

To Canada Energy Regulator  
Suite 210, 517 10 Ave SW Calgary, AB T2R 0A8  
Via Electronic Document Portal  
Attention: Mr Ramona Sladic, Vice President, Secretary of the Commission  
Re: Mountain 3 HDD Deviation

IN THE MATTER OF

**TRANS MOUNTAIN PIPELINE ULC (TRANS MOUNTAIN)  
TRANS MOUNTAIN EXPANSION PROJECT (Project, TMEP)**

**Certificate of Public Convenience and Necessity OC-065 (Certificate)**

**Application pursuant to subsection 69(1) of the Canadian Energy Regulator Act Mountain 3 Horizontal Directional  
Drill Variance Application**

**Mountain 3 HDD – Request for Variance**

**CER File: OF-Fac-Oil-T260-2013-03 61 and File 3427016**

**NOTICE OF MOTION**

Name of person bringing motion: Tim Takaro

Decision or order requested:

1. **That CER takes the necessary time and due diligence** to re-evaluate TMEP variance application for reducing pipe diameter from NPS 36 to NPS 30 inches ([C27302](#) and [C27678-2](#)), including reviewing the upcoming TMEP response to the latest Information Request (IR) from Dec 22, 2023 ([C27818](#)), **and considering the additional concerns raised here**. TMEP is making multiple attempts to force CER to reverse their decision from December 5<sup>th</sup>, 2023 ([C27543-1](#)) and has established a deadline of January 9<sup>th</sup>, 2024. CER must uphold their mission “with safety remaining at the core of our mandate” and not rush any decision.
2. That all **feasibility studies regarding the approved NPS 36 pipeline for Mountain 3 HDD crossing are made public**, and calculations are updated for the proposed diameter 30 inches, for the new interfaces with existing 36-inch pipe, and for the new materials and coatings (and coefficient of friction), and that those studies are certified by CER engineer licensed by EGBC.

## **Request #1: Additional concerns and request to take required time for technical assessment.**

### **PART 1 – STATEMENT OF FACTS**

#### **A. The TMEP pipeline is expected to run for decades, and analysis of the physical integrity of the pipeline cannot be rushed by requested date January 9, 2024.**

TMEP has indicated on their second attempt to approve their request for variance that a CER decision is required before January 9, 2023, for the project to meet planned in-service date of late Q1 2024 ([C27678-2](#), paragraph 54).

TMEP also indicated on the same document that delay to the TMEP in-service date results in roughly \$200 million per month in delayed revenues and roughly \$190 million in carrying charges for Trans Mountain. (paragraph 47) as well as losses for shippers and other parties relying on the TMEP.

TMEP has asked for urgency before and has not followed through.

On a previous request for deviation (ie. variance) on 22 December 2021, TMEP filed a request for deviation of HDD routing under the Fraser River, requesting urgency. This deviation was approved by CER on record time on 28 January 2022 ([C17459-3](#)), with little or no engineering involvement, as per 313 pages document obtained from Access of Information ATIP File A-2021-00002.

Albeit permission was granted quickly, TMEP only performed the crossing of the Fraser River 9 months later, starting in October 2022 ([C17122-1](#) progress report, page 25) and finishing in December 2022. They faced multiple issues on first and second crossing attempts, and there is evidence they moved the exit point position by an amount higher than 80 metres, information that was not clearly disclosed to CER in their deviation request. In short, there was no benefit for the urgency requested, and technical concerns remain in that crossing.

On a more recent deviation application, on May 5, 2023, TMEP requested a variation to the HDD for the Salmon River ([C24412-1](#)). This time CER requested ([C24533-2](#)) all sorts of engineering studies, including, but not limited to, providing the drilling execution plan including the expected pull forces on the pipe as well as a description of the buoyancy control measures, the stringing operation and setup; confirm whether a structural engineer has assessed and confirmed that the estimated settlements for the existing structures are within acceptable limits; and have they analyzed geotechnical feasibility report ([C24412-2](#), page 2, request A).

Fortunately, this recent variance request from Oct 31, 2023 ([C27302](#)) is being handled in a thorough and critical way, as it should be with any requests involving the safety integrity of pipeline, as demonstrated by CER inquiries in the oral hearing held on November 27<sup>th</sup>, 2023 (links to [recording](#) and [transcript](#)).

I trust this will continue to be the approach of CER towards TMEP requests moving forward.

Below is evidence, from TMEP documentation ([C27483-1](#), page 13) that deviation are being made based on short delivery window and schedule constraints.

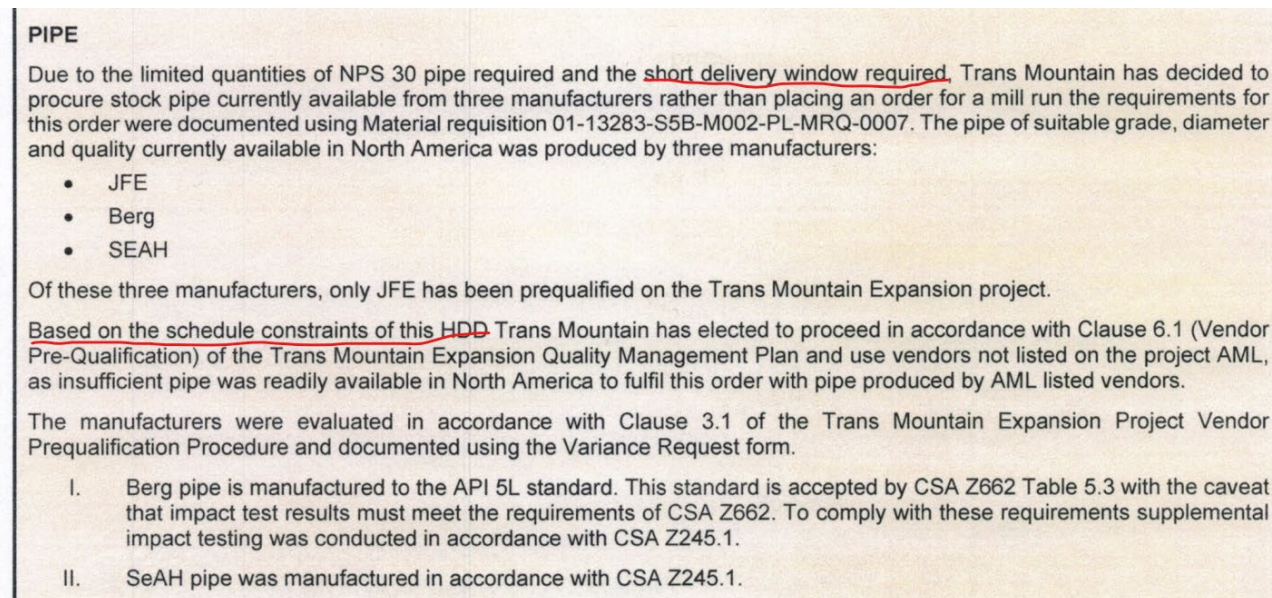


Figure 1. TMEP DCN-01094 signed on November 27<sup>th</sup>, 2023 indicating reasons for deviating from their own procedures.

## B. Additional technical concerns over TMEP request for variance

As CER may know, a Quality Management Plan (QMP) is not just a “forward looking” document, as TMEP stated in their oral hearing ([transcript](#) page 16, line 13). This is a process that ensures that CER and the public trust that an organization will follow their procedures, inspection plans, including change management and critically review their own internal deviations and feasibility studies before approaching CER. CER cannot be micro-managing TMEP.

I believe it was in this spirit that, Ms. Marian Yuzda from CER asks TMEP on November 27<sup>th</sup>, 2023 to “demonstrate... [if there] were any deviations from the AML, from the approved manufacturers list, ... and... how that was done in accordance with Trans Mountain's own deviation procedures.” ([transcript](#) page 34, line 1).

TMEP responded with a signed DCN (Design Change Notice) signed on November 27<sup>th</sup>, 2023, the day of the oral hearing! ([C27483-1](#), page 13).

A proper deviation (or variance) process is expected to involve:

1. Review of initial plans and feasibility studies, and what went wrong that triggered the need for a deviation.
2. A clear description of what is changing or being deviated from.
3. A **systematic review** of every document, feasibility study and procedures affected by the deviation.
4. A SME (Subject Matter Expert, usually Engineering) assessment of what documents need to be reviewed and updated.
5. A Quality Engineer review if all the above was completed.
6. Internal signatures and releases, pending external approval.
7. A request for CER approval, **prior to commencing work and sourcing material**.
8. Approval to proceed with the revised plans.

From TMEP responses, there is no evidence that this process was applied.

It seems TMEP is considering the deviation process as a paperwork exercise. Instead, this process is critical to uncover technical risks, some listed here due to the lack of diligence from TMEP assessments:

- a. The reduction from NPS 36 to NPS 30 was assessed for its ability to keep the necessary pressure only (ie. to maintain function, [C27372](#), MAOH studies on page 18), **but not assessed for its side effects, such as: impact to seismic studies; stress analysis of the pipeline and integrity of pipe during the HDD pullback**. If the 30-inch pipe has such a little impact, and it is a much more cost-effective solution, why is it the first time it is used in TMEP? ([transcript](#) page 33, line 1, explaining why they don't have 30-inch material in AML).
- b. **TMEP used leftover material, which was likely manufactured to a different set of requirements**. The forms signed for inclusion of new material manufacturers in the AML (approved manufacturer list) do demonstrate that critical reviews took place. The Vendor List

Deviation Request Form ([C27372](#) page 21), just signed on November 29<sup>th</sup>, 2023, refers to “detailed justification is on Design Change Notice (DNC)”, and the DNC refers to “equivalent acceptance” from Gary Oak pipeline and pipe from vendor stock as a proxy for inclusion in their AML. Other projects have their own requirements, and suitability for Gary Oak pipeline does not imply suitability for TMEP. Further, there was no review of which requirements SeAH had to comply with when they produced their stock, how long it has been stored, and therefore there is no evidence it is suitable for TMEP. During the milling process there is the possibility of manufacturing defects, such as inclusions or local material degradation, that cannot be detected on the final product with existing inspection methods. That is why safety-oriented organizations have an AML (approved manufacturer list) linked to a process to certify the production methods of their vendors, including on site audits, also during production process, 3<sup>rd</sup> party inspections, and review of customer specific requirements. Unless the vendor can *demonstrate* that this process took place and have full documentation traceability of their production process requirements and parameters, with documents dated by the time they were produced, it will be required to make a specific new milling run for TMEP. The existing approach of TMEP to produce documents with recent approvals does not replace the qualification of a new vendor.


Resolution / Description of Change: PIPE MANUFACTURER ACCEPTANCE CRITERIA			
<hr/>			
 19731-501-DCN-01094	<b>Trans Mountain Expansion Project</b>  <b>Design Change Notice</b> <b>NPS 30 Pipe Suitability for</b> <b>Mountain Crossing # 3</b>	Contractor Revision Date:	2023-11-27
		Contractor Revision No.:	0
		Page	3 of 4
<p>As the pipe was previously manufactured, a review of pre-construction risk mitigation documents such as the Quality Management Plans and Inspection and Test Plans do not provide risk mitigation value at this stage. Instead, in accordance with condition 9 and Clause 3.1 approved vendor list deviation procedure, the manufacturers were evaluated for <u>equivalent acceptance</u> based on vendor acceptance criteria i.e.,</p> <ul style="list-style-type: none"> <li>a) Manufacturer considered by other industry standard pipeline companies,</li> <li>b) Trans Mountain's past experience with the Manufacturer</li> <li>c) Manufacturer's ISO certification</li> <li>d) Manufacturer's QA / QC documents</li> </ul> <p>Based on above criteria, following were the findings:</p> <ul style="list-style-type: none"> <li>I. Berg pipe – this pipe is <u>surplus from a mill order for the Gary Oak pipeline</u>, a joint venture between Enbridge and Phillips 66. This pipe was manufactured to the standards of these organizations. As these are top tier organizations with industry leading QMP programs, Trans Mountain considers their QA/ QC processes / standards to be <u>suitable for use</u> on the Trans Mountain Pipeline.</li> <li>II. SeAH – this pipe was purchased <u>from pipe vendor stock</u>. SeAH is a manufacturer which has been previously qualified by Trans Mountain Operations and was used on previous Trans Mountain projects, including the welding procedure qualifications for the Trans Mountain Expansion Project. As such Trans Mountain has a high degree of confidence in the QA/ QC processes / standards of the pipe supplier.</li> </ul>			

Figure 2. TMEP DCN-01094 signed on November 27<sup>th</sup>, 2023 showing new material sourced.

- c. **Risks with the pull back of the 30-inch pipe through the 42-inch hole and damage to the pipeline.** TMEP in their oral hearing indicated that “in the case of a reamer failure, you have to go in and fish for the pieces of the reamer that have fallen off. And you have to do that because you can't leave those pieces in. It would damage the pipe that we're going to pull into the hole eventually.” ([transcript](#) page 22, line 2). There is no evidence that TMEP has accounted for all debris from previous reamer failures, nor that they have shown a plan for a robust pull back of the 30-inch pipeline. Once the pipeline is installed, there is no way to identify if it was damaged during the insertion.

## **PART 2 – GROUNDS FOR THE REQUESTS**

Based on the above, it is clear that TMEP with the request for variance purchased 30-inch non-approved pipes leftover from other projects without CER consent. They seem to be rushing their decisions, skipping their own quality procedures and only now, after a higher scrutiny of CER, it seems they are putting the structural integrity of the pipeline at risk.

This risk is very significant because the eastern end of the Mountain 3 tunnel is located very close to the Fraser River near Herring Island. The island and the surrounding gravel beds are the most significant salmon spawning grounds in the Lower Fraser. A leak in this area would destroy these crucial spawning grounds. In addition, a leak at either end of the tunnel would affect the Trans Canada highway, shutting down freight and vehicular traffic for a significant period. Finally, other TMEP documents indicate that the new pipeline will not have a fibre optic leak detection system in tunnels such as these. This shortfall in the fibre optic system means leaks will not be detected as quickly or assuredly.

Items a, b and c from part 1 above are just examples of additional concerns over the ones raised by CER. A thorough engineering assessment must be made on what should be the complete scope of this request.

## **PART 3 – ORDERS SOUGHT**

1. **That CER takes the necessary time and due diligence** to review the above-mentioned concerns, as demonstrated in their request for information from Dec 22<sup>nd</sup>, 2023, calling TMEP for additional oral hearings as necessary, and not be pressured for a decision by January 9<sup>th</sup>, 2024. The project schedule is in jeopardy due to TMEP lack of transparency and inability to work with CER, not because of CER's scrutiny with questions to uphold their mission of safety being in the core of their mandate.

**Request #2: Publish and review the feasibility studies for the existing NPS 36-inch HDD.**

**PART 1 – STATEMENT OF FACTS**

**A. Almost all HDDs have publicly available feasibility studies, but not for Mountain 3.**

HDD (Horizontal Directional Drilling) is a major engineering undertaking. As such, they count on feasibility studies that evaluate the risks of failure to complete the HDD, risks of drilling fluid leakage and creating sinkholes (such as in [Langley](#) and [Coquitlam](#)), but also for the risks of the pipeline structural integrity being compromised during its insertion. For instance, material stresses, micro-cracks, and damage to the pipeline coating can happen in a way that passes hydrostatic and non-destructive tests, but over time due to an earthquake, fatigue, or propagated corrosion can cause a catastrophic failure.

As an example, the Fraser River had multiple feasibility studies, such as the Hatch Mott MacDonald, 2015 ([B324-11](#)), Thurber Engineering in 2018 ([A90563-3](#)), a Geotechnical Assessment of Property Fragmentation also by Thurber in 2018 ([A90529-1](#)), and a Seismic Liquefaction and Lateral Spreading Assessment by BGC Engineering in 2017 ([A83593-3](#)).

All these reports were made for a NPS 36 1,445m HDD crossing. In the Hatch assessment, it shows the level of risk for such crossing ([B324-11](#), pdf page 22 of 101):

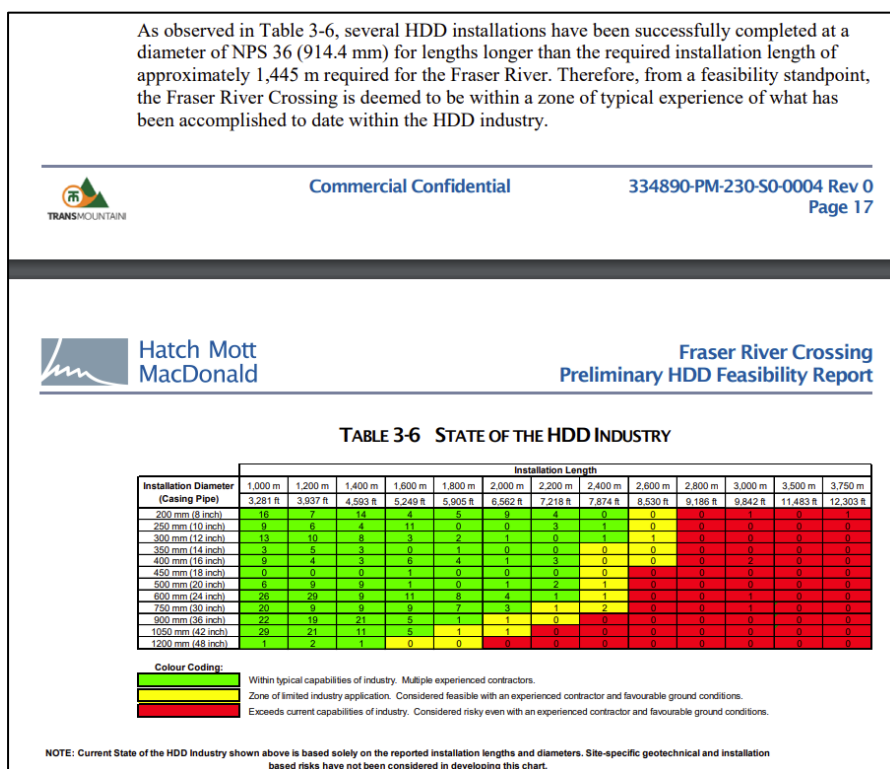


Figure 3: Fraser River feasibility report showing risks related to HDD length and diameter.

The Mountain 3 is a 2,400m crossing over a hard rock, vs. the 1,445m crossing of soft soil of the Fraser River (which posed other risks).

On November 16<sup>th</sup>, 2023, CER through IR1 inquired of TMEP about their feasibility study. ([C27303-2](#), page 3) “clarification on whether the current HDD execution plan for the installation of the initially planned NPS 36 pipeline is technically feasible”.

On November 22<sup>nd</sup>, the TMEP responded with “The current HDD execution plan for installing the NPS 36 pipe is feasible” ([C27372](#), page 7), but without sharing any evidence.

On November 27<sup>th</sup>, TMEP reinstated that “As you heard from Mr. Goulet, while the 48-inch ream could be technically feasible, it carries a greater risk of increased timeline to complete as compared to the variance” ([transcript](#) page 99, line 21).

On December 20<sup>th</sup>, 2024, CER stated that ([C27768-1](#), pdf page 7 of 20):

“Based on the geotechnical evaluations that were carried out prior to the HDD, including boreholes and the pilot hole, Trans Mountain knew that it was dealing with very hard rock over a long distance, and that there was a potential for water. Trans Mountain didn’t find anything that wasn’t expected, and there were no technical challenges encountered that weren’t previously identified in the feasibility study. Trans Mountain did note that although they did not find anything that wasn’t expected, they did find that the rates of penetration were lower than what they expected and that there was more water than they expected.”

On December 22<sup>nd</sup>, 2024, CER asks further questions regarding feasibility and existing plans for approved NPS 36-inch crossing.

**Where are all of those “feasibility studies” for Mountain 3 HDD?**



Here is a comparative assessment of the North Fraser with the Mountain 3 crossing, using the same State of HDD Industry table from the Hatch feasibility report mentioned above:

- Fraser River Crossing: 36-inch, 1,400m – falls on green area, “within capabilities of industry”
- Mountain 3 Crossing: 36-inch, 2,400m – red area “exceeds current capabilities of the industry”

**TABLE 3-6 STATE OF THE HDD INDUSTRY**

Installation Diameter (Casing Pipe)	Installation Length												
	1,000 m 3,281 ft	1,200 m 3,937 ft	1,400 m 4,593 ft	1,600 m 5,249 ft	1,800 m 5,905 ft	2,000 m 6,562 ft	2,200 m 7,218 ft	2,400 m 7,874 ft	2,600 m 8,530 ft	2,800 m 9,186 ft	3,000 m 9,842 ft	3,500 m 11,483 ft	3,750 m 12,303 ft
200 mm (8 inch)	16	7	14	4	5	9	4	0	0	0	1	0	1
250 mm (10 inch)	9	6	4	11	0	0	3	1	0	0	0	0	0
300 mm (12 inch)	13	10	8	3	2	1	0	1	1	0	0	0	0
350 mm (14 inch)	3	5	3	0	1	0	0	0	0	0	0	0	0
400 mm (16 inch)	9	4	3	6	4	1	3	0	0	0	2	0	0
450 mm (18 inch)	0	0	0	1	0	0	0	0	0	0	0	0	0
500 mm (20 inch)	6	9	9	1	0	1	2	1	0	0	0	0	0
600 mm (24 inch)	26	29	9	11	8	4	1	1	0	0	1	0	0
750 mm (30 inch)	20	9	9	9	7	3	1	2	0	0	1	0	0
900 mm (36 inch)	22	19	21	5	1	1	0	0	0	0	0	0	0
1050 mm (42 inch)	29	21	11	2	1	1	0	0	0	0	0	0	0
1200 mm (48 inch)	1	2	1	0	0	0	0	0	0	0	0	0	0

**Colour Coding:**

- Within typical capabilities of industry. Multiple experienced contractors.
- Zone of limited industry application. Considered feasible with an experienced contractor and favourable ground conditions.
- Exceeds current capabilities of industry. Considered risky even with an experienced contractor and favourable ground conditions.

**NOTE:** Current State of the HDD Industry shown above is based solely on the reported installation lengths and diameters. Site-specific geotechnical and installation based risks have not been considered in developing this chart.

Figure 4: Comparative analysis of Fraser River (1,400m) and Mountain 3 (2,400m) state of the HDD Industry. Source of the table: Hatch Mott MacDonald, 2015 (CER filed document B324-11).

Notice that, even by changing the pipeline to NPS 30, it still lands in the yellow area, ie. it is considered feasible with an experienced contractor and “favorable ground conditions”, which is not the current case, as we are dealing with hard rock.

The aerial view below illustrates the location of Mountain 3 HDD, nearby Highway 1 and the Fraser River.



Figure 5: Google maps view of the 2.4 km Mountain 3 HDD crossing near Herrling Island Rd in Rosedale, BC.

## **PART 2 – GROUNDS FOR THE REQUESTS**

Based on the above, there are major challenges with the 2.4 km HDD crossing through hard rock. Those challenges can only be understood if all geotechnical, seismic and feasibility studies are made public and reviewed against existing findings.

The Fraser River had those already cited reports published ([B324-11](#), [A90563-3](#), [A90529-1](#) and [A83593-3](#)). Feasibility studies for other crossings were Salmon River ([A92789-6](#)), Cold Water ([A84152-4](#)), North Saskatchewan River ([B324-25](#)), Wedgewood Creek ([A84152-1](#)).

It is not unreasonable to ask for publication of the initial feasibility studies for Mountain 3 HDD.

## **PART 3 – ORDERS SOUGHT**

**That all feasibility studies regarding the approved NPS 36 pipeline for Mountain 3 HDD crossing are made public** and, in order to compare risks of the 36-inch with 30-inch pipes, they are updated with the new diameter of 30-inch, new interfaces with existing 36-inch pipeline, and new materials and coatings, including changes to coefficient of friction, and that those studies are certified by CER engineer licensed by EGBC.

Finally, CER (and the public) should not be put in a position to choose between what seems to be a non-feasible 36-inch crossing, and a not yet demonstrated to be feasible 30-inch crossing, using leftover materials with poor quality controls.

ALL OF WHICH IS RESPECTFULLY SUBMITTED.

Dated: December 28, 2023

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**Tim Takaro**