Newmont CANADA

ÉLÉONORE
1751, rue Davy
Rouyn-Noranda, Québec J9Y 0A8

T: 819.764.6400
F: 819.764.6543
newmont.com

Rouyn-Noranda, February 4th, 2021

Marc Croteau
Provincial Administrator, James Bay and Northern Quebec Agreement
Deputy Minister of the Environment and the Fight against Climate Change
Édifice Marie-Guyart, 30th Floor
675, boul. René-Lévesque Est, Box 02
Quebec City QC G1R 5V7

Subject: Response to questions and comments – Éléonore Mining Project – Modification of operation of the tailings storage facility
Your Ref.: 3214-14-042

Dear Mr. Croteau,

Goldcorp Canada Ltd. hereby sends the responses to the questions and comments received in the letter dated December 9, 2020 concerning the project cited in the subject line.

QC-1. The Proponent will have to indicate what measures will be deployed to ensure the long-term sealing of the tailings storage facility. It will have to specify the means used to ensure the impermeability of the geomembrane so that it can accommodate the tailings and the waste rock in co-disposal. It will also have to specify the influence of the increase in the ratio of waste rock on the preferential flow of water in the pile and on the resulting water quality.

Long-term sealing

Co-disposal of the waste rock and the mill tailings in the tailings storage facility (TSF) does not change the required sealing level. The waste rock and mill tailings have similar geochemical characteristics. According to the static and kinetic tests performed during the impact study and updated over the past few years, the waste rock is potentially acid generating (PAG) and potentially leachable (PL), while the mill tailings are non-acid-generating (NAG) and arsenic leachable. According to Directive 019 for the mining industry, tailings management (waste rock and mill tailings) requires the same level of sealing when they are acid generating and/or leachable, which means Level A protective measures. This level of protection requires a design allowing a maximum daily percolation rate of 3.3 L/m2 for the bottom of the accumulation area.

The digital flow model of groundwater and contaminant transport prepared in 2016 by SNC (attached) shows an exfiltration flow at the bottom of the tailings storage facility "of 1.4 mm/yr, or 0.0037 $L/m^2/d$, which is below the required 3.3.$L/m^2/d$, and the structure thus complies with the requirements of Directive 019 regarding the Level A sealing measure". Moreover, the contaminant transport simulations were performed over a 500-year period for two arsenic concentrations, 0.46 mg/L and 2.8 mg/L. "The simulations show that the arsenic contamination plume flows slowly to the Opinaca Reservoir. At 500 years, the arsenic concentration that reaches the reservoir is 0.0023 mg/L for a source concentration of 0.46 mg/L, and 0.03 mg/L for a source concentration of 2.8 mg/L. The concentrations in the bedrock remain low, even after 500 years of simulation. The plume develops

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mainly in the unconsolidated deposits." As an indication, the release standard for arsenic according to Directive 019 is 0.2 mg/L.

Influence of the increase in the waste rock ratio on preferential flow:
In the SNC technical memo on the draining areas (attached), it is indicated that the fact of building roads in the TSF with waste rock and connecting them to a central drain will allow discharge of the runoff water and the water generated by consolidation of the sludge. It is indicated that, with time, the voids in the waste rock will be filled partially with tailings. This way of doing things will have no impact on the concept of the TSF, because the drains are not designed to assist long-term drainage. Thus, the presence of waste rock (roads and drains) will allow improvement of the drainage in the tailings, which will help prevent the water table from rising in the tailings pending reclamation, i.e. pending installation of a permanent low-permeability cover on the tailings. Subsequently, the rapid drainage of the runoff and infiltration water will be less necessary, because reclamation will considerably limit water infiltration in the tailings.

Influence on the resulting water quality
As indicated previously, the geochemical characteristics of the waste rock and the mill tailings are similar. Table 1 presents the 2019-2020 average results of analysis of the intermediate effluents of the TSF and the waste rock piles.

- TSF pond: The samples are collected from the TSF pond, which involve a combination of the flow from the tailings and the TSF waste rock pile. However, since the area occupied by the tailings (50 ha) is nearly 5 times greater than the area of the TSF waste rock pile (11 ha), the results mainly represent the quality of the water flowing from the tailings.
- TSF waste rock pile: The samples are collected at the base of the pile, before the water mixes with the tailings runoff water. These results thus are representative of the flow in the waste rock of this pile.
- Industrial area waste rock pile: The samples are collected in the collection pond at the foot of the pile. These results represent the quality of the water flowing in the waste rock of this pile.

Table 1: 2019-2020 average results

	As-Tot	Cu-Tot	Fe-Tot	Ni-Tot	Pb-Tot	Zn-Tot	PH-LE
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pH un
Moyenne mensuelle DIR-0190	0,2	0,3	3	0,5	0,2	0,5	6,0 - 9,5
Bassin du PAR	**0,31**	0,012	1,05	0,08	0,0004	0,01	7,2
Halde à stériles du PAR	0,02	0,010	0,06	0,17	0,0019	0,02	6,2
Halde à stériles de zone industrielle	0,02	0,004	0,19	0,34	0,0009	0,05	7,2

La valeur utilisée pour fin de calculs lorsque des valeurs sont sous la limite de détection est LD/2

Of all the results presented in the table, only the arsenic present in the TSF runoff water exceeds the release criterion of Directive 019. In general, the water flowing from the waste rock piles is of similar or greater quality for all of the parameters, except for nickel and, to a lesser extent, zinc. The pH of the water flowing from the TSF waste rock pile is slightly lower than that of the TSF. The vast majority of the arsenic emissions come from the tailings. Co-disposal of waste rock with tailings will have little impact on overall water quality, especially since the proportion of waste rock in the TSF ultimately will be around 35-40% (by volume) and since, over time, the voids in the waste rock will be partially filled with tailings (SNC, 2018), which will limit their contact with the runoff water. The water treatment

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system in place is designed to treat metals. Consequently, it is able to treat an increase in the metal concentration, including nickel and zinc as well as a pH variation, as applicable.

QC-2. The Proponent will have to update the capacity of the tailings storage facility and the water treatment capacity, considering the future operating possibilities. The Proponent will have to describe the measures deployed for tailings management in the event of the continuation of operations beyond the authorizations currently issued.

Capacity of TSF and water treatment

The capacity of the TSF, considering the space occupied by the new ponds, was evaluated at approximately 12.2 M m^3. The detailed engineering of the ponds is not completed, which could slightly increase or decrease the capacity of the TSF. The mining plan prepared in 2020 shows that the total volume of waste rock and tailings that will be stored in the TSF during the life of the mine, i.e. up to 2025, is 10.4 M m^3. According to the data, a volume of approximately 1.8 M m^3 would remain available in the TSF at end of the mine's lifecycle.

It is important to know that the mining plan is updated each year and that several parameters influence the end date of the mine's lifecycle, such as the evolution of the reserves, the tonnage processed in the mill each year and the waste rock extracted each year, to name only a few. Any evaluation beyond the mine's known lifecycle must rely on assumptions. To evaluate the number of additional years the TSF could be used for storage, the average annual volume of waste rock and tailings stored in the TSF was calculated by using the data from 2021 to 2023. During this period, an average of 1.05 M m^3/year of waste rock and tailings will be stored in the TSF. Under these conditions, the TSF could accommodate approximately 1.7 additional years of operation, i.e. up to 2026-2027.

The capacity of the existing industrial water treatment plant (IWTP) remains unchanged and is sufficient to manage the water from the entire authorized perimeter of the TSF. The issue is more to be able to distribute the spring meltwater volumes over a longer period. The addition of one or two ponds, depending on the needs, will allow temporary storage of the water to pump it slowly to the IWTP. During the detailed engineering, the pond or ponds will be dimensioned to allow treatment of meltwater at the TSF to be staggered, accounting for the capacity of the IWTP. Also, the progressive reclamation of the completed cells of the TSF will allow reduction of the volume of runoff water to be treated as soon as the follow-up will have demonstrated the efficiency of the covering.

Tailings management beyond the current authorization

Tailing management beyond the current authorization is a highly hypothetical question. The current reserves ensure the operation of the Éléonore Mine up to 2025. Exploration continues on the Éléonore property with the objective of extending the mine's lifecycle. As indicated above, the TSF, as authorized, could receive the tailings and the waste rock from one to two additional years of operation, i.e. possibly up to 2026-2027.

If the discovery of new reserves allowed operation of the Éléonore Mine longer than the current capacity of the TSF, studies and consultations will be undertaken to ensure the authorization of an enlargement of the TSF. A very preliminary assessment demonstrated that it is possible to enlarge the TSF in the same valley, without touching the Opinaca River watershed.

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For more information, you may contact the undersigned. We trust that the above meets your requirements.

Best regards,

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Geneviève Pepin
Director, Sustainability and External Relations
Genevieve.pepin@newmont.com
819-865-4102

encl. Modèle numérique de l'écoulement de l'eau souterraine et du transport de contaminant (Digital model of groundwater runoff and contaminant transport), SNC, 2016
Note technique - Zones drainante (Technical memo- Draining areas), SNC, 2018

c.c. (By email)
Paschale Noël Bégin, MELCC;
Kelly Leblanc, Cree Nation Government