

May 20, 2022

Mavis Cli-Michaud, Chair
Mackenzie Valley Land and Water Board
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RE: Prairie Creek - Mining and Milling - New Type A Land Use Permit and Water Licence Renewal Applications (MV2021D0005 MV2021L2-0004) – Closing Argument

łíídlı́ Kúé – “the place where the rivers come together” – is a First Nation (LKFN) located on shared Dene territory and headquartered in the community of Fort Simpson, NWT. Guided by our Dene principles and values, we are the keepers of our traditional lands and health of our people. As signatories of Treaty 11, the Dene never surrendered our land. This was confirmed in the *Re Paulette* legal case and is also confirmed in our Elders’ memory and oral history. Given this context, and in this age of Reconciliation, it is important that First Nations have an active role in environmental decision-making and meaningful economic participation in resource development projects occurring in our territories.

LKFN values the relationship we have created with NorZinc (NZC) from our time working together over the years; we have created a partnership. In August of 2021, our community and NZC signed two important impact benefit agreements: a Road Benefits Agreement and a Letter of Agreement revising our 2011 IBA. These agreements are momentous for our community and for NZC, and we look forward to realizing the benefits.

Throughout LKFN’s engagement on this Project, our community has emphasized the need for benefits not only for our community, but for the Dene of the region. Our community’s stance on the Project is to ensure it is constructed as environmentally and socially responsible as possible. Environmental protection is of critical importance to our community, as our community members continue to actively use the land and carry out traditional lifestyles. We must take care of the land so the land can take care of us.

To help ensure regional benefits, LKFN negotiated with NZC to commit to the establishment of a regional Dene trust fund. This regional Dene trust would see economic benefits to the wider Dene community. Regional benefits have been a priority for our community and finalizing this trust will be necessary in achieving a socially responsible project.

This document is the closing argument for LKFN relating to NZC’s applications for licence MV2021L2-0004 and permit MV2021D0005. LKFN offers the following technical comments in an effort to further the environmental and social responsibility of the Project.

In October 2021, LKFN provided several recommendations for the Mackenzie Valley Land and Water Board’s (the Board) consideration in our technical interventions (LKFN 2021). We

attended the Public Hearings for the proceeding in December 2021 and listened carefully to the presentations and recommendations of other parties. On May 6, 2022, we submitted comments on the draft water licence conditions for MV2021L2-0004 (the Draft WL). After reviewing NZC's responses to our comments on the draft water licence (MVLWB 2022b), we continue to stand by our recommendations for the reasons expressed in our comments on the licence, in our interventions, and throughout the proceeding.

Although we will not revisit our recommendations in these closing arguments, we wish to reiterate how important well-planned closure and reclamation of the site is for our community and the Dene region for generations to come. We believe that early closure planning, early studies, an operational response framework related to post-closure water quality, and regular updates to water quality predictions are needed to ensure there will be no significant adverse impacts to water quality in Prairie Creek and beyond after the site is closed.

Below, we provide our closing arguments on topics that we have not yet made definitive recommendations on during the proceeding. We have waited until our closing argument as we felt it important to hear evidence from all parties before coming to any conclusions. These topics include: effluent quality criteria, variable load discharge criteria and licence term.

Effluent Quality Criteria (EQC)

In its application to the Board for this water licence, NZC proposed one set of EQC to meet water quality objectives (WQO) in Prairie Creek assuming discharge through an exfiltration trench. The exfiltration trench design assumed an 8 m pipe length in summer and a 6 m length in winter; this was what was approved of as part of the MV2008L2-0002 water licence. In their response to Information Request 2 (NZC, 2021a) of the Technical Sessions, NZC provided a lengthy analysis of shorter pipe lengths which evaluated the feasibility of meeting WQOs and the cost/benefit of doing so. This analysis was done in response to questions¹ (from the GNWT and the Board staff on how well NZC's proposed effluent mixing zone met the criteria set out in the MVLWB/GNWT's Guidelines for Effluent Mixing Zones (MVLWB/GNWT 2017).

NZC's response to Information Request 2 provided predictions for three potential pipe lengths (summer/winter lengths): 8m/6m, 4.8m/4.8m, and 2m/1.5m. NZC noted that either the EQC or the maximum volume of effluent discharge could be adjusted to meet WQOs in Prairie Creek for the three scenarios. NZC chose to keep the maximum effluent discharge amount the same and, as a result, the proposed EQC for the three scenarios necessarily became more stringent as the pipe length decreases.

In the Draft WL, three sets of EQC were presented based on the three pipe lengths. In its comments on the Draft WL, GNWT's Department of Environment and Natural Resources (ENR) recommended² that the shortest of the potential pipe lengths (2m/1.5m) be adopted because it

¹ Pages 168-178 of MVLWB 2021a

² ENR Comment 20 in MVLWB 2022b.

was the “only option that predominantly conforms to the GNWT/MVLWB (2017) guidance for mixing zone size which constrains the mixing zone to approximately 25% creek width under all flow conditions”. NZC has continued to recommend using the EQC for the 8m/6m pipe lengths, consistent with what was approved in licence MV2008L2-0002. To our knowledge, no other party other than NZC has recommended specific EQC and/or exfiltration pipe lengths.

During this proceeding, we have noted the following point of evidence related to EQC:

- Throughout the proceeding, GNWT-ENR continued to characterize³ constraining the mixing zone size to 25% of the wetted width of Prairie Creek as “the current best practice for the Northwest Territories”. We find this characterization overstated and possibly misleading for the following reasons:
 - The guidance document only says that the 25% maximum width of a mixing zone is only a “useful starting point for defining the dimensions of a regulated mixing zone”.
 - Calling it a “current best practice” implies that it has been used many times before in water licence proceedings in the NWT when, in fact, we are not aware of any water licence in the NWT that has used this 25% limit for discharges into rivers or creeks.
 - The guidelines only discuss point-source discharges; the exfiltration trench is designed to rapidly dilute the effluent in the waterbody while point source discharges do not.
- The GNWT goes on to say⁴ that the shortest pipe length (2m/1.5m) “minimizes the potential for deleterious effects to the receiving environment, specifically potential deleterious effects to migrating fish and any impacts to fish habitat.” This statement implies that use of the shortest pipe length will result in the lowest impacts to the receiving environment; but this characterization is not supported by the evidence for the following reasons:
 - The Department of Fisheries and Oceans Canada (DFO) stated that, with respect to effects on fish passage, one of their concerns is the velocity of effluent leaving the trench pipes. On January 18, 2022, NZC provided a response (NZC, 2022a) to the Board’s Public Hearing Undertaking 12 with an assessment of flow velocities in Prairie Creek associated with different pipe lengths in the exfiltration trench. On February 23, 2022, DFO responded to an information request (DFO, 2022) from the Board asking if, based on the results of Undertaking 12, DFO could eliminate any pipe length scenario from further consideration due to negative impacts on fish passage. DFO responded that “Based on the results of this assessment, DFO cannot eliminate any pipe length scenario as NZC anticipates no negative impacts to fish passage. However, as stated in NZC’s assessment, a

³ Page 21 of GNWT 2021, page 34 of MVLWB 2021b.

⁴ Page 21 of GNWT 2021.

longer exfiltration trench (8 m/6 m) may be preferable as it minimizes increases in flow velocity and attenuation distance downstream of effluent release.”

- In its response to the Draft WL, ENR states⁵ that “the EQC for several parameters under Option 1 (ENR’s preferred exfiltration trench size) may result in exceedance of water quality objectives at the edge of the mixing zone.” We note that the last page of Attachment 4.1 of NZC’s Response to IR1-4 (NZC, 2022b) does predict exceedances of WQOs in Prairie Creek for dissolved zinc in the months of January to April in the 2m/1.5m pipe scenario. Importantly these WQO exceedances are not predicted in the 4.8m/4.8m or 8m/6m scenarios.
- We are concerned with balancing all the potential environmental effects when deciding on EQC. Lower EQC mean more treatment⁶ which has its own environmental costs in terms of greenhouse gas emissions and the handling of contaminated sludges. When we asked the GNWT at the Public Hearing whether they considered these other environmental costs, they answered that they “do consider that.” However, we have not seen any evidence in the GNWT intervention or subsequent submissions that they have given any consideration to balancing all the environmental costs of the options.
- NZC has asserted⁷ that the EQC for ammonia and nitrite in the 2m/1.5m scenario is so low that they may not be able to consistently meet them because the treatment does not affect the concentration of those parameters.
- NZC’s revised water management plan, specifically the separation of contact and non-contact water as well as the recycling of Cell A water, for the expansion project has led to a significant reduction in the amount of contaminants that need to be either treated or discharged. Source reduction is a preferred way to minimize impacts to the environment and is consistent with the principles in the Board’s Water and Effluent Quality Management Policy.

In our intervention, we recommended that the Board set EQC that:

- are protective, with a high level of precaution regarding the receiving environment
- are achievable, considering the variability of the operation, the receiving environment and the uncertainty of instrumentation and measurement
- take into consideration all environmental costs of treatment

Based on our review of the evidence, we can support either the 8m/6m or the 4.8m/4.8m options for the exfiltration trench pipe lengths and the EQC that correspond to those pipe

⁵ GNWT-ENR comment 20 in MVLWB 2022b,

⁶ See Table 2-2, page 6, in NZC 2021a entitled “Trench Option Costs”. NZC Estimates that the average amount of water treatment will increase from 23 L/s in the 8m/6m pipe scenario to 56.5 L/s for the 2m/1.5m scenario. NZC also estimated that the increased costs for the treatment over the life of the mine increases by almost \$25M if the 2m/1.5m scenario is chosen over the 8m/6m scenario.

⁷ Pages 6-7 of CZN 2022b.

lengths. In our opinion, either of these options meet the objectives of our original EQC recommendation⁸ about EQC and will allow WQOs to be met in Prairie Creek.

Variable Load Discharge (VLD)

In the Draft WL, Board staff highlighted the licence conditions relating to the Variable Load Discharge (VLD) approach that were developed during the proceeding for MV2008L2-0002, stating that evidence related to these conditions would be presented to the Board for a decision.

We understand that the GNWT has recommended⁹ that all the VLD conditions should be removed from the new licence because “CZN is no longer pursuing it”. The GNWT goes on to say that “should CZN wish to pursue this in the future, an amendment with supporting rationale will be required.” However, this logic seems flawed to us. We recommend the Board leave the VLD conditions in the licence for the following reasons:

- The Board’s previous determination on the VLD approach was extensively described in the reasons for decision for MV2008L2-0002 (MVLWB, 2013). A lot of time and attention by all parties went into that decision and no valid reason has been put forward to suggest the VLD approach is anything but protective of the environment. The worst complaints leveled at the approach were that it was complex to regulate, but this has not been substantiated.
- The idea of the VLD approach is to release more effluent when Prairie Creek levels are high. If WQOs can be continuously met in Prairie Creek, there could be great advantages to releasing more effluent at certain times of year. Minimizing the amount of wastewater stored on site seems sensible since it could minimize the impact of seismic activity or floods in the environment.
- There is no harm in leaving the VLD conditions in the licence because NZC would still have to meet all additional regulatory requirements to be approved to take that approach. In other words, there are already a series of conditions in the water licence that, collectively, would ensure that NZC was well-prepared prior to being allowed to implement a VLD approach.
- If, in future, it appears that a VLD approach is superior to the fixed EQC approach, then removing the conditions from the licence now will mean a whole other licensing process. Why do this when we can identify no harm in leaving the conditions in the water licence?

Licence Term

NZC has requested a 25-year term for the water licence. Although this is allowed under the Waters Act, it is hard for us to envision a situation where the mine would operate for 25 years

⁸ Recommendation 3 of NDDB 2021.

⁹ Recommendation 21 of GNWT 2021.

without the need for a licence amendment of some kind. Review of the licence is also important as it allows for a more formal regulatory opportunity to ensure environmental compliance, which is a priority for our community. We recommend a licence term of 5-7 years.

LKFN is committed to ensuring this Project moves forward in an environmentally and socially responsible way and looks forward to realizing the benefits associated with this Project. To this end, we have provided our closing arguments for consideration by the Board. LKFN is committed to fully participating in all regulatory process and looks forward to the Board's decision.

References

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NZC, 2021b. [Prairie Creek Mine – Effluent Quality Criteria Report – March 2021](#), submitted to the MVLWB on March 11, 2021.

NZC, 2022a. [Responses to Public Hearing Undertakings, Mining and Milling Water Licence MV2021L2-0004 and Land Use Permit MV2021D0005, Prairie Creek Mine](#), submitted to the MVLWB on January 18, 2022.

NZC, 2022b. [Responses to Information Requests 1-4, Mining and Milling Water Licence MV2021L2-0004 and Land Use Permit MV2021D0005, Prairie Creek Mine](#), submitted to the MVLWB on March 11, 2022.

DFO, 2021. [Fisheries and Oceans Canada Intervention to Canadian Zinc Corporation Prairie Creek Mine – Type A Water Licence and Land Use Permit Application](#), submitted to the MVLWB on October 8, 2021.

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MVLWB, 2022b. NZC Prairie Creek Mine – Draft Licence and draft Permit – [Comment and Response Table](#), May 15, 2022.