RioTinto

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Mason Mantla, Chair
Wek'èezhìi Land and Water Board
PO Box 32
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May 9, 2023

Dear Mr. Mantla,

Subject: Diavik Response to Interventions

Diavik Diamond Mines (2012) Inc. (DDMI) is pleased to provide the attached Response to Intervenor Submissions for the Wek'èezhìi Land and Water Board's (WLWB or Board) consideration with regard to the Amendment to Water License W2015L2-0001. Each Intervention has been reviewed and considered by DDMI with revisions to the DDMI position made where appropriate. DDMI has organised responses to align directly with the submitted interventions and these are included in a detailed response table as Attachment A.

Over the last two decades there have been many updates and improvements to our closure plan presented through the Closure and Reclamation Plan (CRP) processes. Re-establishing natural drainages has always been a part of Diavik's closure plan. This activity was originally described and assessed in the Environmental Assessment (Diavik 1998) and supported in the Comprehensive Study Report (CEA 1999). Despite this, the current License does not allow the WLWB to authorize re-establishing natural drainages with associated discharge. This regulatory aspect of progressive reclamation and closure implementation must be addressed with certainty before DDMI can proceed with closure and reclamation of the Diavik mine site.

DDMI is taking meaningful action to address Stakeholder input on Closure Planning

Over the years many stakeholders have continued to raise uncertainties and concerns related to the water quality conditions of the reclaimed site. These questions may remain until we have obtained reliable performance and effects information from monitoring actual conditions that represent the closed site. The approach to enable progressive reclamation in this Application will allow DDMI to get a head start on closure performance monitoring, support the validation of closure planning to date, and use new results to adaptively manage the next phases of our reclamation work. We are confident that this transparent and adaptive approach to reclamation planning will build trust and confidence with key stakeholders and help ensure a successful mine closure.

In reviewing Interventions, we do not believe any stakeholder is opposed to this closure plan or opposed to allowing this progressive reclamation work to advance; outstanding issues appear to be focussed on how to define acceptable closure runoff water quality and the administrative regulatory mechanisms to authorize, monitor, and adaptively manage the work. DDMI has identified a few key questions or points of

clarification that we believe need to be addressed by the Government of Northwest Territories (GNWT) during their presentations at the Public Hearing so that the WLWB, DDMI, and other Intervenors can fully understand their recommendations around effluent quality criteria (EQC). With this clarification at the Public Hearing, DDMI may then be able to fully respond through Closing Arguments and/or comments on the Draft Water License.

The question at hand for this proceeding remains to be how the WLWB should regulate the Diavik mine's seepage and runoff once DDMI breaches water collection ponds

DDMI is proposing a Surface Water Action Level Framework (SWALF) as the primary regulatory mechanism for monitoring and managing safe closure runoff with implementation through the FCRP. The Technical Session provided a helpful opportunity to dive deep into this proposed regulatory approach in detail with simultaneous participation from stakeholders. Based on feedback during the Session and through the WLWB Information Request (IR) process, DDMI provided a revised SWALF (IR #4) containing a number of SWALF options as suggested from discussions at the Session. In consideration of further feedback provided in the Interventions as well as further DDMI review of the SWALF options, DDMI has made additional changes and is providing a final recommended SWALF which is included as Attachment B.

DDMI maintains that closure runoff, with the SWALF management and monitoring proposed, will not be detrimental to water uses in Lac de Gras, consistent with long approved Closure Objectives SW1 and SW2

DDMI acknowledges that it is the role of the WLWB to determine the approach for regulating Diavik closure runoff. How the WLWB chooses to regulate the Diavik mine's closure runoff, and the 'goalpost' established therein, are central, and now critical, to how and when we implement closure and reclamation activities. WLWB direction that is materially different from DDMI's current understanding and expectations of what is acceptable for the regulation of closure runoff[1] would trigger a re-evaluation of risk that closure runoff will be deemed unacceptable and long-term water treatment required. DDMI's closure plan is fundamentally based on the goal of no permanent site presence. A regulatory decision indicating this goal is unlikely to be achieved would cause immediate consideration of changes to DDMI's closure designs and schedules including ongoing and future progressive reclamation work.

It will be up to the WLWB to determine if DDMI runoff is a non-waste or a waste under the *Waters Act* and if this even matters

Under the Waters Act[2], a waste is something that if added to water would degrade or alter it such that it becomes detrimental to its use by people or by an animal, fish or plant. In a broad sense, DDMI understands that "detrimental" means a negative outcome of significant actual harm. DDMI is not aware of any evidence, or even a lack of certainty related to any evidence, suggesting any reasonable presence of threats of serious or irreversible damage that approach the concept of detrimental impacts on use. On this basis, the Amendment Application[3] by DDMI intentionally did not indicate "to deposit waste" as a

[1] Decision from the Wek'èezhìi Land and Water Board Meeting of June 10, 2021
[2] NWT Waters Act
[3] Diavik - Type A WL Amendment - Decommissioning

Water Licencing Criteria. DDMI's position is built upon an established evidence-based framework of previous WLWB decisions confirming that *"small zones with conditions above Water Quality Objectives (WQO) is not detrimental to use*" and *"while DDMI's modeling shows that AEMP benchmarks may be exceeded in waters around East Island for periods of time each year post-closure, there is currently no evidence that these exceedances will adversely affect aquatic life either within individual mixing zones or for Lac de Gras as a whole"* (WLWB, 2021[4]).

DDMI remains unsure if classification of Diavik runoff as a waste or non-waste through this process matters or changes regulation options for runoff. DDMI's concern is what the definition of waste implies regarding successful closure of the Diavik site. Regarding the concerns around Diavik site runoff exceeding AEMP benchmarks and/or not meeting drinking water limits, DDMI must reiterate that some natural tributaries in the region also do not meet all guidelines and it is not reasonable to expect or assume that surface water coming from disturbed or undisturbed ground (associated within mining or otherwise) should always meet aquatic receiving environment criteria or automatically qualify as a safe drinking water source without treatment (filtration, boiling, etc.). "Mixing zones" can be associated with natural runoff, just as they are with Diavik runoff. Further to this point, for water to allow "use" by humans should not imply "permanent drinking water supply without treatment" – some higher threshold for detriment to use is likely required.

DDMI, under its own direction, choose to go beyond what is required and conduct a quantitative human health and ecological risk assessment

This assessment was completed to better inform an answer to this important question of post-closure 'use' and safety related to the closed Diavik site. This scientific assessment definitively concluded that residual risks associated with the closed mine would be low or largely negligible. This conclusion was not sensitive to the assessment inputs or assumptions. Despite this, as Diavik closure runoff discussions are drawn out, become more frequent and grow towards broader audiences, DDMI has realized there may be growing misperceptions about the risks associated with runoff. It would be reasonable for someone to assume that if discharge of closure runoff requires three years for permitting including an unsuccessful Licence Amendment it must be a very controversial and/or high-risk proposal triggering concern. DDMI will continue endeavouring to ensure accurate risk information is shared and DDMI appreciates the exceptional efforts of groups such as the Tłı̨chǫ Government to facilitate good risk communication directly to the potentially impacted people.

DDMI has reviewed the EQC proposed by the GNWT, and the calculation approach appears to be inconsistent with LWB Standard Process for Setting Effluent Quality Criteria

The GNWT has expressed the clear position that runoff should be regulated by EQC that must not be exceeded at any time. To this end, the EQC proposed by the GNWT, and as identified by the GNWT themselves in their Intervention, are unlikely to be achievable in runoff from the closed Diavik site. LWB/GNWT policy[5] states that EQC should be reasonably and consistently achieved with the goal of meeting water quality objectives at the edge of the mixing zone or other relevant assessment boundary.

[4] Decision from the Wek'èezhìi Land and Water Board Meeting of June 10, 2021
[5] LWB Standard Process for Setting EQC

Overall, it is unclear to DDMI why the GNWT has proposed unachievable EQC or how they are meant to be considered by the WLWB. The GNWT seems to acknowledge this challenge by indicating that less conservative EQC may need to be considered in the future, presumably through another Licence Amendment process. Following this logic, DDMI assumes this third Amendment Process would be required before DDMI could continue with scheduled progressive reclamation work – or perhaps Diavik runoff can exceed EQC and still be declared as successfully closed. Clarity on this GNWT position is required as DDMI is aware of an occurrence where runoff from a reclaimed site exceeded site water licence criteria or EQC[6,7] and still received GNWT support for complete security reimbursement without holdback[8,9]. DDMI does not question the success of the referenced closure work or why the GNWT supported and the WLWB subsequently accepted[10] this refund request; rather we seek clarity on what EQC or closure criteria exceedances in runoff from reclaimed sites mean to the GNWT as the land manager. It will be important for the GNWT to explain the meaning of their Intervention in more detail at the Hearing so the WLWB can properly consider this position.

EMAB continues to use these public regulatory processes as the sole means to obtain any information, including simple clarifications, from DDMI

Despite open offers for access to DDMI staff and Consultants, and unlike other Parties, EMAB has not engaged with DDMI for the purpose of improving their understanding of DDMI's plans. DDMI suggests that the number of recommendations and number of repeat recommendations (both within the Intervention and between the Intervention and the initial review comments) is a direct result of this lack of engagement. DDMI appreciates and supports EMAB's role in obtaining independent expert reviews for the benefit of all Parties and the WLWB, but we believe it would be more helpful if EMAB would provide a consolidated and relevant set of recommendations rather than a growing shopping list of potential concerns or possible ideas without clear recommendations or a proposed path forward. For example, EMAB recommends that the WLWB not approve the Amendment in its current form but does not indicate which of their 99 recommendations must be addressed before EMAB would support the Amendment.

A requirement to re-establish any runoff collection during closure would by necessity also mean requiring *in-perpetuity* water management and treatment

Active water treatment has been retained as a viable contingency measure if water quality is significantly worse than predicted, however DDMI is not aware of any evidence that the currently predicted changes would adversely affect people, wildlife or aquatic life either on land, within individual mixing zones, or for Lac de Gras as a whole. Unless new evidence suggests otherwise, we understand this contingency measure does not warrant further investigation. We remind all stakeholders and the WLWB that a decision to pursue active water treatment must be weighed against the environmental reality that running a water treatment plant (of any scale) in perpetuity (forever) would mean: 1) a mixing zone in the lake associated with treatment discharge; 2) permanent infrastructure on the island including a water

[6] 2020 Closure and Reclamation Progress Report Part 1
[7] 2020 Closure and Reclamation Progress Report Part 2
[8] W2012L2-0001 – Ekati – CRP – 2020 APR and Security – Review Summary and Attachments – Feb 24_21
[9] W2012L2-0001 - Ekati - CRP - 2020 APR and Security - GNWT IR Response - Mar 17_21
[10] WLWB Decision - Ekati – 2020 Annual CRP Progress Report - Request for Security Adjustment – Progressive Reclamation of Old Camp

treatment plant, a site wide network of surface water pumps and pipelines, a camp facility, a network of roads, a diesel powerhouse facility, powerlines, diesel storage, warehouse for chemicals and supplies, infrastructure for landfilling and incineration of waste, an airfield, and intermittent winter roads; 3) permanent loss of access/use of the North Inlet by aquatic life; 4) permanent loss of access/use of the island by people due to ongoing active use by the company; 5) an ongoing zone of influence on wildlife associated with the active site; 6) new solid waste disposal on the island composed of sediments of precipitated metal hydroxides, metal sulfides, and calcium sufate; and 7) ongoing generation of dust and sulfur and nitrogen oxide emissions.

A decision to treat water in-perpetuity would, unequivocally, result in an inability to meet some closure goals and objectives and DDMI would consider this outcome to be a failure of the closure plan

This failure would immediately put into question the $80M of progressive reclamation efforts already completed by Diavik over the last 6 years which has focussed on construction of the robust world-class Waste Rock Storage Area - North Country Rock Pile (WRSA-NCRP) cover over all operationally segregated potentially acid generating waste rock. Following completion of this closure cover and with the recent completion of open pit mining at the A21 pit, DDMI has now transitioned most of the surface mining workforce to advance progressive reclamation of the Processed Kimberlite Containment Area (PKC). Construction of a final rock cover over the PKC is a progressive reclamation activity being completed to meet the end goal of a safely closed site that does not require a permanent site presence; this cover may not be required for a site with active site management *in-perpetuity*.

Detailed post-closure runoff and lake mixing predictions for the Diavik site have been available for over three years and the subject of highly focussed examination for over the last two years and during this time a clear determination on the acceptability of closure runoff water quality has not been completed

It is troubling to DDMI that this process has now resulted in the GNWT conclusion that runoff associated with reconnection of Diavik collection ponds, as evaluated in the FCRP, is mine-altered to an extent that is “unequivocally and unquestionably” detrimental to its use by people or by an animal, fish or plants. The GNWT have further indicated that DDMI may need to revise foundational and longstanding closure objectives SW1 and SW2 or risk failure to achieve safe closure[11]. The GNWT have implied that this impact on water uses could continue *in-perpetuity*, referencing Northwest Territories abandoned mines and contaminated sites as examples, effectively further implying failure of DDMI’s FCRP to meet foundational closure goals and objectives[12]. This GNWT view appears to be at odds with LWB/GNWT Policy on Guidelines for Effluent Mixing Zones[13] and LWB Policy on Waste and Wastewater Management[14]. It remains DDMI’s position that with implementation of the FCRP all closure goals and objectives will be achieved, and most importantly on this “waste” topic that: 1) land and water will be physically and chemically stable and safe for people, wildlife and aquatic life; and 2) land and water will allow for traditional uses.

[11] GNWT Intervention
[12] GNWT IR Response
[13] LWB/GNWT Guidelines for Effluent Mixing Zones
[14] LWB Waste and Wastewater Management Policy

DDMI requests that the WLWB make a determination on the acceptability of closure runoff during this proceeding

Clear direction on acceptability is required if DDMI is to continue any progressive reclamation activities as currently scheduled. Simply put, if the WLWB determines that closure runoff, with the DDMI management and monitoring proposed, is unlikely to meet closure goals and objectives, then DDMI will need to immediately re-evaluate options for closing Diavik. This would mean an immediate re-evaluation of current large-scale progressive reclamation activities of the PKC.

The future success of progressive reclamation in the Northwest Territories requires collaboration by all parties including Indigenous Governments and Organizations, Territorial and Federal Governments, and Regulators to create a regulatory framework for modern successfully closed mines

Without this, there is no incentive for companies to take on the financial risks and liabilities required to do progressive reclamation. DDMI chose to advance progressive reclamation of the WRSA-NCRP because we believed it was the right thing to do. This decision required the company to take on a very significant financial and regulatory risk because there was, and remains, no established or approved closure criteria for the facility, little certainty on a process for complete financial security return, and no timeline for establishing a GNWT relinquishment process[15]. DDMI is seeking a decision on this Water License Amendment that substantially reduces these financial and regulatory risks that continue to burden DDMI progressive reclamation work. We are hopeful that collaboration on implementation of closure work at Diavik will result in a story of a mine in the Northwest Territories that was constructed, operated, closed and relinquished successfully and set up future mines with a pathway to similar success.

Please contact the undersigned or Sean Sinclair (sean.sinclair@riotinto.com; 867-447-2440) if you have any questions regarding this response.

Yours sincerely,

Gord Macdonald
Diavik Closure Manager

Attachment A – Detailed Response to Interventions
Attachment B – Final DDMI Proposed SWALF

Cc
Marie-Eve Cyr, WLWB
Meghan Schnurr, WLWB
Ryan Fequet, WLWB

[15] GNWT IR Response from DDMI FCRP Workshop

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Attachment A

DDMI Detailed Response to Interventions

as part of Diavik - Type A WL Amendment – Decommissioning

EMAB Recommendation #	Recommendation	Response
2.1	Limit any approval to Pond 2 and Pond 7, scheduled to be breached in 2023 so that monitoring data can inform the approach to breaching collection ponds during the closure water licence renewal.	While DDMI is currently seeking approval to reconnect Ponds 2 and 7, DDMI is requesting that the Water License Amendment provide the regulatory mechanism and associated conditions to allow reconnection of all Collection Ponds as per the FCRP. EMAB has not provided evidence to show that reconnecting collection ponds following the monitoring and management approaches proposed by DDMI would result in adverse impacts on water uses in Lac de Gras. Delaying full consideration of this amendment and approval of the FCRP simply because there will be another opportunity during a future Water License renewal is not a rationale the WLWB should accept. DDMI requested regulatory direction regarding closure runoff in 2015 with the last Water License Renewal. DDMI has been prepared to commence progressive reclamation of the collection ponds since summer 2021 while awaiting regulatory direction. Given the extensive efforts by DDMI and regulatory discussions on this runoff and mixing topic over the last 3 years DDMI believes the regulatory direction should be all encompassing and be forthcoming without delay.
3.1	The discharge from the breached collection ponds should be considered a waste as defined by the Waters Act and Diavik should sample water from the streams as it enters Lac de Gras.	DDMI maintains that closure runoff, with the management and monitoring proposed, will not be detrimental to water uses in Lac de Gras, consistent with long approved Closure Objectives SW1 and SW2. It will be up to the WLWB to determine any definition under the *Waters Act*. DDMI's proposed monitoring approach will provide the information necessary to implement the SWALF and confirm performance is aligned and with closure criteria. The SNP monitoring location for each catchment runoff should be at the breach location, consistent with monitoring requirements of MDMER. Compliance monitoring at the stream outlet is not practical, not the best measure of closure runoff and would not provide information directly relevant for regulating closure runoff at the point where it is released from the mine footprint.
3.2	Reject Diavik's argument that it has provided sufficient evidence in its proposed Final Closure and Reclamation Plan to meet the requirements set out in the Decommissioning Plan description, and remove references to approval of decommissioning of collection ponds through an approved Closure and Reclamation Plan in Part G(27)(e), G(28(g), G28(h), G(33), Part J(9) and J(10) of the draft licence.	DDMI has fully considered the complete list of items in Schedule Item 3 of the 2022 Draft Water License and has included proposed approaches for each within this proceeding or where we have not considered an item as being necessary or appropriate have provided reasons and evidence. DDMI provided a conformance table with the draft Schedule as part of the Application. If the WLWB believes information is missing from the FCRP or this Water License Amendment they can direct that this information be provided.
3.3	Diavik should address all requirements set out in the Decommissioning Plan described in the Schedule 8, section 3 of the draft licence included with its amendment application, or provide a detailed justification for any requirements it is unable to provide.	Please see response to EMAB 3.2.
3.4	In addition to effluent quality limits for pH and acute toxicity, the Water Licence should include limits for TSS. These should either be consistent with the MDMER, or if/when MDMER do not apply to the runoff, then CCME Guidelines should be used.	DDMI has included current Licence EQC and MDMER limits of 30mg/L (grab) 15 mg/L (average) as action levels within the SWALF. DDMI understands the WLWB will determine the most appropriate approach for regulating closure runoff.

3.5	Provide clear regulatory requirements to establish and meet numerical thresholds for relevant contaminants of concern in all of the affected watersheds.	EMAB's consultant (Slater Environmental) incorrectly states in reference to DDMI Response to IR#7 that "DDMI argues that no additional parameters need to be addressed either in the license or in the SWALF." IR#7 was a specific request to address the Board Standard Process for Setting Effluent Quality Criteria (EQC) and as such the response was limited to consideration of EQC parameters and did not make conclusions regarding the SWALF. The analysis does conclude that EQC are not required and provides a complete rationale, as requested in IR#7. EMAB's Recommendation #2 has been addressed through a number of proposed License conditions and numerical and toxicological thresholds in a SWALF Once finalized these are expected to be clear enforceable regulatory requirements. While DDMI has made the case for why EQC are not required, we understand the WLWB will determine if EQC are a more appropriate regulatory approach for closure runoff.
4.1	A condition should be included in any approval for Diavik to breach collection ponds that Diavik propose Traditional Knowledge monitoring of the collection ponds, discharge and effects on the receiving waters, and incorporate early warning triggers into the SWALF. If Diavik proposes that meeting AEMP Benchmarks also meets the cultural use criteria, then it must demonstrate a direct linkage between each of the cultural criteria and the AEMP benchmarks.	As previously stated and as EMAB is well aware, a Closure Traditional Knowledge Monitoring Program is being developed for DDMI and it will include assessment of closure runoff.
5.1	Provide a table(s) of source term loads used in runoff modeling to assist with identifying what source terms are the most significant in each drainage.	This information is provided in FCRP Appendix X-21 with relative contributions described in Figures. Closure discharges are predicted to result in significant decreased loading.
5.2	Conduct runoff modeling using a more conservative background water quality source term (e.g., maximum or 95th percentile) and compare to predictions based on the median baseline water quality values.	It has already been established that the predicted background concentrations are most likely over-estimates of future conditions (see for example DDMI Response to IR#1). DDMI sees no merit in pushing the level of conservatism further and making background conditions less relevant.
5.3	DDMI should provide a rationale for why the mixing zone cell must have water for the entire year in order to conduct predictive modeling.	The modelled cells do not have to have water for the entire year in order to conduct predictive modelling. The model currently has cells that freeze completely – these cells are still included in the modelling. For the purpose of assessing mixing zones DDMI has only used cells that are expected to have water all year because: 1) WQ statistics on the data in frozen cells will not be comparable for wet cells; and 2) it is unclear how water use could be assessed for frozen conditions.
5.4	The thermal analysis and related seepage and water quality predictions should be updated based on conservative, current projections of climate change.	EMAB believes that additional and more conservative (more worst-case) modelling should be done because they are concerned the modelling might not be conservative (worst-case) enough yet EMAB does not provide any indication why this is necessary – that is how this additional information would be used by EMAB to inform this proceeding. For example does EMAB believe the more worst-case results would be used to revise the SWALF action level thresholds or any proposed EQC? Does EMAB believe the more worst-case results would be used to revise the criteria to be used by the Inspector before issuing an approval to proceed with reconnection? DDMI asks because the modelling results that are used to inform the SWALF action levels and the criteria for the Inspector are the expected dilution factors at the mixing boundaries. Dilution factors are not impacted by the predicted PKC thermal conditions. Over the remainder of the mine operation and through the active closure period and into post-closure DDMI will be collecting actual measurements of both thermal conditions in the PKC and the quality of water in runoff from the PKC that will ultimately be used to demonstrate closure performance in a PKC Closure Performance Assessment Report (PAR). Further modelling of more worst-case scenarios will not advance closure planning as all reasonable and practical passive source controls are already being implemented. Regarding closure climate change scenario selection, DDMI has implemented a climate change assessment process informed by the MAC's guide for climate change adaptation in the mining sector (MAC 2021 – see FCRP Appendix X-24). DDMI has confirmed the engineering design of applying the median climate change

		condition predicted for 2120's for all closure engineering designs with the exception of the PKC. The PKC has been determined by the Engineer of Record to be a more critical structure, and on that basis has included consideration of an upper 95% 2120's climate change condition. DDMI requests that the WLWB advise if there are climate change design standards that they require to be included in closure designs, otherwise DDMI intends to follow the recommendations of the Engineer of Record as described in the FCRP.
5.5	Use existing conditions to validate whether the PKC Facility thermal model provides an accurate prediction of current thermal conditions in the Facility, and consider whether the model and its assumptions and inputs (e.g., material properties) should be refined	Over the remainder of the mine operation and through the active closure period and into post-closure DDMI will be collecting actual measurements of thermal conditions in the PKC to inform any design updates and/or to be used to demonstrate closure performance in a PKC Closure Performance Assessment Report (PAR). DDMI understands that the defined properties of materials can influence predictions but more importantly the importance of using measured thermal conditions from the PKC facility to calibrate and verify predictive models. DDMI does not agree with EMAB that there is currently a need to contrast modelling assumptions between the NCRP and PKC. Golder/WSP is the Engineer of Record for both facilities and DDMI intends to follow their expert advice.
5.6	DDMI should also consider the 95th percentile to evaluate the upper end of the predicted modeling. It is important to measure the effectiveness of the designs if the impacts of climate change end up being on the upper end of the predictive modeling.	Please see response to EMAB-5.4
6.1	DDMI should provide information about how it has addressed potential use of water in mixing zones for human consumption, and whether there may be long-term constraints on consumption in these areas.	DDMI has described how it has addressed potential use of Lac de Gras water from human consumption in the HHERA included with the FCRP as provided in Response to EMAB-8. DDMI notes that our response to EMAB-8 addressed potential constraints on locating drinking water intakes in ephemeral streams but could logically also extend to near shore areas where these ephemeral streams enter Lac de Gras as it appears EMAB is suggesting. DDMI further notes that water quality in the mixing areas is predicted to experience peak concentrations during spring freshet when the lake is still ice covered and access to water by wildlife and humans is limited. Water quality in the mixing areas is expected to be much better quality during the open water season which is limited between early July until early October.
6.2	6.2 Drinking water quality guidelines should be added to the closure criteria for SW1-1.	DDMI's response to IR#4 included a revised SWALF containing a number of options. One of these options was the inclusion of MXB SNP water quality greater than Human Health (Drinking Water) Guidelines as an Action Level 3 Trigger. Human Health (Drinking Water) Guidelines are effectively the SW1-1 Human Health (Recreation) Closure Criteria divided by 20. It would be helpful if EMAB could confirm this option, as presented in response to IR#4 is supported by EMAB. DDMI maintains that the Human Health (Recreation) Closure Criteria is appropriate for the SW1-1 Closure Criteria as supported by the HHERA.
6.3	Sediment monitoring, especially in future discharge areas should be added to the closure plan as closure criteria to meet Closure Objectives.	Sediment monitoring in Lac de Gras through operations, including at the outfall of our Operational discharge point, has demonstrated that sediment accumulation is not a significant pathway. Monitoring through closure will focus on runoff water quality that includes total metals and total suspended solids which can be used to support AEMP sediment monitoring results. DDMI does not support EMAB's view that the Diavik mine is a source of arsenic and DDMI is unaware of how EMAB formed this view.
6.4	Diavik should provide details of what will be included in the performance assessment reports for the WLA and in the FCRP. The information contained in the performance assessment reports should also be indicated to be subject to the WLWB approval.	Part J Item 6 specifies the requirements for a PAR "Once the Licensee has determined that Closure Objectives and Closure Criteria have been met, the Licensee shall submit to the Board for approval a Performance Assessment Report. The Report shall be developed in accordance with the Mackenzie Valley Land and Water Board's Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites within the Northwest Territories. The Licensee shall submit subsequent Reports as directed by the Board."
6.5	Closure Criterion SW2-1 should be revised to address toxicity to a broader range of species. Typically testing would be completed on relevant sensitive fish, invertebrate and algae/aquatic plant species.	EMAB provides no reference or evidence to support their assertion of what is "typical". DDMI submits that use of *C. Dubia* as a sensitive single species test to assess aquatic health has been approved as a key action level indicator for Snap Lake closure monitoring and that the WLWB should consider this evidence rather than EMAB's assertion.

6.6	DDMI should consider whether toxicity testing protocols for evaluating achievement of closure criterion SW2-1 should be revised to require use of Lac de Gras water as dilution water for lab testing.	The AEMP is designed to detect changes in the water quality of Lac de Gras and any toxicological implications. DDMI suggest that rather than basing a recommendation on conservative worse-case modelling results that have been acknowledged as not indicative of expected future conditions, EMAB should wait and consider evidence from the Closure AEMP. If evidence from the Closure AEMP indicates background toxicological results in Lac de Gras then it would be prudent to consider how this might influence toxicity of closure runoff entering Lac de Gras.
6.7	DDMI should add meeting the AEMP benchmarks to criteria SW2 and the SWALF as a criteria to be met at the mixing zone boundary.	The M1 Objective is different from the SW2 Objective justifying a difference in the criteria. Specifically the M1 objective includes requirement for water quality within the flooded pit and dike area to be similar to Lac de Gras. In terms of surface water and mixing in LDG, DDMI maintains that toxicological measurements are a better indicator of effects (as a closure performance measurement) than numeric concentrations. DDMI will still collect paired samples for water quality as supporting information.
6.8	Monitoring of sediment quality and the potential impacts to aquatic life should be included in the FCRP and SWALF	Monitoring of potential contributions of particulate materials in closure runoff to Lac de Gras will be monitored at SNP locations through total metals analysis and total suspended solids. Also see EMAB 6.3.
6.9	The monitoring program should include inspections during the initial five-year period after any major storm events that may cause erosion or damage to conveyance channels or pond breaches. Once the initial five-year period has passed, periodic monitoring should likely continue at lower frequency, and event specific monitoring should be conducted after large events.	It appears to be EMAB's position that Closure Objective SW6 can only be demonstrated if DDMI monitors large events long into the future. Presumably EMAB would recommend extending this to include monitoring climate change events more than 100 years into the future, and if extreme storm events didn't occur in that 100 years, extending it longer. DDMI has retained qualified professional engineers to design and monitor the pond breaches over 5 years. The WLWB must be able to rely on this professional engineering design expertise rather than require each design event to actually occur and have DDMI provide monitoring evidence for each event. Pond breaches are designed to withstand 1 in 200-year storm events in a 2120s future – these are essentially 24-hour storm events equivalent to current cumulative annual precipitation. The likelihood of monitoring these events is rare and it is not necessary or practical to require long-term monitoring of these events to have reasonable confidence that a collection pond breach has been designed and will continue to perform such that the ground surface drains naturally following pre-development drainage patterns. Also note that from an erosion perspective the breaches are expected to perform better in extreme storm events than natural tundra.
6.10	DDMI should correct the references to the AEMP Criteria throughout Appendix V	The FCRP Appendix V reference is to the location of the Closure Criteria for the North Inlet (NI2, NI3 and NI5) and is correct. The AEMP Benchmarks are not present in FCRP Appendix V but can be found in the AEMP Design Report.
6.11	If AEMP benchmarks are determined not to be applicable, then they should be adjusted to site-specific criteria prior to closure. Adjusting closure criteria during closure and post-closure should be avoided.	It is not practical to develop site-specific AEMP benchmarks before exposure concentration can be confirmed at levels that would indicate a concern. The SWALF is designed to provide early warnings while also collecting site specific data (paired water chemistry and toxicity) that will be invaluable if there is a need to develop site-specific AEMP Benchmarks.
7.1	Remove the 5 m depth constraint for establishing MZB stations and sample at 100 m distance from shore in all mixing zones (or closer if full mixing occurs closer to shore); change the sampling method if needed to sample shallower water depths	DDMI's understands the purpose of monitoring is to assess water quality conditions as they relate to protecting water more broadly in LDG that will be used by people, wildlife and aquatic life. To that end the monitoring focuses on the edge of small mixing areas where DDMI still expects that reliable WQ data that can be collected and compared to current and future lake wide AEMP data. DDMI completed an HHERA based on the assumed size of these mixing areas which concluded low or negligible risks. Further, these mixing areas meet LWB guidance for mixing areas in lakes so it is unclear why sampling should be focussed closer to shore or how that assessment would be used, particularly considering these areas of Lac de Gras can freeze to the bottom.
7.2	Collect depth-integrated samples at the MZB stations rather than only a portion of the water column in the event that a site is not fully mixed.	DDMI acknowledges that different sampling methods may be required if the expectation of a vertically mixed condition is not realized. Based on current information, DDMI recommends the current method is appropriate.
7.3	Conduct a plume survey in each mixing zone to establish the size, dimensions, and location of full mixing. Review the proposed MZB sampling site locations based on the results of the plume survey	DDMI has described monitoring plans for the MXB SNP stations such that the modelled dilution factor can be confirmed. More detailed plume delineation surveys may only be justified if effects diverge from predictions. For instance, DDMI has proposed a response to AL3 being a Special Effects Study through AEMP to determine significance and extent of a significant divergence from predictions being C. dubia IC50 < 100%.

	and move stations as required and appropriate.	
7.4	It is recommended that discharge of surface runoff be monitored regularly (e.g., daily discharge) if/as feasible to: (A) provide a means to monitor the overall flow conditions encountered each year (i.e., hydrograph, periods of flow, volume of runoff); (B) document the range of discharge conditions to assist with interpretation of monitoring results (e.g., was toxicity testing sampling or mixing zone sampling conducted during a relatively high or low discharge); and (C) to facilitate verification of modeling results, including verification of dilution, and allow for calculation of loadings from site runoff.	Post-decommissioning surface runoff flow (discharge) will be monitored through presence/absence observations at the time of planned sampling as provided in Response to EMAB-18. Flow measurements are not required to confirm dilution factors at the MXB SNP station.
7.5	Model validation of dilution factors should compare water quality in the runoff directly to the water quality at the MZB (i.e., background conditions should not be added to the MZB measurements).	Background conditions must be included in the calculation of a dilution factor – that is how it has been estimated and used in all analysis.
7.6	The predicted concentrations were below the drinking water guidelines, however, until such time that the model is validated and is accurately predicting concentrations at the end of the mixing zone, the comparison to drinking water guidelines should be completed as part of the closure monitoring.	Monitoring data collected over the first two years after reconnection will be used to confirm the dilution factor. The Human Health (Recreation) criteria will be the primary comparison with closure runoff water quality. The proposed Human Health AL3 trigger is WQ at the MXB SNP station exceeding drinking water criteria which appears to meet EMAB expectations.
7.7	DDMI should add Drinking Water Guidelines to the SWALF and monitor for them.	DDMI's response to IR#4 included a revised SWALF containing a number of options. One of the options was the inclusion of MXB SNP water quality greater than Human Health (Drinking Water) Guidelines as an Action Level 3 Trigger. Human Health (Drinking Water) Guidelines are effectively the SW1-1 Human Health (Recreation) Closure Criteria divided by 20. It would be helpful if EMAB could confirm this SWALF option, as presented in response to IR#4 is supported by EMAB.
7.8	A decision to deactivate an SNP station should consider the hydrological conditions/climatological conditions encountered during initial monitoring relative to the range of flow conditions for each stream. If the period of monitoring did not capture relatively high flow conditions, the station should remain active.	A request to deactivate an SNP station will include consideration of the climactic conditions encountered. The WLWB will make the decision on deactivating and SNP Station. DDMI notes that a review of historical water quality on site (FCRP X-27) did not identify any significant WQ trend or correlation with variable hydrological conditions of the Operational period. The DDMI model assumes the full annual load of constituents associated with the full active zone of disturbed ground is released each year into the lake regardless of flow conditions so it is more likely that should variable flow impact WQ in the future it would be better WQ conditions in the lake, not worse.
7.9	Triggers for stopping monitoring should be defined (i.e., no significant change for X years, for example) and the WL	Changes to monitoring frequency and duration are recommended in the SNP and SWALF and are subject to WLWB approval. DDMI does not believe it is practical to determine the specific evaluation criteria to be used to inform this decision *a priori.* DDMI understands the WLWB could also direct monitoring continue evidence indicated it was necessary (e.g. PAR insufficient for return of security).

	Amendment and FCRP should include wording to indicate that any change to the monitoring frequency and duration is subject to board approval.	
7.10	Recommend a minimum of two years of weekly monitoring of SNP runoff sites; reductions in sampling frequency thereafter should be based on the results of the monitoring, including consideration of hydrological conditions encountered during the initial monitoring (i.e., wet or dry years/ range of flow conditions encountered during initial monitoring years) and variability of water quality conditions.	The closure runoff SNP monitoring proposed by DDMI is appropriate. It is supported by well researched an applied monitoring requirements for MDMER and is proportional to the level of environmental risk which is a reduction, or improvement, from Operations.
7.11	Identify the approach that will be taken to trigger sampling of the streams subject to infrequent/intermittent flows, including the time required to mobilize and complete toxicity/water quality sampling once flow is detected.	Each SNP station will be visited at the prescribed SNP frequency. If sufficient water is present, a sample will be collected, if not a sample will not be collected and the absence (limited quantity) of water will be recorded. The same process will occur with the next scheduled sampling event regardless of the presence/absence of water at the prior sampling event. This process will commence in the late winter/early spring and continue until frozen conditions are encountered.
7.12	Increase monitoring frequency for water quality at the mixing zone boundary. Sampling conducted in the first two years at mixing zone boundaries should be compared with predicted concentrations from modelling and evaluation of trends, to assess whether the runoff and mixing conditions are consistent with expectations. If concentrations of any parameters are higher than predictions or trending upward, monitoring should continue.	MXB sampling results will be used to confirm the estimated dilution factor or mixing conditions. If the measured dilution factor is significantly more or less than 10 then the results may be used to revise the dilution factor for that basin and the SWALF Action Level thresholds as appropriate. Recall that modelling indicates dilution will be >10, >95% of the time, meaning the current aquatic AL1 trigger is highly conservative.
7.13	Increase post-closure monitoring frequency for surface runoff, with sampling of sufficient frequency to capture major hydrological periods and water quality variability. For intermittent flows, monitoring should focus on time periods when flow is likely to be present.	The closure runoff SNP monitoring proposed by DDMI is appropriate. It is supported by well researched an applied monitoring requirements for MDMER and are proportional to the level of environmental risk.
7.14	DDMI should revise monitoring durations for catchments in which misclassified Type III rock was used for construction. Monitoring durations should be sufficient to detect any contamination that arises from potential ARD and metal leaching, based on predictions of the time for the	The misclassified waste rock represents less than 0.06% of the total waste rock placed at site at that time. The misclassification was fully addressed (WLWB Submission) to the satisfaction of the Inspector. Slater Environmental requested evidence regarding geochemical timelines: Smith, Lianna et al (2013) *The Diavik waste rock project: Initial geochemical response from a low sulfide waste rock pile.* Applied Geochemistry Volume 36, September 2013 Pages 210-221. There is no reasonable expectation that any closure runoff water quality would be measurably different because of the immaterial presence of misclassified waste rock.

	specific materials to react and consume neutralizing materials.	
7.15	Recommend sampling runoff for water quality analysis at an additional site near the stream mouths to assess changes in water quality conditions.	The closure runoff SNP monitoring proposed by DDMI is appropriate. It is supported by well researched an applied monitoring requirements for MDMER and is proportional to the level of environmental risk. EMAB has not indicated why it is necessary to understand how water quality might change along the length of a runoff stream nor have they indicated how this information would be used to inform or adaptively manage closure.
7.16	Develop an alternate sampling plan for scenarios in which the MZB stations cannot be sampled for safety reasons. Recommend sampling the mouth of the runoff stream (if regular sampling of these sites is not required) and/or the nearshore area of the lake as feasible.	MXB sampling will occur as soon as safe after ice-off. DDMI is not aware of a practical alternative approach to collecting a MXB sample during unsafe ice conditions. It is not clear how samples from near shore areas of the lake would be used to indicate MXB dilution or WQ conditions. Note that if access to the MXB station is unsafe to sample it would also be unsafe to access for general use by people or wildlife.
7.17	Estimate concentrations using predicted dilution factors at the SNP MZB stations in the event the sites cannot be sampled for safety reasons	DDMI has very conservatively applied an initial 10x factor to be applied unless MXB monitoring indicates otherwise. It would be helpful if EMAB could confirm if this is an appropriate estimate to use in the interim.
7.18	Identify alternate sampling sites in runoff streams downstream of the breach locations to be sampled in the event of practical constraints on sampling at the proposed runoff SNP stations. Identify alternate sampling sites in the nearshore of the lake in the event that runoff cannot be sampled at any location in the runoff streams.	DDMI does not propose an alternative SNP sampling location for runoff. The proposed locations are them most practical to access and if there is insufficient flow to allow a valid sample collection, then one would not be collected. Sampling further downstream would not be measuring mine site closure runoff which is the intent of the SNP location.
7.19	Add chlorophyll a to the list of water quality parameters to be monitored at the SNP Mixing Zone stations.	
7.20	Diavik should monitor Sediment impacts in the mixing zone	Please see response to EMAB 6.3
8.1	DDMI should provide clarification of the intended use of the SWALF and the measurement of SW1 and SW2 if it is not intended for a waste discharge.	DDMI would like to clarify that the statement regarding the SWALF and possible application for a “non-waste” was based on DDMI’s understanding that closure runoff would not be considered detrimental to water uses in Lac de Gras (i.e., it was expected to achieve closure objectives SW1 and SW2.) DDMI is proposing the SWALF as a primary regulatory mechanism for monitoring and managing closure runoff with implementation through the FCRP. The same monitoring results will be used to demonstrate closure performance with regard to SW1 and SW2.
8.2	Diavik should explain how the SWALF will be included in its water licence and be enforceable.	Currently the SWALF is integrated into the FCRP. Once approved it will become an enforceable management plan equal to if it were directly in the Licence.
8.3	Revise the SWALF to provide for investigation of causes of SW1-1 or SW1-2 exceedance, and consideration of maintenance/mitigation before revising closure criteria, potentially as a response to a revised Action Level 2.	DDMI acknowledges that “Investigation of Cause” covers a range of possible activities, some of which could be appropriately included as a Level 1 Response and others that are more appropriate following confirmation of criteria. For example, as suggested by EMAB, at Level 1 it would likely be appropriate to conduct a table-top assessment to confirm if cause was likely mine-related. However, a more specific field-investigation to locate and quantify a specific source(s) for example, would be a more appropriate Level 2 Response. DDMI suggests including “Investigation of Cause (desktop review)” as a response at Action Level 1 and “Investigation of Cause (field review)” at Action Level 2.

8.4	The SWALF should indicate that no changes to the criteria will be made without approval from the Board. DDMI should also present the information for each discharge point where they determined the required dilution factor. This information should look not only at the average conditions, but also at the "worst case".	The dilution within the mixing zones are known as well as can be reasonably expected until monitoring data is available to check against modelling results. There is no value in further modelling of different cases. DDMI understands that changes to the SWALF may require approval of the WLWB if they determine it to be necessary.
8.5	Revise the SWALF to include an Action Level trigger that is based on comparisons between actual and predicted conditions potentially considering predictions in both individual catchments (i.e., close to sources) and Lac de Gras.	A difference between predicted and measured water quality is not in itself sufficient justification for DDMI to take an action in response, the difference would have to be material to the environment. DDMI suggest the appropriate test of materiality would be if the measured water quality exceeds the thresholds defined for each level in the SWALF as currently proposed.
8.6	DDMI should change the Action Outcome of Toxicity impairment IC50 at the mixing zone boundary to Toxicity Impairment IC25 at the mixing zone boundary so as to meet their closure objectives.	DDMI's proposed closure criteria for Objective SW2 are: **SW2-1** – No sublethal toxicity at 12.5% strength of surface runoff with *Ceriodaphnia dubia* toxicity test (IC25 for three brood reproduction with *C. dubia* is ≥12.5%)., and **SW2-2** – No acute toxicity (96 hr Rainbow Trout, 48 hr *Daphnia magna*) observed (LC_{50} >100%). DDMI has provided evidence to support why these criteria are appropriate metrics to define surface runoff and seepage water quality that will not cause adverse effects on aquatic life or water uses in Lac de Gras or the Coppermine River. The SWALF action threshold described by EMAB is not the closure criteria proposed for closure objective SW2. Further EMAB has not provided any evidence to support their assertion that a small area of Lac de Gras with measured impairment at an IC50 level would cause adverse effects on aquatic life but that the same area with measured impairment at the IC25 would not.
8.7	EMAB recommends Diavik confirm the dilution required at the discharge point to the end of the mixing zone at each discharge point using information representing the worst-case scenario. The trigger level to the required dilution factor to meet the AEMP at the mixing zone boundary could then be applied (i.e.., DF * AEMP), along with no acute toxicity and no chronic toxicity at the IC25 for that dilution factor. If there is an exceedance, or toxicity is present, then if weather permits, sampling at the end of the mixing zone should be completed within 7 days. Water quality at the end of the mixing zone should meet the AEMP and there should be no chronic effects to at least an invertebrate (C. dubia) and a fish species (rainbow trout) at an IC25 level. If there is chronic toxicity, then mitigation measures need to be implemented and discharge to Lac de Gras stopped. If weather does not permit sampling at the end of the mixing zone, then sampling should occur as close	This recommendation is very similar to what DDMI is proposing in the SWALF with a few exceptions of note: 1. At AL2 a water sample will collected from the MXB and analyzed for water chemistry and toxicity but the subsequent threshold for AL3 is toxicity at the MXB (IC50 rather than IC25) not exceedance of AEMP benchmarks. As noted by EMAB, toxicity results at the MXB are more relevant than AEMP benchmarks. Again as suggested by EMAB if AEMP benchmarks were exceeded the next step would be toxicity testing to determine if further action was necessary. That is why DDMI has proposed the AL2 and AL3 thresholds as being toxicity rather than AEMP benchmarks. 2. DDMI does not agree that the runoff would need to be stopped if safety concerns did not permit collection of an MXB sample. DDMI suggests the appropriate steps would be determined through discussions with the Inspector in this instance.

	to the mixing zone as possible or mitigation measures stopping discharge should be implemented, until such time a repeat of the testing at the discharge location can be completed with confirmatory sampling at the end of the mixing zone occurring within 7 days.	
8.8	Once the dilution factor at each point of discharge is verified, with data, to be reliable, then DDMI should set a suitable protective early trigger level at each discharge point based on the assumption that the AEMP benchmarks will be met at 100 m, or at the end of the mixing zone (in most cases this will not be at ARC1). If AEMP benchmarks are not met at 100 meters, then chronic toxicity testing using multiple species should be the next action level with anything above an IC25 triggering another action level (i.e. stop releasing discharge to Lac de Gras).	Again what EMAB has recommended is generally consistent with what DDMI is proposing with the following exceptions: 1. Chronic toxicity testing will be conducted at the closure runoff SNP regardless of if it exceeds AEMP*10 but at a lower frequency. This will develop valuable site-specific information. 2. The trigger for sampling at the MXB (ie AL2) is IC25 < 12.5% at the closure runoff SNP. 3. Toxicity testing at the MXB would be with *C. dubia* and the threshold level is proposed at IC50 < 100%.
8.9	Diavik should add meeting the AEMP benchmarks to the SWALF as a criteria to be met at the mixing zone boundary.	As noted by EMAB in Recommendation 8.7 what is most relevant for the aquatic life at the MXB is the result of the toxicity test rather than the AEMP benchmark. If there is no measured toxicity but an exceedance of an AEMP benchmark that would indicate that the benchmark should be revised for this site not that a mitigative action is needed.
8.10	Describe how water quality monitoring results in the mixing zone will be incorporated into the SWALF and clarify what the actions would be in the event that AEMP benchmarks are not met at the MZB	Water quality monitoring results from the MXB SNP will be used to confirm the estimated dilution factor of 10 that is within AL1. If monitoring results indicate a dilution factor significantly different than 10 then the AL1 trigger will be re-evaluated (up or down). If the AEMP benchmark was exceeded at the MXB but the IC50 was >100% then no additional mitigation actions would be taken. If the AEMP benchmark was exceeded and the IC50 was <100% then the action described in the SWALF at level 3 would be taken.
8.11	Revise the surface water action level framework to include appropriate triggers for TP and chlorophyll *a*.	With regard to aquatic life the SWALF is designed as an early response/action framework for potential toxicological impairment. Total phosphorus and its linkage with Chlorophyll *a* is not expected to impair aquatic like rather it could cause nutrient enrichment (as observed through the Operational AEMP). As has been described in FCRP Appendix X-21, and accepted by EMAB, the post-closure loading of nutrients to Lac de Gras will be significantly reduced with the termination of the treated groundwater (mine water) discharges and completion of blasting on site. Closure runoff is not a material source of TP. Responses in Chlorophyll *a* in Lac de Gras to a reduced nutrient input will be monitored through the Closure AEMP. Nutrient enrichment is a whole of lake response/assessment rather than mixing zone. Operations monitoring assesses chlorophyll *a* throughout Lac de Gras in the AEMP and it is not a monitoring parameter in the mixing zone for the North Inlet Water Treatment Plant discharge which is currently the primary mine related source of TP.
8.12	Add a trigger/response/action level for chlorophyll *a* in the mixing zone.	Please see response to EMAB 8.11
8.13	Diavik must ensure that the approved cultural use criteria are integrated into the SWALF, including at an early warning level. It must commit to expanding this aspect of the SWALF, as well as leaving room to	As previously stated and as EMAB is well aware, a Closure Traditional Knowledge Monitoring Program is being developed for DDMI and it will include assessment of closure runoff. It is not clear at this time if it will or will not be included in the SWALF.

	incorporate any additional triggers that may result from development of the TK Monitoring Plan.	
8.14	Present SWALF separately for human health and wildlife and aquatic life as proposed in the Responses to Information Requests.	Acknowledged and this is how DDMI has presented the information during and after the Technical Session.
8.15	Implement a trigger level before the 10X AEMP or the SW1-1 and SW1-2 exceedance	DDMI provided a response to this recommendation in IR#4. It would be helpful if EMAB could confirm if the early action levels proposed for Human Health (Recreation) and Wildlife is appropriate. As explained elsewhere the AEMP x 10 trigger for aquatic life is already very conservative as an early warning limit.
8.16	AL3A trigger should be changed to toxicological impairment defined as an IC25 (not an IC50).	DDMI recommends use of the IC50 rather than IC25. The 50% value is a standard regulatory end-point applied to acute toxicity test (i.e.LC50) and the same logic holds for chronic test. The 50% measurement end-point has a higher confidence that the 25%. DDMI also advises that the IC50 measurement end-point has been approved for similar regulatory use with the same *C. dubia* test in the Snap Lake closure water license.
8.17	Identify monitoring locations in the bay where discharge is occurring at near shore locations and determine water quality.	DDMI has proposed a monitoring program that includes SNP locations for closure runoff monitoring at each collection pond breach with additional monitoring at the MXB. Evaluation of closure runoff with regard to wildlife is conducted using water quality results from the SNP location at the pond breach where conditions are expected to meet wildlife direct consumption limits. There does not appear to be a need for additional monitoring at near shore locations.
8.18	For Action Level 3 Triggers, water quality criteria should not exceed AEMP benchmarks or drinking water quality guidelines at the mixing zone boundary or near shore areas.	DDMI provided a response to this recommendation in IR#4. It would be helpful if EMAB could confirm if the action levels proposed is supported by EMAB.
8.19	If AEMP benchmarks are determined not to be applicable, then they should be adjusted to site-specific criteria prior to closure. Adjusting closure criteria during closure and post-closure should be avoided.	Appropriateness of AEMP benchmarks will be informed by toxicological and water quality data collected from closure runoff. As such any adjustments cannot practically be done until this information is available and any need confirmed.
8.20	References to the AEMP fish and AEMP plankton & benthic should be removed and the effect level for AEMP WQ needs to be revised.	In response to IR#4 DDMI included, as an option, triggers from the Aquatic Effects Monitoring Program in the SWALF. EMAB recommends that the SWALF not include results from the AEMP monitoring. DDMI accepts this recommendation as these late-stage lake effects-based triggers may not be appropriate in the SWALF which is designed to prevent this event.
8.21	DDMI should consider having a TSS criterion of 5-6 mg/L.	DDMI has proposed including MDMER limits of 30 mg/L (grab) and 15 mg/L (average). For reference Diavik's original Water License (N7L2-1645) included construction runoff limits of 100 mg/L (grab) and 50 mg/L (average) approved by the then NWT Water Board and supported by an EQC report. DDMI has not requested the original Water License limits because we understand that the WLWB cannot issue a Water License with limits that are less restrictive than MDMER. DDMI does not believe a TSS limit of 5-6 mg/L is either achievable or necessary. https://registry.mvlwb.ca/Documents/N7L2-1645/N7L2-1645%20-%20Diavik%20-%20Water%20Licence%20-%20Aug%2018_00.pdf
8.22	Remove reference to evaluating sampling locations and examining ecological significance.	Please see response to EMAB 8.20.
8.23	Add sediment quality monitoring and comparison to EQG for sediment to the SWALF in the mixing zones for each discharge point.	Please see response to EMAB 6.3.

8.24	Clarify what is meant by the nearfield mean for the fish component (Action Level 2 trigger). Recommend assessing this trigger for each individual NF area against the reference condition. Include a description of how FF data will be incorporated in the assessment.	Please see response to EMAB 8.20.
8.25	Clarify what is meant by the nearfield mean for the plankton and benthic invertebrate components (Action Level 2 trigger). Recommend assessing this trigger for each individual NF area adjacent to the pond breaches against the reference condition. Include a description of how FF data will be incorporated in the assessment.	Please see response to EMAB 8.20.
8.26	Define “effects threshold” for water quality. If the effects thresholds have not been defined for water quality, describe how the Action Levels 2 and 3 triggers will be assessed. Assuming effects thresholds have not been defined, identify what trigger would be applied to cause an effects threshold to be defined.	Please see response to EMAB 8.20.
8.27	Clarify if the water quality trigger proposed for the Midfield area would apply to individual stations or to all stations combined.	Please see response to EMAB 8.20.
8.28	Describe what the response and actions will be in the event that action AL1A (runoff toxicity) or AL2A is triggered (i.e., MZB sampling) but the runoff is no longer flowing, the quality and/or quantity of runoff changes notably, and/or if actions can no longer be implemented due to lack of flow or safety considerations.	DDMI suggests that these types of situations would be best addressed through specific discussions with the Inspector. It is not reasonable to predefine all possible outcomes. DDMI is of the opinion that the SWALF provides reasonable grounds to address most expected outcomes.
8.29	DDMI should consider replacing the Action Level 0/1 with an early warning trigger. A fundamental issue with the SWALF is that the first criteria is a level where impacts are expected and the timeframe to confirm and mitigate those effects for human, wildlife and aquatic life is either too long or uncertain. No mitigation measures are in place if that first level is exceeded until such time that additional	DDMI has proposed early action levels for aquatic life in the SWALF and added early warning levels for Human Health (Recreation) and Wildlife in response to IR#4. It would be helpful if EMAB would advise if they support the proposed early warning levels for human health and wildlife.

	testing can be safely completed or until a risk assessment can be completed. DDMI should add another "warning level" trigger that would commence action prior to concentrations being that where adverse effects could be expected. This applies to human health, wildlife and aquatic life. DDMI has proposed optional amendments to the SWALF in the response to Information Request (IR#4) which includes an early trigger. This concept should be captured in the final SWALF if it is to proceed.	
8.30	EMAB recommends that an early warning trigger sign be used (such as a percentage of the SW1/SW2 criteria) to investigate the risk assessment and source investigation. DDMI has proposed an early warning trigger for SW1 that will help to alleviate concerns with timeframes. DDMI should also incorporate an early warning trigger for SW2 into the SWALF for aquatic life	DDMI has proposed early action levels for aquatic life in the SWALF and added early warning levels for Human Health (Recreation) and Wildlife in response to IR#4. It would be helpful if EMAB would advise if they support the proposed early warning levels for human health and wildlife. Action level 1 for aquatic life is AEMP benchmarks *10 and is considered very conservative and therefore an appropriate early warning level.
8.31	Diavik should implement a trigger level before the 10X AEMP or the SW1-1 and SW1-2 exceedance.	Please see response to 8.30.
8.32	Monitoring water quality at the breach location as well as along the path to Lac de Gras should occur weekly at a minimum until such time that the risk assessment is completed, water quality returns for at least three sampling events to below the early warning trigger concentrations or the investigation of cause has identified an issue that has been mitigated and water quality has returned to conditions lower than the trigger.	DDMI suggests that any changes to sampling frequency be determined based on specific conditions observed at the time. Changes to proposed monitoring frequencies would require WLWB approval.
8.33	DDMI should provide at a conceptual level what would be involved in a trade-off study, who would be consulted, the timeframe and the decision process.	The concept of the trade-off study was discussed at the Technical Session and an initial list of trade-offs summarized. DDMI expects that if such a study was required by the WLWB that it would follow their defined processes and timelines for engagement, review and decision. Please see YKDFN 4.2 for more information.
9.1	EMAB recommends that any change to the decommissioning schedule for individual ponds should be approved by the WLWB.	DDMI understands that the closure schedules included in the FCRP are for Board approval.

9.2	Decommissioning should be prohibited until monitoring demonstrates that water quality has remained suitable in various flow conditions and throughout the year.	DDMI continues to collect water quality information for each of the collection ponds. This information has been summarized and provided in FCRP Appendix X-27. This large dataset demonstrates that WQ has remained stable throughout the years under variable flow (year-over-year and month-over-month). DDMI proposed that the final water quality sampling prior to breach collection, in addition to all of the measured and monitored information provided through these proceedings should be more than sufficient to approve reconnection of natural drainages. DDMI is not aware of any evidence, or lack of evidence, that would support the EMAB recommendation to prohibit decommissioning. Two decades of monthly data collection is more than sufficient, especially given conditions are expected in improve in closure.
9.3	DDMI should specify that the decommissioning requirements need to be met for at least two sampling events completed at different times of the year (i.e., freshet and the fall), prior to submission to the inspector.	Please see response to EMAB 9.2.
9.4	DDMI should provide rationale/basis for the 3 mg/L. for TPH. This value should be based on the protection of human health, wildlife and aquatic life.	A TPH of 3 mg/L is what is currently in the DDMI Water License and is common across other NWT Water Licences.
9.5	DDMI should consider having a TSS criterion of 5-6 mg	Please see response to EMAB 8.21.
9.6	DDMI should add a fish species to the chronic toxicity testing	DDMI has proposed use of *C. dubia* as it has been demonstrated to be a sensitive species for Diavik closure runoff water and it was previously approved, and identified as a sensitive species, for similar application at Snap Lake. https://registry.mvlwb.ca/Documents/MV2019L2-0004/De%20Beers%20Snap%20Lake%20-%20Revisions%20Required%20-%20AEMP%20Design%20Plan%20V1.2%20-%20Aug30_22.pdf
9.7	DDMI should revise the thresholds and remediation plans for sediment in control pond areas to consider the material as contaminated soil rather than sediment that will remain submerged	The proposed thresholds are specific to sediment and actions that would be taken to limit introduction of hydrocarbons into the closure runoff. Thresholds that relate to soil are addressed in the FCRP and would still apply to any materials that would be exposed to terrestrial receptors.
9.8	DDMI should conduct an analysis of contaminants of concern for Collection Pond sediments to consider a range of contaminants consistent with the potential sources and mechanisms of contamination for these materials.	Please see DDMI Response to IR#5. In general, and as expected, pond sediment whole rock chemistry falls with the range of chemistries found in mine site rock, till and soils as well as lake sediments.
9.9	Limit breaching of Surface Water Ponds until after completion of operations and closure-related earthworks and erosion control measures (e.g., re-vegetation) in the specific catchments while providing for controlled discharge of surface runoff that meets licence limits (for discharge from Collection Ponds), numerical closure criteria and thresholds in the SWALF	EMAB's recommendation, if accepted by the WLWB, would not allow DDMI to proceed with progressive reclamation and would limit activities to what we would consider research. DDMI does not see value in this research relative to the information and progress that could be obtained with appropriate pond breaching and does not intend to consider this recommendation further.

9.10	DDMI should provide evidence for each proposed breach about the potential erosion that may result from failure during events larger than the design event. As part of this, it should consider whether that erosion is consistent with erosion rates in similar natural channels during similar events and whether progressive erosion at any of these locations could adversely affect mine waste storage facilities. Where erosion could affect mine waste storage facilities, more robust closure designs would be required. Where erosion greater than that expected in natural channels may occur, post-closure maintenance should be expected and required.	It is DDMI's opinion that the Response provided by the Engineer of Record to EMAB-12 has already addressed this recommendation. DDMI requests that the WLWB consider qualifications of the Engineer of Record and the EMAB Consultant when weighting evidence with regard to this recommendation. Breaches have been designed to withstand 1-200 year storm events for a 2120's climate change scenario without the need for maintenance.
10.1	Two years of pre-closure sampling at the new areas/sites is recommended to provide robust data for comparison. At a minimum, one round of monitoring at the new NFC should be completed for all components (water quality, plankton, sediment quality, invertebrates, fish, and metals in fish) prior to breaching of ponds. For water quality and plankton, the pre-closure sampling should include at least one summer and one winter sampling event.	DDMI has proposed that the Closure AEMP would commence in 2025, one year before the end of commercial operations. This is expected to be sufficient to transition from an operations AEMP to a Closure AEMP while maintaining program integrity. New NFC stations for water quality, plankton and benthos will be added sooner where practical (e.g., near Pond 2 and 7) but full biological monitoring like sculpin will not commence until at least 2025. Note that much of the AEMP sites are the same as those used in Operations so there is a significant / robust dataset for comparison of lake wide changes.
10.2	Sample all components in the C3 bay and collect a minimum of one year of pre-closure monitoring data to facilitate pre- vs. post-closure comparisons of conditions.	Please see response to EMAB 10.1.
10.3	DDMI should be required to implement relevant parts of the Closure and Post-Closure AEMP Design Plan, including monitoring potential effects of the additional discharge locations, in association with any Collection Ponds that are decommissioned during the operational period.	Please see response to EMAB 10.1.
11.1	DDMI should provide comparison of water quality from current reference locations relied upon in the RA to pre-mining water quality to identify whether the reference locations relied upon in the RA are representative of unimpacted conditions.	EMAB makes a claim of substantive dust deposition at a distance from the mine based on "stakeholders" descriptions without providing the supporting evidence or providing DDMI an opportunity to review and respond to the evidence. DDMI requests that the WLWB not consider this statement as evidence. If the WLWB intends to consider this recommendation then DDMI requests an opportunity to review and respond to any evidence prior to consideration by the WLWB.

11.2	It appears that DDMI's approach to the protection of aquatic life would not result in meeting their closure objective of no adverse impacts to aquatic life. Mixing zones need to be as small as possible and the end of the mixing zone should not result in chronic effects to aquatic life. Mixing zones need to be reduced and the action levels defined in the SWALF are not acceptable and need to be adjusted.	DDMI has proposed a monitoring and management approach in the SWALF that will be used to both manage closure runoff and demonstrate closure performance meets closure objective SW2. Specifically closure criteria are included within the SWALF at Action Level 2. EMAB provides no evidence or indication of why these criteria are unlikely to be achieved.
11.3	EMAB recommends that DDMI remove reference to low risk from an HQ of 5 in Table 19 of Appendix X-25.	It is acknowledged and agreed that, as an initial general interpretation of HQs in risk assessment, HQs cannot be linearly scaled to risk. An HQ above 1 may indicate potential for unacceptable risk (i.e., it does not indicate strong evidence for harm, but rather inability to conclusively eliminate potential for risk based on magnitude of the HQ alone). As such we agree that the word "hazard" rather than "risk" would be a better choice in the Table 19 sentence, as follows: "When using the lowest LC50 from laboratory tests documented in the literature, there are low magnitude hazard (i.e., HQ <5) for D. magna at nine runoffs." We agree that interpretation of HQs should consider the conservatism (margin of safety) inherent in the derivations. Due to the conservative nature of the assumptions in the aquatic ERA, including short-term benchmark derivations close to CCME chronic guidelines and Lac de Gras background conditions, context is helpful in the interpretation of screening HQs. Given the nature of the input data for the exposure and effect terms of the HQ calculation, it would be appropriate to state that HQs greater than 1 for silver and copper do not necessarily mean risks are unacceptable, rather than emphasize the value of 5 as an indicator of "low magnitude". The result of HQ>1 does, however, indicate that further assessment may be required. When assessing potential risks for these metals, multiple lines of evidence were evaluated and the conservatism in each line of evidence considered in rendering an overall conclusion. Ultimately, the site-specific testing (with D. magna in particular) provide the best means of validating the low-risk predictions from the aquatic ERA.
11.4	DDMI should revise the approach taken in the HHRA to identify and discuss all risks above background.	Please note that we have been consistent with BC's guidance in that none of the COPCs have been eliminated by comparison to baseline conditions. All COPCs were carried forward for quantitative assessment as shown in Tables 30 and 31 and Appendix K. We are currently assessing a closure plan (e.g., the project has already happened, and exposure can be measured in the environment). Therefore, the environmental samples collected in the vicinity of the mine represent both background and mine contributions. The samples collected in the reference areas represent background conditions without the effect of the mine. The reference condition locations (far field sites) were selected with Indigenous elders as part of ongoing lichen monitoring studies and are outside the influence of the mine. In this case we would not add risk estimates calculated in the vicinity of the mine to those calculated for the reference areas. The Alberta guidance text that is referenced in this IR question. is applicable to a new project that has not happened yet, in which case you would add predicted contributions for the project to existing conditions, and also evaluate the project contribution. As we are assessing the suitability of the closure plan to mitigate exposure to COPCs resulting from the mining activities, we have focused the discussion on COPCs that are primarily attributed to mining activities. We have done this by subtracting the risk estimates for the reference conditions (background conditions) from those for the Project (both mining and background influences). A closure plan is not designed to mitigate substances that are elevated due to background conditions (e.g., naturally occurring substances). We would typically not discuss qualitatively risk results that are less than an HQ of 0.2 or an ILCR of 1 x10-5. Substances that were not discussed in detail based on risk results that exceeded an HQ of 0.2 or an ILCR of 1x10-5 for the indigenous receptor (Table 30) include: - aluminum (HQ=0.48 (mining plus background, HQ=0.28 (background), HQ=0.16 project contribution); - chromium (HQ=0.78 (mining plus background, HQ=0.67 (background), HQ=0.10 project contribution); and, - lead (HQ=0.48 (mining plus background, HQ=0.35 (background), HQ=0.13 project contribution. The hazard quotients for aluminum, chromium and lead, have marginal contributions from mining based on the magnitude of the project contribution HQ relative to the total HQ (project and background) and therefore, have not been discussed in greater detail in the qualitative evaluation. For iron, manganese, nickel and zinc, HQs were higher for background than project and background; therefore, these substances are not attributed to mining activities. For antimony, cadmium, and cobalt the HQ was only elevated above 0.2 for the background condition, not for the project and background condition), therefore, these substances are not attributed to mining activities.

		Substances that were not discussed in detail based on risk results that exceeded an HQ of 0.2 or an ILCR of 1x10-5 for the recreational receptor (Table 31) are manganese and methylmercury. For manganese, the HQ was higher for background than project and background; therefore, manganese is not attributed to mining activities. For methylmercury, the HQs were the same for project and background and background, so methylmercury is not attributed to mining activities.
11.5	Diavik should provide additional discussion for all parameters where potential unacceptable risks are identified and the mine contributed to exposure.	See response to 11.4
11.6	DDMI should verify modelling results and once monitoring commences confirm with measured data whether the predictions are accurate. In particular, DDMI should verify BLM and Windward modelling results, regarding the predictions of the copper concentrations, and once monitoring commences confirm with measured data whether the predictions are accurate.	DDMI does not intend to "verify modelling" rather DDMI intends to collect paired water chemistry and toxicology (acute and chronic) results for each of the closure runoff catchments that can be used to inform a site-specific understanding the relationship between water chemistry and toxicology. DDMI expects this data will supersede modelling data. The comparisons of copper to natural conditions in Lac de Gras are not a consequence of the biotic ligand model (BLM) procedure. Comparisons to background were made based comparisons of model predictions to aqueous copper concentrations observed (measured) in three far-field areas (FFA, FFB, and FF1), consistent with the normal ranges described in the AEMP Reference Conditions Report Version 1.4. Use of the BLM models is a separate procedure that examines potential bioavailability changes resulting from toxicity modifying factors. Where BLM model estimates yield toxicity predictions (i.e., thresholds for copper responses) that fall within the range of reference conditions, this is not an indication that inputs have been underestimated. Rather, it is an indication that the BLM-based adjustments for bioavailability are over-protective, yielding benchmarks that are unrealistically low, overlap with natural conditions, and overstate actual risk potential. This conservatism relates to the issue of natural tolerance described in Section 4.4. Where a model generates thresholds that are lower than natural background copper concentrations in the region outside the influence of mining, the main uncertainty lies not with measurement of background, but with the reliability of the model that predicts potential responses at concentrations well below the generic CCME chronic guideline for copper. We agree that monitoring of water quality and verification (both for chemistry and toxicity) will be important aspects of confirming that risks are acceptable under closure conditions.
11.7	DDMI should provide a discussion of the uncertainties associated with relying on a model for which the predicted concentrations of arsenic are outside the validation range.	Please see below as noted in our previous response to EMAB 107. HC (2017) provide a regression equation to correlate bioaccessibility (in vitro) results with RBA values derived from in vivo studies (in vivo-in vitro [IVIV] comparison). The regression equation used to adjust arsenic is provided in Health Canada (2017) guidance (i.e., not developed as a part of this HHRA). The regression equation cited in HC (2017) is adopted from US EPA (2017). The US EPA (2017) regression model for predicting relative bioavailability in soil is developed from a meta-analysis of data studies in mice and pigs (Bradham et al., 2011, 2013; Brattin et al., 2013; Juhasz et al., 2009, 2014a at cited in US EPA 2017). Paired IVBA and RBA measurements collected from 83 soils, representing a range of different sites and mineral types, including mining, smelting and pesticide/herbicide applications were used in a weighted linear regression model. The model equation is: Relative Bioavailability (%) = 0.79·In vitro Arsenic Bioavailability (%) + 3.0 The regression model was developed using soil concentrations ranging from 40 to 13,000 mg/kg (ppm) (US EPA 2017). The arsenic mineral types included in the soil studies used to generate the regression equations include sorbed arsenic (III) and (V) species, arsenic trioxide, arsenopyrite, and arsenic-metal oxides (US EPA 2017). The post-closure soil concentrations ranged from 0.72 - 10.5 mg/kg which are a bit below the range used to develop the regression model. However, US EPA (2017) indicates that the minimum level in the range specified is based on the detection limit used in this standard operating procedure. US EPA (2017) indicates the range specified above should be suitable for most applications and that if soil concentrations are outside of this range, it will add some additional uncertainty to the relative bioavailability estimate. We had previously indicated that additional text could be added to the uncertainty section of the HHERA in the next version of the report to address the uncertainty associated with relative bioavailability.

		The text that could be added to Table 34 is "It is noted that the arsenic post-closure soil concentrations used in the risk assessment ranged from 0.72 - 10.5 mg/kg which are a bit below the range used to develop the regression model. US EPA (2017) indicates that the minimum level in the range specified is based on the detection limit used in this standard operating procedure. US EPA (2017) indicates the range specified above should be suitable for most applications and that if soil concentrations are outside of this range, it will add some additional uncertainty to the relative bioavailability estimate. The potential to underestimate or overestimate risk through the use of the PBET regression equation required by Health Canada on soils that are lower than the soil concentrations used to derive regression equation is unknown. However, it is noted that the maximum soil concentration used in the risk assessment is below the Northwest Territories soil quality criteria of 12 mg/kg which is considered to be protective of human and ecological health (e.g., associated with negligible health effects). Figure 16 of the health risk assessment shows the relative contribution of the pathways assessed to the overall risk and it is noted that soil ingestion is an extremely marginal contributor to the overall risk estimates. As a result, the uncertainty associated with the PBET regression equation for arsenic does not affect the overall conclusions of the risk assessment. References: Health Canada. 2017. Supplemental Guidance on Human Health Risk Assessment for Oral bioavailability of Substances in Soil and Soil-Like Media. Contaminated Sites Division, Safe Environments Directorate, Ottawa, ON, Canada. NWT CSR (Northwest Territories Contaminated Sites Regulation). 2003. Environmental Guidelines for Contaminated Site Remediation for Agricultural Land Use. Appendix 5 for metals, PAHs, and BTEX. Available online at: https://www.enr.gov.nt.ca/sites/enr/files/guidelines/siteremediation.pdf
11.8	Confirm model prediction of no acute lethality with toxicity test results collected as part of monitoring programs.	DDMI has proposed acute toxicity testing for each of the closure runoff catchments to confirm no acute toxicity (LC50>100%). Sampling to date (X-27) supports prediction of no acute lethality.
11.9	Verify that the conclusions of the HHERA would not change with the use of actual Lake Trout metals data.	Measured mercury concentrations in lake trout were used in the HHRA. For other metals, site-specific bioaccumulation factors (using measured slimy sculpin tissue concentrations and measured water concentrations) were calculated and if there was a relationship between the two media, then the site-specific bioaccumulation factor was multiplied by the modelled water concentrations in Lac de Gras to calculate slimy sculpin tissue concentrations as a surrogate ("Lac de Gras" in **Table 1 – see end of Attachment A**). If there was no relationship between the measured slimy sculpin tissue concentrations and measured water concentrations, then the 95% UCLM tissue concentration was used in the HHRA ("95% UCLM in **Table 1**). Measured data for lake trout collected as part of the Traditional Knowledge Studies were compiled and summary statistics were calculated. The summary statistics for the lake trout metals data were compared to the summary statistics previously calculated for slimy sculpin as shown in **Table 1**. Updated summary statistics for mercury based on the inclusion of Golder 2017, 2019, and 2021 data are provided in **Table 2 – see end of Attachment A**. With the exception of antimony (Lac de Gras) and copper (Lac de Gras), the slimy sculpin metals concentrations used in the HHRA are greater than the lake trout tissue concentrations, therefore the risk estimates in the HHRA are more conservative than those that would be generated using lake trout concentrations (i.e., risks would decrease). The difference in the 95% UCLM concentrations for copper in Lac de Gras and iron in North Inlet are marginally greater than those used in the HHRA, with the lake trout concentrations being approximately 2.1 times and 1.1 times greater than the slimy sculpin concentrations, respectively, as shown in **Table A**. An example comparing the hazard quotients for antimony and copper if the lake trout tissue concentrations are used instead of slimy sculpin tissue concentrations are shown in **Table A** for the indigenous toddler (because it is a more sensitive receptor). The hazard quotients increase by approximately 1.1 times for antimony and marginally increased for copper.

Table A: Comparison of Hazard Quotients for the Toddler in the HHRA Using Slimy Sculpin Tissue Concentrations Versus Lake Trout Tissue Concentrations

Parameter	Slimy Sculpin		Lake Trout	
	Tissue Concentration (mg/kg wwt)	Hazard Quotient	Tissue Concentration (mg/kg wwt)	Hazard Quotient
Antimony	0.0030	0.094	0.00616	0.106
Copper	0.33	0.0104	0.353	0.0105

11.10

Verify conclusions of the HHERA would not be affected by removal of the 2007 and 2016 slimy sculpin metals datasets.

Summary statistics (95% UCLMs) for slimy sculpin tissue concentrations were recalculated excluding the 2007 and 2016 datasets. A comparison of the updated summary statistics for slimy sculpin tissue concentrations to those used in the HHERA is provided in **Table 3 – see end of Attachment A**. The selected concentrations used in the risk assessment at Lac de Gras and North Inlet were lower (e.g., less conservative) than the updated 95% UCLM for 11 of the 25 COPCs (antimony, cadmium, cobalt, copper, iron, lead, molybdenum, nickel, thallium, tin, and zinc).

Hazard quotients for the three ecological receptors that consume fish (wolverine, peregrine falcon, and long-tailed duck) were recalculated using the updated slimy sculpin tissue concentrations for the 11 COPCs except for the following receptor-COPC combinations because toxicity reference values are not available:

- Antimony – peregrine falcon and long-tailed duck
- Tin – peregrine falcon and long-tailed duck

The updated hazard quotients are shown in **Table B**. The results of the re-assessment do not change the conclusions of the original HHERA as risks are the same for COPCS where the HQ was greater than one (i.e., copper and iron) or risks were negligible for those COPCs where HQs were less than one (i.e., antimony, cadmium, cobalt, lead, molybdenum, nickel, thallium, tin, and zinc).

Table B: Comparison of Hazard Quotients for Parameters and Ecological Receptors Using Slimy Sculpin Tissue Concentrations in the ERA Versus the Updated Slimy Sculpin Tissue Concentrations

Parameters	Slimy Sculpin Tissue Concentrations Used in the ERA					Updated Slimy Sculpin Tissue Concentrations			
	Tissue Concentration in Lac de Gras (mg/kg wwt)	Tissue Concentration in North Inlet (mg/kg wwt)	Hazard Quotients for Wolverine	Hazard Quotients for Peregrine Falcon	Hazard Quotients for Long-tailed Duck	Tissue Concentration in Lac de Gras and North Inlet (mg/kg wwt)	Hazard Quotients for Wolverine	Hazard Quotients for Peregrine Falcon	Hazard Quotients for Long-tailed Duck
Antimony	0.00297	0.00297	0.00042	No TRV	No TRV	0.0103	0.00042	No TRV	No TRV
Cadmium	0.0211	0.0211	0.00027	0.0022	0.029	0.0236	0.00027	0.0022	0.029
Cobalt	0.0628	0.0628	0.000070	0.023	0.183	0.148	0.000070	0.024	0.18
Copper	0.33	0.23	0.0035	0.051	**1.1**	0.664	0.0035	0.051	**1.1**
Iron	5.2	4.6	0.024	**6.6**	**19.5**	25.1	0.024	**6.7**	**19.5**

		<table><tr><td>Lead</td><td>0.012</td><td>0.012</td><td>0.00064</td><td>0.021</td><td>0.14</td><td>0.014</td><td>0.00064</td><td>0.021</td><td>0.14</td></tr><tr><td>Molybdenum</td><td>0.056</td><td>0.052</td><td>0.00069</td><td>0.038</td><td>0.54</td><td>0.0525*</td><td>0.00069</td><td>0.038</td><td>0.54</td></tr><tr><td>Nickel</td><td>1.2</td><td>2.2</td><td>0.0048</td><td>0.0045</td><td>0.86</td><td>2.096</td><td>0.0048</td><td>0.0057</td><td>0.87</td></tr><tr><td>Thallium</td><td>0.00635</td><td>0.00635</td><td>0.0078</td><td>0.024</td><td>0.039</td><td>0.0068</td><td>0.0078</td><td>0.024</td><td>0.039</td></tr><tr><td>Tin</td><td>0.066</td><td>0.071</td><td>0.00078</td><td>No TRV</td><td>No TRV</td><td>0.077</td><td>0.00078</td><td>No TRV</td><td>No TRV</td></tr><tr><td>Zinc</td><td>31.4</td><td>31.5</td><td>0.0042</td><td>0.47</td><td>0.12</td><td>35.0</td><td>0.0042</td><td>0.47</td><td>0.12</td></tr></table> Notes: No TRV = Not toxicity reference value is available therefore a hazard quotient was not calculated; mg/kg wwt = milligrams per kilogram in wet weight. Bolded value = hazard quotient greater than one (1.0). * Tissue concentration is Lac de Gras remains unchanged (0.056 mg/kg wwt) because it is still greater than the updated slimy sculpin tissue concentration, but the tissue concentration at North Inlet increased from 0.052 mg/kg wwt to 0.0525 mg/kg wwt.
11.11	Verify and clarify what specific mercury in Lake Trout datasets were used to define summary statistics to support the HHERA. Data sets should exclude replicate samples and analyses (e.g., 2008 dataset). Verify that the conclusions of the HHERA would not change with use of a corrected dataset (if applicable).	The dataset used to calculate mercury tissue concentrations in lake trout included samples collected in 2008 from Lac de Gras (n=20) and from Lac du Sauvage (n=20), 2009 (n=10), 2011 from Lac de Gras (n=17) and Lac du Sauvage (n=30), 2012 (n=13), 2014 from Lac de Gras (n=30) and from Lac du Sauvage (n=20), 2015 (n=20), & 2018 (n=20), for a total 210 samples, as shown in **Table C**. Note that duplicate samples collected in 2008 from Lac de Gras and Lac du Sauvage were included in the calculation of summary statistics for a total number of 250. In response to this IR, an updated dataset was generated that included the following: • The samples collected in Lac de Gras (n=20) analyzed by Flett Research Ltd. in 2008 (n=20) • The samples collected in Lac de Gras 2011 (n=17) and in 2014 (n=30) • Samples collected in 2009, 2012, 2015, and 2018 • Samples collected as part of the Traditional Knowledge Studies in 2015 (n=21), 2018 (n=20), and 2021 (n=12). A total of 183 samples were included in the updated dataset to calculate mercury concentrations in lake trout, as shown in **Table C**. The summary statistics for both sets are data are shown in **Table 2**. The 95% UCLM for the updated dataset for mercury in lake trout tissues is 0.276 mg/kg wet weight which is slightly lower than the value used previously in the HHRA of 0.302 mg/kg wet weight. This means that the risk estimates in the HHRA are slightly more conservative (i.e., higher) than those that would be generated using the updated 95% UCLM for mercury in lake trout. **Table C. Summary of Lake Trout Tissue Samples collected from 2008 to 2021 Used to Generate Summary Statistics in the HHERA and in the Updated Dataset.** <table><tr><th>The Year that samples were collected</th><th>Location of Tissue Collection</th><th>Number of Samples</th><th>Were data included in the HHRA?</th><th>Included in updated dataset?</th></tr><tr><td>2008</td><td>Lac de Gras</td><td>20 (+20 duplicates)</td><td>Yes (+20 duplicates)</td><td>Yes (exclude duplicates)</td></tr><tr><td>2008</td><td>Lac de Sauvage</td><td>20 (+20 duplicates)</td><td>Yes (+20 duplicates)</td><td>No</td></tr><tr><td>2009</td><td>Lac de Gras</td><td>10</td><td>Yes</td><td>Yes</td></tr><tr><td>2011</td><td>Lac de Gras</td><td>17</td><td>Yes</td><td>Yes</td></tr></table>

		2011	Lac du Sauvage	30	Yes	No	
		2012	Lac de Gras	13	Yes	Yes	
		2014	Lac de Gras	30	Yes	Yes	
		2014	Lac du Sauvage	30	Yes	No	
		2015	Lac de Gras	20	Yes	Yes	
		2015 (Traditional Knowledge Study)	Lac de Gras	21	No	Yes	
		2018	Lac de Gras	20	Yes	Yes	
		2018 (Traditional Knowledge Study)	Lac de Gras	20	No	Yes	
		2021 (Traditional Knowledge Study)	Lac de Gras	12	No	Yes	
		Total Number of Samples		**263 (+40 duplicates)**	**210 (+40 duplicates)**	**183**	

TG Recommendation #	Recommendation	Response
1	The Tłı̨chǫ Government recommends that, if certain requirements are met, the WLWB allow Diavik to breach one or two ponds to verify predictions and build understanding of post-closure mixing zones.	DDMI agrees with the Tłı̨chǫ Government that the WLWB should allow progressive reclamation of ponds to importantly build a better understanding of post-closure mixing conditions in the lake. DDMI had aspirational plans to start this important work in 2021 but the project has incurred significant delays as the regulatory mechanisms and options are considered by stakeholders. DDMI looks forward to building this important understanding with the Tłı̨chǫ Government once the progressive closure work is allowed to proceed.
2	If these principles and any other requirements deemed necessary by the WLWB are met, the Tłı̨chǫ Government supports the breaching of Pond 7 (and potentially pond 2).	DDMI reiterates that it is important to reconnect both ponds 2 & 7 to maximize information gained and ensure DDMI gains an early understanding of post-closure mixing conditions in the lake. As TG has identified, Pond 7 collects water from 91% undisturbed tundra so the learnings from this pond reconnection are expected to be limited if even material. The Pond 2 catchment is expected to produce more useful closure performance information as the catchment contains more disturbed ground. Regarding TG principles for breaching, DDMI believes our plans for breaching meet the intent of principles #1-4, 6-8, 10-11. Regarding #5, DDMI does not agree that more intensive monitoring than proposed is necessary for the first breach. DDMI reiterates that predicted runoff discharge loads are a tiny fraction of the current Operational discharge load – requirements for substantially more monitoring of substantially less loads is not reasonable. Monitoring frequency and magnitude should be proportional to predicted effects/risk and not increase with the sole justification of being research. Regarding #9, DDMI does not believe additional management plans beyond the scope of the current FCRP and SWALF (which includes TSS triggers) are required to manage activities such as scarification. The management action for SWALF TSS exceedances will be directed by the Inspector based on conditions in the field and could include implementation of sumps or silt fences. More Plans are not necessary to predefine the Inspectors options.
3	The Tłı̨chǫ Government is of the view that the WLWB has the authority to use effluent quality criteria and/or a response framework to regulate the discharge of seepage and runoff to Ek'atì. The SWALF needs some revisions before it can be approved. If the Board sets effluent quality criteria, they should be developed in accordance with the Boards' policies and guidelines.	DDMI also understands that the WLWB has the authority to use effluent quality criteria and/or a response framework to regulate the discharge of seepage and runoff. DDMI is confident that the SWALF approach will protect water uses as much, or more, compared to effluent quality criteria. DDMI does not see environmental value in the overlapping approach of applying EQC and a SWALF. Regarding TG comments on the SWALF: 1) DDMI believes 80% of the human and wildlife guidelines is a reasonable AL1 trigger but is open to alternatives subject to reviewing the evidentiary basis and ensuring they will not be unnecessarily triggering; 2) The inability to sample water during unsafe ice periods is unavoidable and conditions will need to be inferred based on results before and after, runoff monitoring during, and previous modelling – as discussed with TG, at this time people will also not be able safely access there area for "use" so DDMI expects knowledge of exact chemistry would be of less importance. Monitoring of water will be straightforward when "use" access is easy (i.e. open water period); 3) DDMI confirms that it has set AL3 triggers at an exceedance of human or wildlife drinking water limits at the MXB as we view this would be unacceptable and a response to recollect water would take place. It is correct that some portion of the mixing areas could exceed drinking water guidelines at some times because the runoff itself is expected to exceeds some guidelines – note these drinking water limits conservatively assume the water is used as a permanent and continuous drinking water source which is not actually realistic within mixing areas; 4) DDMI views the proposed AL3 triggers as conservative and may need to revisit them in the future to ensure there is no lost opportunity to learn from these breaches. These AL3 values are set at levels below the current Operational AEMP; 5) DDMI agrees that it is too soon to develop a trigger for water treatment and has only proposed that a trade-off study be conducted in response to AL3.
4	The Tłı̨chǫ Government is of the view that, at least for the time being, seepage and runoff should be regulated as a waste.	DDMI has proposed an approach (SWALF) to appropriately regulate this runoff, but DDMI is unsure if classification of runoff as a waste makes a difference or is required to regulate the runoff. DDMI maintains that closure runoff, with the management and monitoring proposed, will not be detrimental to water uses in Lac de Gras, consistent with long approved Closure Objectives SW1 and SW2. Regarding TG concerns around runoff exceeding AEMP benchmarks and not meeting drinking water limits, DDMI would like to reiterate that some natural tributaries in the area also do not meet all guidelines and it is not reasonable to expect or assume that surface water coming from disturbed or undisturbed ground should automatically qualify as a safe drinking water source without filtration. For water to allow "use" by humans should not imply "drinking water without filtration" – some higher threshold is required. For further context, DDMI has reviewed publicly available lake water quality data collected at YK-Detah, YK-N'Dilo and Behchokǫ̀ and found DDMI predicted mixing zone concentrations to generally be similar or of better quality. https://mackenziedatastream.ca/explore

5	Other Topics: Long-term Water Treatment Plant Information	DDMI directs TG to YKDFN 4.2 for additional dialogue on the potential impacts of water treatment in-perpetuity which DDMI views as being significantly worse for all aspects of the environment than small, different but safe mixing zones.
6	Other Topics: Financial Security	As TG is aware, DDMI intends to continue working closely and transparently with the TG to ensure proper communication about the Diavik FCRP takes place. Diavik has proposed a comprehensive scientific monitoring program and a Closure Traditional Knowledge Monitoring Program is being developed for DDMI which includes TG involvement. DDMI has completed quantitative scientific assessments to evaluate risk conditions on land and in the mixing zones that have identified low and negligible risk. DDMI realizes there may be misperceptions about the risks associated with closure mixing zones and would like to continue working with the TG to ensure accurate risk information is shared. For instance, DDMI assumes that because Diavik Closure “mixing zones” have been a material topic of regulatory discussions (including two Licence Amendments) over the last 3 years, the perceived risk may have continued to grow and not balance with the risk evidence. It may be reasonable for someone to assume that if something requires 3 years for approvals including an unsuccessful Licence Amendment it must be very controversial and/or high-risk proposal triggering concern. However, reconnecting natural drainages to LDG including resulting mixing zones above benchmarks have been in the Diavik closure plan since the late 1990’s. While risk communication is important, it remains a choice of the company and DDMI does not believe Water Licence securities are the appropriate place for these types of funds.
7	Other Topics: Drinking Water Mixing Zone vs Aquatic Life Mixing Zones	First off DDMI must emphasize that the identified Arc 1 boundaries and associated MXB SNP stations were defined by the smallest practical area to model, not an extent of effect that exceed AEMP benchmarks. Model data from all Arc 1 locations meets AEMP benchmarks >95% of the time, meaning that the actual extent of WQ above AEMP benchmarks (a “mixing zone”) is smaller than Arc 1. Arc 1 should be viewed as a conservative outer boundary of potential effects in any given year at any given time of the year, not a likely extent of effects or an area that must be avoided to remain safe. Please also recall that direct use including associated incidental consumption of site runoff (before any lake mixing) is also safe, it would just not meet guidelines for establishing a permanent/continuous drinking water source. Regardless DDMI agrees with TG that a better understanding of physical boundaries of where and when water is safe to drink would result in a valuable risk communication activity, particularly as these areas would be expected to be smaller than Arc 1 and significantly vary month-over-month with a much smaller extent during open water when the water is actually more readily available for uses such as drinking. DDMI does not believe this activity is related to the Water Licence Amendment not would costs be held within the security.
8	Other Topics: Effluent Quality Criteria for Wildlife and Human Health	DDMI has proposed a SWALF that includes distinct streams for management of aquatic life, wildlife and human health which we believe addresses the concern that aquatic life thresholds may not also protect wildlife and humans.

YKDFN Recommendation #	Recommendation	Response
3.1	If collection pond breaching is approved, it should be considered a study rather than a closure option. Testing and modelling should consider impacts from all developments. The end goal is water quality.	There may be some misconceptions that Diavik is proposing a new project to breach collection ponds. Breaching collections ponds to reconnect drainages with LDG is the closure option DDMI has proposed in the FCRP. Breaching with mixing zones has been the closure plan for Diavik since the Project was approved in the late 1990's. The purpose of this Amendment is to address a current lack of regulatory mechanisms to allow this work to proceed. DDMI does not view progressive reclamation of site drainages as a study. DDMI agrees that the end goal is safe water quality in LDG.
3.2	Determine Lac de Gras baseline conditions (pre-exploration) to determine full effects of mining process leading up to closure planning and determine cumulative effects of development on Lac de Gras quality to determine the "reference" water quality used in modeling and closure plans.	The baseline conditions of LDG are documented in the AEMP Reference Conditions Report. Cumulative effects of developments on LDG are considered in AEMP reports. https://registry.mvlwb.ca/Documents/W2015L2-0001/Diavik%20-%20AEMP%20Reference%20Conditions%20Report%20-%20Version%202.2%20-%20Mar%2013_23.pdf
4.1	Water with measured concentrations of contaminants as defined in the GNWT's Environmental Protection Act, ions, metals, and nutrients above natural conditions should not be permitted to enter Lac de Gras.	Water with measured concentrations of some parameters above background conditions are associated with almost any human activity, mining or otherwise. Setting discharge limits for environmental protection equal to natural background levels is neither achievable or necessary.
4.2	With current information presented to the YKDFN, the maintenance of a water treatment in perpetuity appears to have less impact on the receiving environment.	It is unclear to DDMI what information the YKDFN have considered in forming the current conclusion that water treatment in perpetuity would have less impact on the environment than small and safe (demonstrated negligible risk) post-closure mixing zones. As discussed with YKDFN, water treatment in perpetuity would, at a minimum, have the following ongoing (forever) environmental impacts: 1) a mixing zone in the lake associated with treatment discharge; 2) permanent infrastructure on the island including a water treatment plant, a site wide network of surface water pumps and pipelines, a camp facility, a network of roads, a diesel powerhouse facility, powerlines, diesel storage, warehouse for chemicals and supplies, an airfield, and intermittent winter roads; 3) permanent loss of access/use of the island by people due to ongoing active use by the company; 4) new solid waste disposal on the island composed of sediments of precipitated metal hydroxides, metal sulfides, and calcium sufate; 5) an ongoing zone of influence on wildlife associated with the active site; and 6) generation of dust and SOx & NOx emissions.
4.3	If collection pond breaching is approved; allow only the Pond - scheduled to be breached in 2023 (pond 2 or 7) – with the least measured concentration of monitored ions, metals, nutrients, and other contaminants. This should be conducted as a study. Data gathered by monitoring should be used to determine whether more ponds are able to be breached and inform the approach developed for future collection pond breaches.	See TG 2.
4.4	If collection pond breaching is approved; collection pond drainage monitoring and sample collecting should include PA group representatives to imbue trust in the process.	As previously stated and as YKDFN is well aware, a Closure Traditional Knowledge Monitoring Program is being developed for DDMI and it will include assessment of closure runoff.

5.1	All drainage from site, including discharge from breached collection ponds should be considered a waste as defined by the Waters Act	DDMI maintains that closure runoff, with the management and monitoring proposed, will not be detrimental to water uses in Lac de Gras, consistent with long approved Closure Objectives SW1 and SW2. It will be up to the WLWB to determine any definition under the *Waters Act*.
5.2	Diavik to include "waste" sampling on land as close to the point of entry into Lac de Gras as possible.	DDMI has proposed to sample runoff at the on-land collection pond breach locations after which point the water will flow following natural drainage patterns over the tundra into the lake. DDMI has selected this location as we expect this to be the most likely location to observe measurable flow volumes.
5.3	If not considered a waste, the equivalent of AEMP benchmarks should be applied to on land site drainages that reach the receiving environment and to those lost in soil before visibly reaching the receiving environment.	Applying AEMP benchmarks as limits for discharge would not be achievable or necessary to protect the environment.
6.1	Until erosion and sediment loss from the closed mine has been tested and confirmed through monitoring to not adversely impact the receiving environment, TSS should be regulated through terms and conditions in the Water License.	DDMI has proposed TSS action levels in the SWALF. DDMI understands that regulation and enforcement with the SWALF would be equivalent to regulation and enforcement through Licence Conditions. The primary benefit of the SWALF is greater ease of adaptive management without the longer legislated timelines to Amend Licences.
6.2	The license should include effluent quality limits for TSS consistent with the AEMP benchmarks, CCME guidelines, or MDMER, whichever is most effective in preventing adverse impacts.	See YKDFN 6.1
7.1	If collection pond breaching is approved; mixing zones should be limited to a maximum of 50 meters. This would ensure a conservative approach. Arc 2 may be placed at a maximum of 100m.	DDMI has proposed mixing SNP stations located 100m from where closure runoff enters Lac de Gras unless there is insufficient water depth (i.e. less than 5m). LWB Guidelines for regulatory mixing zones recommends 100m as a "starting point" for the size of mixing zones. DDMI's proposed SNP MXB is consistent with the WLWB Guidance. As DDMI already plans to implement all practical closure source controls, DDMI does not have the ability to make any mixing areas smaller. See TG 7 for more discussion on the variable size of mixing zones.
7.2	Select a different method that allows for sampling of shallower depths.	DDMI has proposed this method to be consistent with data collected over the last 20 years of AEMP water quality monitoring. Data collected through a different method in shallower water (e.g. right above lake bed) may likely introduce variable chemistry that is not associated with the Diavik site that would complicate any cause assessment and comparison to AEMP data.
7.3	The mixing zone plume should be delineated through sampling and monitored over time. Consider locating SNP stations on land before entering the receiving environment or in the receiving environment at the discharge point, at Arc 1 (sample at multiple depths and points along a horizontal axis), and at Arc 2 (sample at	DDMI has proposed SNP stations on land and 100m from the point of discharge into the lake (or first lake depth >5m). More detailed plume delineations have been proposed as an AL3 response to aquatic life triggers in the SWALF. Given the significance and extent of mixing areas is predicted to be negligible and meet LWB guidelines this level of additional assessment is not justified.

	multiple depths and points along a horizontal axis).	
7.4	Drinking water guidelines should be met by Arc 1.	DDMI has predicted that drinking water guidelines will be met at Arc 1. The proposed AL3 trigger for human health is an exceedance of drinking water guidelines at the MXB SNP.
8.1	The YKDFN do not have sufficient information to support, deny or comment on this this water license as a whole. The application may be better suited as a research proposal rather than a closure plan with known outcomes and a closure option. The YKDFN are unable to consider the scale and scope of impacts at this point and suggest this application not be considered a closure option until the research has been done.	Decommissioning ponds to allow the reconnection of drainages to LDG has always been the closure plan for Diavik (i.e. since the Project was first proposed in the late 1990's). This Amendment is not a proposal for a new project or closure option that may justify a requirement for research. This Amendment is about establishing the regulatory mechanisms currently lacking to allow planned closure work to advance progressively. As discussed with YKDFN members, Diavik wants to do this closure work now so we can start monitoring and learning early to confirm closure performance.
8.2	Risk to be assessed based on full time use of area, drinking water purposefully and fishing from that area. Results reported in a manner that allows the site to safe for cultural use. Negligible effects must be confirmed by the PA groups. The approval pond collection pond breaching should be dependant on consensus between science and TK.	DDMI has conducted a human health and ecological risk assessment which confirmed low or negligible risks to use. Predicted runoff from the site will not be available for "full time use" as it ephemeral in nature, however if flowing runoff is still anticipated to be available for use by humans, just not as a permanent drinking water source. LDG will be available as a drinking water source year-round (albeit under significant ice cover much of the year where melting snow may be a more practical drinking water source). It will be safe to fish in LDG year-round. As previously stated and as YKDFN is well aware, a Closure Traditional Knowledge Monitoring Program is being developed for DDMI and it will include assessment of closure runoff. If approval to breach ponds requires consensus from TK program input progressive reclamation is likely to be further delayed as the program has not been developed yet.
9.1	Response actions must occur before cultural use may be impacted. As proposed, the water is contaminated before it enters Lac de Gras and remains contaminated within a significant region called the mixing zone. The YKDFN suggest implementing preventative measures and early warning triggers with preventative or at least mitigative response times.	The proposed SWALF includes early warning triggers and response actions to prevent unacceptable risks or impacts to people, wildlife and aquatic life. Based on engagements to date, DDMI understands that the YKDFN consider water to be "contaminated" if it is measurably different than background concentrations. As documented in response to Technical Session IR#7, DDMI has predicted that during post-closure some runoff parameter concentrations will be different than background, however the risk associated with these concentrations was low or negligible. DDMI has also reviewed publicly available lake water quality data collected at YK-Detah, YK-N'Dilo and Behchokǫ̀ and found DDMI predicted mixing zone concentrations to generally be similar or of better quality that the median results from these lake stations. The DDMI view on what would define water as "contaminated" is more in line with our current understanding of the regulatory definition of "waste" under the Waters Act. https://mackenziedatastream.ca/explore
9.2	If mixing zones are permitted, the maximum action outcome of toxicity impairment should be no more than inhibitory concentration (IC)20 to meet their closure objectives.	The 50% value is a standard regulatory end-point applied to acute toxicity test (i.e.LC50) and the same logic holds for chronic test. The 50% measurement end-point has a higher confidence that the 25%. DDMI also advises that the IC50 measurement end-point has been approved for similar regulatory use with the same C. dubia test in the Snap Lake closure water license. https://registry.mvlwb.ca/Documents/MV2019L2-0004/De%20Beers%20Snap%20Lake%20-%20Revisions%20Required%20-%20AEMP%20Design%20Plan%20V1.2%20-%20Aug30_22.pdf

DKFN Recommendation #	Recommendation	Response
1	Recommend a precautionary approach be taken by DDMI and the WLWB and that the runoff to be discharged from the decommissioned collection ponds be characterized as waste. As such, the amended water license should include conditions that set out effluent quality criteria at the discharge points.	The proposed SWALF includes early warning triggers and response actions to prevent unacceptable risks or impacts to people, wildlife and aquatic life. DDMI understands that this is a precautionary approach and that EQC would not provide any additional protection to the environment. Regardless, determination on appropriate regulation methodology of safe closure runoff from the Diavik Mine Site will be up to the WLWB.
2	At the edge of the mixing zone, or "Arc 1" as presented by DDMI (DDMI presentation, March 6-8, 2023), constituents' concentration be compared to CCME long-term water quality guidelines or AEMP benchmarks and any exceedances associated with a trigger in the SWALF	DDMI has compared concentrations at Arc 1 against AEMP benchmarks and these stringent limits are met when reviewing the 95th percentile of predictions. Intervenors generally appear to recognize that toxicological measurements are a better indicator of effects than AEMP benchmarks, as such DDMI has proposed toxicological triggers in the SWALF for AL 2 and AL3 (a measurement of an actual relevant effect) rather than concentrations (an indicator of potential effects). AL1 is concentrations based as this is appropriate for an early warning trigger meant to identify potential effects.
3	The SWALF to include a chemistry-based trigger at the edge of the mixing zone that would include all constituents' AEMP benchmarks, including nutrients such as nitrogen and phosphorus.	DDMI's expectations based on the modelling and analysis to date is that AEMP benchmarks will be achieved at the edge of the mixing area. A chemistry-based trigger set at AEMP benchmarks at the mixing area would not serve as an early warning or be useful. DDMI has proposed more relevant early warning concentration-based triggers on land and more relevant toxicological triggers at the edge of the mixing area.

ECCC Recommendation #	Recommendation	Response
3.1	Not applicable–for information only.	Information noted by DDMI.
3.2	ECCC recommends that any reductions in SNP monitoring associated with the decommissioning of collection ponds are submitted for review and approval prior to discontinuation of sampling. Submissions for reductions in monitoring should include evidence that a sufficient range of hydrologic conditions have been observed, runoff water quality and mixing in Lac de Gras is behaving as predicted, and that no upward trends at the mixing zone stations are observed.	DDMI understands that any sampling reduction or cessation outside of what has been proposed will require a review and approval process through the WLWB. DDMI does not believe it is reasonable or necessary to define that a sufficient range of hydrologic conditions must be observed prior to a reduction or cessation of sampling. Historical data compiled for the site has shown generally consistent WQ trends year over year and month over month under variable hydrologic conditions. DDMI will need to submit PARs to argue success against closure criteria and the case for extended monitoring will need to be evaluated at that time based on the evidence to date.
3.3	ECCC recommends that: - Diavik provide justification for their selection of action levels related to AEMP monitoring within the SWALF, including how they provide an appropriate step-wise approach for action in the closure and post-closure period; - Separate plankton and benthic invertebrate action levels such that one may trigger a response without the requirement of the other; - AEMP triggers be expanded to include the range of potential changes including water quality “outside of the normal range” and a eutrophication response in plankton and benthic invertebrates.	DDMI provided options for AEMP action levels in the SWALF as required by Technical Session IR#4. DDMI does not believe AEMP action levels are necessary in the SWALF and has removed them in the final proposed SWALF. The SWALF proposed by DDMI is designed to identify and action potential water quality issues on land and within the mixing areas prior to any potential later stage effects broader to LDG.
3.4	ECCC recommends that closure criteria for SW-2 include numeric water quality criteria for both runoff and receiving environment water quality to be paired with the proposed toxicity testing. Criteria should include measures of temporal stability, such that there is a reasonable expectation that water quality will not deteriorate in the future. Monitoring plans for data collection under the SNP, AEMP, and SWALF should be sufficiently robust such that it can be clearly demonstrated when the closure criteria are met.	DDMI maintains that toxicological measurements are a better indicator of effects than numeric concentrations. DDMI will still collect paired samples for water quality as supporting information. Arguments for temporal stability do not need to be pre-defined today as the case will be made and evaluated at that time based on all available evidence.

GNWT-ECC Recommendation #	Recommendation	Response
1	The GNWT recommends the scope of the Water Licence include the deposit of waste from the decommissioned collection ponds as the GNWT interprets the runoff associated with reconnection of the collection ponds to be "waste" as defined in the Waters Act.	DDMI maintains that closure runoff, with the management and monitoring proposed, will not be detrimental to water uses in Lac de Gras, consistent with long approved Closure Objectives SW1 and SW2. It will be up to the WLWB to determine any definition under the *Waters Act*.
2	The GNWT recommends that should the WLWB determine that concern remains about the quality of waste proposed to be discharged from the decommissioned collection ponds, such waste should be regulated with EQC in the licence.	DDMI understands that it will be up to the WLWB to determine how to appropriately regulate safe closure runoff from the Diavik Mine Site.
3	The GNWT recommends the EQC proposed in Table 2 be included in the Water Licence to regulate the discharge of waste from the decommissioned collection ponds.	DDMI has reviewed the EQC proposed by the GNWT and the calculation approach appears to be inconsistent with LWB Standard Process for Setting Effluent Quality Criteria. It would be helpful for the GNWT to explain how they followed the Standard Process in more detail at the Hearing so DDMI can properly consider these EQC. DDMI also notes that during the previous/recent Licence Amendment process seeking development of the same regulatory mechanisms to allow discharge of runoff, the GNWT supported a different set of EQC set at MDMER limits that were up to 150x less stringent than these newly proposed GNWT EQC. An explanation of this stark difference may also help DDMI and others consider these new EQC. Note DDMI had previously accepted the GNWT recommendations to include MDMER limits as EQC in an Amended Licence in part because they are already a legal requirement but also because including MDMER limits as EQC, at a minimum, was something the GNWT stated was legally required in the body of the License. The EQC proposed by the GNWT, and as identified by the GNWT themselves in their Intervention, are unlikely to be achievable by DDMI for many parameters where DDMI predicted runoff concentrations are above proposed EQC (e.g. copper, silver, uranium). Further the GNWT has also confirmed the position that these EQC must not be exceeded at any time. LWB policy states that EQC should be reasonably and consistently achieved with the goal of meeting WQOs at the edge of the mixing zone or other relevant assessment boundary. Overall it is unclear to DDMI why the GNWT has proposed these EQC or how they are meant to be considered by the WLWB. The GNWT seems to acknowledge this challenge by indicating that that less conservative EQC may need to be considered in the future through another ~1 year Licence Amendment process. Presumably this third Amendment Process would be required before DDMI could continue with scheduled progressive reclamation work. DDMI also notes that the newly proposed GNWT EQC for Diavik runoff appear in general to be materially more stringent than other EQC applied elsewhere in the territory, including those applied at DDMI's own Operational discharge, which sets limits for water quality associated with a discharge of up to 90,000,000L of water **per day into LDG**, which is orders of magnitude larger in volume than closure discharges and in fact larger in magnitude than some of the expected closure runoff discharges **per year into LDG**. DDMI is unsure how these EQC were developed following LWB policy. GNWT Closing: https://registry.mvlwb.ca/Documents/W2015L2-0001/Diavik%20-%20WL%20Amendment%20-%20Progressive%20Reclamation%20-%20GNWT%20Closing%20Arguments%20-%20Apr%2013_22.pdf Diavik Closing: https://registry.mvlwb.ca/Documents/W2015L2-0001/Diavik%20-%20WL%20Amendment%20-%20Progressive%20Reclamation%20-%20DDMI%20Closing%20Arguments%20-%20Apr%2020_22.pdf MDMER: https://laws-lois.justice.gc.ca/eng/regulations/sor-2002-222/FullText.html Diavik EQC: https://registry.mvlwb.ca/Documents/W2015L2-0001/Diavik%20-%20Water%20Licence%20-%20SNP%201645-44%20Update%20-%20Dec%201_22.pdf Ekati EQC: https://registry.mvlwb.ca/Documents/W2020L2-0004/Ekati%20-%20Water%20Licence%20-%20Jun%2027_22.pdf Prairie Creek EQC: https://registry.mvlwb.ca/Documents/MV2021L2-0004/Canadian%20Zinc%20Corporation%20-%20Issuance%20-%20Type%20A%20Water%20Licence%20-%20Sep%2023_22.pdf

		Gahcho Kue EQC: https://registry.mvlwb.ca/Documents/MV2005L2-0015/MV2005L2-0015%20-%20De%20Beers%20Gahcho%20Kue%20-%20Issuance%20-%20Amended%20Type%20A%20Water%20Licence%20-%20Mar%2010_21.pdf Snap Lake EQC: https://registry.mvlwb.ca/Documents/MV2019L2-0004/De%20Beers%20Snap%20Lake%20-%20Water%20Licence%20-%20SNP%20Update%20-%20April%2028_22.pdf Fortune Minerals EQC: https://registry.mvlwb.ca/Documents/W2008L2-0004/NICO%20Mine%20-%20Water%20Licence%20-%20SNP%20Update%20-%20Dec%2019_19.pdf Cantung EQC: https://registry.mvlwb.ca/Documents/MV2015L2-0003/NATCL%20%E2%80%93%20Cantung%20%E2%80%93%20Approval%20-%20Modification%20Request%20-%20Dec21_22.pdf Giant Mine EQC: https://registry.mvlwb.ca/Documents/MV2007L8-0031/MV2007L8-0031%20-%20CIRNAC-GIANT%20-%20Issuance%20-%20Type%20A%20Water%20Licence%20-%20Sept18-20.pdf
4	The GNWT recommends the Water Licence include EQC for TPH, as in the current licence, for the discharge of waste from the decommissioned collection ponds. For each catchment, the GNWT recommends the EQC for TPH apply until a source of hydrocarbons will no longer be present and monitoring illustrates that there are no detectable concentrations.	DDMI has proposed a requirement for TPH < 3 mg/L prior to decommissioning to confirm an absence of hydrocarbons in the catchment. GNWT has indicated that inclusion of EQC for TPH is standard practice until the source of hydrocarbons (i.e. any equipment working that could have a spill) is no longer present in a given catchment. TPH risk due to hydrocarbon spills are actively reported and managed through GNWT spill line, the DDMI Contingency Plan and directly through the GNWT Inspector. DDMI does not believe it is necessary to apply a TPH EQC to any area with equipment operating as this risk is already managed adequately through other spill response processes. Duplication of this with TPH EQC appears unnecessary.
5	The GNWT recommends the Water Licence include EQC for TSS and turbidity, as in the current licence, for the discharge of waste from the decommissioned collection ponds.	DDMI has proposed TSS triggers, matching current Operational EQC and MDMER limits, in the SWALF. TSS and turbidity are strongly correlated so duplication in the SWALF was not recommended. DDMI understands that it will be up to the WLWB to determine how to appropriately regulate safe closure runoff from the Diavik Mine Site.
6	The GNWT recommends that the SWALF include an AL 1 trigger that compares water chemistry at the edge of the mixing zone to AEMP benchmarks. This would replace the AL 1 trigger proposed by DDMI: “water quality greater than 10x AEMP benchmark”.	It appears the GNWT did not review the most up to date SWALF provided by DDMI in response to Technical Session IR #4. Moving forward DDMI recommends GNWT review that IR response as well as the new adjusted SWALF provided by DDMI in response to Interventions. Recognizing this, DDMI has still attempted to address GNWT Interventions on the SWALF. The current AL1 trigger was selected as an early warning to be triggered long before AEMP benchmarks may be exceeded at the mixing boundary. Changing the AL1 trigger to be an exceedance of AEMP benchmarks at the mixing boundary would not be an early warning trigger – this would be a high-level trigger. Modelling indicates AEMP benchmarks to be met at these MXB locations >95% of the time. The current AEMP * 10 trigger applied to runoff is more likely to be triggered early and is therefore a more appropriate AL1. Modelling indicates there will be >10x dilution at the MXB >95% of the time.
7	The GNWT recommends AL 1 and AL 1A of the SWALF be expanded to include: •5-8-day *Ceriodaphnia dubia* (freshwater crustacean) three-brood survival (LC50) and reproduction (IC25) test; •14-day *Hyalella azteca* (benthic invertebrate) survival (LC50) and growth (IC25) test; •72-hour *Lemna minor* (duckweed; aquatic macrophyte) survival (LC50) and growth (IC25) test; and •7-day Fathead Minnow (freshwater fish) survival (LC50)and growth (IC25) test.	DDMI maintains that testing using the most sensitive species (as identified through site specific multi-species toxicity testing) is a practical (effort, cost) and defensible (direct indicator of effects) approach. DDMI does not support consideration of additional and likely less sensitive toxicity tests that are also not currently applied under the Water License or MDMER. DDMI also notes that Snap Lake has approved AEMP ALs based on C.dubia as a sensitive and conservative species. https://registry.mvlwb.ca/Documents/MV2019L2-0004/De%20Beers%20Snap%20Lake%20-%20Revisions%20Required%20-%20AEMP%20Design%20Plan%20V1.2%20-%20Aug30_22.pdf

8	During the period when unsafe ice conditions prevent sampling at the mixing zone boundary, the GNWT recommends the response to AL 1 and AL 1A of the SWALF require sublethal toxicity testing be immediately rerun. If subsequent toxicity is confirmed, the GNWT recommends the SWALF proceed directly to AL 3A and reestablish temporary water collection from the pond while a special effects study is conducted.	The response to aquatic AL1 is already to initiate off schedule toxicity testing. The AL2 trigger, C. dubia IC25 < 12.5%, was selected based on the available range of test results in a standard dilution series, rather than at a limit of anticipated IC25 effects at the mixing boundary station. Modelling indicates that mixing is anticipated to be >8x (12.5% dilution series result) at all mixing stations >95% of the time. This means that an exceedance of the AL2 trigger is still set at an early warning level and would not warrant the action of re-establishing temporary water collection.
9	The GNWT recommends that AL 2A of the SWALF be updated to require chronic toxicity tests at the edge of the mixing zone and a comparison of water quality to AEMP benchmarks. Samples for both analyses should be collected from the depth at which the highest conductivity is measured.	DDMI has proposed aquatic AL3 at C. dubia IC50 < 100% at the mixing station which is equivalent to the approved medium AL in the Snap Lake AEMP. DDMI maintains that toxicological measurements are a better indicator of effects than numeric concentrations. DDMI will still collect paired samples for water quality as supporting information. Changing this toxicity trigger or adding AEMP benchmark exceedances at the mixing station at AL2 would not be more protective. https://registry.mvlwb.ca/Documents/MV2019L2-0004/De%20Beers%20Snap%20Lake%20-%20Revisions%20Required%20-%20AEMP%20Design%20Plan%20V1.2%20-%20Aug30_22.pdf
10	The GNWT recommends that if either set of tests indicate a failure/exceedance, the tests should immediately be rerun to determine whether DDMI should proceed to AL 3A and water collection should be temporarily reestablished.	DDMI has proposed re-establishment of temporary water collection if aquatic AL3 C. dubia IC50 < 100%. DDMI does not believe this level of response is warranted without this level of effect as indicated by toxicity testing.
11	The GNWT supports the SWALF AL 1 trigger of runoff water chemistry > 80% of wildlife criteria and of human health criteria. The GNWT recommends that an appropriate initial response to this trigger would be to collect an additional sample to confirm the results and/or increase the frequency of monitoring.	DDMI agrees with the GNWT recommendation to confirm the AL1 trigger through an additional off schedule sampling event before implementation of response actions. DDMI has applied this confirmation step to the wildlife, human and aquatic AL1 actions provided in response to Interventions.
12	The GNWT recommends that the response of investigation of cause be conducted before a detailed risk assessment that would confirm or adjust any criteria.	Both responses can occur in parallel without impacting each other.
13	The GNWT recommends that the SWALF include an AL 1 trigger of > 80% of EQC. The GNWT recommends the corresponding response be to collect an additional sample to confirm the results and/or increase the frequency of monitoring.	An early action level (AL1) trigger set at 80% of a value that is never to be exceeded does not appear reasonable or achievable.

14	The GNWT recommends the frequency of toxicity testing required by the SNP be at least as stringent as MDMER.	Unless DDMI becomes a Recognized Closed Mine under MDMER, sampling will be conducted to meet MDMER requirements.
15	The GNWT recommends that the Board not approve the proposed pre-determined reductions of the post-closure monitoring proposed in the SNP.	DDMI expects the proposed sampling frequencies, including reductions in the absence of triggers, are sufficient to demonstrate safe runoff conditions and support a Performance Assessment Report.
16	The GNWT recommends that the quarterly SNP monitoring frequency proposed by DDMI at the edge of the mixing zones increase to monthly sampling when discharge from the collection ponds is present.	DDMI expects the proposed sampling frequencies, including reductions in the absence of triggers, are sufficient to demonstrate safe conditions in LDG and support a Performance Assessment Report.
17	The GNWT recommends sampling at the edge of the mixing zone be maintained for the first five years following pond decommissioning, at minimum, before a termination of sampling request is made to the Board for approval.	DDMI expects the proposed sampling frequencies, including reductions in the absence of triggers, are sufficient to demonstrate safe conditions in LDG and support a Performance Assessment Report. The mixing stations will be monitored with increasing frequency in the event ALs are triggered and AEMP monitoring will persist well beyond the cessation of mixing area sampling.
18	The GNWT recommends that the AEMP sampling schedule be modified to include one freshet sampling event immediately following the ice-cover season once field conditions are safe as part of the comprehensive and interim monitoring.	In Closure, conditions in LDG are expected to improve relative to Operations (safe and acceptable today). Given this, DDMI does not understand the GNWT rationale to increase AEMP monitoring frequency. The mixing stations will be monitored with increasing frequency in the event ALs are triggered and DDMI has proposed a Special Effects Study through AEMP to determine significance and extent in the event that aquatic AL3 is triggered.
19	The GNWT recommends that the Water Licence include a condition to require approval by the Inspector before decommissioning a collection pond.	DDMI has proposed this step in the SWALF. DDMI understands that it will be up to the WLWB to determine how to appropriately regulate safe closure runoff from the Diavik Mine Site.
20	The GNWT recommends that the Water Licence require confirmation of remaining activities in the catchment of the collection pond proposed to be decommissioned be provided to the Inspector for approval before decommissioning a collection pond.	DDMI recommends this information is more logically contained in the FCRP. For example, the process to decommission the UG mines is outlined in the FCRP and includes steps for Inspector review and approvals. This level of detail is not necessary in a Licence and is better left in Plans where changes can be made without a lengthy administrative process. The Inspector has the ability to enforce the content of Plans. Using plans allows for content requirements to adapt without requirement lengthy Amendment processes.
21	The GNWT recommends that the Water Licence include a condition that should the listed remaining activities within a catchment change after a collection pond is decommissioned, the Inspector be notified.	DDMI recommends this information is more logically contained in the FCRP. This level of detail is not necessary in a Licence. The Inspector has the ability to enforce the content of Plans. Using plans allows for content requirements to adapt without requiring lengthy Amendment processes.

22	The GNWT recommends that the information submitted to the Inspector for approval before decommissioning a collection pond be outlined as a condition or schedule of the Water Licence.	DDMI recommends this information is more logically contained in the FCRP. This level of detail is not necessary in a Licence. The Inspector has the ability to enforce the content of Plans. Using plans allows for content requirements to adapt without requirement lengthy Amendment processes.
23	The GNWT recommends that the information submitted to the Inspector for approval include "Water chemistry meets Part G requirements" to ensure water chemistry is compared to EQC in the licence. The requirement to submit "Water chemistry < AEMP Benchmark x10" could therefore also be removed.	DDMI recommends this does not need to be stated as Part G requirements remain in effect without this repetition of fact.
24	The GNWT recommends that the SWALF and the AEMP not be approved as part of this licence proceeding and be issued for review post-issuance of the Water Licence.	In response to stakeholders comments on the ICRP, DDMI expressed the intention to commence progressive reclamation of select collections ponds in the **summer of 2021** to allow for early assessment of closure performance. As the regulatory mechanisms are being developed, DDMI has had to delay this work for 2 years. DDMI is now approaching the **last opportunity to complete this work in 2023**. If this opportunity is missed, the closure work, and importantly the early performance monitoring, will be delayed by another year, making it a total of 3 years of delays. The GNWT recommendation to delay these approvals would guarantee this closure work be delayed further. This delay should not be considered by the WLWB, particularly as the GNWT has not provided any rationale for why the SWALF and AEMP should not be approved as part of this Amendment and instead be issued for review through another future process. DDMI has provided all the necessary information for the GNWT and other parties to review the plans now. There has been opportunities to formally comment/verify all information through the initial comments, the Technical Session, IR's and Responses and this Intervention. Adding an additional and unscheduled future review would further impact on DDMIs closure plan implementation without any identified benefit.

Table 1. Comparison of Updated Lake Trout Tissue Chemistry Statistics to Slimy Sculpin Tissue Concentrations Used in the Human Health Risk Assessment

Parameters	Updated Lake Trout Summary Statistics[1]							Slimy Sculpin Tissue Concentrations Used in the HHRA	
	Number of samples	% Detected	Minimum Concentration	Average Concentration	90th Percentile Concentration	95% ULCM Concentration	Maximum Concentration	95% UCLM Concentration[2]	Lac de Gras[3]
Aluminum (Al)	53	4%	<0.2 (0.22)	0.28	0.4	Not Calculated	0.4	-	**26.1**
Antimony (Sb)	53	66%	<0.001 (0.0011)	0.0021	0.00394	**0.00616 (95% GROS Approximate Gamma UCL)**	0.0076	0.0030	-
Arsenic (As)	53	100%	0.0117	0.037	0.05796	0.0412 (95% Student's-t UCL)	0.0867	-	**0.096**
Barium (Ba)	53	38%	<0.01 (0.011)	0.017	0.0288	0.0176 (KM H-UCL)	0.167	-	**7.0**
Beryllium (Be)	53	0%	<0.001	0.0014	0.002	Not Calculated	<0.002	**0.2**	-
Boron (B)	53	0%	<0.2	0.20	0.2	Not Calculated	<0.2	-	**0.57**
Cadmium (Cd)	53	6%	<0.001 (0.0011)	0.001	0.001	Not Calculated	0.0059	**0.021**	-
Chromium (Cr)	53	47%	0.01	0.033	0.045	0.0283 (KM H-UCL)	0.706	-	**0.62**
Cobalt (Co)	53	81%	0.0014	0.0073	0.014	0.00994 (95% GROS Approximate Gamma UCL)	0.054	**0.063**	-
Copper (Cu)	53	100%	0.129	0.32	0.49	**0.352 (95% Approximate Gamma UCL)**	0.839	-	0.33
Iron (Fe)	53	100%	1.63	4.3	7.4	4.748 (95% H-UCL)	11.5	-	**5.2**
Lead (Pb)	53	2%	<0.001 (0.002)	0.002	0.004	Not Calculated	<0.004 (0.002)	-	**0.012**
Manganese (Mn)	53	100%	0.047	0.132	0.179	0.15 (95% Modified-t UCL)	0.576	-	**41.1**
Molybdenum (Mo)	53	4%	<0.004 (0.0041)	0.004	0.004	Not Calculated	0.0078	-	**0.056**
Nickel (Ni)	53	55%	<0.01 (0.011)	0.026	0.04	0.0199 (95% KM (BCA) UCL)	0.084	-	**1.22**
Selenium (Se)	53	100%	0.12	0.168	0.204	0.175 (95% Approximate Gamma UCL)	0.26	**0.33**	-
Silver (Ag)	53	4%	<0.001 (0.0011)	0.001	0.001	Not Calculated	0.0014	**0.0078**	-
Strontium (Sr)	53	100%	0.053	0.60	1.25	0.778 (95% Approximate Gamma UCL)	6.75	-	**54.1**
Tin (Sn)	53	9%	<0.02 (0.024)	0.021	0.02	0.0229 (95% KM (t) UCL)	0.054	-	**0.066**
Uranium (U)	53	9%	<0.0004 (0.00056)	0.0004	0.0004	0.00046234 (95% KM (t) UCL)	0.0009	-	**0.85**
Vanadium (V)	53	0%	<0.02	0.02	0.02	Not Calculated	<0.02	**0.17**	-
Zinc (Zn)	53	100%	2.57	4.0	5.5	4.327 (95% Modified-t UCL)	8.79	-	**31.4**

Bolded and shaded cell = Greater of the updated lake trout 95% UCLM concentration or selected slimy sculpin tissue concentration used in the human health risk assessment; UCLM = upper confidence limit of the mean

Concentrations in mg/kg wwt (milligrams per kilogram wet weight).

1. Summary statistics calculated using measured lake trout tissue concentrations collect as part of the Traditional Knowledge Studies by Golder in 2017, 2019, and 2021.
2. 95% UCLM statistic calculation includes data collected in 2007, 2010, 2013, 2016, and 2019 from near-field and far-field locations.
3. Lac de Gras tissue concentrations were calculated based on modelled water concentrations in Lac de Gras and site-specific bioaccumulation factors.

Table 2. Comparison of Updated Mercury Concentrations in Lake Trout Tissues to Mercury Concentration Used in the Human Health Risk Assessment (HHRA)

Parameter	Number of Samples	% Detected	Minimum Concentration	Average Concentration	90th Percentile Concentration	95% UCLM Concentration	Statistic	Maximum Concentration
Selected Lake Trout Tissue Concentration Used in the HHRA [1]								
Mercury	250	100%	0.0846	0.213	0.503	**0.302**	95% H-UCL	1.99
Updated Lake Trout Tissue Concentration [2]								
Mercury (Hg)	183	100%	0.0345	0.247356444	0.4648	0.276	95% H-UCL	1.843

Bolded and shaded cell = Greater of the selected lake trout tisssue concentration or updated lake trout tissue concentration.
Concentrations in mg/kg wwt (milligrams per kilogram in wet weight).

1. Summary statistics were calculated using measured lake trout tissue concentrations collected in 2008, 2009, 2011, 2012, 2014, 2015, and 2018.

2. Summary statistics calculated using measured lake trout tissue concentrations collect as part of the Traditional Knowledge Studies by Golder in 2017, 2019, and 2021.

Table 3. Comparison of Updated Slimy Sculpin Tissue Chemistry Statistics to the Selected Concentrations Used in the Ecological and Aquatic Risk Assessments

Parameters[1]	Updated Slimy Sculpin Tissue Chemistry Statistics[2]							Slimy Sculpin Tissue Concentrations Used in the Ecological and Aquatic Risk Assessments		
	Number of Samples	% Detected	Minimum Concentration	90th Percentile Concentration	95% ULCM Concentration	95% ULCM statistic	Maximum Concentration	95% UCLM Concentration[3]	Lac de Gras[4]	North Inlet[4]
Aluminum	112	99%	1.06	13.6	7.714	95% KM Approximate Gamma UCL	42.3	-	**26.1**	**25.1**
Antimony	112	3%	<0.002 (0.0026)	0.002	**0.0103**	Maximum	0.0103	0.00297	-	-
Arsenic	112	100%	0.015	0.08684	0.0635	95% Approximate Gamma UCL	0.124	-	**0.096**	**0.099**
Barium	112	100%	1.63	6.365	4.635	95% Approximate Gamma UCL	9.28	-	**7.0**	**8.3**
Beryllium	112	0%	<0.002	0.002	Not Calculated	Maximum	<0.002	Not Calculated	**<0.2 (Maximum)**	**<0.2 (Maximum)**
Boron	112	1%	<0.2 (0.35)	0.2	0.35	Maximum	0.35	-	**0.57**	**0.64**
Cadmium	112	100%	0.0053	0.03787	**0.0236**	95% Approximate Gamma UCL	0.113	0.0211	-	-
Chromium	112	96%	<0.01 (0.012)	0.5973	0.32	KM H-UCL	1.75	-	**0.62**	**0.61**
Cobalt	112	100%	0.0106	0.1886	**0.148**	95% Chebyshev (Mean, Sd) UCL	0.935	0.0628	-	-
Copper	112	100%	0.444	0.8136	**0.664**	95% Student's-t UCL	0.988	-	0.33	0.23
Iron	112	100%	5.21	37.09	**25.07**	95% Approximate Gamma UCL	109	-	5.2	4.6
Lead	112	90%	<0.004 (0.0042)	0.02455	**0.0136**	KM H-UCL	0.0482	-	0.012	0.012
Manganese	112	100%	1.72	20.35	15.73	95% H-UCL	55.9	-	**41**	**71**
Mercury	111	100%	0.0088	0.0254	0.0183	95% Student's-t UCL	0.0384	**0.113**	-	-
Molybdenum	112	100%	0.0138	0.08613	**0.0525**	95% Student's-t UCL	0.144	-	**0.056**	0.052
Nickel	112	100%	0.07	4.034	**2.096**	95% Chebyshev (Mean, Sd) UCL	7.83	-	1.22	**2.24**
Phosphorus	112	100%	4230	8817	7358	95% Student's-t UCL	10100	-	**7607**	**7544**
Selenium	112	100%	0.164	0.4143	0.314	95% Student's-t UCL	0.584	**0.33**	-	-
Silver	112	81%	0.001	0.00459	0.00509	95% KM (Chebyshev) UCL	0.0484	**0.00776**	-	-
Strontium	112	100%	16.2	49.02	37.31	95% Approximate Gamma UCL	60.2	-	**54**	**61**
Thallium	112	100%	0.00253	0.009739	**0.00677**	95% Approximate Gamma UCL	0.0147	0.00635	-	-
Tin	112	97%	<0.004 (0.0045)	0.0977	**0.0768**	95% KM (Chebyshev) UCL	0.355	-	0.066	0.071
Uranium	112	100%	0.00409	0.09725	0.0593	95% Chebyshev (Mean, Sd) UCL	0.25	-	**0.85**	**3.44**
Vanadium	112	99%	0.02	0.0709	0.0535	95% KM Approximate Gamma UCL	0.176	**0.166**	-	-
Zinc	112	100%	23.2	39.78	**35.0**	95% Student's-t UCL	55.6	-	31.4	31.5

Bolded and shaded cell = Greater of the updated statistics or selected concentration in the risk assessment (the only exception would be if the updated statistic is less than the selected concentration at one location and greater than

1. List of parameters measured in slimy sculpin tissues and assessed in the ecological and aquatic risk assessments.
2. Includes measured data collected in 2010, 2013, and 2019 from near-field and far-field locations.
3. 95% UCLM statistic calculation includes data collected in 2007, 2010, 2013, 2016, and 2019 from near-field and far-field locations.
4. Selected concentrations based on water concentration and site-specific bioaccumulation factors.

RioTinto

Attachment B

Diavik Final Closure and Reclamation Plan (FCRP)

Surface Water Action Level Framework (SWALF)

Final DDMI Recommended SWALF as part of Diavik - Type A WL Amendment - Decommissioning

RioTinto

SWALF – Once Prior to Decommissioning

Prior to reconnection – Collection Pond	Response
• Water chemistry < AEMP Benchmark *10 • Water chemistry < Wildlife and Human Health (Recreation) criteria • *C. dubia* IC25 > 12.5% • TPH < 3 mg/L • No acute lethality to rainbow trout OR daphnia magna • TSS < 30 mg/L	• Submit to Inspector for approval to proceed with reconnection

SWALF – Wildlife

Action Level 1 Triggers – Runoff SNP Location	**Level 1 Response**
• Runoff water chemistry > 80% of Wildlife Criteria (SW1-2)	• Resample to confirm If trigger confirmed: • Investigate cause – desktop review • Identify rapid mitigation options • Detailed risk assessment to confirm or adjust Wildlife Criteria (SW1-2)
Action Level 2 Triggers – Runoff SNP Location	**Level 2 Response**
• Runoff water chemistry > confirmed/adjusted Wildlife Criteria (SW1-2)	• Investigate cause – field review • Implement rapid mitigations to deter wildlife from accessing runoff • Investigate long-term mitigation options
Action Level 3 Triggers – Lake Mixing Location	**Level 3 Response**
• MXB SNP water chemistry > SW1-2	• Re-establish temporary water collection • Environmental Trade-off-Study to consider *in perpetuity* water treatment

SWALF – Human Health

Action Level 1 Triggers – Runoff SNP Location	Level 1 Response
Runoff water chemistry > 80% of Human Health (Recreation) Criteria (SW1-1)	• Resample to confirm If trigger confirmed: • Investigate cause – desktop review • Identify rapid mitigation options • Detailed risk assessment to confirm or adjust Human Health (Recreation) Criteria (SW1-1)
Action Level 2 Triggers – Runoff SNP Location	**Level 2 Response**
• Runoff water chemistry > confirmed/adjusted Human Health (Recreation) Criteria (SW1-1)	• Investigate cause – field review • Implement rapid mitigations to deter people from accessing runoff • Investigate long-term mitigation options
Action Level 3 Triggers – Lake Mixing Location	**Level 3 Response**
• MXB SNP water chemistry > Human Health **(Drinking)** Criteria (SW1-1 / 20)	• Re-establish temporary water collection • Environmental Trade-off-Study to consider *in perpetuity* water treatment

Action Level 1 Triggers – Runoff SNP Location	**Action Response 1**
• Runoff water chemistry > AEMP Benchmark * 10	• Resample to confirm If trigger confirmed: • Initiate off schedule toxicity testing; paired datasets of toxicity test results and water chemistry inform trigger adjustments • Consider any adjustment(s) to the triggered parameter(s) • Consider need to establish site specific Effects Threshold for the triggered parameter
Action Level 2 Triggers – Runoff SNP Location	**Action Response 2**
• Runoff (RO): chronic toxicity – *C. dubia* IC25 < 12.5% • RO: TSS > 15 mg/L avg OR 30 mg/L grab • RO: Acute lethality to rainbow trout OR *daphnia magna*	• All: Investigate cause • Chronic: Confirm if chronic toxicity extends to lake mixing location • Chronic: Consider adjustment to 12.5% trigger if toxicity does not extend to lake mixing location or lake dilution demonstrated to be greater than 8x • TSS/Acute: Management action as directed by GNWT Inspector
Action Level 3 Triggers – Lake Mixing Location	**Action Response 3**
• MXB SNP toxicity – *C. dubia* IC50 < 100%	• Re-establish temporary water collection • Toxicity Identification and Evaluation • Special Effects Study through AEMP to determine significance and extent • Environmental Trade-off-Study to consider *in perpetuity* water treatment.