Trans Mountain Expansion Project
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VIA ELECTRONIC SUBMISSION

April 20, 2018

National Energy Board
Suite 210, 517 Tenth Avenue SW
Calgary, AB T2R 0A8

To: Ms. Sheri Young, Secretary, National Energy Board

Dear Ms. Young:

Re: Trans Mountain Pipeline ULC ("Trans Mountain")
Trans Mountain Expansion Project ("Project" or "TMEP") Certificate OC-064
National Energy Board ("NEB" or "Board") File OF-Fac-Oil-T260-2013-03 19
Detailed Route Hearing Order MH-013-2018
Trans Mountain's Reply Evidence for Coldwater Indian Band (Chief Lee Spahan)

Trans Mountain's Reply Evidence with respect to the evidence from Coldwater Indian Band (Chief Lee Spahan) ("Coldwater") filed April 9, 2018 (A91119) ("Coldwater Evidence") is attached as follows:

i) Appendix A – Trans Mountain's Reply Evidence with respect to the Coldwater Evidence;

ii) Appendix B – Figure B1 – Glaciofluvial Aquifer Footprint;

iii) Appendix C – Trans Mountain Expansion Project, Preliminary Hydrogeological Assessment, Coldwater Indian Reserve No. 1; and

iv) Appendix D – Trans Mountain's Record of Engagement with Coldwater.

If you have any questions, please contact me via email at regulatory@transmountain.com or by phone at 403-514-6400.

Sincerely,

Original signed by

Scott Stoness
VP, Regulatory and Compliance

Encl.

cc: Coldwater

Appendix A – Reply Evidence with respect to the Coldwater Evidence

I. Background and Summary of the Coldwater Evidence

1. Coldwater filed a Statement of Opposition on April 7, 2017 (A82510) ("Statement"), asserting Aboriginal rights, including Aboriginal title, over an area identified by Coldwater as its traditional lands. Trans Mountain has applied for a detailed route, as specified in the Plan, Profile, and Book of Reference ("PPBoR"), which includes certain lands within that area. Those specific lands identified by Trans Mountain in the PPBoR, which intersect with the lands identified by Coldwater as their traditional lands, will be referred to herein as the "Lands".

2. Trans Mountain filed evidence with respect to Coldwater's Statement on March 5, 2018 (A90410) ("Trans Mountain Written Evidence").

3. On April 9, 2018, Coldwater filed its Coldwater Evidence (A91119). It states that, in choosing its detailed route through the Coldwater Valley, Trans Mountain has:

   - failed to minimize new disturbance in the Coldwater Valley, choosing the route with the most greenfield disturbance of all of the routes initially proposed in its Facility Application;
   - failed to consider or avoid risks to Coldwater Indian Band's aquifer ("Coldwater Aquifer") which is the sole source of drinking water for 90 percent of residents on Coldwater's Indian Reserve No. 1 ("Coldwater IR 1") – when an alternative that poses no risks to Coldwater's Aquifer was available but not meaningfully analyzed or considered;
   - selected a route that restrains future use of parts of Coldwater IR 1; and
   - chosen a route through the Coldwater Valley without considering whether the proposed detailed route minimizes impacts to Coldwater's traditional uses and spiritual values.

4. Coldwater states that Trans Mountain has failed to establish that the proposed detailed route is the best route through the Coldwater Valley.

II. Trans Mountain's Response to the Coldwater Evidence

Arguments Included in the Coldwater Evidence

5. Much of the Coldwater Evidence consists of argument rather than information of a factual nature. For example, the Coldwater Evidence alleges that:

   - the onus and burden is on Trans Mountain to establish that its proposed detailed route is the best route (par. 5, 9);

- by accepting Coldwater's Statement, the Board accepted as an issue in this proceeding whether Coldwater's preferred alternative route to the west of the Coldwater IR 1 (the "West Alternative") may be a better route for the Project (par. 8);

- it is not open to Trans Mountain to lead evidence about the West Alternative in reply to Coldwater (pars. 11-12);

- to the extent the detailed route falls within 30 metres of the Coldwater IR 1, it constitutes expropriation by virtue of the Prescribed Area established by the *National Energy Board Pipeline Damage Prevention Regulations – Authorizations* ("Damage Prevention Regulations") (par. 14-16);

- consent of the Governor in Council ("GIC") is required under s.35 of the *Indian Act*, and thus the NEB lacks jurisdiction to approve the detailed route (par. 17); and

- there has been inadequate Crown consultation with Coldwater with respect to the detailed route and thus the NEB lacks jurisdiction to approve the detailed route (par. 3, 18-20, 151-156).

6. Argument and legal submissions such as the above assertions are not appropriate to be sworn as "evidence" in the hearing. To the extent that the Coldwater Evidence includes argument, Trans Mountain will respond upon closure of the evidentiary record and during final argument at the hearing. However, the evidence to be relied upon in support of Trans Mountain's arguments is presented in this Reply Evidence and the Trans Mountain Written Evidence.

7. Similarly, par. 101 through 121 of the Coldwater Evidence outlines Coldwater's communications with government representatives and the NEB and the lack of clarity regarding hearing scope – specifically, whether evidence regarding the West Alternative was properly in scope. Coldwater also states that it had inadequate funding to prepare the Coldwater Evidence. Coldwater argues that, as a result, its evidence was significantly constrained. In response, Trans Mountain notes that:

- Coldwater was granted a detailed route hearing on January 23, 2018 pursuant to the NEB Letter of Decision (A89486);

- also on January 23, 2018, the Board informed Coldwater that it would have until March 27, 2018 to file written evidence, including alternative routes, through the hearing order (A89487);

- on March 12, 2018, the Board confirmed that Coldwater could submit evidence on the West Alternative (A90539) and, "[i]n consideration of all related correspondence, and to assist Coldwater's effective participation" the Board extended Coldwater's written evidence deadline to April 9, 2018;

- other detailed route hearing processes for the Project, including Segment 5, typically provide landowners and affected parties, including First Nations, three weeks between the submission of Trans Mountain's written evidence and the deadline for the landowner's or affected party's evidence, as the case may be;

- as a result of the extension of Coldwater's evidence deadline, Coldwater had approximately:

  – five weeks from the date the Trans Mountain Written Evidence was filed (March 5, 2018); and

  – four weeks from the NEB's March 12, 2018 letter;

  to prepare and submit the Coldwater Evidence;

- Coldwater received funding in relation to the Project through (i) the NEB Participant Funding Program; (ii) the Government of Canada's Major Project's Management Office, (iii) the British Columbia Environmental Assessment Office ("BC EAO"); and (iv) a Protocol and Capacity Agreement with Trans Mountain dated October 1, 2014, part of which Trans Mountain understands was to support Coldwater's assessment of the Project and its impacts on Coldwater's interests and concerns (including routing and hydrogeological matters);

- Coldwater applied for and received $10,000 in advanced costs from Trans Mountain specifically in relation to the detailed routing process; and

- as the Board confirmed in its February 2, 2018 letter to Coldwater (A89780), any person making representations to the Board at a detailed route hearing is entitled to reimbursement of reasonable costs incurred from the company at the conclusion of the detailed route hearing process.

8. Trans Mountain's view is that Coldwater had a reasonable amount of time and funding to prepare the Coldwater Evidence, exceeding the timeframes and funding provided to other participants in detailed route hearings.

Route Selection Process

9. In the Coldwater Evidence, Coldwater states that Trans Mountain did not consult with Coldwater before unilaterally removing the West Alternative from consideration by the NEB. Further, Coldwater asserts that Trans Mountain has given no indication that it is willing to discuss the West Alternative as a routing option.

10. Trans Mountain disagrees with these assertions. The record shows that Trans Mountain has been open to engaging with all interested parties on the Project and providing information on the Project when requested, beginning before Trans Mountain filed the Project Description for the TMEP with the NEB on May 24, 2013. This is true for Coldwater, which Trans Mountain engaged on routing matters beginning in late 2012; but Trans Mountain also recognizes that engagement and open communication is a two-way process.

11. On May 27, 2013, in response to a Letter from Chief Harold Aljam of April 19, 2013, Trans Mountain shared a report by Integrated Pipeline Projects Canada Ltd.'s ("IPP") entitled "Trans Mountain Expansion Project Coldwater Indian Reserve Routing Review"

with Coldwater. That report addressed Coldwater's request regarding off-reserve routing options under consideration. This document was provided to Coldwater to ensure they had access to the information available. The letter from Trans Mountain and the IPP report was included as Appendix B, Tab 1 to the Coldwater Evidence (A6D0Y4) and was previously filed by Coldwater in its evidence in the s.52 process (A70316, A4Q0X3).

12. Three routing options were evaluated in the IPP report; two of the options were routes around the reserve - one to the west and one to the east. The report stated that on July 21, 2012 a helicopter flyover was conducted of the Coldwater IR 1 and surrounding area to verify desktop studies. Subsequent to the flyover, desktop studies were completed in April 2013 along the West Alternative route that focused on the two trenchless horizontal directional drill ("HDD") crossings of the Coldwater River that would be required to construct the West Alternative, and the Species at Risk habitat areas for the Williamson's Sapsucker. The IPP report stated that, due to the HDD requirements of the West Alternative, "*a re-alignment of the approach to the first Coldwater crossing was required and the route was adjusted accordingly. In light of the additional issues along the West Alternative, a new Coldwater IR East Alternative was developed on desktop and subsequently ground-truthed in April 2013*." The report continues by listing the issues introduced by each of the two off-reserve routes.

13. In December 2013, Trans Mountain filed its Facility Application with the NEB. In that document Trans Mountain was clear that "*several alternative corridors east and west of the IR were studied and evaluated from an environmental and socio-economic perspective*". Further, Trans Mountain stated that "*The currently proposed pipeline corridor is the East Corridor, although the Modified East Alternative is also under consideration*" (Volume 5B: ESA – Socio-Economic, Section 4.0: Corridor and Facility Site Selection, pg. 4-12). Table 4.2-5, pg. 4-18 sets out a summary of the routing criteria that was reviewed for routing selection for the preferred corridor. It is clear in Table 4.2-5 that the West Corridor was one of the corridors evaluated, but that for several reasons the corridor was considered inferior to the East Corridor as the best corridor.

14. The reasons for this ranking included: the additional length of the corridor, maximum deviation from the existing Trans Mountain Pipeline ("TMPL"), two required crossings of the Coldwater River, medium risk for natural Hazard potential, length of thin overburden, numerous impacts to environment (including: the length within the Coldwater riparian reserve zone, woodlots crossed, *Species at Risk Act* [*SARA*] wildlife habitats) and constructability issues (including: the risk of two trenchless crossings within the Coldwater riparian reserve zone, installation of four valves and six crossings of the Spectra Energy pipelines). The evaluation of the alternative routes was conducted before the filing of the Facility Application and based on that evaluation it was Trans Mountain's considered opinion at that time that the West Alternative was not as viable an alternative as the East Corridor or the Modified East Alternative; consequently, Trans Mountain proposed a corridor to the east of the Coldwater IR 1.

15. Contrary to Coldwater's assertions, Trans Mountain did not "unilaterally remove" the West Alternative from the NEB's consideration. In the Facility Application, Trans Mountain identified alternative corridors in the vicinity of the Coldwater IR 1 and provided the Board with the factors it used to assess the relative viability of all the routing options

it reviewed, including the West Alternative. In Trans Mountain's opinion, the NEB s.52 process requires a Proponent of a project to evaluate possible alternatives and then to select and propose the rationale and route option it has elected, through its evaluation, as being the most viable route. Similarly, the Proponent's responsibility in this process is to put the best route forward, and Trans Mountain stated very clearly in the Facility Application which route, in its opinion, was the preferred route and why. The NEB process then offered both the Board and all interested parties an opportunity to participate in that process and to comment and challenge the selected route. Coldwater took that opportunity and was a full participant in the s.52 hearing process, providing oral evidence as well as issuing information requests to Trans Mountain to highlight their questions and concerns, including:

- Intervenor Requests Round 1, June 2014, Coldwater issued Information Requests with multiple questions specific to four general categories: 1.1 Aboriginal Engagement, 1.2 Project Routing, 1.3 Environmental Impacts Affecting Coldwater Rights and Interests and 1.4 Social, Cultural and Economic Impacts affecting CIB's Rights and Interests. Questions specific to routing included both on-reserve and off-reserve route options and impacts, including potential impact to well water and surface water.

- Coldwater did not submit questions for Intervenor Round 2, but did submit Information Requests specific to Intervenor Round 2(d) in June, 2015 which was directed by NEB Ruling No. 61 to questions specific to Trans Mountain's filing of the Seismic Hazard Update. Coldwater IR 2(d)12 b) questions Trans Mountain's assessment of the risks posed to the route alternatives, including the West Alternative, by seismic activity. Trans Mountain's response is that the preferred corridor is the Modified East Alternative, and that Trans Mountain is no longer considering the West Alternative or the East Alternative as proposed pipeline corridors, and thus were not considered in the Seismic Hazard Update.

16. In May 2016, after taking into consideration all of the evidence from Trans Mountain and interested parties, the NEB recommended approval of the TMEP, including the proposed East Corridor to the GIC. In December 2016, the GIC approved the TMEP including the proposed East Corridor. That approval signaled to Trans Mountain that the East Corridor had been approved, the alternative corridors were redundant, and the focus of subsequent studies and investigations should be restricted within that corridor. Coldwater, as a party to the s.52 hearing process, was fully aware of the Board's decision to support the proposed Modified East Alternative and approval of that corridor by the GIC.

17. Table 1 provides a summary chronology of the information provided to Coldwater related to the routing of the TMEP throughout the s.52 process.

TABLE 1

CHRONOLOGY – COLDWATER ROUTE ALTERNATIVES

Date	Document Reference	Description
May 2013	Letter to Coldwater with Enclosures (Coldwater Evidence, Appendix B, Tab 1 [A6D0Y4])	Trans Mountain provided its preliminary assessment of routing options around the Coldwater IR 1, including a report by IPP titled *Coldwater Indian Reserve Routing Review* with the West Alternative, East Alternative and TMPL Alternative routes.
December 2013	Facility Application (A3S0R0, A3S1R6)	Volume 2, Page 2-54, identifies alternatives east and west of the Coldwater IR 1, and proposes a corridor which avoids the reserve to the east. Volume 5B, Section 4.2.3 Black Pines to Hope Segment. Table 4.2.5 indicates four Alternatives – TMPL Modified Alternative, West Alternative, East Alternative, and Modified East Alternative. Proposed pipeline corridor is the East Alternative, although Modified East Alternative under consideration. Based on environmental and socio-economic perspective would switch to TMPL Modified Alternative (*i.e.*, largely along the existing TMPL right-of-way ["ROW"] on the Coldwater IR 1) with Coldwater's approval. West Alternative least favorable with added length, maximum deviation from TMPL, and two HDD crossings of the Coldwater River.
May 2014	Trans Mountain Response to NEB IR No. 1 (A3W9H8, A3W9Q5, A3W9Q6)	IR 1.40 requests identification of all deviations from the proposed pipeline corridor under consideration by Trans Mountain. Trans Mountain provided Table 1.40A-1 in response, which identified the TMPL Modified Alternative as the alternative route to the proposed corridor to the east of Coldwater IR 1. Trans Mountain's response to IR 1.84a includes a map that identified the Modified East Alternative as Trans Mountain's proposed corridor route and the TMPL Modified Alternative as the alternate route.
June 2014	Trans Mountain Response to Coldwater IR No. 1 (A3Y2I0)	Trans Mountain's response to IR 1.2a refers to the route alternatives in the Facility Application and to the responses to NEB IR No. 1.40a and 1.84a. Trans Mountain's response to IR 1.2h states that the proposed pipeline corridor is located outside of the east boundary of Coldwater IR 1 and the proposed alternative pipeline corridor crosses the Coldwater IR 1, paralleling the existing TMPL for most of the length. This information was also referenced in response to IR 1.3f.
August 2014	Technical Update No. 2 (A4A4C8)	Routing, Section 1.0, Appendix A includes detailed mapping that shows the proposed corridor along the Modified East Alternative route and the alternate corridor along the TMPL Modified Alternative route.
February 2015	Trans Mountain Response to NEB IR 3.017a (A4H1V2)	Table 3.017a indicates TMPL Modified Alternative remained under consideration contingent on agreement with Coldwater, which was subject to a May 1, 2015 deadline.
May 2015	Trans Mountain Response to Coldwater IR 2(d) (A4L1W7)	In response to IR 2(d).12 in reference to the March 2015 Seismic Hazard Update filed by Trans Mountain, Trans Mountain stated that the preferred pipeline corridor does not cross the Coldwater IR 1 and that the preferred/proposed pipeline corridor is the Modified East Alternative. Trans Mountain confirmed that it did not consider the West Alternative in the update because it was not proposing that route.
June 2015	TMEP Letter to Coldwater (A4S7H0)	Trans Mountain explained the route selection process regarding the routes in the Facility Application, and explained why the West Alternative was least favourable. Trans Mountain expressed willingness to meet and discuss route alternatives in an effort to reach agreement.
July 2015	Update to NEB IR 3.017a Response (A71581)	Trans Mountain confirmed it was seeking approval for the preferred pipeline corridor that does not cross Coldwater IR 1, and that TMPL Modified Alternative (on the Coldwater IR 1) was no longer under consideration.
August 2015	Trans Mountain Reply Evidence (A4S7E9)	Section 13.13 includes a summary of Trans Mountain's routing determination with respect to the four alternatives considered (West Alternative, TMPL Modified Alternative, East Alternative and Modified East Alternative). It outlines Trans Mountain's selection process and the alignment of the Modified East Alternative with the routing criteria, and also states that: *"Coldwater's assertion that they were only informed of the dropping of the West Alternate in March 2015 is not reflected by the record, which indicated that this route has not been under consideration since before the filing of the Application in December 2013, and has at no point been part of a corridor presented by Trans Mountain for the Board's consideration."*
August 2015	Trans Mountain Final Argument (A4S7U5)	Trans Mountain requested approval of the preferred corridor and certain specified alternatives (not near the Coldwater IR 1).
February 2016	Trans Mountain Reply Argument (A4Y1Z0)	Pages 55-56 reject Coldwater's arguments that the West Alternative was "unilaterally removed" from consideration and re-affirms that the Modified East Alternative is the preferred corridor for the TMEP.

Routing

18. In the Coldwater Evidence, Coldwater asserts that the West Alternative is superior to Trans Mountain's preferred route as applied for in the PPBoR (which follows what was previously referred to as the "Modified East Alternative"). Coldwater also alleges that the West Alternative was not properly assessed before Trans Mountain removed it from consideration during the s.52 Facility Application process before the NEB.

19. Trans Mountain disagrees with that assertion. As indicated above, Trans Mountain considered and rejected the West Alternative based on adequate information and has conducted further studies in relation to the West Alternative since that time in response to Coldwater's concerns, particularly as they relate to potential impacts on the Coldwater Aquifer, and as a condition of approval for the TMEP. The results of these additional studies have reinforced Trans Mountain's conclusion that the route proposed in the PPBoR (Modified East Alternative) is the best possible route on the Lands.

Trans Mountain's Prior Assessments of the West Alternative

20. Coldwater asserts that Trans Mountain has not offered evidence about the West Alternative or why the proposed route is superior to the West Alternative.

21. Trans Mountain disagrees with those assertions. As discussed above, the TMEP Facilities Application, Volume 5B, Section 4.0: Corridor and Facility Site Selection, pg. 4- 2, addresses routing in the vicinity of the Coldwater IR 1 specifically. Table 4.2-5, pg. 4-18 sets out a summary of the routing criteria that was reviewed for routing selection of the preferred corridor. Table 4.2-5 clearly demonstrates that the West Alternative was one of the corridors evaluated and that for several reasons, that alternative was not considered as the best corridor, and in fact was the least favored of the four options presented.

22. Subsequently, in response to Coldwater's concerns around the risks to the Coldwater Aquifer and in the interests of ensuring TMEP risks are minimized, Trans Mountain commissioned further reports comparing the TMPL Modified Alternative, the Modified East Alternative, and the West Alternative routes. Three reports were completed and were forwarded under covering letter from Ian Anderson, President of Kinder Morgan Canada Inc. to Coldwater, dated December 21, 2015 (A75204, A4X6U6; see also Appendix D, Tab 6):

- December 17, 2015 UPI Coldwater No. 1 IR West Alternative Route Review (Revision 2), (A75204, A4X6U7);
- December 17, 2015 Dynamic Risk Updated Preliminary Risk results for TMEP Coldwater IR #1 Alignment Comparison (A75204, A4X6U9); and
- November 27, 2015 BGC Cold Water IR Alternative Routes – Geohazard Analysis Rev. 1 (A75204, A4X6U8), which was included as an Appendix to the Dynamic Risk report.

23. The above referenced letters and the three documents were filed with the NEB by Coldwater.

24. As stated in Mr. Anderson's letter, the UPI Route Review Report investigated, on a more in-depth basis, the feasibility of the West Alternative, Coldwater's expressed preference. The report revealed that, although the route was feasible, it was also technically inferior to the Modified East Alternative. Based on an initial desk-top review and limited field observations, the West Alternative appeared to be a feasible alternative for the routing of the TMEP. However, that determination would be subject to further detailed field verification of technical, archaeological, and environmental factors.

25. A number of issues were identified that could have an impact on the West Alternative:

- the West Alternative would include two additional HDD river crossings (of the Coldwater River) which were deemed significant;
- the West Alternative would be at least 2.1 kilometres longer than the proposed Modified East Route option; and
- the West Alternative is subject to a significantly higher number of geohazards, with higher severity sites located immediately west of the Coldwater River.

26. On further field reconnaissance and detailed study, additional issues were identified including:

- a *NEB Act* s.21 Variance application and approval would be required for the West Alternative;
- additional pipeline crossings were required;
- four additional valves at the Coldwater River crossings would be needed; and
- should the West Alternative not be able use the existing access through Coldwater IR 1, it would require an additional access road, approximately 39 kilometres in length, and also would require a bridge installation along the Coldwater River.

27. In conclusion, at the time the report was issued, it stated that the TMPL Modified Alternative was the preferred route due to its maximal use of the existing Trans Mountain ROW, its shorter length, its avoidance of the more populated area of the Coldwater IR 1, and its traversing of generally more favourable terrain staying closer to the valley bottom and avoiding the slopes encountered by the other route options. The Modified East Alternative was preferred to the West Alternative due to its greater use of the existing Trans Mountain ROW, its shorter length, and its avoidance of two additional crossings of the Coldwater River.

28. Attached to the UPI report, as Appendices B and C, was an Environmental and Geotechnical Evaluation of the West Alternative Route Corridor Including Risk and Mitigation and a Geohazard Route Evaluation by BGC Engineering Inc. ("BGC"), respectively. These documents identified a number of potential environmental risks associated with the West Alternative including: environmentally sensitive bunch grass communities, 28 rare ecological communities, high potential for the occurrence of

archaeological sites, Final Critical Habitat areas for the Williamson's Sapsucker (a *SARA*-listed species), and wetlands.

29. Two crossings of the Coldwater River, required for the West Alternative, involved potential geohazard risks, including: landslide/slope instability; river erosion and flooding with scour bank erosion; and liquefaction with the potential for lateral displacement. The last two categories of risk arise due to the necessity of installing the pipeline in a wide floodplain area of the Coldwater River as part of the West Alternative. The West Alternative would also require an additional seven watercourse crossings.

30. The Dynamic Risk Associates ("DRA") Report examined the full range of risks that constructing and operating a pipeline entails to determine which of the three routes reviewed posed the least risk to the Coldwater. Specifically, the report contemplated both the probabilities of a spill and the consequences of the spill. The same methodology described in Technical Update #1 (A3Z8E6) was used to assess the threats of third-party damage and geohazards (as other hazards that contribute in a significant manner to overall failure likelihoods were addressed in Technical Update #1).

31. The results of the DRA risk assessment indicated that the integrated risk associated with the West Alternative alignment is 152 percent higher than the Modified East Alternative. The reasons for this were that the West Alternative has an 84 percent higher failure likelihood and localized discrete geohazards exist along the West Alternative that are not present on the other two alternative routes. In addition, even though the West Alternative is farther away from the Coldwater IR 1 and the Coldwater Aquifer, it crosses the Coldwater River twice, which also causes an increase in risk. The Risk Assessment for the Modified East Alternative includes a very conservative assumption that the Coldwater Aquifer extends for almost the full length of the route. Therefore, the subsequent delineation of the Coldwater Aquifer demonstrating a much smaller extent (see Appendix B hereto) would result in additional reduction in the integrated risk score for the proposed route.

32. BGC prepared a report of a quantitative geohazard frequency assessment of four proposed routing alternatives for the TMEP, including the West Alternative and the TMPL route. The purpose of the assessment was to estimate the frequency loss of containment ("FLoC") at each credible geohazard site on the four routes to help identify geohazard sites that require additional site-specific information or mitigation design. It was intended that the quantitative results would also be provided to DRA as input to their risk calculations.

33. The methodology for the BGC assessment followed a similar methodology for the original Risk Assessment for the TMEP Line 2 provided in NEB Technical Update #1. Three geohazard categories were assessed: one soil slope geohazard - earth landslides, and two hydrotechnical hazards - debris floods and scour. Other geohazards had been assessed in the original Technical Update #1 filing.

34. The result of the assessment was a sum of the geohazard sites count per FLoC range for each of the four route options; the West Alternative had the highest number of geohazards, by a factor of two.

35. On the basis of the results of the assessments and evaluations conducted on the viability of the West Alternative (which were shared with Coldwater), Trans Mountain's conclusion that the route proposed in the PPBoR (Modified East Alternative) is the best possible route on the Lands has not changed, but rather has been reinforced.

36. As stated above, the NEB ultimately recommended Trans Mountain's preferred corridor to the GIC for approval and the GIC approved the current TMEP corridor, which resulted in making all of the other alternative routes redundant and focused Trans Mountain's studies and investigations within the approved corridor for determination of the detailed route.

NEB's Prior Consideration of Coldwater's Concerns

37. In Trans Mountain's view, in the May 19, 2016 Decision Report (A77045), the NEB previously dealt with many of the issues raised in the Coldwater Evidence regarding the proposed corridor for the TMEP. The West Alternative discussed in the Coldwater Evidence is located within the West Alternative corridor considered by the NEB and discussed in the NEB Decision Report that approved the TMEP corridor proposed by Trans Mountain along the eastern boundary of the Coldwater IR 1. In the NEB Decision Report, pg. 241, the Board considered and addressed the assertions raised by Coldwater related to the proposed route specifically.

38. In the discussion regarding the Coldwater IR 1, the Board stated:

> *"The Coldwater Indian Band raised concerns about Trans Mountain's preferred pipeline corridor outside of the east boundary of the Coldwater Indian Reserve 1. The Coldwater Indian Band said that its members have a high level of anxiety because of potential added impacts to its drinking water and the Coldwater River. The Coldwater Indian Band said that Trans Mountain did not consult them about the removal of the various corridor options from consideration. The Coldwater Indian Band said that its preliminary assessment of the corridor options suggested that the West Alternative could be a better option based on the potential effects to its aquifer, its rights and its overall quality of life and sense of well-being.*
>
> *Trans Mountain said that consultation with the Coldwater Indian Band on the corridor options occurred as early as May 2013 and that it had continued to update the Coldwater Indian Band since the Application was filed with the Board. Trans Mountain maintained that the proposed preferred pipeline corridor was selected following consultation with affected stakeholders and assessment of the route options against the routing criteria established for the Project."*

39. In the NEB's decision for the TMEP Detailed Route Hearing MH-017-2017 (A89821), the Board stated that: "*the Board notes that the original routing criteria was assessed and accepted during the OH-001-2014 hearing and approved with Certificate OC-064 for the TMEP. It is therefore not a matter that the Board will reconsider in this detailed route hearing.*" In the facilities proceeding, the Board concluded that Trans Mountain's selection process, route selection criteria and level of detail for its alternative means

assessment was appropriate. The Board also indicated that aligning the majority of the proposed pipeline route alongside, and contiguous to, existing linear disturbances would minimize the environmental and socio-economic impacts of the Project (NEB Report [May 2016] at p. 244).

40. Many alternative options were considered by the Board in that proceeding as a means of carrying out the TMEP. While the Board noted in the Decision Report that several intervenors did not agree with the route selection process and it may not have produced desired or acceptable route selections for some participants, at that time, the detailed route for the TMEP had not been finalized (NEB Report [May 2016] at p. 244-245). However, the proposed corridor was approved in the Certificate of Public Convenience and Necessity ("CPCN") and this corridor was selected following consultation with affected stakeholders and assessment of the route options against the routing criteria established for the TMEP, which included an assessment of the impacts to Coldwater's rights and interests.

41. Regarding the concerns of Coldwater relating to the Coldwater Aquifer, on page 289-290, the Board stated:

> *"The Board shares the concern raised by participants about water quality for Aboriginal communities that utilize groundwater resources. The Board acknowledges the importance of water use for Aboriginal communities, for consumption, agricultural and municipal use, and as sources associated with traditional uses and values.*
>
> *The Board notes the concerns raised in this regard by the Coldwater Indian Band and Health Canada. The Coldwater Indian Band stated the draft conditions proposed by the Board fail to address their concerns regarding impacts and risks posed by the proposed Project, and will not result in the avoidance of impacts and risks to Coldwater's water supply. They recommended that the proposed requirement for a water well inventory must also identify the location and extent of aquifers transected, and that the Board's proposed condition for consultation on protection of municipal water sources does not stipulate whether measures have to be taken to mitigate risks or put in place protections to protect water sources.*
>
> *Trans Mountain made a number of commitments to address the concerns raised by governments and Aboriginal groups. These included commitments to discuss how groundwater modelling and monitoring could be undertaken to help address concerns, and to work with Aboriginal communities to collectively determine appropriate measures to protect people's health. However, Trans Mountain has not conducted a hydrogeological study at the Coldwater Reserve that could more precisely predict any potential interactions from the proposed pipeline and the aquifer relied on by the Coldwater Indian Band. The Board finds that Trans Mountain has not sufficiently substantiated in its evidence that there is no potential interactions with the aquifer underlying Coldwater IR No. 1 and the proposed project route. The Board would therefore impose Condition 39 requiring Trans Mountain to file a hydrogeological study to more precisely determine the*

potential for interactions and impacts on the aquifer at the Coldwater IR 1, and to assess the need for any additional measures to protect the aquifer, including monitoring.

The Board is of the view that its proposed conditions, along with the commitments by Trans Mountain, can effectively address any effects on human health via potential Project impacts to groundwater. The Board would therefore impose a number conditions, including requirements for Trans Mountain to file with the Board a Pipeline Environmental Protection Plan (Condition 72), a water well inventory (Condition 93), consultation reports for protection of municipal water sources (Condition 94) a Groundwater Seepage Management Plan (Condition 87) and a Groundwater Monitoring Program (Condition 130)."

42. Therefore, Trans Mountain's view is that the NEB approved the TMEP corridor along the Modified East Alternative subject only to potential modifications deemed necessary following further consultation with Coldwater and studies specific to the groundwater issues raised by Coldwater. As discussed further below, Trans Mountain has engaged with Coldwater and has conducted additional studies, all of which confirms that the proposed route remains the best possible route on the Lands, all relevant factors considered.

Trans Mountain's Updated Assessment of the West Alternative

43. Trans Mountain has prepared a comparison of the West Alternative to the proposed detailed route located within the NEB-approved corridor. The comparison, presented in Table 2, demonstrates that, given due consideration to all relevant factors, the proposed route (Modified East Alternative) is superior to the West Alternative and is therefore the best possible route.

44. In summary, some key points of comparison indicate the West Alternative route:

- provides the largest deviation and has the least alignment with TMPL ROW;
- is 2.1 kilometres longer;
- has two additional HDD crossings of the Coldwater River;
- has integrated risk 152 percent higher than the proposed TMEP detailed route;
- would take three times longer to construct;
- has four additional crossings of the Spectra Energy pipeline;
- has a high potential for additional archaeological sites that would require field survey to determine;
- has the potential to cross habitat for Species at Risk requiring field surveys to determine;

- has five additional crossings of other watercourses including the Oluk, Salem, and Lemolo Creeks;

- would require additional engagement with landowners and tenants not previously involved in the Detailed Route Hearings, and require additional engagement with Aboriginal groups beyond the Coldwater; and

- would require an application and approval under s.21 *NEB Act* to amend the CPCN that would materially delay the construction and in-service date for the TMEP.

45. Coldwater indicates the proposed detailed route has more greenfield disturbance than the West Alternative. As indicated in Table 2, this is correct – the proposed route has 4.9 kilometres of greenfield route compared to the 0.7 kilometres of greenfield route along the West Alternative. On its own, this criteria would favour the West Alternative; however, the route selection process was a balancing of criteria and the criterion of greenfield was not determinative. Other factors, as indicated above, outweighed the criteria of alignment adjacent to other linear infrastructure. In particular, the least deviation from the TMPL, risk to the pipeline, and the additional HDD crossings of the Coldwater River, that are not known to be feasible, weighed more heavily in the determination of route preference.

TABLE 2

COMPARISON OF MODIFIED EAST ALTERNATIVE AND WEST ALTERNATIVE

Factors	Proposed Modified East Alternative		West Alternative	
	Quantity	Description (where appropriate)	Quantity	Description (where appropriate)
LENGTHS AND VALVES				
Length of Pipeline Corridor (km)	17.3*		19.3	
Length following existing TMPL ROW (km)	5.0		0	
Length following other linear features (other pipelines, power lines, highways, roads, Fibre-Optic Transmission System ("FOTS"), railways, etc.) (kilometres)	7.4*		18.6	
Length of new corridor (km)	4.9		0.7	
Total parallels (km)	12.4*		18.6	
No. of Valves	1	Remote mainline block valve	4	Isolation valves: one on each side of the two Coldwater River Crossings
CROSSINGS				
No. of highway crossings	0*		0	
No. of road (arterial, collector, local) crossings	4*		4	
No. of pipeline crossings	4	One each Spectra gas 30-inch and 36-inch Two TMPL 24-inch	6	Three each Spectra Energy 30-inch and 36-inch
No. of named river crossings	0		2	Two Coldwater River
No. of HDDs and length (m)	0		2	Length: two approximately 650 m
No. of named creek crossings	5	Stirlin, Skugam, Kwitshatin, Castillion, Salem	4	Oluk, Salem, two Lemolo
No. of other watercourse crossings	18		24	
Total no. of watercourses	23		30	
GEOTECHNICAL				
Length crossing slopes > 50 percent on the fall line (km)	0		0	
Length crossing slopes > 50 percent on sidehill (km)	0.5		0.2	
Natural Hazard Potential (km)	High: 0 Medium: 0 Low: 17.5		High: 0 Medium: 2.3 Low: 17.1	
Length of thin veneer of overburden or exposed bedrock (km)	4.1		4.5	
Geohazard Sites (No.) and Category Description	0	Earth landslides	3	Earth landslides
	4	Debris floods	0	Debris floods
	22	Scour	44	Scour

TABLE 2 Cont'd

Factors	Proposed Modified East Route		Alternate West Route	
	Quantity	Description (where appropriate)	Quantity	Description (where appropriate)
RISK				
Failure frequency (km/year)	3.63E-05*		6.81E-05	The integrated risk of the West Alternative is 82 percent higher than the Proposed Modified East Route.
Mean Failure Return Period Over Segment (years)	1,588*		760	
Consequence Score (index)	50.2*		42.5	These results are based on a conservative assumption of the outline of the Coldwater Aquifer.
Integrated risk value (index/year)	3.16E-02*		8.12E-02	The integrated risk of the West Alternative is 152 percent higher than the Proposed Modified East Route.
Hydraulic Acceptability	Yes		Yes	
LAND				
Indian Reserve (km) (name)	0		0	
Total Parcels Intersected	28		28	
No. of private Parcels	17		10	
No. of Crown Parcels	11		18	
Total Private Parcels with Signed Land Agreements	17		2	
ENVIRONMENT				
Length of Coldwater River Riparian Reserve Zone (km)	0		0.6	
Woodlots crossed (km)	0		0.7	
Wildlife habitat areas for *SARA*-listed species (km) (species)	3.3**	Williamson's Sapsucker	10.7**	Williamson's Sapsucker
Old Growth Management Area (non-legal) (km)	1.4*		1.3	
Old Growth Management Area (legal) (km)	0		0	
Ungulate Winter Range (km)	13.5*	Mule Deer (U-3-003)	13.4	Mule Deer (U-3-003)
Wetlands crossed (km)	0.12***	Two wetlands	0.08***	Two wetlands
Community forests crossed (km)	0		0	woodlot retired
Mapped Aquifers	1	Coldwater Aquifer	0	
Surface Water Licences (within 150 m)	1	Kwinshatin Creek (irrigation)	2	Talapus Creek (domestic) Oluk Creek (irrigation)
Springs (within 150 m)	0		2	Unnamed private domestic use spring and Ewalt Spring
Water wells (within 150 m)	8	Three active domestic use wells. Five inactive domestic use wells.	0	
Archaeology sites	0		Unknown	
SOCIO-ECONOMIC				
Traditional Land and Resource Use sites identified	All watercourses identified as sacred Kwinshatin and Skugam specifically identified as sacred Plant harvesting identified along Kwinshatin Creek.		All watercourses identified as sacred plant gathering, hunting, fishing, and sacred sites identified along Coldwater River	
Parks and protected areas (km) (name)	0		0	
Agricultural Land Reserve (km)	4.2		6.1	
Community watersheds (No.)	2		0	

TABLE 2 Cont'd

Factors	Proposed Modified East Route		Alternate West Route	
	Quantity	Description (where appropriate)	Quantity	Description (where appropriate)
Land and Resource Management Plan ("LRMP") area (km) (name)	0		0	
CONSTRUCTABILITY AND COST				
Constructability	Skirts to the East side of Coldwater IR 1; includes two crossings of Coquihalla Highway 5.		Requires two Coldwater River trenchless crossings; includes Spectra Energy ROW and FOTS parallel.	
Construction Schedule (months)	3		9	Up to 18 months in the event one or both HDD drills fail
Estimated Construction Cost ($ millions)	$44.2		$53.0	

Notes: * Reflects current design SSEID 5.6 for Proposed Modified East Alternative
** Reflects changes to critical habitat of Species at Risk
*** Reflects updated wetlands metrics

Construction Methods and Timing

46. Coldwater has raised a concern regarding the potential impact of the engineering and construction methods on the use and enjoyment of its reserve lands. In their risk assessment report, DRA stated that Trans Mountain is undertaking a risk-based design process so that mitigation measures can be pre-emptively identified and incorporated at the design stage to address principle risks. Risk-based design is a rigorous design approach that goes beyond the minimum requirements of the Canadian Standards Association ("CSA") Z662 code. It is an industry-leading, world class design approach that will enable the design team to identify potential risks along the detailed route and the new delivery lines and to pre-emptively adopt mitigation measures at the design phase to address those risks. These pre-emptive measures, once incorporated into the final design, will reduce failure likelihood and/or consequence (and hence risk) by targeting risk mitigation strategies directed at the principle drivers of risk.

47. This iterative risk-based design process is currently underway, and will continue to progress through to detailed design phase of the Project. The presence of the Coldwater Aquifer has been factored into the risk-based design since December of 2015.

48. In response to Coldwater's concern regarding the effects of construction on the Coldwater seasonal round, Trans Mountain will work with Coldwater to discuss the construction plan and schedule to mitigate the effects on Traditional Land Use ("TLU") activities associated with the seasonal round to the extent practicable.

Coldwater IR 1 Water Supply

49. The Coldwater Evidence raises concerns about the potential impacts of the proposed detailed route on the Coldwater Aquifer that serves the Coldwater community. Coldwater states that the Coldwater Aquifer is its sole source of water for most reserve residents and that the proposed route crosses the associated recharge area.

50. An aquifer is defined as a saturated geological unit that produces usable quantities of groundwater. The TMEP crosses 67 provincially mapped aquifers. This number does not include the Coldwater Aquifer, as it has not been identified in provincial data sets as underlying the Modified East Alternative alignment. The BC Groundwater Consulting Services Ltd. conceptual model, included in the Coldwater Evidence (A91119-7 Appendix A – Part 4, pgs. 133 and 134), indicates the pipeline alignment crosses east of the Coldwater Aquifer limits. Although the Coldwater Aquifer is interpreted not to extend beneath the Modified East Alternative alignment, there is agreement that the alignment does cross the upland recharge area defined by the Kwinshatin Creek watershed.

51. As part of NEB Condition 93, water wells located within 150 metres of the centreline of the TMEP ROW are to be verified. Although this effort continues to evolve, to date, 588 water wells have been field verified within the 150 metre offset of the TMEP centreline. All of these active water wells are, by definition, completed in an aquifer; an aquifer must exist in order to have an active well. The primary Coldwater municipal well, referred to as the Upper Kwinshatin well, is located greater than 1 kilometre from the TMEP Modified East Alternative alignment. It is reasonable to conclude that thousands of active water wells are located within 1 kilometre of the TMEP alignment, extending from Edmonton to Burnaby.

52. Trans Mountain agrees that placing an oil pipeline within an aquifer recharge area involves a certain level of risk. In fact, based on the available data and in accordance with the British Columbia Government's Comprehensive Drinking Water Source To Tap Assessment Guidelines, Trans Mountain has assessed a potential "Moderate" risk to the Coldwater community water supply associated with the TMEP. Transportation and municipal infrastructure, that supports community development, must cross watercourses, aquifers and aquifer recharge areas. Therefore, it is inevitable that risks will occur; however, risk mitigation measures must be employed to adequately protect those water resources.

53. Although recharge is a complex component of an aquifer water balance, Trans Mountain acknowledges Coldwater's concern that the proposed route poses risks to the Coldwater Aquifer by virtue of its location across the recharge area and the Kwinshatin and Skuagam Creeks. Trans Mountain also acknowledges the importance of aquifers and the need to protect them.

54. The Coldwater Evidence, Part 5 (par. 47) states that Trans Mountain identified the proximity of Coldwater's wells to the Project, but it failed to identify the existence of the Coldwater Aquifer on or near the Coldwater IR 1. Trans Mountain is aware that identified active water wells must be associated with an aquifer. Although Trans Mountain has not completed hydrogeology studies of the West Alternative, it is considered a reasonable conclusion that the West Alternative route poses no risk to the Coldwater community water supply which is located on the opposite side of a regional groundwater flux boundary where groundwater discharges to the Coldwater River. Regardless of risk level, the risk of a release from a pipeline that crosses an aquifer or recharge area would be considered higher relative to a pipeline that does not cross the aquifer or recharge area.

55. With respect to NEB Condition 39, Trans Mountain is aware of the intent of the condition. Nevertheless, Trans Mountain considers all aquifers crossed by the TMEP as important water resources that require protection, including the Coldwater Aquifer.

56. Ultimately, with respect to the Coldwater Aquifer, Trans Mountain will submit a report that complies with the requirements of NEB Condition 39 prior to commencing construction on the Lands. This report will include Trans Mountain's proposed mitigation strategy to minimize risk to the Coldwater Aquifer. Trans Mountain understands that the NEB will review the report and seek clarification, additional information or changes through information requests, as necessary. The NEB must indicate that it is satisfied with Trans Mountain's compliance with Condition 39 before construction on the Lands can commence.

57. The Coldwater Evidence, Part 1 - Overview implies that Trans Mountain has failed to consider the risks to the Coldwater Aquifer. In addition, the Coldwater Evidence states that, although Coldwater continues to work with Trans Mountain regarding the completion of the hydrogeology study required to meet NEB Condition 39 and BC EAO Condition 25, the study is still in its early stages.

58. Trans Mountain does not hold the same opinions as those expressed by Coldwater in their Coldwater Evidence, specifically in regard to the aquifer study required to meet the terms of NEB Condition 39 or BC EAO Condition 25. Trans Mountain acknowledges that the assignment has been challenged by scheduling delays from commencement of the work in December 2016. Although Coldwater was engaged in the planning phase of the program and had full control of their level of participation in the field program, Trans Mountain was informed to direct all correspondence through Coldwater's legal counsel. Trans Mountain recognizes that this line of communication did pose challenges to the collaborative efforts of the technical teams, which lead to further scheduling delays. In attempting to advance the study through collaborative dialogue with Coldwater and their technical team, an update of the hydrogeology study was presented to Coldwater as a technical memorandum dated May 10, 2017. This technical memorandum was issued to Coldwater shortly after the processed geophysical data was received by the Trans Mountain technical team. The technical memorandum was provided to the Coldwater team for review and comment.

59. Due to ongoing scheduling conflicts, the meeting intended to discuss the preliminary findings was deferred until June 19, 2017. Although no technical feedback was provided by Coldwater during the intervening period, the study continued to advance in order to meet the NEB Condition while conforming to the TMEP proposed execution schedule. As such, a draft report addressing the terms of NEB Condition 39 was available for distribution at the June 19, 2017 meeting held at the Coldwater office. This draft report was also submitted to British Columbia Ministry of Forests, Lands Natural Resources Operations and Rural Development ("BC MFLNRORD") June 21, 2017 for review. Once presented with the draft report on June 19, 2017, Coldwater expressed concern as stated in evidence; specifically, par. 131 and 133, alleging that Trans Mountain failed to comply with the agreed process.

60. On July 19, 2017, Trans Mountain received written review comments on the draft report from BC MFLNRORD. These written comments were followed up with a conference call with the BC MFLNRORD hydrogeologist review author on August 2, 2017. Based on the written review and follow up conversation, BC MFLNRORD's comments were incorporated into the draft report.

61. Also on July 19, 2017, the BC EAO informed Trans Mountain that the BC Ministry of Environment had reviewed the draft report and had no comments.

62. On August 14, 2017, Trans Mountain received comments from Coldwater on the draft report provided at the June 19, 2017 meeting and reflected in the Coldwater Evidence. These comments largely included general statements on the report content, or perceived lack thereof, criticism with respect to the perceived non-collaborative approach, data integrity concerns, and criticism related to the limited field program that supported the study; essentially dismissing the report as not meeting Coldwater's expectations. Trans Mountain seriously considered these comments. However, as the review comments were general in nature, and the Trans Mountain technical team disagreed with them, no modification to the draft report text was considered necessary or appropriate based on the Coldwater review provided to Trans Mountain in August of 2014.

63. Trans Mountain continued to move forward with the program and agreed to undertake a supplemental geophysical program at the request of Coldwater, as corroborated in evidence referenced as an October 12, 2017 letter from Trans Mountain. In this respect, Trans Mountain met with Coldwater and its consultants on December 13, 2017. At that meeting, Trans Mountain agreed to a supplemental field program that included the expansion of the geophysical program and a drilling program intended to further validate the conceptual hydrogeological model that is considered the foundation of NEB Condition 39. As an action item, Coldwater agreed, with the help of its consultant BC Groundwater, to prepare a fieldwork proposal while considering the Trans Mountain proposal presented at the meeting.

64. On January 3, 2018, Trans Mountain received an email from Coldwater's Chief Lee Spahan that included a BC Groundwater memorandum attachment that presented a workplan and cost estimate required to develop the proposed field program scope. The workplan included an additional site visit, review of geophysical data, preparation of a layout plan and location summary identifying coordinates for the geophysical investigation and an intrusive drilling program, and a memorandum summarizing the program. The memorandum agreed deliverable was a field work proposal which was received by Trans Mountain on April 16, 2018 and is currently under review. As part of the documents provided by Coldwater in the April 16, 2018 submission, BC Groundwater included a figure that outlined the possible footprint of the glaciofluvial aquifer (*i.e.*, the Coldwater Aquifer) utilized by the Band. This figure is essentially an expression of BC Groundwater's conceptual model presented in previous documents and referenced in the Coldwater Evidence, Appendix A – Part 4 (pgs. 133 and 134; Exhibit A91119-7). This interpreted outline of the Coldwater Aquifer is depicted in the figure appended to this Reply Evidence as Appendix B. This figure puts the Coldwater Aquifer, as interpreted by Coldwater, in context with regards to both the applied-for detailed route (Modified East Alternative) and the West Alternative.

65. In order to demonstrate Trans Mountain's commitment to engaging with Coldwater and in response to the information filed in the Coldwater Evidence, a preliminary hydrogeological assessment of the Coldwater Aquifer, including a preliminary evaluation of aquifer vulnerability and risk to the community water supply, was prepared and is attached as Appendix C of this Reply Evidence. This report is also intended to aid the Board's understanding of the Coldwater Aquifer and in appraising the level of technical effort Trans Mountain has extended to this Project with the objective of fulfilling the terms of the NEB and BC EAO Conditions.

66. The report's focus is on the TMEP Modified East Alternative alignment. The West Alternative route crosses the Coldwater River approximately 6 kilometres upstream of the Coldwater IR 1 community, routed through the highlands west of the river, and crossing back to the east side of the river approximately 7 kilometres downstream of the Coldwater IR 1 community. Although hydrogeology was not considered in the decision to exclude the West Alternative route, it is an understandable conclusion that any pipeline release west of the Coldwater River defined as a regional groundwater flow boundary could have no effect on the Coldwater IR 1 community water supply located upland, east of the river.

Coldwater Aboriginal Interests and TLU

67. Coldwater filed "The Preliminary Ethnographic and Historic Overview and Traditional Use Study" as evidence with the NEB on May 27, 2015. Trans Mountain reviewed the TLU information provided in the report at that time and has reconsidered the report in respect to the Detailed Route Hearing Process. Based on the review of the report, any route in proximity to Coldwater IR 1 will cross TLU sites. Coldwater stated in their Coldwater Evidence that all watercourses within their traditional territory are sacred. The preferred route crosses 23 watercourses, including two identified by Coldwater in their Coldwater Evidence (Kwinshatin and Skugam Creeks). Coldwater also identified sacred sites and timber harvesting sites along the Kwinshatin Creek. The West Alternative crosses 30 watercourses including the Coldwater River (twice). The Coldwater River has also been identified by Coldwater as an important fishing, plant harvesting, hunting location, and sacred site. Coldwater also reports that several TLU activities are conducted on the Coldwater IR 1 including plant gathering, gathering places, and sacred sites.

68. Trans Mountain has developed a comprehensive suite of mitigation measures designed to protect the environment so that the Coldwater will be able to continue with their cultural practices and traditional harvesting such as fishing, hunting, and gathering plants. The comprehensive suite of mitigation measures presented in the Pipeline Environmental Protection Plan ("EPP") are intended to address these concerns. Trans Mountain prepared the Pipeline EPP as part of the Facilities Application and has updated the EPP as part of Condition 72, which was most recently filed with the NEB on March 29, 2018 (A90966). The EPP is designed to:

(a) identify mitigation measures to be implemented during construction activities of the pipeline and associated components;

(b) provide instructions for carrying out construction activities in a manner that will avoid or reduce adverse environmental effects; and

(c) serve as reference for the environmental inspection staff to support decision-making and provide direction to more detailed information (such as resource-specific mitigation, issue management, and contingency plans).

69. Trans Mountain will implement the Pipeline EPP throughout construction to ensure the environmental and socio-economic impacts are minimized. During construction, Trans Mountain will ensure that compliance with environmental commitments, undertakings and conditions of authorization, and applicable environmental regulations are strictly enforced. This will involve hiring Environmental Inspectors as part of the Trans Mountain construction management team to ensure the measures set out in the EPP are communicated, complied with, monitored, and documented throughout all phases of construction.

70. In response to Coldwater's concern about the impacts of the "Approved Corridor" on Coldwater's interests and values, as stated in par. 24 of the Trans Mountain Written Evidence, Trans Mountain is aware that Coldwater has identified cultural sites along the proposed detailed route and remains willing to meet with Coldwater to discuss appropriate avoidance, mitigation, and accommodation of potential effects due to routing through the Coldwater Valley prior to the start of construction.

Aboriginal Engagement

71. Coldwater states that Trans Mountain did not consult with Coldwater in relation to its decision to "remove" the West Alternative from further consideration and in relation to hydrogeological studies of the Coldwater Aquifer. Coldwater also raises general issues regarding consultation on the detailed route for the Project. In Trans Mountain's view, Coldwater has provided an incomplete portrayal of Trans Mountain's consultation efforts, which have been ongoing since October 2011. Trans Mountain is therefore enclosing a complete engagement log as Appendix D, Tab 1 to this Reply Evidence ("Engagement Log"). Entries in the Engagement Log from 2011 through June 2017 were previously filed with the Board through the s.52 process and in relation to NEB Condition 96.

72. The Engagement Log demonstrates that Trans Mountain has been – and remains – in contact with Coldwater representatives in relation to the Project throughout its development. Through that engagement, Trans Mountain heard and responded to Coldwater's concerns regarding routing and the Coldwater Aquifer. For example, the following points of engagement are included in the Engagement Log:

- March 14, 2013: Trans Mountain advised Coldwater that it was entering into the planning phase that included proposed routing and requested a meeting with Coldwater to discuss routing options on the Lands, on and off the Coldwater IR 1.

- March 18 and 22, 2013: Coldwater requested information on off-reserve routing options. Trans Mountain acknowledged Coldwater' s letter and noted that it would prepare a response.

- April 19, 2013: Coldwater communicated its opposition to routing the Project through the Coldwater IR 1 and refused consent regarding any socio-economic or other study involving Coldwater or on the Coldwater IR 1 while the on-reserve option was still under consideration.

- May 27, 2013: Trans Mountain provided Coldwater with a letter and IPP report regarding on- and off-reserve routing options (including the West Alternative) in response to Coldwater's concerns about routing through the Coldwater IR 1 and offered to set up a meeting to discuss the options further. Trans Mountain's invitation for a meeting went unanswered. Trans Mountain's letter and IPP report are included with the Coldwater Evidence (Appendix B, Tab 1).

- August 6, 2014: Trans Mountain and Coldwater met and discussed, among other things, Project routing around the Coldwater IR 1 and a TLU study.

- March 19, 2015: Trans Mountain advised Coldwater that the West Alternative was eliminated as a route option early on and, therefore, was not a part of environmental field studies for which shapefiles were generated.

- March 19 and 26, 2015: Trans Mountain followed up with Coldwater on a meeting date to discuss preferred routing of the Project.

- April 17, 2015: Coldwater advised that (i) it understood that all route alternatives were under consideration throughout the NEB hearings; (ii) it had provided oral traditional knowledge evidence with a view to considering the impacts of each of the routes on its rights and interests; (iii) it had retained a hydrological expert to assess each of the route options; (iv) it continued to engage with Coldwater members with respect to all route options (including the West Alternative); (v) in Coldwater's view, all alternatives should remain under consideration; and (vi) based on Coldwater's preliminary assessment, the West Alternative may be the preferred option. Coldwater asked to suspend a meeting with Trans Mountain until it received the report from its hydrological expert and an explanation from Trans Mountain. Coldwater filed this letter on the NEB Registry with its evidence in the Facilities Application process (A4Q0X7). It is also attached hereto as Appendix D, Tab 2.

- June 17, 2015: Trans Mountain explained why the West Alternative was considered to be inferior to the alternatives to the east and stated its understanding of Coldwater' s position on routing options. Trans Mountain communicated its willingness to consider all routing alternatives proposed by Coldwater, referenced the agreed-upon studies recently completed under Coldwater's direction, and requested a meeting to discuss the results of the studies, routing and potential solutions. Trans Mountain filed this letter on the NEB Registry with its reply evidence in the Facilities Application process (A4S7H0). It is also attached hereto as Appendix D, Tab 3.

- July 23, 2015: Coldwater requested that Trans Mountain reconsider the West Alternative as a viable route option. This letter was filed by Coldwater on the NEB Registry (A4X4V6). It is also attached hereto as Appendix D, Tab 4.

- July 30, 2015: Trans Mountain replied to Coldwater's July 23, 2015 letter: (i) explaining that certain assumptions were made when filing routing options with the Board; and (ii) confirming its willingness to discuss the West Alternative as a routing option. Trans Mountain suggested a meeting as soon as possible. This letter was filed by Coldwater on the NEB Registry (A4X4V6). It is also attached hereto as Appendix D, Tab 5.

- October 14, 2015: Trans Mountain and Coldwater met to discuss routing options. Trans Mountain explained how routing options are decided on and the engineering and expertise that informs the process of arriving at the best route. It further explained that when alternatives were first developed, Trans Mountain cast a wide net for its assessment, and that it took a principled approach to exploring all options in the initial stages of routing work. Trans Mountain clarified that the West Alternative was included in the Facilities Application as an option that was initially reviewed but was not studied further once it was determined that there were three other options that would be more suitable. Trans Mountain provided the rationale for preferring the Modified East Alternative. Trans Mountain stated it would like to work together with Coldwater in addressing concerns around water and the TMEP route, and listed several potential options to help address Coldwater's concerns.

- December 21, 2015: Trans Mountain summarized routing concerns in a letter to Coldwater and provided additional technical reports on: (i) the West Alternative; and (ii) the risks of each routing option (including the West Alternative) through the Coldwater Valley. This additional technical work is discussed further above and was filed by Coldwater, along with Trans Mountain's letter, on the NEB Registry (A75204). Trans Mountain's letter is also attached hereto as Appendix D, Tab 6.

- September 9, 2016: Coldwater provided a report from Accufacts Inc. ("Accufacts Report") commenting on the additional technical studies on routing. Coldwater also requested a meeting to discuss the additional technical studies and the possibility of rerouting the TMPL and Project along the West Alternative. A copy of this letter and enclosure are attached hereto as Appendix D, Tab 7.

- September 19, 2016: Trans Mountain provided drawings for the proposed hydrogeological study for consideration by Coldwater.

- November 21, 2016: Trans Mountain acknowledged Coldwater's concerns about risks to Coldwater's water supply and confirmed its commitment to ensure the Project would not contaminate Coldwater' s drinking supply and provided a reply to the Accufacts Report. A copy of this letter and enclosure are attached hereto as Appendix D, Tab 8.

- February 3, 2017: Trans Mountain and Coldwater met to discuss access issues for studies and also discussed Coldwater's routing concerns.

- June 19, 2017: Trans Mountain and Coldwater met to discuss various aspects of the draft Coldwater Hydrogeological Assessment. Communication between Trans Mountain and Coldwater in relation to this report and related fieldwork and studies occurred throughout that timeframe and over the last year (as discussed above and summarized in the Engagement Log) and is ongoing.

73. As discussed above, Trans Mountain has continued to evaluate the West Alternative in response to Coldwater's concerns, even after Trans Mountain examined the various relevant factors, applied its routing criteria and concluded that the proposed route (Modified East Alternative) is superior. Trans Mountain has and continues to engage with Coldwater on potential impacts to the Coldwater Aquifer as a result of the proposed detailed route, including potential mitigation measures.

Land

74. Trans Mountain has undertaken work to identify the lands affected by the proposed Detailed Route, and include those landowners within the TMEP Landowner Engagement Program. Trans Mountain has also undertaken preliminary work to identify the lands that potentially would be affected by the alternate route proposed by Coldwater. Table 3 provides a summary comparison of the Coldwater proposed alternative compared to the proposed detailed route:

TABLE 3

SUMMARY COMPARISON OF COLDWATER PROPOSED ALTERNATIVE TO PROPOSED DETAILED ROUTE

Description	Proposed Detailed Route	Coldwater West Alternative
Total Parcels Intersected	28	28
Total Crown Parcels	11	18
Total Private Parcels	17	10
Total Private Parcels with Signed Land Agreements	17	2

Note: Two Private parcels with land agreements are intersected by both the Detailed and Coldwater alternative routes. The agreement with these two landowners is for the Proposed Detailed Route only.

75. As indicated in Table 3, Trans Mountain has fully engaged the private landowners who would be affected by the proposed detailed route and has reached voluntary land agreements with each landowner. Trans Mountain is in the process of acquiring the necessary land rights for the Crown parcels through the Government of British Columbia.

76. In comparison, Trans Mountain has obtained landowner agreements for only two parcels along the proposed West Alternative route, neither of which are for the alignment required for the proposed West alternative. Adopting the West Alternative would require

Trans Mountain to re-engage with these two landowners and renegotiate revised agreement with both landowners.

77. Trans Mountain historically has engaged with the landowners along the West Alternative, although that engagement was terminated following the decision to propose the East Alternative or Modified East Alternative corridor for approval. Landowners along the West Alternative were asked for survey permission to complete preliminary surveys. Of the ten private landowners along the West Alternative, two refused survey permission.

Prescribed Area

78. The Coldwater Evidence states that the detailed route restrains future use of parts of Coldwater IR 1 and amounts to an unlawful expropriation of Reserve Land. Coldwater further asserts that this triggers the need for GIC consent under s.35 of the *Indian Act*. The Damage Prevention Regulations require land users to obtain consent from pipeline companies prior to conducting certain ground disturbance activities within 30 metres of a federally-regulated pipeline.

79. Trans Mountain disagrees that the Prescribed Area materially restricts Coldwater's use of the Lands or that it constitutes a taking or expropriation. Rather, Trans Mountain understands that the purpose of the requirements imposed by the Damage Prevention Regulations is to ensure pipeline safety. Trans Mountain is of the view that the *NEB Act* and its regulations are laws of general application and the Prescribed Area does not constitute a right in land. Coldwater and any person or entity with authorization to conduct work on Coldwater IR 1 will retain the right to undertake activities and construct buildings, facilities or other structures within the Prescribed Area, as long as they abide by all legislative requirements for construction within the Prescribed Area.

80. Under s.10(1) of the Damage Prevention Regulations, if a person intends to engage in ground disturbance activities, that person is required to:

a) obtain the pipeline company's written consent;

b) make a locate request in accordance with section 3; and

c) obtain from the pipeline company the information that is referred to in paragraphs 6(1)(a) and (c) of the National Energy Board Pipeline Damage Prevention Regulations – Obligations of Pipeline Companies.

81. Trans Mountain has identified three small areas where the Prescribed Area associated with the proposed detailed route of the TMEP would extend into the Coldwater IR 1: areas adjacent to Kilometre Post ("KP") 936.2, KP 939.9 and KP 941.4, at points parallel to Highway 5.

82. Within these areas, if Coldwater were to conduct ground disturbance activities as specified in the Damage Prevention Regulations, it would be required to obtain written consent from Trans Mountain, except where the ground disturbance constitutes:

- cultivation to a depth of less than 45 centimetres below the surface of the ground; and

- any activity to a depth of less than 30 centimetres and that does not result in reduction of the depth of earth cover over the pipeline less than that approved at time of construction.

83. Trans Mountain is required by law to respond to requests for consent in a timely manner (and in any event, no later than ten working days after receiving the request). Moreover, Trans Mountain has an established process for reviewing applications for performing ground disturbance work within the Prescribed Area to protect the integrity of its pipelines and will respond promptly to all requests for crossing or proximity (ground disturbance) approvals in relation to the TMEP. Trans Mountain will only impose conditions or withhold consent where reasonably required to ensure safety and security of the pipeline, people and/or the environment. In the event Coldwater believes that Trans Mountain is unreasonably withholding consent for work within the Prescribed Area, it can seek consent from the NEB.

84. Trans Mountain notes that Coldwater is currently subject to the requirements of the Damage Prevention Regulations associated with the existing TMPL located within the IR. Currently, the Prescribed Area extends 30 metres on both sides of the TMPL within the Coldwater IR 1. Trans Mountain notes that, based on current records, there have only been three requests for consent to conduct ground disturbance near the TMPL on the Coldwater IR 1 since 2011. In each case, Trans Mountain granted consent within 3-4 days.