



CIRNAC Comments to NIRB Re: Sabina Gold and Silver Corp.'s Back River Project 2022 Annual Report



GCDOCS # 113917693



Nunavut Regional Office
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Your file - Votre référence
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Our file - Notre référence
GCDOCS #113917693

June 8, 2023

Guillaume Daoust
Technical Advisor II
Nunavut Impact Review Board
P.O. Box 1360
Cambridge Bay, NU, X0B 0C0
Via electronic mail to: info@nirb.ca

Dear Guillaume Daoust,

Re: Comment Request for Sabina Gold and Silver Corp.'s Back River Project 2022 Annual Report

On April 24, 2023, as per Section 12.7 of Nunavut Agreement (the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada*) and the Back River Gold Mine Project Certificate [No. 007], the Nunavut Impact Review Board (NIRB) requested parties to review Sabina Gold and Silver Corp. (Sabina)'s Back River Project 2022 Annual Report with respect to effects and compliance monitoring.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) conducted a review of the 2022 Annual Report and related documents in areas under its mandate and jurisdiction pertaining to effects and compliance monitoring. On this basis, CIRNAC would like to provide the comments below for NIRB's consideration.

CIRNAC appreciates the opportunity to review Sabina's Back River Project 2022 Annual Report and looks forward to working with the NIRB and Sabina through any future reviews for this project. Should you have any questions, please do not hesitate to contact Alexandre Chaikine by email at alexandre.chaikine@rcaanc-cirnac.gc.ca.

Sincerely,



Amal Roy
A/Manager, Impact Assessment



1. Effects Monitoring

The 2022 Annual Report has been evaluated to assess the measurable changes to the valued components/indicators under CIRNAC areas of interest, compared to the potential effects that were predicted to result from a proposed development of Back River Project, taking into account the Final Environmental Impact Statement (FEIS), previous years' monitoring reports and the requirements included in the Project Certificate. The assessment considered the following:

- a. Whether the conclusions reached by Sabina Gold & Silver Corp. in the Back River Project 2022 Annual Monitoring Report are valid; and,**
- b. Any areas of significance requiring further supporting information or any changes to the monitoring program which may be required**

Within the areas under its mandate and jurisdiction, CIRNAC did not identify any information or data that would invalidate the conclusions reached by Sabina in the 2022 Annual Report. Nonetheless, CIRNAC has identified areas that require clarification and is providing the following comments for the NIRB's and Sabina's consideration:

Comment Number:	CIRNAC #1 (On-going)
Subject:	Permafrost Mapping and Monitoring
Reference:	<ul style="list-style-type: none">Back River Project Certificate (PC) Term and Condition (T&C) #11: Terrestrial Environment – Permafrost Mapping and MonitoringBack River Project 2022 Annual Report, Page 3-1, 4-30 to 4-31Sabina's Responses to 2021 Annual Report Comments
Issue/Rationale:	<p>Project Certificate T&C #11 states that <i>"During construction, the Proponent shall, on an annual basis, provide additional permafrost mapping information documented in fulfillment of this Term and Condition in the Proponent's annual report to the Nunavut Impact Review Board."</i></p> <p>Sabina did not address comments related to CIRNAC #1 (Permafrost Mapping and Monitoring) in their Responses to 2021 Annual Report Comments. Sabina did not provide permafrost mapping in their 2022 Annual Report.</p> <p>In their 2022 Annual Report, Sabina stated that construction activities were underway in 2022. These construction activities included construction for fuel tanks at Goose Property and at the Marine Laydown Area (MLA); expansion of the Goose Property and MLA site road network up to approximately 20 km; and completion of pads for the permanent camp, plant, and fuel storage areas.</p> <p>No information was included in the 2022 Annual Report with regard to permafrost and ground temperature data during the 2022 construction activities listed above. The annual permafrost monitoring/mapping information is required to document permafrost</p>



	<p>temperature, thickness of seasonal thaw, and amount of ground ice in the project development area. This information should be made available to inform the detailed design of project infrastructure.</p> <p>In their 2022 Annual Report, Sabina states that as part of the 2023 scope of work, they will revisit past thermistor and Ground Temperature Cables (GTCs), and will take readings where possible, and generate an initial draft of Goose site Thermal Monitoring Plan. Sabina also describes that in 2023, GTCs will be installed within, upstream, and downstream of the proposed Primary Pond structure. It is unclear if Sabina is also considering installing new GTCs around the Project Area including both Goose and the MLA sites.</p>
Recommendation:	<p>CIRNAC recommends that Sabina:</p> <ol style="list-style-type: none"> Provide ground temperature/permafrost monitoring data for the fuel tank construction and other construction-related activities that occurred in 2022. Provide permafrost monitoring and ground temperature data collected during construction, and on any subsequent phases, in the future annual reports. Confirm what parts of the Project Area will be included in the 2023 Thermal Monitoring Plan.

Comment Number:	CIRNAC #2 (Ongoing)
Subject:	Permafrost Monitoring
Reference:	<ul style="list-style-type: none"> Back River Project Certificate T&C #12: Terrestrial Environment – Permafrost Monitoring Back River Project 2022 Annual Report, Page 3-1, 4-32 to 4-35 Sabina's Responses to 2021 Annual Report Comments
Issue/Rationale:	<p>Sabina did not address comments related to CIRNAC #2 (Permafrost Monitoring) in their Responses to 2021 Annual Report Comments.</p> <p>CIRNAC acknowledges that it may not be feasible to monitor permafrost conditions over the entire potential development area, but monitoring should take place in key areas that are or will be developed. In addition to the main project infrastructure, these include the existing roadways, quarries, and waste storage areas.</p> <p>In the 2022 Annual Report, Sabina stated that construction activities were underway in 2022, including construction for fuel tanks at Goose and at the MLA, that the Goose and MLA site road network was expanded up to approximately 20 km of all-weather roads, and that pads were completed for the permanent camp, plant, and fuel storage areas. However, no information was included in the 2022 Annual Report with regard to permafrost and ground temperature data. The annual permafrost monitoring information is required to monitor changes in permafrost conditions and to monitor the effects of the Project on permafrost conditions.</p>



	<p>In the 2022 Annual Report, Sabina stated that all available ground temperature data was reviewed, and a summary of that data was presented in the 2022 Annual Geotechnical Inspection (AGI) report that was appended to the 2022 Annual Report (Appendix B).</p> <p>In their 2022 Annual Report, Sabina stated that as part of the 2023 scope of work, they will revisit past thermistor and Ground Temperature Cables (GTCs), and will take readings where possible, and generate an initial draft of Goose site Thermal Monitoring Plan. Sabina also described that in 2023, GTCs will be installed within, upstream, and downstream of the proposed Primary Pond structure. It is unclear if Sabina is also considering installing new GTCs around the Project Area including both Goose and the MLA sites.</p>
Recommendation:	<p>CIRNAC recommends that Sabina:</p> <ol style="list-style-type: none"> Begin permafrost monitoring in developed and planned areas throughout the Project to establish baseline information and supplement the data collected during the Environmental Impact Statement phase. Submit the updated data to NIRB as part of the annual reporting. Provide ground temperature/permafrost monitoring data for the fuel tank construction and other construction-related activities that occurred in 2022. Provide permafrost monitoring and ground temperature data collected during construction, and on any subsequent phases, in the annual reports. Provide the summary of ground temperature data that was said to have been reviewed in the 2022 Annual Geotechnical Inspection (AGI) report. Confirm what parts of the Project Area will be included in the 2023 Thermal Monitoring Plan.

Comment Number:	CIRNAC #3 (On-going)
Subject:	Sensitive Landform Mitigation and Monitoring
Reference:	<ul style="list-style-type: none"> Back River PC T&C #13: Terrestrial Environment - Sensitive Landform Mitigation and Monitoring Back River Project 2021 Annual Report, Page 3-1 and 4-33 to 4-34 Sabina's Responses to 2021 Annual Report Comments Back River Project 2022 Annual Report, Page 3-1 and 4-36
Issue/Rationale:	Reporting requirements for PC T&C #13 state that Sabina shall provide the results of additional geotechnical investigations, along with any associated mitigation and monitoring measures, in the annual report to the NIRB.



	<p>Sabina did not address comments related to CIRNAC #3 (Sensitive Landform Mitigation and Monitoring) in their Responses to 2021 Annual Report Comments.</p> <p>Sabina stated in the 2021 Annual Report that geotechnical investigations were undertaken in 2021 (geotechnical drilling at Goose), but the results were not provided to the NIRB. In CIRNAC's comments to the 2021 Annual Report, CIRNAC recommended that Sabina provide the results or status update of the geotechnical investigations undertaken in 2021 in the 2022 Annual Report. The results of the 2021 geotechnical investigations were not provided in the 2022 Annual Report.</p>
Recommendation:	CIRNAC recommends that Sabina provide the results or status update of the geotechnical investigations undertaken in 2021, and any subsequent geotechnical investigations, in the 2023 Annual Report.

Comment Number:	CIRNAC #4 (On-going)
Subject:	Waste Management Plan
Reference:	<ul style="list-style-type: none"> • Back River PC T&C #14: Terrestrial Environment – Waste Management Plan • Back River Project 2022 Annual Report, Page 4-37 • Back River Project 2021 Annual Report, Pages 4-32 and 4-35 • Sabina's Responses to 2021 Annual Report Comments • Sabina's Responses to 2020 Annual Report Comments
Issue/Rationale:	<p>Sabina did not address comments related to CIRNAC #4 (Waste Management Plan) in their Responses to 2021 Annual Report Comments.</p> <p>As per the 2020 Annual Report, Sabina submitted the Landfill and Waste Management Plan (LWMP) to the NIRB in 2017 and was expected to update and submit it again to the NIRB following approval of the amendment to the water licence. The 2021 Annual Report indicates that the plan was updated and approved by the Nunavut Water Board (NWB), but further updates are required to address current practices at the Project site. Sabina is currently updating the plan and will provide it to NWB and the NIRB. Sabina has not indicated when they plan on submitting the updated plan (third version).</p> <p>As per the 2022 Annual Report, Sabina submitted an updated LWMP (August 2022) to the NWB on September 1, 2022, for review and approval. The 2022 Annual Report indicates that once approved by the NWB, the updated LWMP will be submitted to the NIRB in the following year's annual report. The updated LWMP was not included in the 2022 Annual Report.</p>



	Additionally, T&C#14 states “ <i>the Proponent shall provide a Waste Management Plan that describes how the local environment, including permafrost integrity and water quality, will not be harmed by wastes at project landfills</i> ”. The Landfill and Waste Management Plan (2017), which was included in the 2020 Annual Report, but not the 2021 Annual Report or the 2022 Annual Report, appears to discuss how permafrost has influenced design methodology, but it does not thoroughly consider how the Project impacts permafrost integrity as intended in T&C #14. To comply with T&C #14, impacts to permafrost integrity and appropriate mitigations shall be considered and included in the LWMP.
Recommendation:	CIRNAC recommends that Sabina: <ul style="list-style-type: none"> a) Provide a timeline for the anticipated submission of the updated Landfill and Waste Management Plan to the NIRB. b) Include a statement describing how permafrost integrity will be impacted, and how these impacts will be managed/mitigated, at the project landfill when completing updates to the Landfill and Waste Management Plan.

Comment Number:	CIRNAC #5 (On-going)
Subject:	Waste Management Pre-construction, Construction and Operations Standard Operating Procedures (SOP)
Reference:	<ul style="list-style-type: none"> • Sabina’s Responses to 2021 Annual Report Comments • Back River Project 2021 Annual Report – Part 2 - Appendix F, • 2021 Pre-Construction Wildlife Mitigation and Monitoring Program Report Appendix 5D, Waste Management Preconstruction, Construction, and Operations SOP, Section 6 • FEIS Volume 10, Part 12 – Hazardous Materials Management Plan, Section 7.3.4 • FEIS Volume 10, Part 10 – Waste Management Plan, Section 7.3 • FEIS Volume 10, Part 10 – Waste Management Plan, Section 7.4
Issue/Rationale:	<p>Sabina did not address comments related to CIRNAC #5 (Waste Management Pre-construction, Construction and Operations Standard Operating Procedures (SOP)) in their Responses to 2021 Annual Report Comments.</p> <p>In the Waste Management Preconstruction, Construction, and Operations SOP—submitted in Appendix F of the 2021 Annual Report—it is not clear whether hazardous waste will be stored separately from other waste materials, which they should be. The SOP is also inconsistent with statements on waste segregation in the FEIS (i.e., FEIS Vol 10, Part 10, Section 7.3.4). The SOP should clearly define how hazardous waste will be handled and stored and should be consistent with the commitments made in the FEIS.</p>
Recommendation:	CIRNAC recommends that Sabina:



	<p>a) Clarify which of the waste materials listed in the Waste Management Preconstruction, Construction, and Operations SOP can be stored indoors as opposed to at the lined containment facilities.</p> <p>b) Replace references to “hazardous materials” with “hazardous waste materials” where appropriate.</p> <p>c) Update the SOP to clarify that hazardous waste materials or incompatible waste streams will be kept separate from nonhazardous wastes while the Camp Manager (or designated Personnel) performs the waste consolidation to align with the FEIS Volume 10, Part 10 and 12.</p>
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Comment Number:	CIRNAC #6 (On-going)
Subject:	Hydrogeology and Groundwater Quantity and Quality – Geotechnical Characterization Program
Reference:	<ul style="list-style-type: none"> • Back River PC T&C #18: Hydrogeology and Groundwater Quantity and Quality - Geotechnical Characterization Program • Back River Project 2022 Annual Report, Pages 4-44 to 4-45 • Sabina's Responses to 2021 Annual Report • Back River Project 2021 Annual Report, Pages 4-41 to 4-42
Issue/Rationale:	<p>Reporting requirements for PC T&C #18 state that Sabina shall provide the results of an infill geotechnical characterization program, along with associated mitigation measures, in the annual report to the NIRB. Sabina stated that geotechnical investigations were undertaken in 2021, but the results were not provided in the 2021 Annual Reports to the NIRB.</p> <p>Sabina's 2022 Annual Report stated that the 2021 geotechnical investigation “<i>did not focus on the TSF [Tailings Storage Facility] Containment Dam but the other key infrastructure locations</i>” and therefore the geotechnical investigation report was not provided. Sabina then stated that the remaining infill geotechnical investigation will be completed “<i>immediately prior to TSF Dam Construction if constructed</i>”. Sabina further stated that “<i>Sabina's currently approved mine plan no longer contains a TSF structure and its associated dam</i>”.</p> <p>CIRNAC acknowledges Sabina's response to the 2021 Annual Report where Sabina stated that “<i>should Sabina elect to develop the TSF for the purpose of tailings storage, Sabina will implement this infill geotechnical program in compliance with T&C #18.</i>”</p>
Recommendation:	CIRNAC recommends that Sabina provide results of the infill geotechnical characterization program and any required mitigation measures in the Annual Report to the NIRB should construction of the Tailings Storage Facility Dam resume.



Comment Number:	CIRNAC #7 (On-going)
Subject:	Hydrological Features and Hydrogeology -Thermal Monitoring
Reference:	<ul style="list-style-type: none"> • Back River PC T&C #20: Hydrological Features and Hydrogeology • Back River Project 2022 Annual Report, to NIRB, Pages 29 to 30 • Back River Project 2021 Annual Report, to NIRB, Pages 4-40 • Back River Project 2020 Annual Report, to NIRB, Pages 4-45 • FEIS Addendum-Vol 6-Pt 1-IA2E Freshwater Environment, Pages 6-4 and 6-11 • NIRB Final Hearing Report Back River Gold Mine Project, Section 4.6 – Hydrological Features and Hydrogeology
Issue/Rationale:	<p>In the 2021 Annual Report, Sabina indicated that a thermal monitoring plan is in preparation. CIRNAC notes that though the plan is in preparation, there are deficiencies in the thermal modelling that has been completed to date, and care should be taken to ensure the adequacy of the thermal baseline data. CIRNAC notes that, though there seems to be baseline data between 2007 and 2014, hydrological and hydrogeological processes are not static and can vary widely from season to season, year to year, and decade to decade. For this reason, data collected between 2007 and 2014 is insufficient to adequately characterize the baseline hydrological characteristics.</p> <p>In their response to CIRNAC's comments, Sabina stated that the baseline was deemed "adequate" during the FEIS process, committed to collecting additional hydrology data, and indicated that an updated groundwater model will be provided in August.</p> <p>CIRNAC notes that even though the results of the analysis are adequate, it is expected that they will support the development of groundwater models for further assessment, including extension of the model domain to -900 metres, and work to model and evaluate total metals concentrations in groundwater prior to and during operations. The groundwater model results and further assessments appear to not have been completed, even though the comment is noted by Sabina as being addressed.</p>
Recommendation:	<p>CIRNAC recommends that Sabina:</p> <ol style="list-style-type: none"> Explain the rationale for discontinuing Hydrology Baseline Reports beyond the year 2014. Resume the Hydrology Baseline Reports where construction has not started. Provide a discussion of hydrology data collection in future annual reports. Provide the updated groundwater modelling information.



Comment Number:	CIRNAC #8 (On-going)
Subject:	Aquatic Effects Monitoring Plan
Reference:	<ul style="list-style-type: none"> • Back River PC T&C #21: Groundwater and Surface Water Quality, Sediment Quality and Freshwater Aquatic Environment – Aquatic Effects Monitoring Plan • Back River Project 2022 Annual Report, pages 4-50 to 4-51 • Back River Project 2021 Annual Report, Pages 4-46 to 4-47 • Back River Project 2020 Annual Report, Pages 62 - 63 • Sabina's Responses to 2020 and 2021 Annual Report Comments
Issue/Rationale:	<p>Project Certificate T&C #21 requires an Aquatic Effects Monitoring Plan (AEMP) to include “<i>sufficient sampling and monitoring programs to appropriately characterize the receiving environment to ensure that adequate data is available to assess impact predictions made within the Final Environmental Impact Statement.</i>” Reporting requirements for Project Certificate T&C #21 state that Sabina should provide results of the AEMP program “<i>annually thereafter or as may otherwise be required by the NIRB.</i>”</p> <p>The results of the 2021 data were not provided in the 2021 Annual Report or the 2022 Annual Report as recommended by CIRNAC. The AEMP was also not provided in the 2021 Annual Report. CIRNAC notes that the updated plan, as well as the results of the AEMP, are required to evaluate whether the impact predictions in the FEIS are still valid.</p> <p>Section 4.5.7 of the 2022 Annual Report does not mention the completion or stakeholder review of the 2021 AEMP, however the Aquatic Baseline Report completed by WSP (2022) in Appendix C states that it was completed. The results of the 2021 AEMP should be added to the 2022 Annual Report so that it is captured for future reviews and reference purposes.</p> <p>Additional baseline data including ice-cover and open water sampling in Goose Lake, Propeller Lake, and Reference B Lake, as well as open water sampling in outflow streams from each of the lakes was collected in 2022 in response to technical comments on the Aquatic Baseline Synthesis Report by Kitikmeot Inuit Association (KIA), CIRNAC, and Environment and Climate Change Canada (ECCC), and to support the next update to the AEMP. The results of the 2022 baseline sampling were provided in Appendix C.</p> <p>Based on Section 4.5.7 of the 2022 Annual Report, the AEMP is still being updated to include a number of changes such as commitments made and the terms and conditions of the Type A Water license, update to the Project description, recommendations based on Aquatic Baseline Synthesis Report, and updates to reflect an updated mine plan alignment with additional modelling completed in</p>



	2022. CIRNAC understands that the full AEMP will be implemented when discharge activities start, with results submitted annually; however, until that time, any updated AEMP reports should be included in future annual reports.
Recommendation:	CIRNAC recommended that Sabina: <ul style="list-style-type: none"> a) Provide the summarized results of the 2021 data collection in the next annual report. b) Include any updated AEMP reports in future annual reports.

Comment Number:	CIRNAC #9 (On-going)
Subject:	Vegetation Monitoring Plan
Reference:	<ul style="list-style-type: none"> • Back River PC T&C #34: Vegetation – Vegetation Monitoring Plan • Back River Project 2022 Annual Report, Pages 4-78 to 4-79 • Back River Project 2022 Annual Report, Appendix E - Vegetation Monitoring Program • Sabina's Responses to 2021 Annual Report Comments Back River Project 2021 Annual Report, Pages 4-73 to 4-74 • Back River Project 2021 Annual Report, Appendix F • Sabina's Responses to 2020 Annual Report Comments Pages 30-37 • Back River Project FEIS Addendum, Volume 5, Page 5-20
Issue/Rationale:	<p>In response to comments received on the Back River Project 2020 Annual Report, Sabina committed to amending the January 2020 Vegetation Monitoring Plan. An updated or amended Vegetation Monitoring Plan was not included (or referred to) in the 2022 Annual Report and the Vegetation Monitoring Program memo on the 2022 monitoring activities (Appendix E of 2022 Annual Report) does not state which monitoring plan it was conducted under.</p> <p>The 2022 Annual Report states that Sabina conducted invasive plant monitoring as part of the Vegetation Monitoring Program on July 2 to 11, 2022 (Appendix E). However, this appendix provides only baseline results of vegetation community composition within the ten new 1m x1m vegetation monitoring plots established due to proposed re-alignment of the Winter Ice Road. It also includes photos of the 1m x1m veg monitoring plots at MLA and Goose in 2022, as required under the 2020 Vegetation Monitoring Plan, however the photos provided are aerial photos which show very little detail and are insufficient for identification of invasive plant species.</p> <p>The 2022 Vegetation Monitoring Program report (Appendix E of 2022 Annual Report) says no invasive species were detected within the new Winter Ice Road (WIR) monitoring plots, however one vascular plant was identified only as a graminoid (a grass-type plant), with no genus or species provided. There are at least two grass-type plant species that are considered non-native/invasive in Nunavut but there</p>



	<p>is no explanation provided of how this unidentified species was determined to be non-invasive.</p> <p>The 2020 Monitoring Plan provides a schedule of required monitoring activities but does not provide the actual calendar years that each survey type will be completed.</p>
Recommendation:	<p>CIRNAC recommends that Sabina:</p> <ol style="list-style-type: none"> Provide a timeline for submitting the updated Vegetation Monitoring Plan to the NIRB. If the update is simply including the new 2022 WIR monitoring locations and an amended monitoring schedule, this should be clarified, and the plan resubmitted. Clarify if 2022 invasive species monitoring was limited to the ten new vegetation monitoring plots established along the WIR in 2022, or if surveys of larger Project areas were conducted. As part of vegetation plot monitoring, provide ground-level photo, with scale included, of all monitored plots, to aid in interannual comparison of vegetation communities. Provide a detailed schedule by calendar year for all plant-related survey requirements and include in the updated Vegetation Monitoring Plan. Clarify how unknown graminoid species detected in new 2022 WIR vegetation monitoring plots was determined to be non-invasive.

Comment Number:	CIRNAC #10 (On-going)
Subject:	Revegetation and Reclamation
Reference:	<ul style="list-style-type: none"> Back River PC T&C #35: Vegetation - Revegetation and Reclamation Back River Project 2021 Annual Report, Page 4-75 Back River Project 2022 Annual Report, Page 4-80
Issue/Rationale:	<p>Project Certificate T&C #35 requires Sabina to develop a progressive revegetation program and submit the program and results in their annual report to the NIRB. In the 2022 Annual Report, Sabina stated that the program was provided to the NIRB on December 13, 2021, but did not include the program or any results in the 2022 Annual Report.</p> <p>The 2022 Annual Report states that the 2021 Interim Closure and Reclamation Plan (ICRP) included a conceptual progressive revegetation program that was approved by the NWB and was provided to the NIRB on December 13, 2021. This ICRP was also stated to have been further updated in 2022/23 as part of the amendment application process and is currently under review by the NIRB.</p>



	In the 2022 Annual Report states, Sabina committed to providing information on revegetation strategies in fulfillment of PC T&C #36 in the annual report to the NIRB within three years from the commencement of construction. Based on the start of Project construction in 2020, information on the revegetation strategies should be provided to the NIRB in 2023.
Recommendation:	CIRNAC recommends that Sabina provide the progressive revegetation program and any results with future annual reports. This shall be provided in the 2023 annual report to the NIRB to meet PC T&C #36, which requires submission of this information within three years from the 2020 commencement of construction.

Comment Number:	CIRNAC #11 (On-going)
Subject:	Marine Environment – General
Reference:	<p>Back River PC T&C #62: Marine Environment – General</p> <ul style="list-style-type: none"> • Back River Project 2022 Annual Report • Back River Project 2021 Annual Report, Pages 4-117 to 4-118 • Back River Project 2020 Annual Report, Pages 4-108 to 4-109 • Sabina's Responses to 2020 Annual Report Comments • Back River Project FEIS, Supporting Volume 7, Page 2-33
Issue/Rationale:	<p>Sabina did not address comments related to CIRNAC #11 (Marine Environment – General) in their Responses to 2021 Annual Report Comments. In reviewing the 2021 Annual Report, CIRNAC recommended that Sabina provide the summarized results of the 2021 data collection, including, where available, mapping of sampling locations, sample collection notes, water quality data, analytical chemistry results in the next annual report. The 2021 results should be added to the 2022 Annual Report for review and reference purposes.</p> <p>Although there are many references to both baseline data collection and the 2021 sampling discussed above, the 2021 Monitoring Report did not present the data for analysis (i.e., mapping of sampling locations, sample collection notes, water quality data, analytical chemistry results, etc.).</p>
Recommendation:	<p>CIRNAC recommends that Sabina:</p> <ol style="list-style-type: none"> Provide the summarized results of the 2021 data collection in the next annual report. Include the annual AEMP reports in any future annual reports.



Comment Number:	CIRNAC #12 (On-going)
Subject:	Tailings Management Plan
Reference:	<ul style="list-style-type: none"> • Back River Project 2021 Annual Report, Page 4-41 • Back River Project 2021 Annual Report, Appendix K • Back River Project Responses to 2021 Annual Report Comments • Back River Project 2022 Annual Report, Page 4-42, 4-43
Issue/Rationale:	Sabina has updated the Tailings Management Plan (TMP) and has submitted it to the Nunavut Water Board for approval. But, as it was not submitted in the 2022 Annual Report to the Nunavut Impact Review Board (NIRB), the updated TMP was not reviewed.
Recommendation:	CIRNAC recommends that Sabina provide an updated version of the Tailings Management Plan to the NIRB, reflecting the current approved practices to be used on site, in future annual reports.

Comment Number:	CIRNAC #13
Subject:	Aquatic Baseline Report
Reference:	<ul style="list-style-type: none"> • Back River PC T&C #21: Groundwater and Surface Water Quality, Sediment Quality and Freshwater Aquatic Environment – Aquatic Effects Monitoring Plan • Aquatic Baseline Report, WSP 2022 - Appendix C
Issue/Rationale:	<p>The report states that the NWB reviewed the Aquatic Baseline Synthesis Report in 2020 and Sabina was committed to (as it relates to water quality):</p> <ul style="list-style-type: none"> • Collect water quality data in Propeller Lake in year 8 and to then collect 3 years of data. • Collect another year of under-ice water quality data in Goose Lake and Reference B Lake <p>The report states that the collection of additional data in 2021 and 2022 was to address these commitments; however, the 2021 report has not been provided for review. The 2022 report summarizes the baseline data collected in 2022 and not 2021. This presents a gap in the data provided for review through the Annual Reporting requirements.</p> <p>Additional baseline data including ice-cover and open water sampling in Goose Lake, Propeller Lake, and Reference B Lake, as well as open water sampling in outflow streams from each of the Lakes was collected in 2022 in response to technical comments on the Aquatic Baseline Synthesis Report. This included one under ice sampling event in April 2022 and two open water sampling events. Some data gaps were identified as part of the outflow stream sampling due to ice conditions.</p>



	<p>Section 2.3 states that samples were collected at 1.5 m and 3 m below ice surface due to “field crew error”. This error did not result in an impact to the data collected; however, to prevent such errors in the future, a lessons learned should be conducted with the field crew.</p> <p>Section 3 states that metals (primarily chromium) as part of the August sampling event at Reference B Lake were elevated in four samples and an exceedance was noted in one sample. It was reported that this data is not considered representative; however, no reasoning was provided. It was noted that some hold times were also exceeded.</p> <p>It is noted that the surface water results are compared to drinking water criteria. Has it been confirmed that lake water or water from the streams are used for drinking water? Or are these guidelines being used in the absence of surface water criteria for certain parameters?</p> <p>No recommendations were provided as part of the report. As this is still baseline sampling with the purpose to provide a more robust dataset for comparison in the future, uncertainties need to be removed where possible and field findings need to be confirmed as part of future sampling events.</p>
Recommendation:	<p>CIRNAC recommends that Sabina:</p> <ol style="list-style-type: none"> Provide the summarized results of the 2021 data collection in the next annual report. Conduct the stream sampling events when the streams are free of ice (open water) to prevent future data gaps. Conduct lessons learned with the project team to reduce field errors, data gaps, and exceeding hold times for laboratory analysis. Resample to confirm the concentrations of chromium at Reference B Lake. Provide the rationale for the selection of water quality guidelines.

Comment Number:	CIRNAC #14
Subject:	Spills
Reference:	<ul style="list-style-type: none"> Back River PC T&C #89: Accidents and Malfunctions - Spills Back River Project 2021 Annual Report, Section 4.4.2 – Unauthorized Discharges and Spills, Page 4-3 Back River Project 2021 Annual Report, Appendix F: 2021 Pre- Construction Wildlife Mitigation and Monitoring Plan Back River Project, Spill Contingency Plan, Final Environmental Impact Statement Supporting Volume 10: Management Plans, November, 2015, Revision G.1. Back River Project 2022 Annual Report, Section 4.4.2 – Unauthorized Discharges and Spills, Page 4-4 and 4.5.



	<ul style="list-style-type: none"> Back River Project 2022 Annual Report, Appendix I. Oil Pollution Emergency Plan
Issue/Rationale:	<p>Section 4.4.2 of the 2022 Annual Report indicates that there were unauthorized discharges or spills in 2022. Five discharges or spills are presented in Table 4.4-1. This Table presents information on the date of the occurrence, the substance lost, the volume lost, the cause, the location and mitigation measures. Four of these discharges/spills were reported as having been remediated while one is under investigation.</p> <p>When discussing spills within Appendix I. Oil Pollution Emergency Plan, spills are referred to using several units including litres, m³, and tonnes which could lead to confusion around the size of a spill event and associated response measures. Additional information required in relation to spill events including status of clean-up, reporting of the spill event, disposal/treatment locations for contaminated materials/product, post-spill monitoring/remediation activities and site photographs, is outlined in the Spill Contingency Plan. Where detailed reports are prepared in relation to spill events, these reports should be referenced in this Section and appended to the Annual Report.</p>
Recommendation:	<p>CIRNAC recommends that Sabina:</p> <ol style="list-style-type: none"> Where detailed reports are prepared in relation to spill events, append them to the Annual Report. Use consistent units (litres, m³, or tonnes) when discussing spill events to avoid confusion around appropriate response measures. Clarify wording in Section 8.5 - Contaminated Soil Treatment and Disposal – page 8-8 of Appendix I—when can soils be treated on site, where on site, when should they be sent for off-site treatment/disposal, testing requirements. Relevant details may be included in the Spill Contingency Plan and should be referenced within this Section.

2. Compliance Monitoring

a. Provide a summary of any compliance monitoring and/or site inspections undertaken in association with the project, including specifically:

i. Identify the terms and conditions from the Project Certificate which have been incorporated into any permits, certificates, licences or other approvals issued for the project, where applicable;

CIRNAC has a broad mandate for the co-management of water resources and the management of Crown land in Nunavut under the following applicable acts and regulations:

- The *Department of Crown-Indigenous Relations and Northern Affairs Act*;
- The *Nunavut Land Claims Agreement Act* and the *Nunavut Agreement*;
- The *Arctic Waters Pollution Prevention Act* and *Regulations*;
- The *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and *Regulations*; and
- The *Territorial Lands Act* and *Regulations*.



In terms of water management in Nunavut, CIRNAC has a number of different responsibilities. The Minister of Northern Affairs has a decision-making role with regards to the Nunavut Water Board (NWB)'s issuance of any Water Licences associated with a project. Furthermore, the Department participates as an intervenor in the water licencing process, providing advice and expertise.

When a proposed project is approved to proceed, CIRNAC is responsible for inspecting and enforcing any terms and conditions (T&Cs) contained within any Water Licence associated with the project.

CIRNAC has reviewed the Type 'A' and Type 'B' Water Licences associated with the project with respect to Project Certificate [No. 007] and has included a concordance table (Appendix A) that outlines how these Project Certificate T&Cs have been incorporated in the Water Licence.

In 2022, the projects activities and monitoring were conducted under the following Water Licences:

- Type A Water Licence 2AM-BRP1831,
- Type B Water Licence 2BC-BRP1819,
- Type B Water Licence 2BE-GOO2028,
- Type B Water Licence 2BE-GEO2025, and
- Type B Water Licence 2BE-MLL1722.

ii. A summary of any inspections conducted during the 2022 reporting period, and the results of these inspections:

CIRNAC's Water Resource Officer (WRO) conducted two inspections during the 2022 reporting period.

A summary of the inspection reports is presented below for NIRB's consideration.

June 19, 2022

Inspections were conducted at George Camp, Goose Camp and Marine Laydown Area. At George camp area, drill lubricants and other oils were found to be stored in a pop-up berm; garbage had significant pooling water with a visible sheen, hydrocarbon stains were noticed on the floor and hazardous materials were found to be stored inside. A major drill rig appears to have been leaking near the back of the shack and flora appears to be damaged from a chemical burn. The inspector asked the licensee to ensure the pop-up berm is not leaking, to repair or replace the leaking berm and submit a spill report for the seepage, to contain and remediate all contaminated soil from the garage and store it in an approved manner, to remediate the spill at Drill shack number 1486 and submit a spill report for the spill.

At the Goose Camp area some concerning items such as food waste, oil filters and a fuel tank on a welder were identified. The road leading to the water intake appeared to have signs of erosion and rutting and consists mostly of mud. At the site the drill waste was found to be deposited into a sump and the historical waste pile was sitting in ponding water and there appeared to be a visible sheen indicating hydrocarbon contamination. The inspector asked the licensee to implement erosion control measures at the water intake roads in order to prevent the entry of sediment into Goose Lake, to remove all hazardous and food wastes from the waste storage area and store them in an approved manner, to provide a plan to ensure the sump is operating as a sump as defined in the licence and no longer over flowing into the surrounding water bodies, provide an inventory of the historic waste pile, remove all waste from the ponding



water and ensure all hazardous waste is stored in secondary containment, ensure all hazardous waste and materials are stored in a way to prevent waste from entering water and is consistent with the approved management plan.

At MLA the Freight storage laydown had five totes of hazardous material outside of containment; the licensee appeared to be washing vehicles within 31m of ponding water; behind the main camp there was a fuel tank without a drip tray. The inspector asked the licensee to ensure all hazardous material is kept within secondary containment, no waste/water resulting from washing vehicles is entering water and/or causing erosion and to install drip trays below the fuel tank.

November 18, 2022

During the inspection of Goose camp, the inspector noticed a significant amount of ice in the collapsed hazardous waste berms near the incinerator, contaminated soil outside of containment. Since the June inspection, the licensee failed to properly contain this contaminated soil and additionally the licensee had added more contaminated soil to the site. Also, multiple types of hazardous materials were visible outside of containment near the portal shop such as Gear oil 75W90, ammonium nitrate and break Parts cleaner. The inspector asked the licensee to take care of the noted problems.

iii. A summary of Sabina's compliance status with regard to authorizations that have been issued for the project.

In 2022, the majority of instances of non-compliance related to the Water Licence and Nunavut Waters and Nunavut Surface Rights Tribunal Act S.C 2002, c.10 were resolved. CIRNAC Inspectors continue to work with Sabina to resolve the outstanding issues.

CIRNAC Inspectors reported that in 2022 there were five hydrocarbon spills reported to the NT-NU 24-Hr Spill Reporting Line.

CIRNAC will continue to work with Sabina to ensure compliance with all applicable water licence conditions associated with this project.



Appendix A: Project Certificate Terms and Conditions (T&C) incorporated into licenses or other approvals issued for the Project

NIRB Project Certificate No. 007 Term & Condition		Implemented in NWB Water Licence NO: 2AM-BRP1831
4	Sabina shall develop and implement an Incineration Management Plan that takes into consideration the recommendations provided in Environment Canada's Technical Document for Batch Waste Incineration (2010).	▪ Part B: Item f
7	The Proponent shall maintain a Mine Closure and Reclamation Plan designed to: identify the processes that may act upon the mine components after closure and reclamation so that they can be factored within the design and operation of the mine; ensure physical and chemical stability of mine components that remain after closure; ensure mine components that remain after closure will not require long-term active care; and consider future use and aesthetics of the area with the surrounding lands. This plan should include: <ul style="list-style-type: none"> a. An adaptive management component that documents monitoring and mitigation measures to ensure long-term containment of the Tailings Storage Facility and Waste Rock Storage Areas; b. Details for monitoring the thermal condition and stability of storage facilities; c. Details on the triggers for implementing alternative mitigation options; d. Details pertaining to ongoing monitoring and research being conducted to supplement the adaptive management protocols; e. Details on the plans to maintain the integrity of the groundwater quality within and adjacent to the Project; and f. Details on how the Proponent will carry out continued analyses over time to confirm or update the approximate fill time for the mine pits. 	▪ Part B: Item 14g
12	Sabina shall monitor the effects of the Project on permafrost conditions relative to Project infrastructure, including along the all-weather access road and associated roads, waste rock stockpile, trails and quarries. Should permafrost degradation be observed, the Proponent shall report on measures implemented to restore and promote permafrost integrity.	▪ Part 1, Item 10
13	Sabina shall undertake additional geotechnical investigations as required to identify sensitive landforms, modify engineering design for Project infrastructure (i.e., dikes, tailings storage facility, waste rock pile and landfill), and develop and implement preventative and/or mitigation and monitoring measures to minimize the impacts of the Project's activities and infrastructure on sensitive landforms. Plans for the investigations, mitigation and monitoring measures are to be included within appropriate management plans.	▪ Part 1, Item 10
15	The Proponent shall have in place a plan for the progressive reclamation of project components, areas, and infrastructure throughout the life of the Project. The plan shall detail: <ul style="list-style-type: none"> a. projected timelines for the reclamation of project features, methodologies for undertaking such activities, and monitoring measures to ensure the effectiveness of reclamation methods employed; b. specific measures for adaptive management and triggers for their application, should monitoring results reveal trends that could affect the reclamation and closure objectives; and, c. how Inuit Qaujimajatuqangit and Traditional Knowledge was collected, and used to inform closure plans and the design of project components. 	▪ Part B, Item 14 g



NIRB Project Certificate No. 007 Term & Condition		Implemented in NWB Water Licence NO: 2AM-BRP1831
17	<p>The Proponent shall conduct tests of the tailings and treatment sludge's as they are produced to evaluate the potential for remobilization of arsenic from these materials.</p> <p>Commentary: For clarity, the Proponent's testing is limited to grab sampling only and does not impose an obligation for continuous testing of tailings and treatment sludge. The parties also acknowledge that the reporting requirements apply to any remobilization of arsenic beyond levels predicted in the FEIS and FEIS Addendum.</p>	<ul style="list-style-type: none"> Part B, Item 14
18	<p>The Proponent shall undertake an infill geotechnical characterization program to determine the extent of the fractured bedrock contact zone and apply proposed mitigation measures as necessary. The program should include permeability testing, seepage analysis and planning for thermal monitoring of the western ridge, where appropriate.</p>	<ul style="list-style-type: none"> Part D, Item 4
19	<p>The Proponent shall, reflecting any direction from the Nunavut Water Board, maintain a saline water management plan which includes monitoring of thermal conditions, monitoring of saline water at the Goose site, and mitigation measures designed to address the potential for higher-than- predicted volumes of saline water inflows into the open pits and the underground mine, treatment and disposal methods. The plan should include accurate characterization of saline water inflows into the underground mine workings.</p>	<ul style="list-style-type: none"> Part E, Item 2
21	<p>Sabina shall update its Aquatic Effects Monitoring Plan (AEMP) to include, at a minimum:</p> <ol style="list-style-type: none"> Details regarding the monitoring of non-point sources of discharge, selection of appropriate reference sites, measures to ensure the collection of adequate baseline data at Meliadine Lake prior to and during construction activities, including information on chemical loading in the snowpack, and the mechanisms proposed to monitor for and treat runoff and sediment; A description of measures to be undertaken as relate to dustfall monitoring, designed in accordance with the following: <ol style="list-style-type: none"> To establish Phase 1 all-weather access road baseline data and a description of plans for data collection during Project operations for comparison; To facilitate comparison with existing guidelines; To assess the seasonal deposition (rates, quantities) and chemical composition of dust entering aquatic systems along representative distance transects of the all-weather access road and Rankin Inlet by-pass road; A description of water quality monitoring to be conducted at Little Meliadine Lake; and <p>Details regarding comparisons of results to be run against predicted values and the analysis of data to be undertaken on an annual basis, or as may be required.</p>	<ul style="list-style-type: none"> Part E, Item 15 Part 1, Item 2



NIRB Project Certificate No. 007 Term & Condition		Implemented in NWB Water Licence NO: 2AM-BRP1831
22	The Proponent shall, reflecting any direction from the Nunavut Water Board, maintain a Site Water Monitoring and Management Plan designed to: minimize the amount of water that contacts mine ore and wastes; appropriately manage all contact water and discharges to protect local aquatic resources; and, implement water conservation and recycling to maximize water reuse and minimize the use of natural waters. The plan should include monitoring that demonstrates contact water (runoff and shallow groundwater) from the ore storage and waste rock storage areas is adequately captured and managed, as per the Mine Waste Rock Management Plan.	<ul style="list-style-type: none"> Part B, Item 14
23	Sabina shall maintain an appropriate setback distance between project quarries and fish-bearing or permanent water bodies, or implement appropriate mitigation measures implemented by the Proponent in fulfillment of this Term and Condition in the Proponent's Annual Report to the NIRB.	<ul style="list-style-type: none"> Part E, Item 3
27	The Proponent shall provide bathymetry, depth, and location of proposed water withdrawal sites, volumes to be extracted, anticipated water level decreases, and fish habitat features within each waterbody proposed to be used for winter water withdrawal in support of the annual construction of the winter ice roads. If additional waterbodies are required the Proponent shall provide all required information on the additional proposed lakes prior to the use of the waterbodies.	<ul style="list-style-type: none"> Part E, Item 5
28	The Proponent shall equip all water intake hoses with a screen of an appropriate mesh size to ensure that fish are not entrained and shall withdraw water at a rate such that fish do not become impinged on the screen.	<ul style="list-style-type: none"> Part E, Item 7
62	The Proponent shall maintain a marine monitoring program at the Marine Laydown Area to enable identification of potential impacts of the Project on the marine environment and to inform adaptive management actions. The monitoring program shall be in line with the proposed monitoring in the Aquatic Effects Monitoring Program, or as required by applicable regulatory authorities. At a minimum, water sampling should include end of pipe and control area samples, collected on a regular basis to confirm salinity levels of the discharge and the receiving environment.	<ul style="list-style-type: none"> Part B, Item 14 Water Management Plan approved by NWB

