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## Appendix

GN-01: Terrestrial Wildlife Effects	
<b>Department</b>	Environment
<b>Organization</b>	Government of Nunavut
<b>Subject/Topic</b>	Terrestrial Wildlife Cumulative Effects
<b>References</b>	<ul style="list-style-type: none"> <li>• NIRB Application for Screening #125502 – Ulu Gold Project – Blue Star Gold Corp.</li> <li>• NIRB Public Notice of Screening and Comment Request for Blue Star Gold Corp.'s "Ulu Gold Project" Project Proposal</li> <li>• Effects Assessment (2020) – Ulu Gold Project – Blue Star Gold Corp.</li> <li>• Environment and Heritage Resources Protection Plan (2020) – Ulu Gold Project – Blue Star Gold Corp.</li> <li>• Project Description (2020) – Ulu Gold Project – Blue Star Gold Corp.</li> <li>• Wildlife Protection Plan (2020) – Ulu Gold Project – Blue Star Gold Corp.</li> <li>• The Bathurst Caribou Range Plan (2018) – Government of the Northwest Territories.</li> <li>• Environmental Dynamics Inc. (EDI). (2008). Yukon Environment - Flying in Caribou Country – How to minimize disturbance from aircraft</li> <li>• Poole, K.G. and Gunn, A. (2015). Mobile Caribou Conservation Measures for the Kivalliq Region, Nunavut. Final report for Kivalliq Inuit Association.</li> </ul>
CONCERNS	
<p>The Project proposal contains insufficient information pertaining to wildlife management and mitigation which impedes the GN's accurate review of the Project's potential environmental effects. The GN has identified 3 issues where the Project proposal is lacking in information concerning potential adverse impacts on wildlife habitat:</p> <p>1. <u>Cumulative Impacts on Caribou Ranges:</u></p> <p style="padding-left: 40px;">The Project proposal indicates no cumulative effects without substantiation. The proposed Project area is located within the annual ranges of Bathurst</p>	

and Dolphin-Union caribou herds. As such, Project activities may affect caribou spring migration and calving. The Project area is also in proximity (1-11 km) of the calving area, post-calving areas and within the historic calving area of the Bathurst herd (Figures 1 and 2). The potential impacts of the Project activities may affect these areas and cause disturbance during caribou calving, post-calving, and migration.

The proposed Project, combined with other existing and approved Projects in the area (e.g. Hood River Project, Tibbit to Contwoyto Winter Road, Sabina Winter Ice Road, and Lupin Winter Access road), may cause cumulative effects on Dolphin-Union and Bathurst caribou herd abundance and habitat quality. Such cumulative effects may also impact other wildlife and vegetation. The proposed exploration activities are scheduled for May – October, potentially beginning as early as March. The Project's schedule overlaps with the Bathurst caribou herd calving and post-calving periods, which occur around June 2 to June 28, inclusive. The Project proposal does not reflect potential impacts on Bathurst caribou herd calving and post-calving areas and does not provide an assessment of potential cumulative effects on caribou herds in the area. It is also unclear if and how the Proponent used Inuit Qaujimajatuqangit to identify seasonal caribou areas.

## 2. Project Activities:

The exploration surveys and associated activities may disturb wildlife by converting/degrading terrestrial habitat as indicated but not limited to:

- Low altitude flights, take offs, and landings during geophysical surveys and logistics operations;
- Generation of noise from drilling;
- Generation of overpressure and vibration from blasting (e.g. seismic exploration);
- Construction and operation of a seasonal camp;
- Waste and chemicals management; and
- Spill prevention and management.

The description of Project activities in the *NIRB Public Notice of Screening* includes airborne and ground-based geophysical surveys but no geophysical surveys are mentioned in the Project description. However, the Project proposal states:

“Geophysical and other airborne surveys may be undertaken in the future if needed.” (NIRB Application for Screening #125502)

Details of potential environmental effects of these surveys provided in the proposal are lacking. Project descriptions should include consistent descriptions of all planned activities, provide detailed assessments of

impacts, and propose adequate mitigation measures to address potential adverse environmental effects.

3. Environmental Impacts and Mitigation:

The Project proposal lacks information related to environmental impacts and mitigation measures. The effects assessment table indicates that residual impacts on wildlife are not predicted after implementation of the Wildlife Protection Program (Effects Assessment, 2020). The *Environment and Heritage Resources Protection Plan* (2020) does not discuss impacts on wildlife.

The *Wildlife Protection Plan* (2020) mentions indirect habitat loss and disruption of movement as interaction pathways but, only the risk of direct and indirect mortality is discussed and assessed. No assessment of habitat loss and disruption of movement is provided in the *Wildlife Protection Plan* (2020) or other Project proposal documents. A cumulative effects assessment is recommended to be conducted for caribou that included all existing and planned Projects in the area.

The Wildlife Protection Plan (2020) states:

“If wildlife are observed, pilots will avoid wildlife by 300 m, except where low- elevation surveys are required, during take-off and landing, and at pilot’s safety discretion.” (Wildlife Protection Plan (2020); Section 5.5).

The recommended altitude for flights where caribou may be present is 600 metres during calving and post calving, and 300 metres for other times of the year (EDI, 2008). Flights over areas where caribou have been observed and core calving areas should be avoided. Mineral licks should be avoided by 1 kilometre during spring. Although similar avoidance measures are mentioned in Table 4 of the Wildlife Protection Plan (2019), there is no clear statement that no low altitude aerial surveys will be permitted if caribou are present in the area.

The *Wildlife Protection Plan* (2020) indicates it includes mitigation measures that align with the concept of mobile caribou conservation measures developed for the Kivalliq Region but, no detailed comparison is provided, and no mechanism is proposed to assess effectiveness of these measures (Poole and Gunn, 2015).

## **SUGGESTIONS AND RECOMMENDATIONS**

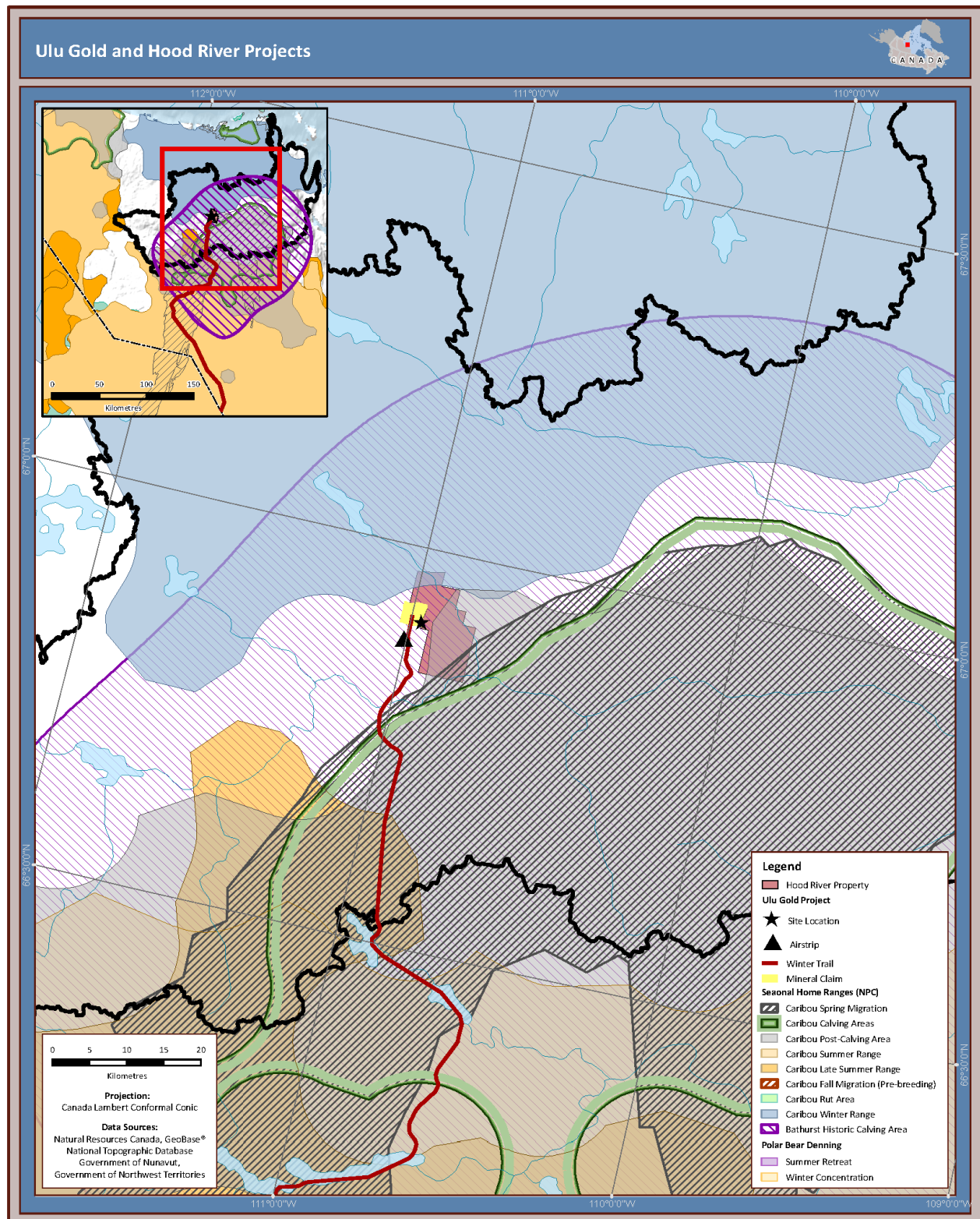
The GN submits this missing information is necessary for the Board to conduct its screening. Accordingly, pursuant to s. 144(1) of *NuPPAA*, the GN recommends the NIRB request of the Proponent to provide additional information described below:

1. A complete Project description with necessary details related to the proposed geophysics surveys;
2. The Project's Zone of Influence (ZOI);
3. An assessment of potential cumulative effects;
4. Revision of the Wildlife Protection Plan that includes the detailed description of proposed mitigation measures and a monitoring program.

With this information and a revised Wildlife Protection Plan, the NIRB and other intervenors can accurately and fulsomely determine whether potential Project effects and mitigation measures are sufficient to effectively reduce Project-induced ecosystemic impacts.

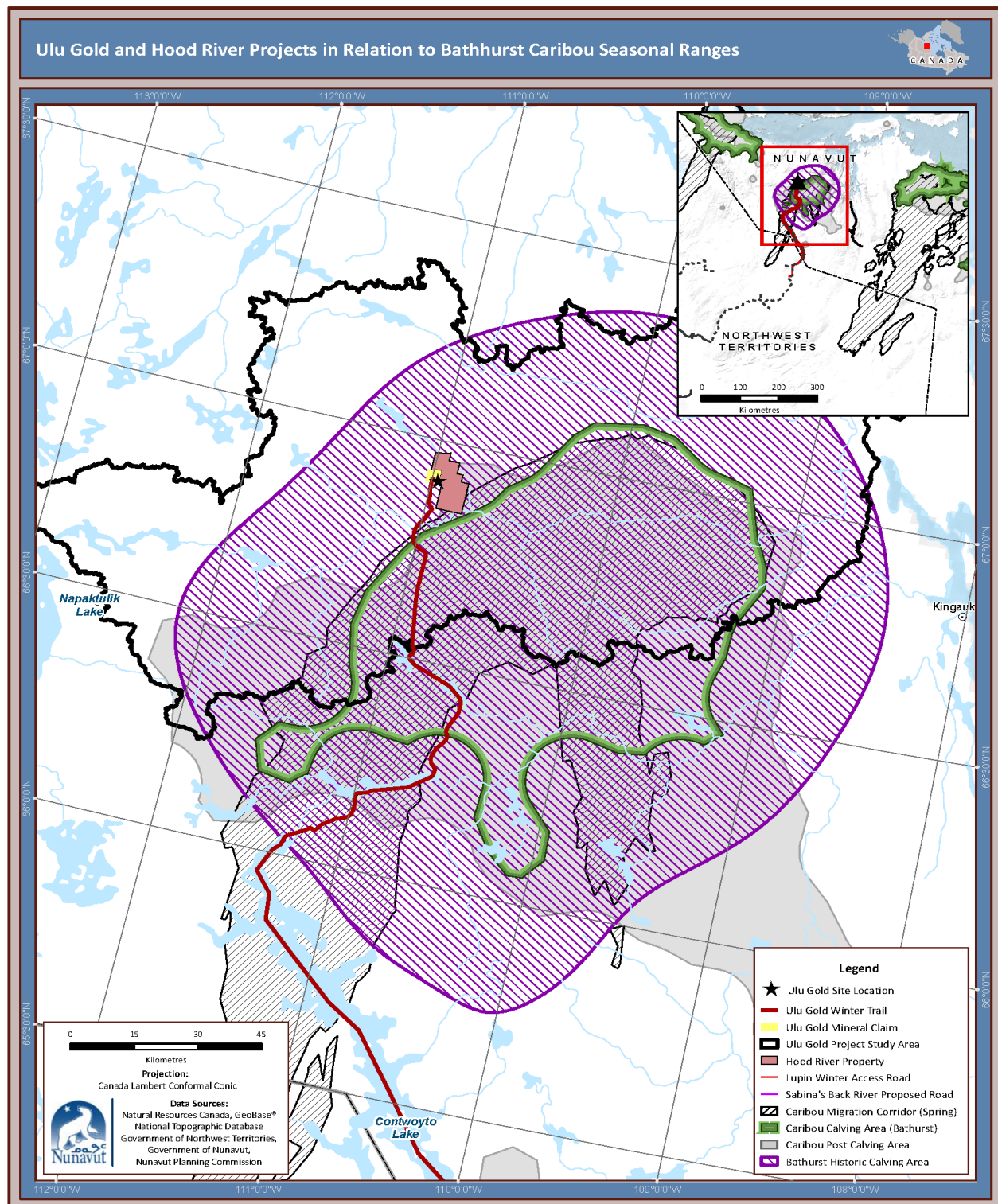
Further, the GN recommends the NIRB consider the location of the proposed new camp infrastructure, fuel storage facilities, and exploration activities be limited to areas well outside the seasonal ranges and migration corridors of the Bathurst caribou herd.

**Figure 1:** Ulu Gold and Hood River Projects in Relations to Bathurst Caribou Seasonal Ranges – Large Scale





**Figure 2:** Ulu Gold and Hood River Projects in Relation to Bathurst Caribou Seasonal Ranges – Small Scale



<b>GN-02: Waste Management Plan</b>	
<b>Department</b>	Department of Environment
<b>Organization</b>	Government of Nunavut
<b>Subject/Topic</b>	Absence of A Waste Management Plan
<b>References</b>	<ul style="list-style-type: none"> <li>• NIRB Application for Screening #125502 – Ulu Gold Project – Blue Star Gold Corp.</li> <li>• NIRB Public Notice of Screening and Comment Request for Blue Star Gold Corp.'s "Ulu Gold Project" Project Proposal</li> <li>• Project Description (2020) – Ulu Gold Project – Blue Star Gold Corp.</li> <li>• Spill Response Plan (2020) – Ulu Gold Project – Blue Star Gold Corp.</li> </ul>
<b>CONCERNS</b>	
<p>The Project proposal contains insufficient information pertaining to waste management which impedes the GN's accurate review of the Projects' potential environmental effects.</p> <p>The Proponent has indicated that a substantial portion of proposed Project activities at site relates to cleanup, demolition, and progressive reclamation activities which, generate waste materials. These activities may potentially cause adverse impacts to ecological integrity if waste is not managed in a responsible and diligent manner. The GN would like to note the following four areas of the proposal that are lacking in information:</p> <ol style="list-style-type: none"> <li>1. Land-farm Operation and Management <p>The Proponent has indicated that contaminated soils on site will be treated through establishing a land-farm. However, information is lacking about the development, use, monitoring, and eventual reclamation of the land-farm. The Proponent has not provided an estimate of the total volume of contaminated soils to be reclaimed, nor the expected lifespan of the land-farm. A section of the proposal concerning operations and management for the land-farm should be fulsomely developed and included in the Waste Management Plan. A Spill Contingency Plan should also be included.</p> </li> <li>2. Landfill Operation and Management</li> </ol>	



The Proponent has not provided sufficient information or impact mitigation plans for the proposed construction, operation, maintenance, and closure/reclamation of the proposed landfill. The Proponent has indicated that only non-hazardous, non-combustible waste will be placed in the landfill but, a list of type of waste considered acceptable and/or unacceptable for placement within the landfill is not included. This information should be compiled into a section on Landfill operation and management to be included in the Waste Management Plan.

### 3. Incineration of On-Site Waste

The Proponent has indicated using open burning of combustible, non-hazardous demolition waste as a means to reduce the volume of waste going to the planned landfill. The Proponent has not provided sufficient detail on the method of open burning. Per the GN's *Environmental Guideline for the Burning and Incineration of Solid Waste (2010)*:

- Open burning and the improper incineration of solid waste can result in environmental, health, and safety hazards from the pollutants found in smoke and exhaust gases and in the bottom ash;
- Open burning produces more smoke and pollutants, including dioxins and furans, than an incinerator capable of achieving complete combustion; and
- In general, open burning on the ground results in the incomplete combustion of waste and the release of various harmful pollutants to the air which can cause vegetation or tundra fires through the uncontrolled release of hot sparks and embers, and is actively discouraged by the Government of Nunavut's Department of Environment as a method for disposing of unsegregated or mixed solid waste.

The Proponent has indicated that an incinerator is currently used for disposal of camp waste (food and human). To the extent possible, this incinerator should also be used to dispose of other solid waste generated through demolition and cleanup of the old camp and general site reclamation.

Details on how the Proponent intends to segregate demolition waste originating from the old camp, determine what is combustible and non-hazardous, and generally manage waste incineration should be compiled into a section on Waste Incineration to be included in the Waste Management Plan.

### 4. Hazardous Waste Management

The Proponent has described steps pertaining to hazardous waste storage and management within the January 2020 Spill Response Plan. This hazardous waste storage description does not describe appropriate material segregation and does not address how hazardous materials should be safely transported for

backhaul to an approved facility. This information should be compiled into a section on Hazardous Waste Management to be included in the Waste Management Plan.

## **SUGGESTIONS AND RECOMMENDATIONS**

The GN submits this missing information is necessary for the Board to conduct its screening. Accordingly, pursuant to s. 144(1) of NuPPAA the GN recommends the NIRB requests of the Proponent to provide the following additional information:

1. A Land-farm Operations & Management Plan and Land-farm Spill Contingency Plan;
2. Landfill Operations & Management Plan;
3. Waste Incineration Plan;
4. Hazardous Waste Management Plan; and
5. Waste Management Plan that includes the detailed description and proposed management of Project waste, and including the components listed above.

The GN recommends the Proponent develop a complete and fulsome Waste Management Plan that includes specific details about the construction, operation, maintenance, monitoring, and closure/reclamation of the proposed waste management facilities. The Proponent should also provide details on the proposed entity/entities providing backhaul shipment, handling, and eventual disposal of hazardous waste at an approved facility.

With this new information and Waste Management Plan, the NIRB and other intervenors can fulsomely assess whether potential Project effects and mitigation measures are sufficient to effectively mitigate Project-induced ecosystemic effects.

## **ADDITIONAL COMMENTS**

The GN has developed guidelines for waste management for various materials and categories of waste, which are available on the Department of Environment's website. The Proponent may find the *Environmental Guideline for the General Management of Hazardous Waste (2010)*, the *Environmental Guideline for the Burning and Incineration of Solid Waste (2010)* useful references. The GN recommends the Proponent review and apply the guidelines where appropriate.

GN-03: Spill Response	
Department	Department of Environment
Organization	Government of Nunavut
Subject/Topic	Spill Response Capacity Relative to Fuel Storage Capacity
References	<ul style="list-style-type: none"> <li>• NIRB Application for Screening #125502 – Ulu Gold Project – Blue Star Gold Corp.</li> <li>• Project Description (2020) – Ulu Gold Project – Blue Star Gold Corp.</li> <li>• Spill Response Plan (2020) – Ulu Gold Project – Blue Star Gold Corp.</li> </ul>
CONCERNS	
<p>The Proponent has indicated they are in the process of procuring bulk storage (single tank or bladder, up to 100 000 L). It is unclear whether the Proponent has a sufficient Spill Response Plan to address a possible spill equivalent to this volume. It is also unclear if fuel is to be delivered to the site in barrels followed by transfer to bulk storage, or, if bulk transport will be used (e.g. Bulk Aviation Transport Tanks [BATTs] or large tanks hauled over the winter trail).</p> <p>The proposal currently lacks sufficient detail about the Proponent's intended response to a fuel spill related to the capacity of the containers used. Additionally, the proposal lacks sufficient detail about the methods and containers used for fuel transport, storage, and transfer.</p>	
SUGGESTIONS AND RECOMMENDATIONS	
<p>The GN recommends the Proponent provide additional detail about the methods and containers used for fuel transport, storage, and transfer. The GN recommends update their January 2020 <i>Ulu Gold Project Spill Response Plan</i> to include this information and verify whether they can adequately respond to a spill involving the failure of its largest container at any point in which the container is holding fuel.</p> <p>The GN further recommends that the proponent develop a Spill Contingency Plan for the land-farm operation or update the existing <i>Ulu Gold Project Spill Response Plan</i> (January 2020) to include a section on spill response for the land-farm. This should include specific reference to how water within the treatment cells (e.g. snowmelt, rainfall) will be tested and treated.</p>	
ADDITIONAL COMMENTS	

A large spill kit (220L) may be adequate for a single barrel of fuel but, may not fully address an incident involving multiple barrels (e.g. during transport) or, the rupture of a fuel bladder or large spill during transfer.

The GN recommends the Proponent provide additional detail in its proposed steps for responding to possible spills relating to larger storage containers (e.g. tanks, bladders). Particular attention should be given to spill response during transport. The Proponent notes that heavy equipment at the site can assist with cleanup in the event of a spill. This equipment may be available for use on a spill at the site but may not be immediately deployable to clean up a spill during transportation. Additionally, secondary containment should be designed and built to accommodate the capacity of larger fuel storage vessels (tanks, bladders) if used.

In the event of a spill, it is not clear how the Proponent will handle used spill kit materials and other contaminated materials. Additional detail on how contaminated materials will be handled, stored, and disposed of should be included in a Waste Management Plan.

<b>GN-04: Blasting and Quarry Management</b>	
<b>Department</b>	Department of Environment
<b>Organization</b>	Government of Nunavut
<b>Subject/Topic</b>	Absence of detail regarding blasting and quarry activities
<b>References</b>	<ul style="list-style-type: none"> <li>• NIRB Application for Screening #125502 – Ulu Gold Project – Blue Star Gold Corp.</li> <li>• February 2020 Letter to NIRB re: Additional Information</li> </ul>
<b>CONCERNS</b>	
<p>The Proponent has indicated a new quarry will be developed and used to support various project activities, including resurfacing and lengthening of the existing airstrip.</p> <p>Quarry development and use can have negative impacts on the environment. Blasting creates vibration, overpressure, toxic fumes, and dust, among other impacts. These impacts can lead to habitat degradation and avoidance behaviour in wildlife. Quarrying can have impacts on local permafrost structure and create change in geophysical stability of the local environment.</p> <p>The Proponent has not included sufficient detail about planned quarry activities, such as estimated volume, lifespan, management, and reclamation and closure of the quarry. The Proponent has not included sufficient detail about how they intend to mitigate and manage impacts to wildlife and the environment from the effects of blasting.</p>	
<b>SUGGESTIONS AND RECOMMENDATIONS</b>	
<p>The GN recommends the Proponent develop a Quarry Management Plan. This plan should contain details about proposed quarry activities, including quarry design, construction, ongoing operations, water management, safety, impacts to wildlife and the environment, the monitoring and mitigation of those impacts, and closure and reclamation of the quarry.</p> <p>The GN also recommends that the Proponent develop a Blasting Plan. This plan should contain details about proposed blasting activities, including estimated number and intensity of blast events, blast design, blast operations and safety, details on explosives spill management, contact water management, impacts to wildlife and the environment, and the monitoring and mitigation of those impacts.</p>	



GN-05: Archaeological Resources	
<b>Department</b>	Culture and Heritage
<b>Organization</b>	Government of Nunavut
<b>Subject/Topic</b>	Archaeological Resources Effects
<b>References</b>	<ul style="list-style-type: none"> <li>• 20EN001: Notice of Screening and Comment Request for Blue Star Gold Corp's Ulu Gold Project.</li> <li>• Blue Star Gold Corp's. <i>Ulu Gold Project: Project Description.</i></li> <li>• Blue Star Gold Corp's <i>Ulu Gold Project: Non-Technical Summary.</i></li> </ul>
CONCERNS	
<p>Project activities that may affect heritage resources include exploration activities (prospecting and drilling), establishment of a new temporary camp, extension of the existing airstrip, construction of landfill(s), use of quarry/borrow sites, use of a winter trail, and use of heavy equipment to haul rock and supplies.</p> <p>The GN notes that the proposed use of a winter trail to transport fuel and supplies constitutes a concern as not only snow cover might mask unrecorded archaeological sites but the likelihood of vehicles impacting unidentified (unrecognized) protruding cultural features is high (i.e. inuksuit, caches, look-out, dwelling, etc.).</p> <p>A search of the Nunavut Archaeological Site Database indicates that there are numerous archaeological sites within the proposed project area, including many sites along the proposed winter trail route. This however does not preclude the presence of unrecorded sites or cultural features as areas may not have been the object of a systematic archaeological assessment.</p>	
SUGGESTIONS AND RECOMMENDATIONS	
<p>The GN recommends the following:</p> <ol style="list-style-type: none"> <li>1. The Proponent hire a qualified archaeologist(s) in order to conduct archaeological assessments of any areas where ground disturbance activities are planned to occur (exploration areas, campsite, airstrip extension, landfill(s), quarry/borrow sites, and winter trail);</li> <li>2. The Proponent adheres strictly to the assessed winter trail route;</li> </ol>	

3. The Proponent works closely with the Territorial Archaeology Office to clearly identify and mark the locations of archaeological sites that might potentially be affected by development or remediation activities; and
4. No activities be conducted in the vicinity (50 m buffer zone) of any archaeological sites. If archaeological sites or features are encountered during the Project, activities should immediately be interrupted and moved away from this location. Each site encountered needs to be recorded and reported to the Department of Culture and Heritage.

All archaeological and palaeontological sites in Nunavut are protected by law. The Proponent should understand that it is their responsibility to ensure no heritage resource sites are disturbed throughout Project activities. Accordingly, no person shall alter, disturb, or remove any artifact from an archaeological site. Moreover, the building of inuksuit is not recommended.