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British Columbia Utilities Commission
Sixth Floor
900 Howe Street
Vancouver, B.C.
V6Z 2N3

Attention: Ms. Erica M. Hamilton, Commission Secretary

Dear Ms. Hamilton:

Re: Terasen Gas Inc. - Fort Nelson Service Area (TG Fort Nelson) 2011 Revenue Requirements Application for Changes to the Revenue Stabilization Adjustment Mechanism ("RSAM") Rate Rider and Delivery Rates effective January 1, 2011 (the "Application")

Response to the British Columbia Utilities Commission ("BCUC" or the "Commission") Information Request ("IR") No. 2

On September 8, 2010, TG Fort Nelson filed the Application as referenced above. On November 19, 2010, TG Fort Nelson filed an Evidentiary Update. In accordance with the British Columbia Utilities Commission Letter No. L-98-10 setting out the Amended Regulatory Timetable, TG Fort Nelson respectfully submits the attached response to BCUC IR No. 2 on the Evidentiary Update.

If there are any questions regarding the attached, please contact the undersigned.

Yours very truly,

TERASEN GAS INC.

Original signed:

Diane Roy

Attachment

cc (e-mail only): Registered Parties



<p>Terasen Gas Inc. Fort Nelson Service Area ("TGFN", "TG Fort Nelson" or the "Company") 2011 Revenue Requirements Application for Changes to the Revenue Stabilization Adjustment Mechanism ("RSAM") Rate Rider and Delivery Rates effective January 1, 2011 (the "Application")</p>	<p>Submission Date: December 10, 2010</p>
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1.0 Reference: Muskwa River IP Bridge Crossing

Exhibit B-5, Cover letter dated November 19, 2010, p. 2

1.1 TGIFN makes reference to uncertainty in the IP Bridge Option due to required permits and approvals.

1.1.1 Please explain what permits and approvals TGIFN requires and provide a status update on the stage of negotiations for each of the required items.

Response:

The permits and approvals required for the IP Bridge Option are described in the table below.

Authority Having Jurisdiction (AHJ)	Act (if applicable)	Permit	Risk Of Not Obtaining Permit
Canada, Public Works and Government Services Canada (PWGSC)		Application and approval to hang the pipe on the underside of the Alaska Highway Bridge over the Muskwa River	High
Canada, Public Works and Government Services Canada (PWGSC)		Application and approval to reroute the pipeline within the easement of the Alaska Highway easement	Low
Canada Department of Fisheries and Ocean (DFO)	Fisheries Act	Authorization under Section 35 (2) and 32 of the Fisheries Act and application for a Letter of Notification for the trenchless crossing of a fish-bearing watercourse.	Low
Canada, Transport Canada - Navigable Waters Protection Program		Authorization to cross a navigable waterway	Low
British Columbia Ministry of Environment (MOE)	Water Act	Permits required under appropriate sections of the Water Act for works in, or about a stream in BC	Low
British Columbia Ministry of Environment (MOE)	Water Act	Approval for temporary short-term use of water (Section 8 under the BC Water Act) and approval for work in and about a stream (Section 32)	Low
British Columbia Ministry of Environment (MOE)	Environmental Management Act	Authorization under the BC Environmental Management Act under appropriate sections for the management of waste generated by the Project	Low
British Columbia Ministry of Environment (MOE)	Wildlife Act	Permits under Section 40 of the Wildlife Act if works results in the temporary closure to hunting, trapping and guide during a construction activity	Low



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Authority Having Jurisdiction (AHJ)	Act (if applicable)	Permit	Risk Of Not Obtaining Permit
British Columbia Ministry of Integrated Land Management Bureau (ILMB)	Land Act	Application of Occupation and Use of Crown land under the Land Act for the use of temporary workspace during construction, if required	Low
British Columbia Ministry of Forest and Range (MOFR)		Master License to Cut Agreement. A license to Cut for the clearing of temporary workspace, if required	Low
British Columbia Ministry of Forest and Range (MOFR)		Burning Reference Number - Forest Fire Prevention and Suppression Regulations for disposal of scrub and non-merchantable timber	Low
British Columbia Ministry of Forest and Range (MOFR)		Permitting for site cleaning / preparation	Low
British Columbia Ministry of Tourism, Sport and the Arts (MTSA)	Heritage Conservation Act	Heritage Conservation Act Clearance that no impacted sites exist within the Project workspace	Low
BC Oil and Gas Commission (OGC)	Oil and Gas Activities Act – Pipeline Regulations	Certificate	Low
Authority	Rationale	Permit/Approval/Authorization	Risk of not obtaining approval
British Columbia Ministry of Transportation and Infrastructure (MOTI)	Owner of Alaska Highway Road Allowance	Application and approval to reroute the pipeline within an easement of the Alaska Highway road allowance.	Med
Fort Nelson First Nation	Potential Land Claim Territory and OGC Requirement	Consultation	Low

As shown in the above table, only the PWGSC permit required to hang the pipeline on the underside of the Alaska Highway Bridge is considered to be of concern to the progress of the IP Bridge Option. Please see the responses to BCUC IR 2.1.1.2 and 2.1.1.3 for a further description of this risk and the progress on this item. The remaining permits have not yet been requested; they will not proceed until the approval is received from the PWGSC.



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- 1.1.2 What is management's best estimate of the likelihood of obtaining each of the required permits and approvals?

Response:

TGFN considers that there is a strong likelihood of receiving all permits and approvals; however, we cannot predict the response of PWGSC who has, until very recently, appeared to be unwilling to consider the installation of a natural gas pipeline on the Alaska Highway Bridge.

Please refer to the response to BCUC IR 2.1.1.1 above for TGFN's current best estimate of the likelihood of obtaining each of the required permits and approvals.

- 1.1.3 What risks or difficulties might TGFN encounter in obtaining each of the permits and approvals required?

Response:

With one exception, TGFN considers that there are only low risks with obtaining the permits and approvals required for the IP Bridge Option for this Project. The exception is the permission to attach the gas pipeline to the Alaska Highway Bridge. TGFN currently consider this risk as "high" due to the reluctance by PWGSC to permit the installation of a gas pipeline on the bridge. TGFN is committed to working with PWGSC to understand and mitigate their concerns with an application that meets provincial Ministry of Transportation and Infrastructure requirements, does not impair the structure of the bridge in any way, and is the most economical crossing solution that has the lowest risk of environmental impact. Please see the response to BCUC IR 2.12.1 for further description of the work underway.

- 1.1.4 Could permits or approvals delay the construction schedule? If so, please explain management's views of the extent of these possible construction delays.

Response:

Delays in receiving approvals may affect the construction schedule. Short delays of up to several weeks may be able to be absorbed within the schedule. However, any issue that cannot be resolved expeditiously may negatively impact the schedule for a 2011 installation. If



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necessary, and with additional resources, it may be possible to continue construction through the winter months in an effort to replace the pipeline prior to the 2012 spring freshet.

- 1.1.5 If the permits and approvals are not obtained, what is the revenue requirements and rate impact in 2011 and 2012 of proceeding with alternatives to the Muskwa River crossing? For example, what will the rate impact in 2011 and 2012 be if the HDD Peak to Peak project is pursued?

Response:

Since the Muskwa River crossing is not scheduled to enter rate base until October of 2011, the rates in 2011 are not as sensitive to variations in the cost of the Project as the 2012 rates would be. For an overall sensitivity, for every \$500,000 in Project costs, the 2011 revenue deficiency increases by approximately \$17,000 and the 2011 average rates increase by \$0.03/GJ. This is assuming the Project is included in rate base October 1, 2011. For the same increase, the 2012 revenue deficiency increases by \$38,000 and the 2012 average rates increase by \$0.08/GJ.

Specifically for the HDD Peak to Peak alternative using the Class 3 estimate of \$4,087,100 plus Project development costs of \$300,000 and site remediation costs of \$100,000 for a total Project cost of \$4,487,100, the total revenue deficiency for 2011 would be \$372,000 (margin increase of 25.71 per cent) as compared to the revenue deficiency of \$315,000 (margin increase of 21.74 per cent) as filed in the Evidentiary Update for the IP Bridge Option. The revenue deficiency for 2012 would be \$614,000, a margin increase of 42.38 per cent, assuming all factors are held constant from 2011 with the exception of the full year impact from the Project.

The 2011 and 2012 rates that result from the HDD Peak to Peak Option revenue deficiencies are shown in the two tables below.



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Particulars	Tariff @ 2010 Rates	Less: RSAM Recovery Charge (in \$/GJ)	Less: Average Cost of Gas	Delivery Margin	Margin Rate Increase	Add: Average Cost of Gas	Add: Revised RSAM Recovery Charge	Tariff @ Revised Rates Jan 1/11
Residential								
1st Blk ≤ 2 GJ \$ / Month	\$ 19.370	\$ (0.070)	\$(11.570)	\$ 7.730	\$ 2.169	\$ 11.570	\$ 0.065	\$ 21.534
2nd Blk Next 28 GJ \$ / GJ	\$ 7.821	\$ (0.037)	\$(5.784)	\$ 2.000	\$ 0.485	\$ 5.784	\$ 0.033	\$ 8.301
3rd Blk Excess of 30 GJ \$ / GJ	\$ 7.763	\$ (0.037)	\$(5.784)	\$ 1.942	\$ 0.471	\$ 5.784	\$ 0.033	\$ 8.229
General Service - Small Commercial								
1st Blk ≤ 2 GJ \$ / Month	\$ 34.410	\$ (0.070)	\$(11.570)	\$ 22.770	\$ 6.162	\$ 11.570	\$ 0.065	\$ 40.567
2nd Blk Next 298 GJ \$ / GJ	\$ 8.053	\$ (0.037)	\$(5.784)	\$ 2.232	\$ 0.566	\$ 5.784	\$ 0.033	\$ 8.614
3rd Blk Excess of 300 GJ \$ / GJ	\$ 7.982	\$ (0.037)	\$(5.784)	\$ 2.161	\$ 0.548	\$ 5.784	\$ 0.033	\$ 8.525
General Service - Large Commercial								
1st Blk ≤ 2 GJ \$ / Month	\$ 34.410	\$ (0.070)	\$(11.570)	\$ 22.770	\$ 6.162	\$ 11.570	\$ 0.065	\$ 40.567
2nd Blk Next 298 GJ \$ / GJ	\$ 8.053	\$ (0.037)	\$(5.784)	\$ 2.232	\$ 0.566	\$ 5.784	\$ 0.033	\$ 8.614
3rd Blk Excess of 300 GJ \$ / GJ	\$ 7.982	\$ (0.037)	\$(5.784)	\$ 2.161	\$ 0.548	\$ 5.784	\$ 0.033	\$ 8.525
Transportation Service								
1st Blk ≤ 20 GJ \$ / GJ	\$ 2.319	\$ -	\$(0.113)	\$ 2.206	\$ 0.699	\$ 0.113		\$ 3.018
2nd Blk Next 260 GJ \$ / GJ	\$ 2.145	\$ -	\$(0.113)	\$ 2.032	\$ 0.645	\$ 0.113		\$ 2.790
3rd Blk Excess of 280 GJ \$ / GJ	\$ 1.736	\$ -	\$(0.113)	\$ 1.623	\$ 0.518	\$ 0.113		\$ 2.254
Minimum Delivery Charge per Month	\$ 1,458.00			\$ 1,458.00	\$ 425.00			\$ 1,883.00
Administration Charge	\$ 202.00	\$ -		\$ 202.00	\$ -			\$ 202.00
RSAM Recovery Charge	\$ 0.037	\$ (0.037)	\$ -	\$ -		\$ -	\$ 0.033	\$ 0.033



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Particulars	Tariff @ 2011 Rates	Less: Delivery Rate Rebate (in \$/GJ)	Less: RSAM Recovery Charge (in \$/GJ)	Less: Average Cost of Gas	Delivery Margin	Margin Rate Increase	Add: Average Cost of Gas	Add: Revised RSAM Recovery Charge	Tariff @ Revised Rates Jan 1/12
Residential									
1st Blk ≤ 2 GJ \$ / Month	\$ 21.534	\$ -	\$ (0.070)	\$ (11.570)	\$ 9.894	\$ 3.576	\$ 11.570	\$ 0.065	\$ 25.104
2nd Blk Next 28 GJ \$ / GJ	\$ 8.301	\$ -	\$ (0.033)	\$ (5.784)	\$ 2.484	\$ 0.799	\$ 5.784	\$ 0.033	\$ 9.100
3rd Blk Excess of 30 GJ \$ / GJ	\$ 8.229	\$ -	\$ (0.033)	\$ (5.784)	\$ 2.412	\$ 0.776	\$ 5.784	\$ 0.033	\$ 9.005
General Service - Small Commercial									
1st Blk ≤ 2 GJ \$ / Month	\$ 40.567	\$ -	\$ (0.070)	\$ (11.570)	\$ 28.927	\$ 10.160	\$ 11.570	\$ 0.065	\$ 50.722
2nd Blk Next 298 GJ \$ / GJ	\$ 8.614	\$ -	\$ (0.033)	\$ (5.784)	\$ 2.797	\$ 0.932	\$ 5.784	\$ 0.033	\$ 9.546
3rd Blk Excess of 300 GJ \$ / GJ	\$ 8.525	\$ -	\$ (0.033)	\$ (5.784)	\$ 2.708	\$ 0.903	\$ 5.784	\$ 0.033	\$ 9.428
General Service - Large Commercial									
1st Blk ≤ 2 GJ \$ / Month	\$ 40.567	\$ -	\$ (0.070)	\$ (11.570)	\$ 28.927	\$ 10.160	\$ 11.570	\$ 0.065	\$ 50.722
2nd Blk Next 298 GJ \$ / GJ	\$ 8.614	\$ -	\$ (0.033)	\$ (5.784)	\$ 2.797	\$ 0.932	\$ 5.784	\$ 0.033	\$ 9.546
3rd Blk Excess of 300 GJ \$ / GJ	\$ 8.525	\$ -	\$ (0.033)	\$ (5.784)	\$ 2.708	\$ 0.903	\$ 5.784	\$ 0.033	\$ 9.428
Transportation Service									
1st Blk ≤ 20 GJ \$ / GJ	\$ 3.018	\$ -	\$ -	\$ (0.113)	\$ 2.905	\$ 1.152	\$ 0.113		\$ 4.170
2nd Blk Next 260 GJ \$ / GJ	\$ 2.790	\$ -	\$ -	\$ (0.113)	\$ 2.677	\$ 1.063	\$ 0.113		\$ 3.853
3rd Blk Excess of 280 GJ \$ / GJ	\$ 2.254	\$ -	\$ -	\$ (0.113)	\$ 2.141	\$ 0.854	\$ 0.113		\$ 3.107
Minimum Delivery Charge per Month	\$ 1,883.00				\$ 1,883.00	\$ 798.00			\$ 2,681.00
Administration Charge	\$ 202.00	\$ -	\$ -		\$ 202.00	\$ -			\$ 202.00
RSAM Recovery Charge	\$ 0.033	\$ -	\$ (0.033)	\$ -	\$ (0.000)		\$ -	\$ 0.033	\$ 0.032

1.2 Would TGIFN be willing to report quarterly status updates on the Muskwa River crossing project until completion is achieved.

Response:

Yes, TGFN would be willing to provide quarterly status updates on the Project until completion is achieved.



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- 1.3 Would TGIFN be willing to provide the Commission with further information for review and enquiry before proceeding with another alternative should it become known that the IP Bridge Option is not achievable?

Response:

Please refer to the response to BCUC IR 2.1.4.

- 1.4 Would TGIFN accept a Commission decision that approved for inclusion into rate base, based on TGI's accepted practices, the Muskwa River IP Bridge Crossing up to an amount of \$3,000,000 and if the IP Bridge Crossing is not achievable, would TGIFN accept an additional regulatory process if the Commission believes the process is warranted? If not, what other project amount and/or regulatory follow-up with the Commission would TGIFN be willing to accept once TGIFN knows for certain which project alternative will be pursued?

Response:

To address the uncertainties around the Muskwa River crossing, TGFN suggests the following:

- 1) The Commission should accept the IP Bridge Option at an estimated cost of \$3,015,650 as set out in the Evidentiary Update. This results in an increase of \$45,000 to the revenue requirement in 2011 or approximately \$11 to the annual bill of a residential customer. As with any capital project, there is some risk that the project will be delayed, or that costs will be higher or lower than forecast. Based on the best information TGFN has today, the Class 3 estimated costs are reasonable and the IP Bridge Option is achievable for being in service in late 2011.
- 2) When the Commission approves delivery rates for 2012, the remaining uncertainty around the feasibility of the IP Bridge Option will be removed, and the cost estimate will be much more certain. As the project is completed, future rates will reflect the actual cost of the Project.
- 3) TGFN believes that the main area of risk is related to the possibility of not receiving permission to attach the pipeline to the Alaska Highway Bridge. Should the IP Bridge Option not be achievable, TGFN would advise the Commission of that fact and reconsider all of the remaining crossing options and may investigate any of these remaining options more closely to determine feasibility and preference. When a new recommendation is reached based on the then available information, that recommendation along with the supporting documentation will be provided to the Commission for review and approval on an expedited basis.



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**2.0 Reference: Muskwa River Crossing-HDD Crossing Class 3 Cost Estimate Report
Exhibit B-5, Appendix A, p. 26**

"The length of casing significantly increases the cost and risk to construct a HDD crossing of the Muskwa River rendering it one of the most costly and challenging to be attempted in Western Canada in recent history. There is significant risk the drill will fail and there exists the probability the full cost estimate value may be accrued without successfully completing the crossing if known drilling risks materialize."

2.1 Given these concerns expressed by David Bainbridge of Chinook Engineering Ltd., why does TGIFN believe that this is a feasible option for the Muskwa River crossing?

Response:

The HDD crossing of the Muskwa River is considered high risk in terms of technical feasibility and cost overruns. The probability that the crossing can be completed has a 50:50 likelihood of success, as casing installation risks exist that may result in a failed drill. TGFN would only consider this option as a last resort, if all of the other options are concluded to be technically not feasible or if the necessary permits cannot be obtained. If this option were to be pursued further, additional studies would be considered in an attempt to improve the probability of success. TGFN would not proceed with an HDD crossing without further communication with the Commission, including the results of any additional studies and any revision to the estimated probability of success.

2.2 In TGIFN management's opinion, what is the percent of likelihood of success in completing a HDD Peak to Peak crossing of the Muskwa River?

Response:

Please refer to the response to BCUC IR 2.2.1.



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- 2.3 If TGIFN was to undertake a HDD Peak to Peak crossing because the IP Bridge crossing was not feasible, what risk should the shareholder take on should the crossing not be successful?

Response:

As stated in the response to BCUC IR 2.2.1, based on the currently available information and analysis, the HDD Peak to Peak Option is both technically and financially risky to pursue further. Therefore, it would not be prudent for TGFN to undertake the HDD Peak to Peak Option at this time. The IP Bridge Option is TGFN's next preferred alternative. If the IP Bridge Option cannot be pursued, TGFN will reconsider the remaining crossing options and may investigate any of these remaining options more closely to determine feasibility and preference.

The HDD Peak to Peak Option would only be undertaken based on the Commission's approval. If the HDD Peak to Peak Option were to be approved but ultimately be unsuccessful, all prudently incurred costs should be borne by ratepayers.

- 2.4 In TGIFN management's opinion, what level of certainty of project success is needed before TGIFN should take on a capital project?

Response:

TGFN will only consider those crossings that have, based upon engineering evaluation, a strong likelihood of technical and economical success.

- 2.5 Before proceeding with a HDD Peak to Peak crossing of the Muskwa River, would TGIFN be willing to conduct additional feasibility studies for review and comment by the Commission?

Response:

Please refer to the response to BCUC IR 2.2.1.



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- 2.6 Would TGIFN accept a Commission decision that, in the event that a IP Bridge crossing was not feasible, did not permit a HDD crossing to proceed until sufficient information was collected to generate a report from David Bainbridge expressing a greater level of confidence of success was obtainable?

Response:

Please refer to the response to BCUC IR 2.2.1.

- 2.7 Through what other methods could TGI provide the Commission with greater confidence that if the IP Bridge crossing was not feasible, the HDD crossing should be pursued?

Response:

Please refer to the response to BCUC IR 2.2.1.



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3.0 Reference: **Muskwa River Crossing**

Exhibit B-5, Cover Letter Dated November 19, 2010, p.3

3.1 Table 1 of Exhibit B-5 (Evaluation of Non-Financial Screening Analysis), the category labelled "Construction Hazards" was given an equal weighting to other categories such as vandalism, aesthetics, etc.

3.1.1 Please explain why on Table 1 of Exhibit B-5 (Evaluation of Non-Financial Screening Analysis), the category labelled "Construction Hazards" was given an equal weighting to other categories such as vandalism, aesthetics, etc. given that construction hazards could, as noted above, result in the project not being successfully completed given drilling risks.

Response:

In most projects, construction hazards are mitigated by contractor skill, risk transfer, inspection processes, and provision of adequate site information to allow the contractor to prepare and have adequate control of the site variables. This condition is important to all alternatives and has weight. The construction hazards category must also be considered with the natural hazards category as they may influence each other. The combination of these two categories results in a significant total hazards weighting which is only equalled by the environmental category.

The descriptions noted in Table 1 are generic and relatively broad in scope. However, the telling indicator is that the score received by the HDD option is only one with a score of "1" which indicates a "poor choice". TGFN realizes that the screening analysis may not adequately address the issue of construction risk, particularly as it pertains to the probability of success of an HDD.

In all cases, TGFN applies its judgement in evaluating the financial and non-financial factors to be considered in determining its preferred alternative.



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3.1.2 Is it possible that the risk of not being able to successfully complete a project due to drilling risk is a risk that is not contemplated by the analysis done in Table 1 as Construction Hazards are to include "vulnerability of the facilities during construction due to..." ? this description makes no mention of project failure, only of "vulnerabilities" during the construction phase.

Response:

Please refer to the response to BCUC IR 2.3.1.1.

3.2 Could the projects be evaluated in such a way that includes an evaluation of successful completion of the project within the overall rating of alternatives?

Response:

In the non-monetary comparison, any of the crossing alternatives rated as a "1" in any category can also be considered as a "show stopper" that requires unusual levels of resources to manage or has a significant risk of harm to the health and safety of construction and operations staff or risk of significant environmental impact.

3.3 Has any work been done on further evaluating other 2nd choice options in the event that the IP Bridge Crossing is not feasible?

Response:

Please refer to the response to BCOAPO IR 2.1.2 through 2.1.4.



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3.4 If the IP Bridge Crossing is not feasible, what is the risk of not proceeding with the project for one additional year until other options could be further assessed?

Response:

If permission to install a new crossing on the bridge is not granted by January 28, 2011, there is a high risk that the installation of a new crossing by whatever means will be delayed to 2012.

The risk of a delay to the integrity of the pipe is difficult to calculate, although TGFN believes the risk of damage to the pipeline from river action to be the highest during the spring freshet. The consequence may range from nothing, to a leak occurring under water, to a complete rupture. The probability of any of these events happening is a function of the current condition of the pipe, the velocity of the flow in the river, and the amount and size of debris that is moved by the river. It is not possible to predict the probability of high flow in the river or the large debris that could be moved nor do we know the condition of the exposed pipe at this time. The possibility that at any point a failure could occur may be no different over the next year than over the past year.

3.5 If the IP Bridge Crossing is not feasible, could mitigating actions be taken to allow for a one year deferral of the Muskwa river crossing. If so, what are the actions or options that could be taken, if needed, to forestall the project and what are the associated costs and implications?

Response:

Theoretically, the pipe could be protected in some manner to ensure significant damage would not occur, thus preventing a rupture. However, practically, there are difficulties in attempting to place material in the water around a live, suspended pipeline that is in the water and cannot be readily observed. Material must be placed under the suspended pipeline in order to build the required support while also attempting to cover the pipeline. These activities may damage the pipe or may strain the pipe to an unacceptable level. Construction and monitoring personnel necessary to ensure correct material placement may also be at significant risk during operations. So while it may be possible, a permit would be required prior to installation, exceptional care would have to be taken to place the material, and there would be an incremental cost associated with these protection activities.

In the event that TGFN was successful in obtaining a permit and also successful in placing the material, this protection would still not address the long-term integrity issue. In future, TGFN believes that as a result of undertaking the interim protection measures, it would have more difficulty in obtaining the required approvals to address the long-term pipeline integrity through one of the identified options.



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- 3.6 Given the uncertainty with regard to obtaining the necessary permits and approvals for the IP Bridge Option in a timely fashion for the current year, has TGI given consideration to undertaking measures such as placing rip rap to protect the exposed portion of the pipeline as a temporary measure to provide more time to evaluate the options and move discussions forward with the various permitting organizations?

Response:

Please refer to the response to BCUC IR 2.3.5.



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4.0 Reference: Muskwa River Crossing Pipeline Size – IP Bridge Crossing Option

Exhibit B-5, Appendix B, p. 5

4.1 What would be the difference in the capital cost estimate for the IP Bridge Crossing if the size of the intermediate pressure distribution main was 114 mm O.D. rather than 168mm O.D.?

Response:

The following costs remain relatively unchanged for both a 114mm OD and a 168mm OD bridge crossing:

- clearing and grading costs for access and staging preparation;
- trenching and backfilling costs for tie-ins; and
- labour and equipment for the installation of pipe supports under the bridge deck.

Cost differences occur for the following items:

- Welding costs, which are less as less consumables are required and time to complete a weld is approximately 20% less. The number of welds to be completed is small and therefore the cost savings is minimal in terms of welding; and
- Pipe material costs between 114mm and 168mm pipe.

Incremental savings by installing a 114mm OD pipeline is approximately \$100,000 based on the Class 3 cost estimated.

4.2 What are the design and operating implications if the size of the intermediate pressure distribution main was 114 mm O.D rather than 168 mm O.D.?

Response:

For an IP system operating at 1379 kPa (the current operating pressure of the IP piping in Fort Nelson), the 114 mm crossing would advance the requirement of pipeline or station upgrades by nine years, to the winter of 2030/31, to meet the forecast demand. The 168mm crossing would require these upgrades for the winter of 2039/40.



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5.0 Reference: Impact of Future Water Flow Rates in the Muskwa River

Exhibit B-2, Response to BCUC IR 1.21.1, Attachment 21.1, Appendix A

- 5.1 Appendix A of the Application which was filed with the response to BCUC IR 1.21.1, included "Figure A: Specific gauge plot showing the variation in water levels at a flow of 215 m³/s over the period between 1945 and 2008". In this figure, it appears that there is a longer term trend to decreasing water levels over the past 30 years. Please comment on this apparent trend and any impact it might have on the evaluation and ranking of the river crossing alternatives being considered in the subject application.

Response:

The pipeline crossing is designed to meet a 1:100 year flood event. Declining average flows do not have a significant impact on selection of a crossing methodology as the reduction in volume is not large enough to impact construction costs or change the construction plan for a crossing methodology.



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**6.0 Reference: Muskwa River Bridge Crossing-HDD crossing Class 3 Cost Estimate Report
Exhibit B-5, Appendix A, Document Appendix C
Cost Estimate Summary**

6.1 Please clarify how Unit Rate: \$/m and \$/m3 have been determined

Response:

The \$/m unit rate is a representation of labour and equipment required to complete a task on a lineal meter basis. Based on a detailed construction plan developed for the estimate, units of labour and specific pieces of equipment are assigned to a task or function for a scheduled duration of the job. The duration is determined by typical pipeline production rates (for activities such as welding, trenching, coating, etc) based on the number of resources assigned. The calculated cost of the task is then divided by the total number of lineal meters required to derive a \$/m cost. \$/m is common in industry to display and compare pipeline construction costs.

The \$/m3 unit rate is a representation of material volumes to be supplied and placed by a pipeline contractor. Unit rates are developed from both quotes and estimated time to transport a product to site and place it. Quantities required are from physical calculations based on the scope of work and preliminary work plans.

6.2 Please confirm what percentage of costs of the project are directly a result of quotes made by third parties such as Cantech, Entec and Superior City

Response:

All labour and equipment costs are based upon force account rate sheets for labour and equipment from reputable pipeline contractors operating in British Columbia.

Specific non-binding verbal and written quotes were received for most materials and some specialized construction activities such as hydrovac services.

Non-binding quotes account for:

- Approximately 70% of material costs; and
- Approximately 90% of construction costs if one assumes that force account labour and equipment rates are a type of quotation. If not, 75% of the construction costs were based on quotes.



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6.3 Will any TGI human or other resources be utilized for construction project? If so, please describe.

Response:

It is anticipated that contract work forces will be utilized for a significant portion of the work. TGI work forces will be required for Project management, inspection services and commissioning.

6.4 Please explain what the 15% contingency reserve is intended to cover. I.e. please describe what sort of miscellaneous items could be included and also define "unforeseen construction impacts".

Response:

Contingency is defined in AACE International Recommended Practice No. 10S-90 as:

CONTINGENCY – An amount added to an estimate to allow for items, conditions, or events for which the state, occurrence, or effect is uncertain and that experience shows will likely result, in aggregate, in additional costs, typically estimated using statistical analysis or judgment based on past asset or project experience. Contingency usually excludes: 1) Major scope changes such as changes in end product specification, capacities, building sizes, and location of the asset or project; 2) Extraordinary events such as major strikes and natural disasters; 3) Management reserves; and 4) Escalation and currency effects. Some of the items, conditions, or events for which the state, occurrence, and/or effect is uncertain include, but are not limited to, planning and estimating errors and omissions, minor price fluctuations (other than general escalation), design developments and changes within the scope, and variations in market and environmental conditions. Contingency is generally included in most estimates, and is expected to be expended.

Within the estimate, a 15% contingency was added to account for the following items:

- Accounts for inadequacies in complete Project scope definition, estimating methods, and estimating data. Contingency specifically excludes changes in Project scope, and unforeseen major events such as earthquakes, prolonged labour strikes, etc.;
- Accounts for cost or time overruns on items due to skill of labourers or equipment breakdowns;
- Accounts for minor weather events such as high rain flow resulting in additional water control and management, and dealing with saturated soils;
- Accounts for expected omissions and unforeseen costs caused by the lack of complete "Issue for Construction" engineering;



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- Accounts for owner overhead and administration costs during construction such as progressive invoice payments; and
- Accounts for minor construction waste of materials.

After an assessment to the guideline AACE International Recommended Practice No. 40R-08 "Contingency Estimating – General Principles", TGFN accepts that a contingency of 15% is appropriate for the Muskwa River Crossing Project.

- 6.5 Please quantify the estimates for costs excluded from this estimate as described on page 21 of this report under section 4.11. This estimate should break down excluded costs by the bulleted categories listed in section 4.11.

Response:

Costs itemized in Section 4.11 and excluded from the Chinook Class 3 Report are as follows:

- Development costs of \$300,000 (bulleted category 1);
- Access rights, third party legal, environmental , public relations, land services, and permits of approximately \$100,000 (encompassing bulleted categories 2, 3 and 4); and
- Harmonized Sales Tax of \$0 as these amounts would be eligible for an input tax credit of an equal and offsetting amount (bulleted category 5).

The \$300,000 has been included in the total estimated Project costs as "Pipeline development and alternative evaluation costs".

The \$100,000 has not been included in the total estimated Project costs included in the Application or in the Evidentiary Update. As a result of the work currently underway on the Kootenay River Crossing (Shoreacres) Upgrade Project, TGFN recently became aware of additional costs necessary for TGFN to be compliant to the newly legislated *Oil and Gas Activities Act* ("OGAA"), and has estimated these costs to be approximately \$100,000. The estimated impact of this omission on the 2011 revenue deficiency is \$3,400. The actual amount incurred relating to these costs will be included in the final Project costs that are included in Rate Base when the Project is completed.



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6.6 Please quantify costs incurred to date on the Muskwa river crossing project.

Response:

A summary of costs incurred up to October 25, 2010 was provided in BCUC IR 1.14.1. TGFN has spent approximately \$240,000 on Project development and alternative evaluation costs up to November 30, 2010, an increase of approximately \$114 thousand from the October 25th summary. Below is a summary of the costs.

Project Management	\$31,000
Engineering	210,000
Total	\$241,000



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7.0 Reference: Muskwa River Crossing Capital Cost Estimate – HDD Crossing Option

Exhibit B-5, Appendix A, Document Appendix D, p. 10

- 7.1 In section 3.0 on page 10 of the BGC Engineering Inc. Geotechnical Investigation report included as Appendix D of Appendix A of the Evidentiary Update, BGC Engineering makes a number of recommendations to be considered for the HDD Crossing Options. Does the Class 3 cost estimate of \$4,087,100 for the HDD Peak to Peak Option include the recommendations made by BGC Engineering? Specifically, does the cost estimate include the estimated cost of retaining an HDD borepath designer, further subsurface investigations on the south side of the crossing and increasing the entry and exit angles of the borepath?

Response:

An HDD designer, Entec Engineering and Technology ("Entec"), has been retained and preliminary designs were developed by Entec. The costs for this have been included in the \$300,000 for "Project development and alternative evaluation costs" category of the total Project cost that are common to all alternatives, and that would be incremental to the Class 3 cost estimate of \$4,087,100 for the HDD Peak to Peak Option.

The cost estimate does not include the cost of additional feasibility analysis of the HDD alternative such as that described in the question, as TGFN will not likely pursue an HDD crossing of the Muskwa due to the in-situ risk associated with the construction methodology.

- 7.2 Given the extent of the risks of the HDD Peak to Peak project expressed by BGC, please explain why TGFN believes that this crossing method is a feasible option.

Response:

Please refer to the response to BCUC IR 2.2.1.



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8.0 Reference: Muskwa River Crossing Project Costs to Date

Exhibit B-5, Cover Letter dated November 19, 2010, p.4 and Appendices A and B

In the Evidentiary Update on page 4 of the Cover Letter, the estimated costs for the IP Bridge Option include \$300,000 for Project development and alternative evaluation costs.

8.1 Please confirm if these are all of the excluded costs referred to as "Development costs to date" in the Chinook Engineering Ltd. cost estimate information on page 22 of Appendix B , 4.11 Excluded Costs.

Response:

As described in the response to BCUC IR 2.6.5, the \$300,000 noted in the cover letter of the Evidentiary Update is for Project development, primarily engineering and environmental consultants and Project management. In that IR response, an incremental expense of \$100,000 was identified that should have been included in the Project cost estimate for the IP Bridge Option as well as the HDD Peak to Peak Option.

8.2 Please confirm if these are all of the excluded costs referred to as "Development costs to date" in the Chinook Engineering Ltd. cost estimate information on page 21 of Appendix A , 4.11 Excluded Costs.

Response:

Please refer to the response to BCUC IR 2.8.1.



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- 8.3 If there are additional development costs to date not included in the \$300,000 estimate, please itemize the additional project development costs that will be over and above those included in the Class 3 cost estimates for the HDD Peak to Peak and IP Bridge Options, respectively.

Response:

Presently, TGFN does not anticipate additional development costs greater than the \$300,000. However, if the IP Bridge Option is not achievable then TGFN will be required to analyze other crossing options.

TGFN estimated that development costs would be \$300,000 based on HDD development costs. The cost of examining the IP Bridge Option in closer detail was considered and TGFN was able to absorb the incremental IP Bridge development costs within the \$300,000 budget. However, if TGFN is required to continue detailed analysis of the other crossing options then it is likely that development costs will exceed \$300,000.

While not related to Project development costs, TGFN has added \$100,000 to the IP Bridge crossing estimate (and applicable to all crossing options) to cover the cost required to gather and present all the permits, licenses, authorizations, and approvals that are necessary in order to comply with the newly legislated *Oil and Gas Activities Act* administered by the BC Oil and Gas Commission. Please see a discussion of this \$100,000 in the response to BCUC IR 2.6.5.



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9.0 Reference: Capital Expenditures – Measuring and Regulating Equipment

Exhibit B-1, p. 32 and Exhibit B-5, Appendix B

In the Application, it is noted that "Capital Expenditures in 2010 and 2011 for Measuring and Regulatory Equipment are attributable to the Muskwa Gate Station Project. This project involves replacing obsolete valves, stations and regulators and filters at the Muskwa Gate Station in order to maintain the safety, reliability and integrity of the station."

9.1 In Appendix B of the Evidentiary Update on Page 2 of Appendix D, the Terasen Gas Regulating Gate Station Scope and Cost Estimate describes the Design and Equipment Assumptions that were used to estimate the costs of relocating the TP/IP Station as part of the IP Bridge Option. For example, it is noted that the existing four Fisher 3-600, 399A regulators and the ball valves will not be re-used and that the existing lineheater and filter will be re-used in the proposed relocation.

9.1.1 Please provide details regarding the potential overlap of the Muskwa Gate Station project and the impact of the timing and selection of a river crossing option.

Response:

The following discussion is intended to clarify the facilities associated with the Fort Nelson lateral.

The gas that flows through the Muskwa River Crossing supplies a station called the Fort Nelson Gate Station. It is this station that could be reconfigured from a TP-DP station to an IP-DP station if a new TP-IP station was installed on the south side of the Muskwa River in order to use the highway bridge (the IP Bridge Option). In this option, there is no station relocation, but there is a modification to an existing station and the installation of a new station. The first paragraph of Section 4.1 of Exhibit B-5, Appendix B discusses the possibility of "replacing and relocating" the Fort Nelson Gate Station. However, what is meant by this wording is the relocation of the TP-IP pressure reduction, not the physical relocation of facilities. The bulleted list of Project components following this introductory paragraph is correct and consistent with this response.

There is another station 3km south of the Muskwa River crossing called the Muskwa Gate Station. This is a TP-DP station that supplies gas at distribution pressure to the local area. This is the station that requires upgrading to address safety, reliability and integrity and has been included in the capital expenditures as the Muskwa Gate Station Project.

There is no overlap between these projects and they can proceed independently.

Please refer to Attachment 9.1.1 for a diagram.



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9.1.2 To what extent is the Muskwa Gate Station project rendered redundant if the ultimate Muskwa River Crossing Option is the IP Bridge Option?

Response:

Please refer to the response to BCUC IR 2.9.1.1.

9.1.3 Specifically, what costs will have been incurred in the Muskwa Gate Project that would not be required if the existing Gate Station is subsequently transitioned from a TP/IP gate station to an IP/DP regulating station?

Response:

Please refer to the response to BCUC IR 2.9.1.1.

9.1.4 Could the Muskwa Gate Project be delayed until the Muskwa River Crossing Project was completed or at least the selected alternative to make the crossing was reasonably certain to proceed?

Response:

Please refer to the response to BCUC IR 2.9.1.1.

9.1.5 What, if any would be the revenue requirement and rate impact in 2011 if the Muskwa Gate Project was delayed until completion of the Muskwa River crossing project?

Response:

Please refer to the response to BCUC IR 2.9.1.1.



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9.1.6 What, if any would be the revenue requirement and rate impact in 2011 due to potential redundancy, overlap with the gate project with the Muskwa River crossing project?

Response:

Please refer to the response to BCUC IR 2.9.1.1.



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10.0 Reference: BC Oil and Gas Commission Application

Exhibit B-5, Appendix B, p. 13

- 10.1 It is noted on Page 13 of the Chinook Engineering report in Appendix B of the Evidentiary Update, that the IP Bridge Option is considered a deviation from the best management practices outlined within the Environmental Protection and Management Regulation Guidebook and therefore requires an application by the non-routine process under the Oil and Gas activities Act – Pipeline Regulation and requires a mitigation strategy or justification. Please provide an update on discussions and progress to date on these BC Oil and Gas Commission requirements.

Response:

An application to the BC Oil and Gas Commission has yet to be made and will not occur until permission to install a new crossing on the Muskwa River bridge has been granted by PWGSC.



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11.0 Reference: Muskwa River IP Bridge Crossing-Bridge Crossing Class 3 Cost Estimate Report

Exhibit B-5, Appendix B, Section 4.4, p. 15

- 11.1 The report notes that the project duration would be approximately 10 months. For project completion to occur by October 2011, the project would need to commence in early 2011. Given the outstanding permits and licences, is it feasible to start this construction so quickly?

Response:

The 10 month Project duration includes obtaining all required permits based on permit timing durations provided by TGFN's environmental consultant.

To commission the Project by October 2011 will require completion of the crossing design, and commencement of materials procurement and permit gathering by the end of February 2011. With the exception of the PWGSC permission, all other permits and authorizations appear to be straightforward with minimal risk of any unusual delay. Therefore, if PWGSC is able to respond to TGFN favourably by Jan 28, 2011 then the IP Bridge option installation and completion is achievable by October 2011. Construction duration of the bridge crossing installation is approximately 50 days or two months. To be completed by the end of October 2011, the construction would have to commence in August 2011.

There may be some site restoration and Project completion tasks required in 2012.



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12.0 Reference: Status of Discussions with PWGSC

Exhibit B-5, Appendix B, p. 26

- 12.1 Further to the Regulatory Risk described in Section 6.2 on page 26 of the Chinook Engineering report on the IP Bridge Option in Appendix B of the Evidentiary Update, please provide an update on discussions and progress to date on obtaining the necessary regulatory approvals from PWGSC.

Response:

PWGSC has been reluctant to provide authorization to install a gas line on the bridge. It appears that this reluctance stems from eastern Canadian bridge management practices where gas lines on bridges appear to be rare. However, the Terasen Utilities have installed gas lines on dozens of bridges owned by the BC Ministry of Transportation and Infrastructure ("MoTI") and other bridge owners in BC. It is possible in most bridge applications to engineer a safe and economical gas pipeline installation that meets Canadian Highway Bridge Design Guidelines.

TGFN will continue communication with PWGSC, will provide an information package that meets the MoTI requirements and includes a description of the bridges that have gas lines installed on them in the upcoming month, and will make a formal application to install a new crossing on the bridge in early 2011 with a request for approval by January 28, 2011.



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13.0 Reference: Muskwa River IP Bridge Crossing- Bridge Crossing Class 3 Cost Estimate Report
Exhibit B-5, Appendix B, Document Appendix C
Cost Estimate Summary

13.1 Please confirm what percentage of costs of the project is directly a result of quotes made by third parties.

Response:

All labour and equipment costs are based upon force account rate sheets for labour and equipment from reputable pipeline contractors operating in British Columbia.

Specific non-binding verbal and written quotes were received for most materials and some specialized construction activities such as hydrovac services.

Non-binding quotes account for:

- Approximately 81% of material costs; and
- Approximately 61% of construction costs if one assumes that force account labour and equipment rates are a type of quotation. If not assumed, a small portion (26%) of the construction cost were direct quotes.

13.2 Please confirm what percentage of costs of the project is directly a result of quotes made by Terasen Entities and explain if this charge is at cost or includes any administrative mark-ups.

Response:

Excluding contingency, 21% of the Bridge Crossing costs were a result of TGFN quotations to Chinook Engineering. Labour costs did not include administrative mark-ups.



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13.3 Will any TGI human or other resources be utilized for construction project? If so, please describe.

Response:

Please refer to the response to BCUC IR 2.6.3.

13.4 Please explain what the 15% contingency reserve is intended to cover. I.e. please describe what sort of miscellaneous items could be included and also define "unforeseen construction impacts".

Response:

Similar items are covered as detailed in the contingency response for the HDD option. Please refer to the response to BCUC IR 2.6.4.

13.5 Please quantify the estimates for costs excluded from this estimate as described on page 22 of this report under section 4.11. This estimate should break down excluded costs by the bulleted categories listed in section 4.11.

Response:

Please refer to the response to BCUC IR 2.6.5.

13.6 What steps has TGIFN taken to ensure that cost estimates for permits, licences and other access rights have been properly estimated?

Response:

As discussed in Section 4.11 of Appendix B, the cost estimates for permits, licences, and other access rights were not included in the Class 3 estimate. TGFN is now estimating that the cost to gather the required permits and other related items not included in the Chinook estimate is about \$100,000. This estimate is based on experience with other projects with similar permit requirements and is considered appropriate to this level of cost estimate (Class 3).

Please refer to the response to BCUC IR 2.6.5.



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13.7 When including all costs included in the cost estimate of appendix c, plus the costs excluded as noted in section 4.11 plus the costs of the Ft. Nelson TP IP Station Relocation cost estimates, what is the TOTAL project cost for the IP Bridge crossing and what is the total level of confidence (+/-) for this project as a whole.

Response:

The total estimated costs for the IP Bridge Option are included in the table below. The only change from Table 2 of the cover letter to the Evidentiary Update is the additional \$100,000 as described in response to BCUC IR 2.6.5.

ITEM	Source	Amount (mean Costs)
Construction Installation Cost	Chinook Class 3 Estimate	\$2,565,650
Project development and alternative evaluation costs	TGFN	\$300,000
Third party legal, environmental, public relations and land services or permits, third party negotiations	TGFN	\$100,000
TOTAL		\$2,965,000
Lower Bound (-20%)		\$2,372,000
Upper Bound (+30%)		\$3,854,500

For clarification of the proposed Fort Nelson pressure regulation facilities, please refer to the response to BCUC IR 2.9.1.1. The cost for the new gate station that reduces the pressure from TP to IP pressure is included in the "construction installation cost" line in the table above.



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**14.0 Reference: Muskwa River IP Bridge Crossing and Pressure Reduction Station-
Class 3 Estimate
Exhibit B-5, Appendix B, p. 2 of Document Appendix E
Project Schedule**

14.1 Please quantify management's best estimate of the likelihood, as a percentage, that the Muskwa River crossing will be completed in October, 2011.

Response:

Chinook Engineering Ltd. estimates that the likelihood that the crossing will be completed in October 2011 is 70% with a P50 confidence interval (i.e. within less than one standard deviation). A low confidence interval was selected because PWGSC's approvals and their timing are unknown. If PWGSC permitting is achieved by the end of the first quarter of 2011, it is highly likely the Project will be completed in October 2011 with a higher confidence interval (P90).

14.2 Please quantify management's best estimate of the likelihood, as a percentage that the Muskwa River crossing will be completed before the end of fiscal 2011.

Response:

Chinook Engineering Ltd. estimates that the likelihood that the crossing will be completed before the end of the 2011 fiscal year is 80% with a P50 confidence interval (i.e. within less than one standard deviation). A low confidence interval was selected because PWGSC approvals are currently unknown. If PWGSC permitting is achieved by the end of the first quarter of 2011, it is highly likely the Project will be completed in October 2011 with a high confidence interval (P90).



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14.3 What risks could prevent the project from being complete by October 2011.

Response:

The following risks may cause creep of the preliminary Project schedule:

- Regulatory risk in negotiations with PWGSC pertaining to the acceptance of installing a pipeline on the Alaska Highway Bridge. The Bridge Authority within PWGSC is presently opposed to the crossing due to the perceived risk of a natural gas pipeline on a highway bridge. PWGSC has committed to reviewing the application and will consider granting approval for the crossing provided it meets all BC MOTI requirements for a natural gas pipeline crossing on a bridge; and
- Contractor availability and market conditions that may impact the receipt of competitive pricing or securing a competent contractor.

14.4 What risks could prevent the project from being complete by the end of Fiscal 2011.

Response:

Risks that may prevent the completion of the Project by the end of 2011 are the same as stated in the response to BCUC IR 2.14.3, but somewhat reduced to recognize the additional time available to reach agreement with PWGCS.

14.5 The schedule in this exhibit indicates that Project Close Out and owner acceptance will take place between late October and mid November.

14.5.1 Please comment on the preciseness of this estimate.

Response:

Project closeout includes as-built of the installation and submission of information for a Leave to Open and Notice of As-built with the OGC. It is expected that all costs, outside of restoration costs, will be included in 2011 if the Project were to commence in January of 2011. Once again, if risks materialize and the Project schedule begins to creep, these activities will also shift accordingly based on the tardiness of completing risk related activities.



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14.5.2 Does TGI intend to include the project asset into rate base before the asset goes into service?

Response:

TGFN will include the Project into rate base at the time the asset goes into service, and not before then. For purposes of the Application, TGFN has forecast an October 1, 2011 in-service date for the Project. The actual in service date may differ from this; if this situation arises, the addition to rate base will be adjusted to reflect the actual date the asset is in service.

14.5.3 Does TGI intend to include the project asset into rate base before owner acceptance and/or project closeout has occurred?

Response:

Typical of all projects, TGFN structures projects so that the distinct phases of a project can be managed, in terms of both schedule and cost. Generally work orders will be created to track costs associated with, for example, project management, design, fabrication and installation of piping, fabrication and installation of civil structures, habitat and land rehabilitation. Once a project is put into service, the activities that have been completed, such as design and fabrication and installation, will be added into rate base. These will likely be added into rate base well before the phases of habitat and land rehabilitation or project acceptance are completed as quite often these latter activities need to continue for months or even years after the piping has been put into service. These other phases will be added to rate base when they are completed.



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- 14.6 Could TGI propose a regulation-mechanism that would protect the ratepayer from the risk that the pipeline project takes longer than anticipated or is less costly to construct? For example, if actual costs of the project are lower than forecasted or if the project assets are not in service as forecasted, could TGI propose a mechanism to capture collected customer tariffs related to the over-forecasted revenue requirements for future recovery by ratepayers. Specifically address how potentially over forecasted expenses such as depreciation, income tax expense, interest expense and return on equity resulting from overestimated project costs or project schedule delays might be captured in a possible deferral account.

Response:

Please see the response to BCUC IR 2.1.4.

- 14.7 Would TGIFN be adverse to creating a regulated mechanism to capture difference between actual and forecasted expenditures related to the Muskwa River crossing.

Response:

Please see the response to BCUC IR 2.1.4.



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15.0 Reference: Muskwa River Crossing Update

Exhibit B-5, Financial Schedule 3.2

15.1 In the Application, Exhibit B-1, financial schedule 3.2, in 2011 TGIFN forecasted additions of \$2,350,000 plus AFUDC additions of \$125,000 for total additions of \$2,475,000 to asset class 465-000 "Mains". In the Evidentiary update, Exhibit B-5, TGIFN now forecasts additions to that same asset class totalling \$2,866,000 plus AFUDC of \$152,000 for a total of \$3,018,000. This amount greatly exceeds the class three estimates provided for the now preferred alternative IP Bridge crossing which is \$2,565,650.

15.1.1 Please how, in forecast 2011, the additions to Asset class 465-000 "Mains" was calculated.

Response:

At the time of the Application, TGFN considered that the HDD Peak to Peak Option would be the most cost effective strategy. In the Application, the forecasted 2011 additions to asset class 465-000 of \$2,350,000 consisted of \$2,050,000 for the installation cost (the Class 4 estimate for the HDD Peak to Peak Option plus allowance for cost escalation) plus \$300,000 for Project development and alternative evaluation costs. After including AFUDC of \$125,000, the total additions to asset class 465-000 "Mains" asset class were \$2,475,000.

In the Evidentiary Update, TGFN included the Class 3 estimate for the IP Bridge Option. The revised additions to asset class 465-000 in the Evidentiary Update consist of \$2,565,650 for installation costs (the Class 3 estimate for the IP Bridge Option referenced above), \$300,000 for Project development and alternative evaluation costs, and \$152,000 of AFUDC totalling \$3,017,650. The table below outlines the calculation of the additions to asset class 465-000 "Mains".

<u>2011 Asset Class 465-000 Additions</u>	<u>Cost</u>
Pipeline crossing installation	\$2,565,650
Project development and alternative evaluation costs	\$300,000
AFUDC	\$152,000
Total 2011 Additions	<u>\$3,017,650</u>



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15.1.2 Please reconcile the total additions to asset class 465-000 Mains forecast in fiscal 2011 to the project cost estimate for the IP Bridge.

Response:

Please refer to the response to BCUC IR 2.15.1.1 for the reconciliation.

15.1.3 Please explain why the increase in additions to the asset class 465-000 according to schedule 3.2 within the evidentiary update was much greater than the increase in the expected project cost as the original project estimate totalled \$2.45M and this estimate was revised to approximately \$2.57M in the evidentiary update.

Response:

Based on the information available at the time of filing the Application, TGFN considered the HDD Peak to Peak option to be the preferred alternative, for both financial and non-financial reasons. The preliminary cost estimate and spending for the Project under the HDD Peak to Peak Option was as follows:

<u>HDD Peak to Peak Project</u>	<u>Original Costs</u>
2011 Installation and allowance for cost escalation	\$2,050,000
2011 Project development and alternative evaluation costs	\$300,000
2012 Site Restoration Costs	\$100,000
Total	<u>\$2,450,000</u>

Therefore, the initial estimate of \$2,450,000 (excluding AFUDC) consisted of \$2,050,000 installation and allowance of cost escalation, \$300,000 of Project development and alternative evaluation costs and 2012 site restoration and ongoing completion costs of \$100,000.

TGFN had identified that further investigative work was necessary to determine the next most appropriate alternative and as a result, TGFN has identified the IP Bridge Crossing Option as the preferred alternative at this time. The estimate for the Project under the IP Bridge Option is \$2,565,650 (excluding AFUDC). As shown in Table 2 of the Evidentiary Update, the total estimated costs for the IP Bridge Option also include \$300,000 for Project development and alternative evaluation costs and 2012 site restoration and ongoing completion costs of \$150,000. The revised costs are provided below:



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<u>IP Bridge Crossing Project</u>	<u>Revised Costs</u>
2011 Pipeline crossing installation	\$2,565,650
2011 Project development and alternative evaluation costs	\$300,000
2012 Site remediation and potential ongoing completion costs	\$150,000
Total	\$3,015,650



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16.0 Reference: Type of HDD Contract

TGI Application for CPCN for Kootenay River Crossing (Shoreacres) Upgrade,

Exhibit B-3, Response to CEC IR 1.9.2

16.1 In response to CEC IR 1.9.2 for the TGI Application for a CPCN for the Kootenay River Crossing (Shoreacres) Upgrade, TGI indicated that "the two most common types of contracts for an HDD project are a) payment only if the pipeline is satisfactorily completed ("guaranteed completion") and b) payment for work done – pipeline may or may not be satisfactorily completed ("shared risk")." Please indicate which type of contract is contemplated in the Class 3 Cost estimate for the HDD Peak to Peak Option.

Response:

It was assumed that the pipeline work will be contracted in the following manner:

Construction: Prime Pipeline Construction Contractor;
NDE: Sub-contract to Prime Pipeline Contractor;
HDD Contractor: Sub-contract to Prime Pipeline Contractor; and
Project office: One site office located in Fort Nelson, BC.

NDE – Non-destructive Examination - used to describe pipeline integrity (primarily pipe coating and pipe joining examination) that is the responsibility of the Contractor during construction and commissioning prior to acceptance by the owner.

Pipeline contractors' fees for the administration of sub-contracts are included in the estimate at the rate of 5%.

The construction contract proposed would be a lump sum contract with drilling activities based on quoted unit rates for installation of the pipe. A guaranteed completion type of contract was not evaluated as the Class 3 estimate did not quantify the cost of drilling risks. Given the risk associated with the Project, it is unlikely any HDD contractor would accept a "guaranteed completion" contract without some sort of risk mitigation mechanism or would alternatively submit a bid with an exception to accepting all Project risk. If a "guaranteed completion" contract were to be signed, a contractor would most likely quantify all conceivable Project risk and load his lump sum cost resulting in bids that would not be considered competitive or economic.



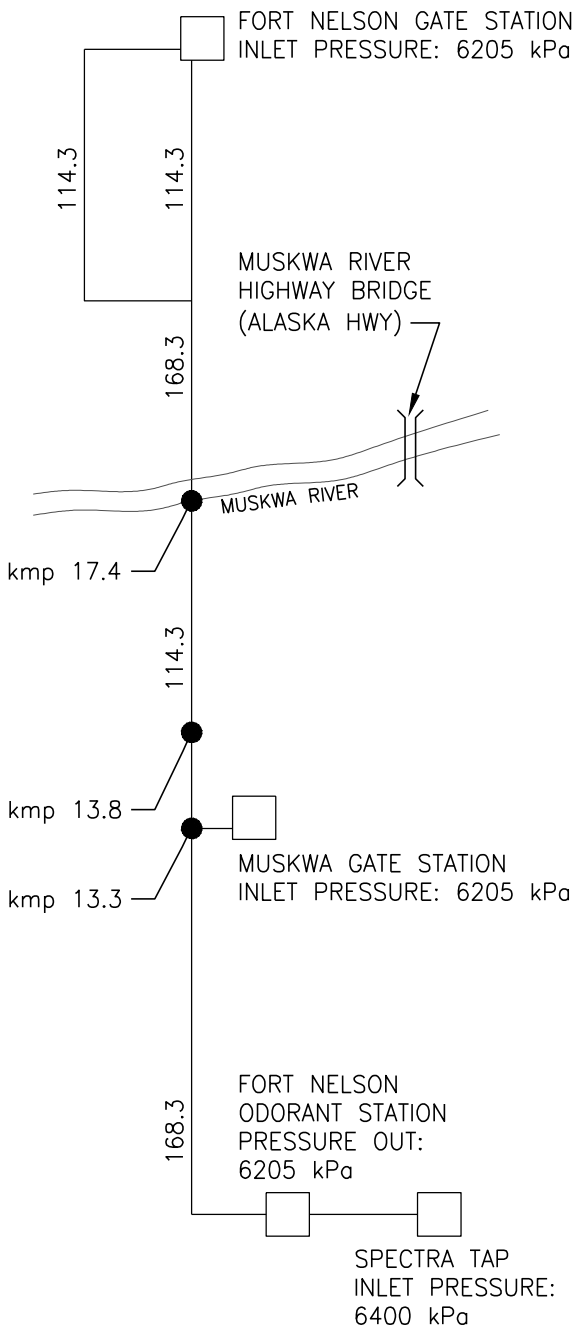
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16.2 If the type of contract underlying the cost estimate is not a guaranteed completion contract, what would be the capital cost impact of going with a guaranteed completion type contract for the HDD Peak to Peak Option?

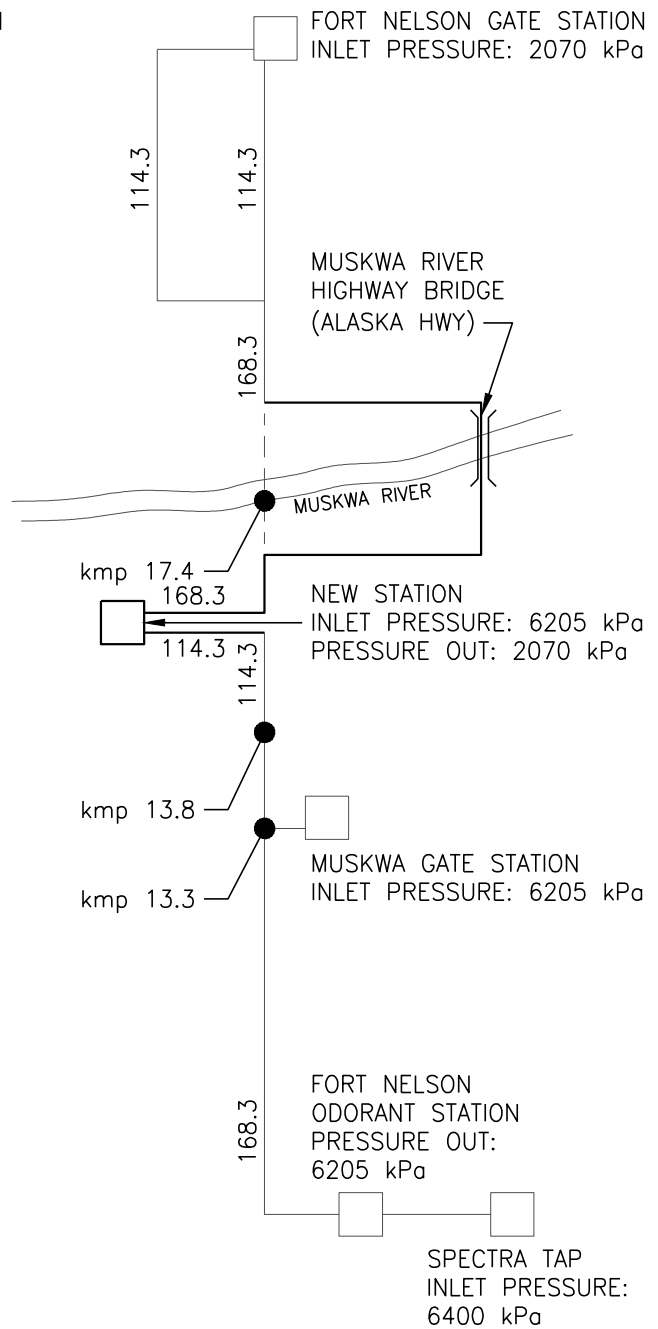
Response:

To acquire this information will require TGFN to contact HDD contractors for their input. Given that the HDD option is not likely to proceed because of the identified high risks, TGFN does not consider it worthwhile to engage contractors for their assessment and cost estimate of a guaranteed completion contract at this time.

Attachment 9.1.1



EXISTING



PROPOSED

A1	08-12-10	ISSUED FOR INTERNAL REVIEW	DAH	PT	-
REVISION	DATE	REVISION DESCRIPTION	DRAWN/DESIGN	DRAWING CHECK	DESIGN ENGINEER



MUSKWA RIVER PIPELINE CROSSING REMEDIATION					
EXISTING AND PROPOSED FORT NELSON TRANSMISSION PIPELINE PLAN IP BRIDGE OPTION					
DRAWN DAH	DESIGN ENGINEER PT	PROJECT NUMBER	SCALE N.T.S.	DATE 07/12/10	
DRAWING CHECK	PROJECT APPROVAL	DRAWING NUMBER 32004-P-000-SK		SHEET 1	REVISION A1