

**Trans Mountain Pipeline ULC
Trans Mountain Expansion Project (“TMEP”)**

**Hearing Order OH-001-2017
File No. OF-Fac-Oil-T260-2013-03 13**

City of Chilliwack Information Request No. 1

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Route Selection Process

1.1 BC Hydro Report

Reference:

- i) A84596-5. Attachment 1 Part 3 of 7 (to Information Request No. 1).
- ii) A84596-7. Attachment 1 Part 5 of 7 (to Information Request No. 1).

Preamble:

Reference i) contains a redacted report by BC Hydro dated January 2017 (the “**BC Hydro Report**”). There is no information on record about the scope, methodology or assumptions used in preparing the BC Hydro Report; who commissioned the BC Hydro Report; when the BC Hydro Report was commissioned; and who paid for the BC Hydro Report.

Reference ii) includes an email chain between Steve Scott and Peter Poos from April 20, 2017 to April 26, 2017. In these emails, Trans Mountain requests that a number of amendments be made to the BC Hydro Report before the report is provided to the City of Chilliwack. The reasons for these amendments, and their impact on the scope of the BC Hydro Report, are unclear.

Request:

- a) Please describe the scope of the BC Hydro Report, as agreed to by Trans Mountain and BC Hydro; the methodology used in preparing the BC Hydro Report; and any assumptions made in preparing the BC Hydro Report.
- b) Please advise whether it was BC Hydro or Trans Mountain that requested that the BC Hydro Report be prepared and whether Trans Mountain paid for (or reimbursed BC Hydro for) the BC Hydro Report.
- c) Please detail all the original language and all the amendments made to the BC Hydro Report before it was disclosed to the City of Chilliwack and explain the rationale for such amendments.

1.2 BC Hydro Route

Reference:

- i) A82269-2. Trans Mountain, Application pursuant to section 21 of the *National Energy Board Act*.
- ii) A82269-3. Trans Mountain, Appendix A, Route Alignment Map.
- iii) A84340-3. National Energy Board, Information Request No. 1.5.
- iv) A84596-8. Trans Mountain, Response to IR 1.5, Attachment 1 Part 6.

Preamble:

At paragraph 28 of reference i), Trans Mountain states: “BC Hydro notified Trans Mountain in a letter dated November 10, 2016 letter [sic] (Appendix B), the closest distance acceptable would be 12 m *from their southern outside conductor*. The 12 m minimum separation distance required by BC Hydro between the electrical transmission system and the TMEP pipeline would result in the pipeline being located very close to the existing residential housing. The realignment results in approximately 25 homes and six sheds less than 8 m from the new pipeline.” [emphasis added]

The BC Hydro letter attached as Appendix B to reference i) states that: “The permissible horizontal distance was calculated to be 12m to *the closest foundation of a BC Hydro transmission tower* in the studied Chilliwack corridor.” And again: “... the proposal to install the new Trans Mountain pipeline closer than 12m horizontal distance to *tower foundations* of BC Hydro Circuit 2L078 in Chilliwack is not acceptable to BC Hydro.” [emphasis added]

In reference iii), the Board notes that the detailed route alignment map provided by Trans Mountain in reference ii), which depicts the existing Trans Mountain pipeline right of way as well as the reroute, does not include the alternative pipeline alignment within and adjacent to the BC Hydro right of way. In reference iii), the Board requests that Trans Mountain provide a detailed route alignment map, at a scale of 1:2000, showing the alternative pipeline alignment within and adjacent to the BC Hydro right of way.

Reference iv) contains the detailed route alignment map requested in reference iii). However, the distance between the pipeline and existing residential infrastructure, such as homes and sheds, along route P1a is unclear.

Request:

- a) Please confirm the exact point and dimensions from which BC Hydro measures the 12m setback.
- b) Please confirm the exact point and dimensions from which the setback on the map in reference iv) was measured.
- c) Please provide legal descriptions of properties where existing homes and sheds are less than 8 m from the new pipeline along route P1a.

1.3 Universal Pegasus International Report

Reference:

- i) A85579-4. Attachment – UPI Report on Chilliwack Highway 1 Corridor Assessment dated July 27, 2017.

Preamble:

The UPI Report is silent on the scope of the report, assumptions made in the report, and field work, third party research or data sources carried out and used in support of the report.

Request:

Please describe, and provide supporting documentation for:

- a) the scope of the UPI report;
- b) assumptions made by UPI in support of the report;
- c) field work that UPI carried out in support of the report; and
- d) third party research and data sources on which UPI relied in support of the report.

1.4 Trans-Canada Highway Route

Reference:

- ii) A85579-4. Attachment – UPI Report on Chilliwack Highway 1 Corridor Assessment dated July 27, 2017.

Preamble:

At page 9 of reference i), the UPI Report states that: “It was stressed that MOTI ... may examine a request from Trans Mountain to accommodate the pipeline.” It is unclear if MOTI was aware of the relative impacts of each alternative route on the Sardis-Vedder Aquifer. It is also unclear if UPI or Trans Mountain approached MOTI after Trans Mountain decided not to pursue the BC Hydro route.

Request:

- a) Please describe all discussions between UPI, Trans Mountain and MOTI about the relative impacts of alternative routes (including the Trans-Canada Highway route) on the Sardis-Vedder Aquifer.
- b) Please describe all discussions between UPI, Trans Mountain and MOTI after Trans Mountain decided not to pursue the BC Hydro right of way route.

Impact on the Sardis-Vedder Aquifer

2.1 Waterline Report and Technical Memorandum – Scope of Work

Reference:

- i) A84231-3. Correspondence between TM and Chilliwack – Jan. to May 2017.
- ii) A82269-5. Appendix C Part 1-11.

Preamble:

At page 5 of the Waterline Draft Technical Memorandum dated February 28, 2017 (the “**Waterline Report**”), which forms part of reference i), Waterline states that the Waterline Report is based on the scope of work for the project that was agreed to by Trans Mountain and Waterline. The Waterline Report is only available in “draft”.

The Technical Memorandum by Waterline Resources Inc. dated December 14, 2016 (the “**Technical Memorandum**”), which forms part of reference ii) similarly states that the scope of work was agreed to by Trans Mountain and Waterline.

Neither the Waterline Report nor the Technical Memorandum describe field work, data sources, third party research or assumptions on which the reports are based.

Request:

- a) Please describe the agreed upon scope of work between Trans Mountain and Waterline for the Waterline Report and the Technical Memorandum.
- b) Please provide the “final” as opposed to “draft” Waterline Report. If no final report was prepared, please explain why.
- c) Please describe the assumptions on which Waterline relied to prepare the Waterline Report and the Technical Memorandum.
- d) Please describe, and provide supporting documentation for, any third party research and data sources on which Waterline relied to prepare the Waterline Report and the Technical Memorandum.
- e) Please describe, and provide supporting documentation for, field work that Waterline carried out in support of the Waterline Report and the Technical Memorandum.

2.2 Hatch Mott MacDonald Technical Memoranda

Reference:

- i) A82269-17. Appendix C Part 1-13.
- ii) A84231-3. Correspondence between TM and Chilliwack Jan. to May 2017.
- iii) A86546-35. Trans Mountain Revised Report Vol. 6. Sec. 4.2 Groundwater Condition 78.

Preamble:

Reference i) contains technical memoranda by Hatch Mott MacDonald (“HMM”) dated May 26, 2015 and October 16, 2015 which were provided to the City of Chilliwack. The memoranda describe measures to mitigate the impact of the pipeline on the Sardis-Vedder Aquifer. The HMM memoranda are referred to in the letter from Trans Mountain to the City of Chilliwack dated February 15, 2017 (included in reference ii)) and in Appendix D to the Groundwater Management Plan (reference iii)).

Request:

- a) Please describe the scope of work for the memoranda that was agreed to by Trans Mountain and HMM.
- b) Please describe the pipeline route alignment that HMM considered when preparing the memoranda in reference i).
- c) Please describe, and provide supporting documentation for, field work that HMM carried out in support of the memoranda.
- d) Please describe, and provide supporting documentation for, third party research and data sources on which HMM relied to prepare the memoranda.

2.3 Understanding the Sardis-Vedder Aquifer

Reference:

- i) A85095-1. Chilliwack Response to comments received July 24, 2017.
- ii) A82269-2. Application pursuant to section 21 of the *National Energy Board Act*.
- iii) A84231-3. Correspondence between TM and Chilliwack Jan. to May 2017.
- iv) A86546-35. Trans Mountain Revised Report Vol. 6. Sec. 4.2 Groundwater Condition 78.

Preamble:

It is unclear to what extent Trans Mountain, Waterline and HMM investigated the features and the nature of the Sardis-Vedder Aquifer. References to the nature of the Aquifer are vague and unsubstantiated:

- a) At page 5 of reference i) and in Appendix D of reference iv) (page 43), Trans Mountain states that it has relied on the BC aquifer classification maps to define the aquifers in the Groundwater Management Plan.
- b) Reference iv), the Groundwater Management Plan, does not expressly refer to the Sardis-Vedder Aquifer. However, on page 43, in response to the City's concern that the Aquifer is not referenced in the Plan, Trans Mountain refers the City to the HMM technical memoranda of May 26, 2015 and October 16, 2015. These memoranda do not extensively describe the Aquifer.
- c) At paragraphs 33 and 34 of reference ii), Trans Mountain describes methods of protecting the Sardis-Vedder Aquifer and states that the aquifer is "robust." No explanation is provided for this statement.
- d) At page 1 of the Waterline Draft Technical Memorandum dated February 28, 2017, which forms part of reference iii), Waterline describes the nature of the Sardis-Vedder Aquifer in very general terms.

Request:

- a) Please describe, and provide copies of supporting documentation for:
 - a.1) the information that Trans Mountain, Waterline and HMM used to map, and to define the features of, the Sardis-Vedder Aquifer;
 - a.2) the currency, completeness and accuracy of the BC aquifer classification map referred to in reference i) and in reference iv);
 - a.3) field work (including monitoring wells) that Waterline, HMM and Trans Mountain carried out to map, and define the features of, the Sardis-Vedder Aquifer; and

- a.4) scientific studies that Waterline, HMM and Trans Mountain carried out to compare impacts on the Sardis-Vedder Aquifer of P1, P1a and P2 route alignments.

- b) Please explain the meaning of, and the scientific basis for, concluding that the Sardis-Vedder Aquifer is “robust”.

2.4 Identifying Well Capture Zone

Reference:

- i) A84231-3. Correspondence between TM and Chilliwack Jan. to May 2017.
- ii) A82269-17. Appendix C Part 1-13.

Preamble:

At page 2 of the Waterline Draft Technical Memorandum dated February 28, 2017, which forms part of reference i), Waterline states that: “... shallow groundwater near the water table may evade capture by municipal wells entirely (Figure 2)”. Figure 1 includes a Schematic Plan of the Aquifer, with reference to a study prepared by Amec in 2011. Figure 2 includes a Conceptual Hydrogeological Cross-Section, with no reference to any source.

Appendix 3A to the Waterline Technical Memorandum dated December 14, 2016, which forms part of reference ii), contains a sketch plan showing well capture zones.

Also part of reference ii) is a letter from the City of Chilliwack to Trans Mountain dated January 23, 2017, in which the City advised Trans Mountain that Waterline’s information on capture zones may be outdated and inaccurate. It is unclear if Trans Mountain heeded this advice.

Request:

- a) Please describe, and provide supporting documentation for, field work that Waterline carried out to define the capture zone for the City of Chilliwack wells.

- b) Please describe, and provide supporting documentation for, third party research and data sources on which Waterline relied to identify the capture zone for the City of Chilliwack wells.

- c) Without limiting the foregoing, please describe the climate, precipitation, seasonal, pumping and other variables that Waterline considered in identifying the capture zone for the City of Chilliwack wells.

- d) In the January 23, 2017 letter to Trans Mountain, the City of Chilliwack advised Trans Mountain that, based on current research undertaken by the City, the capture zones for the City's wells are likely larger than those referred to in Waterline's reports. Please describe:
 - d.1) research carried out by Waterline and Trans Mountain in response to this information;

 - d.2) amendments to Waterline's Technical Memoranda following this advice; and

 - d.3) implications of a larger well capture zone on the accuracy and sufficiency of Trans Mountain's Draft Groundwater Management Plan and mitigation strategy for the Sardis-Vedder Aquifer.

2.5 Identifying Water Table

Reference:

- i) A84231-3. Correspondence between TM and Chilliwack Jan. to May 2017.

Preamble:

At page 2 of the Waterline Draft Technical Memorandum dated February 28, 2017, which forms part of reference i), Waterline states that: "The TMEP pipeline routing across the Sardis-Vedder Aquifer is proposed as a shallow buried utility within the existing pipeline right-of-way, down-gradient of the operating municipal wells. This places the pipeline in the unsaturated zone, or dry soils above the water table (Figure 2)". Figure 1 includes a Schematic Plan of the Aquifer, with reference to a study prepared by Amec in 2011. Figure 2 includes a Conceptual Hydrogeological Cross-Section, with no reference to source.

Request:

- a) Please describe, and provide supporting documentation for, field work that Waterline carried out to define the water table and to identify the highest anticipated elevation of the water table.
- b) Please describe, and provide supporting documentation for, third party research and data sources on which Waterline relied to define the water table and to identify the highest anticipated elevation of the water table.
- c) Without limiting the foregoing, please describe the climate, precipitation, seasonal, pumping and other variables that Waterline considered in identifying the water table.

2.6 Measuring Gradient

Reference:

- i) A84231-3. Correspondence between TM and Chilliwack Jan. to May 2017.

Preamble:

At page 3 of the Waterline Draft Technical Memorandum dated February 28, 2017, which forms part of reference i), Waterline states that: "By following the conceptual model presented above, dissolved phase contamination sourced from the NAPL outside the shallow water table capture zone can be carried down gradient, away from the deeper manifestation of well capture in the active aquifer layers, and have no impact on the municipal wells (Figure 2)"

Request:

- a) Please describe the gradient used by Waterline in support of the above conclusion.
- b) Please describe the soil stratigraphy used by Waterline in support of the above conclusion.

- c) Please describe, and provide supporting documentation for, field work, third party research and data sources carried out and relied on by Waterline in support of the above conclusion.

Spill Response

3.1 Existing Pipeline

Reference:

- i) A84231-3. Correspondence between TM and Chilliwack Jan. to May 2017.
- ii) A85579-2. Attachment – Trans Mountain letter to the Province of BC dated January 6, 2017.

Preamble:

Reference i) contains a letter from Trans Mountain to the City of Chilliwack dated February 15, 2017. At pages 4 and 5 of this letter, Trans Mountain describes its spill response practices and states that it has developed a comprehensive program based in part on past incidents. No details are provided about past incidents or responses to such incidents.

In attachment 1 to reference ii), Trans Mountain confirms that there were two pipeline leaks in 2013 in the Sardis-Vedder Aquifer area. No details are provided.

Request:

Please describe past spill incidents occurring in the Sardis-Vedder Aquifer area. For each spill incident, please provide the following information:

- a) cause of the incident;
- b) method of identifying the incident;
- c) time it took to identify the incident;
- d) time it took to address the incident;
- e) steps Trans Mountain took to address the incident;

- f) steps Trans Mountain took to prevent another incident from occurring;
- g) depth and volume of soil negatively impacted during the incident; and
- h) depth and volume of water negatively impacted during the incident.

3.2 Pipeline Integrity Program

Reference:

- i) A84231-3. Correspondence between TM and Chilliwack Jan. to May 2017.

Preamble:

At page 3 of the Waterline Draft Technical Memorandum dated February 28, 2017, which forms part of reference i), Waterline describes Trans Mountain's pipeline integrity program and states that Trans Mountain will continue to allocate "extensive resources" to its pipeline integrity program.

Request:

- a) Please confirm what experience and knowledge Waterline has in respect of Trans Mountain's pipeline integrity program and financial commitments.
- b) Please explain what "extensive resources" means in the context of the Sardis-Vedder Aquifer Area over the pipeline's lifespan.

3.3 Response Time

Reference:

- i) A85579-1. Letter to NEB – s.21 Variance Application.
- ii) A85095-1. Chilliwack Response to comments received July 24, 2017.

Preamble:

At pages 4 and 5 of reference i), Trans Mountain discusses its spill response techniques, in very general terms, with no reference to the Sardis-Vedder Aquifer, the

particulars of soil, or the time to get the spill response units to the location. Trans Mountain states that it has a large inventory of oil spill equipment, including response units in Abbotsford and Burnaby and a rapid response trailer in Hope.

Further, at pages 8 and 9 of reference i), Trans Mountain states that its Emergency Preparedness Plan covers all aspects of response and recovery and it has gathered information on the “high consequence areas of concern for the City of Chilliwack, including the Sardis-Vedder Aquifer.” No details are provided about such “high consequence areas.”

At page 5 of reference ii), Trans Mountain states that: “...targeted groundwater modelling for specific locations that yield credible results could be beneficial and Trans Mountain will work continue to work [sic] with communities that have specific concerns related to protection of their municipal water sources.” As in reference i), spill response measures are described in platitudes, with no concrete references to the Sardis-Vedder Aquifer.

Request:

- a) Please confirm whether Trans Mountain has conducted spill modelling for spills in the area of the Sardis-Vedder Aquifer. If not, please explain why.
- b) Please explain the concept of “groundwater modelling” described in reference ii) and confirm whether Trans Mountain has carried out such modelling for the Sardis-Vedder Aquifer.
- c) Please confirm whether Trans Mountain intends to prepare a specific spill response plan for the Sardis-Vedder Aquifer area. If not, please explain why.
- d) Please explain the concept of “high consequence areas for the City of Chilliwack, including the Sardis-Vedder Aquifer” described in reference i), and describe aspects of the Emergency Management Plan specifically applicable to these areas.
- e) Please confirm the nearest spill response units to the Sardis-Vedder Aquifer.
- f) Please describe specific measures that Trans Mountain will take to assess the impact of a spill on the Sardis-Vedder Aquifer and the City of Chilliwack’s water supply system.

- g) Please confirm how long Trans Mountain estimates it will take to detect a leak in the area of the Sardis-Vedder Aquifer.
- h) Please describe the leak detection mechanisms that Trans Mountain will use to detect leaks in the area of the Sardis-Vedder Aquifer.
- i) Please confirm how long Trans Mountain estimates it will take contaminants to reach the capture zone of the City of Chilliwack wells following a leak in the area of the Sardis-Vedder Aquifer.
- j) Please confirm how much fluid can be discharged between the time a leak is detected and the time the leak stops.
- k) Please confirm how long it would take for Trans Mountain to start remediation after a leak in the Sardis-Vedder Aquifer area.

3.4 Alternative Source of Drinking Water

Reference:

- i) A85579-1. Letter to NEB – s.21 Variance Application.

Preamble:

At page 5 of reference i), Trans Mountain states that it has committed to providing replacement water from an alternate source until the water quality in the impacted source has been returned to safe levels. No details are provided on how this will be achieved.

Request:

Please confirm whether Trans Mountain has:

- a) identified the alternate source of drinking water to be used in the event of a spill in the Sardis-Vedder Aquifer;
- b) identified the treatment mechanisms required in the event of having to use an alternate source of drinking water;

- c) identified the method of delivering and distributing alternate drinking water to residents of the City of Chilliwack;
- d) estimated the cost associated with identifying alternate water sources and providing water to the City of Chilliwack; and
- e) defined a funding mechanism to cover the expenses.

3.5 Monitoring Wells

Reference:

- i) A82269-2. Application pursuant to section 21 of the *National Energy Board Act*.
- ii) A84231-3. Correspondence between TM and Chilliwack Jan. to May 2017.

Preamble:

At paragraph 37 of reference i), Trans Mountain states that it will consider installing monitoring wells in strategic locations along the pipeline. It is unclear how this applies to the Sardis-Vedder Aquifer or P2 alignment.

Reference ii) contains a letter from Trans Mountain to the City of Chilliwack dated May 1, 2017, where Trans Mountain states that vapour monitoring is not an effective method of leak detection. However, Trans Mountain does not identify any alternative methods of leak detection saying only that it will consider installing monitoring wells in strategic locations.

Request:

- a) Please describe monitoring wells Trans Mountain intends to place in the area of the Sardis-Vedder Aquifer generally and the P2 alignment area specifically.
- b) Please describe why Trans Mountain does not consider vapour monitoring to be an effective method of leak detection in the Sardis-Vedder Aquifer.
- c) Please describe methods of leak detection that Trans Mountain intends to use in the Sardis-Vedder Aquifer generally and P2 alignment area specifically.