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Nunavut Resources Corporation. Inuit Tapirisat of Kanatami



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Information Requests

KIA-IR-01: Back River – Winter Ice Road Subbase Upgrade

Source:	Kitikmeot Inuit Association
IR Number:	KIA-IR-01
Request to:	Sabina Gold & Silver Corp.
Reviewer:	BGC Engineering Inc.
Subject:	Winter Ice Road Subbase Upgrade
Reference:	Back River Project Modification Package October 2020, Version 2 – Section 6.1
Issue/Concern:	<p>Sabina indicates that the proposed WIR Subbase Upgrade footprint of approximately 15 ha combined with the quarry footprints, would remain within the previously assessed WIR area of impact (Local Study Area; WIR Sub-LSA) in the FEIS (83,310 ha) and represent only 0.02% of the WIR Sub-LSA. Sabina has determined that, with the proposed modification of the WIR subbase upgrade, the overall effect of the modification on all VECs/VSECs remains Not Significant.</p> <p>However, considering that the material placement is most likely required in sensitive areas additional considerations should be made, in accordance with NIRB PC No. 007 Term and Condition No. 34. It is important to note that the KIA had indicated concerns regarding potential use of aggregates to comply with vertical alignment and associated impacts during the review of the FEIS (F-KIA-IR-20).</p>
Information Request:	Sabina should complete a thermal analysis to illustrate that there are no significant thermal disturbances and associated long-term impacts on the permafrost and surface water flow in the permafrost. In addition, it is also recommended that the proponent provide a closure and monitoring program specifically addressing these new fill sections and additional quarries used.

KIA-IR-02 Back River WIR – Winter Ice Road Subbase Upgrade

Source:	Kitikmeot Inuit Association
IR Number:	KIA-IR-02
Request to:	Sabina Gold & Silver Corp.
Reviewer:	Zoetica Environmental Consulting Services
Subject:	Back River Winter Ice Road – Winter Ice Road Subbase Upgrade
Reference:	<ul style="list-style-type: none"> Back River Modification Package (October 2020); Section 6.1.3; Page 6-2 Back River Water Management Plan, Appendix B; Section 9.3; Page 9-2
Issue/Concern:	Sabina is proposing a modification to the Project by upgrading select WIR sections through the placement of aggregate along key areas of the approximately 160 km alignment. This would include the placement of aggregate over approximately 15 km of the WIR. This length of road represents approximately 9% of the alignment. These upgrades are proposed



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	<p>to be approximately 10 m wide and 1 m thick and would be located in the same general location and orientation as the currently permitted WIR. In total, it is estimated that approximately 150,000 m³ of material will be used for this modification. This geochemically suitable material would be sourced from borrow pits and/or quarries located along the road alignment.</p> <p>Potential effects of the proposed road upgrades relate to surface hydrology, water quality, archaeology, wildlife, vegetation, and landforms. The Road Management Plan and Borrow Pits and Quarry Management Plan describes mitigation measures, including setbacks from water, geochemical confirmation of material suitability and assessment of archaeological, vegetation, and/or wildlife status.</p> <p>Additional information will be required to determine project effects and mitigation required for specific VCs. For example, information on the proportion of materials to be derived from various sources may be helpful in determining effects of road upgrades. Eskers may be sources of road fill material, for example, but are also features that provide important refuge habitat for caribou escaping biting flies, travel corridors for various wildlife species, and denning habitat for grizzly bear, Arctic fox, Arctic ground squirrel, and wolves. Permanently increasing the grade elevation of the road may also affect caribou movement patterns and influence surface hydrology to modify nearby ecosystems.</p>
Information Request:	<p>The KIA requests the following information:</p> <ul style="list-style-type: none"> • What percentage of the Special Landforms, including eskers, specifically, would be impacted by road upgrades as a result of quarry or borrow pits? How do these percentages differ from those predicted during the 2015 FEIS? • What proportion of the WIR (if any) will be suitable for all-season travel after upgrades are completed? If the upgrades permit all-season road use, how will potential impacts to wildlife and vegetation be assessed? • Please provide information on how the proposed road upgrades will change surface hydrology and existing ecosystems such as adjacent wetlands. • Will any additional road crossing mitigation be implemented at high priority caribou crossings as a result of road upgrades? • What percentage of vegetation would be impacted based on direct (footprint) and indirect (surface hydrology) impacts of the project modification?



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KIA-IR-03: Upgraded WIR Summer Water and Dust Management

Source:	Kitikmeot Inuit Association
IR Number:	KIA-IR-03
Request to:	Sabina Gold & Silver Corp.
Reviewer:	Hutchinson Environmental Sciences Ltd
Subject:	Upgraded WIR summer water and dust management
Reference:	Modification Package Version 2: Section 6.1.3 Modification Details Appendix B Water Management Plan: Section 7.6 WINTER ICE ROAD
Issue/Concern:	As part of the modifications proposed, Sabina proposes discontinuous upgrades to the WIR that represent less than 10% of the total length. These upgrades include the placement of aggregate over approximately 15 km of the WIR. While the upgrade does not change the scope of activities along with WIR nor necessarily introduce new impacts to the aquatic environment, additional clarity is required to ensure that potential impacts are mitigated. Water and dust management of the upgraded sections of the WIR are not discussed within the modification package.
Information Request:	Please clarify how runoff will be managed along with upgraded sections of the WIR during freshet when the ice road melts, and during precipitation events when the WIR is not in operation. Sabina to further clarify how the potential generation of dust from the upgraded portions of the WIR will be managed when the WIR is not in operation. The requested clarifications should specifically address the concern that these upgraded sections of the WIR are not easily accessible by land during the summer months.

KIA-IR-04: Back River WIR – Winter Ice Road Service/Emergency Camps

Source:	Kitikmeot Inuit Association
IR Number:	KIA-IR-04
Request to:	Sabina Gold & Silver Corp.
Reviewer:	Zoetica Environmental Consulting Services
Subject:	Winter Ice Road – Winter Ice Road Service/Emergency Camps
Reference:	<ul style="list-style-type: none"> Back River Modification Package (October 2020); Section 6.2.3; Page 6-7 Back River Modification Package (October 2020), Appendix A; Figure 5
Issue/Concern:	Sabina is proposing that three permanent WIR camps be installed along the approximately 160-km WIR alignment to replace a mobile camp/emergency shelter. Sabina anticipates that the WIR Service/Emergency Camps will be similar in size and layout to the mobile camp/emergency shelter employed during the 2019 WIR season (approximately 100 m x 100 m each). These camp installations would include a kitchen, sleeping, and office space, communication capabilities, fuel storage in secondary containment berms



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	<p>equipped with rain drain filters, equipment maintenance warming shop, incinerator, spill response equipment, and material and supply storage. These facilities would be placed on aggregate pads of geochemically suitable material. Sabina currently estimates that 20 to 50-person camps would be required. These proposed camp installations are anticipated to represent a total footprint area of approximately 3 ha. Pad material will be sourced from the same WIR quarry and borrow pits identified and assessed for WIR.</p> <p>Construction of additional WIR camps will have potential direct, indirect, and cumulative impacts. There are now two major camps, with potentially one more, and 3 WIR camps. A total of 5 to 6 camps will result in a substantial human presence across the landscape. Depending on camp locations, human disturbance could have varying impacts on wildlife, vegetation, and water quality. Caribou movement patterns may be adversely affected by camp locations that are placed within known movement corridors. Vegetation and Special Land Features, including those that act as habitat for wildlife denning, may be affected due to direct interactions from camp footprints. Location and proximity of camps may also pose an issue as a bear attractant (especially if the camps are operational just prior to grizzly bears denning or just after grizzly bears emerging from their dens), which may require Sabina to amend management plans with consideration of BearWise recommendations. Additionally, there are potential effects on Freshwater Water Quality related to the discharge of camp greywater, berm water, and pad runoff.</p>
Information Request:	<p>The KIA requests the following:</p> <ul style="list-style-type: none"> • Please confirm the date by which winter ice road service/emergency camps would be erected and operational, and when they would cease operating each year; • Please confirm whether road service/emergency camps would remain in place permanently for the life of the project, and if so, provide information on the date by which, and how, they would be secured from wildlife access during the period of non-use; • Please identify locations of proposed WIR camps on maps that show their respective positions in relation to existing caribou habitat (particularly winter habitat and fall and spring migration routes/ice crossings) and potential denning habitat; • Update management plans to incorporate all prior BearWise recommendations, as the issue of bear attraction will be greater and more spatially dispersed given the proposed change in winter ice road construction plans.



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KIA-IR-05: Back River WIR – Winter Ice Road Mitigation

Source:	Kitikmeot Inuit Association
IR Number:	KIA-IR-05
Request to:	Sabina Gold & Silver Corp.
Reviewer:	Zoetica Environmental Consulting Services
Subject:	Winter ice road mitigation
Reference:	<ul style="list-style-type: none"> Back River Water Management Plan, Section 8.1.8 on stream diversions
Issue/Concern:	Section 8.1.8 of the Water Management Plan deals with the topic of stream diversions. Within this section, there is discussion of creating permanent impassable barriers to prevent fish access to upstream areas and avoiding adverse effects to fish in streams that may experience reduced discharge resulting in the potential for increased fish and egg stranding. As a permanent mitigation that eliminates passage in a fish bearing stream is not normally encountered, the KIA is wondering if this is misworded, and whether Sabina will be making an effort to re-establish connectivity after the mine has been de-commissioned.
Information Request:	<p>The KIA requests/recommends the following:</p> <ul style="list-style-type: none"> Please provide clarification on Sabina's intention for its construction of a barrier to prevent fish access upstream, as discussed in Section 8.1.8. Please clarify if Sabina plans to remove the barrier to fish passage after the mine has been decommissioned.

KIA-IR-06: Marine Laydown Area – Shoreline Pad Extension

Source:	Kitikmeot Inuit Association
IR Number:	KIA-IR-06
Request to:	Sabina Gold & Silver Corp.
Reviewer:	Zoetica Environmental Consulting Services
Subject:	Marine Laydown Area – Shoreline Pad Extension
Reference:	<ul style="list-style-type: none"> Back River Modification Package (October 2020); Section 5.1.3; Page 5-3
Issue/Concern:	Sabina is proposing a modification to the Project by extending the existing shoreline pad into the water to allow vessels to dock directly against it. This modification would extend the pad into the intertidal and shallow subtidal zone to a depth of 1 to 2 m. This extension will result in a sea-floor footprint of approximately 420 m ² with a lesser above-water area, based on the bathymetry and side slopes of the pad. The anticipated loss of intertidal and subtidal habitat from the MLA Shoreline Pad Extension is approximately 0.04 ha. The MLA Shoreline Pad Extension would be constructed using clean quarried rock fill or concrete blocks placed on geogrid.



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	<p>Sabina has indicated that the MLA Shoreline Pad Extension could result in direct fish mortality due to crushing or smothering if they are unable to escape the construction area. Mitigation methods proposed include timing construction within specific windows, use of sedimentation curtains, and working with ground-fast ice conditions. Additional mitigation measures should be included to address potential construction-related noise and barometric pressure impacts to fish and marine wildlife.</p> <p>In-water work could cause short-term disruption and suspension of sediments, influence water quality, could alter fish habitat, and cause direct impacts to fish. Sabina has indicated that in-water blasting is not planned; however, conditions may arise where in-water blasting may be considered or required.</p> <p>Sabina has indicated that in-water surface area of the MLA Shoreline Pad Extension will also be colonized by benthic invertebrates and algae naturally with no intervention, offsetting some of the lost fish habitat footprint. Habitat offsets should be discussed to determine equivalency ratios that consider habitat type and quality.</p>
Information Request:	<p>The KIA requests the following:</p> <ul style="list-style-type: none"> • Please provide assurance that mitigation methods will include use of bubble curtains during relevant work windows, if works such as underwater blasting or pile driving is required. Bubble curtains are important in limiting noise, pressure, and vibration induced mortality to fish and marine wildlife. The KIA understands that such activities are not currently planned, but as Sabina also indicates that they may be required, providing mitigation for such contingencies will help to independently determine whether the amended impact predictions are reasonable. • Sabina will develop plans for restoration/creation of habitat for fish and benthic invertebrates with DFO that adequately compensate (i.e., offset) for loss of existing habitat. Calculations for proposed offsetting equivalency ratios that consider habitat type and quality should be provided in the amendment application.

KIA-IR-07: Goose Property and MLA Airstrip Extension

Source:	Kitikmeot Inuit Association
IR Number:	KIA-IR-07
Request to:	Sabina Gold & Silver Corp.
Reviewer:	Zoetica Environmental Consulting Services
Subject:	Goose Property and MLA Airstrip Extension
Reference:	<ul style="list-style-type: none"> • Back River Modification Package (October 2020); Section 1.6; Table 1.6-1



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	<ul style="list-style-type: none"> • Back River Modification Package (October 2020); Section 2.1.3; Page 2-2 • Back River Modification Package (October 2020); Section 4.2.3; Page 4-6 • Back River Modification Package (October 2020); Section 2.1.6; Effects Assessment
Issue/Concern:	<p>Sabina is proposing a modification to the Project to allow an extension of the already permitted Goose Property all-weather 1,500 m (5,000 ft.) by 45 m (150 ft.) airstrip. Sabina intends to extend the permitted all-weather airstrip to 1,800 m (6,000 ft.) by 60 m (200 ft.), an increase in airstrip dimensions totaling approximately 4 ha, which would allow aircraft of different sizes to land year-round.</p> <p>Sabina is also proposing a modification to the Project to allow an extension of the already permitted MLA all-weather 900 m (3,000 ft.) by 45 m (150 ft.) airstrip. Sabina intends to extend the permitted all-weather airstrip to 1,500 m (5,000 ft.) by 60 m (200 ft.), an increase in airstrip dimensions totaling approximately 5 ha.</p> <p>The updated effects assessment (Section 2.1.6) appears to assess only the impacts of the two extended airstrips relating to its construction and the loss of vegetation, archeology, or wildlife values within the newly disturbed footprint. Sabina concludes that because the expanded footprint will be constructed within the area already assessed for potential development (the PDA), no additional residual effects to wildlife are anticipated. The effects assessment does not appear to consider noise and disturbance/habitat avoidance effects that could result if the expanded airstrips allow for larger aircraft to land within the MLA and/or Goose properties.</p> <p>Aircraft noise and wildlife was an issue discussed extensively at the final EIS hearings. Sporadic and ongoing noise disturbance from aircrafts can result in indirect habitat loss due to the avoidance of overflight and surrounding areas by wildlife and may cause changes in movement patterns near flight paths (e.g., during migration). If the proposed airstrip extensions result in changes in the types of aircraft capable of landing, aircraft frequency, and/or overall numbers of flights, the related effects to wildlife may require re-assessment. Habitat loss in the October 2020 amendment package is still considered to be limited to the project footprint while disturbance due to noise is considered to be limited to the LSA; however, there is little supporting evidence supplied about aircraft use, seasonality, and flight frequency that would eliminate the possibility that indirect habitat loss may be expanded due to avoidance of aircraft beyond the project footprint, or that noise related disturbance may occur along flight paths outside of the LSA. Sufficient information does not appear to be explicitly supplied within the application to allow for an independent evaluation of this mode of potential impact or to determine</p>



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	whether changes to airstrips could alter the geographic extent of impacts to habitat loss (i.e. which include indirect habitat due to avoidance) and noise disturbance for caribou and other wildlife from previous FEIS predictions.
Information Request:	<p>The KIA requests the following:</p> <ul style="list-style-type: none"> • Please provide more information about potential aircraft type/specifications and flight frequencies/seasonality that will be accommodated by larger runways, under likely and worst-case scenarios. • Please describe why Sabina does not consider that runway extensions could alter predictions made in the FEIS about geographic extent (as captured in Table 1.6-1) to caribou and other wildlife for habitat loss and noise disturbance. • Similar to aircraft noise reporting undertaken as a commitment to the FEIS, will Sabina keep and supply a log of all aircraft coming and going to/through the project area to be summarized within the annual Wildlife Effects Monitoring Plan reports, including noise models associated with flights, to test predictions about geographic extent of impacts in the amended FEIS?

KIA-IR-08: Goose Property - Umwelt Underground Extension

Source:	Kitikmeot Inuit Association
IR Number:	KIA-IR-08
Request to:	Sabina Gold & Silver Corp.
Reviewer:	Zoetica Environmental Consulting Services
Subject:	Goose Property - Umwelt Underground Extension
Reference:	<ul style="list-style-type: none"> • Back River Modification Package (October 2020); Section 2.2.3; Page 2-6 • Back River Modification Package (October 2020); Section 3.1.3; Page 3-2 • Back River Water Management Plan, Appendix B; Section 7; Table 7-1; Page 7-1
Issue/Concern:	Sabina anticipates that the change in its mine design and plan included in the October, 2020 application package will result in approximately 450,000 tonnes of additional waste rock (which includes a 46% increase in NPAG).
Information Request:	<p>As the production of NPAG waste rock will be increasing by 46% based on the updated plans, please clarify the following:</p> <ul style="list-style-type: none"> • Will Sabina consider using that additional NPAG for a greater depth of tailings capping on closure? A thicker rock capping, as discussed during the FEIS, would reduce risks of localized failures and provide further assurance that wildlife will not be exposed to post-closure tailings over time.



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	<ul style="list-style-type: none"> Will additional NPAG be used for road enhancements? If so, will it reduce the need for materials to be taken from other features (e.g., eskers), which are valuable wildlife habitat.
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KIA-IR-09: Goose Property – Total Water Use Increase

Source:	Back River Modification Package (October 2020)
IR Number:	KIA-IR-09
Request to:	Sabina Gold & Silver Corp.
Reviewer:	Zoetica Environmental Consulting Services
Subject:	Goose Property - Total Water Use Increase
Reference:	<ul style="list-style-type: none"> Back River Modification Package (October 2020); Section 2.3.3; Page 2-11 Back River Modification Package (October 2020), Appendix C; Goose Property Water Availability Memo Back River Water Management Plan, Appendix B; Section 5. 1.4; Page 5-3 Back River Modification Package (October 2020); Section 6.3.3; Page 6-13 Back River Modification Package (October 2020), Appendix C; Goose Property Water Availability Memo Back River Water Management Plan, Appendix B; Section 5. 1.4; Page 5-3
Issue/Concern:	<p>The Goose Property Total Water Use Increase proposes that the total freshwater volume authorized in the Type A Water License at the Goose Property be increased to 882,450 m³/yr. from the previously assessed volume of 518,000 m³/yr. (FEIS) and currently authorized 468,000 m³/yr. (Type A Water License). This amounts to a total increase of 414,450 m³/yr.; of this total volume increase, 218,700 m³/yr. is requested from Goose Lake and 195,750 m³/yr. from Big Lake. The proposed increase would reduce water quantity within the Goose Lake and Big Lake drainages in the LSA.</p> <p>The WIR Total Water Use Increase modification proposes updating the total volume of water authorized in the Type A Water License for WIR construction and operation to 324,000 m³ (2,025 m³/km) from the currently authorized total volume of 108,000 m³ (675 m³/km). The WIR Total Water Use Increase represents an additional water volume of 216,000 m³ (0.4% of the total identified available water volume) beyond the previously permitted water withdrawal volume of 108,000 m³ (0.2%). Considering the magnitude of these amendments in water use needs, some information is missing from the October 2020 amendment application that would be useful in independently assessing the impacts of these proposed changes on the biological environment.</p>



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	<p>First, explicit information on the likely seasonality of water use would help in assessing impacts to fish, waterbirds, and the integrity of winter ice crossings for caribou. Water losses during seasons of particular importance for migration, spawning, rearing and overwintering can have very different impacts to various species. The typical seasons of higher versus lower water needs should be indicated in the application to enable an independent assessment of the life history phases that water use will most likely affect.</p> <p>Second, climate change projections summarized in the Water Management Plan indicate increases in long-term air temperatures and precipitation; however, it is unclear as to how these projections are incorporated into hydrological models to determine potential impacts to drainage areas and seasonal water volumes in freshwater habitats (e.g., streams, wetlands, and lakes) affected by Project activities. It would be helpful to view hydrological models alongside several feasible climate change projection scenarios. Inuit have observed receding water levels and the loss of local lakes and streams due to shifts in weather and precipitation patterns. These observations indicate potential changes in seasonal ice accumulation, streamflow volume, and other conditions. These changes may result in different conditions than the baseline average and 1 in 20-year dry conditions used in the assessment of surface hydrology (streamflow, lake volumes, and outflows). Projected changes in streamflow at Goose Lake Outflow due to the Project exceed DFO guidelines of a 10% reduction in streamflow; it is unknown if potential climate change effects could exacerbate or buffer against this change.</p>
Information Request:	<p>The KIA requests/recommends the following:</p> <ul style="list-style-type: none"> • Please provide more details on the seasonal predictions for water volume needs and impacts to determine the life history periods of various fish and wildlife that would be impacted by decreases in volumes and flows; • Please provide details for the assessment of potential Project effects on surface hydrology (stream flows, lake volumes and outflows) with details on the considerations of predicted future climate change scenarios (including the scenarios considered) that were used.

KIA-IR-10: Temperature and Precipitation Model Predictions

Source:	Kitikmeot Inuit Association
IR Number:	KIA-IR-10
Request to:	Sabina Gold & Silver Corp.
Reviewer:	Hutchinson Environmental Sciences Ltd
Subject:	Temperature and precipitation model predictions
Reference:	Appendix B Water Management Plan: Section 5.1.4.1 Climate Change
Issue/Concern:	Sabina notes that <i>"The long-term air temperature and precipitation trends are compared to a baseline set from 1979 – 2005 and provided in Table 5.1-4. These</i>



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	<p>values were input into the Water and Load Balance model and interpolated linearly centered on 2025, 2055, and 2085 for the 2020s, 2050s, and 2080s periods, respectively.” It is this reader’s understanding that current climate models do not suggest a linear increase in air temperature and precipitation in comparison with historical observations between 1979 – 2005. Further, the Government of Nunavut suggests that “future warming will not be uniform across Nunavut; some areas (for example, Western Nunavut and the High Arctic) could warm much faster than other areas (South Baffin/Davis Strait)”. Deviations from the temperature and precipitation predictions incorporated into the water and load balance model may increase interactions with underlying PAG in the WRSA and mobilize additional contaminants into the aquatic environment during the closure and post closure project phases than are currently predicted.</p> <p>Reference: Climate change in Nunavut. Retrieved November 3, 2020 from www.climatechangenunavut.ca/en/understanding-climate-change/climate-change-nunavut</p>
Information Request:	<p>Please provide a sensitivity analysis within the water and load balance model to characterize potential impacts to water quality if temperature and precipitation do not increase linearly from the 1979-2005 period over the next 65 years. We recommend this sensitivity analysis evaluate 50% greater warming and precipitation falling as rain than currently incorporated into the water and load balance model.</p>

KIA-IR-11: Water Quality Predictions and Defining the Mixing Zone

Source:	Kitikmeot Inuit Association
IR Number:	KIA-IR-11
Request to:	Sabina Gold & Silver Corp.
Reviewer:	Hutchinson Environmental Sciences Ltd
Subject:	Water quality predictions and defining the mixing zone
Reference:	Appendix B Water Management Plan: Section 6.1.5 Water Quality Predictions; Table 6.1-2, Appendix D – Water Quality Prediction Results
Issue/Concern:	<p>Table 6.1-2 indicates that “Long-term steady state conditions are expected to meet MDMER limits during Operations and Closure at PN04 (Goose Neck), and will meet SSWQOs at PN03 (outlet of Goose Lake).” This modelling appears to suggest that the entirety of Goose Lake will be relied upon for physical mixing of effluent from the site. From our understanding, Goose Lake is fish bearing and water quality within it should be maintained at or below CCME WQOs or SSWQOs as applicable for the protection of aquatic life in that waterbody beyond a 100 m mixing zone. It is also our understanding that PN04 is not along the consolidated flow path from the site but within Goose Lake itself where aquatic life may be encountered and that MDMER limits apply at the end of pipe, not after initial mixing in the receiver. Table 6.1-2 indicates that arsenic, copper and zinc will be above SSWQO/CCME WQO at Goose Neck</p>



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	(PN04) at flooding. We also note that these model outputs are provided using average hydrologic conditions and concentrations are presented as monthly averages. Model outputs use relatively basic pH (8.1) and warm water temperature (15°C). While these conditions are conservative with respect to calculating the applicable ammonia guideline, a relatively basic pH used for modelling purposes may under predict concentrations that are present in effluent.
Information Request:	<p>We request the following clarifications:</p> <ol style="list-style-type: none"> 1. Where in Goose Lake will water quality meet a) MDMER effluent limits and b) SSWQO / CCME WQG PAL? Specifically, please define the extent of the mixing zone in Goose Lake. Please define the mixing zone under a) increased and decreased precipitation scenarios (i.e. wet vs dry year scenarios), b) increased warming conditions (i.e. a thickening of the active layer), c) under ice to determine the effect of cryoconcentration on water quality within Goose Lake. Note this scenario should assume 100% solute exclusion. 2. Do the “max” values provided in Appendix D of the Water and Load Balance Report represent maximum average monthly values or maximum values? It is important to understand potential water quality entering Goose Lake under a worse case scenario. We note that these values differ from those presented in Table 6.1-2 in the Water Management Plan.

KIA-IR-12: Updated MDMER Deleterious Substance List

Source:	Kitikmeot Inuit Association
IR Number:	KIA-IR-12
Request to:	Sabina Gold & Silver Corp.
Reviewer:	Hutchinson Environmental Sciences Ltd
Subject:	Updated MDMER deleterious substance list
Reference:	Table B-03. List of Constituents in Each Parameter Group
Issue/Concern:	Parameter Group Code G addresses “ <i>MDMER Deleterious substances</i> ” but does not include total ammonia. Un-ionized ammonia as nitrogen is now included in Table 1 of Schedule 4 in MDMER and is associated with a Maximum Authorized Monthly Mean Concentration of 0.50 mg/L expressed as nitrogen, and a Maximum Authorized Concentration in a Grab Sample of 1.00 mg/L expressed as nitrogen.
Information Request:	Please update parameter group G to include total ammonia as nitrogen as well as pH and water temperature to calculate un-ionized ammonia as nitrogen.



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KIA-IR-13: Defined Closure Period

Source:	Kitikmeot Inuit Association
IR Number:	KIA-IR-13
Request to:	Sabina Gold & Silver Corp.
Reviewer:	Hutchinson Environmental Sciences Ltd
Subject:	Defined Closure Period
Reference:	Appendix B Water Management Plan: Section 9.5 ACID ROCK DRAINAGE / METAL LEACHING Appendix E Water and Load Balance: Figure A-1 Project Timeline.
Issue/Concern:	<p>Closure is currently defined as mine year 13 to 20, an 8-year period. However, <i>“Goose Property mine workings and waste rock represent a moderate ARD/ML potential. Low to moderate bulk Neutralizing Potential (NP) contents could result in acidic drainage after a lag time of 14 to 20 years. Interaction with the deposit material and air/water could result in runoff/drainage exhibiting concentrations of arsenic and copper greater than MDMER limits.”</i></p> <p>Sabina notes that the water management plan <i>“has been designed to minimize exposure time of the mine workings and waste rock to air/water and, wherever possible, to ensure the exposure time is less than the expected lag time.”</i> We are concerned that the lag time prior to encountering acid drainage exceeds the closure period; water quality from the site could degrade after the closure period has concluded if the mine plan fails to adequately isolate PAG rock.</p>
Information Request:	Please clarify why closure has been defined as an eight year period when potential degradation of water quality from the site associated with gradual weathering of PAG rock may be encountered once the closure period has concluded and provide contingencies in the event that ARD is observed after the formal closure period.

KIA-IR-14: Saline Water Management: Additional Meromictic Lake Storage

Source:	Kitikmeot Inuit Association
IR Number:	KIA-IR-14
Request to:	Sabina Gold & Silver Corp.
Reviewer:	Hutchinson Environmental Sciences Ltd
Subject:	Saline water management: additional meromictic lake storage
Reference:	Appendix C: Saline Water Management Plan: Section 4.2 SALINE WATER MANAGEMENT STRATEGY AND ASSOCIATED CONTROL STRUCTURES
Issue/Concern:	A relatively high degree of certainty is required for saline water modelling and management options at the Back River project given discharges of saline water are not possible within the local study area and available storage options may be limited on site. A key management option outlined by Sabina is:



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	<p><i>“Management Option/Location:</i> Exhausted open pits (Umwelt, Llama, Goose Main, or other open pits).</p> <p><i>Discussion of Applicability:</i> A possible option if the future pit lake could be managed to support meromictic conditions, resisting turnover due to pit lake geometry, and therefore unlikely to result in a discharge of saline water to local freshwater streams. Currently, Umwelt Pit is expected to be developed as meromictic, but depending on the developing mine plan, all pits could be considered for the possibility of temporary or permanent saline water storage. In-pit tailings disposal in all pits would be prioritized over disposal of saline water. The use of exhausted open pits, along with mined-out underground workings, provide the most suitable permanent saline water disposal locations; however, the timing of saline water discharges, relative to the availability of either as permanent storage, may not match.”</p> <p>Sabina’s outlined adaptive management option relies on the capacity of future pit lakes to support meromictic conditions. It does not appear Sabina has conducted any preliminary modelling to demonstrate the viability of this storage option. This concern is highlighted by the potential implications of encountering an unexpected fault zone (i.e. an increased permeability zone) which may rapidly increase the volume of saline water requiring management.</p>
Information Request:	Please provide preliminary modelling or other feasibility assessment (i.e. case studies) to demonstrate whether Llama and Goose Main pits could support meromixis and the conditions under which they could to support evaluation of Sabina’s proposed approach to adaptively managing additional saline water on site.

KIA-IR-15: Saline Water Management: Man-Made Surface Containment Ponds

Source:	Kitikmeot Inuit Association
IR Number:	KIA-IR-15
Request to:	Sabina Gold & Silver Corp.
Reviewer:	Hutchinson Environmental Sciences Ltd
Subject:	Saline water management: man-made surface containment ponds
Reference:	Appendix C: Saline Water Management Plan: 4.2 SALINE WATER MANAGEMENT STRATEGY AND ASSOCIATED CONTROL STRUCTURES
Issue/Concern:	<p>A relatively high degree of certainty is required for saline water modelling and management options at the Back River project given discharges of saline water are not possible within the local study area and available storage options may be limited on site. A key management option outlined by Sabina is:</p> <p><i>“Management Option/Location:</i> Man-made surface containment ponds</p> <p><i>Discussion of Applicability:</i> Similar to the modified natural containment area, man-made surface containment ponds could be constructed (or a current water</p>



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	<p><i>management pond could be utilized) to temporarily or permanently store saline groundwater; this would be at a higher (than other options) cost and could increase the footprint of the surface disturbance within the Property. The man-made surface containment ponds would be designed and constructed to avoid additional impacts to fish or fish habitat."</i></p> <p>Sabina does not indicate where these proposed man-made surface ponds may be constructed nor provide an estimate as to how much saline water they may hold and for how long storage may be necessary. Construction locations are necessary to evaluate whether the additional storage ponds can be added without expanding the overall project footprint while still avoiding additional impacts to fish or fish habitat. An estimate of the potential storage volume these additional man-made surface ponds may provide is required to determine their capacity to offset the need to implement additional adaptive saline water management options</p>
Information Request:	<p>Please provide a figure indicating where additional man-made surface ponds may be placed within the LSA to store saline water, and provide an associated water balance and discussion demonstrating how impacts to fish and fish habitat may be avoided. We also request an approximate estimate of the storage volume this management option may provide.</p>

KIA-IR-16: Saline Water Management: Transport and Disposal to Bathurst Inlet

Source:	Kitikmeot Inuit Association
IR Number:	KIA-IR-16
Request to:	Sabina Gold & Silver Corp.
Reviewer:	Hutchinson Environmental Sciences Ltd
Subject:	Saline water management: Transport and disposal to Bathurst Inlet
Reference:	Appendix C: Saline Water Management Plan: Section 4.2 SALINE WATER MANAGEMENT STRATEGY AND ASSOCIATED CONTROL STRUCTURES
Issue/Concern:	<p>A relatively high degree of certainty is required for saline water modelling and management options at the Back River project given discharges of saline water are not possible within the local study area and available storage options may be limited on site. A key management option outlined by Sabina is:</p> <p><i>"Management Option/Location: Transport and disposal to Bathurst Inlet Discussion of Applicability: Should on-site storage volumes be insufficient, saline water, or high salt brine from reverse osmosis treatment, could be transported to Bathurst Inlet and discharged via a diffuser. Should this option be required it is noted that significant additional regulatory requirements (including MDMER) may be required."</i></p>



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	We agree with Sabina's assessment that additional regulatory approval would be required to implement this management option. We require clarification as to whether Sabina will be able to identify the need to implement the proposed management option and secure the necessary regulatory approvals in time to avoid running out of storage capacity on site.
Information Request:	Please clarify how Sabina will determine the need to transport and discharge saline water or high salt brine to Bathurst Inlet with sufficient lead time to secure the necessary regulatory approval.

KIA-IR-17: Background Water Quality Inputs to Water and Load Balance Model

Source:	Kitikmeot Inuit Association
IR Number:	KIA-IR-17
Request to:	Sabina Gold & Silver Corp.
Reviewer:	Hutchinson Environmental Sciences Ltd
Subject:	Background water quality inputs to water and load balance model
Reference:	Appendix E. Water and Load Balance Report: Section 4.2.2 Background Water Quality
Issue/Concern:	<p>Sabina notes that "water quality median values for the Goose Lake outlet were used as inputs in the load balance model. The freshet values were applied for April through June and the open water season values were applied to all other months. Any measurement below the detection limit was taken to be equal to the detection limit."</p> <p>We applaud Sabina for applying seasonal variation to model inputs. However, we are concerned the application of median water quality values may under predict interactions with mine water quality in Goose Lake.</p>
Information Request:	Please model water quality in Goose Lake using 75th or 95th percentile water quality as inputs to better characterize the upper bounds of potential water quality impacts to Goose Lake during closure and in the long term.