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Senior Hope Bay Project Officer
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Technical Comments for the Back River Project Type B Water Licence Application

Prepared for the KIA

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1.0 REVIEW COMMENTS: GEOTECHNICAL

Review Comment Number	KIA-NWB-1
Sabina Gold & Silver – Back River Project	Service Road Cross Section (BGC)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Road Management Plan (RMP), Section 4.1.2 Construction of All-weather Service Roads RMP, Section 4.1.6 Measures to Prevent Permafrost Degradation.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	The proposed service road cross section has a minimum embankment thickness is 1.0 m and side slopes of 2H:1V. According to SRKs Memorandum "Thermal Modelling to Support Run-of-Quarry Pad Design – Final", October 14, 2015 (Appendix B of FEIS Appendix V2-7C), a thaw depth of 1.8 – 2.5 m is expected. SRK further recommended that "a ROQ pad with a design thickness of at least 1.90 m is required to maintain the 0°C isotherm at the base of the pad for areas not thermally impacted by heated buildings and other surface infrastructure." Based on the proponent's studies, thaw may penetrate for more than 1 m, in other words into the permafrost foundation, thus affecting shallow water courses and resulting in lasting environmental impacts that cannot be reversed



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	upon closure.
Importance of issue to the Type B Water Licence review process	Upon closure, new water courses may form in response to the disturbance caused by the service roads and change surface water flow. Sabina must demonstrate how this will be managed.
Detailed Review Comment	<p><i>1. Gap/Issue</i></p> <p>Sabina indicates that a service road thickness of 1.0 m is acceptable without specifying what this means or how this is controlled in the long-term. Additional thaw penetration and permafrost degradation are expected beneath the embankment side slopes in response to snow deposition.</p> <p><i>2. Disagreement with WL information/conclusion</i></p> <p>Impacts on the permafrost are considered non-reversible and non-manageable.</p> <p><i>3. Reasons for disagreement</i></p> <p>Thaw penetration into the foundation is known to have lasting effects on surface water flow and permafrost degradation. The Transport Association of Canada (TAC) guideline on transportation infrastructure in permafrost regions (2010) recommends a minimum embankment thickness of 1.5 m to avoid permanent disturbance to the permafrost foundation.</p>
Recommendation/Request	It is requested that Sabina re-evaluate the cross-section design for the service roads and consider a higher embankment fill thickness.
Importance	Moderate

Review Comment Number	KIA-NWB-2
Sabina Gold & Silver – Back River Project	Service Road Culverts - Aufeis and Culvert Clogging (BGC)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Road Management Plan (RMP) Section 6.1.2 Watercourse Crossings Inspection and Maintenance. RMP, Section 6.3 Snow clearing.



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Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Culverts are used to manage water crossings. According to the Road Management Plan, accumulated snow and ice will not be removed from within culverts. If culverts are filled with ice, runoff during freshet may not be able to drain as planned and result in erosion of the road embankment. In addition, changes in the thermal regime due to road construction may result in the formation of aufeis, which can also affect the planned drainage regime. However, the Road Management Plan does not address contingency plans for these scenarios.
Importance of issue to the Type B Water Licence review process	The changes in the drainage regime in response to altered surface drainage can result in permafrost degradation and long-term impacts on the surface water drainage.
Detailed Review Comment	<p><i>1. Gap/Issue</i></p> <p>The Road Management Plan lacks contingency plans for potential aufeis formation and impacts of clogged culverts.</p> <p><i>2. Disagreement with WL information/conclusion</i></p> <p>Impacts on the permafrost are considered non-reversible and non-manageable.</p> <p><i>3. Reasons for disagreement</i></p> <p>Changes in the surface water regime have a major influence on the ground thermal regime. Those changes are typically non-reversible and may create a ripple effect.</p>
Recommendation/Request	It is requested that Sabina re-evaluate the water crossings inspection and maintenance procedures.
Importance	Moderate

Review Comment Number	KIA-NWB-3
Subject/Topic (Company)	Defining "geochemically suitable" and "clean rock" (BGC)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if	Road Management Plan (RMP), Section 4.1.2 Construction of All-weather Service Roads. RMP, Section 4.1.5 Measures to Protect Fish and



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relevant, table or appendix)	Fish Habitat. RMP, Section 6.1 All-weather Service Roads Inspection and Maintenance.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	All-weather service roads are expected to be constructed with run-of-mine or run-of-quarry rock that is placed onto the tundra to preserve the permafrost. The Road Management Plan indicates these construction materials will consist of <i>geochemically suitable</i> rock, sourced from the existing Airstrip Quarry and/or the new Umwelt Quarry. As well, the Road Management Plan indicates <i>clean rock</i> will be used in the maintenance of watercourse crossings. In both respects, the Road Management Plan does not provide a definition of these terms nor the methods/criteria to be used in characterizing material as <i>geochemically suitable</i> or <i>clean</i> . The Mine Waste Rock Management Plan (Section 5.3) does delineate criteria for material management (Table 5.3-1); however, it is not clear whether these criteria are to be applied in the Road Management Plan.
Importance of issue to the Type B Water Licence review process	The use of excavated material in road construction has the potential to leach metals and/or acidic conditions that can affect underlying sediments and/or permafrost and be detrimental to surface and ground water and downstream aquatic environments. Excavated materials should be appropriately characterized before placement to assess its suitability as construction fills.
Detailed Review Comment	<ol style="list-style-type: none"> 1. <i>Gap/Issue</i> <p>The Road Management Plan does not define the terms <i>geochemically suitable</i> or <i>clean rock</i>, or the methods to be used to assess material characteristics prior to its use as construction material.</p> <ol style="list-style-type: none"> 2. <i>Disagreement with WL information/conclusion</i> 3. <i>Reasons for disagreement</i> <p>See above.</p>
Recommendation/Request	It is requested that Sabina revise the text to define the terms <i>geochemically suitable</i> and



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	<i>clean rock</i> and indicate whether the geochemical criteria outlined in the Mine Waste Rock Management Plan can be consistently applied to the Road Management Plan.
Importance	High

Review Comment Number	KIA-NWB-4
Sabina Gold & Silver – Back River Project	Management/monitoring of potential stockpiles (BGC)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Road Management Plan (RMP), Section 4.1.5 Measures to Protect Fish and Fish Habitat.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	The Road Management Plan provides details regarding the disposal of excavated material, for the purposes of protecting nearby fish and fish habitat areas. However, the Road Management Plan does not provide details as to the adaptive management strategies (e.g., capping, blending, etc.) to be used to suitably stockpile excess material on surface to protect down-gradient environments.
Importance of issue to the Type B Water Licence review process	The use of excavated material in road construction has the potential to leach metals and/or acidic conditions. The stockpiling of these materials on surface has the potential to release runoff or seepage that may be detrimental to downstream fish and fish habitat areas.
Detailed Review Comment	<p><i>1. Gap/Issue</i></p> <p>The Road Management Plan does not provide management or monitoring strategies to handle excess excavated material.</p> <p><i>2. Disagreement with WL information/ conclusion</i></p> <p><i>3. Reasons for disagreement</i></p> <p>See above.</p>
Recommendation/Request	It is requested that Sabina provide 1) details of its proposed management of potential excess material to be stockpiled at surface and, 2) details of possible monitoring programs of stockpiles located near sensitive, fish bearing



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	habitats.
Importance	Moderate

Review Comment Number	KIA-NWB-5
Sabina Gold & Silver – Back River Project	Mitigative/management strategies to address predicted nitrite exceedances associated with road construction (BGC)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Road Management Plan (RMP), Section 6.1 All-weather Service Roads Inspection and Maintenance.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	The Road Management Plan does not discuss monitoring or management/mitigation strategies related to the predicted nitrite exceedances (from road construction), as described in the Water and Load Balance Report (MASD Appendix E-2 Section 7.4).
Importance of issue to the Type B Water Licence review process	Nitrite is a well-known toxicant for fish that disrupts several physiological functions. Nitrite is considered an intermediate species and oxidizes to nitrate over time. The use of explosives in road building and the location of all-weather service roads near fish habitat indicate monitoring for nitrogen species should be considered and included in the Road Management Plan.
Detailed Review Comment	<p><i>1. Gap/Issue</i></p> <p>The Road Management Plan does not provide management or monitoring strategies to address potential nitrite exceedances, as noted with predictive water quality modeling.</p> <p><i>2. Disagreement with WL information/conclusion</i></p> <p><i>3. Reasons for disagreement</i></p> <p>See above.</p>
Recommendation/Request	It is requested that Sabina include details of monitoring and management/mitigation strategies (as necessary) of exceedances related to explosive use in road construction.
Importance	Low



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Review Comment Number	KIA-NWB-6
Sabina Gold & Silver – Back River Project	Ship to shore bulk fuel transfer (BGC)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Oil Pollution Emergency Plan (OPEP), Section 10 Spill Scenarios and Response Strategies. OPEP, Annex 5 Bulk Cargo Transfer Procedures.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Ship to shore bulk fuel transfer is proposed at a Marine Laydown Area/Oil Handling Facility in Bathurst Inlet, utilizing floating hose deployed between the vessel and the shore. Transfer procedures appear to adhere closely to Transport Canada's <i>Arctic Waters Oil Transfer Guidelines (TP 10783 E)</i> . However, the OPEP is not clear on roles and responsibilities for spill prevention and response related to the floating hose, or the coordination between Sabina's Fuel Transfer Master and the Supplier's Oil Transfer Supervisor. Similarly, it is not clear who is responsible for inspection of the floating hose by workboat during transfer.
Importance of issue to the Type B Water Licence review process	The NWB has advisory functions over adjacent marine areas, but not regulatory jurisdiction. This comment is simply to provide clarity for the reviewing parties.
Detailed Review Comment	<p>1. <i>Gap/Issue:</i></p> <p>More detail is needed to clearly delineate the roles and responsibilities between Sabina's shore-based crew, and the Supplier's vessel-based crew during fuel transfer. In particular, the document should specify who is responsible for spill prevention and response for the floating hose during deployment, transfer, and demob.</p> <p>2. <i>Disagreement with WL information/conclusion</i></p> <p>3. <i>Reasons for disagreement</i></p> <p>See above</p>
Recommendation/Request	Include additional detail in the OPEP to clarify the roles and responsibilities between Sabina's shore-based crew, and the Supplier's vessel-based crew during fuel transfer. It is recommended that the document specify who is responsible for spill prevention and response



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	related to the floating hose during deployment, transfer, and demob.
Importance	Moderate

Review Comment Number	KIA-NWB-7
Sabina Gold & Silver – Back River Project	Notification for spill incidents (BGC)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Comprehensive Spill Contingency Plan (SCP), Section 3 Roles and Responsibilities. SCP, Section 6 Spill Response Procedures. SCP, Appendix B Procedure In The Event Of a Spill.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	In the event of a spill, the SCP directs employees to <i>"Notify direct supervisor or Site Superintendent"</i> (Section 3), <i>"Notify their supervisor or on-site management"</i> (Section 6), and <i>"Notify Operations Superintendent"</i> (Appendix B). Consistency is important to ensure proper notification procedures are followed. A notification placard may be helpful to ensure that site personnel follow proper procedures. Included should be who to contact in the event that the Operations Superintendent is not available, so that the 48-hour period is not exceeded.
Importance of issue to the Type B Water Licence review process	Nunavut's Spill Contingency Planning and Reporting Regulations require a SCP, including reporting procedures.
Detailed Review Comment	<p><i>1. Gap/Issue:</i></p> <p>Spill reporting procedures for site personnel is important to ensure that proper notification procedures are followed. The SCP should use consistent terminology and clear reporting instructions regarding spill reporting.</p> <p><i>2. Disagreement with WL information/ conclusion</i></p> <p><i>3. Reasons for disagreement</i></p> <p>See above</p>
Recommendation/Request	Revise text in the SCP to ensure consistent terminology and notification procedures for employees to follow in the event of a reportable spill. A notification placard may be helpful to



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	ensure that site personnel follow proper procedures. Included should be who to contact in the event that the Operations Superintendent is not available, so that the 48-hour reporting period is not exceeded. The placard could be included in the SCP as an appendix.
Importance	Low

Review Comment Number	KIA-NWB-8
Sabina Gold & Silver – Back River Project	Disposal of drill cuttings and core saw sludge in trenches (BGC)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Comprehensive Spill Contingency Plan (SCP), Section 2.3 Solid Wastes.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	The Comprehensive Spill Contingency Plan states drill cuttings are to be disposed in a trench at the Goose Exploration Camp and sludge (from core saws) to be disposed in an exploration trench south of camp. Drill cuttings and core saw sludges are broken bits of solid material removed from the borehole or drill core, respectively. These materials are typically fine-grained and are comprised of the material removed with drilling. Therefore, it is suggested that drill cuttings and core saw sludges may be better classified as 'mine waste' and their handling/management be consistent with environmental protection measures outlined in the Mine Waste Rock Management Plan.
Importance of issue to the Type B Water Licence review process	The disposal of fine-grained material (such as drill cuttings and sludges) has a greater potential to weather and release metals/acidity due to a higher surface area to volume ratio, relative to coarser grained waste. The disposal of these materials in a trench may not be adequate to appropriately manage the potential for future leaching.
Detailed Review Comment	<p><i>1. Gap/Issue:</i></p> <p>The Comprehensive Spill Contingency Plan does not provide rationale for disposing drill cuttings and core saw sludges in trenches. The composition of drill cuttings and core saw sludges</p>



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	<p>suggests it should be classified as mine waste and therefore managed with guidance from the Mine Waste Rock Management Plan.</p> <ol style="list-style-type: none"> 2. <i>Disagreement with WL information/ conclusion</i> 3. <i>Reasons for disagreement</i> <p>See above</p>
Recommendation/Request	It is requested that Sabina provide rationale for disposing drill cuttings and core saw sludges in trenches and not applying the environmental protection measures outlined in the Mine Waste Rock Management Plan to these materials.
Importance	High

Review Comment Number	KIA-NWB-9
Sabina Gold & Silver – Back River Project	Post-closure management of Umwelt Quarry ponds & cost estimate contingency. (BGC)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Interim Closure and Reclamation Plan (ICRP), Section 3.1.2 Quarries/Borrow Sources and Overburden.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	<p>The proposed Umwelt Quarry is anticipated to be excavated in two closed depressions which will accumulate water in ponds. The location of the quarry was selected to be entirely within the upper greywacke unit, in which sampling has resulted in the rock being classified as NPAG or low sulfide (S) material, with a limited potential for ARD. The plan concludes therefore that no special management measures are required at this location. This conclusion seems reasonable, but is based on limited geochemical data in one specific location. If there is a moderate degree of metal leaching in the Umwelt Quarry, even under neutral pH conditions, the resulting water quality could be such that some form of post-closure water management and/or treatment could become necessary. It is therefore recommended that the document discuss an adaptive management approach to this during development of the quarry, and to also consider adding additional contingency to the cost estimate.</p>



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Importance of issue to the Type B Water Licence review process	For the NWB to be able to issue a licence, Sabina must satisfy the Board that the company has the financial ability to adequately implement mitigation measures and apply any costs associated with closing or abandonment of the undertaking.
Detailed Review Comment	<p>1. <i>Gap/Issue:</i></p> <p>The ICRP, and associated cost estimate, assumes no metal leaching in the Umwelt Quarry. Any metal leaching could result in the need for some form of active water management post-closure.</p> <p>2. <i>Disagreement with WL information/conclusion</i></p> <p>3. <i>Reasons for disagreement</i></p> <p>See above</p>
Recommendation/Request	<p>The ICRP should: 1) discuss the uncertainty with respect to the water quality of the post-closure ponds in the Umwelt Quarry; 2) discuss an adaptive management approach to addressing this should metal leaching occur in the quarry; and 3) consider adding additional contingency to the cost estimate, for a total contingency of ~20% instead of 10% as proposed.</p> <p>It is noted that a description of the geochemical characteristics of Umwelt Quarry rock is also included in Section 4.5.1 of the Quarry Management Plan. Similar to the above recommendation for the ICRP, the Quarry Management Plan should also include discussion of an adaptive management approach to address any water quality in the quarry's ponded areas.</p>
Importance	High

Review Comment Number	KIA-NWB-10
Sabina Gold & Silver – Back River Project	Quarry water management infrastructure (BGC)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Quarry Management Plan (QMP), Section 6.2 Surface Drainage and Water Management from Quarries and Borrow Pits.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	The Quarry Management Plan describes quarry configurations as a " <i>relatively flat surface graded</i> "



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	<p><i>such that water slopes to an area within, or adjacent to, the quarry boundaries".</i> Flowing water will be sampled as part of the on-going monitoring and allowed to discharge to the environment if it meets discharge criteria, as defined in the Type B Water Licence. This is a reasonable management strategy; however, further details as to the expected volume and appropriately sized collection/contact ponds and diversion ditches are not included in drawings 4.2-1 and 4.2-2. Additionally, review of the Site-wide Water Management Report (MASD Appendix F-1) did not show related conveyance/containment infrastructure associated with quarries.</p>
Importance of issue to the Type B Water Licence review process	<p>The ability to test flowing quarry waters and have time to review water quality data (to assess its compliance with Type B Water Licence discharge criteria) is dependent on appropriately sized water containment infrastructure. These details provide confidence that waters not meeting specific criteria will not be released to the environment and suitably managed.</p>
Detailed Review Comment	<p><i>1. Gap/Issue:</i></p> <p>The Quarry Management Plan describes the collection and testing of flowing water from quarries, but does not provide details of collection ponds on accompanying quarry drawings or text of the expected geometry or holding times.</p> <p><i>2. Disagreement with WL information/ conclusion</i></p> <p><i>3. Reasons for disagreement</i></p> <p>See above</p>
Recommendation/Request	<p>It is understandable that specific water infrastructure details may not be available; however, if drainage/runoff from quarries is expected then these systems (i.e., collection ponds, diversion ditches) should be included on associated drawings. Sabina is requested to update relevant drawings with details of relevant water management infrastructure and provide details of geometry, holding times, etc. where</p>



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	possible.
Importance	Moderate

2.0 REVIEW COMMENTS: HYDROGEOLOGY

Review Comment Number	KIA-NWB-11
Sabina Gold & Silver – Back River Project	Road pad thickness and permafrost (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Road Management Plan (RMP), Section 4.1.2, Page 4-4.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Discrepancy between the minimum pad thickness to prevent permafrost melt and the minimum thickness determined by modelling.
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	Section 4.1 of Appendix V2-7C of FEIS indicates that a minimum thickness of 1.9 m is required to maintain the 0°C isotherm at the base of the pad. Fig 1 shows that required pad thickness ranges from 1.9 to 2.85 m to ensure that the -2C and -0C isotherm is maintained at the base of the pad. The minimum thickness of 1 m indicated here is therefore lower than both these estimates.
Recommendation/Request	Please explain why a minimum of 1 m for the pad thickness was selected, as opposed to thicker pads.
Importance	Moderate

Review Comment Number	KIA-NWB-12
Subject/Topic (Company)	Water crossings (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Road Management Plan, Section 4.1.5, Page 4-6.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Disposal of excavated material during culvert installation.
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	
Recommendation/Request	Please show on a map the proposed disposal location for the material that will be excavated during the installation of culverts at water course



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	crossings.
Importance	Low

Review Comment Number	KIA-NWB-13
Sabina Gold & Silver – Back River Project	Stockpile water collection system (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Road Management Plan (RMP), Section 4.1.5, Page 4-6.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Provide layout for stockpile water collection system
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	The Geotechnical Properties Report (App V2-7C, Section 4.2) mentions that high-TSS chloride-rich water may be generated from stockpiles. Please provide a proposed layout for the water collection system that will intercept this water, so to keep it separate from freshwater receptors.
Recommendation/Request	Please provide a proposed layout for the water collection system that will intercept this water, so to keep it separate from freshwater receptors.
Importance	High

Review Comment Number	KIA-NWB-14
Sabina Gold & Silver – Back River Project	Road pad thickness and permafrost (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Road Management Plan (RMP), Section 4.1.6, Page 4-7.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Discrepancy between the minimum pad thickness to prevent permafrost melt and the minimum thickness determined by modelling.
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	This is inconsistent with result of thermal modelling presented in Appendix V2-7C, where minimum pad thickness required to avoid thawing is 1.9 m.



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Recommendation/Request	Please explain the discrepancy between the minimum road pad thickness of 1 m and the minimum pad thickness of 1.9 m resulting by modelling.
Importance	Moderate

Review Comment Number	KIA-NWB-15
Sabina Gold & Silver – Back River Project	Water intakes (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Road Management Plan (RMP), Section 4.2.2, Page 4-9.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Maximum number of water intakes to meet water withdrawal restriction.
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	
Recommendation/Request	Please provide the maximum number of water intakes that will be considered to meet this withdrawal restriction.
Importance	Low

Review Comment Number	KIA-NWB-16
Sabina Gold & Silver – Back River Project	Water withdrawal (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Road Management Plan (RMP) , Section 4.2.2, Page 4-9.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Maximum rate of withdrawal to prevent fish from becoming impinged on the screen.
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	
Recommendation/Request	Please provide the anticipated maximum rate of withdrawal to prevent fish from becoming impinged on the screen.
Importance	Moderate

Review Comment Number	KIA-NWB-17
Sabina Gold & Silver – Back River Project	All-weather airstrip (Palmer)
References to the document being	Road Management Plan (RMP), Section 4.3.1,



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reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Page 4-9.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Examples of environmental considerations in the design and routing of all-weather airstrip
Importance of issue to the Type B Water Licence review process	The proponent needs to demonstrate that environmental practices to reduce the potential impacts related to the construction of the all-weather airstrip have been considered.
Detailed Review Comment	
Recommendation/Request	Provide examples of what environmental considerations will be accounted for (provide examples) in the design and routing of the all-weather airstrip.
Importance	Moderate

Review Comment Number	KIA-NWB-18
Sabina Gold & Silver – Back River Project	Dust suppression (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Road Management Plan (RMP), Section 6.1.1, Page 6-2.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Clarify use of chemical for dust suppression in frost-free days
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	Chemicals used for dust suppression on roads may reach the water courses and adversely affect water quality.
Recommendation/Request	Please clarify whether chemical will be sprayed for dust suppression in frost-free days
Importance	Moderate-High

Review Comment Number	KIA-NWB-19
Sabina Gold & Silver – Back River Project	Water crossings (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Road Management Plan (RMP), Section 6.1.2, Page 6-2.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Sizing of culverts
Importance of issue to the Type B Water Licence	



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review process	
Detailed Review Comment	
Recommendation/Request	Please indicate return period (if this is the criteria selected) will be considered to size culvert for heavy rainfall flows.
Importance	Low-Moderate

Review Comment Number	KIA-NWB-20
Sabina Gold & Silver – Back River Project	Movement of fuel tanks (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Fuel Management Plan (FMP), Section 6.1, Page 6-1.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Collision protection measures for moving tanks - clarify
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	It's not clear whether these collision protection measures based on concrete posts and barriers refer to moving tanks.
Recommendation/Request	Please clarify.
Importance	Low

Review Comment Number	KIA-NWB-21
Sabina Gold & Silver – Back River Project	Fuel tank location (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Fuel Management Plan (FMP), Section 6.2, Page 6-2.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Clarify what minimum distance between fuel tanks will be used.
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	This appears to be inconsistent with minimum distance of concrete posts from edge of a tank, which is of 1 m. Based on this minimum distance, the minimum separation between two adjacent tanks is 2 m, not 1 m.
Recommendation/Request	Please clarify.
Importance	Moderate



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Review Comment Number	KIA-NWB-22
Sabina Gold & Silver – Back River Project	Fuel tank location (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Fuel Management Plan (FMP), Section 6.2, Page 6-2.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Criteria for tank siting.
Importance of issue to the Type B Water Licence review process	The fuel tanks will pose a different risk of contamination depending on their location.
Detailed Review Comment	
Recommendation/Request	Please provide a detailed description of the criteria used for tank siting.
Importance	Moderate

Review Comment Number	KIA-NWB-23
Sabina Gold & Silver – Back River Project	Hydrocarbon removal from water (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Fuel Management Plan (FMP), Section 6.2, Page 6-2.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Capacity of water/oil separators
Importance of issue to the Type B Water Licence review process	The capacity of the water/oil separators is key to determine whether the expected volumes of water flowing through the water collection system will be adequate for hydrocarbon removal.
Detailed Review Comment	
Recommendation/Request	Please specify capacity of oil/water separators and provide rationale for selected capacity.
Importance	Moderate

Review Comment Number	KIA-NWB-24
Sabina Gold & Silver – Back River Project	Geotechnical program at the MLA (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Quarry Management Plan (QMP), Section 4.1.2, Page 4-1.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence	



Review Comment Number	KIA-NWB-25
Sabina Gold & Silver – Back River Project	Stockpile design (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Quarry Management Plan (QMP), Section 4.3.1.2, Page 4-3.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Visual impact of stockpile.
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	
Recommendation/Request	Please indicate whether a visual impact of the overburden stockpile maximum height of 6 m was conducted.
Importance	Low

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Review Comment Number	KIA-NWB-27
Sabina Gold & Silver – Back River Project	Assessment of PAG rock in the Airstrip Quarry (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Quarry Management Plan (QMP), Section 4.5.1, Page 4-5.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	It is important to adequately assess the acid generating potential of rock in the Airstrip Quarry.
Detailed Review Comment	Given the presence of PAG rock in the Airstrip Quarry and that further geochemical testing will be undertaken, a summary description of why the ABA criteria mentioned provide an adequate level of conservatism should be included.
Recommendation/Request	Provide a summary description of why AB criteria are an adequate level of conservatism.
Importance	High

Review Comment Number	KIA-NWB-28
Sabina Gold & Silver – Back River Project	ARD generation management – Airstrip Quarry (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Quarry Management Plan (QMP), Section 4.5.1, Page 4-5.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	It is important to plan and implement adequate measure for the effective management of ARD
Detailed Review Comment	Given the presence of PAG rock in the Airstrip Quarry, please indicate what management measure will be taken to minimize ARD generation.
Recommendation/Request	Please indicate what management measure will be used to minimize ARD generation.
Importance	Moderate

Review Comment Number	KIA-NWB-29
Sabina Gold & Silver – Back River Project	Permafrost degradation during quarrying



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	(Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Quarry Management Plan (QMP), Section 6, Page 6-1.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	It is believed that the planned quarries will not be excavated to depths below the base of the permafrost in the project area. However, this is not worded clearly in the text, and a clarification is required.
Detailed Review Comment	Table 6-1 states that permafrost degradation will be minimized by limiting the pit or quarry depth to within the continuous permafrost zone. By This is not clear - does this mean avoid creating full taliks? Please clarify.
Recommendation/Request	Please clarify Table 6-1.
Importance	Low

Review Comment Number	KIA-NWB-30
Sabina Gold & Silver – Back River Project	ARD generation management – MLA Quarry (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Quarry Management Plan (QMP), Section 6.1, Page 6-2.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	It is important to plan and implement adequate measure for the effective management of ARD
Detailed Review Comment	Please specify what management measures would be adopted, should PAG materials are found at the MLA quarry.
Recommendation/Request	Please specify management measures would be used if PAG materials are found at the MLA quarry.
Importance	High

Review Comment Number	KIA-NWB-31
Sabina Gold & Silver – Back River Project	Mitigation of erosion in water courses (Palmer)
References to the document being	Quarry Management Plan (QMP), Section 6.2,



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reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Page 6-2.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	In-stream work should be minimized to limit impacts on water courses. As such, riprap of river banks should be avoided and erosion should be controlled by means of runoff diversion channels.
Detailed Review Comment	This needs clarification. Will riprap be placed along banks of water bodies affected by erosion? If so, this could affect the aquatic habitat of the affected water bodies. Erosion from surface water runoff should be minimized by means of runoff diversion channels, not by altering water bodies.
Recommendation/Request	Please confirm if riprap will be placed along the banks of water bodies to prevent erosion.
Importance	High

Review Comment Number	KIA-NWB-32
Sabina Gold & Silver – Back River Project	Water management in quarry area (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Quarry Management Plan (QMP), Section 6.2, Page 6-2. Golder states: “The quarry configuration will consist of a relatively flat surface graded such that water slopes to an area within, or adjacent to, the quarry boundaries. Since no extraction will occur below water level, and the areas will be contoured to drain positively, there will be no residual ponds once the sites are closed.”
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	Extraction will occur below the depth of the active layer, where a shallow water level is present during the thaw season. A pond is likely to develop at the bottom of the quarry, as a result of snowmelt and as shallow water flows through the active layer and discharges into the quarry. Since the pond will be hydraulically disconnected from nearby water bodies (as it's



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	surrounded by permafrost), it is not clear why the presence of a pond within the quarry would be relevant.
Recommendation/Request	Please clarify what effects the development of a pond within the quarry are expected.
Importance	Moderate

Review Comment Number	KIA-NWB-33
Sabina Gold & Silver – Back River Project	Contact water event ponds (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Quarry Management Plan (QMP), Section 6.2, Page 6-3.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	It is important that the water contact pond be sited and sized in accordance with the site topography and anticipated volume of contact water generated at the site.
Detailed Review Comment	
Recommendation/Request	Please provide a preliminary estimate and rationale of the location and the required capacity of the contact water event ponds.
Importance	High

Review Comment Number	KIA-NWB-34
Sabina Gold & Silver – Back River Project	Dust control (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Quarry Management Plan (QMP), Section 6.3, Page 6-3.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	Measures of dust control need to be implemented at all times to minimize the quantity of wind-blown dust reaching the water courses in the project area.
Detailed Review Comment	
Recommendation/Request	Please indicate whether ROQ will be covered during truck transport to minimize dust.
Importance	Moderate



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Review Comment Number	KIA-NWB-35
Sabina Gold & Silver – Back River Project	Water quantity and quality monitoring (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Quarry Management Plan (QMP), Section 7, Page 7-1.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	
Recommendation/Request	Please specify the frequency for the spring seep survey.
Importance	Low

Review Comment Number	KIA-NWB-36
Sabina Gold & Silver – Back River Project	Water quality (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Quarry Management Plan (QMP) , Section 7, Page 21.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	
Recommendation/Request	Provide an indication of what is the contribution of the total nitrogen blasting residue compared to the total nitrogen modelled in the water and load balance.
Importance	Moderate

Review Comment Number	KIA-NWB-37
Sabina Gold & Silver – Back River Project	Mitigation of fuel spills (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Spill Contingency Plan (SCP), Section 1.5, Page 4.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	It is important to minimize risk of fuel spill by adopting all reasonable prevention measures.



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Detailed Review Comment	
Recommendation/Request	Please indicate if the drums are double-walled or not.
Importance	High

Review Comment Number	KIA-NWB-38
Sabina Gold & Silver – Back River Project	Spill containment (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Spill Contingency Plan (SCP), Section 1.5, Page 5.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	
Recommendation/Request	Please specify what secondary containment is used.
Importance	High

Review Comment Number	KIA-NWB-39
Sabina Gold & Silver – Back River Project	Grey-water disposal (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Spill Contingency Plan (SCP) , Section 1.6.2, Page 6.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	It is important to ensure adequate waste water disposal.
Detailed Review Comment	<p>It is stated that grey-water from the exploration camp will be disposed of by infiltration into the ground. The presence of continuous permafrost would limit the infiltration of grey-water to within the active layer, which would provide minimal attenuation and dilution of the contaminant plume of grey-water.</p> <p>The water disposed of in the sump would likely flow through the active layer and part of it may discharge into nearby waterbodies, depending on the topographic gradient and hydraulic properties of the active layer between the sump</p>



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	and the nearby waterbodies.
Recommendation/Request	Please confirm whether an assessment of the hydraulic connection between the proposed locations for grey-water discharge and nearby water bodies has been conducted.
Importance	High

Review Comment Number	KIA-NWB-40
Sabina Gold & Silver – Back River Project	Grey-water disposal (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Spill Contingency Plan (SCP), Section 2.2, Page 9.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Compliance of grey-water quality prior to release into the environment
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	What is the expected chemical composition of grey-water after settling. Will the water be tested for compliance with water license thresholds prior to release into the environment? How will release into the environment occur (e.g. diffuse or point discharge)?
Recommendation/Request	Please provide more details on grey-water.
Importance	High

Review Comment Number	KIA-NWB-41
Subject/Topic (Company)	Waste incineration ash disposal (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Spill Contingency Plan (SCP), Section 2.2, Page 9.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	Ash from waste incineration will contain contaminants that require adequate disposal
Detailed Review Comment	
Recommendation/Request	Please indicate how ashes from sewage incineration will be disposed of.
Importance	High



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Review Comment Number	KIA-NWB-42
Sabina Gold & Silver – Back River Project	Waste water disposal (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Spill Contingency Plan (SCP), Section 2.2, Page 10.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	
Recommendation/Request	Please indicate what additional treatment of grey-water, sewage water and contact water will be considered if compliance is not achieved.
Importance	Moderate

Review Comment Number	KIA-NWB-43
Sabina Gold & Silver – Back River Project	PAG rock disposal (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Spill Contingency Plan (SCP), Section 2.3, Page 10.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	It is important to dispose of PAG rock adequately so to minimize generation of contact water and potential impact of contact water on water courses.
Detailed Review Comment	
Recommendation/Request	Please provide examples of how the disposal of PAG rock would occur.
Importance	High

Review Comment Number	KIA-NWB-44
Sabina Gold & Silver – Back River Project	Drill cuttings disposal (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Spill Contingency Plan (SCP), Section 2.3, Page 10.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence	



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review process	
Detailed Review Comment	Please show exact location of exploration trench on a map. What will the minimum distance between the trench and waterbodies be? Will the hydraulic connection between the trench and nearby waterbodies be assessed?
Recommendation/Request	Please show exact location of exploration trench on a map.
Importance	Low

Review Comment Number	KIA-NWB-45
Sabina Gold & Silver – Back River Project	Water requirement in case of spills (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Spill Contingency Plan (SCP), Section 6.4, Page 19.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	The volume of water required for pressure-washing in the event of a spill may be significant, and it is important to determine whether the requested withdrawal of 297 m3/day will be sufficient to ensure that water for pressure-washing is available. If water for pressure-washing is not included in the requested withdrawal, then the volume of additional water required for pressure-washing should be estimated.
Detailed Review Comment	Please confirm whether the water for pressure-washing is included in the 297 m3/day requested in water license. If not, indicate how much water is expected to be required for pressure-washing in case of spill, and where would the water be sourced from.
Recommendation/Request	Please indicate how much water is expected to be used for pressure-washing.
Importance	High

Review Comment Number	KIA-NWB-46
Sabina Gold & Silver – Back River Project	Spill response time (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if	Spill Contingency Plan (SCP), Appendix B.



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relevant, table or appendix)	
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	Estimating the response time of external assistance in case of a major spill is important to ensure that large spills will be adequately contained
Detailed Review Comment	
Recommendation/Request	Please indicate what is average response time by external assistance in case of major spill.
Importance	High

Review Comment Number	KIA-NWB-47
Sabina Gold & Silver – Back River Project	Wildlife protection (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Interim Closure and Reclamation Plan (ICRP), Section 5, Page 5-2.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	
Recommendation/Request	Please indicate how wildlife will be prevented from accessing the pit lakes.
Importance	Moderate

Review Comment Number	KIA-NWB-48
Sabina Gold & Silver – Back River Project	Groundwater monitoring (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Interim Closure and Reclamation Plan (ICRP), Section 5, Page 5-2.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	Please indicate examples of site-specific conditions that would require "groundwater" monitoring. It is also recommended that the word "groundwater" be replaced with "shallow water", since the term groundwater typically refers



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	to sub-permafrost water, whereas only shallow, supra-permafrost water will be affected in this project.
Recommendation/Request	Please provide site-specific conditions for groundwater monitoring. Substitute groundwater for shallow water in the submitted plan.
Importance	Moderate

Review Comment Number	KIA-NWB-49
Sabina Gold & Silver – Back River Project	Environmental monitoring (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Environmental Management and Protection Plan (EMPP), Section 3.1, Page 3-1.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type A Water Licence review process	
Detailed Review Comment	
Recommendation/Request	Please provide references (document, section, page) for the previously made commitments with regard to monitoring.
Importance	Low

Review Comment Number	KIA-NWB-50
Sabina Gold & Silver – Back River Project	Water quality monitoring (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Environmental Management and Protection Plan (EMPP), Section 3.3, Page 3-3, Table 3.3-1.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	Specify what is meant by "as required" with regard to testing the quality of runoff water in the Fuel Tank Farm containment area. Monitoring should be carried out on a regular basis with specified frequency, not 'as required', as stated in the document.
Recommendation/Request	Please Specify what is meant by "as required"
Importance	Low



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Review Comment Number	KIA-NWB-51
Subject/Topic (Company)	Water quality monitoring (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Environmental Management and Protection Plan (EMPP), Section 3.3, Page 3-3, Table 3.3-1.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type A Water Licence review process	
Detailed Review Comment	Specify what is meant by "as required" with regard to monitoring water quality at PN04, PN07 and PN09. Monitoring should be carried out on a regular basis with specified frequency, not 'as required', as stated in the document.
Recommendation/Request	Please Specify what is meant by "as required"
Importance	Low

Review Comment Number	KIA-NWB-52
Sabina Gold & Silver – Back River Project	Water level monitoring in spill containment area (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Environmental Management and Protection Plan (EMPP), Section 3.3, Page 3-3, Table 3.3-1.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	Please confirm whether 'as required' means here whenever the water level in the containment area reaches a depth of 10 cm (see Spill Response Plan, section 2.2).
Recommendation/Request	Please clarify 'as required' as being the containment area reaches a depth of 10 cm.
Importance	Low

Review Comment Number	KIA-NWB-53
Sabina Gold & Silver – Back River Project	Spill recovery capacity (Palmer)
References to the document being	Oil Pollution Emergency Plan (OPEP), Section



Review Comment Number	KIA-NWB-55
Sabina Gold & Silver – Back River Project	Oil Cargo Transfer (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Oil Pollution Emergency Plan (OPEP), Section 5.2, Page 5-1.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type A Water Licence review process	
Detailed Review Comment	The oil transfer rate of 450 m3/hr is inconsistent with what is stated in Annex 5 - Bulk Cargo Transfer procedure (Section 5, 5.4), i.e. that transfer pumping rate will not exceed 149 m3/hr.



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Recommendation/Request	Please clarify.
Importance	Low

Review Comment Number	KIA-NWB-56
Subject/Topic (Company)	Spill assessment (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Oil Pollution Emergency Plan (OPEP), Section 5.3.6.4, Page 5-7.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	It is important to assess the risk and magnitude of spills assuming not only mild to moderate, but also extreme weather conditions
Detailed Review Comment	Spills are considered only under mild to moderate wind conditions. However, spills are expected to occur when ships hit shallow sea shelves or exposed rocks, which is more likely to occur with strong wind conditions.
Recommendation/Request	Please explain why strong wind conditions were not considered in the assessment spills.
Importance	High

Review Comment Number	KIA-NWB-57
Sabina Gold & Silver – Back River Project	Spill response – water requirements (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Oil Pollution Emergency Plan (OPEP), Section 9, Page 9-2.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	
Recommendation/Request	Please indicate where the water for pressure-washing will be sourced from, and whether this involves the installation of additional water intake points.
Importance	Moderate



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Review Comment Number	KIA-NWB-58
Sabina Gold & Silver – Back River Project	Spill containment – lined berms (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Oil Pollution Emergency Plan (OPEP), Section 9.5, Page 9-7.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	
Recommendation/Request	Please indicate whether the lined berms will be temporary and set up as a result of the spill, or whether they will be permanent structures. Also indicate expected locations of the lined berms.
Importance	Moderate

Review Comment Number	KIA-NWB-59
Sabina Gold & Silver – Back River Project	Spill response – third party assistance (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Oil Pollution Emergency Plan (OPEP), Section 10.1, Page 10-5.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	It is important to determine whether third party assistance may be required in the event of a large spill.
Detailed Review Comment	The need for third party assistance should be determined prior to the commencement of the project, based on the expected maximum spill volume and the required capability to contain and clean it.
Recommendation/Request	Please specify the need for third party assistance for spill response.
Importance	High

Review Comment Number	KIA-NWB-60
Sabina Gold & Silver – Back River Project	Oil Cargo transfer (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Oil Pollution Emergency Plan (OPEP), Annex 5, Section 5, point 5.4.



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relevant, table or appendix)	
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	The rate of 149 m ³ /hr indicated here is inconsistent with the maximum pumping rate of 450 m ³ /hr stated Section 5.2, page 5-1.
Recommendation/Request	Please clarify the rate of pumping.
Importance	Low

3.0 REVIEW COMMENTS: WATER QUALITY

Review Comment Number	KIA-NWB-61
Sabina Gold & Silver – Back River Project	Monitoring and Assessment of Turbidity and TSS related to in-water works (Hutchinson)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Main Application Supporting Document (MASD), Section 3.1.2.9. MASD, Section 3.2.2.6. Interim Closure and Reclamation Plan (ICRP), Section 3.1.8. ICRP, Section 3.2.6.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Sabina has not proposed locations for monitoring stations for the in-water works in either the marine or freshwater environment. We further note that sufficient detail has not been provided regarding how TSS and turbidity levels will be monitored nor has the application provided threshold concentrations of turbidity and TSS that would be considered " <i>too high</i> ". We request Sabina provide additional detail as to how TSS and turbidity monitoring associated with the in-water works will be implemented.
Importance of issue to the Type B Water Licence review process	Absence of adequate monitoring and thresholds for TSS and turbidity, and an interpretative framework for the resulting data, can result in insufficient mitigation for related risks to aquatic life.
Detailed Review Comment	1. Gap/Issue: To limit disruption to freshwater and marine aquatic resources during construction of water intakes, Sabina will implement several best practices including: " <i>Total suspended solids (TSS) and turbidity levels will be monitored throughout</i> "



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	<p><i>construction and work will be delayed if TSS levels and turbidity become too high.”</i></p> <p>We note that no monitoring stations have been proposed for the in-water works locations in either the marine or freshwater environment. We further note that sufficient detail has not been provided regarding how TSS and turbidity levels will be monitored nor has the application provided threshold concentrations of turbidity and TSS that would be considered “too high”.</p> <p><i>2. Disagreement with WL information/ conclusion:</i></p> <p>We are concerned that Sabina has not provided sufficient detail as to how TSS and turbidity monitoring associated with the in-water works will be implemented.</p> <p><i>3. Reasons for disagreement:</i></p> <p>Absence of adequate monitoring, an interpretative framework for collected data, and adaptive management thresholds for TSS and turbidity can result in an unrepresentative characterization of the impacts associated with in-water works, and insufficient mitigation of the related risks to aquatic life.</p>
Recommendation/Request	<p>We request Sabina provide additional detail as to how TSS and turbidity monitoring associated with the in-water works will be implemented.</p> <p>Monitoring protocols should include:</p> <ul style="list-style-type: none"> a) continuous monitoring of turbidity at select locations, b) development of a site – specific relationship between TSS and turbidity to allow estimation of TSS concentrations from turbidity data, c) Assessing TSS and turbidity levels at various depths throughout the water column to ensure no seepage has occurred from beneath any silt curtains. We note that subsurface plumes of TSS and turbidity may not be visible from the surface nor would they be detectable through a surface grab sample, and d) Guidance for interpretation of results for grab samples from specific depths vs whole column composite data. <p>We also request Sabina propose a threshold as to what total suspended solids (TSS) and turbidity</p>



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	levels will be considered “too high” and for allowable duration of exposure.
Importance	High

Review Comment Number	KIA-NWB-62
Sabina Gold & Silver – Back River Project	Additional Discharge Criteria (Hutchinson)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Main Application Supporting Document (MASD), Section 3.3.4, Table 3.3-2. Fuel Management Plan (FMP), Section 7, Table 7-1. Comprehensive Spill Contingency Plan (SCP), Section 2.2.
Summary (include proponent’s conclusion if relevant and conclusions of commenting party)	Sabina has not presented discharge criteria for all key contaminants associated with the application. We request Sabina include discharge criteria for petroleum hydrocarbons, ammonia and nitrate for contact water associated with preconstruction activities covered under the Type B water licence.
Importance of issue to the Type B Water Licence review process	Discharge criteria do not reflect the risks associated with water that may be affected by preconstruction activities involving transport and potential spillage of fuel and residues from blasting agents. This represents a potentially unmitigated risk to aquatic life.
Detailed Review Comment	<p>1. Gap/Issue:</p> <p>We note that Sabina has only provided a general discharge criterion for total suspended solids (TSS) in the Type B application. We acknowledge that a comprehensive suite of criteria is not required for the proposed preconstruction activities, but note that the full range of potential contaminants have not been accounted for.</p> <p>Sabina has proposed a series of discharge criteria for several specific types of contact water, including Bulk Fuel Storage Pooling Water discharge to the tundra. All criteria other than phenol are in line with CCME water quality guidelines for the protection of aquatic life. No explanation for this difference has been provided. Note that all other proposed concentrations (benzene, ethyl benzene, toluene, pH and Oil and Grease) are in line with the Canadian Council of Ministers of the Environment</p>



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	<p>Water Quality Objectives for the Protection of freshwater Aquatic Life.</p> <p>Not all types of contact water have associated discharge criteria; no discharge criteria nor monitoring of the contact water have been proposed for contact water collected in berms following a spill associated with preconstruction activities, which may have come into contact with petroleum hydrocarbons.</p> <p><i>2. Disagreement with WL information/ conclusion:</i></p> <p>We express concern that the full range of potential contaminants have not been accounted for in the general discharge criteria. We are further concerned with the monitoring and discharge criteria (or lack thereof) proposed for specific types of contact water.</p> <p><i>3. Reasons for disagreement:</i></p> <p>Discharge criteria do not reflect the risks associated with water that may be affected by preconstruction activities involving transport and potential spillage of fuel and residues from blasting agents.</p> <p>The criterion proposed for phenol is 0.02 mg/L, above the 0.004 mg/L CCME (1999) water quality guideline for the protection of freshwater aquatic life. Use of a discharge criterion an order of magnitude greater than the CCME water quality guideline may put aquatic life at unnecessary risk. No discharge criteria beyond suspended sediments have been provided for spill contact water sequestered in berms, resulting in a potential risk to aquatic life from unmonitored and untreated discharges.</p> <p>We note that while Sabina has provided some mitigations for specific types of discharged contact water (discharges from Bulk Fuel Storage Pooling water and berms will be made to the terrestrial environment at minimum 31 m from all waterbodies), the absence of discharge criteria for key contaminants of potential concern precludes an assessment as to whether these mitigations will be sufficient.</p>
Recommendation/Request	We request Sabina include general discharge criteria for petroleum hydrocarbons, ammonia



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	<p>and nitrate for contact water associated with preconstruction activities covered under the Type B water licence.</p> <p>We recommend Sabina provide a rationale for the chosen phenol discharge criterion or adopt the more stringent criterion for phenol of 0.004 mg/L in line with CCME water quality guidelines for the protection of aquatic life.</p> <p>We further recommend discharge criteria for nitrate and ammonia as key components of the ammonium nitrate fuel oil blasting agent. See our comment titled “Quarry Contact Water” for additional detail.</p> <p>Reference: Canadian Council of Ministers of the Environment. 1999. Canadian water quality guidelines for the protection of aquatic life: Phenols — Mono- and dihydric phenols. In: Canadian environmental quality guidelines, 1999, Canadian Council of Ministers of the Environment, Winnipeg.</p>
Importance	High

Review Comment Number	KIA-NWB-63
Sabina Gold & Silver – Back River Project	Sampling Associated with Spills (Hutchinson)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	(MASD), Section 6.4.
Summary (include proponent’s conclusion if relevant and conclusions of commenting party)	<p>Sabina has failed to clarify what conditions must be met for sample collection following a cleaned spill to be deemed necessary. We therefore recommend that:</p> <ul style="list-style-type: none"> a) Sabina conceptually define what conditions must be met for sampling to be required following a spill, b) Inform KitIA of a spill and, if possible, include KitIA as part of the emergency response team, c) Provide photographic documentation of all spills, cleanup activities and post cleanup status, and d) Document locations sampled as part of spills management, and details regarding the sampling plan.



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Importance of issue to the Type B Water Licence review process	Without a clear trigger for sampling, the proponent may miss an opportunity to characterize a spill's impact to the aquatic environment, and evaluate the success of any subsequent mitigations or cleanup activities.
Detailed Review Comment	<p>1. Gap/Issue: Sabina states that <i>"Following the clean-up of a spill, the Environmental Department will inspect the spill site and, if necessary, collect samples to verify that the clean-up is complete."</i> Sabina has failed to clarify what conditions must be met for sample collection following a cleaned spill to be deemed necessary.</p> <p>2. Disagreement with WL information/ conclusion: We are concerned this ambiguity may result in insufficient sample collection following a spill.</p> <p>3. Reasons for disagreement: Without a clear trigger for sampling, the proponent may miss an opportunity to characterize a spill's impact to the aquatic environment, and evaluate the success of any subsequent mitigations or cleanup activities.</p>
Recommendation/Request	<p>We therefore recommend that:</p> <ul style="list-style-type: none"> a) Sabina conceptually define what conditions must be met for sampling to be required following a spill, b) Inform KitIA of a spill and, if possible, include KitIA as part of the emergency response team, c) Provide photographic documentation of all spills, cleanup activities and post cleanup status, and d) Document locations sampled as part of spills management, and details regarding the sampling plan.
Importance	Moderate

Review Comment Number	KIA-NWB-64
Sabina Gold & Silver – Back River Project	Culvert Sizing (Hutchinson)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Road management Plan (RMP), Section 6.1.2.



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Summary (include proponent's conclusion if relevant and conclusions of commenting party)	It is not clear whether culverts will be adequately sized to accommodate storms and freshet thereby minimizing the likelihood of overtopping resulting in mobilized loose particulate matter degrading water quality and aquatic habitat. We recommend that "heavy rainfall flows" be defined and quantified to provide engineering certainty for culvert design. We further recommend Sabina define and quantify the expected storm flows and design criteria for culverts to minimize the potential for overtopping.
Importance of issue to the Type B Water Licence review process	Culverts may not be adequately sized to convey storms and freshet without overtopping the road thereby mobilizing loose particulate matter into the watercourse, degrading water quality and aquatic habitat
Detailed Review Comment	<p>1. Gap/Issue: Sabina has indicated <i>"Culverts will be sized for each stream crossing to accommodate normal summer flows, as well as spring freshet and heavy rainfall flows."</i></p> <p>It is not clear whether culverts will be adequately sized to accommodate storms and freshet without overtopping.</p> <p>2. Disagreement with WL information/ conclusion AND Reasons for disagreement: We share the concern that culverts be adequate to convey storms and freshet without overtopping the road to minimize the potential for overtopping flows that can mobilize loose particulate matter into the watercourse thereby degrading water quality and aquatic habitat.</p>
Recommendation/Request	We recommend that "heavy rainfall flows" be defined and quantified to provide engineering certainty for culvert design. We further recommend Sabina define and quantify the expected storm flows and design criteria for culverts to minimize the potential for overtopping.
Importance	Moderate

Review Comment Number	KIA-NWB-65
Sabina Gold & Silver – Back River Project	Quarry Contact Water (Hutchinson)



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References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Quarry Management Plan (QMP), Section 6.2. Environmental Management and Protection Plan (EMPP), Table 3.3-1, Table 3.3-2.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	<p>Sabina has not provided discharge criteria for contaminants associated with water that has come into contact with ammonium nitrate fuel oil and blasting residuals. Sabina should provide proposed discharge criteria for all contact water, for ammonia, nitrate and petroleum hydrocarbons parameters as part of the Type B water licence.</p> <p>We recommend that all ponded water associated with the quarries be included in the water quality monitoring program, and be assessed for parameter suites A (field chemistry), B (suspended sediments and turbidity), nitrogen species, oil and grease, and petroleum hydrocarbons as per Table 3.3-1 and 3.3-2 of the EMPP.</p>
Importance of issue to the Type B Water Licence review process	Discharge of contact water that has not been required to meet defined discharge criteria, even to the terrestrial environment, may not be sufficient to mitigate the risk to aquatic life.
Detailed Review Comment	<p>1. Gap/Issue: Sabina states <i>"Any flowing water which may leave the working area will be sampled as part of ongoing monitoring and allowed to discharge to the environment if it meets discharge criteria as defined in the Type B water licence. Any problematic water will be directed away from waterbodies, or held in contact water event ponds with enough capacity to contain high runoff from the spring freshet."</i></p> <p>Currently, the only general discharge criterion proposed under the Type B water licence is for TSS. Sabina has not provided discharge criteria for contaminants associated with water that has come into contact with ammonium nitrate fuel oil and blasting residuals.</p> <p>We are also concerned that <i>"problematic water"</i> will simply be directed away from waterbodies without treatment and without a clear idea as to its contaminant burden.</p> <p>2. Disagreement with WL information/</p>



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	<p><i>conclusion:</i></p> <p>Discharges from quarry sites may not meet accepted criteria for nitrate and ammonia and total petroleum hydrocarbons (THP), components of the blasting material that will be used for preconstruction activities.</p> <p><i>3. Reasons for disagreement:</i></p> <p>Discharges that do not meet discharge criteria for nitrate and ammonia and petroleum hydrocarbons may pose unnecessary risk to aquatic life. This applies to all contact water, including “problematic water”.</p> <p>We recognize that “problematic water” will only be discharged to the terrestrial environment at minimum 31 m from all waterbodies, but are concerned we cannot evaluate if this will adequately mitigate the risk to aquatic life without defined discharge criteria.</p>
Recommendation/Request	<p>Sabina should provide proposed discharge criteria for parameters associated with the blasting material that will be used for preconstruction activities, as part of the Type B water licence. We propose the following criteria for nitrogen species:</p> <p>Unionized Ammonia: 0.5 mg/L as nitrogen. MMER 2017</p> <p>Nitrate-Nitrogen: 3.0 mg/L as nitrogen. CCME 2017</p> <p>We also provide recommendations for petroleum hydrocarbon discharge criteria in our comment titled “Additional Discharge Criteria”. Please see that comment for additional details.</p> <p>We recommend Sabina revise the quarry management plan such that they will not discharge any water to either the terrestrial or aquatic environment unless it meets discharge criteria for TSS, turbidity, ammonia, nitrate and TPHs.</p> <p>Discharges to the environment should only occur at specified and signed areas greater than 31 m from all watercourses and waterbodies. Sabina should provide additional detail as to how water that does not meet discharge criteria will be dealt with.</p> <p>We further recommend that all ponded water</p>



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	<p>associated with the quarries be included in the water quality monitoring program, and be assessed for parameter suites A (field chemistry), B (suspended sediments and turbidity), nitrogen species, oil and grease, and petroleum hydrocarbons as per Table 3.3-1 and 3.3-2 of the EMPP.</p> <p>References:</p> <p>Canadian Council of Ministers of the Environment. 2012. Canadian water quality guidelines for the protection of aquatic life: Nitrate. In: Canadian environmental quality guidelines, Canadian Council of Ministers of the Environment, Winnipeg.</p> <p>Government of Canada. 2017. Regulations Amending the Metal Mining Effluent Regulations.</p>
Importance	Moderate

Review Comment Number	KIA-NWB-66
Sabina Gold & Silver – Back River Project	Water Quality Monitoring at BRP-18 and BRP-19 (Hutchinson)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	<p>Environmental Management and Protection Plan (EMPP), Section 3.3, Table 3.3-1, Table 3.3-2, and Figure 3.3-1.</p> <p>Concordance Assessment (CA), Section 8.0, subsection 1 and 6.</p> <p>EMPP, Section 3.3.</p>
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	We are concerned that monitoring proposed at BRP-18 and BRP-19 is insufficient to characterize the potential impacts to the aquatic environment from proximal project activity. We propose a series of recommended changes to monitoring activities proposed for BRP-18 and BRP-19 to better reflect potential impacts from proposed project activities.
Importance of issue to the Type B Water Licence review process	Insufficient monitoring at these sites may result in a failure to detect environmental impacts at those locations, and a failure to implement an appropriate mitigation response.
Detailed Review Comment	<p><i>1. Gap/Issue:</i></p> <p>The freshwater environment monitoring sites BRP-18 and BRP-19 are located in small streams down gradient from the all-weather road between the Goose plant fuel storage pad and</p>



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	<p>the main camp, airstrip and other infrastructure. The parameter suite proposed for these sites currently only includes total suspended solids (TSS) and turbidity – the “Surface Runoff” parameter suite. We are concerned that monitoring proposed at BRP-18 and BRP-19 is insufficient to characterize the potential impacts to the aquatic environment from proximal project activity.</p> <p><i>2. Disagreement with WL information/conclusion:</i></p> <p>Monitoring proposed at BRP-18 and BRP-19 is insufficient to characterize the potential impacts to the aquatic environment from proximal project activity.</p> <p><i>3. Reasons for disagreement</i></p> <p>Insufficient monitoring at these sites may result in a failure to detect environmental impacts at those locations, and a failure to implement an appropriate mitigation response.</p>
Recommendation/Request	<p>We provide the following recommended changes to monitoring activities proposed for BRP-18 and BRP-19:</p> <ol style="list-style-type: none"> 1) As the all-weather road will be used extensively by vehicular traffic, the addition of total petroleum hydrocarbons to the monitored parameter suite is prudent as a secondary check to ensure there are no unintentional discharges of fuel to the receiving environment. 2) If additional dust suppression beyond the application of water is used along the all-weather road, the parameter suite should be adjusted accordingly to characterize any potential impacts to the aquatic environment. For example, if calcium chloride (an approved dust suppressant in Nunavut (2002)) is applied to the road, those parameters should be added to the monitoring suite. <p>Reference: Government of Nunavut. Department of Sustainable Development and Environmental Protection Service. 2002. Environmental Guideline for Dust Suppression.</p>
Importance	Moderate



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Review Comment Number	KIA-NWB-67
Sabina Gold & Silver – Back River Project	Monitoring frequency for sites BRP-18, BRP-19 and BRP 23 (Hutchinson)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Environmental Management and Protection Plan (EMPP), Section 3.3, Table 3.3-1.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	<p>The monitoring frequency outlined for sites BRP-18, BRP-19 and BRP-23 may not be sufficient to appropriately characterize any potential contaminants or sediment mobilized during freshet or by construction activities that may reach the aquatic environment.</p> <p>We recommend the monitoring frequency for be further refined to once during freshet as confirmed by on site air temperature and flow measurements consistent with an increase in flow indicative of melting snow and ice, and monthly during construction while visible flow is present at the station.</p>
Importance of issue to the Type B Water Licence review process	Failure to collect seasonally appropriate samples may result in an unrepresentative characterization of aquatic conditions during freshet and any corresponding impacts from preconstruction activities. This may in turn result in a failure to implement an appropriate adaptive response to project related changes in the aquatic environment.
Detailed Review Comment	<p><i>1. Gap/Issue</i></p> <p>The monitoring frequency outlined for sites BRP-18, BRP-19 and BRP-23 are as follows: <i>"Once during freshet; additional as required during construction"</i>.</p> <p>This frequency may not be sufficient or sufficiently detailed to provide assurance that potential contaminants or sediment mobilized during freshet or by construction activities that may reach the aquatic environment will be appropriately characterized.</p> <p><i>2. Disagreement with WL information/conclusion:</i></p> <p>Freshet represents a relatively short sampling window in which on land particulate matter may</p>



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	<p>be rapidly mobilized to the aquatic environment. Insufficient detail regarding sampling frequency for sites BRP-18, BRP-19 and BRP-23 has been provided to provide assurance that monitoring will occur during this critical period and appropriately thereafter.</p> <p>3. Reasons for disagreement:</p> <p>Failure to collect seasonally appropriate samples may result in an unrepresentative characterization of aquatic conditions during freshet and any corresponding impacts from preconstruction activities. This may in turn result in a failure to implement an appropriate adaptive response to changes in the aquatic environment.</p>
Recommendation/Request	<p>We recommend the monitoring frequency be further refined to once during freshet as confirmed by on site air temperature and flow measurements consistent with an increase in flow indicative of melting snow and ice, and monthly during construction while visible flow is present at the station.</p>
Importance	Moderate

Review Comment Number	KIA-NWB-68
Sabina Gold & Silver – Back River Project	Sampling Stations Downgradient of WIR 2A and 2B (Hutchinson)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	<p>Environmental Management and Protection Plan (EMPP), Section 3.3, Table 3.3-1.</p> <p>EMPP, Section 3.3, Table 3.3-1, Table 3.3-2, and Figure 3.3-1.</p>
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	<p>Sampling locations have not been proposed downgradient of winter ice road (WIR) 2A. Sampling stations should be added near the outlet of the Goose Lake neck and downgradient of Winter Ice Road (WIR) 2A. These stations should be assessed for parameter suites A (field chemistry), B (surface runoff) and total petroleum hydrocarbons. We recommend that these sites should be sampled at the beginning of freshet as confirmed by on site air temperature and flow measurements indicating an increase in flow indicative of melting snow and ice when the WIRs are beginning to melt into the underlying freshwater environment.</p>



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Importance of issue to the Type B Water Licence review process	Failure to include sampling locations downgradient will preclude Sabina's ability to establish whether the construction and use of WIR 2A and WIR 2B are influencing the freshwater aquatic environment.
Detailed Review Comment	<p><i>1. Gap/Issue:</i> Sampling locations have not been proposed downgradient of winter ice road (WIR) 2A.</p> <p><i>2. Disagreement with WL information/conclusion:</i> Not Applicable</p> <p><i>3. Reasons for disagreement:</i> Failure to include sampling locations downgradient will preclude Sabina's ability to establish whether the construction and use of WIR 2A and WIR 2B are influencing the freshwater aquatic environment.</p>
Recommendation/Request	<p>Sampling stations should be added near the outlet of the Goose Lake neck and downgradient of Winter Ice Road (WIR) 2A. These stations should be assessed for parameter suites A (field chemistry), B (surface runoff) and total petroleum hydrocarbons. We recommend that these sites should be sampled at the beginning of freshet as confirmed by on site air temperature and flow measurements indicating an increase in flow indicative of melting snow and ice when the WIRs are beginning to melt into the underlying freshwater environment.</p> <p>These recommended sites and parameter suites are intended to of the WIRs establish whether the construction and use of WIR 2A and WIR 2B are influencing the freshwater aquatic environment.</p>
Importance	Moderate

Review Comment Number	KIA-NWB-69
Sabina Gold & Silver – Back River Project	Marine environment stations BRP-40, BRP-41, BRP-43 and BRP-46 (Hutchinson)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Environmental Management and Protection Plan (EMPP), Section 3.3, Table 3.3-1, and Figure 3.3-2. Concordance Assessment (CA), Section 8.0, subsection 1 and 6. EMPP, Section 3.3.



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Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Marine environment stations BRP-40, BRP-41, BRP-43 and BRP-46 are not plotted on Figure 3.3-2. We request Sabina provide locations their locations on Figure 3.3-2.
Importance of issue to the Type B Water Licence review process	Failure to provide locations of marine environment stations BRP-40, BRP-41, BRP-43 and BRP-46 prevents reviewers from determining where water intakes and discharges will be located in the marine environment and whether the proposed monitoring stations are appropriate.
Detailed Review Comment	<p><i>1. Gap/Issue:</i> Marine environment stations BRP-40, BRP-41, BRP-43 and BRP-46 are not plotted on Figure 3.3-2.</p> <p><i>2. Disagreement with WL information/conclusion:</i> Not Applicable</p> <p><i>3. Reasons for disagreement:</i> Locations of these stations are required to understand where water intakes and discharges will be in the marine environment and whether proposed monitoring stations are appropriate.</p>
Recommendation/Request	We request Sabina provide locations for marine environment stations BRP-40, BRP-41, BRP-43 and BRP-46 on Figure 3.3-2.
Importance	Moderate

Review Comment Number	KIA-NWB-70
Sabina Gold & Silver – Back River Project	Additional Detail Required for Quality Assurance and Quality Control Protocols (Hutchinson)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Environmental Management and Protection Plan (EMPP), Section 3.5. Concordance Assessment (CA), Section 8.0, subsection 5.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Sabina has included limited detail on Quality Assurance and Quality Control protocols within the Type B application. We request additional detail for Quality Assurance and Quality Control protocols outlined in the Type B water licence sufficient to demonstrate analytical precision and reliability of the data.
Importance of issue to the Type B Water Licence review process	Data collected concurrent to the preconstruction activities proposed under the Type B water



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	<p>licence will eventually be used to help confirm predictions of the aquatic environment during construction activities as outlined in the Final Environmental Impact Statement (FEIS). Additional assurance is required to demonstrate data collected under the Type B EMPP will have sufficient precision for that purpose. Data which is imprecise may skew the dataset or introduce increased variability, diminishing the capacity to distinguish project related impacts from natural variability in the aquatic environment.</p>
Detailed Review Comment	<p><i>1. Gap/Issue:</i> Sabina has included limited detail on Quality Assurance and Quality Protocols within the Type B application. The only description is as follows: <i>"Monitoring results collected under the various programs will undergo appropriate quality assurance and quality control checks, and will be included in the annual report."</i></p> <p><i>2. Disagreement with WL information/ conclusion</i> A more detailed QA/QC plan is required to ensure precision and reliability of environmental monitoring data.</p> <p><i>3. Reasons for disagreement</i> Data collected concurrent to the preconstruction activities proposed under the Type B water licence will eventually be used to help confirm predictions of the aquatic environment during construction activities as outlined in the Final Environmental Impact Statement (FEIS). Additional assurance is required to demonstrate data collected under the Type B EMPP will have sufficient precision for that purpose. Data which is imprecise may skew the dataset or introduce increased variability, diminishing the capacity to distinguish project related impacts from natural variability in the aquatic environment.</p>
Recommendation/Request	<p>We request additional detail for Quality Assurance and Quality Control protocols outlined in the Type B water licence application beyond <i>"Monitoring results collected under the various programs will undergo appropriate quality assurance and quality control checks, and will be included in the annual report."</i> A more detailed plan is required, which should include a clear</p>



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	<p>protocol for collecting duplicate samples and field blanks. These should be collected at a frequency of at least 10% of all samples collected to ensure the accuracy of monitoring data. A discussion of data quality objectives should also be included in the expanded QA/QC protocols.</p> <p>We recommend that the Type B application refer and adhere to a QA/QC plan that will be developed as part of the Type A water licence; environmental monitoring data collected concurrent to the preconstruction activities proposed under the Type B water licence will eventually be used to help confirm predictions of the aquatic environment during construction activities as outlined in the Final Environmental Impact Statement.</p>
Importance	Low

4.0 REVIEW COMMENTS: FISHERIES

Review Comment Number	KIA-NWB-71
Sabina Gold & Silver – Back River Project	Water use for the construction and maintenance of Winter Ice Roads (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Main Application Supporting Document (MASD), Section 3.3.1, Page 39.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Proponent states that all water used for the construction and maintenance of the WIRs will be sourced from Goose Lake and Lakes proximal to the MLA.
Importance of issue to the Type B Water Licence review process	It is important to know which lakes proximal to the MLA will be used to assess potential fish habitat loss. Smaller, or shallow lakes that are fish bearing may potentially be affected by a 10% decrease in available water volume, as the overall percentage of potentially available fish habitat affected can be greater than in larger, deeper lakes with the same volume of water withdrawn.
Detailed Review Comment	The proponent does not mention which lakes proximal to the MLA will be used as a water source for construction of the WIRs and other



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	water use. A list of potential lakes to be used as a water source and their fish bearing status should be included to assess any potential for effects to fish and fish habitat.
Recommendation/Request	Please provide a list of potential lakes to be used as a water source for construction of the WIRs and indicate fish bearing status of these lakes.
Importance	Moderate

Review Comment Number	KIA-NWB-72
Sabina Gold & Silver – Back River Project	Timing windows for Arctic fish species present (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Road Management Plan (RMP), Section 4.1.5, Page 4-5.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	The Proponent states that timing of in-water construction activities will conform, when possible, to Nunavut timing windows for the protection of fish and their habitat.
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	No timing windows for Arctic species present are included.
Recommendation/Request	Please provide a table indicating important timing windows of species potentially present that may be affected during construction of watercourse crossings.
Importance	Low

Review Comment Number	KIA-NWB-73
Subject/Topic (Company)	Sensitive Spawning Areas (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Road Management Plan (RMP), Section 4.1.5, Page 4-6.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Proponent states that mitigation measures include designing and planning in-water activities and works such that loss or disturbance to aquatic habitat is minimized and sensitive spawning habitats are avoided.
Importance of issue to the Type B Water Licence review process	The primary objective of mitigation for potential effects to fish and fish habitat is to avoid loss or



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	disturbance where possible.
Detailed Review Comment	It would be helpful to have a link to a map of sensitive spawning habitats for relevant fish species identified during baseline studies.
Recommendation/Request	Please provide reference to a map of sensitive spawning habitats for relevant species.
Importance	Moderate

Review Comment Number	KIA-NWB-74
Sabina Gold & Silver – Back River Project	Measures to Protect Fish and Fish Habitat (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Road Management Plan (RMP), Section 4.1.5., Page 4-6.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	The Proponent states that "Effective erosion and sediment control measures will be installed before starting work to prevent sediment from entering the waterbody."
Importance of issue to the Type B Water Licence review process	Sediment control measures are important to protect fish habitat, especially spawning and rearing habitat.
Detailed Review Comment	What are the effective erosion and sediment control measures? These are not provided.
Recommendation/Request	Please identify erosion and sediment control measures to be used.
Importance	Moderate

Review Comment Number	KIA-NWB-75
Sabina Gold & Silver – Back River Project	Measures to Protect Fish and Fish Habitat (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Road Management Plan (RMP), Section 4.1.5., Page 4-6.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	The Proponent states that "Regular inspection and maintenance of erosion and sediment control measures and structures will be conducted during the course of construction."
Importance of issue to the Type B Water Licence review process	Inspection and maintenance of erosion and sediment control measures is necessary to indicate any potential effects to fish and fish



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	habitat.
Detailed Review Comment	The term “regular” is vague and it should be specified how often inspection will occur. Maintenance should be conducted immediately following cases where inspection indicates that an issue with sedimentation or erosion occurs.
Recommendation/Request	Please identify at what interval sediment and erosion inspection will occur during the construction period.
Importance	Low

Review Comment Number	KIA-NWB-76
Sabina Gold & Silver – Back River Project	Measures to Protect Fish and Fish Habitat (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Road Management Plan (RMP), Section 4.1.5., Page 4-6.
Summary (include proponent’s conclusion if relevant and conclusions of commenting party)	The Proponent states that “If replacement rock reinforcement/armouring are required to stabilize eroding or exposed areas, appropriately-sized, clean rock will be installed at a similar slope to maintain a uniform bank/shoreline and natural stream/shoreline alignment.”
Importance of issue to the Type B Water Licence review process	
Detailed Review Comment	The term “appropriately-sized” is vague and should be specified. If size is dependent on size of sediment material already present or flow of water, then this should be stated.
Recommendation/Request	Please state what appropriately-size rock is based upon.
Importance	Moderate

Review Comment Number	KIA-NWB-77
Subject/Topic (Company)	Water use for the construction and maintenance of Winter Ice Roads (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Road Management Plan (RMP), Section 4.2.2, Page 4-9.



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Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Proponent states that "all water used for the construction and maintenance of the WIRs will be sourced from Goose Lake and Lakes proximal to the MLA."
Importance of issue to the Type B Water Licence review process	It is important to know which lakes proximal to the MLA will be used to assess potential fish habitat loss. Smaller, or shallow lakes that are fish bearing may potentially be affected by a 10% decrease in available water volume, as the overall percentage of potentially available fish habitat affected can be greater than in larger, deeper lakes with the same volume of water withdrawn.
Detailed Review Comment	The proponent does not mention which lakes proximal to the MLA will be used as a water source for construction of the WIRs and other water use. A list of potential lakes to be used as a water source and their fish bearing status should be included to assess any potential for effects to fish and fish habitat.
Recommendation/Request	Please provide a list of potential lakes to be used as a water source for construction of the WIRs and indicate fish bearing status of these lakes.
Importance	Moderate

Review Comment Number	KIA-NWB-78
Sabina Gold & Silver – Back River Project	Water Use for winter roads (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Road Management Plan (RMP), Section 4.2.2, Page 4-9.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	The Road Management Plan states that "Sabina will equip all water intake hoses with a screen of an appropriate mesh size to ensure that fish are not entrained, and will withdraw water at a rate such that fish do not become impinged on the screen."
Importance of issue to the Type B Water Licence review process	Mesh size and withdrawal rate are important factors to ensure that fish are not harmed as defined in the <i>Fisheries Act</i> .
Detailed Review Comment	The proponent mentions that an appropriate mesh size will be used but does not specify what mesh size is appropriate for fish species found in these watercourses.



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	Similarly, the proponent mentions that water withdrawal rate will be such that fish are not impinged, however they do not provide a maximum withdrawal rate appropriate for the fish species present.
Recommendation/Request	Please provide maximum mesh size to be used so that fish are not entrained. Please provide maximum withdrawal rate of water such that fish do not become impinged on the screen.
Importance	Low

Review Comment Number	KIA-NWB-79
Sabina Gold & Silver – Back River Project	Monitoring (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Quarry Management Plan (QMP), Section 7, Table 7-1.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	The Proponent states that "a spring seep survey of all quarries and major infrastructure components except roads will be conducted."
Importance of issue to the Type B Water Licence review process	Seep surveys of quarries and major infrastructure components are important to identify potential sources of contaminants to waterways.
Detailed Review Comment	The proponent indicates that a spring seep survey of all quarries and major infrastructure components except roads will be conducted however, monitoring frequency is not indicated. If this survey is to be conducted only one time this should be indicated with details surrounding survey timing.
Recommendation/Request	Please indicate whether the seep survey will be conducted as a onetime spring survey or multiple surveys and how timing of the survey will be chosen (e.g. during freshet?)
Importance	Low

Review Comment Number	KIA-NWB-80
Sabina Gold & Silver – Back River Project	Risk Management (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if	Spill Contingency Plan (SCP), Section 1.5., Page 5.



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relevant, table or appendix)	
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	The Proponent indicates that risk of fuel leaks during storage can be mitigated with secondary containment and frequent inspection of drums.
Importance of issue to the Type B Water Licence review process	Secondary containment of fuel leaks is necessary to prevent accidental leaching of deleterious substances to fish bearing and other waterways.
Detailed Review Comment	The proponent indicates that risk of fuel leaks during storage can be mitigated with secondary containment and frequent inspection of drums, but no details are provided on secondary containment measures and frequency of inspection.
Recommendation/Request	Please provide secondary containment measures to be used for fuel storage in case of a leak Please provide frequency of inspection of fuel storage containers.
Importance	Low

Review Comment Number	KIA-NWB-81
Sabina Gold & Silver – Back River Project	Solid Waste (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Spill Contingency Plan (SCP), Section 2.3, Page 10.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	The Proponent states that "although the potential for waste rock (including drill core) currently stored to be acid producing is unlikely, any such waste would be disposed of in an approved location and under acceptable practices."
Importance of issue to the Type B Water Licence review process	Location for storage of potentially acid producing material is important to prevent leaching of PAG into groundwater and downstream waterways.
Detailed Review Comment	No details are provided to indicate what qualifies an approved location and acceptable practices are indicated.
Recommendation/Request	Please provide qualifiers to indicate what would consist of an approved location and acceptable practices. Are specific guidelines going to be followed for this practice? Who is responsible for approval of the location?
Importance	Low



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Review Comment Number	KIA-NWB-82
Sabina Gold & Silver – Back River Project	All Weather Road construction and associated water crossings (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Interim Closure and Reclamation Plan (ICRP), Section 3.1.3, Page 3-6.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	The Proponent states that "Stream flow across the service roads will be conveyed using appropriately sized culverts."
Importance of issue to the Type B Water Licence review process	Culvert size is important for maintaining stream flow and maintaining habitat in fish bearing streams.
Detailed Review Comment	No details are provided to indicate what qualifies an appropriately sized culvert.
Recommendation/Request	Please provide qualifiers to indicate what factors would dictate culvert size and provide minimum size if possible.
Importance	Low

Review Comment Number	KIA-NWB-83
Sabina Gold & Silver – Back River Project	Closure and Reclamation Activities (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Interim Closure and Reclamation Plan (ICRP), Section 5, Page 5-2.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	The Proponent states that "In the case of the Airstrip Quarry and MLA Quarry, no extraction will occur below water level and the area will be contoured to drain positively, so there will be no residual pond after the quarries are closed. The water quality of the runoff will be monitored."
Importance of issue to the Type B Water Licence review process	Mitigation for poor water quality is imperative to protecting fish bearing and other watercourses.
Detailed Review Comment	No details are provided for mitigation in the case that water quality of runoff does not meet guidelines.
Recommendation/Request	Please provide mitigation measures in the case where runoff from the airstrip quarry and MLA quarry do not meet water quality guidelines.
Importance	Moderate



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Review Comment Number	KIA-NWB-84
Sabina Gold & Silver – Back River Project	Closure and Reclamation Activities (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Interim Closure and Reclamation Plan (ICRP), Section 5, Page 5-2.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	The Proponent states that "Operation of the Umwelt Quarry will result in the formation of two closed depressions that will accumulate water over time. A wall of boulders will be constructed around the quarry to prevent inadvertent access to the flooded voids and warning signs will be posted. One small spillway will be excavated for each of the depressions to control the location and elevation of water discharge. The discharge water quality will be monitored."
Importance of issue to the Type B Water Licence review process	Mitigation for poor water quality is imperative to protecting fish bearing and other watercourses.
Detailed Review Comment	No details are provided for mitigation in the case that water quality of discharge does not meet guidelines.
Recommendation/Request	Please provide mitigation measures in the case where discharge water does not meet water quality guidelines.
Importance	Moderate

Review Comment Number	KIA-NWB-85
Sabina Gold & Silver – Back River Project	Closure and Reclamation Activities (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Interim Closure and Reclamation Plan (ICRP), Section 5, Page 5-2.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	The Proponent states that "the re-aligned section of the Rascal stream will be restored to its natural drainage and the original fish passage will also be restored when the airstrip is no longer required."
Importance of issue to the Type B Water Licence review process	Offsetting requires that the benefits from offset must balance Project impacts.
Detailed Review Comment	For the construction of the re-alignment of Rascal Stream to flow through Gosling and Gander



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	Ponds, the proponent states in Section X of the Fisheries Assessment of Rascal Stream Re-alignment (dated October 2014) that “substrates remaining in RSE but no longer within a wetted channel will also be retained for use as spawning gravel and cobble during habitat mitigation in year 2”. However, there are no details provided to indicate where substrate will be collected for reclamation activities to restore Rascal Stream East to its natural drainage.
Recommendation/Request	Please provide details indicating where substrate will be collected for the restoration of Rascal Stream East to its natural water course. If the original material will be moved back to RSE after reclamation, then resulting habitat calculations should consider losses that will reoccur in RSW during the decommission phase.
Importance	Moderate

Review Comment Number	KIA-NWB-86
Sabina Gold & Silver – Back River Project	Water Quality Monitoring (Palmer)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Environmental Management and Protection Plan (EMPP), Section 3.3, Table 3.3-1, Page 3-3.
Summary (include proponent’s conclusion if relevant and conclusions of commenting party)	The Proponent states that “water quality monitoring during road construction and culvert installation will occur once during freshet and additional as required during construction.”
Importance of issue to the Type B Water Licence review process	Water quality monitoring is important to ensure that water reaching fish bearing and other watercourses meets water quality guidelines.
Detailed Review Comment	No qualifiers are listed to indicate when additional monitoring would be required.
Recommendation/Request	Please provide conditions whereby additional monitoring would be required and frequency of monitoring in those cases.
Importance	Low

Review Comment Number	KIA-NWB-87
Sabina Gold & Silver – Back River Project	Water Quality Monitoring (Palmer)
References to the document being reviewed/discussed (i.e. Document name,	Environmental Management and Protection Plan (EMPP), Section 3.3, Table 3.3-1, Page 3-3.



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volume, section/sub-section, page number, and if relevant, table or appendix)	
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	The Proponent states that "runoff water in the Fuel Tank Farm containment area will be monitored as required."
Importance of issue to the Type B Water Licence review process	Water quality monitoring is important to ensure that water reaching fish bearing and other watercourses meets water quality guidelines.
Detailed Review Comment	No qualifiers are listed to indicate when monitoring would be required.
Recommendation/Request	Please provide conditions whereby monitoring would be required and frequency of monitoring in those cases.
Importance	Moderate

5.0 REVIEW COMMENTS: TERRESTRIAL

Review Comment Number	KIA-NWB-88
Sabina Gold & Silver – Back River Project	Wildlife Summary (Zoetica)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Type B Water Licence, Main Application Supporting Document, Section 5.2.4., Page 52. Sabina states: "A full summary of potential effects related to Terrestrial Wildlife and wildlife habitat is provided in FEIS Volume 5, Sections 5.5, 6.5, 7.5, 8.5, 9.5, and 10.5."
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	The summary of impacts to wildlife in Section 5.2.4. appears incomplete.
Importance of issue to the Type B Water Licence review process	It is important that all relevant information is summarized in the water license application, including representation of wildlife impacts.
Detailed Review Comment	<p>4. <i>Gap/Issue</i></p> <p>Section 5.2.4. appears incomplete.</p> <p>5. <i>Disagreement with WL information/conclusion</i></p> <p>Unlike other impact sections, such as for the physical environment, archeology, and fish, no summary or details were provided for wildlife. The reader is only referred to the FEIS.</p> <p>6. <i>Reasons for disagreement</i></p>



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	Given the numerous wildlife described in Section 5.2.2, a summary, even if brief, is warranted regarding the type and extent of impacts.
Recommendation/Request	Please provide a brief summary of potential impacts to wildlife similar to the summaries for other sections.
Importance	Moderate

Review Comment Number	KIA-NWB-89
Sabina Gold & Silver – Back River Project	List of Management Plans (Zoetica)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Type B Water Licence, Main Application Supporting Document, Section 6, Page 60, Table 6.1. List of Management Programs and Associated Management Plans under Development for the Project Type A Water Licence.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	The Wildlife Mitigation and Management Plan (WMMP) were not referenced in this list of environmental plans.
Importance of issue to the Type B Water Licence review process	It is important to have all plans listed so that readers are aware of the wildlife related plans.
Detailed Review Comment	This Table listing management programs and associated management plans under development for the Type A Water Licence does not include mention of a wildlife mitigation and management plan (WMMP) even though wildlife were mentioned/discussed at the beginning of Section 6. Was this reference missed, or is the WMMP covered within the Environmental Management and Protection Plan?
Recommendation/Request	Please reference the WMMP if applicable.
Importance	Low

Review Comment Number	KIA-NWB-90
Sabina Gold & Silver – Back River Project	Accidental wildlife death (Zoetica)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Type B Water Licence, Road Management Plan (RMP), 7.6 Management of Wildlife Incidents, Page 7-2. Sabina states:



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	"In the case of the accidental death of an animal, environment personnel will contact the Government of Nunavut Wildlife Officer, KIA Senior Lands Manager, and the Hunters and Trappers Organization office in Kugluktuk and Cambridge Bay to discuss what to do with the carcass. The default action will be to remove the carcass from the road and incinerate it to avoid attracting scavengers, such as wolves, grizzly bear, Arctic fox, and/or wolverine."
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	N/A
Importance of issue to the Type B Water Licence review process	It is important that wildlife deaths be handled with appropriate care to limit unnecessary waste.
Detailed Review Comment	This section states that in the case of the accidental death of an animal, KIA will be notified but the default action will be to remove the carcass from the road and incinerate it to avoid attracting scavengers. Is this correct? There is no requirement to use the meat, fur, or other parts?
Recommendation/Request	Please confirm that there is no requirement to allow for use the animals for parts (e.g., by HTOs) in the default case.
Importance	Low

Review Comment Number	KIA-NWB-91
Sabina Gold & Silver – Back River Project	Fuel Attraction (Zoetica)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Type B Water Licence, Fuel Management Plan (FMP).
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	N/A
Importance of issue to the Type B Water Licence review process	It is important that wildlife be included in other management plans so that the readers of these plans are aware of potential issues with wildlife.
Detailed Review Comment	There was no reference to wildlife in this document. Is there any reason to prepare for the potential of wildlife attraction to fuel or fuel storage areas?
Recommendation/Request	Please discuss any expected issues with regards to wildlife or indicate if there are none anticipated.
Importance	Low



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Review Comment Number	KIA-NWB-92
Sabina Gold & Silver – Back River Project	Quarry Management Relating to Wildlife (Zoetica)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Type B Water Licence, Quarry Management Plan (QMP), Appendix A, Section 8, Page 23, Table 8-1. Mitigation and Adaptive Management Measures. Sabina states: “The Air Quality Monitoring and Management Plan will be followed to reduce or eliminate impacts from air.”
Summary (include proponent’s conclusion if relevant and conclusions of commenting party)	The Quarry Management plan does not give any indication towards best practices relating to wildlife, or refer to the WMMP.
Importance of issue to the Type B Water Licence review process	It is important that all the parts of the various plans that make up the water licence application are appropriately cross referenced so that the readers are aware of the WMMP.
Detailed Review Comment	Blasting mitigation does not state that blasting will follow applicable measures given in the WMMP to protect wildlife. This would be similar to referencing other plans such as for air quality etc. that will be followed.
Recommendation/Request	Please indicate that that the WMMP plan will also be followed as it related to protecting wildlife from excessive blasting disturbance.
Importance	Moderate

Review Comment Number	KIA-NWB-93
Sabina Gold & Silver – Back River Project	Tactical Spill Response (Zoetica)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Type B Water Licence, Oil Pollution Emergency Plan (OPEP), Section 5.3.6.4, Page 5-7. Sabina states: “with these setbacks in place and the low residual spill probabilities provided, a tactical response plan showing fuel spill dispersion modelling results relative to local sensitivities was not deemed a requirement at this time”.
Summary (include proponent’s conclusion if relevant and conclusions of commenting party)	It is unclear if all situations and input conditions



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relevant and conclusions of commenting party)	to the model would result in low residual spill probabilities.
Importance of issue to the Type B Water Licence review process	It is important to provide assurance that spill planning is sufficient.
Detailed Review Comment	<p>1. <i>Gap/Issue</i></p> <p>It is unclear why a tactical response plan showing fuel spill dispersion modelling results relative to local sensitivities was not considered.</p> <p>2. <i>Disagreement with WL information/conclusion</i></p> <p>This section seems to emphasize the volatile components of oils over long-lasting components, and focuses on low risk scenarios (such as low and moderate wind conditions). There is no mention of a high wind scenario for comparison.</p> <p>3. <i>Reasons for disagreement</i></p> <p>It would be helpful to provide more detail about the model results and assumptions to enable the reader to also arrive at the conclusion that a tactical response plan does not need to be considered.</p>
Recommendation/Request	Please provide an additional summary of high wind conditions and the effects of additional factors on spill results. Please also provide additional justification as to why a tactical response plan is not warranted.
Importance	Moderate

Review Comment Number	KIA-NWB-94
Sabina Gold & Silver – Back River Project	Oiled Wildlife (Zoetica)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	<p>Type B Water Licence, Oil Pollution Emergency Plan (OPEP), Section 9.4, Page 9-6.</p> <p>Sabina states that:</p> <p>“efforts shall be made to collect alive or dead oiled wildlife. In the event of a spill occurring in or around a water body, shorelines and beaches</p>



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	shall be inspected for contaminated wildlife to be collected”.
Summary (include proponent’s conclusion if relevant and conclusions of commenting party)	There is some uncertainty over the practices involved in collection and storage of oiled wildlife in the event of a spill.
Importance of issue to the Type B Water Licence review process	In the event of a spill it is important to have clear procedural guidelines for how wildlife will be addressed.
Detailed Review Comment	While the oil emergency plan does include a description of collection of wildlife, and the storage of oiled wildlife in boxes, additional detail is needed. The plan notes that wildlife will be put into cardboard boxes. How would larger mammals such as seals be handled? The proposed response seems to be logical and well thought out, however it may benefit from planning for additional scenarios to ensure appropriate preparations are in place.
Recommendation/Request	Please provide additional detail and planning with regard to how larger mammals that may be become oiled would be managed? Would these animals also be collected, and how would they be stored or rehabilitated?
Importance	Moderate

Review Comment Number	KIA-NWB-95
Sabina Gold & Silver – Back River Project	Oiled Wildlife Rehabilitation (Zoetica)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Type B Water Licence, Oil Pollution Emergency Plan (OPEP), Section 9.4, Page 9-7. Table 9.4-1, Emergency Contacts in Case of Spills Affecting Wildlife.
Summary (include proponent’s conclusion if relevant and conclusions of commenting party)	There is some uncertainty over the practices involved in treatment and rehabilitation of oiled wildlife in the event of a spill.
Importance of issue to the Type B Water Licence review process	In the event of a spill it is important to have clear procedural guidelines for how wildlife will be addressed.
Detailed Review Comment	The Table indicates that the nearest wildlife rehabilitation center is in Nova Scotia. We do not assume that transport to Nova Scotia would be considered if wildlife rehabilitation is needed, as this degree of delay would not prevent mortality. It is unclear how wildlife would be dealt with following immediate treatment. More detail



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	could be provided in this section.
Recommendation/Request	Please provide additional detail and suggest ways that wildlife treatment and rehabilitation may implemented given the remote location.
Importance	Moderate

Review Comment Number	KIA-NWB-96
Sabina Gold & Silver – Back River Project	Oil emergency Equipment for Wildlife (Zoetica)
References to the document being reviewed/discussed (i.e. Document name, volume, section/sub-section, page number, and if relevant, table or appendix)	Type B Water Licence, Oil Pollution Emergency Plan (OPEP), Annex 6 and Annex 4.
Summary (include proponent's conclusion if relevant and conclusions of commenting party)	Emergency equipment quantity and location is described in these documents. However, equipment related to wildlife is incomplete.
Importance of issue to the Type B Water Licence review process	It is important that oil emergency response plans are easy to implement if needed. All equipment referred to in the plans should be in a designated or known location. This would help to avoid unnecessary delay in locating supplies. In the case of preparing for oiled wildlife, there may be additional equipment which should be described in advance.
Detailed Review Comment	Annex 6 provides a list of equipment that is carried on ships in case of an oil spill. Annex 4 provides an additional list for equipment that will be available for dealing with spills on land. However, there may be additional supplies missing for the handling, storage, and potential first response treatment of oiled wildlife. Given the remote location, it may it may be beneficial to have at least some on-site wildlife rescue equipment.
Recommendation/Request	Please clearly indicate where wildlife collection and treatment equipment will be located and consider listing additional supplies that would be needed in handling, storage, and the first response treatment of oiled wildlife.
Importance	Moderate