Mount Polley Project Status Report Overview
May 2017

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**Number One Environmental Concern**

- Ensure that robust ecosystem monitoring plan is in place and legally required so that any and all impacts to the receiving environment are identified.
- Ensure that appropriate response and remediation actions are undertaken where indicated by the ecosystem monitoring plan as soon as possible.

**Overall Commentary on the Qualitative Environmental Risk Assessment**

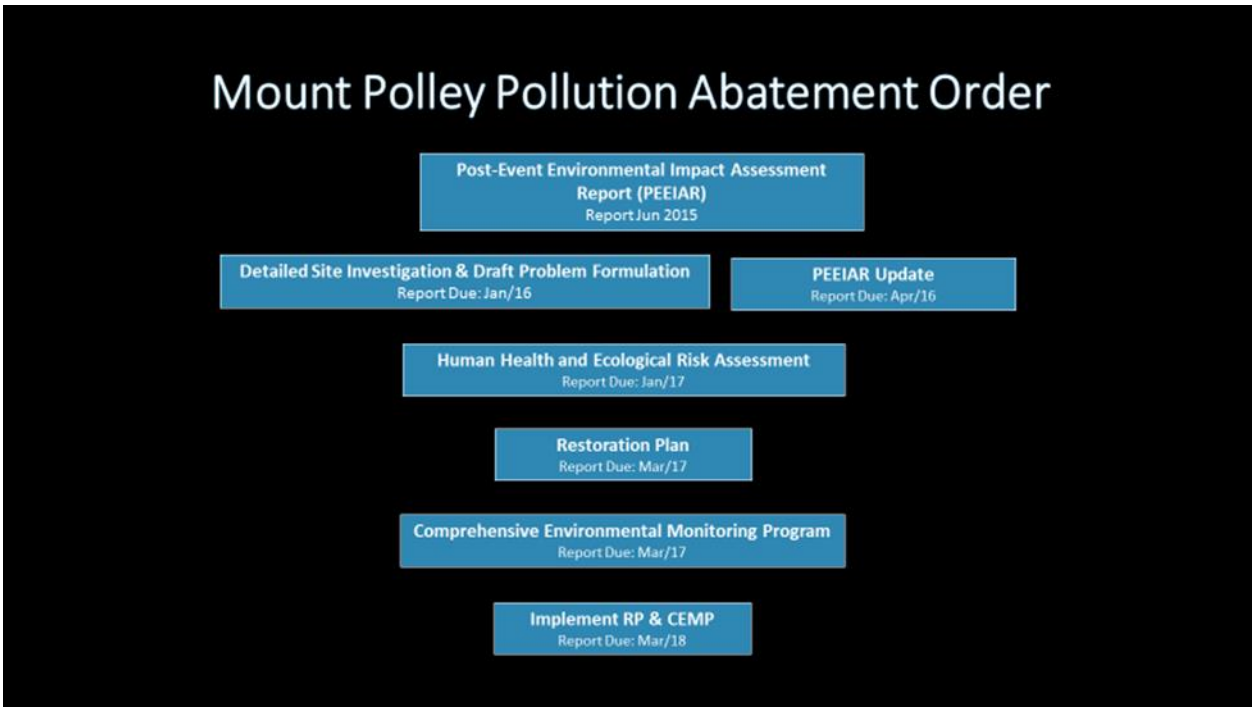
- Environmental impacts from residual tailings materials in Polley Lake and the Hazeltine corridor are also being addressed in the Human Health and Environmental Risk Assessment; it is too early in these studies to comment on their conclusions.
- The main stem aquatic ecosystem of the Hazeltine Creek system was essentially eliminated by the washout from the TST Failure. This may have extirpated some salmon runs present during the summer of 2014 as well as eliminating all other aquatic habitat. In addition to stream restoration, offsets will be required by DFO to address these and other related losses.
- Environmental risks from tailings and organic debris still present at the bottom of the West Arm have not been quantified. MPMC is convinced these risks are negligible. At this time there is little evidence to challenge this conclusion. Long term and comprehensive monitoring is required to prove out this conclusion.
- Environmental risks from the EMA permitted discharge to Quesnel Lake are currently considered by the FN Team to be low. Early exceedences of BC Water Quality Guidelines resulting from the 2014 TSF Failure discharging to Quesnel Lake have been significantly reduced. Permitted end of pipe discharge requirements appear to be achievable. Impacts within the IDZ are considered to be low. Impacts beyond the IDZ are considered to be of lower magnitude. Long term and comprehensive monitoring is required to prove out this conclusion. First Nation access to the monitoring data is essential in order to assist with any required response plans and to ensure that Communities are informed, and seen to be informed, on all monitoring results.

**Commentary on Project Categories Status**

- BCMOE Pollution Abatement Order
- EMA 11678 Permitting Process
- M-200 Permitting Process

## The BCMOE EMA Pollution Abatement Order – FN Team Co-Design

The PAO is the major regulatory instrument for the response to the environmental impacts resulting from the TSF Failure. The Project has undergone stages of engagement. Initially WLIB and XFN (FN's) participated in the PAO by reviewing major documents (e.g., the first PEEIAR was over 5,000 pages and yet we still identified shortcomings in the document and requested that it be re-written. It was rewritten).




Under the Terms stated within the **Letter of Understanding**, August 2014, between the FNs and the Province, there was agreement *to work in partnership, on a government-to-government basis through shared decision-making wherever possible, to jointly address all aspects of the TSF breach at the Mount Polley Mine*. We needed to design and implement a FN's Project Team that addressed all major areas of environmental concern, and that could carry out this responsibility in tandem with MPMC's global consultant Team that included SNC Lavalin, Golder Associates and several sub-consulting specialty firms.

The FN Team moved through the stage of critical document review (e.g., soils and sediment stabilization, and environmental impact reports) to a proactive and co-designer stage wherein we designed a Work Plan with the Province (BC) that was predicated on maximizing consensus in all areas of the response to the TSF Failure. This entailed significant modification of the normal process for the BC Statutory Decision Maker (SDM).

Under the normal SDM process, FN's would simply be recipients of documents and would be asked for their comments, as per standard BC consultation guidelines. We pushed the working definition of shared decision making to the point where decisions were undertaken jointly.

Through this process we enhanced our Capacity through heavy engagement with the BC scientists, Consultants and regulators. Ultimately, we reached agreement with BC to maximize consensus on major components of project decision making. The process has been backed up at Committee levels, from Technical Working Groups, an ADM Committee and finally to the Principal's Table where Chiefs from both Communities directly address ongoing concerns with Cabinet Ministers from BC Ministry of Aboriginal Relations and Reconciliation, BC Ministry of Environment and BC Ministry of Energy and Mines.

The development of terms of reference for the Human Health and Ecological Risk Assessment **(**HHERA) were undertaken jointly by the FN's Team, BC and MPMC. The products of the HHERA will be delivered in a similar and closely engaged manner.

One of the most demanding responses to the PAO was the design and development of a **Comprehensive Environmental Monitoring Plan** (CEMP). The CEMP has been co-designed between BC and the FN Team over a period of months, primarily during 2016. MPMC also designed a CEMP in response to the PAO. These two monitoring plans are currently under review to ensure that the monitoring is systematically addressed in all significant levels of the ecosystem.

The most immediate response to the TSF Failure was to stop, to the extent possible, continued post-event discharge to the receiving environments (e.g., Polley Lake, Bootjack Lake and Hazeltine Creek, and their ground water systems, and to Quesnel Lake and to Quesnel River). MPMC's best efforts to date may have been their rapid and immediate response to stabilizing the mine site and what was left of the Hazeltine Creek. This work was highly successful. The before event, after event without soil stabilization, and after event with soil stabilization, are dramatic and, in the end, positive.

The methodology for soil stabilization included the design and implementation of an armoured creek bed (for the initial remediation of Hazeltine Creek). While this was successful for soil stabilization, stream restoration work was still required to develop fish habitat conditions in Hazeltine Creek. Significant work to date has been undertaken by the FN's Team to co-design the restoration in tandem with the MPMC Team. This has not been easy. Initiatives at this level of complexity never are. The FN Team is satisfied with the work undertaken to restore the Upper Hazeltine Creek and is now focusing on restoration work on the Lower Hazeltine Creek. We underscore here that the FN Team are not permit and document reviewers. Rather, they are important co-designers in different sections of the PAO.

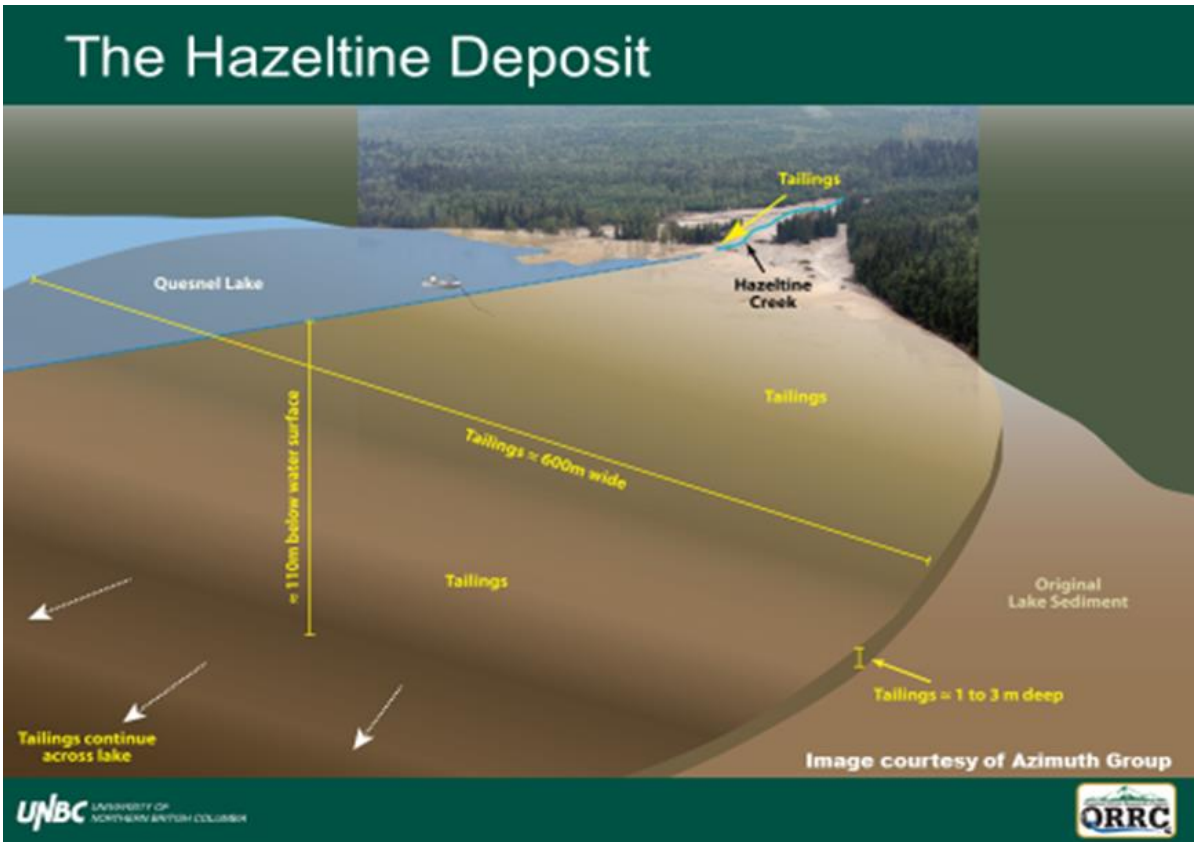
<u>Outstanding Concerns related to the PAO</u>

**Toxicity Concerns**

The FN Team has had concerns with the translation of toxicity monitoring and the determination of the data into ecological conclusions. MPMC is entirely convinced that there has not been, and will not be, any significant leaching of heavy metals attached to the sediment

particles that breached the TSF and flowed into Polley Lake, throughout the Hazeltine Creek drainage and into Quesnel Lake. Most of the heavy particles have likely settled to the bottom of Quesnel Lake and are removed from the active upper ecological lake strata.

The question here is whether the heavy metals will leach away from their particulates and whether the particulate matter can be remobilized by current, storm or turn-over events and then be accumulated within the lake ecosystem.




Studies commissioned by MPMC continue to report that the possibilities of resuspension and separation of metals are negligible. Outstanding questions exist with respect to riparian Hazeltine Creek deposits (e.g., in the adjacent forest areas) where clean-up was not feasible. This is currently being addressed through the Human Health and Ecological Risk Assessment (HHERA). Specialized components of the FN Team are currently engaged in the design and implementation of the HHERA.

**CEMP**

The FN / BC CEMP and the MPMC CEMP must be aligned. This objective is within reach.

**Hazeltine Creek Restoration**

After the successful restoration of the Upper Hazeltine, attention is now focused on the Lower Hazeltine. The FN Team must continue to engage with MPMC to ensure they continue to co-design a successful approach to the Lower Hazeltine. This objective is also within reach.

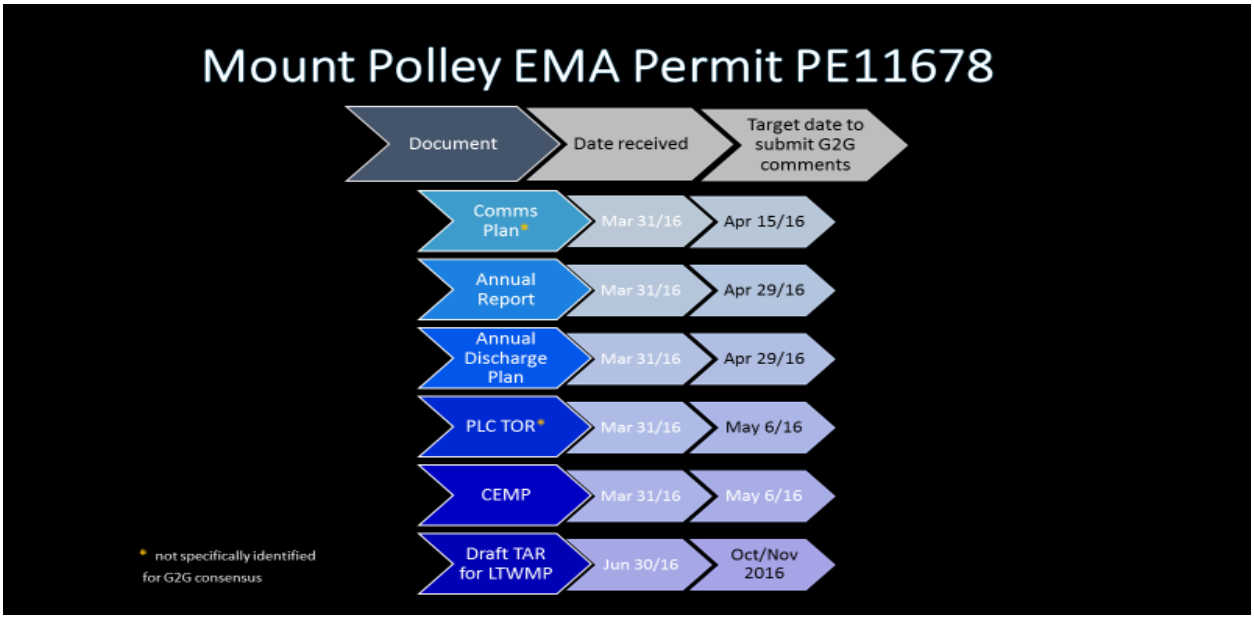
**Cultural Impact Assessment**

In addition to the work being carried out by the FN Team under the HHERA, a comprehensive review of CIA has been carried out by Arrowsmith Gold Inc. which addresses the social, emotional, economic, cultural and spiritual impacts that have been, and continue to be, experienced by both WLIB and XFN Communities, and as well, by downstream Aboriginal Communities.

## The EMA 11678 Permitting Process – FN Team Co-design

The EMA Permit addresses all MPMC Applications to discharge to the receiving environment. Clearly, no one is content with a direct discharge of mining effluent, treated or otherwise, to Quesnel Lake. This permitted discharge has been put in place, however, to address the constant run off of waters from the mine site located up gradient from the lake. These waters *must* be treated and discharged, whether the mine was in operating or shutdown modes. Rainfall and snowmelt will contact and transport heavy metal sediments to all down gradient water bodies without permitted and treated discharge.

The only choice facing the FN Team, MPMC and BCMOE, was how to manage these contact waters. The first required response is to contain the mine site contact waters. MPMC engineers have achieved this containment through a system of drainage ditches, sumps, collection ponds and storage requirements (see comments below on Permit M-200). The EMA Permit is the essential mechanism to control and regulate the treated discharge of both contact waters and residual milling waters to the receiving environment.




The EMA Permits, and the associated Technical Assessment Reports (including Short Term and Long Term Water management Plans) that preceded the Permits, have been subject to intense review by the FN Team. The CEMP is now captured under the EMA Permit (s.3.2).

The most difficult decision faced by the FN Team, MPMC and BCMOE was the selection of a receiving water body for the discharge of treated mine waters. There were three realistic options under consideration. A discharge to multiple receiving water bodies was immediately dismissed as completely undesirable. The discharge option to Quesnel river was dismissed on

the basis of challenging mine site water discharge management to a highly changing situation in the river environment (caused by both seasonal and unique precipitation events) that carried unacceptable risks for dilution zone requirements and the associated risk to the river ecosystem. That left the discharge to the relatively stable environment in Quesnel Lake as the remaining option for consideration.

As stated above, no one is content with a direct discharge of treated mining effluent to Quesnel Lake. It is, however, simply the best available option to address mine waters from an existing mine site, whether active or not. That is the reality that the FN Team had to address. This permitted discharge has been put in place to address the constant run off of waters from the mine site located up gradient from the lake. These waters must be treated and discharged, whether the mine was in operating or shutdown modes. Rainfall and snowmelt will contact and transport heavy metal sediments with or without permitted and treated discharge. However undesirable the optics, responsible environmental management requires the discharge to Quesnel Lake.

The FN Team received valuable Community feedback on two remaining issues in particular – the requirements for using best available technology (BAT) to treat mine discharge waters and the issue of using an Initial Dilution Zone (IDZ) that permitted potential chronic impacts within a 100 meter radius of the discharge diffusers.

It is likely that there is no technology available that could achieve the BC Water Quality Guidelines at the diffusers discharge point for the concentration of all parameters of concern. Nonetheless, the FN Team sought and obtained Permit conditions (s.2.9) that require ongoing reports from MPMC on best achievable practices, particularly as applied to the treatment of copper, total suspended solids (which may transport heavy metals) and aluminum byproducts (used as coagulant agents within the water treatment plant).

The FN Team took the practice of using an Initial Dilution Zone into serious consideration. It was determined that under established industry practice in B.C. that it would not be possible to obtain regulatory approval without the use of an IDZ. No acute impacts are allowed whatsoever under permit, either within or beyond the IDZ. The FN Team came to the conclusion that there would be no significant ecological impact to the West Arm or to the rest of Quesnel Lake by using the IDZ methods. While the ecological reasoning is sound, the optics remain understandably bleak. The Community response to the use of the IDZ did, however, contribute to positive results with the inclusion of the most stringent B.C. Water Quality Guidelines included within the EMA Permit (s.1.2.3).

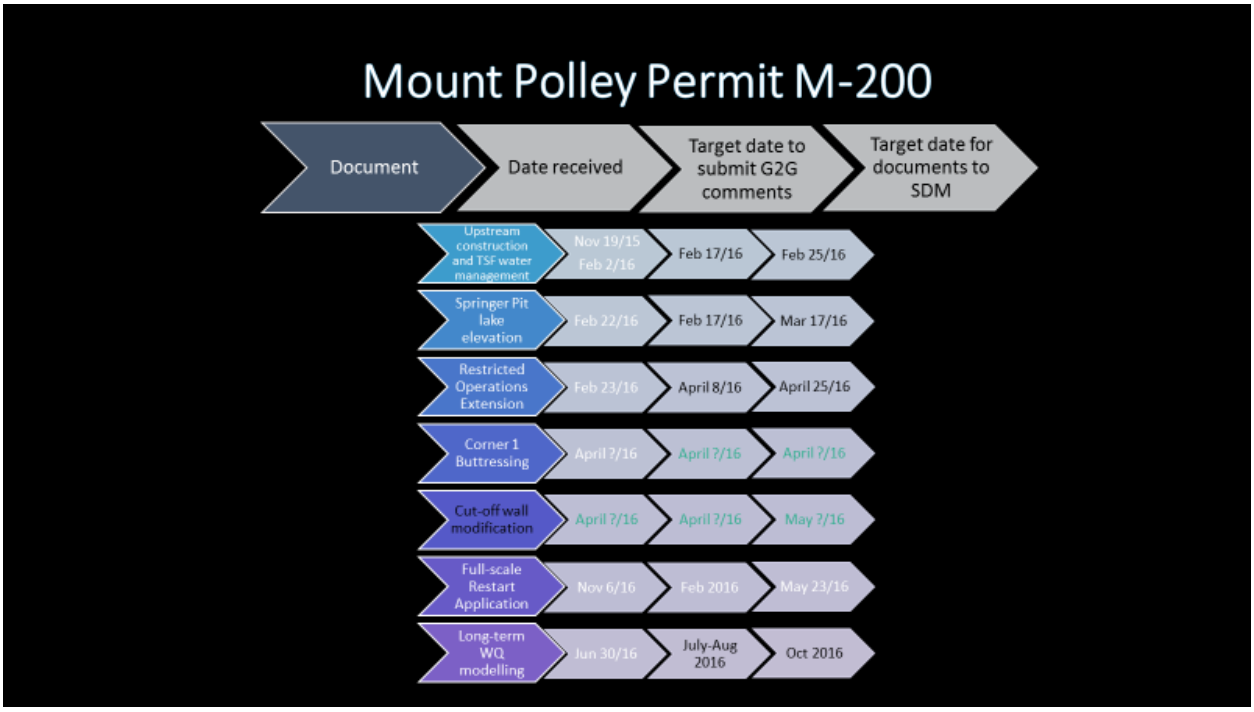
It is essential that these projections are proven out by the implementation of a comprehensive environmental monitoring plan, as is now provided for in EMA Permit s.3.2.

The mine contact waters at the Mount Polley site had to addressed by the FN Team. To not have proceeded in this manner would have been environmentally irresponsible.

## The M-200 Permitting Process

The permitting of mine activities on site of the mine is addressed by the Ministry of Energy and Mines (BCMEM) in the M-200 Permit. These activities include the construction and operation of water management drainage and storage structures.

The re-construction of the Tailings Storage Facility was undertaken by MPMC and reviewed by the FN Team. The FN Team included an eminently qualified structural engineer with considerable professional mining expertise. The re-construction and enhanced buttressing was approved as being entirely sound. The present Long Term Water Management Plan generally allows for storage of 10% of the water volume contained at the time of the 2014 failure.




Springer Pit (currently being drained under preparation for resumption of mining) serves as a back-up should additional storage be required during higher than anticipated scenarios.

The BC Auditor General (AG) carried out an audit of the BC mining sector (An Audit of Compliance and Enforcement of the Mining Sector, May 2016) that was precipitated by the Mount Polley TSF Failure. Most of the recommendations made by the AG have been accepted by the BC Ministry of Energy and Mines.

A major issue addressed by the Audit was the lack of adequate enforcement of Permit conditions by BC E&M for mining in B.C. This issue has been initially addressed by the creation of the Deputy Ministers Mining Compliance and Enforcement (C&E) Board, which now includes the BCMOE and the BC Environmental Assessment Office. While the AG strongly advised the

separation of compliance and enforcement from BCE&M (whose mandate includes the promotion of mining in B.C.), this recommendation did not receive Cabinet approval.

An additional issue addressed by the AG was that of financial risk security. Financial security addresses *on-site* issues such as closure requirements (as are required through Permit M-200) so that the issue of post closure environmental management costs are not borne by the public and are guaranteed by the permittee.

The Auditor General commented:

> MEM is not holding an adequate amount of security to cover the estimated environmental liabilities at major mines. The ministry has estimated the total liability for all mines at more than $2.1 billion, yet has obtained financial securities for less than half that amount ($0.9 billion).

Financial security does not address the assurance that the restoration and remediation of environmental damage, which may occur *off-site* in the event of water storage failure such as took place at the Mount Polley site, would be financially covered by the permittee. This would require at least the pooled funding by all mines in B.C. to create a fund that could address a failure such as occurred at Mount Polley, which would avoid the loss of provincial revenue due to tax write-offs incurred in off-site clean-ups.

Some financial assurance reviewers believe that even a pooled industry fund would be insufficient to address the full environmental mitigation from a major mining disaster, and that the issue of ore grade and financial strength of a mine company be reviewed as a required condition of permitting. The issue of off-site environmental financial assurance remains to be fully addressed by the Province.

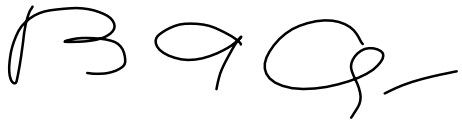
## Final Statement

The importance of the immediate negotiation by the two Chiefs of the Communities (with the assistance of the BC First Nations Leadership Council, and the BC First Nations Energy and Mining Council), which resulted in a strong Letter of Understanding between the WLIB, XFN and the Province, cannot be overstated. This negotiation resulted in the provision of Capacity Funding that provided for the resourcing of the FN Team (general and specialized Consulting expertise), time allocation for the Resource Management Offices, and Chiefs and Councils from both Communities, and for dedicated Community Meetings.

This initial negotiation was critical to the development of the FN Team. The FN Team enabled the Communities to go beyond the traditional document and review roles, and to assume responsible positions for co-design of critical components of both the Pollution Abatement Order and the Permitting processing. Definitive co-design has, and continues, to take place in the development of discharge conditions, river restoration in the Hazeltine corridor, and

comprehensive environmental monitoring requirements that thoroughly address the ecological health of the receiving environment.

The ongoing issues associated with BAT, particularly as associated with effluent quality treatment, require continued due diligence review. The management of the comprehensive environmental monitoring plan is critical to providing the assurance to the Communities, as well as to all stakeholders, so that the current projections for environmental health are proven out, and that in that in any situation where they are not, that they are detected immediately and responded to effectively. The conditions to deliver on these responsibilities are currently in place.



Brian Olding, M.Env.Des.
Brian Olding & Associates Ltd.

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