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March 3, 2023

File: W2020L8-0003

Rasel Hossain,
Senior Manager
Crown-Indigenous Relations and Northern Affairs Canada
Contaminants and Remediation Division
P.O. Box 1500 4923-52nd St
Yellowknife, Northwest Territories, X1A 2R3

Sent by email

Dear Rasel,

Re: Remedial Action Plan, Version 2.0 – Not Approved – Rayrock Remediation Project – Miscellaneous – Former Rayrock Mine, NT

The Wek'èezhì Land and Water Board (Board) met on February 22, 2023 and considered Version 2.0 of by Crown-Indigenous Relations and Northern Affairs Canada – Contaminants and Remediation Division (CIRNAC-CARD)'s Remedial Action Plan (RAP).¹ Version 2.0 was submitted on August 18, 2022 as required by Water Licence (Licence) W2020L8-0003 and the Board's September 30, 2021 Reasons for Decision.^{2,3}

The Board has not approved Version 2.0 of the RAP for the reasons detailed in the Board's Reasons for Decision (attached). As detailed in the attached Reasons for Decision, the Board has also included requirements for engagement to take place prior to submission of Version 2.1 of the RAP.

As per Part B, Condition 11, REVISE AND SUBMIT in the Licence, the Board requires that CIRNAC-CARD revise the RAP and submit Version 2.1 to the Board for approval on or before **November 30, 2023**. The revision must be prepared in accordance with the Land and Water Boards' *Document Submission Standards*.⁴ Once submitted, the revised RAP will undergo the Board's standard public review process before being considered by the Board. Please direct questions or concerns regarding this letter to Ryan Fequet in writing.

¹ See WLWB Online Registry www.wlwb.ca/ for [Rayrock - Remedial Action Plan - Version 2.0 - Aug 18 22](#).

² See WLWB Online Registry for [Rayrock - Licence - Jan 30 23](#).

³ See WLWB Online Registry for [Rayrock - Licence and Permit - Reasons for Decision - Sep 30 21](#).

⁴ See WLWB Policies and Guidelines webpage for MVLWB [Document Submission Standards](#).

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Mason Mantla', written in a cursive style.

Mason Mantla
Chair, Wek'èezhì Land and Water Board

BCC'd to: Rayrock Distribution List
Tim Morton – Inspector, CIRNAC

Attached: Reasons for Decision



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Reasons for Decision

Licensees: Crown-Indigenous Relations and Northern Affairs Canada – Contaminants and Remediation Division (CIRNAC-CARD)	
Location: Kwetłı̄ᓂàà (former Rayrock mine and exploration sites), NT	File: W2020L8-0003
Subject: Remedial Action Plan Version (RAP) 2.0	

Decision from the Wek'èezhìi Land and Water Board Meeting of February 22, 2023

1.0 Decision

On February 22, 2023, the Wek'èezhìi Land and Water Board (WLWB or the Board) considered Version 2.0 of Crown-Indigenous Relations and Northern Affairs Canada – Contaminants and Remediation Division's (CIRNAC-CARD) Remedial Action Plan (RAP) Version 2.0 (the Plan)⁵ required by Water Licence W2020L8-0003 (the Licence).⁶ In consideration of the submission, the Board has decided the following:

1. To not approve Version 2.0 of the RAP;
2. Require CIRNAC-CARD to submit Version 2.1 of the RAP to include RAP Revisions 1 through 30;
3. Require CIRNAC-CARD to conduct Engagement as outlined in Engagement Recommendations 1 through 5;
4. To not approve the closure objectives;
5. To provide the studies/assessments confirming underground workings and site crown pillars are not an issue within 30 days;
6. To not approve the closure criteria;
7. Where an Engineered Structure has a requirement for the submission of a Design Plan, require CIRNAC-CARD to include proposed closure criteria in this Design Plan; and
8. To require CIRNAC-CARD to submit Version 2.1 of the RAP no later than November 30, 2023.

⁵ See WLWB Online Registry at www.wlwb.ca for [Rayrock - Remedial Action Plan - Version 2.0 - Aug 18 22](#).

⁶ See WLWB Online Registry for [Rayrock - Licence - Jan 30 23](#).

2.0 Background

On September 21, 2020, CIRNAC-CARD submitted Version 1.0 of the RAP along with its Type A Water Licence and Land Use Permit Applications. Version 1.0 of the RAP was submitted in place of a Closure and Reclamation Plan and described the environmental and historical conditions of the former Rayrock Uranium Mine, former Sun Rose Advanced Exploration Site, and affiliated sites. Version 1.0 of the RAP also described remediation activities and included proposed closure objectives and closure criteria for the Rayrock Remediation Project (the Project).

On November 18, 2021, Type A Water Licence W2020L8-0003 and Land Use Permit W2020X0005 were issued, and Version 1.0 of the RAP was approved, with a requirement to submit Version 2.0 of the RAP within nine months of Licence and Permit issuance.⁷ Version 2.0 of the RAP was required to include revised closure objectives and closure criteria, as well as information required by Schedule 7, Condition 2 of the Licence. A Closure Objectives and Closure Criteria Workshop was also required by the Licence to support the development of revised closure objectives and criteria.

CIRNAC-CARD hosted the Closure Objectives and Criteria Workshop in March 2022 and submitted Version 2.0 of the RAP as an addendum to Version 1.0 on August 18, 2022. The Plan was circulated to the Rayrock Distribution List for public review via the Online Review System (ORS) on September 1, 2022. Comments and/or recommendations were required by October 6, 2022. The Tłı̨chq̓ Government requested an extension until October 7, 2022, which was granted. Comments and recommendations were received from the following Parties by the comment deadline:

- Environment and Climate Change Canada (ECCC);
- Government of the Northwest Territories – Environment and Natural Resources (Environmental Assessment and Monitoring) (GNWT-ENR);
- The Tłı̨chq̓ Government (TG);
- Canadian Nuclear Safety Commission (CNSC); and
- Wek'èezhìi Renewable Resources Board (WRRB).

Board staff also asked questions during the public review. Responses were due by October 20, 2022 and CIRNAC-CARD requested an extension until November 10, 2022 due to staff availability and volume of comments received. The request was granted, and responses were received by the deadline; however, were not posted to the ORS until November 14, 2022 due to technical difficulties. CIRNAC-CARD's responses included a letter of support for Version 2.0 of the RAP from the Tłı̨chq̓ Government.⁸ The review summary is available on the WLWB Online Review System (ORS).⁹

⁷ See WLWB Online Registry for [CIRNAC-CARD - Rayrock - Issuance Letter and Land Use Permit - Nov 18 21](#).

⁸ See WLWB Online Review System (<https://new.onlinereviewsystem.ca/>) for [Rayrock - Remedial Action Plan \(RAP\) Version 2.0](#); see Comment-02-TG Letter of Support RAP 2.0.

⁹ See WLWB Online Review System for [Rayrock - Remedial Action Plan \(RAP\) Version 2.0](#).

3.0 Reasons for Decision

As discussed throughout this Reasons for Decision, many recommendations and commitments were made during the public review of this Plan, which the Board has decided should be addressed in a revised version of the RAP. The reasons for this decision are:

- additional content is required to address Licence (i.e., Schedule 7, Condition 2) requirements;
- revisions to some of the proposed closure objectives are required;
- additional closure objectives may be required;
- additional closure criteria are required;
- revisions to the closure criteria are required; and
- revisions to other sections of the RAP are required.

The Board has thus decided not to approve Version 2.0 of the RAP and requires submission of Version 2.1 to include the RAP Revisions as outlined in this Reasons for Decision.

- ***Decision 1: The Board has decided not to approve Version 2.0 of the RAP.***
- ***Decision 2: CIRNAC-CARD is to submit Version 2.1 of the RAP to include Revisions 1 through 30.***

As discussed throughout the Reasons for Decision, the Board has included several requirements for engagement to inform Version 2.1. These requirements have been included to help ensure that CIRNAC-CARD receives the feedback necessary to help resolve certain issues and improve the Plan.

- ***Decision 3: CIRNAC-CARD is to conduct Engagement as outlined in Engagement Decisions 1 through 5.***

3.1 Project Components

Permanent closure and reclamation requirements for each project component associated with the remediation (e.g., the mine openings, Tailings Containment Areas (TCAs), borrow areas, etc.) are outlined in Section 5.2 of Version 2.0 of the RAP. Each project component listed in this section of the Plan includes a description of any uncertainties, contingencies, water management activities, climate change considerations, among other information required by Schedule 7, Condition 2(i)). During the public review, GNWT-ENR and the Tłı̄chq Government asked questions on the content of Section 5.2, indicating that additional information and supporting rationale is necessary. A summary of these issues and the Board's Decisions are discussed below.

Additional Project Components

Section 5.2 included descriptions for the 24 project components outlined in Schedule 7, Condition 2(h). The Confined Disposal Facility (CDF) was not included as one of the project components, and the Tłı̄chq Government recommended that it be included because plans for the CDF had changed since the approval of Version 1.0 of the RAP (comments 17 and 22). CIRNAC-CARD disagreed stating that the list of project components was taken from the Licence, and that the CDF is not a project component. CIRNAC-CARD elaborated that the project components are the problems at the site, while the CDF is one of the principal

solutions, and that descriptions of the CDF are provided through reports and Design and Construction Plans required by the Licence.

The Board notes that the Licence states that this list is not limited to the 24 project components and disagrees with CIRNAC-CARD, noting that the CDF is unquestionably a major component of the remediation activities at the Kwetjjaà site. This is evidenced by the fact that the CDF has closure objectives and criteria (i.e., closure objectives 3-1 and 3-2) and is regulated by various requirements throughout the Licence. The Board also notes that the Sun Main Waste Rock Cover was not included in the RAP. For the same reason, the Board is of the opinion that the CDF and the Sun Main Waste Rock Cover are project components and CIRNAC-CARD is to provide the information required by Schedule 7, Condition 2(i) for these components in Version 2.1 of the RAP.

- ***RAP Revision 1: CIRNAC-CARD is to include the CDF and Sun Main Waste Rock Cover as project components and provide the corresponding information required by Schedule 7, Condition 2(i) in Version 2.1 of the RAP.***

Descriptions for Climate Change, Water Management, and Uncertainties and Contingencies

During the public review, GNWT-ENR and the Tłıchǫ Government recommended that the “climate change considerations”, “water management and restoration of natural drainage”, and “uncertainties and contingencies” descriptions for several project components be revised to include additional information because CIRNAC-CARD indicated “none”, or because these descriptions stated that monitoring will be conducted under CIRNAC-CARD’s Waste Nuclear Substance Licence (WNSL; GNWT comments 4, 5, 6, and 7; TG comments 25, 27, and 33). In response, CIRNAC-CARD committed to revising some descriptions but disagreed to others. For the climate change considerations section, CIRNAC-CARD did not agree to including additional information, stating that climate change has been considered for design elements such as the CDF and considerations are also a part of the WNSL for which CNSC will continue to have jurisdiction.

The Board notes that both the CNSC and the WLWB have jurisdiction to consider and establish requirements regarding climate change. In addition, descriptions for climate change, water management, and uncertainties and contingencies are requirements of the Licence that must be addressed with the appropriate information or rationale in cases where a description is not applicable. CIRNAC-CARD did not provide this information or supporting rationale in Version 2.0 of the RAP, and as indicated by comments received during the public review, additional clarity and information is required or has been considered in other documents (e.g., Design Plans). Given that these sections of the RAP require additional detail, the Board has decided that CIRNAC-CARD must either include fulsome information for these descriptions or provide a specific reference (i.e., document name(s), section(s) name, page number(s)) if the information is already fulsomely available on the public registry in a submission other than the RAP.

- ***RAP Revision 2: CIRNAC-CARD is to revise the descriptions for “Climate Change Considerations”, “Water Management and Restoration of Natural Drainage”, and “Uncertainties and Contingencies” to include available information and/or references to specific plans (where applicable) in Version 2.1 of the RAP.***

Applicable Closure Objectives and Closure Criteria

Each project component listed in Section 5.2 was to include a description of associated closure objectives and criteria. For all project components in Version 2.0 of the RAP, this description stated that “The Closure Objectives and Criteria are attached in Appendix A of this Addendum”. During the public review, the Tłı̨chǫ Government recommended that this description be revised to include the closure objectives and criteria specific to each project component noting that as written, the reader is required to interpret which of the closure objectives listed in Appendix A apply to which component (comment 18). In response, CIRNAC-CARD disagreed, stating that the closure objectives and criteria are objective-based, not component-based and attempting to relate project objectives and criteria to specific components would add an unnecessary layer of complexity. CIRNAC-CARD also noted that “all project components must be completed in a manner that satisfies all project objectives and criteria; that is the message conveyed with the reference to Appendix A and is all that should be necessary at the component level”.

The Board notes that the closure objectives and criteria have been in development since March 2022 and agree that repeating the detailed objectives and criteria relevant to each component in Section 5.2 of the RAP would be duplicative of the information provided in Appendix A. However, the Board notes that CIRNAC-CARD’s response indicates that all components must meet all closure objectives and all criteria, and that is not the Board’s understanding based on the title of, and the wording within, the various tables in Appendix A. Therefore, to ensure clarity of the objective and the associated criteria for each component, the Board requires that each component in Section 5.2 of the RAP clearly identify what tables within Appendix A are relevant to each component.

- ***RAP Revision 3: CIRNAC-CARD is to revise each project component’s description of Closure Objectives and Criteria so that these descriptions reference applicable Tables from Appendix A in Version 2.1 of the RAP.***

Natural Revegetation, Scarification, and Winter Roads

Information on the closure of site roads is outlined in Section 5.2.19 and 5.2.20 of the RAP. In response to recommendations made by GNWT-ENR (comments 54 and 55), CIRNAC-CARD stated that the winter roads will be abandoned after all materials and infrastructure are removed, will not be scarified, and will be left to revegetate naturally.

The Board notes that Version 2.0 of the RAP (i.e., Section 5.2.20) states that closure and reclamation activities are not required for the winter road. In addition, the description of winter roads in Version 1.0 of the RAP (i.e., Section 6.7.1) does not include information about closure. The Board notes that because the activity of abandoning winter roads was only provided in response to comments during the public review of Version 2.0 it has not been reviewed by Parties or considered by the Board. The Board believes this closure activity should be outlined in section 5.2.20 for consideration in Version 2.1 of the RAP.

- ***RAP Revision 4: CIRNAC-CARD is to revise the “Preferred Closure and Reclamation Option and Method” for Road Construction (i.e., Section 5.2.20) to include winter roads so that it may be considered in Version 2.1 of the RAP.***

3.2 Closure Objectives

Closure objectives are statements that describe what closure activities are aiming to achieve; they are measurable and achievable and guide the development of closure criteria.¹⁰ Twenty-four closure objectives were presented in Version 2.0 of the RAP. Each closure objective included closure criteria, as well as an “Approach” and “Reporting to WLWB” section, which detail the activities, reports, and plans associated with the closure objective. This section of the Reasons for Decision discusses specific issues that came up during the review of the closure objectives. The closure criteria associated with these some of these objectives are discussed as well, however the main issues regarding closure criteria and the “Reporting to WLWB” section are discussed later in this Reasons for Decision. Overall, the Board is of the opinion that the proposed closure objectives discussed below should not be approved because they require additional revisions based on recommendations received during the public review. The public review also identified that additional closure objectives may be required.

- ***Decision 4: The Board has decided not to approve the closure objectives.***

3.2.1 Changes to the Proposed Closure Objectives

Specifying Remediation Phases in the Closure Objectives

During the public review, Parties commented on closure criteria associated with closure objectives where the phase of the remediation (i.e., during remediation, after remediation, or both) is unclear (i.e., closure objectives 4-1, 4-2, 4-3, 4-4; and 5-1; GNWT-ENR comments 44, 46, 49; ECCC comment 4; TG comment 64, 66). As evidenced by the comments received, if the phase of the remediation is not specified in the closure objective, it is difficult for Parties to evaluate whether appropriate closure criteria are in place. In addition, the Board notes that this is an important detail for closure objectives to include so the closure criteria can be specific and ensure they measure the success of the respective objective. Therefore, the Board has decided that these closure objectives are to be revised to state whether they apply to the remediation, post-remediation, or both. The Board has also decided that the closure criteria associated with these closure objectives are to be revised accordingly to reflect these changes. For example, if closure objective 4-2 applies to the camp wastewater sump during and after remediation, CIRNAC-CARD is to ensure that additional closure criteria are included to ensure this sump is safe and does not present a human or ecological risk during remediation.

- ***RAP Revision 5: CIRNAC-CARD is to revise closure objectives 4-1, 4-2, 4-3, 4-4, and 5-1 to specify whether they apply to post-remediation conditions, conditions during the remediation, or both and revise the closure criteria accordingly in Version 2.1 of the RAP.***

Combining Closure Objectives

During the public review, GNWT-ENR recommended that CIRNAC-CARD consider combining several closure objectives because they had similar closure criteria and goals (e.g., of not presenting a human or ecological risk; GNWT-ENR comments 27, 35, and 57). For example, GNWT-ENR noted that closure

¹⁰ See WLWB Policies and Guidelines (<https://wlwb.ca/resources/policies-and-guidelines>) for [MVLWB Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories \(2013\)](#).

objectives for contaminated materials at Rayrock and Sun Main (i.e., closure objectives 2-1 and 2-2) could be combined with a site-wide closure objective about surficial water soils and sediments not presenting a human or ecological risk (i.e., closure objective 1-6; comment 27). CIRNAC-CARD disagreed because these closure objectives are dissimilar and focus on different sites with different remediation strategies, hazards, locations, and closure activities.

The Board notes that it is unclear whether all the closure objectives identified by GNWT-ENR can be combined at this time because Decisions have been made on the closure criteria associated with these closure objectives based on comments made during the public review. These Decisions are described in Section 3.3 of this Reasons for Decision and could result in significant changes that would make the closure objectives more or less similar to each other. For example, even if two closure objectives have a similar goal of not presenting a human or ecological risk, if the closure criteria, “Approach”, and/or “Reporting to the WLWB” sections of these closure objectives are dissimilar, combining them may result in a lack of clarity. Therefore, because there are anticipated revisions to the closure criteria associated with these closure objectives, at this time, the Board has decided not to require combining of any closure objectives proposed in Version 2.0 of the RAP.

Converting Closure Objectives to Closure Criteria

During the public review, GNWT-ENR noted that several closure objectives were better suited as closure criteria because they appear to relate to other closure objectives or to be actions (GNWT-ENR comments 19, 37, 40, and 48). In response, CIRNAC-CARD proposed to convert two closure objectives to closure criteria (i.e., closure objectives 2-6 and 2-7), but disagreed to converting others (i.e., closure objectives 1-4 and 4-4). CIRNAC-CARD’s rationale against converting closure objectives to closure criteria varied and was either because Parties expressed interest in having a closure objective remain or because CIRNAC-CARD believed the closure objective addressed distinct concerns about remediation infrastructure.

The Board notes that comments were made on the closure criteria associated with most of these closure objectives during the public review (ECCC comment 2; GNWT-ENR comments 38 and 39; Tłıchq Government comment 60; WLWB staff comment 8), including those that CIRNAC-CARD proposed to convert to closure criteria (i.e., closure objectives 2-6 and 2-7). It is the Board’s opinion that these comments indicate that Parties are interested in having these closure objectives remain in the RAP. This is further supported by the CIRNAC-CARD’s responses, which stated that Parties and CIRNAC-CARD are interested in retaining and revising these closure objectives. Therefore, the Board has decided that the closure objectives identified by GNWT-ENR should not be converted to closure criteria in the next version of the RAP.

- ***RAP Revision 6: CIRNAC-CARD is to retain closure objectives 1-4, 2-6, 2-7, and 4-4 in Version 2.1 of the RAP.***

3.2.2 Additional Closure Objectives

During the public review, the Tłıchq Government recommended that closure objectives be developed to ensure long-term stability of underground workings (i.e., crown pillars; comment 39), and requested clarity on whether a crown pillar assessment has been completed at any of the sites (comment 58). In response, CIRNAC-CARD did not agree to including closure objectives for underground workings because a crown pillar assessment had been completed, and studies to date have shown that the underground workings are not an issue. CIRNAC-CARD also stated that the studies and crown pillar assessment could be made available upon request.

Remediation activities related to underground workings and crown pillars were not included in Version 1.0 of the RAP and the assessments and studies demonstrating that underground workings are not a concern are not available on the public registry. As a result, it is unclear whether closure objective(s) are required for these components. To confirm that underground workings and crown pillars are not a closure concern and determine whether additional closure objective(s) are required, the Board has decided that the studies conducted for the underground workings and the crown pillar assessment must be provided within 30 days of issuance of the Reasons for Decision to allow the Tłıchq Government and other interested parties the opportunity to consider this information and whether additional closure objectives and/or criteria are warranted. As the Tłıchq Government raised this concern, the Board is requiring CIRNAC-CARD to engage with the Tłıchq Government on these studies prior to submission of Version 2.1 of the RAP to determine whether additional closure objectives and/or closure criteria are necessary.

- ***Decision 5: CIRNAC-CARD is to provide the studies/assessments confirming underground workings and site crown pillars are not an issue within 30 days.***
- ***Engagement Decision 1: CIRNAC-CARD is to engage with the Tłıchq Government on the crown pillar assessment and underground workings studies to determine whether additional closure objectives/criteria are necessary.***
- ***RAP Revision 7: CIRNAC-CARD is to indicate the outcomes of discussions regarding Engagement Decision 1 in the conformance table of Version 2.1 of the RAP and revise the RAP accordingly.***

3.3 Closure Criteria

Closure criteria measure how successful closure activities are in meeting closure objectives. Closure criteria may have a temporal component (e.g., a performance standard may need to be met for a pre-defined number of years); can be site-specific or adopted from territorial/federal or other standards; and/or can be narrative statements or numerical values.¹¹ Many comments were made about the proposed closure criteria during the public review, and CIRNAC-CARD committed to a variety of revisions which would need to be provided in a new version of the RAP. In addition, and as described in subsections below, the Board identified that additional closure criteria and revisions are required because the proposed closure criteria may require longer temporal components and/or do not demonstrate that the

¹¹ See WLWB Policies and Guidelines for [MVLWB Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories \(2013\)](#).

closure objectives have been achieved. For these reasons, the Board is of the view that the proposed closure criteria in Version 2.0 of the RAP are not adequate to ensure the effective remediation at the Kwetjjaà site and has decided not to approve the closure criteria.

➤ **Decision 6: The Board has decided not to approve the closure criteria.**

3.3.1 Additional Closure Criteria

Closure Criteria to be Provided in Other Plans/Reports

Many closure criteria included terms such as “monitoring objectives”, “performance criteria”, “geochemical criteria”, and “revegetation success” that Parties (GNWT-ENR comments 22, 24, 30, 33, 42, and 52; TG comment 53) and WLWB staff (comment 2) requested CIRNAC-CARD define or provide a reference for during the public review. In response, CIRNAC-CARD proposed to add and/or revise closure criteria to specify plans and/or reports where these terms will be defined (i.e., in the Closure and Reclamation Completion Report, Revegetation Plan, Quarry Management Plan, Sediment and Erosion Control Plan, and AEMP Design Plan; e.g., GNWT-ENR comment 43). For example, the closure objective about the TCAs and decommissioned waste dump (i.e., closure objective 2-3) included the closure criterion: “Meets performance criteria for five (5) consecutive years of geotechnical inspections post-construction”. In response to a comment from GNWT-ENR on what the performance criteria were and where they could be found (comment 30), CIRNAC-CARD committed to revising this criterion to: “Meets Engineer of Record recommended performance criteria, as provided in the Closure and Reclamation Completion Report, for five (5) consecutive years of geotechnical inspections post-construction”.

The Board notes that the example above and all similar revisions proposed by CIRNAC-CARD indicate that additional closure criteria apply to the closure objectives, and that these criteria will either be provided or defined further in other submissions for review at a later date. The Board notes that by not providing these closure criteria at this time, CIRNAC-CARD is delaying the discussion and consideration of those proposed criteria, thus delaying certainty for all Parties as to what those will be. The Board is of the opinion that criteria related to Engineered Structures should be known in advance of Construction, and at the latest be proposed with the respective Design Plans, otherwise it will be difficult for Parties to evaluate the effectiveness of the Design if its not clear what closure criteria the Design is working to achieve. Despite these concerns, the Board has decided to remain open to CIRNAC-CARD’s proposed approach but notes that closure criteria can only be proposed within submissions that are for Board approval. Therefore, plans not required by the Licence (i.e., the Revegetation Plan) and reports that are not approved by the Board (i.e., the Closure and Reclamation Completion Report), are not appropriate submissions to include proposed closure criteria. The Board also notes that because some of these submissions (e.g., Design Plans) are typically required 90 days prior to commencement of activities included in the submission, this timeline may not be adequate to also consider the proposed closure criteria since they can sometimes be complex; thus, CIRNAC-CARD should ensure each submission arrives as far in advance as possible to allow Parties adequate time to consider and discuss them and to avoid potential delays in operations. The Board also notes that because some project components and/or Engineered Structures do not have Licence submissions or Design Plans associated with them (e.g.,

contaminated materials at Rayrock and Sun Main, the TCAs and waste dump, mine openings, exploration workings, camp wastewater sump), it is not clear what submissions additional criteria could be defined in. Therefore, where there is not an appropriate submission for closure criteria to be proposed in or in cases where CIRNAC-CARD would prefer not to delay certainty of closure criteria, those criteria must be included in Version 2.1 of the RAP.

- ***Decision 7: Where an Engineered Structure has a requirement for the submission of a Design Plan CIRNAC-CARD is to include proposed closure criteria in this Design Plan.***
- ***RAP Revision 8: Where an Engineered Structure has no Design Plan for Board approval, the closure criteria for this structure must be defined in Version 2.1 of the RAP.***
- ***RAP Revision 9: CIRNAC-CARD is to revise closure criteria that refer to “monitoring objectives”, “performance criteria”, “geochemical criteria”, and “revegetation success” in Version 2.1 of the RAP, or other submissions that are for Board approval.***

Numeric Closure Criteria

During the public review, the Tłıchq Government recommended that various closure objectives include numeric closure criteria for water, soils, sediments, and radiation (TG comments 44, 53, 55, 56, 57, 63, and 64). CIRNAC-CARD agreed to include numeric criteria for radiation because the project has a gamma radiation remediation objective (GRRO) that must be met as part of the remediation. CIRNAC-CARD also indicated that numeric criteria for water may be defined in the AEMP, but disagreed to including any other numeric criteria for water because the Licence has Effluent Quality Criteria (EQC). CIRNAC-CARD did not provide rationale for why numeric criteria for soil could not be developed for all relevant closure objectives but noted that it would not apply to the closure objective for Sun Main (i.e., closure objective 2-2) because soils will be buried. CIRNAC-CARD also did not indicate whether it agreed or disagreed with including numeric criteria for sediments.

The Board agrees with CIRNAC-CARD’s proposal to incorporate the GRRO into the closure criteria because it makes these criteria specific. The Board also agrees that numeric closure criteria for water are not required for closure objectives related to treated water discharge and seepage from the CDF (i.e., closure objectives 3-2 and 4-1) because EQCs are outlined in the Licence. In addition, the Board notes that because certain closure objectives focus on waste materials and physical stability (i.e., closure objectives 2-6 and 3-1 respectively), numeric closure criteria for water, soils, or sediments would not be applicable.

Of the remaining closure objectives identified by the Tłıchq Government, the Board believes that numeric closure criteria for soils and sediments could be applicable to closure objectives 1-6, 2-1, 2-3, 2-5, and 3-2 because they relate to these mediums. For example, numeric closure criteria for soils and sediments could be applicable to site-wide closure objective 1-6, because it is focused on surficial water, soils, and sediments being safe and not presenting a human or ecological risk. However, as no numeric closure criteria were proposed during the public review, it is unclear what numeric criteria would be appropriate for these closure objectives. In addition, because sediments and some soils will be buried to prevent

human and wildlife exposure, it is unclear whether numeric criteria are necessary or if they are being recommended for soils that will be left in place on site. Given that it is unclear what numeric criteria would be appropriate, what aspect of the remediation they are being requested for, the primary land user are the Tłı̨chǫ people, and Tłı̨chǫ Government recommended numeric closure criteria, the Board is of the opinion that CIRNAC-CARD should engage with the Tłı̨chǫ Government on the topic of numeric closure criteria for soils and sediments for closure objectives 1-6, 2-1, 2-3, 2-5, and 3-2 and either provide numeric criteria or rationale for why they are not applicable in Version 2.1 of the RAP.

- ***Engagement Decision 2: CIRNAC-CARD is to engage with the Tłı̨chǫ Government on numeric closure criteria for soils and sediments for closure objectives 1-6, 2-1, 2-3, 2-5, and 3-2.***
- ***RAP Revision 10: CIRNAC-CARD is to indicate the outcomes of discussions regarding Engagement 2 in the conformance table of Version 2.1 of the RAP and revise the RAP accordingly.***

CDF and Post-Earthquake Factor of Safety

The RAP included closure objective 3-1, which requires that the CDF is physically stable and does not pose a geotechnical safety risk. The Tłı̨chǫ Government recommended that this closure objective's first closure criterion about factors of safety be in line with the guidance from the Canadian Dam Association (CDA) Mining Dams Bulletin and that design criteria for seismic and flooding events be for very long design periods (comments 46 and 62). In response, CIRNAC-CARD stated that the CDF is designed as a landform, not as a dam and did not commit to revising the factors of safety. The Board notes that whether the CDF is a dam or landform, the factors of safety proposed by CIRNAC-CARD (i.e., 1.5 for static and 1.1 for seismic) are at or above the CDA's minimum factors of safety (i.e., 1.5 for static and 1.0 for pseudo-static).¹² The Board also notes that the CDA Mining Dams Bulletin includes a minimum post-earthquake factor of safety (i.e., of 1.2). As the CDF will be present well into the future, and because the closure objective focuses on physical stability of the CDF, CIRNAC-CARD is to include this post-earthquake factor of safety into design and closure criteria in Version 2.1 of the RAP. If this factor of safety is not included as a closure criterion for closure objective 3-1 in Version 2.1 of the RAP, rationale for this decision must be provided in the conformance table of Version 2.1 of the RAP.

- ***RAP Revision 11: CIRNAC-CARD is to include a post-earthquake factor of safety (i.e., 1.2) closure criterion under closure objective 3-1 or provide rationale in the conformance table for Version 2.1 of the RAP for why CIRNAC-CARD believes it is not necessary.***

Closure Criteria for Radioactive Dust

Version 2.0 of the RAP includes a closure objective for dust and air quality (i.e., closure objective 4-3). During the public review, the Tłı̨chǫ Government recommended that CIRNAC-CARD revise the "Approach" section to state the Sediment and Erosion Control Plan would include analyses for any radioactive dust particles (TG comment 66). ECCC also requested that CIRNAC-CARD provide information on airborne monitoring of uranium (ECCC comment 3). In response, CIRNAC-CARD stated that a comprehensive

¹² Technical Bulletin: Application of Dam Safety Guidelines to Mining Dams (2014); See pg 27, Table 3-4 and 3-5.

Radiation Protection Plan (RPP) will be implemented for all project work, will contain details for uranium monitoring, and can be provided upon request. CIRNAC-CARD did not commit to revising closure objective 4-3 and elaborated that post-remediation contaminated areas are buried and “it is very unlikely that dust related radioisotopes would represent a measurable dose for the RPP; however, radiation measuring equipment (such as dosimeters) would account for those exposures”.

Given that the RPP is an operational plan, is not required by the Licence, and dosimeters measure exposure to radiation rather than air quality or inhalation of dust, it is unclear how CIRNAC-CARD will confirm that dust produced during remediation is not radioactive and not a concern at closure. In addition, as the closure objective focuses on dust management and air quality and two Parties have commented on practices that are not currently outlined in the SECP (the plan that provides details on dust monitoring) the Board is of the opinion that additional revisions to include radioactive dust particles and the RPP may be necessary for closure objective 4-3. Therefore, given the Tłıchq Government’s recommendation, the Board requires CIRNAC-CARD to engage with the Tłıchq Government to determine whether closure objective 4-3 requires additional closure criteria and/or revisions to include radioactive dust particles and the RPP.

- ***Engagement Decision 3: CIRNAC-CARD is to engage with the Tłıchq Government to determine whether additional closure criteria and/or revisions are required to closure objective 4-3 regarding the RPP and radioactive dust particles.***
- ***RAP Revision 12: CIRNAC-CARD is to indicate the outcomes of discussions regarding Engagement 3 in the conformance table of Version 2.1 of the RAP and revise the RAP accordingly.***

Construction in Accordance with Design Plans

During the public review, the Tłıchq Government recommended CIRNAC-CARD include closure criteria that confirm that remedial activities and Engineered Structures would be in accordance with approved designs for closure objectives 2-2, 2-3, 2-4, 2-5, and 3-1 (e.g., the CDF is constructed as designed; TG comments 47, 50, 51, and 62). The Board agrees with CIRNAC-CARD’s response that such closure criteria are not necessary because the Licence includes Condition 13 (Part D) that states that all Engineered Structures (such as the CDF) are constructed in accordance with Repair Design Drawings and Design Plans. For the same reason, and because the Licence includes Condition 14 (Part D) about submitting as-built reports, the proposed closure criteria stating that “as-builts for Engineered Structures will be signed and stamped by a Qualified Professional” do not need to be included as closure criteria in Version 2.1 of the RAP.

- ***RAP Revision 13: CIRNAC-CARD is to remove as-built closure criteria under closure objectives 2-2, 2-3, 2-4, 2-5, and 3-1 in Version 2.1 of the RAP.***

Frequency of Geotechnical Inspections

GNWT-ENR commented that there were no details on the frequency of geotechnical investigations associated with the third criterion of the closure objective that ensures mine openings at Rayrock and Sun Main are safe and inaccessible (i.e., closure objective 2-4; comment 33). The Board notes that Part E,

Condition 14 of the Licence includes the minimum requirement that geotechnical inspections of the Rayrock Mine Vents and Sun Main Mine Shaft are conducted annually for the first five years after construction, every five years thereafter, and following any events that exceed design criteria, by a Professional Engineer. The Board also notes that this closure objective includes a second closure criterion to ensure the objective is achieved, and suggests that any additional monitoring of these structures can be discussed during the public review of the proposed Post-Closure Monitoring and Maintenance Plan (PCMMP).

3.3.2 Adequacy of Proposed Temporal Component

Five Year Consecutive Year Timeline

Many closure objectives included closure criteria that have a five-year consecutive temporal component to demonstrate that the closure objective has been achieved. For example, to ensure that the TCAs and decommissioned waste dump are safe for humans, wildlife, and the environment (i.e., closure objective 2-3), CIRNAC-CARD proposed a closure criterion that these locations meet performance criteria for five consecutive years post-construction.

During the public review, Parties and WLWB staff asked for rationale for the five-year timeline (GNWT-ENR comment 34; TG comments 37 and 40; WLWB staff comment 1) and noted that this may not be long enough to ensure long-term stability of certain project components (e.g., mine openings; GNWT-ENR comment 34). The Tłı̨ch̨ Government also noted generally that many of the closure criteria reflected the end of the Licence (i.e., in 2031), rather than the end goal of closure (i.e., safe land use; comments 3 and 6), and recommended additional closure criteria to confirm that the closure objectives would be met in the long-term (TG comments 37, 40, and 57). CIRNAC-CARD disagreed with recommendations to extend the five-year timeline, stating that:

CIRNAC strongly believes that the 5-year post-remediation period is sufficient to establish that the remediation has not affected the receiving environment. The intention of the 5-year window is to establish a limit on the length of time that is required to prove that there is no change, and the objective has been met; otherwise, it has been our experience that the monitoring will be expected indefinitely.

CIRNAC-CARD also stated that “if there is 5-years of steady state results meeting closure criteria, and there is no known change to contaminant containment or distribution, then this demonstrates that the closure objective will continue to be met in the future”. CIRNAC-CARD also acknowledged that monitoring would continue past the five-year timeline (e.g., for failures and verifying the continuing steady state conditions) but that this will be associated with the WNSL.

The Board notes that almost all closure criteria with the five-year timeline (with exception to one in Objective 1-5 about revegetation success) require that criteria be met for five-years consecutively. It is the Board’s understanding that should criteria not be met at any point before five consecutive years post-remediation (e.g., after two years), the timeline would re-commence until criteria are met for another five

years. As this is a remediation project designed to remove and isolate wastes and other contaminants from the environment, the Board is of the opinion that this temporal component may be sufficient for project components that are not expected to change significantly over time (e.g., water, soil, or sediment quality, winter and on-site access roads, and other project components that do not include structures that could require maintenance) unless other environmental changes have occurred. In addition, the Board notes that almost all closure objectives with the five consecutive-year temporal component include additional closure criteria that must also be met before the closure objective can be considered achieved. For example, many of the closure objectives include a closure criterion to conduct a site tour with the Tłı̄chǫ Government. Therefore, because the five-year temporal component can recommence if specific criteria are not met, and because most closure objectives with the temporal component include additional closure criteria, the Board is of the opinion that a five-year temporal component is sufficient for closure criteria related to the aspects of the remediation mentioned above (i.e., closure objectives 1-6, 2-1, 4-1, 4-2, 3-2, 5-1, 6-1, 6-2).

However, per GNWT-ENR's recommendation (comment 34), it is unclear whether a five consecutive year temporal component would be appropriate for structures that require geotechnical inspections (e.g., the CDF, mine vent openings, etc.), because stability and other issues (e.g., slumping) associated with these structures may not be observed within the first five years of monitoring. The Board notes that the Licence also includes a condition for annual geotechnical inspections of various structures (e.g., the CDF, TCAs, and Sun Main mine shaft) for the first five years after construction and every five-years thereafter (Part E, Condition 14), indicating that geotechnical structures may have to meet additional requirements five years after construction and/or after expiry of the water Licence (i.e., in 2031).

The Board acknowledges that CIRNAC-CARD will conduct long-term monitoring of mine openings, the former mine camp, former mill areas, the TCAs, and waste dump, in accordance with the WNSL; however, as physical stability of structures is an essential aspect of successful closure, the Board is of the opinion that closure criteria with timelines beyond five years must be in place to demonstrate the continued effectiveness of these structures. Similar to the Tłı̄chǫ Government's comment that the closure criteria (and closure objectives) should reflect the end goal of closure (i.e., safe land use) rather than the end of the Licence (i.e., in 2031; comment 3), the closure criteria and their associated objectives should demonstrate that the site is safe, regardless of the date that the Licence is anticipated to expire and regardless of monitoring requirements required by the WNSL. As no specific alternative timelines were recommended during the public review, the Board requires CIRNAC-CARD to conduct additional engagement with GNWT-ENR and the Tłı̄chǫ Government to revise the temporal component to be appropriate for closure criteria that require longer-term geotechnical inspections (i.e., closure objectives 2-2, 2-3, 2-4, 2-5, and 3-1). The Board notes that this recommendation also applies to closure criteria that were proposed during the public review in response to reviewer comments (e.g., GNWT-ENR comment 23).

- ***Engagement Decision 4: CIRNAC-CARD is to engage with the Tłı̄chǫ Government and GNWT-ENR on temporal components for closure criteria in closure objectives 2-2, 2-3, 2-4, 2-5, and 3-1 that require geotechnical inspections.***

- **RAP Revision 14: CIRNAC-CARD is to indicate the outcomes of discussions regarding Engagement 4 in the conformance table of Version 2.1 of the RAP and revise the RAP accordingly.**

The Performance Assessment Report's Role in Demonstrating Achievement of Closure Criteria

Several closure criteria with the five-year consecutive temporal component included wording indicating that the closure criteria will be met when the Performance Assessment Report (PAR) is submitted. For example, closure objective 1-6 indicates that surficial water, soils, and sediments do not pose a human or ecological risk and includes the closure criterion that, "Post-remediation AEMP and SNP results meet monitoring objectives for five (5) consecutive years up to the PAR".

PARs are the submission intended to provide a comparison of conditions at the site against the closure objectives and closure criteria.¹³ During the public review, ECCC recommended that CIRNAC-CARD acknowledge that monitoring outlined in the closure criterion may extend beyond the PAR (comment 4), to which CIRNAC-CARD agreed, but did not commit to any revisions. The Board agrees with ECCC's comment, as monitoring requirements will be outlined in the PCMMP and are expected to continue until such time as the Board approves a cessation in monitoring based on results presented through one or several PARs. The PAR is not an appropriate closure criterion or an indication of when monitoring will cease; therefore, the Board has decided that references to the PAR are to be removed from the closure criteria (and Approaches) that include a five-year consecutive timeline in Version 2.1 of the RAP (i.e., closure objectives 1-6, 2-1, 2-2, 2-3, 3-2, 4-1, 4-2, and 5-1). This also applies to any closure criteria that were proposed during the public review that reference the five-year temporal component and the PAR (e.g., GNWT-ENR comments 23, 43, 55, and TG comments 44 and 53).

- **RAP Revision 15: CIRNAC-CARD is to remove wording stating "up to the PAR" in all closure criteria and Approaches that include a five-year consecutive timeline in Version 2.1 of the RAP.**

Temporal Component for Revegetation

Closure objective 2-3 ensures that the TCAs and decommissioned waste dump are safe for humans, wildlife, and the environment. During the public review, GNWT-ENR recommended that the third closure criterion on monitoring for deep rooting vegetation include a temporal component (comment 31). In response, CIRNAC-CARD stated it has consulted with GNWT-ENR and proposed to revise the criterion to state, "no deep-rooting vegetation is present on the covers five years after the completion of remediation". CIRNAC-CARD also stated that continued long-term monitoring and maintenance will be a requirement of the WNSL, and the original cap, constructed in 1996, did not require brushing for 20 to 25 years. The Board interprets CIRNAC-CARD's response to mean that vegetation should be cleared whenever necessary to ensure the continued performance of the cover.

The Board agrees with GNWT-ENR's recommendation to include a temporal component because it makes the criterion more specific. Without this temporal component, it may be unclear when the closure

¹³ See WLWB Policies and Guidelines for [MVLWB Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories \(2013\)](#). See pg. 26 'Performance Assessment Report'.

criterion has been met (e.g., in one year or in perpetuity). However, the Board notes that during the April 2021 public hearing, CIRNAC-CARD stated that there is uncertainty around how long it will take for vegetation covers to establish at Rayrock.¹⁴ Considering this, as well as the fact that the structures will remain on site long-term, the Board is of the opinion that the proposed five-year timeline is not appropriate for this criterion, particularly if vegetation does not establish within this timeframe. As it is unclear whether five years is long enough to determine whether deep-rooted vegetation will establish, the Board requires that CIRNAC-CARD propose a new temporal component for revegetation and provide rationale for this temporal component in Version 2.1 of the RAP. The Board also requires CIRNAC-CARD to include the Post-Closure Monitoring and Maintenance Plan (PCMMP) in the “Reporting to WLWB” section of the closure objective and outline vegetation monitoring for these covers to ensure the closure objective is achieved.

- ***RAP Revision 16: CIRNAC-CARD is to propose a new temporal component for the third closure criterion associated with closure objective 2-3 and provide supporting rationale for this choice in the conformance table of Version 2.1 of the RAP.***
- ***RAP Revision 17: CIRNAC-CARD is to include the PCMMP in the “Reporting to WLWB” section of closure objective 2-3.***

3.3.3 Revisions to Confirm that Closure Objectives Have Been Achieved

Closure Criteria That Are Closure Activities

Various closure criteria were identified as actions that were not measurable and/or more suitable under the “Approach” section of the closure objectives (GNWT-ENR comments 12, 17, 21, and 41; TG comment 54). In addition to the closure criteria identified by Parties, the Board also identified a number of other closure criteria that fall under the definition of closure activities and do not demonstrate that the closure objectives would be achieved. For example, the closure objective for contaminated materials at Rayrock (i.e., closure objective 2-1) includes the following closure criteria:

1. Waste rock is placed within the CDF;
2. Impacted soils excavated from Rayrock, Satellite Sites, and Barge Landing are placed within the CDF;
3. Locations of soils selected to remain in place at Rayrock will be agreed upon with TG; and
4. Spilled tailings are removed / left in place as decided with TG.

The Board acknowledges that the activities above are associated with the remediation and are intended to improve the Kwetjūpaà site but note that completion of the activities does not necessarily demonstrate that the goal of the closure objective – for contaminated materials to not pose a human and ecological risk – has been achieved. The activity of placing waste rock in the CDF, for example, does not confirm that these materials are no longer a risk to humans or the environment. Because many of the proposed closure criteria appear to be activities and do not clearly confirm that the closure objectives have been achieved,

¹⁴ See WLWB Online Registry for [Rayrock - Public Hearing Transcript from Day 2 of 3 - Apr 29 21](#). See page 59.

the Board has decided that the closure criteria listed below must be revised or included as closure activities in the “Approach” section in Version 2.1 of the RAP. Any revised closure criteria are to confirm/demonstrate how the goals of the closure objectives (e.g., physical stability, human or ecological risk, and reintegration with the surrounding landscape) will be achieved. The Board notes that this recommendation also applies to closure criteria that CIRNAC-CARD proposed during the public review and which the Board also identified as closure activities (i.e., GNWT-ENR comments 14, 15, 28, 45, 50, 51, 53 (i.e., the fourth closure criterion), 56 (i.e., the first closure criterion); TG comment 45 and 53).

- ***RAP Revision 18: CIRNAC-CARD is to revise the following closure criteria to state how the closure objective will be achieved, or move them to the “Approach” section in Version 2.1 of the RAP:***
- a) The third, fourth, sixth, and seventh closure criteria of closure objective 1-3 about risk discussions, adherence to the Project Governance Agreement, and the revegetation plan;***
 - b) The first and second closure criteria of closure objective 1-4 about incorporation of Tłıchq input and involvement of the Kwetłı̄paà Elders Committee, and other Tłıchq Elders and youth;***
 - c) The second closure criterion of closure objective 1-5 about scarification;***
 - d) The fourth criterion of closure objective 1-6 about communication of residual risks to communities;***
 - e) The second closure criterion of closure objective 1-7 about mitigation of impacts for areas of archaeological significance;***
 - f) The first, second, third, and fourth closure criteria of closure objective 2-1 about placement of waste rock and impacted soils in the CDF and the soils and spilled tailings that will be removed or left in place as decided with the Tłıchq Government;***
 - g) The fifth closure criterion of closure objective 2-2 about guidelines for waste management;***
 - h) The first closure criterion of closure objective 2-5 about cover construction, contractor specifications, and drawings;***
 - i) The first, fourth, and fifth closure criteria of closure objective 4-1 about discharge location, disposal of water treatment waste, and communication of monitoring results;***
 - j) The first closure criterion of closure objective 4-2 about backfilling of the sump;***
 - k) The first closure criterion of closure objective 4-3 about monitoring of dust concentrations;***
 - l) The first closure criterion of closure objective 4-4 about the demobilization;***
 - m) The first, second, and third closure criteria of closure objective 5-1 about WSCC acceptance of the SSHASP, incident prevention, and documentation of pre-blast surveys;***
 - n) The first and fourth closure criteria of closure objective 5-2 about reclamation slopes and stockpiled overburden;***
 - o) The first closure criterion of closure objective 6-1 about removal of culverts, signage, temporary barriers etc.;***
 - p) The first closure criterion of closure objective 6-2 about widened haul roads; and***

- q) Closure criteria proposed in response to GNWT-ENR comments 14, 15, 28, 45, 50, 51, 53 (i.e., the fourth closure criterion), 56 (i.e., the first closure criterion) and Tłjchq Government comments 45 and 53.**

Verification Site Tour with the Tłjchq Government

Multiple closure objectives included the closure criterion “Verification Site Tour with the Tłjchq Government”. Similar to the section on closure activities above, this closure criterion is also an activity and GNWT-ENR recommended that it be revised to specify that the Tłjchq Government is satisfied with the remediation (comment 17). The Tłjchq Government also recommended that several closure objectives include a closure criterion stating that the Tłjchq Government confirms the objective has been met (TG comments 42, 59, 60, 68, 69, and 70). In response, CIRNAC-CARD proposed revisions (e.g., GNWT-ENR comment 17 and TG comment 60) that the Board notes are also closure activities that do not confirm that the closure objective has been achieved. As the Tłjchq people are the primary land user of this area, and receiving confirmation from the Tłjchq Government would contribute to the reduction in the level of perceived risk related to the site, the Board has decided that all closure criteria that include a verification tour be revised accordingly. For the same reasons, the Board is of the opinion that this closure criterion be included for other closure objectives as recommended by the Tłjchq Government (i.e., closure objective 6-2). To be clear, it is the Board’s view that a closure criterion of this nature does not transfer liability from CIRNAC-CARD to the Tłjchq Government.

- **RAP Revision 19: CIRNAC-CARD is to revise all “Verification Site Tour” closure criteria to “Confirmation from the Tłjchq Government as a result of a site tour that the closure objective has been achieved”, and add this closure criterion to closure objective 6-2 in Version 2.1 of the RAP.**

Other Verifications and Inspections

Version 2.0 of the RAP includes a closure objective focused on the safety and physical stability of remediated and disturbed areas (i.e., closure objective 1-5). During the public review, the Tłjchq Government recommended that CIRNAC-CARD include a closure criterion to this closure objective stating that a qualified person confirms that remediated and disturbed sites are physically stable (comment 52). In response, CIRNAC-CARD stated it had consulted with the Tłjchq Government and would include this recommendation as an item in the closure objective’s “Approach”. The Board notes that the revision proposed by CIRNAC-CARD is an effective and appropriate closure criterion because it confirms that the aim of the closure objective (i.e., physical stability) has been achieved. Therefore, the Board has decided that CIRNAC-CARD is to include the language proposed in CIRNAC’s response as a closure criterion in Version 2.1 of the RAP.

- **RAP Revision 20: CIRNAC-CARD is to include a closure criterion to closure objective 1-5 stating that a site inspection by a qualified person confirms physical stability of remediated and disturbed areas in Version 2.1 of the RAP.**

The Tłıchq Government also recommended that closure objective 1-5 include a closure criterion stating that a specialist can confirm that revegetation appears to be self-sustaining (comment 52). CIRNAC-CARD did not state whether it agreed with the Tłıchq Government's recommendation but noted that revegetation success would be defined in the Rayrock Revegetation Plan. As discussed in Section 3.3.1, of this Reasons for Decision (i.e., Closure Criteria to be Provided in Other Plans/Reports), the Revegetation Plan is not an appropriate submission in which to define revegetation success because it is not a submission required by the Licence and Parties will not have input on it through the public review process. In addition, as discussed in Section 3.2.2 (i.e., Temporal Component for Revegetation), CIRNAC-CARD stated that there is uncertainty around how long it will take for vegetation covers to establish at Rayrock. Given these reasons, the Board is of the opinion that an inspection by a specialist would ensure that revegetation efforts are successful. Therefore, the Board has decided that CIRNAC-CARD is to include a site inspection closure criterion for revegetation in closure objective 1-5 per the Tłıchq Government's recommendation (comment 52).

- ***RAP Revision 21: CIRNAC-CARD is to include a closure criterion stating that an inspection by a specialist identifies that revegetation appears to be self-sustaining in closure objective 1-5.***

Version 2.0 of the RAP also includes a closure objective for contaminated materials at Sun Main (i.e., closure objective 2-2). During the public review, GNWT-ENR recommended that the first closure criterion associated with this closure objective be revised (comment 29). This closure criterion focuses on the removal of visible staining or waste rock in the vicinity of the Sun Main mine shaft, and GNWT-ENR recommended that it be revised to define "in the vicinity". In response, CIRNAC-CARD stated that the criterion would be revised to state that "all visible hydrocarbon-stained soil and waste rock at Sun Main will be placed under the Sun Main Waste Rock Cover". The Board agrees with removal of "in the vicinity of the mine shaft" because the area where contaminated materials will be removed is not specific and measurable. The Board also agrees with CIRNAC-CARD's inclusion of "all visible hydrocarbon-stained soil and waste rock at Sun Main" because it is more comprehensive and ensures that all potentially contaminated soils and waste rock at the site are included in closure. However, the Board notes that because the revised closure criterion does not include a verification method (e.g., a site tour or inspection), it is unclear how the removal of all potentially contaminated soils and waste rock will be confirmed. Therefore, the Board requires that CIRNAC-CARD include a verification method to the first closure criterion of closure objective 2-2 in Version 2.1 of the RAP.

- ***RAP Revision 22: CIRNAC-CARD is to revise the first closure criterion of closure objective 2-2 as proposed in response to GNWT-ENR comment 29 and include a verification method in Version 2.1 of the RAP.***

Post Remediation Human Health and Ecological Risk Assessment (HHERA)

Several closure objectives included a closure criterion that a post-remediation Human Health and Ecological Risk Assessment (HHERA) would confirm a reduction of risk at Rayrock and Sun Main. During the public review, CIRNAC-CARD committed to removing this closure criterion in response to WLWB staff (comment 4), despite other recommendations to revise this criterion so that it states how the closure

objective will be achieved (TG comments 43, 53, and 55; GNWT-ENR comments 11, 25, and 26) and that risks have been reduced to a safe level (GNWT-ENR comment 26).

The Board notes that WLWB staff were not implying that the HHERA closure criterion needed to be removed from the RAP and no other Parties recommended that it be removed. Rather, because Parties recommended revisions to this closure criterion to make it more specific and relevant to the closure objectives, the Board is of the opinion that there is interest in having it remain in the RAP. In addition, because HHERA's assess site risks, and the closure objectives focus on remediated areas being safe and not presenting a human or ecological risk, the Board is of the opinion that the results of the HHERA are an appropriate tool to clearly demonstrate that the closure objective has or hasn't been achieved. Therefore, the Board requires CIRNAC-CARD retain and revise the HHERA closure criterion in Version 2.1 of the RAP so that the results confirm that closure objective has been achieved (e.g., project components do not present a human or ecological risk) and/or risks have been reduced to a safe level.

- ***RAP Revision 23: CIRNAC-CARD is to retain and revise the post-remediation HHERA closure criterion for closure objectives 1-1, 1-6, 2-1, 2-2, and 2-3, to include "the project components do not present a human or ecological risk" in Version 2.1 of the RAP.***

Gamma Threshold for Waste Disposal

Version 2.0 of the RAP included a closure objective for hazardous wastes (i.e., closure objective 2-6). During the public review, ECCC recommended that the second criterion of closure objective 2-6 include a gamma threshold indicating which wastes will be placed in the CDF or disposed of off site (comment 2). CIRNAC-CARD disagreed, noting that the gamma threshold and waste screening methods are noted in the RAP and Waste Management Plan (WMP), and that criteria used for segregation has no bearing on the closure status. The Board notes that closure criteria must be measurable so it is clear when the closure objective has been achieved. Therefore, to ensure the closure criteria are both clear and measurable, and the threshold for disposing of waste in the CDF or off-site is explicit, the Board requires CIRNAC-CARD to revise the second closure criterion in closure objective 2-6 to include the gamma threshold for waste disposal in Version 2.1 of the RAP.

- ***RAP Revision 24: CIRNAC-CARD is to revise the second closure criterion of closure objective 2-6 to include the specific gamma threshold for determining whether hazardous waste will be disposed of in the CDF or off-site.***

3.3.4 Other Closure Criteria Revisions

Communication of Residual Site Risks

During the public review, the Tłıchq Government recommended that the second and fourth closure criteria associated with the closure objective on communication of residual site risks (i.e., closure objective 1-1) include audio and video media (comment 48). CIRNAC-CARD did not state whether these media would be included in the closure criteria, and the Board is unclear whether there is agreement or disagreement with the Tłıchq Government's recommendation. Because the closure objective focuses on

effective communication of site risk to the public, and these are generally more accessible methods of communication, the Board is of the opinion that including audio and video media in the closure criteria would be helpful. As the Tłıchq Government made this recommendation, the Board requires CIRNAC-CARD to engage with the Tłıchq Government on the inclusion of audio and visual media in the closure criteria and identify the results of this discussion in the conformity table of Version 2.1 of the RAP.

- **Engagement Decision 5: CIRNAC-CARD is to engage with the Tłıchq Government on the inclusion of video and audio media to closure criteria in closure objective 1-1.**
- **RAP Revision 25: CIRNAC-CARD is to indicate the outcomes of discussions regarding Engagement 5 in the conformance table of Version 2.1 of the RAP and revise the RAP accordingly.**

Referencing Plans and Plan Sections

During the public review, CIRNAC-CARD committed to revising several closure criteria to reference information in more than one plan, specific versions of plans, and specific sections of plans (GNWT-ENR comments 38 and 39; TG comment 63). The Board notes that the content of a plan may change over time, so referencing two separate plans, and/or a specific version of a plan, may result in relevant details being different and introducing uncertainty as to which plan should be followed. In addition, the Board notes that section numbers in plans may change, particularly as plans are revised and new versions are submitted. Should section numbers change, information will not be easily located by readers and the closure criteria may require revisions to stay up to date. Therefore, the Board has decided that references to specific plan versions or sections are to be removed from the closure criteria in Version 2.1 of the RAP.

- **RAP Revision 26: CIRNAC-CARD is to revise all closure criteria so they specify one plan and do not reference specific versions or section numbers in Version 2.1 of the RAP.**

Referencing the Surveillance Network Program (SNP)

The Board identified closure criteria that included references to the Surveillance Network Program (SNP) where it may not be applicable. For example, the fifth criterion associated with closure objective 5-1 is about post-remediation SNP monitoring for blasting residues and erosion. The Board notes that monitoring of borrow and quarry sites is not a requirement of the current SNP, so referencing post-remediation SNP monitoring is inaccurate and may create confusion. An example of an appropriate closure criterion could be “post-remediation water quality results meet monitoring objectives for X consecutive years in accordance with the Post-Closure Monitoring and Maintenance Plan”.

- **RAP Revision 27: CIRNAC-CARD is to remove references to the SNP that do not reflect the Licence from the closure criteria in Version 2.1 of the RAP.**

3.4 Reporting to WLWB

All of the proposed closure objectives included a “Reporting to WLWB” section, which included a list of Licence submissions associated with the closure objectives. During the public review, Parties made

recommendations on this section and CIRNAC-CARD proposed revisions that are outlined in the sub-sections below.

3.4.1 Revisions to the Reporting Section

Post-Closure Monitoring and Maintenance Plan

Version 2.0 of the RAP included two closure objectives for the CDF, and the Tłıchq Government recommended that a post-construction CDF annual performance report be included in the reporting section of one of these closure objectives (i.e., closure objective 3-2; comment 63). CIRNAC-CARD disagreed, stating that a CDF annual performance report is not a requirement in the Licence and noted that reporting on the CDF Design Plan will be included in the Annual Water Licence Report. The Board notes that CIRNAC-CARD's commitment to monitor the CDF is also captured by Schedule 7, Condition 3 for the PCMMP. Therefore, the Board requires the PCMMP to be included in the "Reporting to WLWB" section of this closure objective to clarify current reporting requirements.

- ***RAP Revision 28: CIRNAC-CARD is to include the PCMMP in the "Reporting to WLWB" section of closure objective 3-2 in Version 2.1 of the RAP.***

Archaeological Surveys

Version 2.0 of the RAP included a closure objective for borrow excavation and quarry blasting, and the Tłıchq Government recommended that the "Reporting to WLWB" section include a requirement to conduct archaeological surveys prior to developing borrow areas and the quarry (comment 67). CIRNAC-CARD disagreed and stated that "archaeological risk assessments of all potential areas of work have already been completed and have been submitted and reviewed by the TG". The Board agrees with CIRNAC-CARD and believes that the Tłıchq Government's recommendation is addressed through closure objective 1-7, which ensures areas of archaeological significance are protected and undisturbed by remedial activities and includes an Archaeological Impact Assessment (AIA) in the "Reporting to WLWB" section. The Board also notes that CIRNAC-CARD's Land Use Permit includes standard archaeological buffer, overview, and impact assessment conditions (Conditions 57, 60, and 61) to protect any archaeological sites. Therefore, the Board has no requirements for this section of this closure objective.

3.5 Submission of Version 2.1 of the RAP

Version 2.0 of the RAP was submitted as an addendum to Version 1.0 and directs readers to sections of Version 1.0 for additional information. For example, the preferred closure and reclamation option and method for the Rayrock mine openings (i.e., Section 5.2.1 of Version 2.0 of the RAP) directs readers to Section 5.3.8 of Version 1.0 of the RAP for details.

During the public review, the Tłıchq Government recommended that Version 2.0 of the RAP be amalgamated with Version 1.0. The Tłıchq Government also noted that the information presented in Version 2.0 does not capture recent changes to the remediation plans and that there are contradictions between information presented in Version 2.0 and Version 1.0 of the RAP (see Tłıchq Government Cover

Letter and TG comments 1, 7, 20, 22, 23, 29, and 36). In response, CIRNAC-CARD noted that the costs to develop a new RAP similar to Version 1.0 could not be supported by the Project and proposed to submit Version 1.0 and a revised Version 2.0 addendum as Version 2.1 of the RAP. With Version 2.1, CIRNAC-CARD also proposed to summarize significant changes to the Project since Version 1.0 of the RAP, and to provide any changes to designs or construction approaches in Design and Construction Plans. The Letter of Support included with CIRNAC-CARD's responses from the Tłıchq Government generally supported this approach.

The Board notes that the RAP is the plan where Parties should be able to understand what remedial activities are occurring at the site, what the closure objectives and criteria are, and which components they apply to. Because Version 2.0 of the RAP references a significant amount of information from Version 1.0, and Parties identified inconsistencies between the two documents, the Board is of the opinion that submitting a revised addendum would create similar issues as initially identified by the Tłıchq Government. The Board also recognizes that submitting Version 2.1 of the RAP in a format similar to Version 1.0 would not be financially feasible for CIRNAC-CARD. Given these considerations and because the Board has decided that RAP Version 2.1 is to be revised to focus on providing up-to-date information on remediation activities and revised closure objectives and criteria, the Board is of the opinion that a submission that addresses specific Schedule requirements, as well as a revised Appendix A, would be appropriate for Version 2.1 of the RAP. Given that Schedule 7, Condition 2 (g), (h), (i), (j), (k), and (l) focus on remediation, closure, and the status of the Project, the Board has decided that CIRNAC-CARD is to provide information that addresses these requirements in Version 2.1 of the RAP. All other Schedule 7, Condition 2 conditions (e.g., that relate to background information and environment conditions) that have not changed since Version 1.0 and/or Version 2.0 of the RAP can be referenced in a conformance table for Version 2.1.

- ***RAP Revision 29: CIRNAC-CARD is to submit Version 2.1 of the RAP in a format that: addresses requirements of Schedule 7, Condition 2 (g), (h), (i), (j), (k), and (l); clearly describes how remediation and closure activities have changed since Version 1.0; and includes a revised Appendix A. The conformance table of Version 2.1 may reference specific sections within Versions 1.0 or 2.0 to address all other Schedule 7, Condition 2 requirements so long as this information has not changed. If information has changed, Version 2.1 of the RAP is to include these changes.***

The Board notes that no submissions (e.g., plans or reports) or project activities are dependent on the approval of the RAP, and because a number of revisions and engagement activities are required, Version 2.1 of the RAP may take several months to prepare. As remediation activities are anticipated to commence in May 2023 and there are several submissions required before that time, the Board expects that submission of Version 2.1 of the RAP may not be possible in the coming months. Given these reasons, the Board has decided that Version 2.1 of the RAP is to be submitted on or before November 30, 2023.

- ***Decision 8: CIRNAC-CARD is to submit Version 2.1 of the RAP no later than November 30, 2023.***

3.6 Revisions to Reflect Commitments and/or Recommended Editorial Updates

In response to recommendations received during the public review, CIRNAC-CARD committed to editing various sections of the RAP. The Board is not concerned with the proposed revisions because they reflect Parties' recommendations and/or because CIRNAC-CARD engaged with Parties during the public review to inform the revision. These include the following comments:

- CNSC comment 1;
- GNWT-ENR comments 2, 3, 4, 6, 7, 8, 9, 10, 12, 13, 16, 18, 21, 29, 31, 32, 36, and 41;
- Tłıchq Government comments 12, 13, 16, 20, 26, 28, 30, 31, 32, 49, 52, and 54.

Given that CIRNAC-CARD agreed to revising the Plan in response to these comments, the Board requires CIRNAC-CARD to include these revisions in Version 2.1 of the RAP.

- ***RAP Revision 30: CIRNAC-CARD is to revise Version 2.1 of the RAP to incorporate the commitments made in response to CNSC comment 1; GNWT recommendations 2, 3, 4, 6, 7, 8, 9, 10, 12, 13, 16, 18, 21, 29, 31, 32, 36, and 41; Tłıchq Government comments 12, 13, 16, 20, 26, 28, 30, 31, 32, 49, 52, and 54.***

3.7 Comments Addressed

A number of comments were not addressed in this Reasons for Decision because responses were deemed by the Board to have addressed the clarification and/or question or were identified as not requiring a response (e.g., lists of references, letters to support comments, requests for confirmation or clarification, and/or were related to other submissions). The comments include the following:

- CNSC comments 2, and 3;
- ECCC comment 1, 5, and 6;
- GNWT-ENR comments 1, 20, 47, 58, and 59;
- Tłıchq Government comment 2, 4, 5, 8, 9, 10, 11, 14, 15, 19, 21, 24, 27, 34, 35, 38, 41, 53, 60, 61, 65, and 71;
- WLWB staff comments 3, 5, 6, 7, and 8; and
- WRRB comment 1.

Signed the 3rd day of March 2023, on behalf of the Wek'èezhì Land and Water Board



Mason Mantla
Chair, Wek'èezhì Land and Water Board



Witness