



Kugluktuk

Kelli Gillard
Manager, Project Monitoring
Nunavut Impact Review Board
P.O. Box 1360
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Bathurst Inlet
Kingaok

June 8th, 2023

Bay Chimo
Umingmaktok

**Re: Review of Sabina's 2022 Annual report for Back River Project
Certificate NIRB No. 007.**

Cambridge Bay
Ikaluktutiak

Dear Kelli Gillard, the KIA has reviewed Sabina's 2022 Annual Report for the Back River Project Certificate NIRB No. 007.

1) Compliance Monitoring:

Gjoa Haven
Okhoktok

The KIA's Framework Agreement (FA) and Inuit Impact and Benefits Agreement (IIBA) with Sabina Gold & Silver Corp. cover terms and conditions of NIRB Project Certificate 007.

Taloyoak

The Framework Agreement is a confidential agreement between KIA and Sabina that supersedes and replaces all previous contractual arrangements between both parties. Section 3.1 of the FA covers Terms and conditions of land use license and reporting.

Kugaaruk

Appendix A of Section 3.1 of the Framework Agreement specifies the details of annual reporting by Sabina to the KIA, which is summarized as follows:

Sabina is to provide an annual report to KIA providing details of its operations under any land use License, Advanced Exploration Lease and/or Commercial Lease covering the location and operations area of lands affected, and the nature of facilities and equipment at these sites. In addition, Sabina is to provide details of progressive reclamation or closure activities undertaken during the year and details of all permits, licenses, and authorizations from other regulatory bodies or agencies that are required for operations.

This annual report is to provide information on:

- Ground disturbances including land use activities for camps, infrastructure, equipment, winter roads and trails.
- Fuel and Chemical storage including Chemicals of Potential Concern inventory (COPC), fuel and chemical usage, and spill records.
- Drilling programs, locations, and methods.
- Water use and effects on water.



- Wildlife interaction, data logs, and summaries.
- Waste disposal, waste management practices, inventory of waste on site, and inventory of hazardous materials or non-combustible waste removed from site.
- Closure and reclamation progress associated with waste management, drilling, and ground disturbance along with associated costs.
- General information on annual inspection activities by staff and other agencies and their results, community consultations, future exploration work plans, submissions to NIRB, NWB, or NPC or other regulators related to mining activity, archaeological sites and burial grounds, and any incidents of storage or possession of alcohol and drugs on site.

Sabina has provided the KIA with the **Back River Project 2022 Annual Report for KIA Framework Agreement** in accordance with Appendix A to Schedule 3.1 of the Framework Agreement. This report is separate from the **Back River Project 2022 Annual Report for Project Certificate No. 007**, which was submitted, to NIRB.

The socio-economic impact of the project on affected communities of Nunavut is covered by the IIBA, which is summarized here.

Inuit Impact and Benefits Agreement (IIBA) – Summary.

On April 20, 2018, the Kitikmeot Inuit Association (KIA) and Sabina Gold & Silver Corp. entered into a comprehensive Framework Agreement for the development of the Back River Project area, which includes the Marine Laydown Area (MLA), Winter Road, and the Goose Lake advanced exploration camp, among other exploration and development targets. The Agreement is intended to provide long-term benefit and certainty to Inuit beneficiaries, long-term development, and tenure certainty to Sabina.

One of the major features of this comprehensive agreement is a publicly available Inuit Impact and Benefit Agreement (IIBA) for activities in the Back River Project area, which addresses socio-economic interests of Inuit in the region, including employment, contracting, and training.

The purpose of the IIBA is to satisfy requirements under article 26 of the NLCA with respect to Back River Project area. It is intended by the IIBA to provide benefits to Inuit arising from Sabina's operations that may fall below the threshold of a Major Development Project.

Under the IIBA, Sabina has a commitment to inform the KIA on a regular basis on both the socio-economic and ecosystem effects of their operations in the Kitikmeot region. Socio-economic effects are to be reported on a regular and timely basis through



the IIBA Implementation Committee, Sabina Liaison, and the IIBA Manager. Ecosystem effects is be reported through the Inuit Environmental Advisory Committee (IEAC) once established.

The Implementation of the Back River IIBA and the establishment of the Back River IIBA implementation Committee was accomplished on December 12, 2022. The KIA and Sabina have had three IIBA IC meetings to date. The IEAC will be formally established in July 2023, at the next IIBA IC meeting.

The 2022 Socio-Economic Monitoring Report submitted to NIRB was reviewed by KIA. The previous matters discussed in 2022 with Sabina on its socio-economic plan, guidance for incorporating community perspectives, traditional knowledge in the monitoring, and outfitting/guiding business consultation were reflected in the 2022 Socio-Economic Monitoring Report. KIA's specific comments and recommendations on this report are included in Section 2, Effects Monitoring b).

Inspection of Back River Project

The KIA conducted its site inspection the Back River Project from July 26 to 29, 2022. The KIA had conducted its inspection of Goose Lake Camp, the Marine Laydown Area (MLA), and George Lake Camp with Sabina staff. KIA's internal report were provided to Sabina Gold & Silver Corp.

Internal Report on Back River Project – July 26 to 29, 2022

Summary

The inspection of Goose Lake Camp, Marine Laydown Area (MLA) facilities, and George Lake Camp was conducted from July 26 to 29 as per established inspection schedule. John Roesch and Skye Lacroix of KIA, and Merle Keefe of Sabina Gold & Silver Corp. had conducted the inspection. Eighty (81) site components out of 82 components were inspected in accordance with KIA's established schedule at all three locations.

Overall, the Goose Lake Camp and MLA are being maintained in good condition while furthering development of the mine site. The Umwelt access road still needs to be raised to 1.5 metres in height. The two temporary bridges will be removed this winter and be replaced with culverts. Weirs will be installed in six to eight locations to slow the flow of water and to provide places for Char to rest when going up stream.

Culverts at Echo crossing will be removed, and a berm will be constructed for the contact water pond adjoining Umwelt Road. The culverts will be moved to the other



side of the berm. Sabina has removed the Tailings Storage Facility (TSF) from its mine site plan and will use Echo pit for tailings storage. More culverts will be added to the location Echo crossing culverts will be moved to.

Past slumping by the generators at Umwelt has been fixed and the pad built up. The temporary saline pond for recirculated mine water at the portal has been removed and saline storage tanks are being used underground. Snow fencing should be installed around the portal to prevent snow accumulation. A berm should also be constructed to prevent water inflow into the portal.

The Umwelt mine site pad is built up to grade and needs surface finishing. The 10 ML tank and liner is installed. Crush will be added on top of the liner. The permitted land farm is next to the mine site pad near the 10 ML tank. Priority should be given to its construction for the remediation of contaminated soil.

The MLA is in good condition, but its pads and roads need to be regraded. New camp accommodations have been constructed which house sleeping quarters, dry, washrooms, and kitchen.

The George Lake Camp is in fair condition and some clean-up and organization has taken place. Further reorganizing and cleaned up is needed. Various materials from scrap metal to drilling oil and transmission fluid need to be inventoried with much of it backhauled from site. Old pallets should be disposed of or burned.

A new airstrip should be built away from the camp and the old airstrip repurposed for reorganizing the camp. The road to the new core storage site should be built up and a culvert added where water flows over the road.

Compliance Status

In 2022, Sabina Gold & Silver completed several activities such as:

- Secured project funding and made formal construction decision for the Goose Mine, to begin full construction activities in 2023;
- Constructed 10 ML fuel tanks at MLA and Goose, including containment;
- Expanded Goose and MLA site road network;
- Completed pads for permanent camp, plant, and fuel storage;
- Completed approximately 1500 m of exploration underground ramp;
- Initiated pre-stripping at Echo Open Pit;
- Organized all major equipment and materials required for construction (i.e., either procured, marshalled, delivered or in transit); and



- Environmental monitoring and baseline programs including atmospheric, archaeology, water quality, fisheries, wildlife, geochemical/ geotechnical, and vegetation program.

Sabina had made a construction decision in September 2022 after receiving financing. Sabina had made full payment to KIA for land access under the Framework Agreement and is implementing the Back River IIBA with the establishment of the IIBA Implementation Committee (IIBA IC), December 2022, and the Inuit Environmental Advisory Committee (IEAC), July 2023. Full construction had commenced in 2023 with continued on-going exploration. Overall, Sabina Gold & Silver Corp. is following its permits, licenses, and agreements.

Some project certificate conditions are considered to be only partially compliant by KIA's wildlife consultant whereas our other consultants find that Sabina has presented adequate information to demonstrate that the Back River Project has complied with project certificate terms and conditions.

Several of our wildlife consultants issues have been brought up in previous reviews of the Back River Annual Reports to NIRB and KIA will seek to address these identified issues with Sabina as the project moves forward.

2) Effects of Monitoring:

a) Whether the conclusions reached by Sabina in the 2022 Annual Report Are Valid.

KIA's consultants in the areas of wildlife, fisheries, water quality, and geotechnical engineering reviewed the 2022 Annual Report for Back River Project Certificate NIRB no, 007 and the following documents:

- Appendix A. Figures.
- Appendix B. 2022 Annual Geotechnical Inspection Report.
- Appendix C. Aquatic Baseline Report.
- Appendix D. Sabina's Back River Blasting Plan for Plant Site and Portal Decline.
- Appendix E. Vegetation Monitoring Program.
- Appendix G. 2022 Pre-Construction Wildlife Mitigation and Monitoring Plan.
- Appendix H. 2022 Socio-Economic Monitoring Report
- Appendix I. Oil Pollution Emergency Plan.
- Appendix J. Marine Monitoring Report.



As well as:

- WMMP Commitments;
- Facilities Camera Monitoring;
- Incidental Wildlife Observation SOP; and
- Incidental Terrestrial Wildlife Observations 2022.

Overall, our consultants find Sabina’s conclusions in the 2022 Annual Report are valid, with several of the Project Terms of Conditions partially being met.

Sabina has presented adequate information to demonstrate the Back River Gold Mine Project has mostly complied with project certificate terms and conditions. There are several reoccurring issues KIA’s wildlife consultant has consistently brought up that need to be addressed so that project certificate conditions are fully compliant. These project certificate conditions are 32, 34, 35, 41, 45, 46, 58, and 64.

Our consultants comments and recommendations concerning these project certificate conditions will be presented in the next section of our response to NIRB.

- b) **Any areas of significance requiring further supporting information or changes to the monitoring program, which may be required.**

1.0 Back River 2022 Annual Report – Wildlife & Vegetation

1.1 KIA-NIRB-01

Review Comment Number	KIA-NIRB-01
Subject/Topic	Beginning of Project Construction Phase
References	<p>Sabina, Back River Project, 2022 Annual Report (March 31, 2023)</p> <ul style="list-style-type: none"> • NIRB Annual Report Executive Summary, pp. iv and vi • Appendix G, 2022 Pre-Construction Wildlife Mitigation and Monitoring Program Report • Project Certificate Conditions No. 41, 45, 46 <p>Sabina, Back River Project, Wildlife Mitigation and Monitoring Program Plan (Version 12, April 2023)</p> <p>Sabina, Back River Project, Responses to 2021 Annual Report Comments (August 5 and August 19, 2022)</p> <ul style="list-style-type: none"> • KIA-NIRB-14
Summary	There are inconsistent statements in the 2022 NIRB Annual Report regarding when the Back River Project Construction Phase began/will begin (i.e., in 2022, 2023, or beyond).



<p>Detailed Review Comment</p>	<p>In the “Environmental Monitoring Programs” section of the 2022 NIRB Annual Report Executive Summary, Sabina states that <i>“In 2022 our environmental monitoring activities continued at the Back River Project in alignment with Sabina’s Construction Phase and related activities.”</i> However, the 2022 Pre-Construction WMMP Report states that the Back River Project was still in the Pre-construction Phase in 2022 (despite drilling and blasting activities); thus, wildlife and mitigation monitoring activities were limited to those outlined in Table 6.2-1 of the WMMP Plan for Baseline/Pre-construction. It is unclear if Sabina made a typo in the Annual Report Executive Summary, or if there was ambiguity even for the Proponent as to whether 2022 Project activities constituted Pre-construction or Construction. The KIA notes that we have commented on this issue previously (e.g., KIA-NIRB-14 for the 2021 NIRB Annual Report review).</p> <p>Nonetheless, in “The Year Ahead” section of the Executive Summary, Sabina states that in 2023 they will <i>“proceed with full scale construction of the Project. Monitoring programs are being enhanced to ensure that construction activities conform to Sabina’s licenses and authorizations.”</i> This statement suggests that the Back River Project will be entering the Construction Phase in 2023. However, in the “Next Steps” responses under Project Certificate Conditions (PCCs) No. 41, 45, and 46, Sabina states that they will continue to conduct mitigation and monitoring relevant for the Pre-construction Phase. These are likely copy-and-paste errors; however, if Sabina believes that the Project will still be in the Pre-construction Phase in 2023, clarification and justification need to be provided. As Sabina acknowledged, there are different/more wildlife monitoring efforts needed during the Construction Phase.</p> <p>Finally, Sabina refers to WMMP Plan V.11 (Dec 2022) throughout the 2022 NIRB Annual Report. However, this version was not appended to the annual report, and only WMMP Plan V.12 (Apr 2023) was available on the NIRB Registry. Therefore, WMMP Plan V.12 was referred to when developing these 2022 NIRB Annual Report review comments. <i>Note: the KIA understands that V.12 includes measures for the proposed Energy Centre; comments on these updates will be provided under a separate cover.</i></p>
<p>Recommendation/Request</p>	<ul style="list-style-type: none"> • Please clarify if the Construction Phase will begin in 2023. • Please clarify if enhanced wildlife monitoring programs, as described in the WMMP Plan for the Construction Phase, will be implemented in 2023.



	<ul style="list-style-type: none"> Please include the WMMP Plan V.11 as an appended or independent document on the NIRB Registry.
Importance of Issue	Low

1.2 KIA-NIRB-02

Review Comment Number	KIA-NIRB-02
Subject/Topic	WMMP Plan commitments prior to Construction
References	<p>Sabina, Back River Project, 2022 Annual Report (March 31, 2023)</p> <ul style="list-style-type: none"> Project Certificate Condition No. 45 <p>Sabina, Back River Project, Wildlife Mitigation and Monitoring Program Plan (Version 12, April 2023)</p> <ul style="list-style-type: none"> Sections 7.2.1.3, 7.2.17, 9.1.2.3, 9.1.3.2, 9.2.1.4, 10.2.1.1, 10.2.1.2, 10.2.2.2, 11.2.1.1, 11.2.2.2, 12.2.2.2, 13.2.2.3
Summary	<p>Sabina intends for the Back River Project to enter the Construction Phase in earnest in 2023. However, there are numerous “prior to construction” commitments in the Wildlife Mitigation and Monitoring Program Plan (WMMP Plan) that appear to be outstanding. Sabina should confirm the progress of this work.</p>
Detailed Review Comment	<p>Assuming the Back River Project is entering the Construction Phase in 2023 (see KIA-TC-01: Project Construction Phase beginning in 2023), there are numerous commitments made in the WMMP Plan that need to be addressed prior to construction; however, it is unclear whether Sabina has completed these requirements. For example, Sabina states that detailed Standard Operating Procedures (SOPs) will be produced for:</p> <ul style="list-style-type: none"> Human Activity Monitoring (Section 7.2.1.7) Skirting and Building Monitoring (Section 9.2.1.3) Waste Management Monitoring (Section 9.2.1.4) Pit and Quarry Wall Nest Monitoring (Section 10.2.1.1) Pre-clearing Surveys for Raptor Nests (Section 10.2.1.2) Waterbird Monitoring on Project Ponds (Section 11.2.1.1) <p>The commitments for Skirting and Building Monitoring (grizzly bear and wolverine) and for Pit and Quarry Wall Nest Monitoring (raptors) also specify that the detailed SOP will be produced and distributed to the NIRB and the KIA for</p>



	<p>review and comment.</p> <p>Furthermore, Sabina states that detailed methods for regional monitoring for bird VECs, including raptors (Section 10.2.2.2), waterbirds (Section 11.2.2.2, both staging surveys and breeding surveys), and upland birds (Section 12.2.2.2), will be described in the WMMP Plan prior to construction of the Project. Sabina makes the same statement about providing detailed methods in the WMMP Plan for Marine Bird Monitoring during Project Shipping (Section 13.2.2.3); however, Sabina’s Marine Shipping Wildlife Mitigation and Monitoring SOP (Version F.1 from Nov 2022 appended to the 2022 WMMP Report) may be intended to meet this commitment.</p> <p>Additional commitments in the WMMP Plan include:</p> <p>Caribou</p> <ul style="list-style-type: none">• Section 7.2.1.3 (Active Caribou Monitoring by Wildlife Monitors) – <i>“Sabina will develop a Wildlife Monitoring Training Program for wildlife monitors. Details of the training program will be shared with the KIA and GN prior to construction of the Project.”</i> <p>The WMMP Plan outlines three options for active caribou monitoring: Observation Blinds, Tower Cameras, and Vehicle-Based Monitoring. Sabina states that testing of human observers and camera technology (including tower installation) will be conducted to determine/ensure that caribou can be detected within and beyond the trigger distances for management actions, and that the results of this testing will be reported to the KIA and GN. It is unclear if Sabina has completed this testing and has proven methods ready to use for active caribou monitoring when the Construction Phase begins.</p> <p><u>Waterbirds & Marine Birds</u></p> <ul style="list-style-type: none">• Sections 11.2 and 13.2 – <i>“Prior to construction, or first shipment, for the Project, Sabina will meet with ECCC and other interested parties, on the regional monitoring priorities, objectives and methods for Waterbird and Marine Bird VECs.”</i> <p>The KIA is aware of some “prior to construction” commitments in the WMMP Plan that Sabina has completed, including development of SOPs for Incidental Wildlife Observations (Section 7.2.1.4; Version A.1 from Dec 2022 appended to the 2022 WMMP Report) and Seal Lair Monitoring (Section 14.2.1.1; Version 1 from Feb 2018 appended to the 2018 NIRB Annual Report). However, Sabina should confirm if these abovementioned tasks have also been completed (or are in progress). It may be helpful to revise</p>
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	<p>completed commitments to past tense and/or include a table of related/relevant Project documents in the next iteration of the WMMP Plan.</p> <p>Finally, the KIA notes that in Section 7.2.2.4 (Regional Collar Monitoring for Zone of Influence) of the WMMP Plan, Sabina has altered wording from the 2019 version of the plan regarding updating the WMMP to “1) confirm that data suitable to meet these technical specifications and monitoring needs are available, 2) demonstrate that relevant data-sharing agreements are in place with government data suppliers, and 3) provide the minimum number of collars that would need to be deployed on the relevant herds in order to calculate a ZOI. The revised WMMP shall be submitted to NIRB for review.” The timing to complete this task changed from “prior to construction” to “during the construction phase.” It is unclear if this change was agreed upon by NIRB and interested parties.</p>
<p>Recommendation/Request</p>	<ul style="list-style-type: none"> • Please clarify if detailed SOPs have been developed for the six wildlife monitoring activities noted in the Detailed Review Comment above. • Please distribute the detailed SOPs for Skirting and Building Monitoring and Pit and Quarry Wall Nest Monitoring to the KIA for review. • Please clarify if Sabina has met with ECCC and other interested parties on the regional monitoring program for waterbird and marine bird VECs. • Please include detailed methods for regional bird VEC monitoring in the next iteration of the WMMP Plan (working from V.12) or a separate but appended document, if appropriate. • Please clarify if a Wildlife Monitoring Training Program has been developed; if so, please share the program details with the KIA. • Please clarify if testing of human observers and tower camera technology has been completed to effectively implement the Active Caribou Monitoring program. • Please consider revising the next iteration of the WMMP Plan (working from V.12) for clarity, and to demonstrate compliance, regarding these “prior to construction” commitments (e.g., by writing in past tense and including a table of compliance with related Project documents indicated). • Please clarify if relevant parties agreed that WMMP updates regarding regional ZOI monitoring can be delayed until after the Project’s Construction Phase begins.



Importance of Issue	High
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1.3 KIA-NIRB-03

Review Comment Number	KIA-NIRB-03
Subject/Topic	Marine wildlife monitoring in 2022 limited to 1/5 vessels
References	<p>Sabina, Back River Project, 2022 Annual Report (March 31, 2023)</p> <ul style="list-style-type: none"> • NIRB Annual Report Executive Summary, p. v • Project Certificate Conditions No. 58, 64 • Appendix G, 2022 Pre-Construction Wildlife Mitigation and Monitoring Program Report <ul style="list-style-type: none"> ○ Appendix 7A, Marine Shipping SOP – Wildlife Mitigation and Monitoring, ENVIRO-02 (Version F.1, 10 November 2022) <p>Sabina, Back River Project, Responses to 2021 Annual Report Comments (August 5, 2022)</p> <ul style="list-style-type: none"> • KIA-NIRB-09
Summary	<p>Only one of five sailings in 2022 completed marine mammal and bird surveys. None of the sailings traversing the Western Route conducting marine wildlife monitoring (neither dedicated surveys nor recording incidental observations). This is a recurring issue, and corrective actions need to be taken to ensure compliance with PCC No. 58 and 64.</p>
Detailed Review Comment	<p>In the “Environmental Monitoring Programs” section of the 2022 NIRB Annual Report Executive Summary, Sabina states that <i>“each vessel transiting through the Arctic Passage and into Bathurst Inlet had onboard observers completing marine mammal and seabird monitoring programs.”</i> To address PCC No. 58 (Seaducks and Waterfowl Mitigation Measures), Sabina explains that five vessels/sailings occurred during the 2022 shipping season and that 33 marine wildlife surveys were conducted over 38 hours.</p> <p>These statements in the main body of the 2022 NIRB Annual Report are inaccurate, as it is evident in the 2022 Pre-construction WMMP Report that marine wildlife monitoring was limited. Of the five sailings completed, only the <i>MV Aujaq</i> (one of two vessels to traverse the Eastern Route) completed marine mammal and seabird surveys. This means none of the three vessels traversing the Western Route, including through the Lambert Channel (a “highly risk intolerant” key habitat site for migratory birds), completed marine wildlife surveys. Furthermore, based on the lack of information in the 2022 WMMP Report (see also KIA-NIRB-04: Data collection</p>



	<p>for marine wildlife monitoring), it appears that none of these vessels recorded incidental observations of marine mammals and birds either. Based on Figure 7.1-1, the <i>Risco Reegan</i> arguably spent the most time travelling through highly risk intolerant areas (Bathurst/Elu Inlets), between September 1 and October 22. Thus, it would have been informative for this vessel, in particular, to have conducted marine wildlife monitoring.</p> <p>The KIA has previously submitted comments on missing marine wildlife monitoring data (e.g., KIA-NIRB-09 for the 2021 NIRB Annual Report review). In response, Sabina stated that <i>“Data collection in 2021 for the marine mammal and seabird monitoring program was much improved in 2021 compared to previous years. Sabina reinforced the importance of recording marine mammal and seabird sightings to the vessel companies and provided each vessel with updated guidance documents (brochure and SOP). This effort by Sabina did improve data collection and will be reinforced again for the 2022 shipping season. Sabina will continue to ensure that the shipping companies’ data collection improves by reiterating the requirement and distributing the training documentation again in 2022.”</i> Although the KIA appreciates Sabina’s efforts, there appears to be an ongoing issue with vessel operators. Sabina needs to identify and provide potential solutions to any constraints that prevent compliance with PCCs No. 58 and 64 (specifically, implementation of the required measures).</p> <p>The KIA notes that Incidental Observations is now a separate procedure (Section 3.4.1) in the updated Marine Shipping Wildlife Mitigation and Monitoring SOP (Version F.1, Nov 2022). This SOP change may need to be accompanied by refresher training for vessel operators. If they are unable to complete dedicated surveys, for whatever reason, it is hoped that they can at least record incidental marine wildlife observations.</p>
<p>Recommendation/Request</p>	<ul style="list-style-type: none"> • Please explain why 4/5 sailings in 2022 did not complete marine wildlife surveys or record incidental observations. • Please investigate the cause(s) of vessel operator non-compliance with the Marine Shipping Wildlife Mitigation and Monitoring SOP and propose solutions to improve implementation. • Please consider additional training for vessel operators in addition to distributing the guidance documentation. Perhaps there is a lack of understanding that can be rectified through



	communication.
Importance of Issue	High

1.4 KIA-NIRB-04

Review Comment Number	KIA-NIRB-04
Subject/Topic	Data collection for marine wildlife monitoring in 2022
References	<p>Sabina, Back River Project, 2022 Annual Report (March 31, 2023)</p> <ul style="list-style-type: none"> • Project Certificate Conditions No. 58, 64 • Appendix G, 2022 Pre-Construction Wildlife Mitigation and Monitoring Program Report <ul style="list-style-type: none"> ○ Appendix 7A, Marine Shipping SOP – Wildlife Mitigation and Monitoring, ENVIRO-02 (Version F.1, 10 November 2022)
Summary	<p>Marine wildlife monitoring in 2022 had some questionable methods and results. The majority of marine wildlife monitoring in 2022 was conducted while the vessel was anchored, which is not the intention of the program. The observation of “grey seal” is suspicious based on the species’ known range. Observation dates are inconsistent with the timing of sailing to and from the MLA.</p>
Detailed Review Comment	<p>The <i>MV Aujaq</i> was the only vessel to complete marine wildlife monitoring in 2022. They reported five sightings of two marine mammal species (grey seal, polar bear) and nine sightings of five marine bird species (northern fulmar, glaucous gull, herring gull, red-necked phalarope, and unknown gull). However, the methods and results presented in the 2022 WMMP Report raise a few concerns.</p> <p>Section 7.1.2.1 states that <i>“Of the 18 seabird surveys, four were completed while the vessel was moving and the remaining 14 while the vessel was anchored. Similarly, four of the 15 marine mammal surveys were completed while the vessel was moving, and the remaining 11 while the vessel was anchored.”</i></p> <p>Although the Marine Shipping Wildlife Mitigation and Monitoring SOP does not explicitly state that surveys are intended for moving vessels, it should be generally understood that this is the case, since the primary purpose of marine wildlife monitoring is to mitigate potential impacts to seabirds (PCC No. 58) and marine mammals (PCC No. 64) during Project shipping.</p> <p>Table 7.1-2 shows that in one instance, 10 grey seals were observed travelling 50 m from the vessel; in another instance, one grey seal was observed 10 m from the vessel (no behaviour noted). According to the federal Marine</p>



	<p>Mammal Regulations, vessels must remain >100 m away from marine mammals in the water. Since Section 7.1.2.1 indicates that none of the wildlife sightings indicated requirements for management activity, it is assumed that these two observations were made while the vessel was anchored. However, Sabina should confirm that this is true. The grey seal (<i>Halichoerus grypus</i>) observations themselves are also questionable. Grey seal is not included as a likely species in the Marine Shipping Wildlife Mitigation and Monitoring SOP; only ringed seal, fur seal, and bearded seal are included in Table 3.2-1. Rather, grey seal occurs on both sides of the North Atlantic Ocean; in Canada, species observations and range maps are restricted to the Maritimes: https://www.inaturalist.org/taxa/41733-Halichoerus-grypus. The KIA suspects that “grey seal” may have been recorded as a description rather than a species. If true grey seals were observed along Project shipping routes (as shown in Figure 7.1-3), these would be unusual occurrences that deserve further investigation (e.g., potential climate change effects?).</p> <p>Appendix 7B presents a table of marine wildlife (misabeled as birds only) observations during shipping in 2022. All observations were made from the <i>MV Aujaq</i> (which is the only vessel that completed marine wildlife surveys). It is unclear if Appendix 7B is presenting survey data or incidental observations (or both). The KIA suspects that these are survey data, and that none of the vessels (including <i>MV Aujaq</i>) recorded incidental observations of marine wildlife.</p> <p>Sabina’s reporting in the main body of the 2022 WMMP Report is also confusing; in Section 7.1.2.2, Sabina refers to marine mammal surveys, but Table 7.1-2 is labelled as incidental observations. By contrast, there is no mention of either “survey” or “incidental” when discussing seabird observations in Section 7.1.2.3 and Table 7.1-3. Finally, in the marine wildlife Incidental Observations Section 7.3, Sabina refers to the lack of marine mammals recorded in camp wildlife logs in 2022, rather than incidental observations made during shipping. Overall, it is unclear how data were collected, which may have implications/limitations for confidence in understanding the species that could be/are being impacted by shipping and will be impacted by cumulative shipping effects in the future, to understand whether mitigation and avoidance distances are being followed.</p> <p>Furthermore, the dates in Appendix 7B do not correspond to</p>
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	<p>Section 7.1.2.1 in the main 2022 WMMP Report, which states that the <i>MV Aujaq</i> completed surveys between August 29 and September 28, and Table 7.1-1, which shows that this vessel left the port in Becancour, Québec on August 13 and left the Back River Marine Laydown Area (MLA) on September 3. Some of the dates in Appendix 7B are suspected to have the month and day switched; however, one entry of “11/10/2022” is likely outside the sailing windows, regardless of month-day format. It is unclear if these errors occurred at the data collection or entry stage. Regardless, additional quality control checks are needed to ensure that data are correct.</p>
Recommendation/Request	<ul style="list-style-type: none"> • Please ensure that vessel operators understand that the Marine Shipping Wildlife Mitigation and Monitoring SOP is intended to be used while vessels are moving and clarify this within the SOP itself during the next update. • Please confirm whether the seals observed in close proximity (10 m and 50 m) required mitigation actions or did not because the vessel was anchored. • Please confirm that the species identification of grey seal (<i>Halichoerus grypus</i>) is correct or incorrect. • Please correct the marine wildlife observation dates from 2022 and ensure that surveyors collect and/or enter data correctly in the future.
Importance of Issue	High

1.5 KIA-NIRB-05

Review Comment Number	KIA-NIRB-05
Subject/Topic	Suggested improvements for marine wildlife survey forms
References	<p>Sabina, Back River Project, 2022 Annual Report (March 31, 2023)</p> <ul style="list-style-type: none"> • Appendix G, 2022 Pre-Construction Wildlife Mitigation and Monitoring Program Report <ul style="list-style-type: none"> ○ Appendix 7A, Marine Shipping SOP – Wildlife Mitigation and Monitoring, ENVIRO-02 (Version F.1, 10 November 2022)
Summary	Missing marine wildlife survey data in 2022 are likely due to data form deficiencies. The KIA thanks Sabina for recent updates and provides further suggestions for improvement.
Detailed Review Comment	Some missing data in Appendix 7B (marine wildlife observations in 2022) can likely be attributed to deficiencies with the data sheets and/or Marine Shipping Wildlife



	<p>Mitigation and Monitoring SOP instructions. For example, there are many “NR” entries (presumably meaning “Not Recorded”), primarily for bird observations, including for time, lat/long coordinates, and mitigation action (y/n). This is likely due to having dedicated fields for this information on the Marine Mammal Survey – Sightings Form, but which are lacking on the Seabird Survey – Sightings Form. For example, the seabird form includes time and location fields for the survey as a whole (i.e., transect start and end) but not for individual species observations.</p> <p>In addition, Sabina’s summary table in Appendix 7B has a column for “Closest Approach (m)”, which was left blank for all entries. However, there is only one space to record Distance (m) on both marine mammal and bird data sheets; thus, it may not be clear to the surveyor that a minimum distance estimate also needs to be documented.</p> <p>The KIA appreciates that Sabina tried to incorporate our suggestions into the updated marine mammal and seabird survey forms. However, the new row for Mitigation makes less sense when a single data sheet is used for multiple species observations. Information about mitigation actions and results should be recorded for each sighting. We understand that there is limited space to add more columns to the bottom portion of the forms, but there may be other ways to make this work. For example, Sabina could create a two-page form with the General, Vessel, Environmental, Survey (Transect) Information on one page, and the second page can be dedicated to species observations, reformatted to fit all the necessary fields.</p>
<p>Recommendation/Request</p>	<ul style="list-style-type: none"> • Please consider setting up the marine mammal and seabird survey forms with the same fields (default to collecting more data). • Please include SOP instructions and a data field for “Closest Approach (m)” to ensure that surveyors record this information. • Please revise/reformat the data forms to allow filling in mitigation actions and results for each species observation.
<p>Importance of Issue</p>	<p>Moderate</p>

1.6 KIA-NIRB-06

<p>Review Comment Number</p>	<p>KIA-NIRB-06</p>
<p>Subject/Topic</p>	<p>New/updated components of Marine Shipping Wildlife SOP</p>



<p>References</p>	<p>Sabina, Back River Project, 2022 Annual Report (March 31, 2023)</p> <ul style="list-style-type: none"> • Appendix G, 2022 Pre-Construction Wildlife Mitigation and Monitoring Program Report <ul style="list-style-type: none"> ○ Appendix 7A, Marine Shipping SOP – Wildlife Mitigation and Monitoring, ENVIRO-02 (Version F.1, 10 November 2022)
<p>Summary</p>	<p>Maps showing sensitive habitats for marine birds in the Northwest Territories (NT) and sensitive habitats for marine mammals in NU require clarification and improvement. Sabina should also consider updating their mapping using other available datasets.</p>
<p>Detailed Review Comment</p>	<p>The KIA appreciates that Sabina tried to incorporate our suggestions into the latest Marine Shipping Wildlife Mitigation and Monitoring SOP (Nov 2022). Clarification and/or improvements could be made for the following new/updated components of the SOP:</p> <p><u>Sensitive habitat for marine birds in NT</u></p> <p>The list of sensitive habitats in NT in Section 2.1 does not match what is presented on Figure 2.1-3, and neither fully reflect the sensitive habitats identified in source referenced (Latour et al., 2008). The list has a typo (should be Kukjuktuk, not Kugluktuk; the former is in the NT and the latter is in NU), Mackenzie River Delta and Beaver Lake are missing (but shown on the map), and the Cape Parry site is mislabeled as Amundsen Gulf on the map.</p> <p>According to (Latour et al., 2008), the following key habitat sites may be relevant to the Project’s Western Shipping Route. In particular, NT Site 7 – Harrowby Bay is highly relevant for the Project and needs to be added to the list and map. Reference to this map should also be included in Table 3.5-1 (Recommended Shipping Mitigation Responses for Seabirds and Marine Mammals).</p> <p>NT Site 4 – Tahiryuak Lake*</p> <p>NT Site 5 – Kagloryuak River Valley*</p> <p>NT Site 6 – Cape Parry - included.</p> <p>NT Site 7 – Harrowby Bay</p> <p>NT Site 8 – Lower Anderson River (and Mason River)</p> <p>NT Site 9 – Kugaluk River*</p> <p>NT Site 10 – McKinley Bay – Phillips Island - included.</p> <p>NT Site 11 – Kukjuktuk and Hutchison Bays - included.</p> <p>NT Site 12 – Mackenzie River Delta - included.</p> <p>NT Site 13 – Ramparts River Wetlands (Tu’eyeta)</p> <p>NT Site 14 – Lower Mackenzie River Islands - included.</p>



	<p>NT Site 15 – Brackett (Willow) Lake NT Site 16 – Middle Mackenzie River Islands - included. NT Site 17 – Southeastern Mackenzie Mountains NT Site 18 – Mills Lake - included. NT Site 19 – Beaver Lake - included. NT Site 20 – North Arm, Great Slave Lake* NT Site 21 – Northwest Point NT Site 22 – Slave River Delta* NT Site 23 – Sass and Nyarling Rivers*</p> <p><i>*Note: Sites 4, 5, 9, 20, 22, 23 are unlikely to be potentially impacted by the Project; however, they should be presented on the Figure 2.1-3 map as they occur in the geographic area shown.</i></p> <p><u>Sensitive habitat for marine mammals along the Eastern Shipping Route in NU</u></p> <p>Sabina has provided a source reference for the sensitive habitat data shown on Figure 2.1-2 (Stephenson & Hartwig, 2010). The KIA reviewed this document, which includes marine mammal species distribution maps in the Canadian Arctic; however, it is unclear how Figure 2.1-2 in the SOP was derived from the reference data. For example, which species, seasonal ranges, or other features were considered? The polygon in M’Clintock Strait does not appear to be encompassed by any of the (Stephenson & Hartwig, 2010) maps; does it come from Traditional Knowledge?</p> <p>The KIA also recommends updating both marine mammal and seabird sensitive habitat maps using Canada’s Arctic Marine Atlas (Oceans North Conservation Society et al., 2018), if the spatial data can be shared. Chapter 6 (marine mammals) and includes species maps as well as an overall Marine Mammal Concentration Areas map; these maps include data from (Stephenson & Hartwig, 2010) and other sources. Similarly, Chapter 5 (waterbirds) includes species maps (ranges and documented occurrences) and Designated Sites; the latter includes data from (Latour et al., 2008) and other Important Bird Areas (IBAs).</p> <p><u>Vessel tracks</u></p> <p>In Section 7.1.1.1, Sabina states that ERM needed to acquire archived Automatic Identification System (AIS) data from a commercial AIS supplier (Vesseltracker) to produce the tracks shown on Figures 7.1-1 and 7.1-2. Sabina also explains that these data vary in frequency from <1 hr to >12 hr between recorded locations (which explains why some ships appear to travel overland on the maps).</p> <p>However, Section 4 (End of Trip Reporting Requirements) in</p>
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	<p>the Marine Shipping Wildlife Mitigation and Monitoring SOP indicates that the vessel operator needs to submit a spatial file of the shipping route to the Sabina Environment Team after each shipping trip. Can these data not be used to general the vessel tracks maps instead of using AIS, or are they the same data? If ERM needed to purchase data from Vesseltracker, does this imply that vessel operators in 2022 did not adhere to the SOP reporting requirements?</p>
<p>Recommendation/Request</p>	<ul style="list-style-type: none"> • Please include NT Site 7 – Harrowby Bay on Figure 2.1-3 (Sensitive Habitat and Setbacks for Seabirds and Seaducks along the Western Shipping Route in NWT). • Please consider adding the other identified NT Sites on Figure 2.1-3 for transparency/completeness. • Please explain how Figure 2.1-2 (Sensitive Habitat for Marine Mammals along the Eastern Shipping Route in Nunavut) was created from the data shown in (Stephenson & Hartwig, 2010), especially the polygon in M’Clintock Strait. • Please consider updating the sensitive habitat maps to reflect a consolidation of data, such as those presented in Canada’s Arctic Marine Atlas. • Please clarify if vessel operators in 2022 submitted spatial files of their shipping route to Sabina, and if these data are different from (and more precise than) AIS and can be used to generate the maps showing vessel tracks.
<p>Importance of Issue</p>	<p>Moderate</p>

1.7 KIA-NIRB-07

<p>Review Comment Number</p>	<p>KIA-NIRB-07</p>
<p>Subject/Topic</p>	<p>Footprint development discrepancies in 2021 and 2022</p>
<p>References</p>	<p>Sabina, Back River Project, 2022 Annual Report (March 31, 2023)</p> <ul style="list-style-type: none"> • Project Certificate Condition No. 32 • Appendix G, 2022 Pre-Construction Wildlife Mitigation and Monitoring Program Report <p>Sabina, Back River Project, Responses to 2021 Annual Report Comments (August 19, 2022)</p> <ul style="list-style-type: none"> • KIA-NIRB-11
<p>Summary</p>	<p>There has been an approximately 6 ha discrepancy in the habitat loss calculations for the MLA Property for the past two years of annual reporting, as presented in Sabina’s response to PCC No. 32 and WMMP reporting.</p>



Detailed Review Comment	<p>The KIA appreciates Sabina’s response to our KIA-NIRB-11 comment for the 2021 NIRB Annual Report review and inclusion of Table 4.5.9-1 when addressing PCC No. 32. However, there are “(a)” superscripts next to many ecosystem types in this table that are not explained. Table 4.5.9-1 shows that 88.3 ha of ecosystem/vegetation loss has occurred at the Goose Property and 37.4 ha at the MLA Property in 2022, for a total of 125.7 ha. However, Table 3.2-1 in the 2022 WMMP Report shows that 88.1 ha and 31.7 ha have been lost at the Goose Site and MLA, respectively, totaling 119.8 ha. There is a 5.9 ha, primarily from the MLA, which is not accounted for in the WMMP Report.</p> <p>The KIA also noted 5.7 ha discrepancy between MLA calculations for the PCC No. 32 response versus 2021 WMMP Report calculations in our KIA-NIRB-11 comment. We had requested clarification on this difference, which Sabina did not respond to, to the best of our knowledge.</p>
Recommendation/Request	<ul style="list-style-type: none"> • Please explain what the (a) superscripts in Table 4.5.9-1 refer to. • Please explain the recurring discrepancy in habitat loss calculations for the MLA Property. Is there a habitat type that is not being considered for WMMP reporting?
Importance of Issue	Low

1.8 KIA-NIRB-08

Review Comment Number	KIA-NIRB-08
Subject/Topic	Presentation of helicopter flight tracks
References	<p>Sabina, Back River Project, 2022 Annual Report (March 31, 2023)</p> <ul style="list-style-type: none"> • Appendix G, 2022 Pre-Construction Wildlife Mitigation and Monitoring Program Report <p>Sabina, Back River Project, Wildlife Mitigation and Monitoring Program Plan (Version 12, April 2023)</p> <ul style="list-style-type: none"> • Section 7.1.5.7
Summary	<p>Sabina has provided maps showing flight tracks in response to various intervenors’ review comments. The way these data are presented may not be the most useful, and Sabina’s interpretation of the results is unclear.</p>
Detailed Review Comment	<p>In the 2022 WMMP Report, Sabina has provided Figures 5.1-1 and 5.1-2 showing the frequency of helicopter flights below 610 m in July-August and in November 2022, respectively,</p>



	<p>and a brief discussion of the results in Section 5.1.2.2. While the KIA appreciates the inclusion of these flight tracks, we have some feedback on how they are presented.</p> <p>Sabina states that in the figures, dark green indicates one flight over the season. However, the figure legends indicate that dark green represents 1-25 flights. It may be that there was only one flight; however, it is impossible to tell with this method of binning. Sabina also states that Figure 5.1-1 “shows that the vast majority of helicopter flights were localized to the area surrounding the Goose Site where drilling activities occurred.” It is unclear how Sabina reached this conclusion, as the heat map appears to show the George Exploration Camp with the “hottest” colour (red, representing 150-175 flights), while the Goose Property has dark orange (125-150 flights) at most. This is an important point to correct if an incorrect conclusion has been made, as the George deposit is closer to Bathurst caribou calving grounds.</p> <p>It is also unclear how the maps were created – do flights need to have the same flight track to be counted cumulatively, or do the maps show the number of points at the same coordinates (i.e., density) regardless of the overall track? If one allows greater variation in flight paths, such as analyzing by trip (e.g., MLA to George flights, MLA to Goose flights, etc.), how would this affect the heat mapping? It would also be more informative to have summary statistics of helicopters flying below 610 m compared to the total number of flights. There is currently no ‘denominator’ for comparison to be confident of Sabina’s statement that “pilots avoided flying close to the ground even when wildlife were absent.”</p> <p>Ultimately, the KIA wanted assurance that helicopters were complying with Section 7.1.5.7 of the WMMP Plan and were not flying below 610 m when caribou were observed.</p>
<p>Recommendation/Request</p>	<ul style="list-style-type: none"> • Please elaborate on how the flight tracking map Figures 5.1-1 and 5.1-2 were produced with respect to how flights or points were summed to create the heat map bins. • Please revisit conclusions that were reached by Sabina about the vast majority of flights being associated with Goose camp given that the heat map appears to indicate more activity around the George Camp. Does the heat map perhaps indicate flight hours rather than number of flights, and helicopters spent more time in the air around George? Please explain. • Please consider creating heat maps by flight trip (i.e., same origin and destination) or other approaches to



	<p>test the validity of Sabina’s interpretations.</p> <ul style="list-style-type: none"> • Please provide summary statistics for the number of helicopter flights below 610 m compared to the total number of flights in 2022
Importance of Issue	High

1.9 KIA-NIRB-09

Review Comment Number	KIA-NIRB-09
Subject/Topic	Wolverine observations and deterrence measures
References	<p>Sabina, Back River Project, 2022 Annual Report (March 31, 2023)</p> <ul style="list-style-type: none"> • Appendix G, 2022 Pre-Construction Wildlife Mitigation and Monitoring Program Report <ul style="list-style-type: none"> ○ Appendix 5D, Incidental Terrestrial Wildlife Observations, 2022 <p>Sabina, Back River Project, Responses to 2021 Annual Report Comments (August 5, 2022)</p> <ul style="list-style-type: none"> • Appendix A, Wildlife Deterrence for Environment Staff: Pre-construction, Construction, and Operations (Version B.1, 20 July 2020)
Summary	<p>There are inconsistencies with the number of wolverine observations and incidents requiring deterrence. It is unclear if Red-level responses were applied when wolverines were observed <1 km from site. Additional mitigation measures may be needed if the number of aggressive/habituated wolverines is increasing.</p>
Detailed Review Comment	<p>In Section 5.5.2.2 (Camp and Waste Management, Monitoring for Grizzly Bears and Wolverine) of the 2022 WMMP Report, Sabina states that <i>“There were 13 reports of aggressive or habituated wolverines, all occurring between November 20 and December 20. Of these instances, deterrent measures were deployed in seven cases (bear bangers in four, rubber bullets in one, and a combination of both in two). Nine of these reports occurred from November 21 to November 24, and are believed to have been the same wolverine. This wolverine was found within the incinerator building on November 21, and deterred using rubber bullets and bear bangers.”</i></p> <p>A summary log of Incidental Terrestrial Wildlife Observations in 2022 is presented in Appendix 5D. This table includes seven additional records of wolverine being deterred from the incinerator in October and prior to November 20; and there are no wolverine deterrence incidents after November 29 (in contrast to Sabina’s</p>



	<p>statement, as quoted above). Clarification is needed for these differences; perhaps it is a matter of incidental observations vs. other types of observations (e.g., during waste management inspections?), or aggressive/habituated animals vs. non-aggressive animals.</p> <p>In Section 5.7.2 (Other Terrestrial Mammal Incidental Observations), Sabina describes 20 sightings of a single wolverine in February, March, April, July, August, September, November, and December 2022, all occurring within 1 km of the Goose Site. However, Appendix 5D includes incidental wolverine observations in months not noted by Sabina (i.e., May, June, October) and is also missing observations in some months noted (i.e., February, March, April). Part of these inconsistencies may be due to date mix-ups, including switching the day and month fields when entering data (see KIA-TC-04: Data collection for marine wildlife monitoring).</p> <p>Furthermore, according to the Wildlife Deterrence for Environment Staff SOP (Version B.1 from Jul 2020 appended to Sabina’s responses to the 2021 NIRB Annual Report review), Table 3, wolverines observed <1 km from site should have triggered a red caution level and response. Sabina does not indicate in the 2022 WMMP Report whether appropriate responses were implemented.</p> <p>Overall, it appears that there was an unusually high number of wolverine incidents in 2022, especially at the incinerator. It may be informative for Sabina to compare these data to previous years. Sabina states in Section 5.5.2.2 that they “<i>re-evaluated the measures taken to keep the camp clean and free of attractants, and also ensured animals were precluded from accessing the incinerator. Sabina continues to ensure safety of personnel and wildlife by meeting all waste management requirements and minimizing attractants on site.</i>” However, if wolverines are becoming increasingly habituated and aggressive, further mitigation measures may be needed.</p>
<p>Recommendation/Request</p>	<ul style="list-style-type: none"> • Please explain the discrepancies in wolverine observation and deterrence reporting presented in Section 5.5.2.2, Section 5.7.2, and Appendix 5D. • Please clarify if Red-level responses, as per the Wildlife Deterrence for Environment Staff SOP, were implemented when wolverines were observed <1 km from site. • Please consider comparing the number of wolverine incidents in 2022 with previous years, to inform adaptive management if needed. • Can Sabina provide more information on what may have been attracting wolverine to the incinerator, and



	the precise adaptive management measures taken to prevent future incidents?
Importance of Issue	Moderate

1.10 KIA-NIRB-10

Review Comment Number	KIA-NIRB-10
Subject/Topic	Facilities camera monitoring in 2022
References	<p>Sabina, Back River Project, 2022 Annual Report (March 31, 2023)</p> <ul style="list-style-type: none"> Appendix G, 2022 Pre-Construction Wildlife Mitigation and Monitoring Program Report <p>Sabina, Back River Project, Wildlife Mitigation and Monitoring Program Plan (Version 12, April 2023)</p> <ul style="list-style-type: none"> Sections 7.2.1.5, 8.2.1.1, 9.2.1.1 Table 6.2-1 <p>Sabina, Back River Project, Responses to 2021 Annual Report Comments (August 5, 2022)</p> <ul style="list-style-type: none"> KIA-NIRB-7
Summary	Further information is needed regarding the Facilities Camera Monitoring program that was only implemented for up to three months in 2022, as well as future plans (beginning in 2023) for this program during the Project's Construction Phase.
Detailed Review Comment	<p>Section 5.6.1 and Table 5.6-1 of the 2022 WMMP Report indicate that six wildlife cameras were deployed around the Goose Camp for approximately 1.5-3 months in the fall/winter of 2022 (end of September to mid-late December). Half the cameras deployed ran out of batteries earlier than expected. As this monitoring program moves forward, will it be feasible to complete monthly camera checks and battery changes?</p> <p>The batteries were presumably changed at the end of December 2022, since Sabina also states that the cameras continue to operate and will be supplemented with additional cameras in 2023. No further details are provided about the plans for 2023; however, the KIA expects that additional cameras will be placed around Project facilities and infrastructure as per Section 5.6 of the 2022 WMMP Report and Section 7.2.1.5 of the WMMP Plan. These locations include:</p> <ul style="list-style-type: none"> Caribou road crossing ramps compared to roadside locations without ramps.



- Waste management facilities
- Goose camp (if more than six cameras are needed)
- MLA
- Modification PDA (i.e., the Energy Centre)
- Tailings impoundment facility
- “Other sites as the need arises.”

Sabina does not explain why the Facilities Camera Monitoring program did not begin until essentially October 2022 and was restricted to the Goose Camp. The KIA previously commented on the lack of on-site camera monitoring reporting in KIA-NIRB-7 for the 2021 NIRB Annual Report review. Sabina responded that they have placed cameras for monitoring at site in 2022, and that results from this monitoring program will be presented in the 2022 Annual Report. The KIA was surprised to learn that an on-site camera monitoring program is not already in place. Table 6.2-1 of the WMMP Plan shows that an on-site camera monitoring program for caribou, muskox, and grizzly bear is required and ongoing for Baseline/Pre-Construction, and the Project has been in the Pre-Construction phase for several years. If camera monitoring had begun and continued throughout the pre-construction phase as noted in Table 6.2-1, there would be sufficient data by this point to look for trends.

The KIA notes that within the main body of the WMMP Plan, triggers for monitoring using on-site cameras for caribou, muskox, and grizzly bear note that: *“the on-site camera monitoring program will be in place throughout construction and operations of the Project”* (Sections 7.2.1.5, 8.2.1.1, 9.2.1.1). Thus, these sections appear to contain a typo, as the Pre-Construction phase is not included, although it was marked off in Table 6.2-1. The KIA believes that Pre-Construction camera monitoring is warranted based on the objectives of this monitoring program. From Section 7.2.1.5 regarding caribou: *“The objective of the on-site camera program is to monitor caribou (and other wildlife VECs activities around Project infrastructure, including:*

1. Locations that are not staffed for long periods of time (e.g., on roads, camps, MLA);
2. Areas with and without mitigation structures or activities to evaluate the efficacy of mitigation activities (e.g., at-road crossing structures); and
3. The time of year when caribou use the Project site.”

Similar objectives are written for muskox and grizzly bear in Sections 8.2.1.1 and 9.2.1.1 of the WMMP Plan. Another objective for muskox is “monitoring areas identified as



	<p>important for muskox from land user knowledge (e.g., eskers, windswept benches) and at points with high numbers of muskox identified during baseline studies (e.g., the hilly area west of the MLA).” These objectives could apply to any Project phase. Implementing the on-site camera monitoring program during Pre-Construction would allow for collection of more data to evaluate the accuracy of the Project’s environmental impact predictions and to better inform mitigation and adaptive management for wildlife VECs.</p> <p>Although the KIA appreciates that Sabina finally commenced the on-site camera monitoring program in 2022, it is unclear why the cameras were not deployed until the fall of 2022. This program quickly ran into logistical issues (camera/battery failure), and it is also unclear if Sabina has developed solutions to these issues such that a full-scale facilities camera monitoring program can be reliably implemented as the Back River Project enters the Construction Phase in 2023.</p>
<p>Recommendation/Request</p>	<ul style="list-style-type: none"> • Please provide rationale for the methods used (including timing, number of cameras, locations) for the facilities camera monitoring program in 2022. • Please provide assurance that measures are being taken to ensure continuous camera operation (as much as possible), such as the use of high-quality batteries (e.g., Energizer Ultimate Lithium) and regular, timely checks to allow for battery changes, data downloading, fixing, cleaning of debris from lenses, and to ensure any overturned cameras can be placed upright again. • Please provide further information regarding plans for the facilities camera monitoring program in 2023 (e.g., timing, number of cameras, locations). • Please clarify in the WMMP Plan when the on-site camera monitoring program is supposed to occur. If it was meant to be ongoing during Baseline/Pre-construction, Sabina has not been following the plan until now.
<p>Importance of Issue</p>	<p>High</p>

1.11 KIA-NIRB-11

<p>Review Comment Number</p>	<p>KIA-NIRB-11</p>
<p>Subject/Topic</p>	<p>Deterrence of red foxes and other wildlife</p>
<p>References</p>	<p>Sabina, Back River Project, 2022 Annual Report (March 31,</p>



	<p>2023)</p> <ul style="list-style-type: none"> • Appendix G, 2022 Pre-Construction Wildlife Mitigation and Monitoring Program Report <ul style="list-style-type: none"> ○ Appendix 5B, Facilities Camera Monitoring Data, 2022 ○ Appendix 5C, Incidental Wildlife Observations SOP, ENVIRO-14 (Version A.1, 30 December 2022) ○ Appendix 5D, Incidental Terrestrial Wildlife Observations, 2022 <p>Sabina, Back River Project, Responses to 2021 Annual Report Comments (August 5, 2022)</p> <ul style="list-style-type: none"> • Appendix A, Wildlife Deterrence for Environment Staff: Pre-construction, Construction, and Operations (Version B.1, 20 July 2020)
<p>Summary</p>	<p>Red foxes were attracted to the incinerator, kitchen, and other Project areas in 2022; these incidents sometimes required deterrence, according to incidental wildlife logs. Additional mitigation measures may be required to prevent red foxes from becoming habituated and/or aggressive.</p>
<p>Detailed Review Comment</p>	<p>In addition to the prevalence of wolverine observations at the incinerator (see KIA-NIRB-09: Wolverine observations and deterrence measures), there appeared to be attraction issues with red foxes. In Section 5.6.2 (Facilities Camera Monitoring results) of the 2022 WMMP Report, Sabina describes red foxes (and common ravens) <i>“attempting to access inorganic waste at camera BR02 (located at the incinerator).”</i> No further details were provided; however, is it possible that the animals were seeking food containers that were not properly rinsed and/or securely stored before incineration?</p> <p>Appendix 5B presents a summary of Facilities Camera Monitoring Data in 2022. In two instances on November 2, a red fox (perhaps the same animal) was detected at the incinerator camera BR02 and there are comments of <i>“Staff taking photos up close”</i> and <i>“Up close with staff.”</i> The actions of the Project staff may be contributing to habituation of the animal. Although red foxes are not amongst the carnivore species that require deterrence (as per the Wildlife Deterrence for Environment staff SOP), there is still a risk (both to human safety and animal welfare) to allowing red foxes and other wildlife to become habituated to humans and Project activities. This should be apparent after the incident on November 8, 2022, when a staff member was bit on the leg by a small carnivore identified as either a fox or wolverine (Section 9 of the 2022 WMMP Report).</p>



	<p>Furthermore, Appendix 5D includes two incidents where red fox was (had to be?) deterred – one on October 1 at the Goose camp and incinerator, and one on November 8 near the weather station. There was also an incident on November 22 when a fox was “Trying to get in kitchen” (and was presumably deterred, though this is not mentioned in the Comments).</p> <p>Additional mitigation may be needed if red foxes are becoming increasingly habituated and potentially aggressive (see also KIA-NIRB-09: Wolverine observations and deterrence measures).</p>
Recommendation/Request	<ul style="list-style-type: none"> • Please consider revising the Wildlife Deterrence for Environment Staff SOP to include red fox as a species that should be deterred from site. • Please ensure that Project staff are trained and reminded of wildlife awareness and sensitivity protocols. Were any corrective actions taken after the facilities camera monitoring data showed staff getting up close to the red fox? • Please consider reviewing the Project’s waste management procedures and implementing additional measures to mitigate wildlife attraction, where possible.
Importance of Issue	Moderate

1.12 KIA-NIRB-12

Review Comment Number	KIA-NIRB-12
Subject/Topic	Spring stand-watch surveys and incidental observations
References	<p>Sabina, Back River Project, 2022 Annual Report (March 31, 2023)</p> <ul style="list-style-type: none"> • NIRB Annual Report Executive Summary, p. v • Appendix G, 2022 Pre-Construction Wildlife Mitigation and Monitoring Program Report <ul style="list-style-type: none"> ○ Appendix 5D, Incidental Terrestrial Wildlife Observations, 2022 <p>Sabina, Back River Project, 2023 FEIS Addendum (March 2023)</p> <ul style="list-style-type: none"> • Section 2.3.6.4, Mitigation for Direct Mortality
Summary	Sabina states in the NIRB Annual Report Executive Summary that spring migration stand-watch surveys were completed in 2022; however, only incidental observations of migrating geese were discussed in the 2022 WMMP Report.



<p>Detailed Review Comment</p>	<p>In the “Environmental Monitoring Programs” section of the 2022 NIRB Annual Report Executive Summary, Sabina states that <i>“Spring migration stand-watch surveys were completed to assess spring bird migration around the Project site.”</i></p> <p>However, spring stand-watch surveys were not reported in the 2022 WMMP Report. The KIA notes that Sabina confirms in the 2023 FEIS Addendum that <i>“Additional baseline surveys for the spring migration period were conducted in May 2022 (data have not been included in this document) to provide additional context and data regarding spring migratory bird movements”</i> (Section 2.3.6.4, Mitigation for Direct Mortality, p. 2-79). As such, detailed methods and results for these spring 2022 surveys have not been made available by Sabina in any Project document.</p> <p>Rather, incidental bird observations were discussed with respect to migration timing in Section 6.3 of the 2022 WMMP Report – on June 28, 2022, a flock of approximately 100 geese fly over the Goose Camp area. (Note: there is an incidental observation of 100 geese flying over the Goose camp on September 17, 2022, as noted in Appendix 5D. However, this may be the same observation and a date error; see also KIA-NIRB-09: Wolverine observations and deterrence measures)</p> <p>Sabina then discusses ‘trends’ in incidental observations from previous years: <i>“In 2020 there were two sightings: on May 17, a flock of 200 geese was observed flying overhead at Goose. The species of geese was not determined. On September 4, 2020, another flock of approximately 200 geese was observed flying overhead at Goose. The species of geese was not determined. These sightings provide information regarding timing of spring and fall migration. For example, a large flock of approximately 200 geese was observed on the same date (May 17) in 2019. Perhaps this indicates general timing for geese spring migration passing over the Goose site and illustrates the importance of recording incidental observations of notable bird sightings.”</i></p> <p>Although we agree that it is important to record incidental observations of notable bird sightings, it is difficult to draw conclusions from a few incidental observations. Migration tends to occur over a period of a few weeks, not just a single day. If information about the timing of spring and fall migration is needed, such as for the proposed Energy Centre, systematic migration stand-watch surveys must be completed over a suitably long period of time.</p>
<p>Recommendation/Request</p>	<ul style="list-style-type: none"> • Please provide detailed methods and results for the 2022 spring migration baseline surveys (e.g.,



	<p>methods, results) conducted for the 2023 FEIS Addendum.</p> <ul style="list-style-type: none"> • Please explain why these surveys were not described in the 2022 WMMP Report.
Importance of Issue	Moderate

1.13 KIA-NIRB-13

Review Comment Number	KIA-NIRB-13
Subject/Topic	Pre-clearing surveys for nesting birds at Echo Pit
References	<p>Sabina, Back River Project, 2022 Annual Report (March 31, 2023)</p> <ul style="list-style-type: none"> • Appendix G, 2022 Pre-Construction Wildlife Mitigation and Monitoring Program Report
Summary	Clarification is needed as to whether pre-clearing nest survey transects were fully aligned with construction of the Echo Pit in 2022.
Detailed Review Comment	<p>In Section 6.2.1 (Timing of Ground Clearing) of the 2022 WMMP Report, Sabina states that “Most ground clearing at the MLA and Goose was conducted during 2022 between August 16 and December, per the WMMP Plan. Clearing did occur within the nesting period at Echo Pit, and pre-clearing surveys were conducted on August 8 which resulted in no nests being identified (Figure 6.2-1).” The referenced map figure shows Project components that were constructed in 2022 versus prior to 2022. Project infrastructure is not labelled on the map, but it is assumed that the bird survey transect lines overlap the aforementioned Echo Pit. However, the transects do not cover the entire construction polygon; the surveys appear to have been completed farther west of the Echo Pit, covering portions of newly constructed site roads. Did the proposed location of the Echo Pit change? Clarification is needed on where clearing was conducted during the bird nesting window.</p>
Recommendation/Request	<ul style="list-style-type: none"> • Please clarify which areas constructed in 2022 (as shown on Figure 6.2-1) were cleared during the bird nesting window. • Please confirm that pre-clearing surveys for nesting birds were performed in the areas that were ultimately cleared during construction activities in 2022.
Importance of Issue	Low



1.14 KIA-NIRB-14

Review Comment Number	KIA-NIRB-14													
Subject/Topic	Wildlife species of conservation concern statuses													
References	<p>Sabina, Back River Project, 2022 Annual Report (March 31, 2023)</p> <ul style="list-style-type: none"> • Appendix G, 2022 Pre-Construction Wildlife Mitigation and Monitoring Program Report <ul style="list-style-type: none"> ○ Appendix 7A, Marine Shipping SOP – Wildlife Mitigation and Monitoring, ENVIRO-02 (Version F.1, 10 November 2022) • Appendix E, 2022 Vegetation Monitoring Field Program Results – Winter Road Realignment (Technical Memorandum, 10 January 2023) • Appendix I, Oil Pollution Prevention Plan & Oil Pollution Emergency Plan (February 2023) 													
Summary	Territorial statuses gathered from NatureServe for wildlife species of conservation concern are either incorrect or less conservative than they should be.													
Detailed Review Comment	<p>In Section 8 of the 2022 WMMP Report, Sabina outlines the federal (COSEWIC and SARA Schedule 1) and territorial conservation status changes for wildlife species at risk (SAR) confirmed or have the potential to occur at the Project. Sabina states that the COSEWIC statuses for three bird species and one marine mammal species changed since the SAR table was updated for the 2021 WMMP Report; however, these changes are not described further, nor are they identified in Table 8-1.</p> <p>Within Table 8-1, territorial statuses for “full species” are current to 2020 as presented in the <i>2020 Wild Species Report</i> (CESCC, 2022), while information about subspecies or populations were gathered from NatureServe. The statuses for some species, including Beverly/Ahiak, Bathurst, Dolphin and Union, and Peary caribou, are either incorrect or the less conservative subnational ranking listed on NatureServe:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Species/VEC</th> <th style="text-align: left;">Table 8-1</th> <th style="text-align: left;">NatureServe</th> </tr> </thead> <tbody> <tr> <td>Beverly/Ahiak and Bathurst</td> <td>Apparently Secure</td> <td>Imperiled/ Apparently Secure (S2S4)</td> </tr> <tr> <td>Dolphin and Union</td> <td>Apparently Secure</td> <td>Imperiled (S2)</td> </tr> <tr> <td>Peary Caribou</td> <td>Imperiled</td> <td>Critically Imperiled/</td> </tr> </tbody> </table>		Species/VEC	Table 8-1	NatureServe	Beverly/Ahiak and Bathurst	Apparently Secure	Imperiled/ Apparently Secure (S2S4)	Dolphin and Union	Apparently Secure	Imperiled (S2)	Peary Caribou	Imperiled	Critically Imperiled/
Species/VEC	Table 8-1	NatureServe												
Beverly/Ahiak and Bathurst	Apparently Secure	Imperiled/ Apparently Secure (S2S4)												
Dolphin and Union	Apparently Secure	Imperiled (S2)												
Peary Caribou	Imperiled	Critically Imperiled/												



			Vulnerable (S1S3)
	Red Knot (<i>Calidris canutus islandica</i>)	Imperiled	Apparently Secure (S4B)
	Killer Whale (NW Atlantic/Eastern Arctic pop.)	Vulnerable	Imperiled/Vulnerable (S2S3)
	Narwhal	Apparently Secure	Vulnerable (S3)
	<p>Please present the more conservative/higher risk conservation status for these species. The KIA notes that the 2022 Vegetation Monitoring Program (VMP) did default to the more conservative territorial statuses for vegetation SAR observed during 2022 surveys. Furthermore, please ensure that SAR listings and statuses, and known or potential occurrence at the Project site, are consistent between related documents, such as the WMMP Plan, Marine Shipping Wildlife Mitigation and Monitoring SOP, and Oil Pollution Prevention Plan & Oil Pollution Emergency Plan (OPPP/OPEP). When the requested revisions are made, the SAR table in the 2022 WMMP Report will be the most up-to-date and should be copied to other Project documents.</p>		
Recommendation/Request	<ul style="list-style-type: none"> • Please present the most conservative territorial status for wildlife species at risk, similar to what is being done for vegetation. • Please ensure that all Project documents that discuss species at risk are updated annually to match the most up-to-date information for species, statuses, statuses, and known/potential occurrence at the Project. 		
Importance of Issue	Low		

1.15 KIA-NIRB-15

Review Comment Number	KIA-NIRB-15
Subject/Topic	Incidental Wildlife Observations SOP
References	<p>Sabina, Back River Project, 2022 Annual Report (March 31, 2023)</p> <ul style="list-style-type: none"> • Appendix G, 2022 Pre-Construction Wildlife Mitigation and Monitoring Program Report <ul style="list-style-type: none"> ○ Appendix 5C, Incidental Wildlife Observations SOP, ENVIRO-14 (Version A.1, 30 December 2022)



	<ul style="list-style-type: none"> ○ Appendix 5D, Incidental Terrestrial Wildlife Observations, 2022 ○ Appendix 7A, Marine Shipping SOP – Wildlife Mitigation and Monitoring, ENVIRO-02 (Version F.1, 10 November 2022) <p>Sabina, Back River Project, Wildlife Mitigation and Monitoring Program Plan (Version 12, April 2023)</p> <ul style="list-style-type: none"> ● Sections 7.2.1.4, 10.1.1
<p>Summary</p>	<p>A draft version of Sabina’s Incidental Wildlife Observations SOP has been included as Appendix 5C of the 2022 WMMP Report. The KIA has reviewed this SOP and offers some feedback regarding species identification guidance, the need for clear and consistent instructions, consideration of management responses, and inclusion of bird VECs.</p>
<p>Detailed Review Comment</p>	<p>As noted in KIA-NIRB-02: WMMP Plan commitments prior to Construction, Section 7.2.1.4 of the WMMP Plan requires the development of this detailed incidental observations SOP and also states that <i>“The SOP will include training requirements for staff; methods for monitoring, and data sheets.”</i> This draft Version A.1 SOP has limited details about training in Section 2; Sabina provides basic wildlife identification guidance during employee training, including for common wildlife such as caribou, muskox, fox, wolverine, grizzly bear, and various bird species (including raptors, waterbirds, and songbirds). Wolf and moose are missing from this list, despite being species that tend to be recorded on camp wildlife logs (Appendix 5D). Sabina states that they also provide species identification guidance in poster or digital form; the KIA has not seen these documents but would suggest something similar to the Common Marine Mammal and Seabird ID Guides that were included in the latest iteration of the Marine Shipping Wildlife Mitigation and Monitoring SOP (Version F.1, Nov 2022). It would also be useful to include guides for wildlife species of conservation concern known to (or that could) occur at the Project (i.e., species listed in Table 8-1 of the 2022 WMMP Report). Section 2 of the SOP also lists the information that should be recorded whenever wildlife is observed, including:</p> <ul style="list-style-type: none"> ● Type of interaction if applicable (e.g., attraction, nesting, collision) ● Condition (e.g., limping, wounded, unable to fly) ● Any damage to or interaction with Project infrastructure (e.g., building skirting, vehicles). <p>However, there are no dedicated fields on the Incidental Wildlife Observation Datasheet to include these details. The</p>



	<p>form instructions for “Condition of Animals” are to circle Alive, Dead, or Injured, with no additional space for elaboration. Any vehicle collisions require filling out a separate form; however, the only space to describe other interactions or damage to infrastructure is in the “Other Notes” field (which has brief, unrelated instructions). Conversely, the datasheet has fields for “Habitat Description” and “Photos,” which are not included in the SOP instructions. As discussed in KIA-NIRB-05: Suggested improvements for marine wildlife survey forms, SOPs and datasheets need to have clear and consistent instructions and dedicated fields to ensure that the required/desired data are collected. For example, the summary log of incidental observations in Appendix 5D has columns for Distance from Camp, Direction from Camp, and Direction Travelling. However, these data fields were incompletely or rarely filled out for 2022 observations, which may be due to the lack of dedicated fields on the datasheet and/or unclear instructions.</p> <p>In addition, the KIA notes that mitigation responses are sometimes noted for incidental observations (Appendix 5D). For example, various observations of wolverine, red fox, wolf, and bear noted deterrence or notifying personnel. Only one record of a wolf 2 km from Goose on September 22 specified that a bear banger was used. It would be highly informative to include instructions in the SOP and fields on the datasheet to record whether management actions were needed (y/n), details of the management response (e.g., site alert, deterrence measures), and results of the actions (e.g., animal moved away).</p> <p>For the Incidental Wildlife Observation Datasheets, the KIA appreciates that the “Species” field now includes a field specifically for birds. However, the instructions at the top of both datasheets (general and wildlife collision), explaining when to complete these forms, still do not mention bird VECs. Raptors should be included as direct mortality due to collisions was rated as a residual effect in the FEIS (summarized in Section 10.1.1 of the WMMP Plan). Furthermore, since Sabina acknowledged the value of recording notable bird sightings, such as large flocks of migrating geese (see KIA-NIRB-12: Spring stand-watch surveys and incidental observations), additional instructions to record incidental bird observations should be included on the datasheet.</p>
<p>Recommendation/Request</p>	<ul style="list-style-type: none"> • Please expand on the list of common wildlife that may be observed and consider developing guides similar to those for common marine mammals and seabirds



	<p>in the Marine Shipping Wildlife Mitigation and Monitoring SOP (if not already done).</p> <ul style="list-style-type: none"> • Please consider adding species of conservation concern known to (or that could) occur at the Project to the wildlife identification guidance documents. • Please revise Section 2 of the Incidental Wildlife Observations SOP and the datasheets to have clear and consistent instructions and include dedicated data fields where needed. • Please consider adding instructions and data fields for management responses (e.g., if any were needed, details, results). • Please clarify, in the SOP and at the top of the datasheet, that observations of bird VECs (especially raptors, species of conservation concern, and large flocks) warrant documentation.
Importance of Issue	Moderate

1.16 KIA-NIRB-16

Review Comment Number	KIA-NIRB-16									
Subject/Topic	Dates of incidental wildlife observations									
References	<p>Sabina, Back River Project, 2022 Annual Report (March 31, 2023)</p> <ul style="list-style-type: none"> • Appendix G, 2022 Pre-Construction Wildlife Mitigation and Monitoring Program Report <ul style="list-style-type: none"> ○ Appendix 5D, Incidental Terrestrial Wildlife Observations, 2022 									
Summary	There are discrepancies in the dates of incidental terrestrial mammal and bird observations that need to be investigated and corrected.									
Detailed Review Comment	<p>The incidental wildlife observations highlighted in Section 5.7.2 (mammals) and Section 6.3 (birds) of the 2022 WMMP Report differ in dates from the summary log presented in Appendix 5D. The following observations are assumed to be the same based on number of animals and location:</p> <table border="1" data-bbox="659 1633 1429 1854"> <thead> <tr> <th data-bbox="659 1633 915 1719">Species (Count)</th> <th data-bbox="915 1633 1172 1719">Sections 5.7.2, 6.3</th> <th data-bbox="1172 1633 1429 1719">Appendix 5D</th> </tr> </thead> <tbody> <tr> <td data-bbox="659 1719 915 1770">Muskox (50)</td> <td data-bbox="915 1719 1172 1770">July 27</td> <td data-bbox="1172 1719 1429 1770">November 26</td> </tr> <tr> <td data-bbox="659 1770 915 1854">Grizzly bear (2, sow and cub)</td> <td data-bbox="915 1770 1172 1854">September 28</td> <td data-bbox="1172 1770 1429 1854">November 29</td> </tr> </tbody> </table>	Species (Count)	Sections 5.7.2, 6.3	Appendix 5D	Muskox (50)	July 27	November 26	Grizzly bear (2, sow and cub)	September 28	November 29
Species (Count)	Sections 5.7.2, 6.3	Appendix 5D								
Muskox (50)	July 27	November 26								
Grizzly bear (2, sow and cub)	September 28	November 29								



	Moose (2)	August 11	June 16
	Moose (3)	November 29	December 14
	Geese (100)	June 28	September 17
	Snowy owl (1)	November 26	November 24
	Swans (6)	September 25	November 22
<p>As discussed in KIA-NIRB-09: Wolverine observations and deterrence measures, there are also discrepancies between dates (months) presented in the main body of the 2022 WMMP Report and Appendix 5D. There may also be data collection or data entry issues associated with other incidental observations in Appendix 5D. Furthermore, date issues were also present for marine wildlife observations (see KIA-NIRB-04: Data collection for marine wildlife monitoring). Sabina needs to investigate the cause(s) of these data inconsistencies and take corrective actions to ensure that the issue does not recur. Although it is unlikely that analyses will (or can) be completed using incidental observations, there may be seasonal information that can be gleaned to inform adaptive management, if needed. If dates are incorrect, assumptions about when adaptive management may be needed may also be incorrect.</p>			
Recommendation/Request	<ul style="list-style-type: none"> • Please investigate and correct the date discrepancies for incidental wildlife observations collected in 2022. • Please note the corrective actions under ISO 9001: 2015 certification to catch these ongoing data entry errors internally, whether they be caused by Sabina or an ISO certified environmental consulting company. 		
Importance of Issue	Moderate		

1.17 KIA-NIRB-17

Review Comment Number	KIA-NIRB-17
Subject/Topic	Corrective actions taken after wildlife biting incident
References	<p>Sabina, Back River Project, 2022 Annual Report (March 31, 2023)</p> <ul style="list-style-type: none"> • Appendix G, 2022 Pre-Construction Wildlife Mitigation and Monitoring Program Report <ul style="list-style-type: none"> ○ Appendix 9A, Wildlife Incident Report, November 8, 2022



	<p>Sabina, Back River Project, Wildlife Mitigation and Monitoring Program Plan (Version 12, April 2023)</p> <ul style="list-style-type: none"> Section 9.1.7.1
Summary	<p>The wildlife incident in 2022 resulting in human injury necessitates a change in wildlife management policy and protocol; the status of these required changes is pending.</p>
Detailed Review Comment	<p>In Section 9 of the 2022 WMMP Report, Sabina describes a wildlife incident that resulted in human injury – a small carnivore in the GS-02 generator shack at Goose bit a staff member on the leg. Sabina states that <i>“An incident report was completed (Appendix 9A), and corrective actions implemented to mitigate access for wildlife to the generator shack. Mitigation actions taken include installation of wire mesh over vent louvres on the building intake duct, and a safety presentation to all staff regarding wildlife interactions, precautions, and waste management.”</i></p> <p>On the Incident Report – Long Form in Appendix 9A, corrective actions consisted of <i>“wire screen placed on intake duct”</i> immediately on November 8, 2022. Under preventive actions, <i>“Incorporate requirement of guarding building openings into existing Wildlife Management SOP”</i> was noted without a completion date. Has this action since been implemented? Please provide the <i>“existing Wildlife Management SOP”</i> for review by the KIA and other interested parties. As noted in KIA-NIRB-09: Wolverine observations and deterrence measures, there appears to have been increased attraction of wolverine to the incinerator in 2022; this Wildlife Management SOP may need to be further revised and improved. In addition, the development and implementation of a Skirting and Building Monitoring SOP, as noted in KIA-NIRB-02: WMMP Plan commitments prior to Construction, should be accelerated to prevent wildlife incidents, like the one on November 8, 2022, from recurring. The KIA also notes that the WMMP Plan currently describes a reactive, rather than proactive, approach; in Section 9.1.7.1 (design mitigation for attraction of grizzly bear and wolverine), Sabina states that <i>“If wildlife are able to access buildings through vents, windows, or by other means, then measures will be taken to exclude wildlife.”</i> It is important to make this policy/protocol change and to install the guards on all building openings as soon as possible to prevent further wildlife incidents where animals become aggressive from being <i>“cornered.”</i></p>
Recommendation/Request	<ul style="list-style-type: none"> Please implement the Preventive Actions noted on the November 8, 2022, Incident Report as soon as



	<p>possible, if they have not already been completed.</p> <ul style="list-style-type: none"> • Please distribute the “Wildlife Management SOP” to the KIA and other interested parties for review.
Importance of Issue	Moderate

1.18 KIA-NIRB-18

Review Comment Number	KIA-NIRB-18
Subject/Topic	Selection and monitoring of new vegetation plots due to WIR realignment
References	<p>Sabina, Back River Project, 2022 Annual Report (March 31, 2023)</p> <ul style="list-style-type: none"> • Project Certificate Conditions No. 28, 34, 45, 80 • Appendix E, 2022 Vegetation Monitoring Field Program Results – Winter Road Realignment (Technical Memorandum, 10 January 2023) <p>Sabina, Back River Project, 2023 Winter Ice Road Technical Memorandum (December 2022)</p> <p>Sabina, Back River Vegetation Monitoring Plan (January 2020)</p> <ul style="list-style-type: none"> • Section 5.5 <p>Golder, 2019 Vegetation Monitoring Program, Technical Memorandum (18 February 2020)</p> <ul style="list-style-type: none"> • Figure 2 <p>Sabina, Back River Project, Responses to 2021 Annual Report Comments (August 19, 2022)</p> <ul style="list-style-type: none"> • KIA-NIRB-11
Summary	<p>Ten new vegetation monitoring plots were established in 2022 due to the proposed WIR re-alignment. It is unclear if new plots will need to be created whenever the WIR alignment changes, and how long-term monitoring can be completed (as per the Back River Vegetation Monitoring Plan) if the plots change each year. It is also unclear if the new plots will still be paired with existing plots to enable before-after and control-impact analyses. The 2022 VMP field program only assessed the new plots, whereas the existing plots were last surveyed in 2019; thus, it is unclear how data can be compared during the next comprehensive WIR vegetation monitoring event.</p>
Detailed Review Comment	<p>As part of addressing PCC No. 34 (Vegetation Monitoring Plan; to minimize potential impacts to vegetation along the winter road/trail routings and around project sites), Sabina states that <i>“in 2022, ten new vegetation monitoring plots were</i></p>



established due to proposed re-alignment of the Winter Ice Road. The results of the monitoring are attached in Appendix E (2022 VMP Report).” However, Sabina explains under several PCCs (No. 28, 45, 80) that the WIR was not constructed in 2022 due to an accident resulting in a fatality. As such, the WIR has not been constructed since 2019. The original paired vegetation monitoring plots were established along the WIR in July 2018 and 2019 (Section 1, 2022 VMP Report). In their plan for the 2023 WIR, Sabina states that they anticipate “slight variations in routing to occur should construction or operational challenges exist” (Section 2, 2023 WIR Technical Memorandum, Dec 2022). Thus, it appears that the WIR alignment may change on an annual basis (when constructed). Does Sabina expect to need new vegetation monitoring plots whenever the WIR is re-aligned? If so, how can a rigorous VMP be developed “to allow for long term monitoring of winter usage of this road” (Section 5.5, Back River Vegetation Monitoring Plan, Jan 2020)? The KIA has previously commented on the lack of trend analyses for the Back River VMP (e.g., KIA-NIRB-11 from the 2021 NIRB Annual Report review). Sabina has stated in the past that there were insufficient monitoring data for analysis but responded to KIA-NIRB-11 that vegetation trend analysis will be completed every three years. If new monitoring plots need to be continually established, the three-year threshold may never be reached for certain locations.

Section 5.5 of the Vegetation Monitoring Plan also explains that “Paired treatment, located in the path of the WIR and control (located adjacent to the WIR) plots have been established between the MLA and Goose Mine area along the WIR (Figure 1). Where possible, selected plots had pre-existing data available on baseline (pre-operational) vegetation conditions, to facilitate before-after as well as control-impact type comparisons.” Table 1 of the 2022 VMP Report presents a list of the new vs. replaced monitoring plots. While Figure 2 in this report does not include all VMP plots, including the replaced ones (which would have been helpful for the reviewer), a visual comparison of Figure 2 in this report versus Figure 2 of the 2019 VMP Report indicates that the new plots are likely near the old ones. However, it is unclear if the plots are also matched with respect to vegetation association and structural stage (i.e., does this information in Table 1 apply to the new plots, old plots, or both?). Ultimately, it is expected that the new 2022 plots were designed to be paired with existing plots (as per the Vegetation Monitoring Plan); however, Sabina does not explicitly state this in the 2022 NIRB Annual Report.



	<p>Finally, Sabina states in Section 6.0 of the 2022 VMP Report that “The vegetation plots assessed during the 2022 field program are only a small subset of the total WIR vegetation monitoring program. They represent areas that have been realigned since the original plots were established in 2018. The next WIR vegetation monitoring event, which will be after three years of WIR construction has occurred, will be a more comprehensive assessment of all the established plots and analysis of plot data.” However, it is unclear how data from the next WIR vegetation monitoring event will be analyzed for the new and existing plots if the former has data from 2022 and the latter have not been monitored since 2019 (except for aerial photographs for some plots in 2022). It would have been more prudent to complete the 2022 field program for all WIR plots to establish the same ‘baseline’ for the next comprehensive field campaign.</p>
<p>Recommendation/Request</p>	<ul style="list-style-type: none"> • Please clarify if the WIR alignment is expected to change during each year of construction, and if new vegetation monitoring plots will be established each time. • Please consider keeping previously established plots in case they become ‘relevant’ again due to future WIR realignments. • If new plots are continually needed, please explain how a long-term monitoring program, according to the Vegetation Monitoring Plan for WIR monitoring, can be developed, with sufficient data for trend analyses. • Please clarify if the new 2022 plots were still designed to be paired with existing plots and explain how these paired treatments can be compared if one set of data is from 2022 and the other from 2019. • In future years, please complete all WIR vegetation plots in addition to new plots added for realignment to ensure that data are comparable at the subsequent monitoring period.
<p>Importance of Issue</p>	<p>High</p>

1.19 KIA-NIRB-19

<p>Review Comment Number</p>	<p>KIA-NIRB-19</p>
<p>Subject/Topic</p>	<p>Vegetation associations for new plots established in 2022</p>
<p>References</p>	<p>Sabina, Back River Project, 2022 Annual Report (March 31, 2023)</p>



	<ul style="list-style-type: none"> Appendix E, 2022 Vegetation Monitoring Field Program Results – Winter Road Realignment (Technical Memorandum, 10 January 2023) <p>Sabina, Back River Vegetation Monitoring Plan (January 2020)</p> <ul style="list-style-type: none"> Section 5.5
<p>Summary</p>	<p>There is a discrepancy regarding the vegetation association for new plot BRR006Ea. In addition, new plot BRR040Ea is categorized as tussock meadow, which is not a vegetation association mentioned in the 2020 Vegetation Monitoring Plan, and it is unclear if there is a suitable plot amongst the previously established plots to act as a paired reference.</p>
<p>Detailed Review Comment</p>	<p>Table 1 of the 2022 VMP Report shows that of the 10 new plots established in 2022, five represent dry-sparse tundra, three represent mesic dwarf-shrub tundra, and one each represents raised bog complex and tussock meadow. However, raised bog complex is not included as a vegetation association in the results tables in Section 3.0. In Table 9, plot BRR006Ea is categorized as mesic dwarf-shrub tundra instead of raised bog complex; however, it is unclear which table contains the erroneous vegetation association. Sabina states in Section 5.5 of the 2020 Vegetation Monitoring Plan that <i>“The most common vegetation associations sampled along the WIR alignment are Dry Sparse Tundra, Mesic Dwarf Tundra, and Raised Bog Complex.”</i> Tussock meadow is not mentioned as a vegetation association within which the paired monitoring plots were established in 2018/2019, unless Undifferentiated Tundra has since been refined. As shown in the 2022 field program results, the tussock meadow experimental plot BRR040Ea has reference plot for comparison. It is also unclear if there are previously established plots in tussock meadow habitat that would be suitable reference(s). Without paired treatments, Sabina would not be following their Vegetation Monitoring Plan for WIR monitoring (see also KIA-NIRB-18: Selection and monitoring of new vegetation plots due to WIR realignment).</p>
<p>Recommendation/Request</p>	<ul style="list-style-type: none"> Please correct the discrepancy in vegetation association for new plot BRR006Ea. Please clarify if new plot BRR040Ea is located in a habitat type (tussock meadow) without a suitable paired reference amongst previously established plots. If so, please explain what monitoring data from BRR040Ea will be compared to.



Importance of Issue	Moderate
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1.20 KIA-NIRB-20

Review Comment Number	KIA-NIRB-20
Subject/Topic	Vegetation species of conservation concern found during 2022 field program
References	<p>Sabina, Back River Project, 2022 Annual Report (March 31, 2023)</p> <ul style="list-style-type: none"> • Appendix E, 2022 Vegetation Monitoring Field Program Results – Winter Road Realignment (Technical Memorandum, 10 January 2023) <ul style="list-style-type: none"> ○ Appendix B, 2022 Species List <p>Sabina, Back River Vegetation Monitoring Plan (January 2020)</p> <ul style="list-style-type: none"> • Section 6
Summary	<p>According to current territorial conservation statuses, six vulnerable and one critically imperiled vegetation species were found during 2022 field surveys. Sabina states that the critically imperiled species may be locally common and does not describe mitigation measures to avoid potential impacts to this species (or other rare plants). Two species observed in 2022 are not known to be present in Nunavut; their identities may warrant re-evaluation as genus <i>Polytrichum</i> includes three other territorial species of conservation concern.</p>
Detailed Review Comment	<p>Table 2 of the 2022 VMP Report presents a list of territorial species of conservation concern (erroneously labelled as “Federally Listed”) observed during 2022 vegetation surveys, including six vulnerable species and one critically imperiled species. Sabina states that, <i>“Although [red-stemmed feather moss, Pleurozium schreberi] is considered critically imperiled in Nunavut, it was observed in the Project area at both experimental and reference vegetation plots in 2018, 2019, 2021, and 2022, suggesting it may be locally common. It is possible that the Project area is near the edge of its range where found.”</i></p> <p>Despite the possibility that red-stemmed feather moss is locally common, Sabina should take measures to avoid potential impacts to this territorially critically imperiled species. If locally common, but regionally rare, this area could be an important location for maintaining the regional presence of this species. However, there are no mitigation measures mentioned in the 2022 VMP Report or specified in Section 6 of the 2020 Vegetation Monitoring Plan for rare</p>



	<p>plants/species of conservation concern. Thus, it is unclear if Sabina has taken/is taking/will take measures to protect rare plants (including federally listed species at risk).</p> <p>The KIA also notes that Sabina states in Section 6.0 (Recommendations) that <i>“In future vegetation monitoring programs where species listed by the CESSC is observed, a collection of the species is recommended. These collections can be sent to a taxonomist for expert verification.”</i> This statement suggests that there may be doubts about the species identifications presented in Table 2 and/or Table B1 (Species Observed During 2022 Field Surveys). In Table B1, two bryophyte species were observed in 2022 that are not known in Nunavut (according to (CESSC, 2022): common haircap moss (<i>Polytrichum commune</i>) and sickle-leaved golden moss (<i>Tomentypnum falcifolium</i>). Perhaps these species could also be considered ‘rare plants’ at the northern edge of their ranges, or perhaps these plants were misidentified at the species level, but the genus is correct. There is only one <i>Tomentypnum</i> species known in Nunavut (<i>T. nitens</i>, S4 = Apparently Secure). However, there are several other <i>Polytrichum</i> species in Nunavut, including three that are species of conservation concern: <i>P. swartzii</i> (S1S3 = Critically Imperiled/Vulnerable), <i>P. hyperboreum</i> (S3 = Vulnerable), and <i>P. piliferum</i> (S3S4 = Vulnerable/Apparently Secure). It would be informative to confirm the identity of these species and to ascertain if they are also species of conservation concern.</p>
<p>Recommendation/Request</p>	<ul style="list-style-type: none"> • Please clarify whether the Back River Project is planning and implementing mitigation and management for rare plants, including both federally listed species at risk and territorial species of conservation concern. • Please confirm if <i>Polytrichum commune</i> and <i>Tomentypnum falcifolium</i> (shown in Table B1) were correctly identified to the species level as they are not known in Nunavut. If they are correct, please discuss whether these species could be considered rare plants in Nunavut.
<p>Importance of Issue</p>	<p>Low</p>

1.21 KIA-NIRB-21

<p>Review Comment Number</p>	<p>KIA-NIRB-21</p>
<p>Subject/Topic</p>	<p>Ambiguities and missing information in 2022 VMP Report</p>



<p>References</p>	<p>Sabina, Back River Project, 2022 Annual Report (March 31, 2023)</p> <ul style="list-style-type: none"> • Appendix E, 2022 Vegetation Monitoring Field Program Results – Winter Road Realignment (Technical Memorandum, 10 January 2023) <ul style="list-style-type: none"> ○ Appendix A, Photographs <p>Sabina, Back River Project, Responses to 2021 Annual Report Comments (August 19, 2022)</p> <ul style="list-style-type: none"> • KIA-NIRB-15 <p>Sabina, Back River Vegetation Monitoring Plan (January 2020)</p>
<p>Summary</p>	<p>A few WIR vegetation monitoring parameters are described in the Methods but not presented in the Results. It is unclear how vegetation is defined as a surface substrate, especially in relation to other vascular vegetation measures. Two plot photographs are duplicated.</p>
<p>Detailed Review Comment</p>	<p>There are a few details within the 2022 VMP Report that the KIA would like clarification on:</p> <p><u>Table 5: Average Surface Substrate Cover by Strata</u></p> <p>It is unclear how the average percent cover for Vegetation can be so low (<1.0 for dry-sparse tundra plots, 0.0 for mesic dwarf-shrub tundra and tussock meadow plots) when Tables 3 and 4 indicate that there is sufficient vegetation to calculate average height and cover by strata, respectively. For example, despite 0.0% vegetation cover as a surface substrate for experimental plots in mesic dwarf-shrub tundra, the vascular vegetation could still be categorized into 40.0% shrub, 0.7% forb, and 35.0% graminoid?</p> <p>Furthermore, the KIA previously commented in KIA-NIRB-15 for the 2021 NIRB Annual Report review that fungi, water, and decaying wood were noted in the Methods as surface substrates but were not included in the results. Sabina has amended the Methods (Section 4.0) in the 2022 VMP report to include surface water, litter, decaying wood, and live ground cover as examples of surface substrate. Decaying wood is still missing from Table 5; it is unclear if none was found on the plots, since Animal Pellets are included in the table despite all values being 0.0. The KIA wonders if decaying wood should be part of the Vegetation Monitoring Plan at all, given the lack of trees in the Arctic environment to create coarse woody material (often assessed as cover in plans developed for other areas) or if this is a copy and paste error from an SOP developed original for another area.</p> <p><u>Wildlife sign</u></p> <p>Data for wildlife sign (also noted in KIA-NIRB-15) continue to</p>



	<p>be missing from the 2022 VMP Report. As noted above, Animal Pellets are included in Table 5 as a type of surface substrate; however, collection of wildlife sign information, as outlined in the Methods section, appears to serve a separate objective.</p> <p><u>Photo monitoring</u></p> <p>In Appendix A of the 2022 VMP Report, Photo 16 for BRR021 (dry sparse tundra) is the same as Photo 17 for BRR038 (mesic dwarf-shrub tundra). One of these photos is incorrect.</p>
Recommendation/Request	<ul style="list-style-type: none"> • Please clarify how vegetation is defined as a surface substrate (Table 5), and how it relates to other measurements of vascular plants (Tables 3 and 4). • Please clarify if decaying wood (as a surface substrate) and wildlife sign (as a separate data collection component) were assessed and observed on the new 2022 monitoring plots. Please provide the correct plot photograph(s) for BRR021 and BRR038. • Please consider the usefulness of including decaying wood as a surface substrate in the Arctic tundra environment.
Importance of Issue	Low

1.22 KIA-NIRB-22

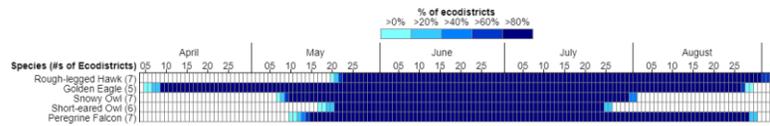
Review Comment Number	KIA-NIRB-22
Subject/Topic	Pre-blasting SOP – inconsistencies with WMMP Plan
References	<p>Sabina, Back River Project, 2022 Annual Report (March 31, 2023)</p> <ul style="list-style-type: none"> • Appendix G, 2022 Pre-Construction Wildlife Mitigation and Monitoring Program Report <ul style="list-style-type: none"> ○ Appendix 5A, Wildlife Monitoring and Mitigation for Blasting, Preconstruction, Construction and Operations, SOP ENVIRO-07 (Version C.1, 4 November 2022) <p>Sabina, Back River Project, Wildlife Mitigation and Monitoring Program Plan (Version 12, April 2023)</p> <ul style="list-style-type: none"> • Sections 10.1.3.2, 7.1.5.8, 9.1.3.6
Summary	There are inconsistencies between the Wildlife Monitoring and Mitigation for Blasting SOP and the WMMP Plan related to the raptor nesting period, caribou group mitigation, applicability to large predator species, and setback distances for blasting in quarries and other (not open pit) blasting.
Detailed Review Comment	There are details within the Wildlife Monitoring and



Mitigation for Blasting SOP that are inconsistent with information presented in the WMMP Plan or require additional clarification/precision:

Section 2.4, Raptor Survey

In the SOP, the bird breeding season is written as March to July; however, Section 10.1.3.2 of the WMMP Plan states April 15 to August 15. The KIA notes that the latter window is generally consistent with the ECCC migratory bird nesting period for nesting zone N9 (Arctic Plains and Mountains; Bird Conservation Region 3), where the Project is located. However, when using the Birds Canada Nesting Calendar Query Tool (Rousseu & Drolet, 2015) and a more refined analysis of ecodistricts around Bathurst Inlet, raptors are observed to nest between April 1 and August 31. The earliest breeding raptor is the golden eagle, a cliff-nesting species of conservation concern, considered Vulnerable in Nunavut (CESCC, 2022). Please consider extending the timing window for which raptor nest surveys and mitigation should be completed.



Section 3.1, Large Mammal Mitigation

In Tables 1 and 2, please edit “Group of 1-25 animals” to be more precise (e.g., “Group of 1-24 animals” or “<25 animals”) as there is greater mitigation for caribou in groups of ≥25. In addition, the Table 1 entry for “Group of 1-25 animals” is written as applicable all year. However, Section 7.1.5.8 of the WMMP Plan includes consideration of <25 caribou during calving, post-calving, and early summer (June 5 – July 31). During this timing window, behavioural monitoring will be conducted, and adaptive management undertaken if needed (e.g., cessation of blasting “should animals respond significantly to blasting”). Please include another row in Table 1 for this seasonal consideration.

Table 2 indicates that the trigger/setback distance for caribou for management of blasting in quarries and other blasts (side from open pits) is 2.5 km. However, Section 7.1.5.8 of the WMMP Plan does not specify 2.5 km and states, “Generally, construction and quarry blasts are much smaller than those in the open pits during operations and therefore may require a smaller setback distance. These distances will be



	<p><i>determined based on the size of the planned blasts using the same 96 dB buffer as the main pit blasts.” Is there modelling to support the 2.5 km setback distance presented in the SOP? Can Sabina guarantee that blasting in quarries and other blasts will not require a setback distance larger than 2.5 km?</i></p>
Recommendation/Request	<ul style="list-style-type: none"> • Please correct the discrepancy in raptor nesting period between the Pre-blasting Survey SOP and WMMP Plan. Please also consider extending the raptor nesting window in the WMMP Plan to be from April 1 to August 31. • Please be more precise about the trigger number of animals (<25) for caribou mitigation in Tables 1 and 2. Please also include the calving, post-calving, and early summer consideration for open bit blasting. • Please provide rationale for the 2.5 km setback distance for blasting in quarries and other blasts (Table 2) and confirm that larger blasts will not be used for the Project.
Importance of Issue	Moderate

1.23 KIA-NIRB-23

Review Comment Number	KIA-NIRB-23
Subject/Topic	Pre-blasting SOP survey datasheet
References	<p>Sabina, Back River Project, 2022 Annual Report (March 31, 2023)</p> <ul style="list-style-type: none"> • Appendix G, 2022 Pre-Construction Wildlife Mitigation and Monitoring Program Report <ul style="list-style-type: none"> ○ Appendix 5A, Wildlife Monitoring and Mitigation for Blasting, Preconstruction, Construction and Operations, SOP ENVIRO-07 (Version C.1, 4 November 2022)
Summary	<p>Clarification is needed for the use of tower cameras as part of pre-blasting surveys and how desk-based review of caribou collar data (and potentially tower camera data) will be reported. The case-specific blast safety distance should be added on the Pre-blasting Survey Datasheet. Data fields for behavioural monitoring and mitigation/management actions could be improved.</p>
Detailed Review Comment	<p>The KIA is providing some suggestions for improvement and requests for clarification for the Pre-blasting Survey Datasheet (vA.1 from July 2020; Attachment A of the Wildlife Monitoring and Mitigation for Blasting SOP):</p> <ul style="list-style-type: none"> • Tower Camera is indicated a type of monitoring for



	<p>large mammals. However, tower cameras were not noted in Section 2.3 of the SOP for large mammal surveys; only review of caribou collar data and ground-based (height of land) surveys are mentioned. It is unclear whether tower camera data would be used as an additional pre-field, desk-based review (similar to the use of collar data) or if these cameras could be a potential substitute for ground-based surveys. Sabina should clarify the purpose, locations, and other methodology information for the tower cameras (e.g., do they have a 360° view, as required during ground-based surveys?), if this monitoring option is used.</p> <ul style="list-style-type: none">• It is unclear whether the desk-based large mammal surveys (review of caribou collar data and potential review of tower camera data, depending on Sabina's response to the previous bullet) require filling out the Pre-blasting Survey Datasheet. The "Type of Monitoring" field allows for circling one or multiple options. Portions of the datasheet may be difficult to complete for desk-based review (e.g., precise location information, distance from wildlife to blast, animal behaviour) and it is unclear how useful this reporting would be if collar data are either one day behind (during calving and post-calving) or up to one week behind (rest of the year). If review of collar and/or camera data does not require filling out this datasheet, are Project staff required to complete a different form or another kind of reporting when caribou are observed?• There is a field for "Wildlife Within Trigger Distances?" with Yes/No options. These distances presumably refer to those presented in Tables 1 and 2 of the SOP. However, given that the blast safety distance is determined on a case-by-case basis by the Blasting Manager, it would be better to include a separate field to record the specific blast safety distance, ideally signed off by the Blasting Manager.• The "Animal Behaviour" field could be improved to record more information for behavioural monitoring to inform adaptive management. For example, separate fields for pre-blasting, during blasting, and post-blasting behaviour would enable more systematic data collection for analysis, and also provide clearer instructions for the surveyor.• Similarly, the "Notes" field currently has brief instructions to record any mitigation actions. Specific
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	<p>fields should be added to ensure that the required information is recorded, as per Section 4 of the SOP: management action(s) taken, including duration of any blast shutdowns and criteria used to approve resumption of activities; and any communication with the KIA and GN DOE or Conservation Officers.</p> <p>Minor typo issue: under the “Wildlife Observed?” field, there is a note stating, “(If “No” proceed to Section 4)”. The instructions are likely pointing to the Other Information section of the form; however, the headings on the datasheet have no numbering.</p>
Recommendation/Request	<ul style="list-style-type: none"> • Please revise the Pre-blasting Survey Datasheet (and the Wildlife Monitoring and Mitigation for Blasting SOP, where appropriate) with the KIA’s recommendations in the detailed review comment.
Importance of Issue	Moderate

1.24 KIA-NIRB-24

Review Comment Number	KIA-NIRB-24
Subject/Topic	Regulatory inspections
References	Annual Report, Section 4.4 Regulatory Compliance
Summary	Summary of inspections by regulators and landowner do not indicate what actions were by Sabina in response to issues raised.
Detailed Review Comment	<p>The Annual Report summarizes issues identified by the KIA, CIRNAC and NIRB during their inspections of the project in 2022 but does not indicate what action has been taken by Sabina to address these concerns. In particular,</p> <ul style="list-style-type: none"> • KIA noted that culverts at Echo Crossing and Gander need to be installed, and measures should be implemented to mitigate water flowing into the underground portal, and • CIRNAC noted issues with sediment erosion control measures, storage of hazardous waste and material, operation of a sump, berm integrity, spill remediation, and wastewater disposal from washing vehicles.
Recommendation/Request	Please include a summary in the Annual Report of Sabina’s response to each of the issues raised by regulatory agencies during their 2022 inspections.
Importance of Issue	Moderate



1.25 KIA-NIRB-25

Review Comment Number	KIA-NIRB-25
Subject/Topic	Climate station
References	Annual Report, Section 4.5.2 Climate and Meteorology
Summary	Location and relation of Lupin A Station and Goose Station needs to be clarified.
Detailed Review Comment	The total rainfall recorded at the Goose station in 2022 is reported to be lower than the climate normal for 1981-2010 recorded at the Lupin A station. The location of the Lupin A station is not provided, and thus it is not possible to determine if data from the Goose station is representative of Lupin A station precipitation conditions.
Recommendation/Request	Please describe the applicability of the climate data collected at the Lupin A station to conditions at the Goose station, including what factors were considered when comparing stations.
Importance of Issue	Moderate

1.26 KIA-NIRB-26

Review Comment Number	KIA-NIRB-26
Subject/Topic	Climate change
References	Annual Report Appendix B – 2022 Annual Geotechnical Inspection Report
Summary	Clarification on incorporation of climate change in the design of project infrastructure and operation.
Detailed Review Comment	The geotechnical inspection is meant to ensure that the project’s surface infrastructure maintains permafrost integrity. The Report states that “underbuilding of roads and pads will result in permafrost damage because of thermal erosion, which will require ongoing maintenance and notable remediation costs at closure.” It is not clear whether design and operating considerations account for projected (and observed) climate change in the region, and how climate change is anticipated to affect thermal erosion.
Recommendation/Request	Please indicate if the Geotechnical Inspection Report’s evaluation of project impact on the continuous permafrost incorporates predicted (and observed) climate warming in the region, and how climate change influences anticipated thermal erosion.



Importance of Issue	Low
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1.27 KIA-NIRB-27

Review Comment Number	KIA-NIRB-27
Subject/Topic	Water crossings
References	Annual Report Appendix B – 2022 Annual Geotechnical Inspection Report, Attachment 1 – Summary of 2022 AGI Observations and Recommendations
Summary	No timetable is provided for revisiting and enhancing drainage at Goose Neck Crossing area.
Detailed Review Comment	The summary indicates that “Sabina also indicated that they would revisit the Goose Neck crossing area to see if additional culvert or drainage measures will be required or suggested to avoid any excessive ponding and/or to reduce the likelihood of the road washing out in a larger storm event.” No timeline is given for this assessment of whether additional mitigation measures are required for the Goose Neck crossing area.
Recommendation/Request	Please indicate when an assessment will be conducted to determine whether additional culvert or drainage measures are required for the Goose Neck crossing, and if they are required, when they will be implemented.
Importance of Issue	Low

1.28 KIA-NIRB-28

Review Comment Number	KIA-NIRB-28
Subject/Topic	Marine shipping monitoring
References	Annual Report Appendix G – 2022 Pre-construction Wildlife Mitigation and Monitoring Plan, Section 7. Marine Mammals and Seabirds
Summary	Inconsistency in marine mammal and seabird observation by transport vessels.
Detailed Review Comment	Marine mammal and seabird observations are required to be recorded by vessel crew members during all sailings. However, Section 7.1.2 Results and Discussion indicates that surveys were not conducted on all vessel trips. It appears that surveys were not conducted for the following trips: <ul style="list-style-type: none"> • MV Aujaq August 23-28, 2022 inbound trip,



	<ul style="list-style-type: none"> • MV Donaugracht August 13-23 inbound trip and September 3 outbound trip, • MV Henry Christoffersen September 7-12 inbound trip, September 17 outbound trip, September 24-October 5 inbound trip, October 8 outbound trip, • Risco Reegen October 22 inbound trip, undated outbound trip.
Recommendation/Request	Please explain what procedures have been implemented to ensure that gaps in vessel monitoring will be avoided in future for marine mammal and seabird sightings for all marine shipping trips.
Importance of Issue	High

1.29 KIA-NIRB-29

Review Comment Number	KIA-NIRB-29
Subject/Topic	Species at risk
References	Annual Report Appendix G – 2022 Pre-construction Wildlife Mitigation and Monitoring Plan, Section 7. Marine Mammals and Seabirds
Summary	Complete documentation of sightings, observations, and locations of marine mammals and seabirds on marine shipping trips.
Detailed Review Comment	One Red-necked Phalarope (listed as special concern federally and vulnerable in the territory) was observed during a vessel trip but the location was not recorded. Documenting location of sightings for marine mammals and seabirds is important to identify sensitive habitat that could be adversely affected by shipping activity and to assess risk of shipping on observed species.
Recommendation/Request	Please ensure that vessel crew members are trained in the importance of providing detailed records of marine mammal and seabird observations during vessel trips, including all the data listed in Section 7.1.1.2. Please ensure that survey records are reviewed periodically by a qualified person during the shipping season so that proper documentation is occurring. If required information is missing, the crew members responsible for the missing observations should be provided with additional training.
Importance of Issue	High



1.30 KIA-NIRB-30

Review Comment Number	KIA-NIRB-30
Subject/Topic	Seal lairs
References	Annual Report Appendix G – 2022 Pre-construction Wildlife Mitigation and Monitoring Plan, Section 7.2 Seal Lair Mitigation and Monitoring
Summary	Specification of minimum setback distance for identified seal lairs needs to be provided.
Detailed Review Comment	Sabina indicates that “if construction of the on-ice landing strip or the WIR [Winter Ice Road] occurs during the seal pupping period (i.e., after February 15), then pre-construction surveys will be conducted, and construction will be altered to avoid any identified seal lairs”. Has a recommended minimum setback distance been identified between seal lairs and construction activity?
Recommendation/Request	Please identify a minimum setback distance to separate construction activity from any known seal lairs, based on the best available science on protecting seals from disturbance during the reproductive period.
Importance of Issue	Moderate

1.31 KIA-NIRB-31

Review Comment Number	KIA-NIRB-31 (Geotechnical Engineering Consultant)
Subject/Topic	Spill modelling
References	Annual Report Appendix I – Oil Pollution Emergency Plan, Section 5.3 Bathurst Inlet Physical Environment and Sensitivities
Summary	Incorporation of climate change into spill modelling is required.
Detailed Review Comment	Sabina concludes from its spill modelling that “ <i>Regardless of diesel amounts, spill occurring in mild to moderate wind conditions generally did not progress past a few kilometres from the source location.</i> ” More intense and more frequent storms due to climate change may generate stronger winds in the project area. It is not clear if spill modelling considers the impact of climate change on spill dispersion.
Recommendation/Request	Please incorporate the impact of climate change (i.e., greater wind speeds and more frequent storms) into spill modelling and discuss how it is expected to affect spill dispersion.



Importance of Issue	Moderate
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1.32 KIA-NIRB-32

Review Comment Number	KIA-NIRB-32
Subject/Topic	Fuel transfer procedures
References	Annual Report Appendix I – Oil Pollution Emergency Plan, Annex 5 OPPP & OPEP Specifics, Section 7.1.3 Communications
Summary	Clarification of major and severe environmental conditions that would affect fuel transfer from ship to shore.
Detailed Review Comment	Sabina lists conditions under which the transfer of fuel must be stopped immediately, including if there is a <i>“major increase in wind and/or swells (supplier)”</i> and if there is <i>“severe deterioration in ice or visibility conditions.”</i> These are generalized conditions that are not well-defined, and thus the determination of what is “major” or “severe” could be subjective, differing between individual operators.
Recommendation/Request	Please identify specific parameters that define what constitutes a 1) major increase in winds above which fuel transfers should be stopped and 2) severe deterioration in ice or visibility conditions below which fuel transfers should be stopped.
Importance of Issue	Moderate

1.33 KIA-NIRB-33

Review Comment Number	KIA-NIRB-33
Subject/Topic	Phytoplankton sampling at reference stations
References	Annual Report Appendix J – Marine Monitoring Report, Section 4.3 Phytoplankton
Summary	Affects of reduced sampling at reference station on statistical data needs to be discussed.
Detailed Review Comment	Sabina reports that samples were collected in triplicate at the MLA stations but only in duplicate at the reference stations <i>“due to equipment and time constraints.”</i> Information should be provided on what will be done to prevent these problems in future. Reduced sampling at the reference stations affects the statistical rigour of comparisons between sites. In addition, phytoplankton samples were only collected at REF-04 and REF-05, not at REF-01 and REF-02.



Recommendation/Request	Please explain how these sampling issues will be avoided in future so that the same number of samples are collected at all stations, and all reference stations are sampled. Please discuss how reduced sampling may affect interpretation of the 2022 results.
Importance of Issue	Low

1.34 KIA-NIRB-34

Review Comment Number	KIA-NIRB-34
Subject/Topic	Chlorophyll measurements
References	Annual Report Appendix J – Marine Monitoring Report, Section 4.3 Phytoplankton
Summary	Clarification of what falls in and out of established range for Chlorophyll measurements
Detailed Review Comment	Sabina reports that chlorophyll-a ranged from 0.418 to 0.436 µg/L at reference stations and “ <i>generally 0.142 to 0.270 µg/L at the MLA stations.</i> ” It is not clear what is meant by “generally.” Were there some samples outside this range? If so, they should be reported and discussed.
Recommendation/Request	Please report the actual range of all chlorophyll-a samples collected at the MLA stations, not just the “general” range.
Importance of Issue	Low

1.35 KIA-NIRB-35

Review Comment Number	KIA-NIRB-35
Subject/Topic	Fish Passage
References	4.5.8 Freshwater Aquatic Environment - Project Certificate Condition No. 26
Summary	Spring stream velocity was monitored in 2021 and 2022 at Rascal Stream, showing the 14 in-stream rock weir structures reduced velocities by 34% on average. This result suggests that spring conditions in 2021 and 2022 did not provide a velocity barrier to Arctic Grayling movement to upstream habitat.
Detailed Review Comment	The results indicate stream velocities were mitigated by the installed rock weirs in 2021 and 2022 to below maximum thresholds for Arctic grayling. No information is provided on whether similar results are predicted for expected future



	stream velocities.
Recommendation/Request	Perform a stream flow study to determine if the rock weir structures will maintain <1.5 m/s maximum allowable thresholds for Arctic grayling under all expected spring flow conditions.
Importance of Issue	High

1.36 KIA-NIRB-36

Review Comment Number	KIA-NIRB-06
Subject/Topic	Fish Passage
References	4.5.8 Freshwater Aquatic Environment - Project Certificate Condition No. 26
Summary	The installation of the Rascal Stream diversion channel would be the next step, followed by monitoring of flows and fish movements under spring flow conditions to evaluate the effectiveness of mitigations and determine whether additional velocity mitigation is required in Rascal Stream West. Collaboration with DFO, KIA, and other interested parties will continue into 2023.
Detailed Review Comment	KIA needs to review the design information for the diversion channel as well as any modelling that has been performed to determine if flows in the channel will maintain <1.5 m/s maximum allowable thresholds for Arctic grayling under all expected spring flow conditions.
Recommendation/Request	Please provide diversion channel designs and any flow modelling.
Importance of Issue	High

1.37 KIA-NIRB-37

Review Comment Number	KIA-NIRB-37
Subject/Topic	Desalination discharge
References	Section 4.5.12 Marine Environment - Project Certificate Condition No. 62; Appendix J
Summary	Sabina collected control and discharge area samples from the MLA during desalination activities in August of 2022. There were no exceedances of CCME at either the Marine Laydown area or the reference site. Phytoplankton biomass (as Chlorophyll a) was slightly higher at the reference site, but



	within previous natural variability.
Detailed Review Comment	Desalination output into the environment is not provided in the methods or results summary. Is it just high salinity brine, as suggested in Appendix J? What is the average rate of discharge?
Recommendation/Request	Please provide information on the discharge to the marine environment.
Importance of Issue	Low

1.38 KIA-NIRB-38

Review Comment Number	KIA-NIRB-38
Subject/Topic	Underground Ramp
References	Operations Overview \ 2022 HIGHLIGHTS AND CHALLENGES
Summary	Approximately 1,500 m of exploration underground ramp completed
Detailed Review Comment	No information about the development of the exploration underground ramp was included in the 2022 Annual Report. KIA's consultant should indicate the conditions encountered during the construction of the exploration underground ramp. In particular, the consultants should indicate if permafrost conditions were encountered during the excavation of the ramp, or if inflow of saline water or freshwater was experienced during the development of the ramp.
Recommendation/Request	In case inflow into the ramp was experienced, the consultants should indicate the type of water (saline or fresh), the amount, the quality and the discharge point.
Importance of Issue	Moderate

1.39 KIA-NIRB-39

Review Comment Number	KIA-NIRB-39
Subject/Topic	Project Certificate Condition No. 18
References	Methods
Summary	Field permeability (packer testing) was also completed on a subset of the drill holes. Initial results of drilling at the western ridge indicate that the bedrock in the area does not have a high permeability, with few joints and fractures



	present, as well as clay infilling and no visible ice within the drill hole.
Detailed Review Comment	Packer Testing should be conducted only in bedrock formations. Hydraulic conductivity testing using different methods such as Single Well Response Tests (SWRTs) could be considered for select formations, unfrozen soils, or areas of thick clay infilling. The tests should be conducted during the open season and within the shallow strata above the permafrost.
Recommendation/Request	The evaluation of the water quality and quantity circulating within the infill geotechnical material should be determined and its effect (in terms of thermal alteration) on the permafrost should be included in the annual report and submitted to the Nunavut Impact Review Board.
Importance of Issue	Low

1.40

Review Comment Number	KIA-NIRB-40
Subject/Topic	Appendix D. Sabina's Back River Blasting Plan for Plant Site and Portal Decline
References	Blasting
Summary	The blasting plan focuses on assessing the radius of which detonations may impact fish or fish habitat, and to provide mitigation measures to avoid the death of fish and harmful alteration, disruption, or destruction (HADD) of fish habitat.
Detailed Review Comment	Explosives used in construction have been implicated as sources of NO ₃ (Nitrate) or NH ₄ (Ammonia). A Nitrate Management Plan was not included in the 2022 Annual Report. The actual pathway of the nitrates into the groundwater/surface water can vary and should be assessed prior to start blasting.
Recommendation/Request	To ensure all potential pathways are being actively managed, in-house procedures should be developed to ensure that corrective actions should be implemented in case of increase of NO ₃ or NH ₄ in groundwater and surface water.
Importance of Issue	Moderate



1.41 KIA-NIRB-41

Review Comment Number	KIA-NIRB-41
Subject/Topic	Terrestrial Environment / Permafrost Monitoring
References	Project Certificate Condition No. 12
Summary	No information has been provided.
Detailed Review Comment	<p>Sabina states on page 4-33 that “A summary of that [ground temperature] data is presented in the 2022 [Annual Geotechnical Inspection] AGI report (Appendix B)”. However, no ground temperature data are presented in the 2022 AGI (dated March 31, 2023).</p> <p>It is worth noting that the 2022 AGI report highlights specific areas for which ground temperature monitoring should be completed, such as Marine Laydown Area (MLA) airstrip (Attachment 2 of 2022 AGI report).</p>
Recommendation/Request	It is requested that Sabina provides updated data on the ground temperatures, i.e., the permafrost characteristics, as part of the annual AGI reports, regardless of project phase and/or construction activities.
Importance of Issue	Moderate

1.42 KIA-NIRB-42

Review Comment Number	KIA-NIRB-42
Subject/Topic	Effects Assessment for the Employment VSEC
References	FEIS Volume 8, Section 3.5.5.3
Summary	The Project is anticipated to increase employment and income levels within the Kitikmeot Region and Nunavut, as well as elsewhere in Canada. The provision of employment opportunities has the potential to result in substantial positive benefits for the Kitikmeot. Increased income and employment levels are anticipated to have a positive residual effect on the Employment VSEC (FEIS Volume 8, Section 3.5.5.3).
Detailed Review Comment	<p>The FEIS notes the expectation that the provision of employment opportunities has the potential to result in substantial positive benefits for the Kitikmeot. Inuit are mainly for support (24) and para-professional (18) positions at Sabina’s operations. Few or no Inuit are in professional (2) and management (0) jobs (See Table 4.3).</p> <p>Also striking is the median income for non-Indigenous residents of Nunavut is \$76, 379 higher than Inuit residents</p>



	<p>of Nunavut (page 28)</p> <p>Sabina identifies the top three reasons for Inuit employee turn-over in 2022.</p> <p>In Appendix C page 35 Sabina refers to career development plans for every Inuit employee over the next two years.</p> <p>In Appendix C. page 34, Inuit employees ask for increased recruitment and employment of Inuit, especially in small communities.</p>
Recommendation/Request	<p>What specific mitigation measures is Sabina taking to 1) increase Inuit employees in professional and management positions, 2) close the wage gap and 3) decrease turn-over in order to reach “substantial positive benefits” for Kitikmeot Inuit?</p> <p>KIA strongly supports career development plans for every Inuit employee as a commitment and expects the plans to be in place within 2 years, and to be renewed and updated regularly.</p>
Importance of Issue	High

1.43 KIA-NIRB-43

Review Comment Number	KIA-NIRB-43
Subject/Topic	Effects Assessment for the Education and Training VSEC
References	FEIS Volume 8, Section 3.5.5.3
Summary	<p>The Project is anticipated to increase the capacity of the labour force in the Kitikmeot Region. At present, Kitikmeot residents face a number of barriers to employment including lack of experience and opportunity. The Project has the potential to alter outcomes for those who become employed directly or indirectly, increasing the ability of individuals and communities to engage in the wage economy. The increased capacity of the labour force is anticipated to have a positive residual effect on regional levels of employment generally, and on the Employment VSEC (FEIS Volume 8, Section 3.5.5.3).</p>
Detailed Review Comment	What specific mitigation measures does Sabina propose to ensure Inuit are training in transferrable skills to increase the capacity of the Kitikmeot Inuit labour force?
Recommendation/Request	What specific mitigation measures does Sabina propose to ensure Inuit are training in transferrable skills to increase the capacity of the Kitikmeot Inuit labour force?
Importance of Issue	High



1.44 KIA-NIRB-44

Review Comment Number	KIA-NIRB-44
Subject/Topic	Effects Assessment for the Education and Training VSEC
References	FEIS Volume 8, Section 3.5.5.4
Summary	The Project may create increased demand for education and training programs as a result of the provision of employment and contracting opportunities. Overall, increases to the demand for education and training are considered to have a positive residual effect on the Education and Training VSEC (FEIS Volume 8, Section 3.5.5.4).
Detailed Review Comment	Sabina conducted a 2022 Inuit Personnel Survey Report for the Back River Project. At Appendix C, page 34, Sabina summarized feedback from Inuit employees that additional training and career advancement opportunities are required
Recommendation/Request	In addition to the Career Advancement Plans, what is Sabina doing now to increase the amount of training of Inuit for supervisory positions, and transferable skills in preparation for operations?
Importance of Issue	High

1.45 KIA-NIRB-45

Review Comment Number	KIA-NIRB-45
Subject/Topic	Terms & Conditions for the Education and Training VSEC
References	Term and Condition 73
Summary	The Proponent is encouraged to work with training organizations and/or government departments offering mine-related or other training to ensure that Project-specific training programs can yield additional opportunities for residents and employees to gain meaningful and transferable skills and certifications. (Term and Condition 73)
Detailed Review Comment	Sabina notes that Inuit training was focused on site orientation (256), Inuit cultural awareness (75) and WHMIS (41). No Inuit were trained in First Aid, Mine Arc, and WSCC Supervisor training. However non-Inuit were trained in these areas (Table 7.1, p. 50).
Recommendation/Request	Sabina should do more to increase the training of Inuit in transferrable skill areas.
Importance of Issue	High



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1.46 KIA-NIRB-46

Review Comment Number	KIA-NIRB-46
Subject/Topic	Terms & Conditions for the Health and Community Well-Being VSEC
References	Term & Condition 83
Summary	The Proponent is strongly encouraged to communicate and collaborate with the GN and the NHC on potential housing initiatives with a view to enhancing employee access to a range of housing options, including homeownership. Initiatives may include, but are not limited to, the provision of financial literacy, financial planning, and personal budgeting training (Term & Condition 83)
Detailed Review Comment	Sabina states at page 55 that it is developing a specific Inuit Employee Support Program which may involve financial literacy and related training.
Recommendation/Request	KIA is supportive of an Inuit Employee Support Program and is seeking a clear plan from Sabina to develop training on financial literacy, financial planning and personal budget training. This will assist in Sabina meeting its FEIS predictions of increased positive impacts for Inuit.
Importance of Issue	High

Thank you.

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