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July 15th, 2021

File: W2020L8-0003 and W2020X0005

Mr. Ryan Fequet
Executive Director
Wek'èezhii Land and Water Board
#1-4905 48th St., Yellowknife, NT X1A 3S3

Dear Mr. Fequet,

**Re: KWETII?AÀ (RAYROCK) REMEDIATION PROJECT
TYPE A (W2020L8-0002) and LAND USE PERMIT (W2020X0005)
PROPONENT'S CLOSING ARGUMENTS**

1.0 INTRODUCTION

Crown-Indigenous Relations and Northern Affairs Canada – Contaminants and Remediation Division (CIRNAC) would like to thank the Tłıchq Ndek'áowo and the Government of the Northwest Territories as Interveners in the Rayrock Water Licence process. CIRNAC values the time and commitment the Interveners have dedicated to this Project in recent years, and looks forward to future collaboration throughout project execution and into post-closure monitoring.

2.0 REGULATORY PROCESS

The Type A Water Licencing process has required a substantial effort on the part of CIRNAC and our Technical Team. As the WLWB is aware, CIRNAC must also navigate a regulatory process administered by the Canadian Nuclear Safety Commission (CNSC), as mandated by the *Nuclear Safety and Control Act*. As a Licensee under a Waste Nuclear Substance Licence WNSL-W5-3208.0/2027, CIRNAC must comply with the terms and conditions of the Licence Condition Handbook issued with the Licence, and CIRNAC is ultimately responsible for the health and safety for all parties working on or visiting the Rayrock mine site, in accordance with the *Radiation Protection Regulations*. A summary of the WNSL requirements is outlined below:

- i) The licensee shall implement and maintain a management system;
- ii) The licensee shall implement and maintain a program for reporting to the Commission or a person authorized by the Commission;
- iii) The licensee shall implement and maintain a physical design plan;
- iv) The licensee shall implement and maintain a radiation protection program;
- v) The licensee shall implement and maintain a conventional health and safety program;



- vi) The licensee shall implement and maintain an environmental monitoring program;
- vii) The licensee shall implement and maintain an emergency management and fire protection program; and
- viii) The licensee shall implement and maintain a waste management program.

CNSC has been conducting site inspections on a three year schedule and will be commencing annual site inspections in 2021 which will carry through remediation. CIRNAC is currently under a direction from CNSC to repair the Tailings Containment Area caps and has incorporated that work into the Remedial Action Plan.

CIRNAC anticipates that the WLWB will consider this dual regulatory burden that the Project faces and set reasonable requirements for management plans and reporting. Rayrock will remain under federal custodianship and CNSC regulatory authority in perpetuity.

The application for a Water Licence and new Land Use Permit were submitted to the WLWB in September 2020, along with the Remedial Action Plan, and the following management plans:

- Waste Management Plan;
- Spill Contingency Plan;
- Community Engagement Plan;
- Sediment and Erosion Control Plan;
- Emergency Management and Fire Plan, and
- Wildlife Management and Monitoring Plan.

The application and plan review process produced two-hundred and thirty seven (237) comments. CIRNAC provided responses to all the comments in an attempt to better explain the remedial process. CIRNAC was then requested to submit the two Human Health and Environmental Risk Assessments (HHERAs) for public review. The HHERAs produced one hundred and fourteen (114) comments, for which CIRNAC provided detailed responses.

A Technical Session was held on January 26th-28th, 2021 to review the information provided to date and to provide technical updates for the Project. A total of twenty-one (21) information requests were produced by the WLWB, with all but one directed to CIRNAC.

Interventions were received by the WLWB from the GNWT and the Tłı̨chǫ Government. CIRNAC responded to the twenty-three (23) recommendations of the GNWT and the thirty-six (36) recommendations from the Tłı̨chǫ Government.

A Public Hearing was held from April 28th to 30th, 2021. CIRNAC responded to six questions from the GNWT, 30 questions from the Tłı̨chǫ Government and forty-seven questions from WLWB. The Public Hearing also produced seven (7) Undertakings, of which four were responded to by CIRNAC.



5.0 PROJECT CLOSURE OBJECTIVES AND CLOSURE CRITERIA

CIRNAC notes that there has been significant discussion through the licencing and permitting process about the scope and application of “Closure” criteria. Closure criteria are an important part of the life cycle of a development project, as they show the planning for the eventual end of the development. As noted in the introduction for the *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories* (MVLWB/AANDC, 2013), closure planning became a requirement when “... the public became increasingly concerned about the growing number of insolvencies and abandoned mine sites that were creating significant environmental liabilities ...”. CIRNAC (under several previous Department names) and the Regulatory Boards developed the Closure and Reclamation Plan process to protect the Crown (as representing the people of Canada) from potential liabilities from licenced developments.

In essence, the provision of MVLWB-defined closure criteria for a CIRNAC remediation project is requiring CIRNAC to explain what measures they will take to make certain that project liabilities do not, at the close of the project, become the responsibility of Government of Canada, as represented by CIRNAC. CIRNAC remediation projects are, exclusively, the end product of the developmental concern expressed in the guidelines, where the residual environmental liabilities are being picked up by the public. The Government of Canada assumed responsibility for the Rayrock Remediation Project sites upon their abandonment and addressing residual environmental liabilities is a public burden. For the majority of the remedial projects, the additional “development” (i.e. set up of a work camp, winter access routes, etc.) that occurs through the closure and reclamation process is incidental to the residual liability from the mining development.

The development of closure objectives and closure criteria for CIRNAC remediation projects may still be appropriate under certain circumstances: to define aspects of projects (such as conditions required for closure of a water licence) or to define site conditions required for jurisdictional transfer, such as devolution of a remediation site from federal to territorial jurisdiction. CIRNAC would like to point out that the storage of uranium tailings at Rayrock requires a Waste Nuclear Substance Licence, and it is likely that this reality would be an impediment to the transfer of the Rayrock site to a third party. It is expected that Rayrock will remain under federal custodianship in perpetuity. Based on these considerations, CIRNAC has re-developed its closure criteria for the Rayrock project to better define the conditions for closure of the water licence. Other “closure” objectives and criteria may be negotiated between interested parties and CIRNAC, but they should not be part of the Water Licence conditions.

In the GNWT Closing Arguments, the GNWT stated that they recommended refinement to the Project Specific Closure Criteria (provided in Table C1 of the RAP) from Information Request #8 (“While the GNWT acknowledges that progress was made in CIRNAC’s response to IR #8, further refinement is needed” and “the GNWT recommends that the Board not approve the closure criteria proposed in Table C1.”) (GNWT Closing Arguments Section 9.0). GNWT had no objection or comment to the Updated Closure Criteria provided in CIRNAC’s response to Undertaking #3, or the Updated Table C1



provided as part of that Undertaking. GNWT had opportunity to review these criteria and to provide comments in the closing arguments. CIRNAC disagrees with the GNWT recommendation “that the Board require closure criteria in Table C1 be resubmitted for public review and Board approval post-issuance of the Water Licence”. Since this Table was resubmitted pre-issuance, and GNWT did not provide comments on the revised C1 in their closing arguments, CIRNAC feels that the Updated Table C1 provided as part of Undertaking #3 should be accepted.

CIRNAC believes that the Remedial Action Plan, developed jointly with the Tłı̨chǫ, presents a unique balance of Western science and engineering and Traditional knowledge. The RAP is our road map for the remediation of project sites and is intended to address the preferences and opinions of all rights and stakeholders, while reflecting the shared Project Vision between CIRNAC and the Tłı̨chǫ:

To effectively carry out the remediation of the Rayrock project sites and shrink the "Zone of Avoidance" (an area the Tłı̨chǫ avoid due to their concerns over site impacts) mapped out by the Kwetı̨ł̨aà Elders around the Rayrock site, such that the Tłı̨chǫ will feel comfortable returning to traditional land use practices in the area.

Our vision will be upheld through:

- Transferring knowledge of traditional land use on and around the sites;
- Addressing human health and environmental hazards associated with the site;
- Improving environmental quality on and downstream of the sites;
- Addressing site risks through our remedial actions; and
- Involving the Tłı̨chǫ at all stages of the project, from remedial options planning, design development, remediation execution to post-closure monitoring.

This project vision is independent of the water licencing process, and CIRNAC acknowledges that the Tłı̨chǫ may not feel comfortable returning to traditional land use practices in the area until many years after the close of the Water Licence.

As communicated throughout the regulatory process, it is CIRNACs position that submission of a Closure and Reclamation Plan in addition to the Remedial Action Plan submitted with the Water Licence Application is not necessary. Design details for engineered structures will be communicated to the WLWB through the Design Plans outlined in the Water Licence. Should the WLWB require separate documentation of additional information related to the Remedial Action Plan, CIRNAC could prepare an addendum to the Remedial Action Plan that provides these clarifications as was proposed during the Public Hearing (Public Hearing Transcript Day 2).

6.0 BETA-GAMMA LAKES

CIRNAC understands that the Tłı̨chǫ are concerned about Beta and Gamma lakes. As stated during the Public Hearings, neither Beta or Gamma lakes were identified as presenting unacceptable risk to human health or the environment through the Human Health Ecological Risk Assessment process, and did not therefore, form part of the



Remedial Action Plan. CIRNAC stands by the HHERA; it was completed by a qualified and experienced Risk Assessor, who is well respected in the field of abandoned mine risk assessment, and former Uranium mines in particular. The draft HHERA underwent a rigorous review process involving experts from Health Canada and the Canadian Nuclear Safety Commission, as well as the IPRP and the Tłıchǫ Government. During the WLWB regulatory process, CIRNAC was also requested to submit the HHERA for public review and detailed responses were provided to reviewer comments, including comments provided by the Tłıchǫ Government. Still, CIRNAC was open to discussing Tłıchǫ concerns further, and this occurred during the in-person KEC workout in February 2021. During the meetings, CIRNAC committed to exploring options for making improvements in the areas of concern identified by the Tłıchǫ, and this commitment was captured in the Public Hearings.

7.0 WATER QUALITY MONITORING

CIRNAC notes that the GNWT has recommended bi-weekly sampling in its Closing Arguments. The GNWT recommends that the sampling frequency for Surveillance Network Program (SNP) stations 1663-1 through to 1663-6, 1663-8 and 1663-10 occur once every two weeks during open water, and sampling for metals if suspended sediment becomes elevated. The GNWT recommends that water quality sampling for total metals (parameters that have EQC) be conducted in the event of a turbidity and/or TSS action level exceedance (Sections 5.1 and 7.3 respectively). CIRNAC will use the term “every two weeks in place of bi-weekly for clarity.

CIRNAC has developed a water monitoring program that collects data that will be used to show that work on the site will have no measurable effect on water quality. Work at Mill Lake, where contaminated materials will be handled is fully contained within the Mill Lake Basin. Work outside of Mill Lake Basin will involve very limited volumes of spilled tailings with low metal impacts (which are being moved to the Mill Lake Basin), and placement of naturally-occurring borrow material that has not been affected by mine activities. Because the work at the Tailings Containment Areas consists primarily of repairs to the existing covers, CIRNAC does not believe that water quality monitoring associated with tailings deposition is required.

During the Public Hearings, CIRNAC asked the WLWB why sampling every two weeks and including metal concentrations for sediment events were necessary. With respect to sampling every two weeks, the GNWT response reads as thus from the transcript: “ ... specifically to the duration or the frequency of monitoring, it's more to monitor effects of the remediation works as opposed to recovery of the project of the site as a result of the remediation project.” Since remediation works near these Lakes only involve placement have borrow material, CIRNAC is unclear what effects of the remediation we are intended to monitor. While it's understood that an increase in suspended solids will often produce a short-term increase in total metals (especially iron and aluminum), the intent of the SNP is showing long-term stability. CIRNAC believes that increasing sampling frequency to pick-up short term changes caused by sediment, is outside the objective of the water



quality monitoring; that is to say, short term sedimentation has minimal environmental impact.

With respect to measurement of total metals during sedimentation events, the GNWT response from the transcript reads: “ ... collecting this data from a sedimentation event, it would help in the later interpretation of water quality data that would be collected from the other monitoring programs, for example, the SNP and AEMP. GNWT feels that this information is important in being able to add to the interpretation of water quality trends in those programs.” CIRNAC would like to point out that only a complete failure of the Sediment and Erosion Control Plan (SECP) response framework would result in a long-term water quality effect that would be picked up in the SNP and potentially result in environmental impacts. This scenario would not be allowed to happen during construction, as the SECP is designed to prevent sedimentation events and to respond to increases in the sediment levels. The concentrations of associated metals in the sediment is immaterial to the SECP response. CIRNAC does not understand how the information would be important. If the Water Licence requires the collection of this data, CIRNAC respectfully requests greater clarity from the Board as to how the data will be utilized.

8.0 SHERMAN LAKE WATER USE

CIRNAC notes that in Section 2.0 of the GNWT Closing Arguments, the use of Sherman Lake water as a diluent was not previously discussed during this Water Licence process, and as such, the GNWT does not support the use of freshwater for the purposes of dilution.

As has been described through the regulatory process, the Mill Lake sediments will be pumped as a slurry from the Lake and into geotubes for dewatering. Water balances have been calculated to find the optimum volume of supernatant water required to make the slurry; however, it was recently noted that in a dry summer or under other conditions where supernatant water is reduced to sub-optimum volumes, make-up (diluent) water from Sherman Lake would be required to maintain the slurring process. In the Type A Water Licence Application, CIRNAC identified that Sherman Lake would be used as a water source for the purpose of camp operations, washing and dust control. CIRNAC feels that the use of Sherman Lake water as a diluent in the sediment remediation process is in the spirit of general water use descriptions provided in the licence application. Diluent water sourced from Sherman Lake would be used without change to the proposed annual withdrawal volumes presented in the Type A Water Licence Application. It is unclear why the GNWT does not support the use of freshwater for this purpose.

In Section 3.0, GNWT then recommends that CIRNAC identify mitigations and control measures that will be implemented in the event of delays with CDF construction following the dewatering and treatment of Mill Lake water. As stated during the Public Hearings, CIRNAC believes these mitigations could be provided in the Sediment and Erosion Control Plan.



In CIRNAC's response to the GNWT intervention, we misunderstood that the basis of Section 2.0 recommendation 2 "GNWT recommends that CIRNAC-CARD identify mitigations and control measures that will be implemented in the event of delays with CDF construction ..." was actually based on concerns expressed in the following: "Once Mill Lake is drained, and the water treated and discharged to Sherman Lake, the contaminated sediments at the bottom of Mill Lake will be exposed. Any delays in construction of the CDF will prolong the exposure of these sediments, potentially creating additional challenges for the project." (GNWT Intervention, Section 2.0). As noted in Section 5.3.1.6 of the Rayrock Remedial Action Plan (AECOM, August 2020), and as shown in presentations during the February Technical Sessions, the process for sediment removal involves "Pumping of the surface water and organic sediment ...". Supernatant water has always been a required part of the sediment treatment process, and sediment treatment cannot begin until the CDF is built, so the scenario of a "delay in CDF construction" would result in Mill Lake having a water level that is 1.5 to 2 metres below the discharge elevation and 1 to 1.5 metres in depth. This will not produce "extended exposure of the Mill Lake sediments, and potential erosion and transport of these sediments into Mill Creek and Sherman Lake." (GNWT Closing Argument Section 3.0).

9.0 RISK COMMUNICATION

Within the closing arguments for the Tłı̨ch̨ Government, the desire to lead future risk communication was highlighted in several sections:

- 1.1.1, page 3 – The TG will continue work on this issue through the TG led risk communication ...
- 1.2.2 Page 8 – CIRNAC officials also agreed that the Tłı̨ch̨ should play a lead role in several areas of ongoing remediation, monitoring, and risk communication work associated with the Rayrock Remediation Project.

While CIRNAC is still committed to the Tłı̨ch̨ Government playing a lead role, Water Licence conditions and any amended Community Engagement Plan must acknowledge CIRNAC as the responsible party in communicating the condition of the Rayrock Remediation Project sites.

Part of the communication of risk is the accurate and consistent description of site features to properly convey the appropriate level of risk, and consideration of the Public perception of terms before they are used to communicate risk. Starting in the Tłı̨ch̨ Government Intervention and continuing through the Public hearing and Closing Arguments, Beta and Gamma Lakes have been referred to as "tailings lakes" and "tailings water bodies". From a communication point of view, tailings lakes, tailings ponds and associated descriptions have the meaning of water bodies where tailings are deposited. Although Beta Lake and Gamma Lake proximate to the Rayrock tailings facilities, they have been impacted by runoff and not by active deposition, so calling them tailings water bodies imparts a greater perception of risk than is indicated by the data collected to date. In the Tłı̨ch̨ Government comments on the Water Licence, it was suggested that Tailings Storage Area be used in place of Tailings Containment Area. Again, this change implies



that the tailings are not contained, which implies a greater risk from the TCA location than all data collected to date would indicate. TCA is the terminology used in our WNSL.

The factual and accurate communication of risk is a challenging endeavor. Rayrock has environmental issues that need to be addressed; however, the volumes and concentrations of contaminants of concern at the Rayrock site represent a very localized (not a regional) risk to human and environmental health. The CIRNAC proposed remedial action is equal to or greater than the action that would be proposed were the site located anywhere else in Canada. Communication of the actual risk posed by the site will be a continuing challenge throughout the project life.

10. SUMMARY

Kwetìṛàà (Rayrock) carries heavy significance with the Tłı̨chǫ. Before the mine opened, the Tłı̨chǫ used the lands and waters surrounding the Rayrock project sites extensively for hunting, fishing and gathering. Since the mines closed, the Tłı̨chǫ have been concerned about the effects mining had on land and water, and they avoid these areas when conducting traditional land use activities.

Tłı̨chǫ Elders have expressed particular concern over possible impacts on fish, wildlife and plants, on and downstream of the Rayrock site. Tłı̨chǫ leadership has told CIRNAC they are concerned about possible downstream impacts on drinking water quality and community health in Behchokǫ.

During the Public Hearings, CIRNAC heard stories from Tłı̨chǫ citizens who were impacted by the Rayrock mine in the past, either from working at the mine or by living near the mine site. CIRNAC also heard Tłı̨chǫ Leadership and Elders' desire to have the project sites cleaned up properly. CIRNAC shares the same goal and believes that the collaborative approaches used to date will ensure that a proper cleanup of the sites is completed.

CIRNAC is committed to working together with the Tłı̨chǫ and all regulatory authorities to make Rayrock and associated sites safe again, to restore Elder trust in the land and water, and to encourage a return to traditional land use for future generations.

If you require any additional information, please do not hesitate to contact us.

Respectfully submitted,

Rasel Hossain

Senior Manager, CIRNAC-CARD

cc: Ron Breadmore, Project Manager, CIRNAC-CARD
Andrew Richardson, Project Officer, CIRNAC-CARD