment to include any results in the post-construction environmental monitoring reports filed under Condition No. 140.
100	**Watercourse crossing inventory** Trans Mountain must file with the NEB, **at least 60 days prior to commencing <u>any</u> watercourse crossing construction activities,** the following: a) An updated inventory of all watercourses to be crossed, including, for each crossing: i) the name of the watercourse being crossed and an identifier for the crossing; ii) the location of the crossing; iii) the primary and contingency crossing methods;

	iv) planned construction timing; v) information on the presence of fish and fish habitat; vi) the fisheries timing window of least risk; and vii) an indication of whether all of Fisheries and Oceans Canada's applicable "Measures to Avoid Causing Harm to Fish and Fish Habitat" will be implemented. b) Detailed generic design drawings of trenchless, dry open-cut, frozen open-cut, and isolation crossings of various watercourse types. c) For each non-trenchless watercourse crossing that will be conducted outside of the fisheries timing window of least risk (both primary and contingency methods), or for any crossings that will be conducted in non-isolated flowing water conditions, please provide: i) detailed crossing-specific design drawings; ii) photographs of the crossing location; iii) an indication of the fish species that may be present and if fish spawning is likely to occur within the immediate area; iv) site-specific mitigation and habitat enhancement measures to be used to minimize impacts to fish; v) any potential residual effects; vi) proposed reclamation measures; and vii) a discussion of the potential impacts to local fisheries resources within the immediate area as a result of the crossing's construction. d) A description of how Trans Mountain has taken available and applicable Aboriginal traditional land use and traditional ecological knowledge into consideration in developing the watercourse crossing designs.
101	**Contingency watercourse crossings** a) For any watercourse crossing where Trans Mountain will employ a contingency crossing method instead of its proposed primary method, and where that contingency will likely require a *Fisheries Act* paragraph 35(2)(b) Authorization, Trans Mountain must file with the NEB, **at least 60 days prior to commencing the contingency crossing,** the following: i) Confirmation of the contingency watercourse crossing method that will be employed, the rationale for employing that method, and a summary of the differences between the primary and contingency watercourse crossing methods. ii) A draft application package for authorization that includes all the information detailed in the Fisheries and Oceans Canada's *Applicant's Guide to Submitting an Application for Authorization under Paragraph 35(2)(b) of the Fisheries Act*. iii) A summary of Trans Mountain's consultation with appropriate government authorities and any potentially affected Aboriginal groups and stakeholders regarding the works proposed to be authorized, as well as any offsetting measures proposed. This summary must include any issues or concerns raised regarding these works and how Trans Mountain has addressed or responded to them.

	b) For all other instances where a contingency crossing method will be employed, Trans Mountain must file with the NEB a notification, **at least 15 days prior to commencing the contingency crossing**, that the contingency method will be employed. With this notification, Trans Mountain must explain why the contingency method is being employed and provide a summary of the differences between the primary and contingency watercourse crossing methods.
102	**Updated engineering alignment sheets and drawings** Trans Mountain must file with the NEB, **at least 90 days prior to commencing pipe installation**, updated engineering alignment sheets and drawings and, **as they become available and prior to their implementation**, any modifications to those sheets and drawings.
103	**NDE of final tie-in welds** Trans Mountain must delay NDE of final tie-in welds and any repairs to them **for 48 hours following weld completion**. Trans Mountain must include this requirement in the NDE specification of its Joining Program required by Condition No. 12.
104	**Pressure testing** a) Trans Mountain must pressure test the pipelines and Project facilities with a liquid medium. b) Trans Mountain must file with the NEB for approval, **at least 90 days prior to commencing pressure testing**, a Pressure Testing Program that demonstrates compliance with applicable codes, standards, and regulatory requirements.
105	**Hydrostatic Testing Plan** Trans Mountain must file with the NEB, **at least 60 days prior to pressure testing any Project component**, a Hydrostatic Testing Plan for the Project that includes: a) the locations of all water withdrawal and discharge sites; b) a discussion of any clearing activities or any other associated works, if required, that will allow for the transportation of the hydrostatic test water; c) water withdrawal rates; d) water withdrawal volumes; e) the flow rate/volume of water at the withdrawal sites; and f) site-specific mitigation measures to be implemented at the water withdrawal and discharge sites or at any other locations required to allow for the transportation of hydrostatic test water.
106	**Post-construction greenhouse gas (GHG) assessment report** Trans Mountain must file with the NEB for approval, **prior to applying for leave to open**, an updated GHG assessment report specific to the Project. The report must include: a) the methodology used for the assessment, including the sources of GHG emissions, assumptions, and methods of estimation; b) the total direct GHG emissions generated from Project construction, including land-clearing; c) a breakdown of direct GHG emissions generated by the construction of individual Project components (pipeline, pump stations, and Westridge marine terminal) and by land-clearing activities; and

	d) a comparison and discussion of the direct GHG emissions calculated in b) with the predicted emissions in Trans Mountain's application and subsequent submissions.
107	**GHG Emissions Offset Plan – Project construction** Trans Mountain must file with the NEB for approval, **prior to applying for leave to open,** a plan for providing offsets for all direct GHG emissions generated from Project construction, as determined in Condition No. 106. The plan must include: a) a list and discussion of all possible offset options considered; b) the criteria against which each option was assessed for viability; c) a description of the offset option(s) selected for direct GHG emissions generated from Project construction, and the rationale for selecting the option(s); d) confirmation that the selected offset option is registered under the approved/quantification protocols and has been verified by an accredited "verification body[7];" e) a schedule indicating when the selected offset options(s) will be initiated; and f) an accounting of offsets confirming no net GHG emissions from Project construction.
108	**Financial Assurances Plan – operations phase** a) Trans Mountain must file with the NEB for approval, **at least 6 months prior to applying for leave to open,** a Financial Assurances Plan that includes details of the financial resources and secured sources of funds that will be capable of covering the costs of liabilities for, without limitation, cleanup, remediation, and other damages caused by the Project facilities during the operations phase.[8] These costs may arise from, among other things, potential accidents, malfunctions, and failures during the Project operations phase, including all spills originating from the pipeline and the Westridge Marine Terminal, up to and including spills of a quantity that have the potential of being a catastrophic event. The Financial Assurances Plan must be signed by an officer of the company, verifying that it is accurate, complete, and, at a minimum, meets the criteria and coverage levels described below: i) Criteria for financial assurance instruments and plan: • Any letter of credit that forms part of the Financial Assurances Plan must be unconditional and irrevocable, segregated from Trans Mountain's day-to-day business activities, and be dedicated to providing funds to cover the costs of liabilities for, without limitation, cleanup, remediation, and other damages. • Third party liability insurance must be current, and broad, respecting the scope of environmental damages covered by the policy (i.e., only exceptional/non-standard perils, taking into account the Project's nature and scope, would be excluded from coverage). Such insurance must be structured on a multi-year basis, recognizing potential loss of income by persons sustaining damage caused by Trans Mountain, over a reasonable number of years after the event.

[7] In these conditions, "verification body" means a competent and independent person, or persons, with responsibility for performing and reporting on the verification process (as defined by ISO 14064).

[8] In the context of this condition, "operations phase" refers to the period after the Project receives leave to open approval and prior to it being fully abandoned.

- A portion of cash reserves or a portion of future cash flows of the Project may be included as instruments in the Financial Assurances Plan, provided they are secured by a commitment letter from a senior officer of the company confirming that the funds will be dedicated to the Financial Assurances Plan without restrictions for the period specified by the officer.
- Immediately after a catastrophic event, sales of Project assets used for transporting hydrocarbons will not be eligible as financial assurance instruments in the Financial Assurances Plan unless Trans Mountain intends to abandon the facilities rather than continuing to use them in operating the Project.
- Parental and other third party guarantors must be registered within a Canadian jurisdiction and must have financial strength that is demonstrated in balance sheet values and ratios and credit ratings. For example, total assets less total liabilities of the guarantor should be several multiples of the liability assumed in the Trans Mountain guarantee.

ii) Financial assurance components and coverage levels:

Trans Mountain's Financial Assurances Plan must provide a total coverage of $1.1 billion[9] for the costs of liabilities for, without limitation, cleanup, remediation, and other damages caused by the Project during the operations phase. The plan should include the following components and minimum coverage levels:

- Ready cash: Trans Mountain must have unfettered access to at least $100 million to cover costs, including compensation to third parties for losses and damages in the near term, while insurance claims are being processed. Once used, this source of cash must be replenished immediately to cover the costs of a potential future spill. This can be in the form of a letter of credit, surety bond or other form acceptable to the NEB.
- Core coverage: Trans Mountain must put in effect and maintain current at all times a core financial coverage of at least $1 billion that includes third party liability insurance and other financial assurance instruments that comply with the criteria. Core coverage must be a portfolio approach with multiple financial instruments used and may not be composed of a single financial instrument (e.g., only third party liability insurance). At least one component of core coverage must be funds that are readily accessible to Trans Mountain (e.g., cash reserves held by the general partner and not distributed to the limited partners).

Below are some illustrative financial and insurance instruments that could be potential candidates for the Financial Assurances Plan:

- Irrevocable, unfettered letter of credit.
- Secured line of credit.
- Cash reserves held by the general partner and not distributed to the limited partners (and verifiable on Trans Mountain Pipelines Limited Partnership's balance sheet).
- Internal cash flow, committed by Trans Mountain to financial assurances.
- Industry pooled fund.
- Third party liability insurance with exclusions for only exceptional/non-standard perils.
- No fault third party liability insurance.
- Parental and other third party guarantees provided by parties demonstrating financial strength through balance sheets and credit ratings.

[9] The NEB's basis for any final coverage level will be described in its report to Governor in Council.

	• Other instruments developed by Trans Mountain and the insurance and financial markets. b) Trans Mountain must file the following with the NEB: i) **At least 6 months prior to applying for leave to open**, a report from an appropriate third party that has assessed the Financial Assurances Plan and its key components against the criteria and actual experiences of industry damage claims. The report must summarize the key features of each financial and insurance instrument proposed for inclusion in the Financial Assurances Plan. ii) **At least 90 days prior to applying for leave to open**, a supplement to the report described in b)i) that provides verification of any third party liability insurance coverage, a copy of the insurance certificate, and a summary of the insurance policy's key features. This summary must include: limits on insurance coverage, deductible amounts, the risks and perils and properties covered by the insurance policy, the exclusions from coverage, Trans Mountain's obligations, effective dates, and names of insurers and reinsurers. iii) **With its leave to open application**, a report describing the steps it took to eliminate any deficiencies in its Financial Assurances Plan that were identified in the third party report in b)i) and the NEB's subsequent review. iv) **On or before 31 January of each year after its leave to open application is approved**, a letter signed by an officer of the company verifying that all components of the Financial Assurances Plan remain complete and as the NEB approved. v) **At least 60 days prior to any intended change(s) to the Financial Assurances Plan during the Projects operations phase**, a letter, for approval, detailing the intended change(s) and how the change(s) provides the same or greater level of protection. vi) **Within 30 days after accessing any component of the Financial Assurances Plan**, a report detailing the component accessed, the reason for accessing it, and Trans Mountain's plan to ensure that it continues to meet the requirements of its NEB-approved Financial Assurances Plan.
109	**Terminal fire protection and firefighting systems** a) Trans Mountain must file with the NEB for approval, **at least 90 days prior to applying for leave to open**, a report prepared by an independent body confirming the adequacy of the proposed fire protection and firefighting systems implemented or planned to be implemented at the Edmonton Terminal West Tank Area, the Burnaby Terminal, the Sumas Terminal, and the Westridge Marine Terminal. The report must demonstrate that the resources and firefighting systems are capable of suppressing fires associated with all scenarios identified in the above-mentioned terminals' final risk assessments (required by Condition No. 112). b) Trans Mountain must file with the NEB for approval, **at least 60 days prior to beginning the assessment leading to the report in a),** the name and qualifications of the proposed independent body that will prepare the report in a).
110	**Offset Measures Plan for residual effects on caribou habitat** Trans Mountain must file with the NEB for approval, in accordance with the timelines below, an Offset Measures Plan for each affected caribou range, the goal of which is to offset all unavoidable and residual direct and indirect Project-related effects on caribou habitat, after taking into account the implementation of Trans Mountain's Post-Construction Environmental Monitoring Program and CHRP (see Condition No. 21) measures.

	a) A preliminary version, to be filed **at least 90 days prior to applying for leave to open**, with the plan's criteria and measurable goals and that includes: i) an initial quantification of the area of caribou habitat directly and indirectly disturbed; ii) a list of the potential offset measures available; iii) each potential offset measure's appropriate offset ratio, based on consultation with expert federal and provincial authorities and on a review of the literature on conservation offsets; iv) each potential offset measure's expected effectiveness; v) each potential offset measure's relative qualitative and quantitative value toward achieving the offset; and vi) a conceptual decision-making tree(s) or decision framework(s) that will be used to select which specific potential offset measures and accompanying offset ratios will be used under what circumstances. b) A final version, to be filed **on or before 31 January after the second complete growing season after commencing operations**, including: i) the preliminary Offset Measures Plan, with any updates identified in a revision log that includes the rationale for any changes; ii) a detailed decision-making tree(s) or process that will be used to select which specific potential offset measures and accompanying offset ratios will be used under what circumstances; iii) a tabular list of the potential offset measures and appropriate offset ratios to be implemented or already underway, including a description of site-specific details and maps showing the locations; iv) a schedule indicating when potential offset measures will be initiated and their estimated completion dates; v) either an assessment of the potential offset measures' effectiveness and their value in offsetting residual effects, or a plan for completing an assessment of the potential offset measures' effectiveness and value; and vi) an update on the restoration success to support offset measure decisions. Both the preliminary and final versions of the plan must also include the following: 1) A summary of Trans Mountain's consultation with appropriate government authorities and any potentially affected Aboriginal groups regarding the Offset Measures Plan. This summary must include any issues or concerns raised regarding the plan and how Trans Mountain has addressed or responded to them. 2) A description of how Trans Mountain has taken any available and applicable Aboriginal traditional land use and traditional ecological knowledge studies into consideration in developing the plan. 3) Evidence of Trans Mountain's consideration of any updates to the applicable Recovery Strategy, as well as to range boundaries and identified critical habitat made prior and up to the date on which leave to open is granted.
111	**Pipeline risk assessment** Trans Mountain must file with the NEB**, at least 90 days prior to applying for leave to open**, the following information for Line 1, Line 2, and the new delivery pipelines: a) The results of the updated risk assessment in a tabular format similar to that provided in its Line 2 Consequence Report (Filing A3Z8G5). The risk assessment tables must also include:

	i) any updates to High Consequence Areas; ii) the risk mitigation method(s); iii) the mitigated Environmental Risk Scores; iv) current maximum outflow volumes; and v) the outflow volumes after mitigation. b) A detailed description of the adequacy of the following from its Line 2 Consequence Report (Filing A3Z8G5): i) the coefficients used in the scoring system equations; and ii) the values from the scoring tables. c) A detailed comparison between the Line 1 and Line 2 risk assessment approaches.
112	**Final terminal risk assessments** Trans Mountain must file with the NEB for approval, **at least 90 days prior to applying for leave to open**, final risk assessments for the Edmonton Terminal West Tank Area, the Sumas Terminal, the Burnaby Terminal, and the Westridge Marine Terminal, including all implemented mitigation measures. Trans Mountain must demonstrate in each risk assessment that mitigation measures will reduce the risks to levels that are As Low As Reasonably Practicable (ALARP) while complying with the Major Industrial Accidents Council of Canada (MIACC) criteria for risk acceptability. The Edmonton Terminal West Tank Area, Sumas Terminal, and Burnaby Terminal must include the elements listed in Condition No. 29.
113	**Slack flow conditions** Trans Mountain must file with the NEB, **at least 60 days prior to applying for leave to open**, for both Line 1 and Line 2, the following: a) A list of locations having potential for slack flow when each of the pipelines is operated at 100 per cent of its maximum operating pressure (MOP), 80 per cent of its MOP, and 50 per cent of its MOP. b) A description of the following regarding detecting and preventing slack flow conditions: i) Operational measures on Line 1 and Line 2. ii) Design measures on Line 2.
114	**Marine shipping-related commitments** Trans Mountain must file with the NEB, **at least 90 days prior to loading the first tanker at the Westridge Marine Terminal with oil transported by the Project**, confirmation, signed by an officer of the company, that it has implemented or caused to be implemented the following commitments related to oil tanker traffic and enhanced oil spill response: a) Enhanced tug escort through developing a tug matrix and including it as part of Trans Mountain's Tanker Acceptance Standard. The tug matrix would prescribe minimum tug capabilities required to escort tankers between the Westridge Marine Terminal and the limit of Canada's territorial sea, as described in Section 5.3.2.1 of Volume 8A of Trans Mountain's Project application (Filing A3S4Y4), Trans Mountain's response to NEB Information Request No. 1.59 (Filing A60392), and Trans Mountain's response to the NEB's Information Request regarding the TERMPOL report (Filing A65273).

	b) An enhanced marine oil spill response regime capable of delivering 20,000 tonnes of capacity within 36 hours of notification, with dedicated resources staged within the study area, as described in Volume 8A of Trans Mountain's application and Trans Mountain's response to NEB Information Request No. 1.64 (Filing A3W9H8). c) Inclusion of any future guidelines, standards, or best management practices designed to reduce underwater noise from commercial vessels within Trans Mountain's Tanker Acceptance Standard, as amended from time to time, and as described in Trans Mountain's response to NEB Information Request No. 2.065(a) (Filing A3Z4T9). Trans Mountain must also include and report on the above-noted marine shipping-related commitments in its commitments tracking table (required by Condition No. 8).
115	**Updated Tanker Acceptance Standard** Trans Mountain must file with the NEB, **at least 90 days prior to loading the first tanker at the Westridge Marine Terminal with oil transported by the Project, and on or before 31 January of each of the first five years after commencing operations,** an updated Tanker Acceptance Standard and a summary of any revisions made to the Standard.
116	**Pre-operations full-scale emergency response exercises** a) **Prior to commencing operations**, Trans Mountain must complete full-scale exercises for the following scenarios: i) a 160-cubic-metre diluted bitumen release into Burrard Inlet as a result of a release from the Westridge Marine Terminal; and ii) a credible worst case release volume at the Burnaby Tank Farm. b) Trans Mountain must notify the NEB, **at least 45 days prior to the date of each exercise in a)**, of: i) the exercise's date(s) and location(s); ii) the exercise's objectives; iii) the participants in the exercise; and iv) the scenario for the exercise. c) Trans Mountain must file with the NEB, **within 60 days after completing each exercise in a)**, a report on the exercise that includes: i) the results of the completed exercise; ii) areas for improvement; iii) steps to be taken to correct deficiencies; and iv) confirmation that an independent third party has evaluated and assessed the emergency response exercises and that Trans Mountain will consider the comments generated for future exercises.
117	**Reporting on improvements to Trans Mountain's Emergency Management Program** Trans Mountain must file with the NEB, **at least 2 years, 1 year, and 6 months prior to commencing operations**, detailed updates for the company's review of its Emergency Management Program referenced in Condition No. 122. This filing must include: a) A summary of work undertaken to-date; b) The approximate timing for completing remaining work; and

	c) A summary of interested parties that were consulted and how their comments and feedback were considered in improving the program.
118	**Firefighting capacity at terminals** Trans Mountain must file with the NEB, **at least 1 year prior to commencing operations,** information regarding developing appropriate firefighting capacity for a safe, timely, and effective response to credible worst case for a fire at the Westridge Marine Terminal and at the Edmonton, Sumas, and Burnaby Terminals. This information must include: a) An assessment of resources and equipment; and b) A Firefighting Capacity Framework, informed by the assessment in a), that includes: i) a summary of Trans Mountain's consultation with appropriate municipal authorities and first responders that includes any issues or concerns raised regarding each municipality's respective firefighting capacity and how Trans Mountain has addressed or responded to them; and ii) a timeline for completing key activities and milestones, including the report required by Condition No. 112.
119	**Emergency Preparedness and Response Exercise and Training Program** Trans Mountain must file with the NEB, **at least 1 year prior to commencing operations**, an Emergency Preparedness and Response Exercise and Training Program for the pipeline; the Edmonton, Sumas, and Burnaby Terminals; and the Westridge Marine Terminal. The program's objective is to demonstrate the continual improvement of responder competencies (including control centre personnel) at all levels of the company to prepare for, respond to, recover from, and mitigate the potential effects of emergencies of any type, including tank fires and earthquakes. The program must include the following: a) A defined scope, other objectives in addition to those noted above, and program targets that address responder turn-over and ensure responders' ongoing training and practice. b) A list of mandatory courses for responders. c) A discussion of how Trans Mountain will train its personnel to respond to all hydrocarbon spill scenarios in various seasons, including releases of hydrocarbons in mountain regions during winter conditions, into ice covered watercourses, and into watercourses under varying flow conditions. d) A description of, and schedule for, all emergency response exercises (full-scale, tabletop, drills, functional) that Trans Mountain will conduct prior to operations to test a variety of scenarios. e) A plan, including rationales, for determining the schedule and frequency of all emergency response exercises (full-scale, tabletop, drills, functional) to test a variety of scenarios during the Project's operational life. f) A discussion of how emergency response exercises will meet the objectives of testing Trans Mountain's: i) emergency response procedures; ii) company personnel training; iii) communications systems; iv) response equipment; v) safety procedures; and vi) the effectiveness of its liaison and continuing education programs.

	g) A learnings implementation plan for exercises that considers how Trans Mountain will update and amend its Emergency Response Plans and related documents following exercises. The learnings implementation plan must consider three main purposes: i) To validate plans. ii) To develop responder competencies (including control centre personnel) and provide them with the opportunity to carry out and understand their roles in emergency response. iii) To test Project-specific and well-established emergency response procedures. h) A plan for addressing the training requirements contained within the *National Energy Board Onshore Pipeline Regulations*. i) Confirmation that an independent third party has reviewed and assessed the Emergency Preparedness and Response Exercise and Training Program and that Trans Mountain has considered and incorporated the comments generated by that review and assessment into the program.
120	**Notification and reporting on emergency response exercises** For any tabletop, functional, and full-scale emergency response exercises undertaken as part of its Emergency Preparedness and Response Exercise and Training Program required by Condition No. 119: a) Trans Mountain must notify the NEB, **at least 45 days prior to the date of each exercise**, of: i) the exercise's date and location(s); ii) the exercise's objectives; iii) the participants in the exercise; and iv) the scenario for the exercise. b) Trans Mountain must file with the NEB, **within 60 days after completing each exercise**, a report on the exercise that includes: i) the results of the completed exercise; ii) areas for improvement; and iii) steps to be taken to correct deficiencies.
121	**Evacuation Plans** a) Trans Mountain must file with the NEB, **at least 6 months prior to commencing operations**, an Evacuation Plan for people present in areas potentially affected by an incident at each of Trans Mountain's Edmonton, Sumas, and Burnaby tank facilities. Each Evacuation Plan must, at a minimum: i) describe how areas for evacuation were determined; ii) describe the circumstances under which evacuation may be required, as well as the respective methods and procedures for public notification; iii) describe specific evacuation routes, methods, and destinations; iv) be prepared in consultation with local municipalities and first responders; v) state how input from local municipalities and first responders was considered in preparing the plan; vi) define the roles, responsibilities, and jurisdictional authority all parties involved in implementing an evacuation; and

	vii) confirm that an independent third party has reviewed and assessed the plan and that Trans Mountain has considered and incorporated comments generated by the review and assessment into the plan. b) Trans Mountain must include with its Evacuation Plan for the Burnaby tank facilities a plan specific to Simon Fraser University that includes the requirements in a)i) to vii) above.
122	**Implementing improvements to Trans Mountain's Emergency Management Program** Trans Mountain must file with the NEB, **at least 6 months prior to commencing operations**, a detailed summary of its review of its Emergency Response Plans and equipment (including its availability), as referenced in Volume 7, Section 4.8.2 of its Project application (Filing A3S4V5). This filing must include a description of changes made to Trans Mountain's Emergency Management Program, as required under the *National Energy Board Onshore Pipeline Regulations*, as a result of the review, including changes to: a) The pipeline Emergency Response Plan; b) Facility Emergency Response Plans for the Edmonton, Sumas, and Burnaby Terminals, as well as the Westridge Marine Terminal; and c) An updated list of all related and accompanying site-specific plans and documents, such as control point mapping and tactical plans for high consequence areas.
123	**Emergency Response Plan for the pipeline and the Edmonton, Sumas, and Burnaby Terminals** Trans Mountain must file with the NEB, **at least 6 months prior to commencing operations**, an Emergency Response Plan for the pipeline to verify compliance with its commitments regarding emergency preparedness and response. The plan must demonstrate Trans Mountain's ability to prepare for, respond to, recover from, and mitigate the potential effects of emergencies of any type and in any geographic region or season and must include the following: a) The following relevant emergency preparedness and response documents: i) an emergency response plan to include the pipeline expansion. ii) updated facility response plans for the Edmonton, Sumas, and Burnaby Terminals. iii) all related and accompanying site-specific plans and documents, such as control point mapping, tactical plans, volunteer management plans, and fire safety plans. b) An emergency response and preparedness table for the pipeline (including facilities) indicating which plans will be referred to in an emergency response for each 10-kilometre-long pipeline segment. For each pipeline segment, the table must also identify, at a minimum: i) high consequence areas, including environmentally sensitive areas; ii) potentially affected persons or groups; iii) available access to the right-of-way and high consequence areas; iv) nearest control point(s); v) nearest available equipment cache(s); vi) response times for deployment of equipment and Trans Mountain personnel, mutual aid personnel, and third party contractors; and vii) geological, meteorological, and geographical hazards (e.g., snow avalanche, mud slides, rock slides, and steep slopes). c) Maps depicting the information identified in b).

	d) A description of the models used in response planning, including oil trajectory, fate and behavior, and air dispersion models. e) A discussion of how the results of research initiatives, such as the Scientific Advisory Committee work noted in Trans Mountain's response to NEB Information Request No. 1.63 (Filing A3W9H8) and other research noted during the OH-001-2014 proceeding, have been considered and incorporated into Trans Mountain's emergency response planning. f) A discussion of how the plan conforms to the requirements contained within the *National Energy Board Onshore Pipeline Regulations*. g) A discussion of how the plan considers, and would allow coordination with, relevant provincial and municipal disaster response plans. h) Confirmation that an independent third party has reviewed and assessed the Emergency Response Plan and that Trans Mountain has considered and incorporated the comments generated by the review and assessment into the plan.
124	**Emergency Response Plan for the Westridge Marine Terminal** Trans Mountain must file with the NEB, **at least 6 months prior to commencing operations**, an Emergency Response Plan for the Westridge Marine Terminal to verify compliance with its commitments regarding emergency preparedness and response. The plan must demonstrate geographic familiarity with the area and the response needed to prepare for, respond to, recover from, and mitigate the potential effects of emergencies of any type and must include: a) All related and accompanying site-specific plans and documents, such as geographic response plans, geographic response strategies, volunteer management plans, and fire safety plans; b) A list of high consequence areas, including environmentally sensitive areas; c) A list of potentially affected persons or groups; d) Nearest available equipment cache(s); e) Response times for equipment and personnel to the water and high consequence areas; f) Maps depicting the information identified in a) to e); g) A description of models used in response planning, including oil trajectory, fate and behavior, and air dispersion models; h) A discussion of how the results of research initiatives such as the Scientific Advisory Committee work noted in Trans Mountain's response to NEB Information Request No. 1.63 (Filing A3W9H8) and other oil fate and behavior research noted during the OH-001-2014 proceeding, have been considered and incorporated into Trans Mountain's emergency response planning; i) A discussion of how the plan conforms to the requirements contained within the *National Energy Board Onshore Pipeline Regulations*; j) A discussion of how the plan considers, and would allow coordination with, relevant provincial and municipal disaster response plans; and k) Confirmation that an independent third party has reviewed and assessed the Emergency Response Plans and that Trans Mountain has considered and incorporated comments generated by the review and assessment into the plan.

125	**SCADA and leak detection system design** Trans Mountain must file with the NEB, **at least 90 days prior to commencing operations**, a report describing the final design of the expanded Trans Mountain Pipeline System's SCADA and leak detection systems. This report must include: a) Trans Mountain's plan to validate the performance of the leak detection system and alarms within the first year of Project operations; b) an update on the status of alternate leak detection technologies that Trans Mountain is considering and any decisions made about their implementation for the Project; c) a description of how Trans Mountain's revised procedures have introduced a rule directing the Control Center Operator to perform a controlled shutdown of the pipeline when a leak cannot be ruled out in a given time period after initial indication; and d) Trans Mountain's plan for upgrading the existing measurement instrumentation that supports the acquisition of input data to improve the performance of leak detection capabilities on Line 1.
126	**Marine Public Outreach Program** Trans Mountain must file with the NEB, **at least 90 days prior to commencing operations**, a report describing completed activities and observed outcomes of Trans Mountain's Marine Public Outreach Program, and any further planned activities for this program. The report must also include: a) a summary of Trans Mountain's consultation with the Pacific Pilotage Authority regarding the scope of work and activities to be undertaken through the program, including: i) the resources and information that Trans Mountain has provided or will provide to the Pacific Pilotage Authority to addresses the impacts of increased Project-related tanker traffic in the Salish Sea; ii) the activities or actions that Trans Mountain will undertake to communicate applicable information on Project-related vessel timing and scheduling to fishing industry organizations, Aboriginal groups, and other affected stakeholders, in conjunction with the Pacific Pilotage Authority's activities; and iii) any issues or concerns raised by the Pacific Pilotage Authority and how Trans Mountain has or will address them; b) a description of the actions or activities that Trans Mountain has or will undertake to incorporate into its own public engagement efforts the activities of the Pacific Pilotage Authority regarding enhanced safe boating practice education for small vessel operators; c) a plan and schedule for all ongoing and future activities and actions under the program, including anticipated completion dates; and d) a summary of Trans Mountain's consultation with Transport Canada, the Chamber of Shipping for British Columbia, Western Canada Marine Response Corporation's Fisherman's Oil Spill Emergency Team program members, commercial and tourism associations, other appropriate stakeholders, and potentially affected Aboriginal groups regarding the scope of work to be undertaken, any issues or concerns raised, and how Trans Mountain has or will address them.
127	**Groundwater Monitoring Program** Trans Mountain must file with the NEB for approval, **at least 90 days prior to commencing operations**, a Groundwater Monitoring Program that pertains to all facilities (pump stations, tank terminals, and Westridge Marine Terminal). For each facility, the program must include, at a minimum:

	a) locations of groundwater monitoring wells, their depths, the rationales for well locations (including how groundwater flow direction was considered [indicate if there is more than one flow regime]), groundwater flow velocity, parameters to be monitored, frequency of monitoring, applicable regulatory criteria for comparing monitoring results, and a process outlining what steps will be followed should monitoring results indicate a negative change in groundwater quality; b) if there is an existing Groundwater Monitoring Program for the facility, a description of any changes required to meet this condition; and c) a summary of consultation with appropriate government authorities, landowners, and any potentially affected Aboriginal groups, including any issues or concerns raised with respect to the Groundwater Monitoring Program and how Trans Mountain has addressed or responded to them.
128	**Marine Mammal Protection Program** Trans Mountain must file with the NEB, **at least 60 days prior to commencing operations,** a Marine Mammal Protection Program that focuses on effects from the operations of Project-related marine vessels. The program must include: a) the goals and objectives of the program, including a discussion on how they align with the applicable Fisheries and Oceans Recovery Strategies and Action Plans; b) a summary of the issues related to marine mammals from Project-related marine vessels; c) a summary of the initiatives that Trans Mountain has supported or undertaken to-date, including the goals of each initiative and how they relate to the objectives of the program; address d) a discussion on the outcomes of the initiatives in c), and how these outcomes have met the objectives of the program; e) a discussion on how the relevant outcomes of the initiatives in c) are being or will be applied to Project-related marine vessels. f) any other initiatives that Trans Mountain intends to undertake or support in the future that are relevant to the program; g) a summary of consultation with appropriate government authorities any potentially affected stakeholders and Aboriginal groups; and h) a proposed schedule that outlines when Trans Mountain will file updated versions of the Marine Mammal Protection Program with the NEB and other appropriate regulatory bodies.
129	**Confirmation of firefighting capacity at terminals** Trans Mountain must file with the NEB, **at least 30 days prior to commencing operations**, confirmation that appropriate firefighting capacity, in accordance with Condition No. 118, is in place.
130	**Tank roof design for tanks at the Edmonton Terminal** Trans Mountain must install steel pontoon internal floating roofs and fixed roofs with odour control systems on all of its five proposed tanks at the Edmonton Terminal. Trans Mountain must file with the NEB, **30 days prior to commencing operations,** a letter signed by an officer of the company that confirms that these roofs were installed.

131	**Control system, SCADA, instruments, and communication** Trans Mountain must file with the NEB, **at least 60 days prior to completing commissioning activities**, the block diagrams of the control system for its proposed pipeline that include the interconnection between various devices and components such as: • programmable logic controllers (PLCs); • flow meters, and pressure and temperature measuring devices; • critical protective elements; • emergency shut-down systems (ESD); • variable frequency drives (VFDs); • control valves; • block valves; and • local human machine interface (HMI). The block diagrams must demonstrate the primary and backup communication systems, supervisory and control layers of software, firewalls, and how all elements are integrated with the SCADA system.
Conditions with initial filings due after commencing operations	
132	**Post-construction noise surveys** Trans Mountain must file with the NEB, **within 90 days after commencing operations,** the results of post-construction noise surveys conducted at the Sumas and Burnaby Terminals and at the Westridge Marine Terminal, demonstrating compliance with the British Columbia Oil and Gas Commission's *British Columbia Noise Control Best Practices Guideline (2009)*, and any further mitigation that Trans Mountain will undertake to achieve compliance.
133	**Baseline inspections** a) Trans Mountain must conduct the following pipeline inspections on Line 2 and the new delivery pipeline, at the times indicated: i) a high-resolution in-line caliper inspection (i.e., a GEOPIG™ inspection) **within 6 months after commencing operations** to establish accurate pipeline position and to detect pipe deformations; ii) an in-line ultrasonic crack detection inspection **within 2 years after commencing operations**; iii) an in-line corrosion magnetic flux leakage inspection in both the circumferential and longitudinal directions **within 2 years after commencing operations**; iv) an in-line ultrasonic wall measurement inspection **within 2 years after commencing operations;** and v) an above-ground coating survey **within 2 years after commencing operations**. b) Trans Mountain must file with the NEB, **within 6 months after completing each inspection in a)**, a report that includes a summary of the inspection results, the proposed re-inspection interval, and mitigation measures for the anomalies detected through any of the inspections, if required.
134	**Natural hazard assessment** Trans Mountain must file with the NEB, **within 1 year after commencing operations:** a) the results of the baseline natural hazard assessment for the new Line 2 and delivery pipeline segments, the reactivated Line 1 pipeline segments, and related facilities; and

	b) confirmation that the natural hazard assessment will be updated no less than every five years, and that the assessment will be integrated into the existing Natural Hazard Management Program for the Trans Mountain Pipeline system.
135	**Pipeline Geographic Information System (radio) data** Trans Mountain must file with the NEB, **within 1 year after commencing operations**, Geographic Information System data in the form of an Esri® shape file that contains pipeline segment centre lines, where each segment has a unique outside diameter, wall thickness, MOP, external coating, field-applied girth weld coating, and pipe manufacturing specification. If the above values of the pipeline change at any point along the length of the Project, the pipeline(s) should be segmented at that point. Trans Mountain must also provide Geographic Information System locations and names of pump stations, terminals, custody transfer meters, tunnel entrances, pipeline bridges, check valves, and block valves, as applicable. The datum must be NAD83 and projection must be geographic (latitudes and longitudes).
136	**Full-scale emergency response exercises during operations** a) **Within 5 years after commencing operations**, Trans Mountain must complete full-scale exercises to test each of the following five scenarios: i) A full-bore rupture under ice and snow conditions in the Coquihalla Mountain Range. ii) A full-bore rupture into the Athabasca River during high spring flow conditions. iii) A full-bore rupture into Fraser River at the Port Mann Bridge, under peak flow conditions. iv) A full-bore rupture into the North Thompson River during high spring flow conditions. v) A tank fire at the Burnaby Terminal. b) Trans Mountain must notify the NEB, **at least 45 days prior to the date of each exercise in a)**, of: i) the exercise's date and location(s); ii) the exercise's objectives; iii) the participants in the exercise; and iv) the scenario for the exercise. c) Trans Mountain must file with the NEB, **within 60 days after completing each exercise in a)**, a report on the exercise that includes: i) the results of the completed exercise; ii) areas for improvement; iii) steps to be taken to correct deficiencies; and iv) confirmation that an independent third party has evaluated and assessed the emergency response exercises and that Trans Mountain will consider the comments generated for future exercises.

137	**Ongoing implementation of marine shipping-related commitments** Trans Mountain must file with the NEB, **on or before 31 January of each year after commencing operations**, a report, signed by an officer of the company, documenting the continued implementation of Trans Mountain's marine shipping-related commitments noted in Condition No. 114, any non-compliances with the requirements of these commitments, and the actions taken to correct these non-compliances. Trans Mountain must provide each report to Transport Canada, the Canadian Coast Guard, the Pacific Pilotage Authority, Port Metro Vancouver, British Columbia Coast Pilots, Western Canada Marine Response Corporation, and Fisheries and Oceans Canada at the same time as it is filed with the NEB. If a particular party mentioned above requests that it not be provided the annual report, Trans Mountain may cease providing it to that party.
138	**Community Benefits Program progress reports** Trans Mountain must file with the NEB, **on or before 31 January of each of the first 5 years after commencing Project operations, and every fifth year thereafter for the life of the Project,** a progress report summarizing the initiatives and activities undertaken as benefits that are in addition to compensation for access and potential impacts to community lands, and/or that exceed regulatory requirements. The report must summarize initiatives supported, at a minimum, in the areas of community programs and infrastructure improvements, environmental stewardship, and education and training during the reporting period, including local emergency management enhancements, improvements to community parks, as well as support for events. This report must include: a) a description of the initiatives undertaken or supported; b) a list of participants or beneficiaries, including Aboriginal groups, local and regional communities, service providers, or others; c) an update on the timing, status, and outcomes of each initiative, including its estimated completion date, if applicable; and d) a summary of Trans Mountain's consultation activities regarding the Community Benefits Program initiatives.
139	**Reports on engagement with Aboriginal groups – operations** Trans Mountain must file with the NEB, **on or before 31 January of each of the first 5 years after commencing Project operations,** a report on the engagement activities it has undertaken with Aboriginal groups. Each report must include, at a minimum, for each Aboriginal group engaged: a) the name of the group; b) the method(s), date(s), and location(s) of engagement activities; c) a summary of any issues or concerns raised; and d) the measures taken, or that will be taken, to address or respond to issues or concerns, or an explanation why no further action is required to address or respond to issues or concerns. Trans Mountain must provide a copy of each report to each group engaged (and identified in a) above) at the same time that it is filed with the NEB.
140	**Post-construction environmental monitoring reports** Trans Mountain must file with the NEB, **on or before 31 January following the first, third, and fifth complete growing seasons after completing final clean-up,** a post-construction environmental monitoring report that must include: a) a description of the valued components or issues that were assessed or monitored;

	b) measurable goals for each valued component or issue; c) monitoring methods for each valued component or issue, results of the monitoring, and a comparison to the defined measurable goals; d) corrective actions taken, their observed success, and their current status; e) identification on a map or diagram of the locations where corrective actions were taken; f) any further corrective actions planned and a schedule for monitoring and reporting; and g) a summary of Trans Mountain's consultation with appropriate government authorities, and any potentially affected Aboriginal groups and stakeholders, including any issues or concerns raised and how Trans Mountain has addressed or responded to them. In the environmental monitoring report filed after the fifth full growing season after completing clean-up, Trans Mountain must include: i) an assessment of the effectiveness of mitigative and corrective actions and how learnings have been or will be applied to Trans Mountain's Environmental Protection Program; ii) a detailed description of all valued components or issues for which the measurable goals have not been achieved during the duration of the post-construction monitoring program; and iii) information on the need for any further corrective actions, measurable goals, assessments, or monitoring of valued components or issues, including a schedule for those. All filed post-construction environmental monitoring reports must address issues related, but not limited, to soils, weeds, watercourse crossings, riparian vegetation, wetlands, rare plants and ecosystems, wildlife and wildlife habitat, fish and fish habitat, and species at risk.
141	**Riparian Habitat Enhancement and Offset Plan** Trans Mountain must file with the NEB for approval, **on or before 31 January after the fifth complete growing season after completing final clean-up,** a Riparian Habitat Enhancement and Offset Plan for all riparian habitat that has not returned to pre-construction functionality or greater. This plan must include: a) an evaluation of performed reclamation activities against the identified measureable goals (required by Condition No. 79), including a quantification of riparian habitat to be enhanced or offset; b) a list and discussion of possible enhancement and offset options considered; c) a description of the enhancement and offset option(s) selected and the rationale for the selected option(s); d) a schedule for when the enhancement measures and offsets will be initiated and an estimated timeline for completion; e) monitoring plans to determine the success of enhancement and offset measures and the need for corrective actions, and a proposed reporting schedule; f) a description of how Trans Mountain has taken available and applicable Aboriginal traditional land use and traditional ecological knowledge into consideration in developing the plan; and g) a summary of Trans Mountain's consultation concerning a) to e) with appropriate government authorities, species experts, and any potentially affected Aboriginal groups, including any issues or concerns raised and how Trans Mountain has addressed or responded to them.

142	**Rare Ecological Community and Rare Plant Population Mitigation Evaluation and Offset Plan** Trans Mountain must file with the NEB for approval, **on or before 31 January after the fifth complete growing season after completing final clean-up**, a Rare Ecological Community and Rare Plant Population Mitigation Evaluation and Offset Plan that includes: a) for ecological communities of concern; rare plants and lichens; and draft, candidate, proposed, or final critical habitat for plant and lichen species under the *Species at Risk Act*, an evaluation of mitigation success with reference to the measurable goals outlined in the Rare Ecological Community and Rare Plant Population Management Plan required by Condition No. 50; b) identification of any residual effects on ecological communities and rare plant and lichen species that have an at-risk status of S1 or S1S2 or that are listed under federal or provincial legislation for protection, or on any draft, candidate, proposed, or final critical habitat under the *Species at Risk Act*; c) for the residual effects identified in b), a Final Rare Ecological Community and Rare Plant Population Offset Plan that updates the preliminary plan required by Condition No. 50, and that also includes details on the amount and type of offsets required, and on the offset measures to be implemented, including a timeline for their implementation and monitoring; d) a description of how Trans Mountain has taken available and applicable Aboriginal traditional land use and traditional ecological knowledge into consideration; and e) a summary of Trans Mountain's consultation concerning a) to d) with appropriate government authorities, species experts, and any potentially affected Aboriginal groups, including any issues or concerns raised and how Trans Mountain has addressed or responded to them.
143	**Wetland Reclamation Evaluation and Offset Plan** Trans Mountain must file with the NEB for approval, **on or before 31 January after the fifth complete growing season after completing final clean-up**, a Wetland Reclamation Evaluation and Offset Plan that includes: a) the extent (in hectares), by wetland type, that was impacted by pipeline and facilities construction and associated activities; b) for each wetland impacted, an evaluation of reclamation success with reference to the measurable goals outlined in the Wetland Survey and Mitigation Plan required by Condition No. 52; c) for any wetland that has achieved the intended degree of reclamation success, an evaluation of any temporary loss of each individual functional condition (e.g., habitat, hydrology and biogeochemistry); d) an identification of any wetlands that have not yet achieved the intended degree of reclamation success; e) for those wetlands that have had a temporary loss in any individual functional condition and for those that have not yet achieved reclamation success, a Final Wetland Offset Plan that updates the preliminary plan required by Condition No. 52, and that also includes details on the amount and type of further offsets required, and the offset measures to be implemented including a timeline for their implementation and monitoring; f) a description of how Trans Mountain has taken available and applicable Aboriginal traditional land use and traditional ecological knowledge into consideration in developing the plan; and g) a summary of Trans Mountain's consultation concerning a) to f) with appropriate government authorities and any potentially affected Aboriginal groups, including any issues or concerns raised and how Trans Mountain has addressed or responded to them.

144	**Caribou Habitat Restoration and Offset Measures Monitoring Program** Trans Mountain must file with the NEB for approval, **on or before 31 January after the first complete growing season after commencing operations**, a program for monitoring and verifying the effectiveness of caribou habitat restoration and offset measures implemented as part of the CHRP (Condition No. 21) and the Offset Measures Plan (Condition No. 110). This program must include: a) the scientific methods or protocols for short- and long-term monitoring of the restoration and offset measures, including their effectiveness; b) monitoring frequency, timing, and locations, and the rationale for each; c) protocols for how restoration and offset measures will be adapted, as required, based on the monitoring results from the program's implementation; and d) a proposed schedule for filing reports on monitoring results and the adaptive management responses to the NEB, Environment Canada, and appropriate provincial authorities.
145	**Caribou habitat restoration and offset measures monitoring report(s)** Trans Mountain must file with the NEB, **based on the approved schedule for the Caribou Habitat Restoration and Offset Measures Monitoring Program** (required by Condition No. 144), a report(s) describing the monitoring program's results, including the observed effectiveness of habitat restoration and offset measures for each affected caribou range, and how those measures will be adapted, as required, based on monitoring results. Any proposed changes to the NEB-approved reporting schedule must be included within the relevant report prior to any reporting on a revised schedule.