

Round 2 - 2022 NWB Annual Report Responses

Agency	Comment No.	Header	Comment
CIRNAC	CIRNAC-1	Surface Water Quality- Goose Lake Hydrodynamic and Water Quality Model	As a reminder, pH is not directly modelled in the Goose Lake Hydrodynamic and Water Quality Model; however measured values of pH during baseline conditions are used to make conservative estimates of relevant guidelines (i.e., guidelines that vary with pH) to compare to model results. The pH of 5.5 identified by CIRNAC in the 2022 baseline dataset, which was lower than the lowest pH identified in the baseline dataset for the guidelines presented in the Goose Lake Hydrodynamic and Water Quality Model Report, would not result in lower (i.e., more conservative) guideline ranges for those guidelines that vary with pH (e.g., ammonia, aluminum, manganese, and zinc) because either the minimum guideline increases with lower pH (e.g., ammonia and zinc), remains the same between pH 5.5 and 5.9 (i.e., manganese) or already accounts for the minimum pH that can be used to derive the guideline (aluminum). Therefore, no changes to the model report’s conclusions related to comparisons of model results to guidelines are expected based on the lower measured pH value of 5.5 in 2022. B2Gold would like to remind CIRNAC that using the single lowest measured value pH to estimate guidelines that decrease with lower pH is extremely conservative, particularly as more baseline data are available and a greater understanding of the typical ranges in pH can be determined. B2Gold continues to commit to using updated monitoring results in the next version of the model. However, in future estimates of guidelines for comparison to model results, B2Gold will consider using an approach that is more representative of the typical lower range in pH values, such as calculating the 5th percentile of the pH data rather relying on a single minimum value.
CIRNAC	CIRNAC-3	Surface Water Quality- Water Management Plan Revisions	B2Gold acknowledges and accepts CIRNAC's recommendation that, when significant changes are made to plans in the future, including, but not limited to, project infrastructure, they are clearly demarcated in a revision list.
CIRNAC	CIRNAC-4	Acid Rock Drainage / Metal Leaching – Waste Rock	B2Gold apologizes for the confusion and confirms that PAG rock was not used as construction material in 2022. Further, B2Gold recognizes that geochemical classification criteria as stipulated in the Quarry Management Plan must go through appropriate regulatory review and approval if B2Gold wishes to revise it to better reflect the true acid generation potential of the materials.
CIRNAC	CIRNAC-6	Acid Rock Drainage / Metal Leaching – Classification criteria for NPAG Material.	B2Gold confirms that samples with a total sulphur content equal to 0.15% will be managed as PAG.
CIRNAC	CIRNAC-7	Monitoring	<div>- The Licensee did not include all monitoring program stations in the Monitoring Summary that are listed in the Water License (i.e., Schedule I, Table 2), including stations BRP-56 and BRP-57, corresponding to the Llama Tailings Facility; The table has been updated and is appended.</div> <div>- The frequency listed for stations BRP-18, BRP-19, and BRP-23 is different than the information presented in the Water License (i.e., Once during freshet and monthly during upstream construction while visible flow is present at the stations); The table has been updated and is appended.</div> <div>- The Licensee provided descriptions of stations BRP-42 and BRP-I-01 to BRP-I-TBD that are different than those listed in the Water License; The table has been updated and is appended.</div> <div>- The Licensee did not identify volumes of water that were withdrawn/discharged in 2022 (stations BRP-40, BRP-41, BRP-49); and B2Gold notes that BRP-40,41 are related to the marine environment, not freshwater, and that BRP-49 was an error that is now corrected.</div> <div>- The Licensee indicated that water was sampled prior to discharge at station BRP- 49, and referred the reader to the Annual Report. CIRNAC notes that only one discharge location was reported in Section 2.13 (Table 2.13-2) of the Annual Report, which appears to correspond to station BRP-43. B2Gold notes that BRP-49 was an error that is now corrected. The table has been updated and is appended.</div>
KIA	KIA-3	Appendices	The 2022 Annual report reflects summary of activities covering period from 1 January 2022 to 31 December 2022. B2Gold notes dewatering will commence in 2024 and will be reflected in the 2024 Annual Report submitted 31 March 2025.

KIA	KIA-4	Spills	B2Gold confirms that RCMP video footage of the vehicle in the weeks following the incident showed no leaks occurring. It is assumed that the hydrocarbons within the vehicle remain there. The vehicle was brand new, buried deep in the sediments, and under much external pressure. There is no evidence of hydrocarbons spills within Bathurst Inlet. As required if spills occur at the Project Site, the spill notification was provided within 24 hours to the NT/NU Spill Report Line - while there is no evidence of the spill occurring, B2Gold did so for precautionary reasons.
KIA	KIA-6	Water and Load Balance Report – Appendix C	<p>The changes made to the model in support of the water and load balance were refinements that allowed better precision in the groundwater model predictions or made the model more conservative.</p> <ul style="list-style-type: none">- grid refinement improved the resolution of predicted hydraulic heads near the open pits and undergrounds during mining.- the removal of lakebed sediments improved numerical stability. Lakebed sediments are also often not continuous enough to provide a uniform resistance to flow and can result in an underestimate of inflow from lakes to dewatered underground and pits. <p>Hydraulic head data and groundwater baseflow measurements do not exist to calibrate the model. This is a reflection of the northern permafrost environment where the presence of thick permafrost prevents the recharge of the sub-permafrost groundwater by precipitation and groundwater hydraulic heads beneath the permafrost are predominately controlled by the elevation of water levels in the lakes with open taliks. Hydraulic gradients are typically weak because of low topographic relief and large distances between lakes with open taliks. The contribution of groundwater to lake baseflow is typically negligible in comparison to surface water inputs, with lakes frozen in the winter when surface water inputs are negligible. This restricts the collection of meaningful data to support model calibration and reduce uncertainty is assigned hydraulic parameters. SRK therefore built their model to reflect the baseline data presented in the groundwater characterization report for the environmental assessment (lake elevations, hydraulic properties, permafrost depth) and then sensitivity runs were completed to provide predictions of groundwater inflow quantity and quality that considered uncertainty in hydraulic conductivity of the bedrock. The model will be calibrated once operation data is available including measured inflows and TDS quality.</p>
KIA	KIA-8	Water and Load Balance Report – Appendix C	<p>The bullets should read the following:</p> <p>Scenario 1</p> <ul style="list-style-type: none">- Ground Surface to 200 masl – Near surface hydraulic conductivity assumed to be equal to the arithmetic average of packer test results.- Below 200 masl – Equivalent to the bedrock hydraulic conductivity profile adopted in the SRK model (SRK 2015). The hydraulic conductivity reduction was truncated at a minimum hydraulic conductivity of 5×10^{-10} m/s. <p>Scenario 2:</p> <ul style="list-style-type: none">- Ground Surface to 200 masl – Near surface hydraulic conductivity assumed to be equal to the arithmetic average of packer test results.- 200 masl to -500 masl – Hydraulic conductivity assumed to be three times the geometric average.- Below -500 masl – assumed to progressively reduce to 5×10^{-10} m/s. <p>The bullets above are a correction of the typo of 0 masl, which should be ground surface. This created confusion in the positive and negative signs in front of the other numbers, which are correct in the report text.</p>
KIA	KIA-10	Water and Load Balance Report – Appendix C	A typo was made, and the correct unit of storage is m^{-1} . The specific storage was reduced from $1 \times 10^{-4} \text{ m}^{-1}$ to $1 \times 10^{-6} \text{ m}^{-1}$. The original value of $1 \times 10^{-4} \text{ m}^{-1}$ is unrealistically high for bedrock and is more representative of unconsolidated deposits.
KIA	KIA-13	Updates to Plan and Reports	B2Gold acknowledges and accepts KIA's recommendation to update and review previous years comments to Sabina Gold & Silver Corps. on management plans and to meet with KIA to discuss how comments will be addressed prior to the next annual report to the NWB due 31 March 2024.

2022 Monitoring Activity Overview by Station

Monitoring Program Station	Monitoring Type	Description	Mine Phase	Group Code*	Frequency	Monitoring Activity
BRP-G-01 to BRP-G TBO	Regulated Monitoring	General Site Runoff Suricata runoff anywhere at both Goose Property and MLA, including quarries, monitoring for erosion and sedimentation	Construction	C	Weekly if flow enters a waterbody	No flow entering a waterbody was observed in 2022.
BRP-S-01 to BRP-S TBO	General Monitoring	General Seeps Seepage or runoff from excavated and/or stockpiled material anywhere at both Goose Property and MLA, including quarries, that does not gather into a collection system or the site is reclaimed.	Construction and Operations	A, D	Monthly during flow, or as found	No seepage was observed in 2022
BRP-01	Regulated Monitoring	Goose Lake Discharge (discharge point for release of dewatering effluent with or without treatment)	Construction	A, B, G D H I	Weekly during dewatering Four times during dewatering, at the same time as the weekly samples Once per month during dewatering, at the same time as Group D One time during dewatering, at the same time as Group D	N/A – dewatering activities have not been initiated
BRP-02	General Monitoring	Llama Lake (intake point for dewatering, triggers need for treatment prior to discharge at BRP-01)	Construction	C (TS3 only)	Weekly if treatment is required; no sample if treatment is not required	N/A – dewatering activities have not been initiated
BRP-03	Verification Monitoring	Llama Pit (representative of collected pit water prior to transfer to tailings management facility)	Operations Stage 1 to Operations Stage 2	A, G	At Licensee's discretion	N/A – facility construction has not been initiated/ n/a mine phase
BRP-04	General Monitoring	Llama Pit Lake (representative of flooded pit during flooding and before overflow to the downstream environment)	Closure* to Post-Closure	A, D	Twice per year	N/A – facility construction has not been initiated/ n/a mine phase
BRP-05	Verification Monitoring	Llama WISA Pond (representative of collected water quality)	Operations Stage 1 to Closure	A, G	At Licensee's discretion	N/A – facility construction has not been initiated/ n/a mine phase
BRP-06	General Monitoring	Umwelt Lake (intake point for dewatering, triggers need for treatment prior to discharge at BRP-01)	Construction	C (TS3 only)	Weekly if treatment is required; no sample if treatment is not required	N/A – dewatering activities have not been initiated
BRP-07	Verification Monitoring	Umwelt Pit (representative of collected pit water prior to transfer to tailings management facility)	Construction to Operations Stage 2	A, G	At Licensee's discretion	N/A – facility construction has not been initiated
BRP-08	General Monitoring	Umwelt Pit Lake (representative of flooded pit during flooding and before overflow to the downstream environment)	Closure to Post-Closure	A, D	Twice per year	N/A – facility construction has not been initiated/ n/a mine phase
BRP-09	Verification Monitoring	Umwelt WISA Pond (representative of collected water quality, including landfill seepage/runoff)	Construction to Closure (early)*	A, G	At Licensee's discretion	N/A – facility construction has not been initiated
BRP-10	Verification Monitoring	Primary Water Pond (representative of collected water quality)	Construction to Closure (early)	A, D	At Licensee's discretion	N/A – facility construction has not been initiated
BRP-11	Verification Monitoring	Saline Water Pond (representative of stored water quality)	Construction (late) to Closure	A, D	At Licensee's discretion	N/A – facility construction has not been initiated
BRP-12	General Monitoring	Big Lake Intake (intake point for potable and industrial water withdrawal)	Construction to Closure	A, D	Four times per year	N/A – facility construction has not been initiated
BRP-13	Verification Monitoring	One Stockpile Pond (representative of collected water quality)	Construction to Closure (early)	A, D	Weekly	N/A – facility construction underway but not completed
BRP-14	Verification Monitoring	ANFO Plant (representative of collected water quality)	Construction to Closure	A, E	At Licensee's discretion	N/A – facility construction has not been initiated
BRP-15	Regulated Monitoring	Goose Fuel Tank Farm (representative of collected water quality)	Construction to Closure	A, E	Prior to discharge or transfer of water	N/A – facility construction, construction underway report in progress, no ponding water observed
BRP-16	Regulated Monitoring	Goose Hazardous Waste Management Area (representative of collected water quality)	Construction to Closure	A, E	Prior to discharge or transfer of water	N/A – facility construction has not been initiated
BRP-17	Regulated Monitoring	Goose Property Sewage Treatment Plant (discharge point for treated sewage onto land)	Construction to Closure	A, F	Prior to discharge	N/A – facility construction has not been initiated
BRP-17A	Regulated Monitoring	Goose Property Sewage Treatment Plant (discharge point for treated sewage into Tailings Storage Facility or Tailine Facility)	Construction to Closure*	A, F	Prior to discharge	N/A – facility construction has not been initiated
BRP-18	General Monitoring	Llama Watershed Outflow (representative of non-contact water, PH04 from Water and Load Balance)	Operations Stage 1 to Closure	A, D	Once during freshet and monthly during upstream construction while visible flow is present at the stations	N/A mine phase
BRP-19	General Monitoring	Echo Outflow (representative of non-contact water, PH09 from water and load balance)	Operations Stage 1 to Closure	A, D	Once during freshet and monthly during upstream construction while visible flow is present at the stations	N/A mine phase
BRP-20	Verification Monitoring	Echo Pit (representative of collected pit water prior to transfer to tailings management facility)	Operations Stage 2	A, G	At Licensee's discretion	Initial construction has occurred; no transfer or discharge of water required in 2022
BRP-21	General Monitoring	Echo Pit Lake (representative of flooded pit during flooding and before overflow to the downstream environment)	Closure to Post-Closure	A, D	Twice per year	N/A – facility construction has not been initiated/ n/a mine phase
BRP-22	Verification Monitoring	Echo WISA Pond (representative of collected water quality)	Operations Stage 2 to Closure (early)	A, G	At Licensee's discretion	N/A – facility construction has not been initiated/ n/a mine phase
BRP-23	General Monitoring	Gander Pond Outflow (representative of non-contact water, PH07 from Water and Load Balance)	Operations Stage 1 to Closure	A, D	Once during freshet and monthly during upstream construction while visible flow is present at the stations	N/A mine phase
BRP-24	General Monitoring	Goose Lake Intake (intake point for potable and industrial water withdrawal)	Operations Stage 1 to Closure (early)	B	Weekly	N/A – no water withdrawn under this licence in 2021
BRP-25	Verification Monitoring	Goose Pit (representative of collected pit water prior to transfer to tailings management facility)	Operations Stage 1 to Operations Stage 2	A, G	At Licensee's discretion	N/A – facility construction has not been initiated/ n/a mine phase
BRP-26	General Monitoring	Goose Pit Lake (representative of flooded pit during flooding and before overflow to the downstream environment)	Closure* to Post-Closure	A, D	Twice per year	N/A – facility construction has not been initiated/ n/a mine phase
BRP-27	Verification Monitoring	Goose Main Tailings Facility (intake point for water treatment, represents pre-treatment water quality)	Operations Stage 3 to Closure	A, G	At Licensee's discretion	N/A – facility construction has not been initiated/ n/a mine phase
BRP-28	Verification Monitoring	Goose Main Tailings Facility (discharge point for water treatment, represents post-treatment water quality)	Operations Stage 3 to Closure	A, G	At Licensee's discretion	N/A – facility construction has not been initiated/ n/a mine phase
BRP-29	Verification Monitoring	TSF WISA Pond (representative of collected water quality, including landfill seepage/runoff)	Operations Stage 1 to Closure	A, G	At Licensee's discretion	N/A – facility construction has not been initiated/ n/a mine phase
BRP-30	General Monitoring	Goose Southeast Inflow (representative of non-contact water, PH05 from Water and Load Balance)	Operations Stage 1 to Closure	A, D	Once during freshet	N/A mine phase
BRP-40	General Monitoring	Bathurst Inlet Intake (intake point in marine environment for potable and industrial water withdrawal)	Construction to Closure	A, D, B	At Licensee's discretion	Water was withdrawn from this location in 2022
BRP-41	General Monitoring	Bathurst Inlet Discharge (discharge point in marine environment for effluent from desalination plant)	Construction to Closure	A, I	At Licensee's discretion	Water was discharged at this location in 2022
BRP-42	Regulated Monitoring	MLA Greywater (representative drainage at point of entry to the marine receiving environment)	Construction to Closure	A, F	Prior to discharge or transfer of water	Greywater was discharged at the MLA in 2022 but no water was available for sampling at BRP-42
BRP-43	Regulated Monitoring	MLA Fuel Tank Farm (representative of collected water quality)	Construction to Closure	A, E	Prior to discharge or transfer of water	Discharge of 10 m3
BRP-44	Regulated Monitoring	MLA Landfarm (representative of collected water quality)	Construction to Closure	A, E	Prior to discharge or transfer of water	N/A – facility construction has not been initiated
BRP-45	Regulated Monitoring	MLA Hazardous Waste Management Area (representative of collected water quality)	Construction to Closure	A, E	Prior to discharge or transfer of water	N/A – facility construction has not been initiated
BRP-49	Regulated Monitoring	MLA Temporary Fuel Storage Facility (representative of collected water quality)	Construction	A, E	Prior to discharge or transfer of water	N/A – no water was discharged from this facility
BRP-51	Regulated Monitoring	Goose Landfarm (representative of collected water quality)	Construction to Closure	A, E	Prior to discharge or transfer of water	N/A – no water was discharged from this facility
BRP-52	General Monitoring	MLA Pond S1 (intake point for potable and industrial water withdrawal)	Construction to Closure	A, D	Once per quarter when in use	No water was withdrawn from this location in 2022
BRP-53	General Monitoring	MLA Pond S2 (intake point for potable and industrial water withdrawal)	Construction to Closure	A, D	Once per quarter when in use	No water was withdrawn from this location in 2022
BRP-54	General Monitoring	MLA Lake 3 (intake point for potable and industrial water withdrawal)	Construction to Closure	A, D	Weekly when in use	No water was withdrawn from this location in 2022
BRP-55	General Monitoring	MLA Lake 4 (intake point for potable and industrial water withdrawal)	Construction to Closure	A, D	Once per quarter when in use	No water was withdrawn from this location in 2022
BRP-56	General Monitoring	Llama Tailings Facility (collected at "inlet" to treatment facility Pre-treatment quality)	Operations to Closure	A, G	At Licensee's discretion	N/A – facility construction has not been initiated/ n/a mine phase
BRP-57	General Monitoring	Llama Tailings Facility (after treatment; collected at "outlet" of treatment facility; no discharge to the receiving environment Post-treatment quality to confirm treatment efficiency)	Operations to Closure	A, G	At Licensee's discretion	N/A – facility construction has not been initiated/ n/a mine phase
BRP-58a to BRP-58b (TBO)	Regulated Monitoring	Final Discharge Point Goose Lake			As per Part F, Item 16	No discharge occurred from this location in 2022
BRP-1-01 to BRP-1 TBO	General Monitoring	Interconnection Winter Ice Road Proximal Water Bodies (intake points for fresh water used in the construction of the Interconnection Winter Ice Road and WIR Service/Emergency Camps)	Construction to Closure	B	Weekly when in use	No water was withdrawn from this location in 2022

* Refers to Group Code from Water Licence 24M BRP1831 Schedule 1 Table 1