WINDFALL GROUPE MINIER

WINDFALL MINING PROJECT

ADDITIONAL INFORMATION
RESPONSES TO QUESTIONS AND COMMENTS - 1ST SERIES

Volume 1

OCTOBER 2024
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wsp

WINDFALL MINING GROUP

WINDFALL MINING PROJECT – ENVIRONMENTAL IMPACT ASSESSMENT

RESPONSES TO QUESTIONS AND COMMENTS FROM MELCCFP – 1ST SERIE

EEYOU ISTCHEE BAIE-JAMES TERRITORY

FINAL VERSION

WSP REFERENCE: CA0023271.9538

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REFERENCE TO BE CITED

WSP. 2024. Windfall Mining Project – Environmental Impact Assessment. Responses to questions and comments from MELCCFP – 1st Serie. Eeyou Istchee Baie-James Territory. Report produced for Windfall Mining Group. WSP Reference: CA0023271.9538.

NOTICE TO THE READER

The purpose of this document is to respond to questions and comments received by Windfall Mining Group Windfall Mining Group from the Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP) concerning the Windfall Mining Project's environmental impact assessment and Addendum 1 of this study. WSP Canada Inc. (WSP) has been mandated by Windfall Mining Group to answer these questions.

The MELCCFP's recommendations and comments are presented in full **in boxes and in bold type** to distinguish them easily from the answers provided in the text. A code and a number are associated with each question or comment (QC-1, QC-2, etc.) as well as with each answer provided (Response 1, Response 2, etc.) to facilitate follow-up.

All information provided at the time of filing is considered applicable unless superseded by an update.

The French version of this document constitutes the official version. In case of conflict of interpretation between the English and French versions, the French version prevails.

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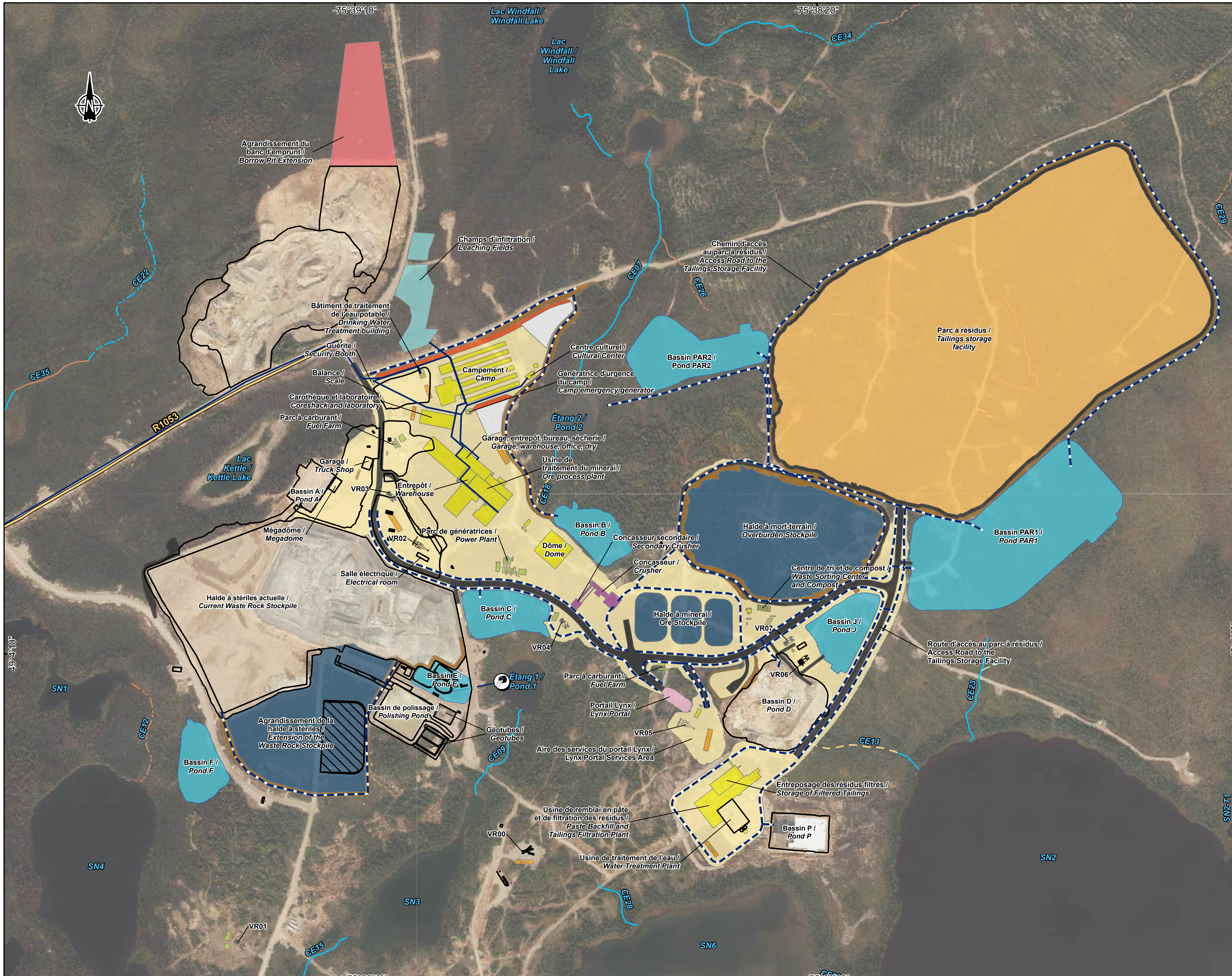
WINDFALL PROJECT HIGHLIGHTS

Average and maximum quantities extracted and processed

Activities	Quantity (metric tons)
Mining	
Average quantity of ore mined per day	3 830
Maximum daily quantity of ore trucked to surface	4 950
Average quantity of ore and waste rock trucked per day on surface	5 150
Maximum quantity of ore and waste rock trucked per day on surface	6 030
Ore processing	
Average quantity processed per day	3 400
Maximum quantity processed per year	1 244 400
Maximum quantity processed per day (plant processing capacity)	4 080

Mining plan (in thousands of tonnes) - November 2023

Year	Development in waste rock	Development in ore	Ore in stopes
2025	776	166	-
2026	770	332	472
2027	914	220	851
2028	716	317	996
2029	882	236	766
2030	850	266	1 076
2031	892	230	975
2032	861	225	981
2033	851	256	1 094
2034	717	163	1 058
2035	243	45	1084
2036	-	-	342
Total	**8 473**	**2 457**	**9 695**
Grand total	**20 625**		



Réseau routier / *Road Network*

Chemin d'accès principal / *Main access road*

Composantes du projet / *Project Components*

Infrastructures actuelles / *Current Infrastructures*

Actuelle / *Current*

Qui sera retirée / *To be removed*

Infrastructures projetées / *Planned Infrastructures*

Effluent minier / *Mine effluent*

Conduite de traitement de l'eau potable / *Drinking water treatment pipe*

Fossé canalisé / *Canalized ditch*

Catégories d'infrastructures projetées / *Categories of Planned Infrastructures*

Aire d'activité / *Activity area*

Banc d'emprunt / *Borrow pit*

Bassin / *Pond*

Bâtiment / *Building*

Champ d'infiltration / *Infiltration field*

Concasseur / *Crusher*

Équipement / *Equipment*

Limite des fossés / *Ditch limit*

Halde / *Stockpile*

Parc à résidus miniers / *Tailings storage facility*

Portail Lynx / *Lynx portal*

Réservoir / *Reservoir*

Route / *Road*

Berme / *Berm*

Zone de dépôt de neige / *Snow deposit zone*

Hydrographie / *Hydrography*

Canal / *Channel*

Cours d'eau intermittent / *Intermittent Watercourse*

Cours d'eau intermittent partiellement souterrain / *Partially Underground Intermittent Watercourse*

Cours d'eau intermittent souterrain / *Underground Intermittent Watercourse*

Cours d'eau permanent / *Permanent Watercourse*

Cours d'eau permanent partiellement souterrain / *Partially Underground Permanent Watercourse*

Cours d'eau souterrain / *Damaged Underground Watercourse*

Fossé de drainage / *Drainage ditch*

WINDFALL GROUPE MINIER

Projet Windfall - Réponses aux questions et commentaires - 1re série /
Windfall Project - Answers to Questions and Comments - 1st Series

Site minier Windfall, Eeyou Istchee Baie-James (Québec) / *Windfall Mining Site, Eeyou Istchee Baie-James (Quebec)*

Infrastructures projetées / *Planned Infrastructure*

Sources :
AQréseau+, Réseau routier, MERN Québec, 2020-03
Mosaique orthophoto inventaire écoforestier, MRNF, 2023

0 95 190 m

MTM, Fuseau 9 / Zone 9, NAD83

2024-10-16

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La précision des limites et les mesures montrées sur ce document ne doivent pas servir à des fins d'ingénierie ou de délimitation foncière. Aucune analyse foncière n'a été effectuée par un arpenteur-géomètre. / Boundary accuracy and measurements shown on this document are not to be used for engineering or land delineation purposes. No land analysis was carried out by a land surveyor.

Updated simplified impacts on hydrous and wetlands

Impact	Component	Area (ha)
Permanent encroachment	Hydrous	0.97
	Wetland	46.87
	Forest	82.48
	Other (anthropogenic)	64.69
	Total	**195.01**
Temporary encroachment	Hydrous	0.14
	Wetland	1.99
	Forest	4.76
	Other (anthropogenic)	0.3
	Total	**7.18**

Table of common mitigation measures by component

No.	Code	Description of the Common Mitigation Measure or Commitment	Construction	Operations	Closure	Follow-up/ Monitoring/ Awareness
Ambient air						
1	AIR01	Use water or dust suppressant on roads during activities to prevent, as much as possible, dust emissions related to activities at risk of causing the raising of dust. The dust suppressant must meet standard BNQ 2410-300.	x	x	x	
2	AIR02	Restrict access to designated areas and limit vehicle speeds for the work sites and mine operations. Post signage at specific locations.	x	x	x	
3	AIR03	Instead of burning tree and brush cuttings, chop them up and spread them on the site whenever possible.	x			
4	AIR04	Whenever possible, use electricity from the Hydro-Québec grid as the primary source of power.	x	x	x	
5	AIR05	Continually assess new energy conservation initiatives to reduce GHG emissions and standard pollutants associated with equipment choice, construction methods, and operating procedures.	x	x	x	
6	AIR06	Educate workers on fuel-efficiency practices, such as effectively managing acceleration and deceleration and turning off vehicles during idle periods, when possible.	x	x	x	
7	AIR07	Determine whether the use of biofuels, such as biodiesel, is feasible and complies with manufacturer recommendations.	x	x	x	
8	AIR08	Implement mechanisms to track fuel and electricity consumption in operations management and equipment maintenance.		x		
9	AIR09	Produce and implement a dust management plan for all project phases.	x	x	x	
10	**NOR01**	**Ensure exhaust systems (and dust collection systems, where applicable) on vehicles and equipment are in good condition and operating properly to limit the emission of airborne contaminants.** **Reference: *Clean Air Regulation*, s. 6.**	x	x	x	
Sound environment						
11	**NOR02**	**Ensure noise levels of stationary sources associated with mining activities meet the requirements of Instruction Note 98-01.** **Reference: D019, section 2.4.1.**		x		
12	**NOR03**	**Ensure maximum blasting distances and loads meet D019 criteria and guideline thresholds for the use of explosives in or near Canadian fisheries waters.** **Reference: D019, section 2.4.2; *Fisheries Act*, subsection 35(2); and Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters, p. 6, paras. 8-9.**	x			
Soil, surface water, and sediment quality						
13	QUA01	Perform only minimal stripping, clearing, excavation, backfilling, and grading of work areas.	x		x	
14	QUA02	Where grading is required in areas with steep slopes, cover the bottom of the ditch with granular drainage material and/or stone fill to prevent erosion.	x		x	
15	QUA03	To lower the risk of erosion on slopes, use methods such as trenches, containment berms, or diversion ditches perpendicular to the slope.	x		x	
16	QUA04	In all areas where particulate matter is likely to contaminate a watercourse due to erosion, stabilize the slopes of cuts and backfills using techniques that blend into the natural environment as much as possible (softening the slope to 1.5H:1V and other available techniques). Use sediment barriers (geotextile, straw, etc.) at the foot of steep slopes as necessary to reduce the volume of particles transported. Protective structures (straw, shavings, mats) may also be used directly on the slope. Avoid cuts on steep slopes. Ensure backfill is adequately compacted.	x		x	
17	QUA05	Perform excavation, backfilling, and rehabilitation work in a way that limits the need to borrow material and crushed stone. Truck in the required backfill material from borrow pits on or near the project site. Depending on its characteristics, use excavated soil as backfill material from the site or remove it from the site if there is too much or its quality is not suitable for engineering purposes. When removed, transport and dispose of the soil in accordance with applicable laws and regulations.	x		x	
18	QUA06	Characterize the environmental quality of the soil in areas of the site where activities that may have contaminated soils have occurred. If contaminated soils are discovered, remediate the land.			x	
19	QUA07	If contaminated spoils must be stored temporarily, take all necessary actions to preserve the integrity of the surrounding soil and water as well as the safety of workers (stockpiling on a waterproof or impermeable surface, covering the stockpiles, limiting access to the stockpiles, etc.).	x		x	

Table of common mitigation measures by component (cont.)

No.	Code	Description of the Common Mitigation Measure or Commitment	Construction	Operations	Closure	Follow-up/ Monitoring/ Awareness
20	QUA08	Where possible, cut trees and shrubs flush with the ground on embankment slopes. Preserve their root systems to promote infiltration of runoff and natural soil stability.	x			
21	QUA09	Monitor excavation and profiling work to detect any potential faults. Put in place corrective measures to prevent landslides if a risk has been identified.	x			
22	QUA10	Wherever possible, perform development work that may affect the hydraulic capacity of permanent watercourses outside the snowmelt period. Ideally, install culverts in permanent watercourses as quickly as possible, during low flow conditions. Culverts must not impede the flow of water or contribute to the formation of ponds upstream in high-water conditions. Restore temporarily altered water flow gradually after construction to prevent sudden changes in flow. The end of the culvert should extend no more than 30 cm beyond the backfilled roadbed. The backfill must be stabilized at both ends of the culvert and must not contain any organic material.	x			
23	QUA11	When installing or replacing a culvert, first confine the work area (e.g., by partially or completely dewatering the area) to avoid releasing particulate matter into the water. Work techniques and materials (diversion structures, geotextile, polythene, etc.) should avoid creating turbidity in the water as much as possible. Continuously maintain the natural flow of the watercourse; return water immediately downstream of the work area. Wherever possible, do not narrow the bed of the watercourse by more than 2/3 during construction. If necessary, pump collected water in the work area into a vegetated area at least 30 m from the watercourse or wetlands.	x			
24	QUA12	Once a culvert has been installed, remove any other structures required for this work from the water. Stabilize the bed of the watercourse at the culvert's inlet and outlet. Ideally, restore the bed of the watercourse to its natural state, with similar materials. Stabilize and, if necessary, revegetate its banks.	x			
25	QUA13	Implement a runoff management system during the construction phase. As appropriate, use methods to control the emission of suspended solids, such as temporary water retention ponds, sediment barriers, turbidity barriers, and slope stabilization. Inspect and clean the chosen solution as required. In addition, pump water into a vegetated area at least 30 m from a watercourse or wetlands.	x		x	
26	QUA14	If calcium chloride dust suppressants are used, do not dispose of them or rinse off equipment in or near water or on vegetation.	x	x	x	
27	QUA15	Wherever possible, use abrasives instead of ice melters in winter. When necessary, use water as a dust suppressant instead of a chemical solution.	x	x	x	
28	QUA16	During snow removal, keep plowed snow 30 m away from watercourses or wetlands where possible.	x	x	x	
29	QUA17	Do not stockpile temporary waste, debris, material, or spoils (e.g., organic material from stripping of the soil surface) in the 15 m strip of land bordering the high-water mark of a watercourse or waterbody or wetlands or in any wetland (pond, marsh, swamp, or peatland). Do not pile waste or wood debris there either. Divert runoff to a vegetated area at least 30 m from the watercourse or intercept it with sediment barriers or a sedimentation pond.	x	x	x	
30	QUA18	If required, remove temporary culverts and bank protection. Restore watercourse beds and banks.	x		x	
31	QUA19	Do not take granular materials for construction of the works from the bed or banks of a waterbody, nor from any source located within 75 m of the aquatic environment, except for the portion of rock excavated in the area adjacent to the loading docks and access roads, or from the watercourses or waterbodies that will be directly affected by the project's infrastructure.	x			
32	QUA20	Restore riparian buffer strips that have been degraded by the work to replicate the natural bank of the watercourse or waterbody or wetlands.	x		x	
33	QUA21	Build temporary developments (e.g., construction trailers, access roads, storage areas, waste sites) more than 60 m from a watercourse.	x		x	
34	QUA22	Plan sufficient emergency petroleum and chemical recovery kits and place them at sensitive locations. Handle petroleum products (hydrocarbons) in a way that prevents and controls leaks and spills.	x	x	x	
35	QUA23	Keep machinery in good condition (clean and free of any leaking contaminants) and ensure fuel and lubricant tanks are perfectly sealed. If a leak is found, repair it immediately.	x	x	x	
36	QUA24	During construction, perform maintenance of vehicles and surface equipment mainly on site, inside an existing truck shop. Refuel with properly equipped service trucks, more than 60 m away from watercourses or wetlands. Place a collection tray under the transfer points during refuelling to prevent drips from falling on the ground.	x		x	
37	QUA25	Equip all stationary equipment containing oil and/or fuel (e.g., light towers, generators) and within 60 m of a watercourse, waterbody or wetlands with a leakproof recovery system. The equipment must carry absorbent material in order to respond quickly and effectively to accidental spills.	x	x	x	

Table of common mitigation measures by component (cont.)

No.	Code	Description of the Common Mitigation Measure or Commitment	Construction	Operations	Closure	Follow-up/ Monitoring/ Awareness
38	QUA26	Report all spills immediately. In the event of a spill of hydrocarbons or any other deleterious substance, notify the MELCCFP alert network (1-866-694-5454) immediately. If the spill reaches a waterbody, notify Environment Canada (1-866-283-2333). All contaminant spills require an immediate response to contain and recover the product. Remove and dispose of contaminated soil at an authorized site and perform a characterization following the MELCCFP's *Politique de protection des sols et de réhabilitation des terrains contaminés* (soil protection and contaminated sites rehabilitation policy).	x	x	x	
39	**NOR04**	**Manage spoils according to the extent of their contamination and following the requirements of the *Politique de protection des sols et de réhabilitation des terrains contaminés* (soil protection and contaminated sites rehabilitation policy).** **Reference: c. Q-2, r. 37 – *Land Protection and Rehabilitation Regulation*: schedules I and II and the *Guide d'intervention – Protection des sols et réhabilitation des terrains contaminés* (response manual – soil protection and rehabilitation of contaminated sites): Table 5 – authorized soil reclamation methods in Quebec.**	x		x	
40	**NOR05**	**Dispose of contaminated spoils following the matrix to that effect in the *Guide d'intervention*. If the spoils may be disposed of in a stockpile, the proponent must request an authorization from the Ministry and must not act before receiving said authorization.** **Reference: c. Q-2, r. 18 – *Regulation respecting the burial of contaminated soils*: Schedule I and *Guide d'intervention – Protection des sols et réhabilitation des terrains contaminés* (response manual – soil protection and rehabilitation of contaminated sites): Appendix 5 – excavated soil management matrix and section 6.4.3.1 – list of authorized treatment facilities.**	x		x	
41	**NOR06**	**Dispose of excess or unusable spoils (clay, silt, gravel, rock) with due care and in accordance with the *Protection Policy for Lakeshores, Riverbanks, Littoral Zones and Floodplains* and D019, keeping a safe distance from waterbodies.**	x		x	
42	**NOR07**	**Design culverts and crossing structures to maintain the free flow of water and fish passage. The construction of crossings and culverts must not reduce the width of a watercourse by more than 20%, measured from the natural high-water mark. The base of the culvert must be sunk below the natural bed of the watercourse to a depth of at least 15 cm or 10% of the height of the structure. The culvert's ends must extend no more than 30 cm from the base of the backfill and be adequately stabilized.** **Reference: *Regulation respecting the sustainable development of forests in the domain of the State*.**	x		x	
43	**NOR08**	**Have contractors maximize the use of mine wastewater produced at the site and minimize their liquid discharge (reference: D019, section 2.2.2.1). Produce a management plan for surface water (whether natural or related to the treatment process). Reference: D019, section 3.2.8.5.**	x	x	x	
44	**NOR09**	**Ensure site effluents comply with applicable standards.** **Reference: *Metal and Diamond Mining Effluent Regulations*, s. 4 and Schedule 4 and D019, section 2.1.1.1.**		x		x
45	**NOR10**	**Stop accidental leaks as soon as they are detected, then contain and recover contaminants using appropriate equipment (absorbent sheets, sediment logs, drain covers, etc.). Notify the Minister immediately. Excavate contaminated soils, then place them in leakproof containers and dispose of them in accordance with the hazardous materials management program. Rapid action is crucial to prevent deep infiltration.** **Reference: *Environment Quality Act*, s. 21 and *Regulation respecting hazardous materials*, s. 9.**	x	x	x	
46	**NOR11**	**Set aside overburden and segregate topsoil to reuse for the restoration of disturbed areas.** **Reference: D019, section 2.6.**	x		x	
47	**NOR12**	**Manage hazardous materials in accordance with the *Regulation respecting hazardous materials* (RSQ, c. Q-2, r. 15.2), following a management system distinct from that for residual materials. If required, have the recovery performed by a specialized company. Store all hazardous materials in a designated area and protect them from the weather with a waterproof tarp until their loading and transport. In winter, place containers on pallets or storage tables. If the storage time exceeds 30 days, the storage area must include a watertight shelter with at least three sides, a roof, and a watertight floor forming a sump with a retention capacity of 110% of the volume of the largest container. The hazardous materials storage area must be located away from vehicular traffic and at a reasonable distance from drainage ditches or catch basins and any other sensitive features, and at least 60 m from any watercourse.** **Reference: *Regulation respecting hazardous materials* (RSQ, c. Q-2, r. 15.2).**	x	x	x	
48	**NOR13**	**Implement the surface water quality monitoring program (for final effluents) in accordance with the *Metal and Diamond Mining Effluent Regulations* and D019. Compare the quality results for the effluent and receiving watercourse to the criteria of the regulations in effect. Reference: D019, section 2.1.1 and *Metal and Diamond Mining Effluent Regulations*, Schedule 5.**		x		x
49	**NOR14**	**Implement a post-restoration monitoring and maintenance program (including for the water quality of mining effluents) to ensure the integrity of the structures and the effectiveness of corrective measures applied in the field. This monitoring must be carried out during the first ten years after the mine's closure, at a rate of eight sampling campaigns per year.** **Reference: D019, section 2.11.**			x	x

Table of common mitigation measures by component (cont.)

No.	Code	Description of the Common Mitigation Measure or Commitment	Construction	Operations	Closure	Follow-up/ Monitoring/ Awareness
Hydrology and hydrogeology						
50	HYD01	Establish a network of wells around the mining infrastructure to measure the drawdown and rise of the water table near the mine.				
51	**NOR15**	**Implement a groundwater quality monitoring program. A minimum of three observation wells should be installed in selected locations around the stockpile to test groundwater quality upstream and downstream. Reference: D019, sections 3.2.10 and 2.3.2.1.**		x		x
Vegetation and wetlands						
52	VEG01	During clearing, pay special attention to avoid damaging the vegetation bordering the work areas. If trees accidentally fall, remove them in a way that does not disturb the environment.	x			
53	VEG02	Have contractors clean all construction equipment before arriving at the work site. The intent is to completely remove mud, plant fragments, and visible debris that may be contaminated with invasive exotic plant species.	x	x	x	
54	VEG03	If possible, perform work in wetlands on frozen ground or during low-flow conditions.	x		x	
55	VEG04	Leave vegetation along watercourses, wetlands, and access roads undisturbed.	x		x	
56	**NOR16**	**Restore work areas and stockpiles by grading, covering with natural soils, scarifying, or seeding to encourage revegetation. Stabilize reworked areas, embankment slopes, loose deposit piles, and others as work is completed. Reference: D019 for the restoration phase.**			x	
Wildlife and habitats						
57	FAU01	Do not carry out work in waterbodies during the spawning periods of the species present: July 1–31 (brook trout), July 1–August 31 (lake whitefish), and July 15–April 15 (northern pike and walleye).	x		x	
58	FAU02	Do not perform clearing activities during the general bird nesting period (May 1–August 15). Validate other equivalent measures with the Ministry before implementing them.	x			
59	FAU03	Do not perform clearing activities during the bat birthing and rearing period (June 1–August 15, approximately).	x			
60	FAU04	Mark areas of high risk of collision with large wildlife with appropriate signage.	x	x	x	
61	FAU05	Before dismantling a building or other facility, inspect concealed spaces to check for potential chiropteran maternity or roosting sites. Where appropriate, take protective measures to ensure the survival of the chiropterans.			x	
62	FAU06	Raise awareness among workers not to leave food lying around so as not to attract wildlife to work areas. Prohibit feeding wildlife.	x	x	x	
63	FAU07	Implement bird-scaring measures if they start visiting the runoff management ponds for waste rock and ore stockpiles, the tailings facility, and process water.		x		
64	FAU08	Limit the emission of light towards the sky by using moderate, even lighting that meets actual lighting needs and whose light is directed towards the surface to be lit.	x	x		
65	FAU09	Carefully direct portable lights and moving light sources.	x		x	
66	**NOR17**	**Create an exclusion zone around active migratory bird nests discovered during the nesting season.**	x	x	x	
Planning, land use, and land tenure						
67	PLA01	Favour previously cleared or disturbed sites for the location of temporary site facilities (site offices, access roads, etc.).	x		x	
68	PLA02	Upon completion of the work, clear work areas of all equipment, machinery, materials, temporary facilities, waste, scrap, rubble, and spoil from the work. Redesign and restore these work areas to blend in with the natural landscape (soil regrading and loosening, slope softening). If segments of roads or paths are abandoned, scarify and revegetate them. Seed the slopes of the project rights-of-way to quickly stabilize them. Vegetate all areas that will not be useful for future projects.	x		x	

Table of common mitigation measures by component (cont.)

No.	Code	Description of the Common Mitigation Measure or Commitment	Construction	Operations	Closure	Follow-up/ Monitoring/ Awareness
Population, economy, and employment						
69	POP01	Maintain existing mechanisms to support diversity and inclusion in hiring, onboarding, and skills development processes.	x	x	x	
70	POP02	Provide regular updates on the lifespan of the mine and inform workers and neighbouring municipalities in advance of the expected mine closure date.		x	x	
71	POP03	Establish a mechanism to help reorient the workforce and support employees during the transition towards mine closure.			x	
Quality of life and well-being						
72	VIE01	Maintain ongoing dialogue with targeted stakeholders and local communities.	x	x	x	
73	VIE02	At the orientation meeting, rais awareness among workers, subcontractors, and transporters to follow road safety rules and Osisko's traffic policy.	x	x	x	
74	VIE03	Establish a system for handling complaints and comments.	x	x	x	
75	VIE04	Maintain the Employee and Family Assistance Program.	x	x	x	
Traditional First Nations land use						
76	UTT01	Raise awareness among workers on the traditional practices of First Nations communities and the activities of First Nations land users.	x	x	x	x
77	UTT02	Maintain a collaborative communication approach to inform key land users of the start and progress of the work.	x	x	x	x
78	UTT03	Continue to prohibit site workers from recreational hunting and fishing.	x	x	x	x
Infrastructure and public utility services						
79	INF01	Continuously perform roadway maintenance during operations to remove all accumulations of loose material or other debris.	x	x	x	
Heritage and archaeology						
80	ARC01	Conduct a manual archaeological survey every 10 m in areas of archaeological potential that have not been surveyed and that are within the construction area. This work should be done before the start of the construction phase to give some leeway if a major discovery is made. Where appropriate, recommendations will be made on mitigation measures to be implemented before or during development.	x			
81	ARC02	If a significant archaeological site is discovered, perform "salvage archaeology," i.e., a complementary survey or a targeted excavation to sample the site before it is destroyed by the work.	x			
82	ARC03	Archaeological monitoring is recommended if work is to be done in areas identified as having archaeological potential where no prior archaeological surveys have been conducted. This monitoring is not required where manual surveys have been carried out.	x			
83	ARC04	If archaeological remains are found during construction work outside the identified zones of archaeological potential, stop all work pending evaluation by an archaeologist. Contact the regional office of the Ministère de la Culture et des Communications: Outaouais, Abitibi-Témiscamingue, and Nord-du-Québec Directorate, Abitibi-Témiscamingue and Nord-du-Québec Office 145 Québec Ave., Rouyn-Noranda, Quebec J9X 6M8 Phone: 819-763-3517 Fax: 819-763-3382 dratnq@mcc.gouv.qc.ca.	x			
Landscape						
84	PAY01	To the extent possible while ensuring the stability of the collection areas, shape the top of the tailings storage facility so it blends into the landscape.			x	

Note : Mitigation measures in red have been modified or added to the version presented in the EIS.

Table of specific mitigation measures by component

No.	Code	Description of the specific mitigation measure	Construction	Operations	Closure
1	P01	Progressively rehabilitate the tailings storage facility in three phases to reduce the area subject to wind and runoff erosion.		x	
2	P02	During the orientation training, make employees aware of the status species that can be observed on the Windfall site. Add large wildlife reporting measures to the forest road traffic procedure.	x		
3	P03	If an active roosting or maternity site used by chiropterans is discovered, establish a 100 m buffer zone, free of human activity, around the habitat and maintain it until a biologist has confirmed that the animals have left.	x	x	x
4	P04	If unflooded natural cavities or old drifts are discovered, verify whether they are being used as hibernacula by chiropterans. If necessary, establish a 500 m buffer zone free of human activity around the entire underground network constituting the habitat.	x	x	x
5	P05	In accordance with the existing hiring policy, when their qualifications are equal, favour women as well as local and First Nations people in the hiring process. In order, give priority to people from the Cree First Nation of Waswanipi, people from the other Cree communities of Eeyou Istchee, people from Northern Quebec, people from Abitibi-Témiscamingue, people from Quebec, and people from Canada.	x	x	x
6	P06	Continue to ensure the visibility of job opportunities in the local community through participation in various local and regional initiatives (e.g., career days).	x	x	
7	P07	Continue to encourage local purchasing and the involvement of local suppliers of goods and services in supply chain opportunities, applying the existing Responsible Procurement Policy.	x	x	x
8	P08	Encourage the development of local businesses aligned with Osisko’s needs, particularly First Nations-owned businesses, as set out in the Responsible Procurement Policy.	x	x	
9	P09	Maintain collaboration with local training institutes to develop training programs adapted to the mining industry and the regional context.	x	x	
10	P10	Continue to develop specific and transferable employee skills by supporting professional development activities that are aligned with employees’ roles and Osisko’s needs, as outlined in the Professional Development Policy.	x	x	
11	P11	Participate in the implementation of a business opportunities, training, and employment committee governed by the upcoming Impact and Benefit Agreement (IBA) with the Cree First Nation of Waswanipi and the Cree Nation Government.	x	x	
12	P12	Continue to hold regular information sessions with local contractors from the Cree community of Waswanipi to inform them of upcoming service needs related to mining operations.	x	x	x
13	P13	Prioritize the reassignment of local employees to mine closure activities.			x
14	P14	Continue to inform the public about the progress of the project, upcoming major work, environmental impacts and preventive measures to mitigate them, as well as the safety measures in place.	x	x	x
15	P15	Continue to raise awareness of all non-First Nations workers and contractors on Cree culture and traditional practices during the orientation meetings and subsequent training activities for supervisors.	x	x	
16	P16	Continue to host cultural activities to foster cross-cultural exchange and a respectful work culture.	x	x	
17	P17	Continue to raise workers awareness of the various forms of harassment and implement mechanisms for handling complaints. Ensure the application of the Workplace Harassment Policy and take appropriate corrective action when a complaint is substantiated.	x	x	
18	P18	Continue to assist land users near the Windfall site with road safety issues.	x	x	x
19	P19	Establish a new Environmental Monitoring Committee (the terms of which will be specified in the IBA) to discuss and determine solutions to the issues that may arise during the mine’s phases.	x	x	x
20	P20	Build a recreation centre accessible to all workers and a Cree cultural site with a teepee for First Nations workers to gather and practice traditional activities such as cooking, crafting, and storytelling.	x		
21	P21	Continue the psychosocial support program to help Cree and non-Cree workers balance work and family life.	x	x	
22	P22	Ensure that reliable means of communication are available at the work camp to let workers communicate with their families.	x	x	
23	P23	Continue discussions with the leaseholder around SN1 Lake.	x		
24	P24	Work with the W25B and W25A tallymen to rehabilitate, restore, and revegetate the site and return it to its natural state.			x
25	P25	To the extent possible, preserve the forest cover along the road and revegetate bare areas with native vegetation once the work is completed.	x		

Table of specific mitigation measures by component (cont.)

No.	Code	Description of the specific mitigation measure	Construction	Operations	Closure
26	P26	Have an environmental monitor conduct regular visits of work areas; ensure that the stakeholders uphold commitments and adhere to obligations, measures, and other requirements; evaluate the quality and effectiveness of the measures applied; and note any non-compliance observed.	x		x
27	P 27	Implement the Project's transportation management plan.	x	x	x
28	P 28	Obtain contact information for permanent or regular users of the area, so that we can set up a notification system to reach them in the event of an accident, and inform them of safety instructions for evacuating to a safe location.		x	
29	P 29	Leave non-active surfaces of the tailings facility covered with snow during the winter: for the winter months, the passive surface, final slopes and inner slopes are considered covered and inactive. Water the non-active surfaces of the tailings facility with a water truck when necessary.		x	
30	P 30	Water the non-active surfaces of the tailings facility with a water truck when necessary.		x	
31	P 31	Install dust suppressants on the slopes and final (outside) surfaces of the tailings facility.		x	
32	P 32	Implement the Monitoring and Follow-up Program presented in Addendum 1, as well as the various environmental follow-ups specific to the Project (see appendices to this document).	x	x	x

Note : Mitigation measures in red have been modified or added to the version presented in the EIS.

1 General Issues

1.1 Tailings and waste rock characterization and management

QC-1
Environmental Impact Assessment, Page 3-19, Volume 1a,
Section 3.1.5 Geochemistry;
Environmental Impact Assessment, Volume 2, Appendix 3-1 - Sectoral Report - Geochemical characterization of mining materials;
Environmental Impact Assessment, Page 3-47, Volume 1a, Section 3.4.4 Tailings;
Addendum 1 - Responses to MELCCFP recommendations and comments
Volume 3, Section 13.2.4 Geochemistry of ore, waste rock, and tailings:

The tailings and ore characterization report only partially meets the requirements of Directive 019 sur l'industrie minière (MDDEP, 2012) (hereinafter referred to as D019) as well as section 23 of the Environment Quality Act (EQA), which specifies that the proponent must provide "the nature, quantity, concentration and location of all contaminants that are likely to be released into the environment" in an application for authorization. In addition, the updated geochemical characterization study of tailings is very sketchy. Considering the acid-generating nature of tailings and the uncertainties concerning the anticipated time before the onset of acid mine drainage (AMD) conditions in the field, the objectives of this follow-up and the characterization program must allow AMD conditions to be properly monitored and corrective action to be taken if necessary. The proponent must review the tailings and ore characterization study, taking into account the recommendations below.

The proponent chose copper (Cu) as the element of interest for contaminant transport simulations, as it is the parameter for which kinetic leaching tests showed the highest average concentration compared to groundwater resurgence criteria (GWRC). Kinetic leaching tests carried out indicate that copper concentrations in the leaching water stabilize at a value of 0.001 mg/L. This value was applied as the source value for the simulations. However, this choice does not meet the objective of the simulations, as the Cu concentration of 0.001 mg/L used as the source concentration is below the groundwater quality criterion of the Guide d'intervention – protection des sols et réhabilitation des terrains contaminés (Beaulieu, 2021) (RES criterion 0.0073 mg/L) (hereinafter referred to as the Response Manual). The use of starting concentrations that already meet groundwater quality criteria makes the modelling study, aimed at assessing the impact on groundwater, of little relevance.

Response 1:

A detailed characterization study was carried out by WSP (Environmental Impact Assessment, Vol. 2, Appendix 3-1) on all Windfall project materials related to the potential for acid mine drainage (AMD) generation and leaching of metals and contaminants, to concisely determine the nature, quantity, concentration, and location of all contaminants likely to be released into the environment. The materials studied are those that will be handled by Windfall project operations, i.e., ore, tailings, waste rock, and overburden, even though these are not requested in the *Guide de caractérisation* (hereinafter the Guide; MELCC, 2020). To meet these objectives, a characterization approach has been designed to classify these materials according to their leaching and acid-generating potential and meet the requirements of the Guide and D019, *Directive 019 sur l'industrie minière* (MDDEP, 2012). This characterization approach consists of two essential parts: the field part and the laboratory part (see Figure RQC1).

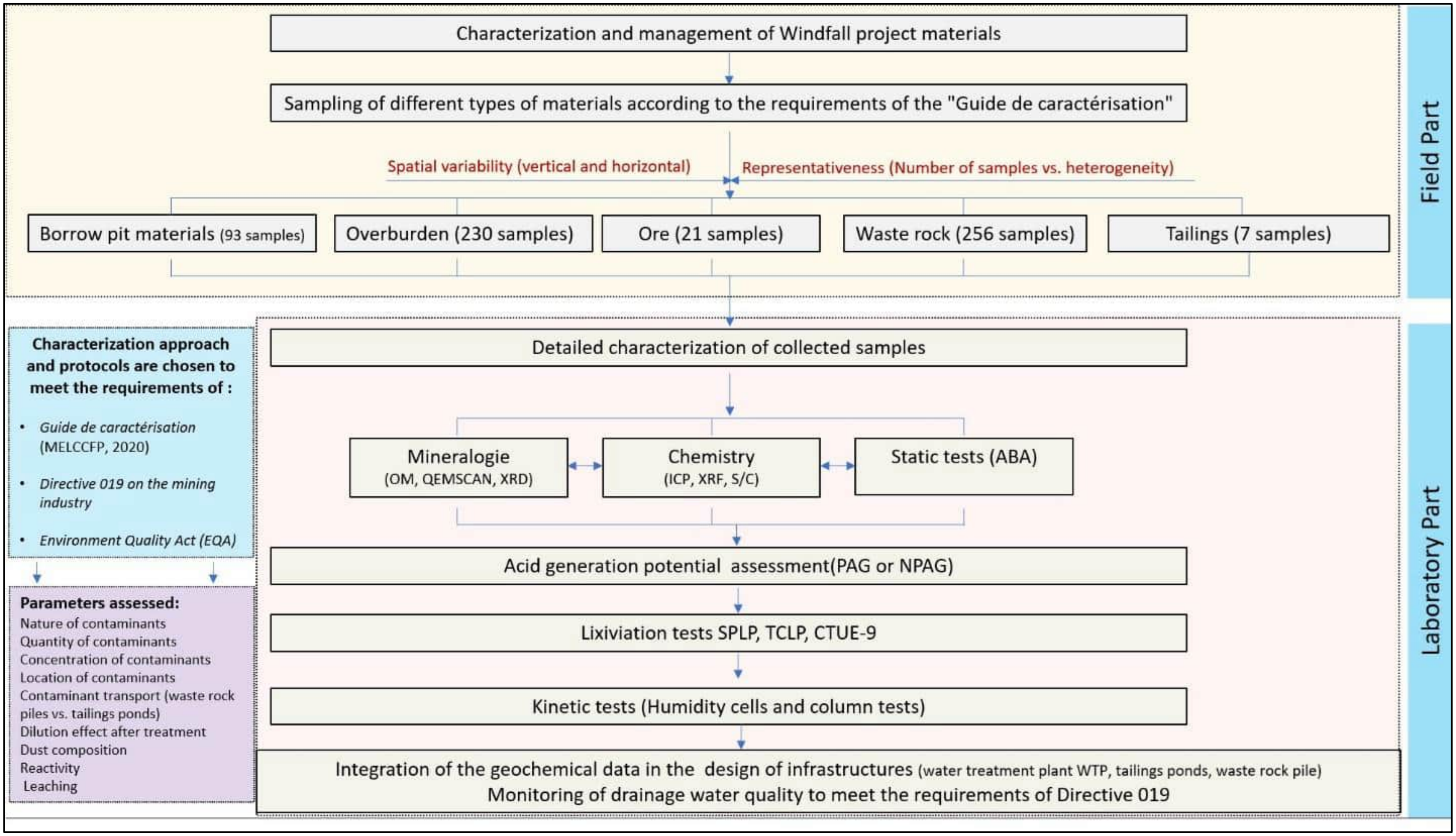

Figure RQC1 Summary of the geochemical characterization program carried out on materials from the Windfall project

The waste rock samples studied were selected from across the entire deposit to represent each lithology. A total of 256 waste rock samples and 236 overburden samples were collected by WSP and/or Osisko. Both numbers of samples exceed the number recommended by the Guide, which recommends using the relationship between the recommended number of samples and the total tonnage of material in a geological unit (SRK, 1989). In addition, spatial variation (horizontal and vertical) and material heterogeneity were inspected and respected before field sampling began.

As for ore and tailings, 21 ore samples (each representative of a distinct zone of the deposit) and 7 tailings samples were selected for detailed characterization. The ore samples are composites representing the different areas of the deposit, while the tailings samples are from laboratory pilot tests. Although the number of tailings samples appears small, they do represent the total waste that could be generated during operations. In addition, to obtain tailings even before the operations phase, pilot tests must be completed, usually on a small number of samples. The Guide mentions that tailings samples can be collected if such tests have been carried out. In any case, the tests completed on the ore remain representative of this type of material. Also, the process water from the pilot tests was analyzed, and the results were provided in the geochemical study. The sectoral report was submitted with the environmental impact assessment, and a summary was added to Chapter 3 (page 183).

For the sake of precision and completeness of geochemical characterization, material from future borrow pits near the Windfall site was also characterized. This includes material from the Gravtest 3 (GT-3) and Gravtest-4 (GT-4) borrow pit areas, as well as from the Flamb-1 extension. A total of 93 samples were characterized, and the results indicated that the materials from each of the GT-3, GT-4, and Flamb-1 borrow pits are considered low risk, as they are neither acid-generating nor leachable. Details of this characterization are provided in Appendix RQC1-1.

Analytical program

This section describes the characterization techniques that were performed on the various samples as a whole to meet the requirements of D019 as well as section 23 of the *Environment Quality Act* (EQA).

All sampled materials were sent to SGS laboratories for determination of major elements in whole rock by X-ray fluorescence and extractable metals in the solid fraction (as per MA.200-Met 1.2). Combining these two analyses allows the precise determination of the content of all chemical elements (metals and metalloids) that are above the detection limits of the instruments used. To complete the characterization of the solids, a mineralogical analysis using semi-quantitative X-ray diffraction (XRD), optical microscopy (OM), and an in-depth mineralogical study using QEMSCAN were carried out. The analyses were carried out by a laboratory accredited by the Ministère.

Static tests to determine acid-generating potential (acid base accounting [ABA] [as per MA.110 ACISOL 1.0]) or total carbon and sulphur analysis were carried out on the samples collected. They balance the acid generation potential (AP) of a material, which is itself related to sulphide minerals, with its acid neutralization potential (NP), which is in turn related to carbonate minerals and certain silicates. The results of this chemical characterization have already been presented in Table 3-4 of the EIA. In addition, to assess leaching potential, the samples were also subjected to TCLP, SPLP, and CTEU-9 leaching tests (according to MA.100-Lix.com.1.1). The SPLP and CTEU-9 tests were used to determine the concentration of inorganic species likely to leach in contact with water and acid rain respectively. In addition to the general chemistry analysis of the leachates, an analysis of the speciation of certain metals such as Cr and Se was carried out to determine the concentration of the species considered most toxic [Cr(VI) and Se(VI)]. The results obtained indicated that their concentrations were below 0.2 µg/l and 5 µg/l respectively.

A representative subset of the waste rock, ore, and tailings samples was submitted for humidity cell testing according to Method D5744-13 (ASTM, 2018) and for column leaching tests for a range of metals, major ions, nutrients, and general chemistry. Around twenty column tests were carried out. Most of these tests were discontinued when concentrations stabilized (usually between 30 and 44 weeks). Some samples were tested for longer periods to provide a longer-term record of test results. In addition, a presentation has been completed with an update on cells that are still active. This study is included in Appendix RQC1-2.

Samples from humidity cell trials completed after 30-44 weeks were subsequently subjected to acid-base accounting (ABA) tests and shake flask extraction (SFE) according to MEND (2009) on all samples; net acid generation (NAG) tests based on Miller (1997) were also carried out on a few samples to detect any changes that might be brought about by the kinetic tests, and to find out whether the remaining samples continue to have acid-generating potential. The results of these analyses are provided in Appendix B of the geochemical sectoral report (Appendix 3-1, EIA).

Summary of results obtained

The geochemical characteristics of the various Windfall materials are summarized in Tables 3-5, 3-6, 3-7, and 3-8 of the EIA. According to the Guide's criteria, static test results showed that waste rock from mafic and intermediate mafic intrusive rocks (I3A), overburden, and borrow material are classified as non-acid generating (NPAG) and non-leachable. However, waste rock from other lithologies and tailings are classified as variable PAG. Again according to the Guide's criteria and the results of the static tests, none of the samples is classified as high risk. Representative samples from each lithology and tailings were subjected to TCLP, SPLP, and CTEU-9 tests to assess their leaching potential. Comparison of element concentrations in leachates with values for drinking water (EC) and resurgence in surface water (RES) for each waste rock lithology showed the presence of samples classified as leachable for As and Ag, as well as Cu, Mo, and Hg for the granitoids (I1P/12P) and Cu and Mn for the intermediate volcanics (V2). Leachable waste rock was subjected to kinetic tests in humidity cells to confirm its leaching potential. Samples are leachable for Hg, As, Cd, Cu, Pb, and Zn depending on lithology. Humidity cell test results compared to D019 values are provided in Appendix D of the geochemical sectoral report, in Appendix 3-1 of the EIA.

Depletion calculations for acid-generating and neutralizing minerals suggest that samples classified as PAG (waste rock and tailings) have the potential to generate acid over the life of the mine, depending on laboratory conditions. An update of the characterization results has been carried out (WSP, 2024). This update is identical to the 2023 study (presented in Appendix 3-1 of the EIA) except that, based on recent laboratory conditions, the times before the onset of acid-generating potential for tailings have been changed to approximately 3 to 15 years instead of 1 to 15 years.

To prevent contaminants from leaking into groundwater, the waste rock and tailings accumulation areas will be lined with waterproof geomembranes. In addition, all drainage water will be conveyed to collection ponds (via drains and lined collection ditches) and sent to the water treatment plant (WTP) for treatment before returning to the natural environment.

The results of kinetic leaching tests were used to define the source concentration to be included in the modelling of groundwater contaminant transport beneath the tailings storage facility. The results of transient contaminant transport simulations indicate that groundwater resurgence (RES) criteria would not be exceeded over a 100-year time horizon, outside the tailings storage facility footprint. Details of this contaminant transport modelling study for the tailings storage facility can be found in Addendum 1 (Volume 2, Appendix 3-2). Also, the response to QC-3 proposes an additional sensitivity analysis on copper as requested by COMEX. It should be remembered that the Windfall project will have a filtered tailings storage facility, allowing water to be removed from the tailings and thus preventing the deterioration of water quality and the appearance of AMD.

In addition to measures to prevent runoff into the natural environment, restoration methods will be implemented as the tailings storage facility is developed. The responses to QC-94 and QC-95 provide details of proposed restoration techniques to minimize AMD generation, but these include covering with a waterproof membrane once zone/cell development is complete.

For the waste rock stockpile, the model was updated as part of the mine's hydrogeological study (Addendum 1, Volume 2, Appendix 3-3). Various scenarios were tested to ensure that the use of geomembranes would provide adequate protection of the environment and that the percolation criteria obtained were below the thresholds defined in D019. A total of five scenarios were run to compare the percolation rates obtained. The results show that daily percolation rates are below the rate set by D019 (3.3 $L/m^2/d$). In addition, infiltration and runoff water will be collected via lined ditches and directed towards a water accumulation pond. None of the simulated contaminants exceeds the RES criterion after 100 years at any of the monitoring points under the conditions imposed in the model.

A network of observation wells (soil and rock) will be installed to ensure compliance with D019 requirements for groundwater quality monitoring. These wells should be positioned, among other locations, at the foot of the tailings storage facility and near high-risk installations. Water quality will be monitored on a regular basis, and details of the monitoring program are provided in the response to QC-128.

As for the overburden, leaching results indicate that it does not pose a significant risk of metal leaching at concentrations above existing background conditions. For borrow materials, the characterization results for materials from the GT-3, GT-4, and Flamb-1 zones are considered low risk according to the Guide, although it is recognized that the characterization of borrow materials is not subject to the methods described in the Guide. Borrow materials and materials of lithology I3A have been identified as having favourable characteristics for construction on the site, since these materials are considered to be non-acid generating, non-leachable and non-cyanide containing, not contaminated by organic compounds, nonradioactive, and nonflammable.

In addition to the uses listed above, the results of the geochemical characterization and the various leaching and kinetic tests were used to define chemical loads, which are inputs for the design of the site's water treatment facilities. The results were used to refine the design of the water treatment systems and to develop the water management plans. This predictive study of water quality on the site has been added to Addendum 1 (Volume 1, Appendix 1-2) and the results are presented in Section 1.3.2.1, "Water management infrastructure."

A dilution study was also carried out to assess the influence of the final effluent on the water in the receiving environment. This study has been provided in Addendum 1 (Volume 3, Appendix 7-3) and is used to compare environmental water quality to life protection criteria – chronic effects. To improve understanding of the downstream impacts of the effluent, additional details were provided in the response to QC-39 and a new dilution study was submitted, taking into account the volumes of lake water obtained through bathymetry. This study also uses inputs from geochemical characterization.

Finally, the results of the geochemical characterization were used to define the metal content of the various lithologies and materials. These values were used as inputs for atmospheric dispersion modelling (Addendum 1, Volume 4, Appendix 2-1).

Conclusion

The main conclusions drawn from this detailed geochemical characterization study on the various materials of the Windfall project are:

- The I3A lithology, borrow materials, and overburden are classified as non-acid-generating and non-leachable. Materials from the I3A lithology can be used as building materials on the site. Details of this use are given in the response to QC-4.
- Updated geochemical characterization results show that AMD generation at the tailings storage facility will take place in approximately 3 to 15 years. By choosing a progressive restoration technique, the contact time can be kept to less than 3 years.
- The mineralogical study determines the minerals carrying the contaminants, the acid-generating minerals (sulphides), and the neutralizing minerals (carbonates and certain silicates) that neutralize the acidity generated during sulphide oxidation.
- The TCLP, SPLP, and CTUE-9 leaching tests showed that none of the lithologies presented a high risk.
- The results of the humidity cell kinetic tests showed that the leached parameters after the leaching transient phase are below the limits of D019 and the RES criteria.
- To reflect the leaching situation, average concentrations in the stable part of the leached parameter curves were used to model contaminant transport in the tailings storage facility and waste rock stockpile.
- Hydrogeological modelling results show that all leached parameters are below RES and EC criteria under model conditions, both for the tailings storage facility and under the waste rock stockpile.
- All drainage water will be collected and treated before being released into the environment, and the design of the water treatment plant has been based on the results of geochemical tests.
- The tailings storage facility and waste rock stockpile will be rehabilitated using waterproof geomembranes to prevent the generation of AMD.
- A continuous water quality monitoring program will be completed at the effluent and in the groundwater in accordance with the requirements of D019 (see responses to QC-123 and QC-128).

Furthermore, in the response to QC-126, the material characterization monitoring program is detailed in relation to the geochemistry of waste rock and tailings.

The second part of the response related to the copper concentration used for hydrogeological modelling of the tailings storage facility can be found in QC-3.

Finally, it would appear that the above demonstrates that the nature, quantity, concentration, and location of all contaminants likely to be released into the environment have been assessed in detail, rigorously, and using industry best practices, whether for the design of structures, for surface and groundwater quality, for air quality, or for mine restoration.

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QC-2
Environmental Impact Assessment, Volume 6, Appendix 6-7 - Sectoral Report – Hydrogeological studies; Addendum 1 - Responses to MELCCFP recommendations and comments Volume 3, Section 13.2.4 Geochemistry of ore, waste rock, and tailings:

The proponent must provide a contaminant transport modelling study demonstrating that the existing sealing conditions or the sealing or mitigation measures to be implemented will prevent any significant degradation of groundwater quality, as required in Section 2.9.4 of D019. The numerical model should include a simulation of the worst-case scenario by applying the maximum hydraulic loads expected in the accumulation areas and the maximum contaminant concentrations obtained from geochemical characterization studies of the tailings.

Response 2:

An additional scenario has been added to the contaminant transport study. This study is presented in Appendix QC3. The response to QC-3 also provides additional details.

QC-3
Environmental Impact Assessment, Page 3-19, Volume 1a, Section 3.1.5 Geochemistry;
Environmental Impact Assessment, Volume 2, Appendix 3-1 - Sectoral Report - Geochemical characterization of mining materials;
Environmental Impact Assessment, Page 3-47, Volume 1a, Section 3.4.4 Tailings;
Addendum 1 - Responses to MELCCFP recommendations and comments Volume 3, Section 13.2.4 Geochemistry of ore, waste rock, and tailings:

According to the results of the characterization study, milling residues are considered to be leachable in arsenic for all samples. According to the data provided, the results obtained during the first leaching cycles of the kinetic "first flush" tests are characterized by concentrations exceeding the quality criteria of the *Intervention Guide* for several parameters. Copper (Cu) also exceeded RES criteria (Golder, 2021). The proponent must assess the risks of groundwater contamination by leached contaminants during the first leaching cycles.

The proponent must also revise the baseline concentrations used in the contaminant transport modelling study according to the above recommendations. The proponent must extrapolate the results obtained for Cu to other concentrations and potential contaminants.

Response 3:

The technical note on the hydrogeological study to assess groundwater percolation from the tailings facility has been updated to incorporate the elements requested in question QC-3. It is included in Appendix RQC3. Its preamble identifies each of the sections of its text that have been updated accordingly, in comparison with its previous version

The hydrogeological model used to simulate the groundwater flow and contaminant transport in the tailings storage facility (TSF) was updated by using initial concentration (first six results / six samples) of the kinetic leaching tests of copper (fists flush). The resulting average concentration of copper is 0.248 mg/L (Cu). This average concentration is mainly influenced by one of the six samples (CIL13) for which the concentrations from the kinetic leaching test are more than 850 times higher than the five other samples.

The results from the groundwater model update shows that even by using initial concentrations (first six results / six samples) of the kinetic leaching tests of copper (fists flush) no concentration of copper above the RES criteria are simulated at the two receptors. Concentration of the RES criteria are simulated within 150 m from the foot of the TSF. This new scenario is considered conservative because the initial concentrations of leaching tests are not usually used as initial conditions in simulating the fate of contaminants in TSF.

In addition, the proposed design concept of the TSF already includes several mitigation measures like a geomembrane at the base of the tailings to limit seepage to the environment, a progressive coverage at the top of the tailings to limit exposure to atmosphere and recharge and drains at the base of the tailings that limits the rise of the water table within the tailings.

Concerning the extrapolation of the simulated results of copper concentrations to other metals, the analysis of the kinetic leaching results and the background concentrations indicated that there should be no concentration above the RES criteria for other metals. The analysis shows that the average concentration from the kinetic leaching test for other metals is lower or close to the RES criteria. For comparison purpose, table RQC3 shows the average concentration from kinetic leaching test for the metals for which the concentrations of sample CIL13 were above or close to the RES criteria.

Table RQC3 Average concentration of the first six results of the kinetic leaching tests (six samples) for antimony, arsenic, cadmium, copper, nickel, lead and zinc

Parameter	Average concentration for the first six results of the kinetic leaching test for six samples (mg/L)	Background (soil/rock) (mg/L)	RES criteria (mg/L)
Arsenic (As)	0.0021	0.0013 / 0.0075	0.34
Antimony (Sb)	0.0035	n.d.	1.1
Cadmium (Cd)	0.0004	n.d.	0.0011
Copper (Cu)	0.248	0.0065 / 0.0015	0.0073
Nickel (Ni)	0.0207	0.0038 / n.d.	0.26
Lead (Pb)	0.0535	n.d.	0.0340
Zinc (Zn)	0.0473	n.d.	0.0670

QC-4

Environmental Impact Assessment, Page 3-45, Volume 1a, Section 3.4.3
Waste rock stockpiles:

On Page 3-45, the proponent mentions that "*a certain amount [of waste rock] could be recovered for construction and ongoing mine operations*." Considering that certain waste rock lithologies have the potential to generate acid mine drainage (AMD) and that all lithologies are leachable for certain metals, the proponent must provide more information in connection with this work. It must confirm that only non-AMD, non-leachable waste rock lithologies will be used as materials. The proponent must specify where, in what quantities, and for what specific use waste rock could be recovered. The proponent must also evaluate sources of materials that pose less risk to surface and groundwater quality.

Response 4:

Preliminary results of material characterization of waste rock lithologies from the Windfall deposit have shown that materials from the gabbro lithology (I3A) could be used in construction (ÉIA, volume 2, Appendix 3-1; WSP, 2023). To ensure that the waste rock from this I3A lithology could be used in construction activities, WMG carried out an in-depth geochemical characterization of the material from this gabbro lithology in accordance with the requirements and recommendations set out in the *Guide de caractérisation des résidus miniers et du minerai, MELCC 2020*. The gabbro materials studied are representative of the different mineralized zones (Main and Lynx) and their different sectors (Triple Lynx, Lynx 4, Caribou, and Underdog) of the Windfall deposit. The samples collected were sent to SGS Lakefield, ON, a laboratory accredited by the Centre d'expertise en analyse environnementale du Québec (CEAEQ), to carry out a complete characterization using a combination of static tests to predict acid-generating potential, kinetic tests (wet cell), and leaching tests (TCLP, SPLP, CTEU-9). In the light of the results obtained on the geochemical and environmental behaviour of gabbro, the following conclusions are presented.

- Gabbro waste rock is considered low risk according to the *Guide de caractérisation des résidus miniers et du minerai* (MELCC, 2020).
- The results of the static acid-generating potential (AGP) prediction tests show that the I3A samples are not acid-generating.
- The wet cell and leaching results confirm that the samples studied are not leachable.
- The materials are considered to be cyanide-free, uncontaminated by organic compounds, non-radioactive, and non-flammable.
- Gabbro waste rock is considered geochemically suitable for construction activities on the site.
- Apart from WMG's activities, no drinking water is taken from local groundwater and leaching parameters (pH, metals) are below the criteria for drinking water and resurgence in surface water.

The quantity of gabbro generated will be partly used for construction and other routine mine operations such as road surfaces, underground and/or surface backfill, and restoration techniques such as bedding backfilling. It should be noted that gabbro will account for around 22% of the project's total waste rock. An additional technical report is attached Appendix RQC4-1.

The full amount of the gabbro lithology waste rock will not be reused as construction material. In fact, if this waste rock is injected with felsic dyke, silica, quartz, and/or sulphide veins, it will not meet the requirements for use as a construction material. These characteristics can only be identified when geologists map the working face on a daily basis. The compliance of the material is thus confirmed by the geologists. It should be noted that predictions of the amount of gabbro that will be intersected in the mine plan are dependent on the accuracy of the geological model. Given that this verification can only be carried out in the field on a day-to-day basis, it is difficult to predict the quantities of gabbro that will qualify for use as building materials.

However, WMG already has some data. Gabbro characterization began on the Windfall site on February 28, 2024, and as of August 26, 2024, approximately 32,900 tonnes of gabbro had been segregated on the waste rock stockpile and determined by geologists to be suitable for recovery, out of a total of 64,869 tonnes of gabbro characterized. So far, around 50% of the gabbro has been recovered for construction work. It should be noted that this percentage is due to underground development that took place in a homogeneous, unaltered gabbro unit for the construction of the underground garage. This situation is not very representative of future mining development. In fact, drift development is associated with strong silica alteration, and may also contain felsic dyke injections and sulphide ores. This provides three arguments for rejecting gabbro as a building material. Drift development should therefore contain much less compliant gabbro. The 50% compliant gabbro percentage will therefore not be constant, and WMG expects this to represent the maximum reclaimable proportion of gabbro, which corresponds to around 865,000 tonnes maximum. The gabbro segregation procedure is presented in Appendix RQC4-2.

Reclaimable waste rock will be crushed to meet aggregate requirements for the production of backfill for both infrastructure foundations and haulage roads. In fact, this material is suitable for all these types of works.

This reclaimable gabbro will be used as a second choice, as the rock blasted for the construction work will be reclaimed and used primarily as rock material. The need for unconsolidated and rock materials is explained in the response to QC-10.

Reference :

WSP. 2023. Projet minier Windfall. *Rapport sectoriel – caractérisation géochimique des matériaux miniers.* Rapport produit pour Minière Osisko inc. 40 pages et annexes.

MELCC. 2020. *Guide de caractérisation des résidus miniers et du minerai*. Ministère de l'Environnement et de la Lutte contre les changements climatique. Direction des eaux usées. 52 pages.

QC-5
Environmental impact study, Restoration plan for work during operations:

The proponent must provide mitigation measures to avoid water erosion at the tailings storage facility and waste rock stockpile to minimize contamination of the surrounding environment. The proponent must also propose water erosion monitoring measures and integrate them into the comprehensive environmental and social monitoring program to be submitted.

Response 5:

Measures have been put in place to prevent water erosion at the tailings storage facility and the waste rock stockpile, and to minimize contamination of the surrounding environment. These measures are detailed below:

1. Erosion control during operations

During the detail engineering phase, mining materials placement and quality control protocols will be developed to meet design specifications in accordance with current standards. These protocols will be aimed at identifying the permissible grading ranges for the various materials making up the waste rock stockpile and tailings storage facility, to ensure compatibility with filter criteria and avoid the creation of sediments from possible internal erosion.

The waste rock stockpile and tailings storage facility are designed with gentle slopes, of the order of 3H:1V and 4.5H:1V respectively, to prevent the formation of erosion furrows and to allow water to be channelled to peripheral collection ditches. In particular, phasing is planned for the waste rock stockpile, with the construction of an intermediate plateau between its two levels. Tailings will be deposited and compacted to 95% Proctor at the storage facility.

In addition, the sequencing of works by zone at the tailings storage facility will enable progressive restoration. Progressive restoration is scheduled to take place once the layout of each of the tailings storage facility's zones and cells is finalized, thereby mitigating erosion.

Routine inspections, in accordance with current standards, will be introduced as part of the maintenance and upkeep of the accumulation areas. These inspections will, among other things, detect and flag the presence of water erosion in accumulation areas, such as the appearance of erosion furrows or water inflow along slopes or at the foot of embankments. Signs of erosion will be treated when they represent a structural anomaly (a set of minor erosion furrows or an erosion furrow of significant depth) for accumulation area infrastructure.

2. Design of works

The various components of the surface water management system, including ditches, ponds, and the foundations of the waste rock stockpile and tailings storage facility, will be lined with geomembranes to channel contact water—potentially laden with suspended solids (SS) from water erosion in the accumulation areas—to the ponds, where sedimentation can take place. Periodic maintenance of the surface water collection network is planned when required. All contact water routed to the collection pond will be treated at the water treatment plant (WTP) before being released into the environment. Note that water collected in the ponds adjacent to the tailings storage facility (PAR1 and PAR2) will be pumped back into the ore treatment process or sent to the WTP. Contact water from the tailings storage facility is segregated from the rest of the contact water system and is sent to the WTP in a water treatment process line (Metals-CN).

3. Deposition plan

The tailings storage facility deposition plan was developed based on the most up-to-date mine plan, which takes into account the operational schedule and annual capacity required. Operations at the tailings storage facility are scheduled to last 11 years and are divided into three distinct zones. Subsequent subdivision of the zones into cells will limit exposed surfaces and therefore the possibility of water erosion. Details of cells and zones are given in QC-95.

The tailings storage facility will be filled in successive layers of compacted mine tailings. The formation of an indurated layer on the surface of exposed slopes can also limit water infiltration into the stockpile. This will help control hydraulic loads inside the stockpile and prevent erosion. In addition, the installation of a drainage system at the base of the tailings storage facility will limit hydrostatic pressure to prevent erosion of the layers above the geomembrane and optimize the integrity of the cover.

4. Progressive restoration

Progressive restoration offers several advantages, including the prevention of water erosion. Therefore, the progressive restoration of the tailings storage facility will be carried out from the very first years. WMG will be able to cover the final surfaces of the tailings storage facility to limit infiltration of precipitation and control runoff.

A review of restoration methods applicable to the Windfall tailings storage facility was carried out and is presented in QC-94.

5. Post-restoration monitoring

During the post-restoration period, the integrity of the accumulation areas will be monitored annually by a geotechnical specialist for a minimum of five years, to ensure that the physical integrity of the structures is maintained and that there are no signs of erosion or significant ground movement. The monitoring program also includes environmental monitoring, including final effluent and groundwater monitoring, and agronomic monitoring for visual assessment of vegetation and any signs of erosion (WSP, 2023; MERN, 2022). Details of the program for monitoring the stability of structures are presented in Response QC-125 (Appendix RQC125).

References:

WSP, 2023. Windfall mine project. Plan de restauration – Travaux d’exploitation (Restoration plan – Mining work). Windfall mine project. Reference document: 201-11330-19.

MERN. 2022. *Guide de préparation du plan de réaménagement et de restauration des sites miniers au Québec*. Ministère de l’Énergie et des Ressources naturelles, Direction de la restauration des sites miniers, Gouvernement du Québec, ISBN : 978-2-550-92682-5 (PDF). 2022, 87 pages.

QC-6
Environmental Impact Assessment, Page 3-26, Volume 1a, Section 3.2.1 Proposed mining method;
Environmental Impact Assessment, Page 9-2 to 15-28, Volume 1b;
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 2,
Section 3-2 Impact of dewatering the proposed underground mine:

During the operations phase, the proponent proposes to backfill the work sites and galleries. The summary description of this activity provided in Section 3.2.6 of Addendum 1 is not sufficient. The proponent must submit more detailed information on this activity, particularly concerning the storage of waste rock and cemented paste backfill in the underground mine, the volumes, the binding agent used, the volumes of water withdrawn and the source, as well as any other information it deems relevant to the impact assessment.

Response 6:

As explained in the impact assessment, Section 3.2.1—Proposed mining method, all ore in the stopes can be mined using the Longitudinal Longhole Stoping method with backfill. Once the ore has been extracted from each stope, the void created must be filled to enable the next stope to be mined. The void can be filled in one of three ways: either with waste rock from gallery development along with cement (cemented rockfill) or not (rockfill), or with cemented paste backfill from the backfill plant made from tailings. There are no permanent underground storage facilities for waste rock or paste backfill, apart from backfill drifts.

The rockfill will not contain cement. It will be used for single stopes and when WMG is mining the last stope in a longitudinal series (unless it's a ground stope).

For cemented rockfill, between 4% and 6% binder will be used. This may be composed of type 10 cement and hydraulic binder from blast furnace slag, depending on availability and required strength. The percentage increases to 7% binder in the specific case of a sill pillar. Cement milk will be produced from a portable underground station where binder powder and water will be mixed. From this station, the cement milk will be transported either via a network of pipes, boreholes, or by loader to the site to be backfilled. The water used will be the same as for underground drilling, i.e., recirculated water from the surface water treatment plant. Strength testing of the cemented rockfill will be carried out, along with laboratory tests to confirm a recipe with precise cement percentages. Thus, the binder percentages proposed are based on average values used in other mines. The water required to make cement milk is around 40% of the weight of the binder used. A reasonable estimate is therefore an average of 5% binder for the entire rockfill (including 2% water).

Cemented rockfill will be used in a timely manner, but mainly at the beginning of mine life, since the paste backfill plant will not be fully operational to backfill the first stopes. Cemented rockfill is an attractive option as it allows waste rock from development to be disposed of. Since it will be brought in using loaders, it takes longer to put in place than paste backfill, which is piped in. Stopes that are too far from the paste backfill distribution centre may also be considered for cemented or uncemented rockfill. Backfill methods will be evaluated as part of mine planning based on economic, technical, and environmental factors.

In the case of paste backfill, the underground network will be fed from the paste backfill plant on the surface. The underground delivery point for the paste backfill was placed in the centre of the Lynx deposit to optimize transport. Thus, depending on the position of the delivery point, a projection was made on the surface, according to the angles deemed acceptable for paste flow. The paste backfill plant was therefore placed close to this surface hole projection. The paste backfill will be conveyed to the underground levels through two boreholes equipped with piping approximately 8 inches in diameter. One of the pipes will be used exclusively for transporting backfill, while the other will remain empty to alleviate any blockages.

The underground network will start from the surface (level 0), and the paste backfill will be directed to a transfer chamber at level 170 underground. Paste transport without a pump is preferred, but several constraints must be respected. There will be distribution zones inside a cone at an angle of 45° from vertical, centred on the surface holes, where gravity flow is possible. However, for levels above level 170, as well as for areas outside the distribution cone, a pump will be required to ensure backfilling.

Inside the distribution cone, a network of transfer chambers will distribute the paste backfill. Outside the cone, a similar network will be set up, but a pump will be needed to transport the backfill to the various stopes. The piping network will be made up of pipes of various sizes, depending on the pressures, distances, etc. involved.

Their size and thickness will be defined by engineering calculations to guarantee flow rates and safety, ensuring the system’s robustness and reliability. A system of pressure sensors strategically located throughout the network will help monitor pressures and sound the alarm should blockages and/or abnormal pressure rises occur.

Typical backfill flow will be 80 m^3/hour, based on an average of 15 hours per day. This would represent 432,000 m^3 per year, more than the volume needed, allowing for maintenance shutdowns as required.

The paste backfill has a solid concentration of around 70%. The water in the paste backfill is the process water. No water is therefore withdrawn to prepare the backfill. Use of type 10 cement and blast furnace slag as binder is planned, subject to availability. If slag is used, it is planned to have a proportion of approximately 90% slag to 10% type 10 cement. For this binder mixture, the binders will represent between 3% and 4% by weight of the binder-plant waste mixture. The binder percentage will be higher, between 6% and 8% for paste backfill from the first 5 m or from the floor up to 5 m high (the plug), and for stopes in sill pillars. In the absence of blast furnace slag, only type 10 cement will be used. In this specific case, the paste backfill will require more binder, i.e., around 50% more.

The use of different types of backfill will be optimized throughout the life of the mine to reduce the environmental footprint and optimize costs. The use of paste backfill allows tailings to be returned underground while reducing the footprint of the tailings storage facility. Cemented and uncemented rockfill reduce the transport of waste rock to the surface and the footprint of the waste rock stockpile. Detail engineering will be required to optimize the backfill recipes and confirm the percentages provided above.

As mentioned at the beginning of the response, backfill will be used to replace the void created by ore mining. With 12.2 Mt of ore to be mined and an average density of approximately 2.8 t/m^3, the void to be filled will be approximately 4,400,000 m^3. WMG plans to produce 4.7 Mt of paste backfill, i.e., around 40% of the tailings produced. During feasibility engineering studies, it was estimated that around 20% of the waste rock volume could remain underground. Since then, WMG has continued the analysis and now estimates this percentage to be 35%. A balance between different types of backfill will be achieved in the preparation of mine plans as the mine becomes operational.

1.2 Project alternatives

QC-7
Environmental Impact Assessment, Page 2-15, Volume 1a, Section 2.1.5 Mining Camp;
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 1, Section 4
Analysis of alternatives:

The proponent evaluated four alternative locations for the mining camp. The proponent must explain why the current camp site was not considered as an alternative. The proponent must further justify why building a new camp on a new site is a preferred option. It must specify what will happen to the temporary camp during each phase of the project. It must also specify whether a gradual reorganization of camp use is planned, and if so, what the timetable is.

Response 7:

Justification of camp location

A response regarding the current location of the exploration camp has been provided in Chapter 4 of the Addendum. To simplify review, the main content of this section has been reproduced below, with additional information added to enhance its content.

The current exploration camp is located 2 km southwest of the Main portal and the mine's planned infrastructure (processing plant, offices, filtration plant, etc.). There were two main reasons why the site of the existing exploration camp could not be considered as a potential location for the worker camp needed for the construction and operations phases of the Windfall mining project:

- Exploration of WMG's claims in the Windfall project area will continue during the project's construction and operations phases. As a result, this camp will already be heavily used by separate work teams when construction work begins.
- This camp does not meet one of the main criteria for selecting the location of the workers' camp for the Windfall project's construction and operations phases, which is to be located close to the main facilities to minimize the use of vehicles for employees travelling between the camp and their work sites.

As for the 1st reason, the exploration camp is too small for the operational needs of the mine, which is expected to require around 600 rooms (current capacity is 300 rooms). In addition, WMG's exploration activities will continue during Windfall mine site operations, and there must be a camp to accommodate the exploration workers.

The accommodation standards currently expected by workers in the mining and construction industries are higher than those for mineral exploration workers. Since the configuration of the current camp would not have suited the needs of these workers (rooms too small, no private bathrooms, insufficient sound insulation, kitchen not adapted for 600 workers, entertainment room and gym inadequate), a new camp would have had to be built anyway. This would have meant dismantling the current dormitories and modular units and replacing them with modular units better suited to the needs of mining activities.

As for the 2nd reason, the commuting required would have involved almost 600 workers on a daily basis. A shuttle bus system would have had to be set up to transport workers from the camp to the mine's infrastructure, generating significant environmental impacts (GHG emissions and atmospheric dispersion).

Shuttle services also generate dust when employees are transported on unpaved roads. The Windfall site has been designed to minimize traffic between the various infrastructure and facilities required for mining activities. Shuttling employees would therefore have run counter to the principle of reducing traffic. It should be noted that site workers will be able to walk along a northern corridor to the processing plant, where workers going underground will be supervised. Workers at the administrative office and the plant will not require any transport, significantly reducing the number of vehicles at the site.

Other factors, such as worker safety and productivity, were also considered when deciding on the location of the new camp. The increase in the number of vehicles on the Windfall site's road network also increases the risk of road accidents and collisions with wildlife.

Finally, in the interest of transparency and despite the fact that the points raised above were considered fatal flaws in WMG's analysis of this alternative, the criteria in Table 2-5 of the environmental impact assessment were reused to assign a score to the current camp site and compare it to the other sites considered at the time of the assessment. The site of the current camp received a score of 4/7 according to the criteria used in the environmental impact assessment, placing it in a tie for third place with Site A.

Criteria	Site A	Site B	Site C	Site D	Existing site
Located near the mining complex	No	Yes	No	Yes	No
Reduces the extent of encroachment	Yes	Yes	No	Yes	No
Safe location	Yes	No	No	Yes	Yes
Avoids wetlands	No	Yes	Yes	Yes	Yes
More than 60 m from a watercourse	Yes	No	Yes	Yes	No
Quiet location	No	Yes	Yes	Yes	Yes
Distant from a potential archaeological site	Yes	Yes	No	Yes	Yes
Total positive points (“Yes”)	**4/7**	**5/7**	**3/7**	**7/7**	**4/7**

Progression of camp use

WMG does not consider the exploration camp to be a temporary camp as mentioned in the question. The preferred solution is to maintain the full capacity (300 people) of the exploration camp for the purposes of exploration and major maintenance projects. The 600 rooms required during the mine’s operations phase do not include the exploration work in the area and the associated workforce. This includes a team of geologists, engineers, technicians, labourers, support staff, and a large number of diamond drillers. It is expected that at least half of the camp will be occupied at peak times by exploration workers. This equates to between 10 and 15 diamond drills. Extra places will also be kept to accommodate additional workers during occasional maintenance periods or when construction projects are carried out in conjunction with mining operations. The current camp will therefore ensure a degree of operational agility and flexibility that is essential to the sustainability of WMG’s operations.

A reduction in the exploration camp’s footprint and gradual reorganization are nevertheless to be expected once the mine is in production. The timeframe for the reorganization will not be before the start of commercial production at the mine, once the infrastructure and facilities required for mining activities have been fully built. A four-phase reorganization is proposed with phase 1 starting 2 years after the start of commercial production and continuing through to phase 4, starting 4 years after the start of commercial production. This reorganization is illustrated on Map RQC7.

- Phase 1 (2 years after the start of commercial production): Dismantling of the infirmary, saw room, and core libraries 1 and 2.
- Phase 2 (3 years after the start of commercial production): Dismantling of the industrial zone (south-southeast sector), with the exception of the waste sorting area, which will be relocated to the west-northwest industrial zone.
- Phase 3 (3 years after the start of commercial production): Dismantling of the dry and the former office complex.
- Phase 4 (4 years after the start of commercial production): Dismantling of the drill core storage area to the northeast.

The areas in green on the map are those that will be kept for exploration and mining purposes, where appropriate.

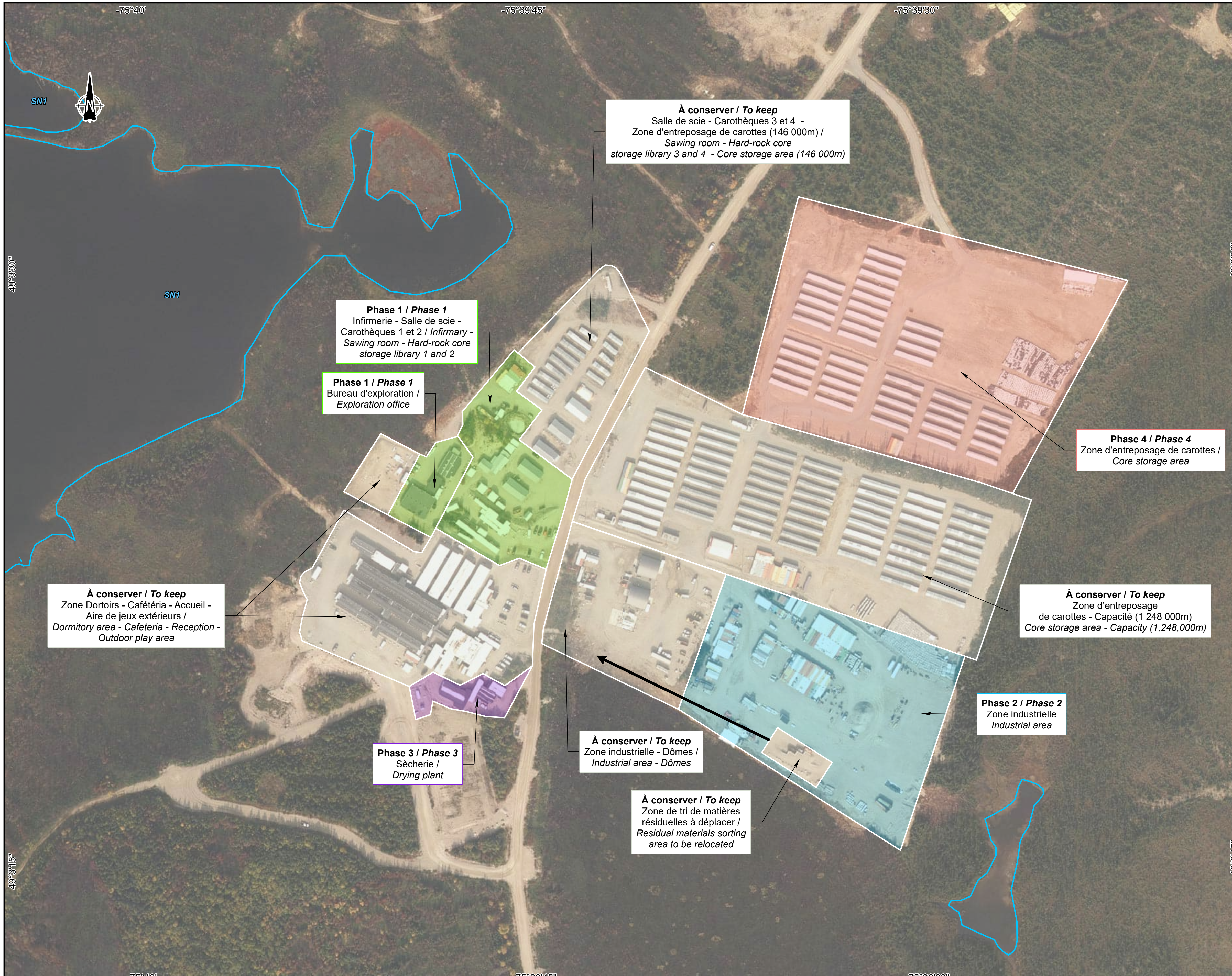
In addition, WMG will need to use two satellite camps during the peak construction period, which will require an additional number of rooms. Construction of the new 600-room camp, along with other work, will take several months, meaning that workers will have to be accommodated elsewhere while it is being built. Two camps are currently proposed: Barry, owned by Bonterra Resources, and Laforest, owned by NT Camps.

The Barry camp, located 11 km southwest of the Windfall site, is currently under option to Osisko Mining (see Bonterra Resources press release dated November 28, 2023[1]). It has been used for mineral exploration since early 2024. According to the authorizations obtained from Bonterra Resources, the camp can accommodate up to 140 people. However, work would be needed to bring the camp up to its maximum capacity of 140 people, given that the current site can accommodate only 56 people.

The Laforest camp is located 16 km from the Windfall camp and can currently accommodate up to 80 people. This camp was used during the bulk sampling phase by WMG to house surplus workers.

WMG will use these two camps at full capacity during construction work, among other things, while the new camp is completed. WMG wants to avoid any scaling back of operations due to a shortage of rooms, which could lead to significant delays in putting the project into production and possible layoffs.

[1] https://btrgold.com/fr/2023/11/28/bonterra-signe-une-entente-finale-avec-miniere-osisko-sur-la-propriete-urban-barry/



Réarrangement progressif du campement d'exploration /
Progressive rearrangement of the exploration camp

- Phase 1 : 2 ans après début production commerciale / *Phase 1: 2 years after commercial production start*
- Phase 2 : 3 ans après début production commerciale / *Phase 2: 3 years after commercial production start*
- Phase 3 : 3 ans après début production commerciale / *Phase 3: 3 years after commercial production start*
- Phase 4 : 4 ans après début production commerciale / *Phase 4: 4 years after commercial production start*
- À conserver / *To keep*

Hydrographie / *Hydrography*

- Plan d'eau / *Waterbody*

WINDFALL GROUPE MINIER

Projet minier Windfall - Réponses aux questions et commentaires - 1re série /
Windfall Mining Project - Answers to Questions and Comments - 1st Series

Site minier Windfall, Eeyou Istchee Baie-James (Québec) / *Windfall Mining Site, Eeyou Istchee Baie-James (Quebec)*

RQC7 / *RQC7*
Réarrangement progressif en quatre phases du campement d'exploration / *Progressive Four-Phase Rearrangement of the Exploration Camp*

Source :
MRNF, Mosaïque d'orthophotographies aériennes de l'inventaire écoforestier, 0,2 m, été 2023

0 30 60 m
MTM, Fuseau 9 / *Zone 9*, NAD83

2024-10-15

Préparation / *Preparation* : M.-H. Brisson
Dessin / *Drawing* : V.Venne
Vérifié par / *Verification* : M.-H. Brisson
CA0023271_9538_eie_rqc7_rehab_241016.aprx
CA0023271_9538_eie_rqc7_rehab_241016

wsp

La précision des limites et les mesures montrées sur ce document ne doivent pas servir à des fins d'ingénierie ou de délimitation foncière. Aucune analyse foncière n'a été effectuée par un arpenteur-géomètre. / Boundary accuracy and measurements shown on this document are not to be used for engineering or land delineation purposes. No land analysis was carried out by a land surveyor.

QC-8

Environmental Impact Assessment, Page 2-1, Volume 1a, Section 2.1 Location of main infrastructure:

The proponent has stated that the location of some of the infrastructure has been authorized in the attestations of exemption and ministerial authorizations obtained as part of the mine's exploration activities. However, these authorizations do not release the proponent from the obligation to carry out an impact assessment on all the infrastructures required for mine operations. The proponent must provide a complete impact assessment, including alternative locations for the mine wastewater treatment plant and the waste rock stockpile.

On the maps presented in the proponent's documents, the project's encroachment is limited to the mine's planned infrastructure, notably on Map 7-6 Project Encroachment on the Relative Probability of Occurrence of Caribou. The proponent must include all infrastructure that is part of the mining project in its impact assessment, at any stage of the project (construction, operations, closure).

The proponent also mentions that some infrastructure will be temporary, such as certain basins during the construction period. The proponent must provide a complete list of the facilities it considers temporary, specifying the duration of their use, size, and capacity, and showing their location on a map. The proponent must restore temporary facilities within one year of the end of their use, or justify their continued use, as the case may be.

Response 8:

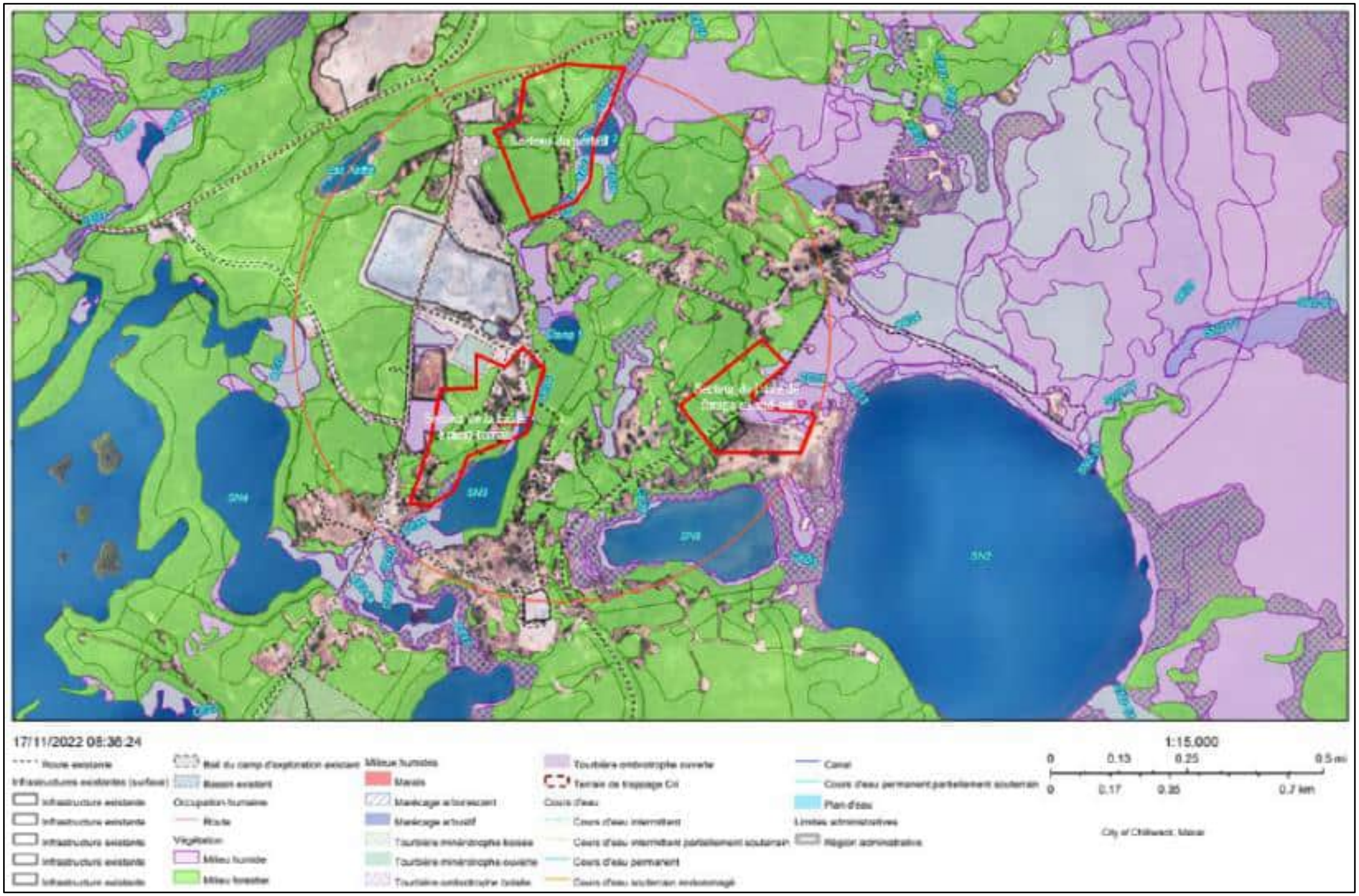
In response to the elements requested in August 2023, an analysis of alternatives for the water treatment plant (WTP) and the waste rock stockpile was presented in Chapter 4 of Addendum 1. Elements of this response and additional information are provided below.

Alternatives for the location of the WTP

An analysis of the alternatives of the water treatment plant (WTP) was carried out and presented in the MELCCFP request for information in connection with the request for authorization for bulk sampling 2022. Alternatives for the location of the WTP were identified using a multi-parameter analysis based on the criteria and considerations in section 3.2.8.5 of Directive 019, even though the WTP is not a tailings accumulation area.

The increase in the volumes of materials to be managed on site during the various phases of project development, for example between the preliminary economic study (2021) and the feasibility study (2023), has led to a reorganization of the infrastructure plan, which explains why the position of various project components, including the water treatment plant, has been reassessed. The site analysis was carried out twice, first within a 500 m radius and then within an 800 m radius of the centre of the site, given that the water management infrastructures must be close to it. With regard to the proximity of the facilities, the location of the WTP should normally be as close as possible to the ponds to concentrate the activities in the same area. This will reduce the impact linked to accessibility, taking into account the pumping distances, the maintenance of all this infrastructure, as well as WTP operations and monitoring. In terms of on-site risk management, it is preferable to minimize the distances between the ponds storing this water and the WTP.

Infrastructure must be built where the topography allows and facilitates construction and operations. Since the topography of the exploration site is rugged, three sites were shortlisted (shown on Map RQC8-1), including one near the existing water management infrastructure and the existing overburden stockpile, one near the portal, and one at a drilling area to the southeast of the facilities. In December 2023, an additional option was presented in the analysis of alternatives (No. 2), namely that next to Pond D. In fact, this option had been considered at the very beginning of the project, but the development of Pond D at this location led to it being ruled out. In addition, despite the favourable topography, the site near the portal was rejected, as failure of the water management infrastructure would have serious consequences for underground operations.



Source : Minière Osisko. 2022. Réponse à la demande d'information 402162926 du 4 août 2022 - Demande de modification d'autorisation AM4737 – Échantillonnage en vrac des secteurs Caribou et Lynx 4 et construction des infrastructures associées.

Map RQC-8-1 Site analysis area for the WTP

The two areas that were studied in greater detail during the multi-parameter analysis for the placement of the WTP are the site near the existing water management facilities and the site of the drilling area to the southeast (see Table RQC8-1). This analysis considered environmental, technical, and economic parameters. All these criteria were considered important and given an equivalent weighting (weighting = 1).

Table RQC8-1 Site selection grid for the WTP

Selection criteria	Site close to water management infrastructure	Drilling site to the southeast
Encroachment on the natural environment	High	Minimal
Encroachment on wetlands and water environments	Yes	Yes
Access road to be built	Minimal	Minimal
Restrictions on future development of the site	Yes	No
Occupation of man-made surfaces*	Partial	Almost total
Length of pumping pipes	~ 1.4 km	~ 3.0 km
Total score	2	4

* Note on weighting: Boxes in red have a value of 0 and those in green have a value of 1.

As the site is close to the site's water management infrastructure, which would be adjacent to the existing infrastructure and the expanded waste rock stockpile, the material accumulation areas are dynamic environments that are bound to change over time. Establishing permanent infrastructure close to infrastructure undergoing change would not be viable in the medium to long term. In addition, the sectors near the accumulation areas still unaffected by exploration activity would have required the disturbance of new areas of natural habitat.

Also, following the project's technical studies, it was agreed that, for reasons of constructability and operational efficiency, the WTP should be located adjacent to the tailings filtration and paste backfill plants. This would make it possible to:

- share common utilities such as electricity, propane, and water;
- create workload-related synergy between plants;
- reduce the free surface area required for snow removal and building maintenance (footprint).

While the location of the WTP is essentially linked to the availability of space and relative proximity to the final effluent point, the tailings filtration and paste backfill plants should ideally be located on surface rock and as close as possible to the paste backfill hole, so as to reduce the transit distance of the paste to the backfill drifts and the energy required to pump it.

In all cases, the proposed WTP site (see Figure RQC8-1) stands out because it is mostly located on a site where human disturbance has been observed. In addition, the location did not require the construction of access roads, as a network of roads already existed in the area. As far as encroachment into wetlands is concerned, it has been avoided as far as possible. In the light of these observations and the technical considerations set out above, it turned out that the site under consideration (the drilling site to the southeast) was the most suitable, despite the fact that it would involve longer pipelines and additional pumping effort.

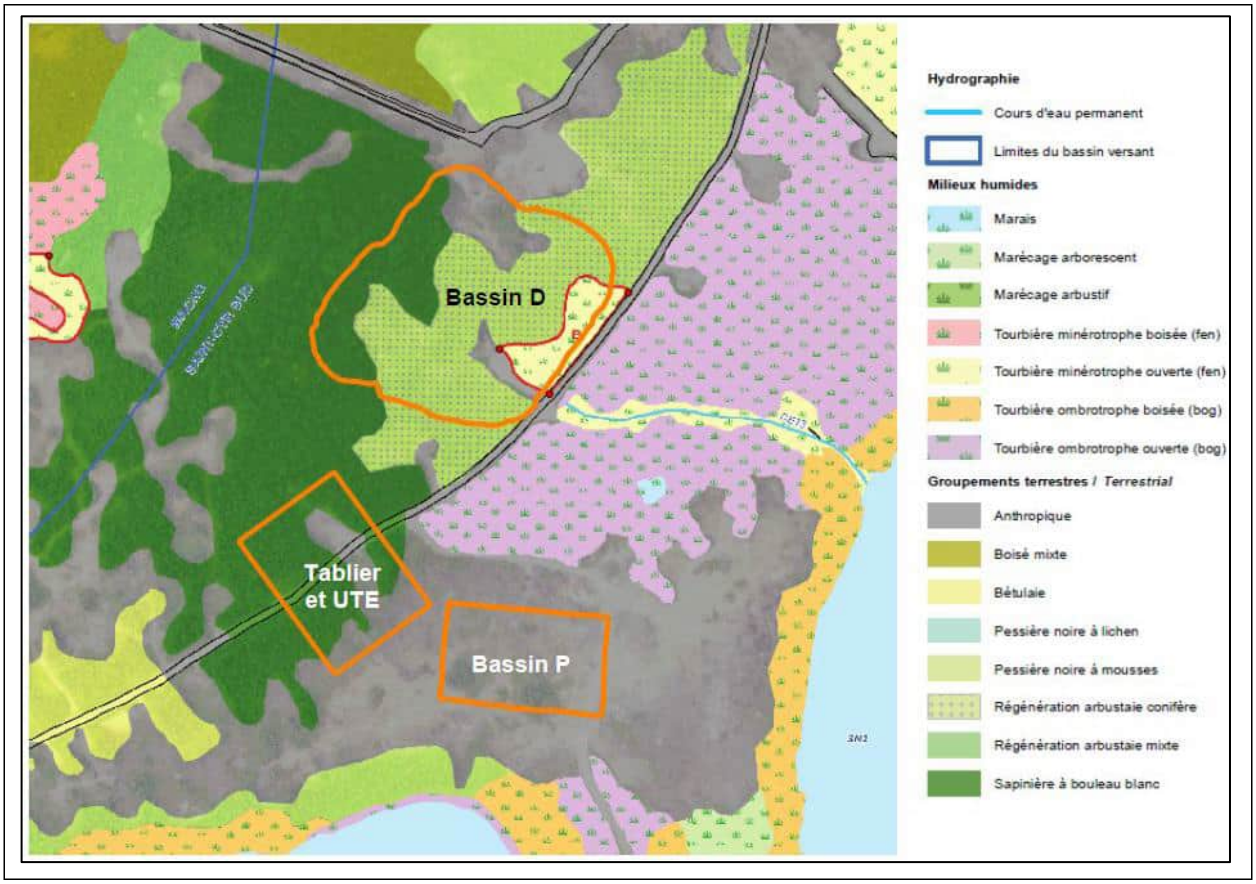


Figure RQC8-1 **Superimposition of infrastructure (WTP and Ponds D and P) in relation to elements of the natural environment**

Alternative locations for the waste rock stockpile

The waste rock stockpile used was already present prior to the acquisition of the site by Osisko Mining. It was developed in 2007. To optimize existing infrastructure and minimize the project's footprint, WMG decided to stay with the already established site of the stockpile.

In any case, as part of the design work for mine site development, WMG maintained its objective of minimizing its footprint and grouping the various project components as close as possible to the mine portals (Main and Lynx). Therefore, despite the former presence of the waste rock stockpile at this location, its position has been reassessed.

The various engineering studies for the project resulted in an increase in the volumes of waste rock to be managed, requiring consideration of various sites to ensure sufficient storage capacity and the keeping of components close to the mine. Thus, three distinct layout alternatives were analyzed for the accumulation of the total volume of waste rock that will be generated during the operation of the Windfall mine site, namely:

- Alternative 1 (1a and 1b) involved extending the surface area of the existing waste rock stockpile and creating a second site located to the north of the proposed site of the processing plant, bounded to the north by Route R1053, to the west by the access road, and to the east by Pond 2 and its outflow watercourse (Map 4-1 in the Addendum).

- Alternative 2 involved extending the surface area of the existing waste rock stockpile and creating a second site, also located north of the processing plant, but between Pond 2 and the tailings storage facility.
- Alternative 3 involved a streamlining of the mine site layout to accommodate the total volume generated on the site of the existing waste rock stockpile.

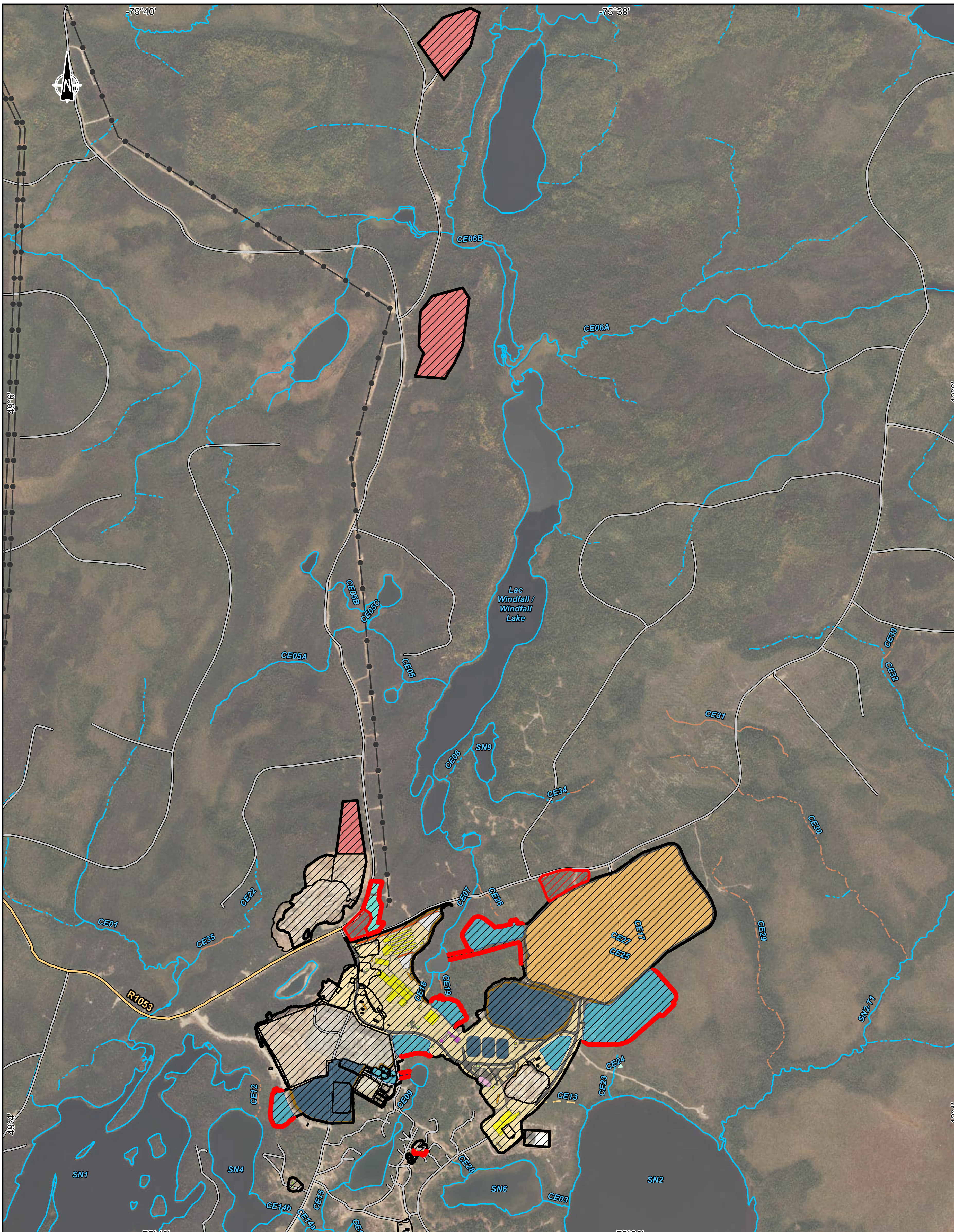
The various sites considered offered a load-bearing capacity that met the requirements of the volumes to be stored, and met a distance criterion of 500 m from the Main and Lynx portals to minimize the distances to be covered to transport the waste rock. This reduces management costs and the generation of additional environmental impacts (loss of vegetated area, GHG and dust emissions, possible increased interaction with terrestrial wildlife, etc.). The progressive analysis of the organizational needs of the mine site led to the abandonment of the first two layouts considered for the following reasons:

- For Alternative 1, it was the analysis of options for the location of the workers' camp, carried out in parallel with that of the waste rock stockpiles, that led to its abandonment. In fact, the second site of Alternative 1 conflicted with the most favourable location for the camp, and priority was given to the camp to reduce the distance employees had to travel between the camp and the mine or plant.
- For Alternative 2, it was once again the second site that conflicted with the need to locate the tailings storage facility's Pond PAR2 as close to it as possible.

In the end, Alternative 3 was selected, as the design team re-evaluated the capacity of the existing waste rock storage area and succeeded in maximizing the space required to store the total volume of waste rock to be produced by the project, as illustrated on Map 4-1 in the Addendum 1. Once it was determined that the existing site could meet the waste rock storage objectives, no other site was considered, because

- other areas of the mine site within a 500 m radius of the Main and Lynx portals were already heavily used by other project components, limiting the space available for a waste rock stockpile.
- the existing stockpile was close enough to the mine portals to limit travel distances, thereby reducing operating costs and facilitating the flow of operations;
- the optimization of the existing stockpile was a response to the need to limit its footprint;
- the optimization of the existing stockpile was a response to the goal of concentrating infrastructure to limit the project's overall footprint on the environment and on the traplines used by Cree families.

In addition, a technical study carried out by WSP on the existing waste rock stockpile in 2022, establishing the criteria and data used in the design of the stockpile, enabled Osisko Mining to apply for authorization to expand the waste rock stockpile. In fact, with the completion of drilling, it was possible to assess the stability criteria and confirm that the conditions were right for expansion. This assessment was provided as an appendix RQC9.



Empiètement du projet Windfall /
Windfall Project Footprint

Permanent / *Permanent*
Temporaire / *Temporary*

Réseau routier / ***Road Network***

Chemin forestier principal / *Main forestry road*
Chemin forestier secondaire / *Secondary forestry road*

Cours d'eau / ***Waterflow***

Canal / *Channel*
Cours d'eau intermittent / *Intermittent Watercourse*
Cours d'eau intermittent partiellement souterrain / *Partially Underground Intermittent Watercourse*
Cours d'eau intermittent souterrain / *Underground Intermittent Watercourse*
Cours d'eau permanent / *Permanent Watercourse*
Cours d'eau permanent partiellement souterrain / *Partially Underground Permanent Watercourse*
Cours d'eau souterrain / *Underground Watercourse*
Fossé de drainage / *Drainage ditch*

Composantes du projet / ***Project Components***

Infrastructure existante / *Current infrastructure*
Ligne de transport d'énergie / *Transmission line*

Infrastructures projetées / *Planned Infrastructures*

Aire d'activité / *Activity area*
Banc d'emprunt / *Borrow pit*
Bassin / *Pond*
Bâtiment / *Building*
Champ d'infiltration / *Infiltration field*
Concasseur / *Crusher*
Équipement / *Equipment*
Limite des fossés / *Ditch limit*
Halde / *Stockpile*
Parc à résidus miniers / *Tailings storage facility*
Portail Lynx / *Lynx portal*
Réservoir / *Reservoir*
Route / *Road*
Berme / *Berm*
Zone de dépôt de neige / *Snow deposit zone*

Projet minier Windfall - Réponses aux questions et commentaires - 1re série /
Windfall Mining Project - Answers to Questions and Comments - 1st Series

Site minier Windfall, Eeyou Istchee Baie-James (Québec) /
Windfall Mining Site, Eeyou Istchee Baie-James (Quebec)

RQC8-2 / ***RQC8-2***
Mise à jour de l'empiètement du projet /
Project Encroachment Update

Sources :
CanVec 1M, Réseau hydrographique, 2019
AQréseau+, Réseau routier, MERN Québec, 2020-03
SDA, 1/20 000, MERN Québec, 2019-01
MRNF, Mosaïque d'orthophotographies aériennes de l'inventaire écoforestier, 0,2 m, été 2023

0 220 440 m
MTM, Fuseau 9 / *Zone 9*, NAD83

2024-10-16

Préparation / Preparation : K. Cadoret
Dessin / Drawing : V. Venne
Vérifié par / Verification : M.-H. Brisson
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CA0023271_9538_eie_rqc8-2_050_empietement_241016

La précision des limites et des mesures montrées sur ce document ne doivent pas servir à des fins d'ingénierie ou de délimitation foncière. Aucune analyse foncière n'a été effectuée par un arpenteur-géomètre. /
Boundary accuracy and measurements shown on this document are not to be used for engineering or land delineation purposes. No land analysis was carried out by a land surveyor.

Temporary facilities

Temporary facilities installed during the construction phase fall into two categories. The first is construction support, the second is water management. All temporary facilities will be dismantled, and impacted areas outside of the project's footprint will be restored within one year of the end of the construction phase.

For the first category, Table RQC8-2 lists the facilities required to support construction. It specifies that three storage areas will be created, two of which will be located outside the final footprint of the project. Map RQC8 illustrates the temporary encroachments, which will be used from the beginning to the end of the construction phase. These facilities will be used to store the equipment and materials required for buildings and plant construction. There will also be prefabricated buildings, such as site trailers and toilet blocks. Around twenty site trailers and toilet blocks will be strategically positioned on the site and will be moved as work progresses.

Table RQC8-2 Construction support temporary infrastructures

Temporary infrastructure	Approximative dimension (m^2)	Quantity	Within the final site footprint
Storage area sector 0	10,000	1	no
Storage area sector 15	21,000	1	no
Storage area sector 17	30,000	1	yes
Workers trailers and sanitary blocks	Variable	20	yes

For water management, a summary of facilities and infrastructure is presented in Table RQC8-3. The table details temporary ponds, their capacities and dimensions. All the facilities shown in Figure RQC8-2 will be used to manage runoff on the site during construction. The white/blue buffer zones around watercourses and lakes represent the 60 m limit of proposed mining infrastructure as required by D019. Temporary facilities will include water collection and pumping ponds, the construction water treatment plant (CWTP), mobile water collection tanks and various sediment control equipment.

Temporary water collection and pumping ponds for each sector have been positioned at the lowest point. They will be installed before stripping begins. These ponds will be dismantled when they are no longer required. They will be small enough to allow total suspended solids (TSS) to settle. The 50 m^3 ponds will have an approximate surface area of 150 m^2, while the 100 m^3 ponds will be 220 m^2 in size. These will be coupled with a second control measure positioned upstream (e.g. sediment traps, silt fence, gel flocculant blocks, etc.) or downstream (e.g. sediment settling bags, sediment retention fiber rolls, etc.).

The CWTP will be positioned in a fixed location. Its exact position is still being finalized, but it is currently envisaged to position it on the eastern portion of the existing waste rock storage. In any case, it will be within the existing footprint of the site. Expected capacity will be around 550 m^3/h. It will be installed at the beginning of the construction and should be operational before stripping begins. It will be built on a watertight platform on which dewatering bags (Geotube®) will be positioned. The space required for all plant components will be approximately 3,700 m^2. Treated water will be pumped to the effluent channel downstream of the mine effluent, but upstream of Pond 1.

Mobile water collection tanks are also planned. The main advantage of these equipment is that they can be installed and moved easily. They enable small flows of water from fixed ponds to be collected at a central location and pumped to the CWTP. These baker tanks may have a capacity of up to 80 m^3. They will be positioned within the site footprint. Mobile pumps of varying capacities will also be used, as required.

Finally, various control measures will be added to the water management strategy presented above. These measures are based on the Quebec Ministry of transport guide (MTQ, 2012). As appropriate, the following equipment could be added:

- **Sediment trap:** The sediment trap is a cavity dug into a ditch upstream of a retention weir to promote the settling of TSS. The trap must be positioned at the bottom of a slope or in a low-gradient area. Several traps can be positioned in series to optimize settling. Cavities are generally at least 30 cm wide, with a length/width ratio of 5.
- **Settling weir:** The settling weir is made of crushed stone (10 to 30 cm). It reduces flow velocity and thus minimizes erosion. The stones must be placed on a steep slope on the upstream side and the riprap continues in the form of an apron downstream (approximately 2 times the height of the riprap).
- **Sediment settling bag:** The sediment settling bag is intended to retain the TSS and efficiently filter TSS from the water. It features an opening for the insertion of a pumping hose, facilitating the introduction of the water to be filtered. Clean water is then diffused in a controlled manner through the walls of the bag, while sediment, sludge and other particles are trapped inside. These bags can be moved and used according to specific site requirements, offering an adaptable solution to changing conditions. They also dissipate some of the energy to minimize erosion at the point of discharge.
- **Sediment retention fiber roll:** The sediment retention fiber roll is a synthetic or natural cylindrical net filled with natural fibers that act as filtering materials. They are designed to slow water flow and intercept TSS in ditches and on slopes. They can be used to replace or complement sediment barriers.
- **Silt fence:** The silt fence is the most used measure, due to its simplicity of use and low cost. These barriers can be made up of straw bales or geotextile membranes installed around the work area. They retain TSS while allowing water to percolate through. They should only be installed in areas with low slopes (ideally <3%) or where it is not possible to direct water to a collection pond. The effectiveness of silt fence depends largely on their installation, which must be carried out properly and tightly so as not to allow sediment to pass through to the bottom of the barrier. Membrane clogging can become an issue; membrane replacement is required when clogging is too severe.
- **Treated jute mat:** Treated jute mat should be used in ditches to minimize erosion by reducing flow velocity. These mats should be installed upstream of a pond when fine particle entrainment is a problem.
- **Gel flocculant block:** The gel flocculant block is a control measure that can be used in a ditch or pond to coagulate colloidal particles that are more difficult to settle or filter.

References :

BBA INC. et al. 2023. NI 43-101 - *Technical Report, Feasibility Study for the Windfall Project*. Prepared for Osisko Mining Inc., Effective Date, November 25, 2022, 668 p.

MINISTÈRE DU DÉVELOPPEMENT DURABLE, DE L'ENVIRONNEMENT ET DES PARCS DU QUÉBEC (MDDEP). 2012. *Directive 019 sur l'industrie minière*. ISBN : 978-2-550-64507-8 (PDF). 66 pages + appendices.

Transport Québec. 2012. *Guide technique – Gestion environnementale des fossés*. 26 pages.

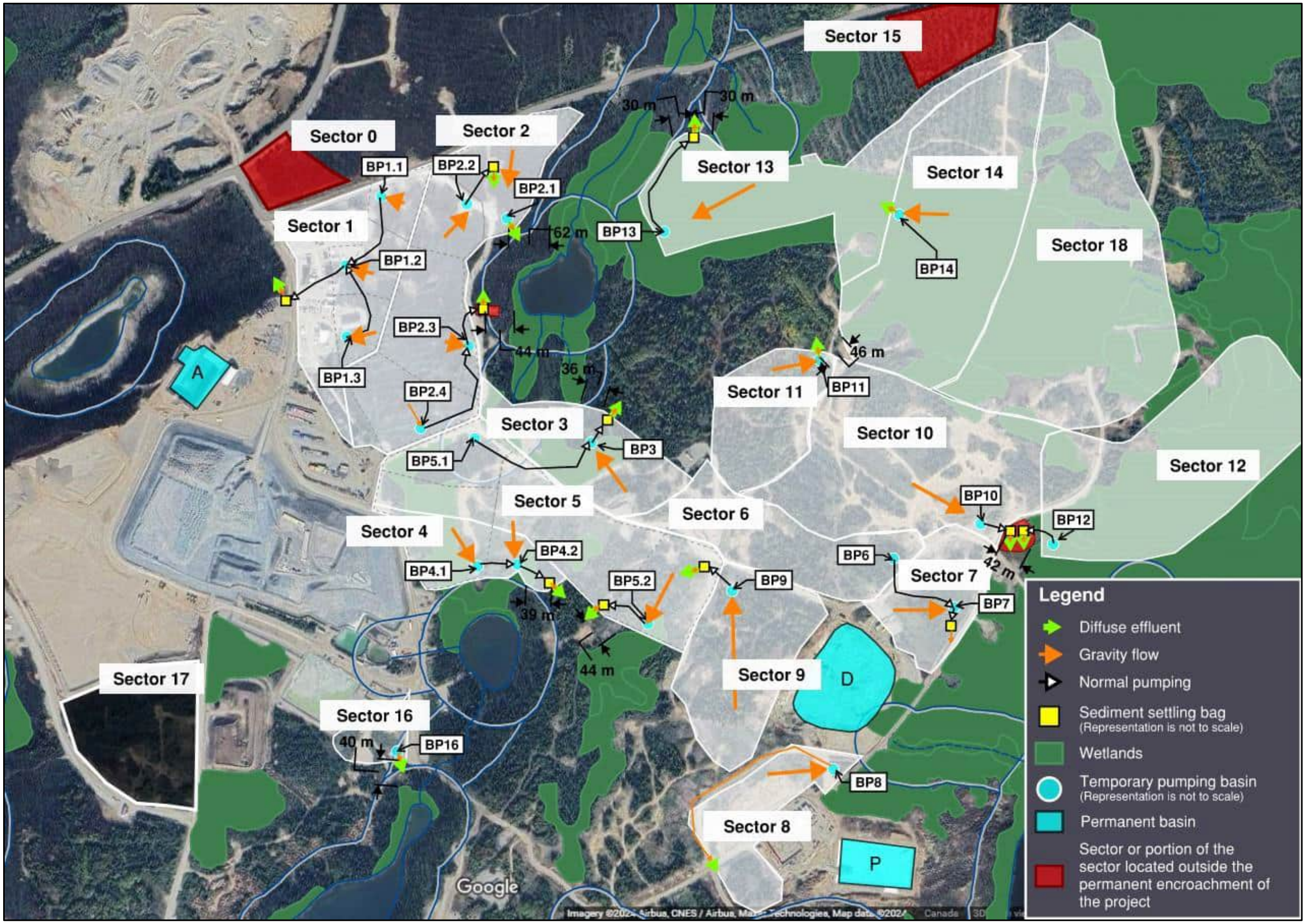


Figure RQC8-2 Location of water management infrastructure by sector - construction phase

Table RQC8-3 Water management infrastructures details – Construction phase

Sector	Pumping pond	Volume (m^3)	Preliminary information on the temporary infrastructures	Maximum use duration[7]
0	None	n.a.	No pond required[5] **Sector located outside the permanent encroachment (10,000 m^2)**	During the entire duration of the construction period
1	BP1.1	50	Discharge: Discharge towards another pond **(BP1.2)**	Until the finalization of the ditches and the pond B. According to the current plan, the construction of pond B will be competed in month 6.
	BP1.2	50	Discharge: Discharge located more than 30 m from a wetland or a watercourse. Type of discharge: diffuse, filtered with a sediment settling bag	
	BP1.3	50	Discharge: Discharge towards another pond **(BP1.2)**	
2	BP2.1	50	Discharge: Discharge located more than 30 m from a wetland or a watercourse. Type of discharge: Diffuse, filtered with a silt fence	
	BP2.2	50	Sediment settling bag: Located outside the permanent encroachment Discharge: Discharge on the other side of the road of the sector **(Sector 2)** Type of discharge: diffuse, filtered with a sediment settling bag	
	BP2.3	100	Sediment settling bag: **Sector located outside the permanent encroachment (600 m^2)**, **located more than 30 m from a wetland or a watercourse.** Discharge: Discharge located more than 30 m from a wetland or a watercourse. Type of discharge: diffuse, filtered with a sediment settling bag	
	BP2.4	50	Discharge: Discharge towards another pond **(BP2.3)**	
3	BP3	50	Discharge: Discharge located more than 30 m from a wetland or a watercourse. Type of discharge: diffuse, filtered with a sediment settling bag	
4	BP4.1	50	Discharge: Discharge towards another pond **(BP4.2)**	Until the finalization of the ditches and the pond C. According to the current plan, the construction of pond C will be competed in month 12.
	BP4.2	50	Discharge: Discharge located more than 30 m from a wetland or a watercourse. Type of discharge: diffuse, filtered with a sediment settling bag	
5	BP5.1	100	Discharge: Discharge towards another pond **(BP3)**	

Sector	Pumping pond	Volume (m^3)	Preliminary information on the temporary infrastructures	Maximum use duration[7]
	BP5.2	50	Discharge: Discharge located more than 30 m from a wetland or a watercourse. Type of discharge: diffuse, filtered with a sediment settling bag	Until the finalization of the ditches and the pond B and the tow road. According to the current plan, the construction of pond B will be competed month 6 and the tow road will be finalized in month 16.
6	BP6	50	Discharge: Discharge towards another pond **(BP7)**	Until the finalization of the ditches and the pond J and the ditches of the sector. According to the current plan, the construction of pond J will be competed month 6 and the sector will be completed in month 16.
7	BP7	50	Discharge: Discharge towards the ditch, water is periodically pumped from the ditch Type of discharge: diffuse, filtered with a sediment settling bag	Until the finalization of the ditches and the pond J. According to the current plan, the construction of pond J will be completed in month 6.
8	BP8	50	Discharge: Discharge located more than 30 m from a wetland or a watercourse. Type of discharge: Diffuse, filtered with a silt fence	Until the conversion of pond P, after the finalization of the works on pond CP. According to the current plan, these works will be completed in month 18.
9	BP9	50	Discharge: Discharge towards another pond **(Sector 5)**	Until the finalization of the ditches leading to pond D. According to the current plan, the sector will be completed in month 16.
10	BP10	100	Sediment settling bag: **Sector located outside the permanent encroachment (2,000 m^2)**, **placed at a location deprived of vegetation** Discharge: Discharge located more than 30 m from a wetland or a watercourse. Type of discharge: diffuse, filtered with a sediment settling bag	Until the finalization of the ditches and the pond J. According to the current plan, the construction of pond J will be completed in month 6.
11	BP11	50	Discharge: Discharge located more than 30 m from a wetland or a watercourse. Type of discharge: Diffuse, filtered with a silt fence	
12	BP12	100	Sediment settling bag: **Sector located outside the permanent encroachment (2,000 m^2 - same as BP10^2)**, **placed at a location deprived of vegetation** Discharge: Discharge located more than 30 m from a wetland or a watercourse. Type of discharge: diffuse, filtered with a sediment settling bag	Until the finalization of pond PAR1. According to the current plan, the construction of pond PAR1 will be completed in month 15.

Sector	Pumping pond	Volume (m^3)	Preliminary information on the temporary infrastructures	Maximum use duration[7]
13	BP13	100	Silt fence: Placed upstream of the discharge point Discharge: Discharge located more than 30 m from a wetland or a watercourse. Type of discharge: Diffuse, filtered with a silt fence	Jusqu'au moment de la finalisation du bassin PAR2. According to the current plan, the construction of pond PAR will be completed in month 15.
14	BP14	100	Silt fence: Placed upstream of the discharge point Discharge: Discharge towards another pond **(Sector 13)**	Until the finalization of TSF Zone 1. According to the current plan, the construction of the PAR Zone 1 will be completed in month 18.
15	None	n.a.	Aucun bassin requis[5] **Sector located outside the permanent encroachment (21,000 m^2)**	During the entire duration of the construction period.
16	BP16	50	Silt fence: Placed upstream of the discharge point Discharge: Discharge located more than 30 m from a wetland or a watercourse. Type of discharge: Diffuse, filtered with a silt fence	Until the finalization of the geotube pad planned in month 6.
17	None	n.a.	No pond required [5]	During the entire duration of the construction period.
18	None	n.a.	No pond required, water will flow by gravity towards the PAR 1 pond	n.a.

Notes :

1) The sediment settling bags were placed outside the permanent encroachment of the project for sectors that are delimited by a road. However, if existing infrastructures allow it, such as existing culverts. The bags could be placed inside of the permanent encroachment (Recommended).
2) The silt fences are not represented on the figure RQC8-1, however every gravity discharge will flow through a silt fence before being discharged to the environment diffusely.
3) The sediment settling bags are required when water is pumped form one pumping pond to another or when water is pumped out of an area because of the presence of obstacles such as roads or topographic restrictions.
4) All pumping ponds are located within the permanent encroachment of the project and placed according to the site topography (low point). When possible, the sediment settling bags are also placed within the permanent encroachment of the project – Except the ones mentioned at point 1. All discharge points are diffuse and located 30 m from a wetland or a watercourse.
5) In the storage areas, there are no pumping ponds. These zones are isolated with silt fences during land leveling works. Subsequently, no sediment control is required since there will be no active works in these areas.
6) The localisation of the sediment settling bags is approximative. Their positioning was completed with the current available information and their position can vary as long as the rule of 30 m distance from wetlands and watercourses is respected.
7) Work duration was determined according to the current construction plan and is subject to change. The schedule is still under review and development and is dependent on multiple factors such as the construction seasons.
8) The sectors of the potable water well and the septic water infrastructures are not represented on the figure RQC8-1, however local control measures will be put in place in these areas as well.

QC-9

Environmental Impact Assessment, Page 3-43, Volume 1a, Section 3.4 Accumulation area management:

Geotechnical stability and soil failure studies for accumulation areas and water retention structures have not been provided. Stability studies carried out to date, especially those involving deep-seated failures, should be submitted. These studies are necessary to ensure that the foundation soils are capable of supporting accumulation areas and water retention structures.

Response 9:

The geotechnical stability studies of the accumulation areas and water retention structures cited in the environmental impact assessment were provided in March 2023 with the Windfall project restoration plan (WSP, 2023). They have been included to appendix RQC9 to this document for ease of reference. The four studies provided are:

1. Expansion of the existing waste rock stockpile and water management infrastructure, October 2022 (RQC9-1);
2. Design of stockpiles and water management infrastructure, March 2023 (RQC9-2);
3. Geotechnical analyses for the design of the tailings storage facility in support of the feasibility study, March 2023 (RQC9-3);
4. New configuration of the overburden stockpile – Stability analysis, November 2023 (RQC9-4).

The first document describes the existing infrastructure at the Windfall site, i.e., the waste rock stockpile and the three ponds (Ponds A, D, and P). The second and third documents relate to the infrastructure proposed as part of the project, at the end of the feasibility engineering phase. They include the expansion of the waste rock stockpile, the ore stockpile, the overburden stockpile, the tailings storage facility, and the ponds. Since the end of the feasibility study (BBA, 2023), certain works have been optimized. Revised analyses will be produced when the detailed engineering design is finalized and applications for ministerial authorization are submitted. Since a revised overburden stockpile stability analysis was available, it was provided (4th study listed above).

Finally, the stability studies of the surface pillar around the two portals (Main and Lynx) (A2GC, 2023) and studies of the geomechanical conditions of the rock mass (A2GC, 2022) are also available in the appendix E to the restoration plan (WSP, 2023) but have not been included again in this document.

References :

BBA INC. et al. 2023. NI 43-101 - *Technical Report, Feasibility Study for the Windfall Project*. Prepared for Osisko Mining Inc., Effective Date, November 25, 2022, 668 p.

A2GC. 2023. *Zones d'exclusion en surface autour des Portails Main et Lynx*. 19 p.

A2GC. 2022. *Windfall Lake Project – Rock Engineering in Support of the Mine Design for the 2022 Feasibility Study*. Technical Report. Ref.: 2243-WIN-003-R2022-v1. 129 p.

WSP. 2023. *Projet minier Windfall. Plan de restauration – Travaux d'exploitation. Projet minier Windfall.* Document de référence : 201-11330-19.

QC-10
Environmental Impact Assessment, Page 3-85, Volume 1a, Section 3.8.6
Borrow pits:

The proponent mentions on Page 3-85 that it wishes to open two new borrow pits, Gravtest-3 and Gravtest-4, in addition to the one currently in use (Flamb-1). The surface areas of Gravtest-3 and Gravtest-4 are 9.86 ha and 10.7 ha respectively. The proponent must confirm whether the entire area will be required for the project's unconsolidated material needs. The proponent must justify the volumes extracted and the areas affected. The proponent must provide details on the reclamation measures for these borrow pits.

Response 10 :

The amount of unconsolidated materials required from borrow pits was determined to be 509,917 m³, distributed according to Table RQC10-1 (taken from Section 3.8.6, page 3-85, Volume 1A of the EIA).

Table RQC10-1 Borrow pit materials required for construction

Type of material	Necessary volume (m^3)	Use
Backfill MG 56	57,731	Roads, ponds
Backfill 0-600 and/or MG 112	126,188	Roads, ponds
Mass backfill	325,998	Roads, ponds, grading
Total	**509,917**	

Rock material requirements were estimated at 11,780 m³. These values are currently being reviewed with detail engineering, but material requirements are not expected to change significantly since the project's planned infrastructure has not been significantly modified since December 2023. The rock blasted for the construction work will be reclaimed and used initially, to avoid having to transport and store it in the overburden stockpile. Blasted rock will be used where it was blasted, wherever possible. It can be used to build roads, ponds, and other infrastructure.

A geophysical survey was carried out in early 2024 at the site of the planned infrastructure to obtain an estimate of the quantities of rock that will need to be blasted during construction. A total of 309,720 m³ of rock will have to be blasted. These quantities are shown in Table RQC10-2. The blasted zones at the proposed infrastructure sites are shown on Map RQC10.

Table RQC10-2 Estimated quantity of rock to be blasted

Sector	Quantity (m^3)
Industrial apron	131,740
Service trenches	4,335
Main trench	5,384
Ponds	147,688
Roads	11,917
Apron	1,892
Lynx portal	6,764
Total	**309,720**

A characterization of the rock to be blasted was carried out at the site of the future industrial area, Ponds B and C, to assess the quality of this material and its suitability for construction purposes. This study concluded that the rock is non-acid generating, not considered leachable, and not contaminated with cyanide, organic, radioactive, or flammable compounds. This excavated rock material is considered low-risk and geochemically suitable for on-site construction. This study is presented in Appendix RQC10-1.

As explained in the response to QC-4, a certain portion of gabbro can also be reclaimed and used as construction material. However, the quantity that can be reclaimed is very difficult to estimate, so this material has not been included in the material balance so as not to overestimate the quantity of materials available and end up with shortfalls at construction time.

Finally, borrow pit materials will be used for specific needs based on aggregate size, quality and geotechnical performance, and in the event of a shortage of blasted rock and reclaimable gabbro. Quantities of blasted rock and gabbro will only become available as surface blasting progresses, based on the construction schedule, the mine plan, and the discovery of reclaimable gabbro. The borrow pits will therefore also be used to make up the shortfall.

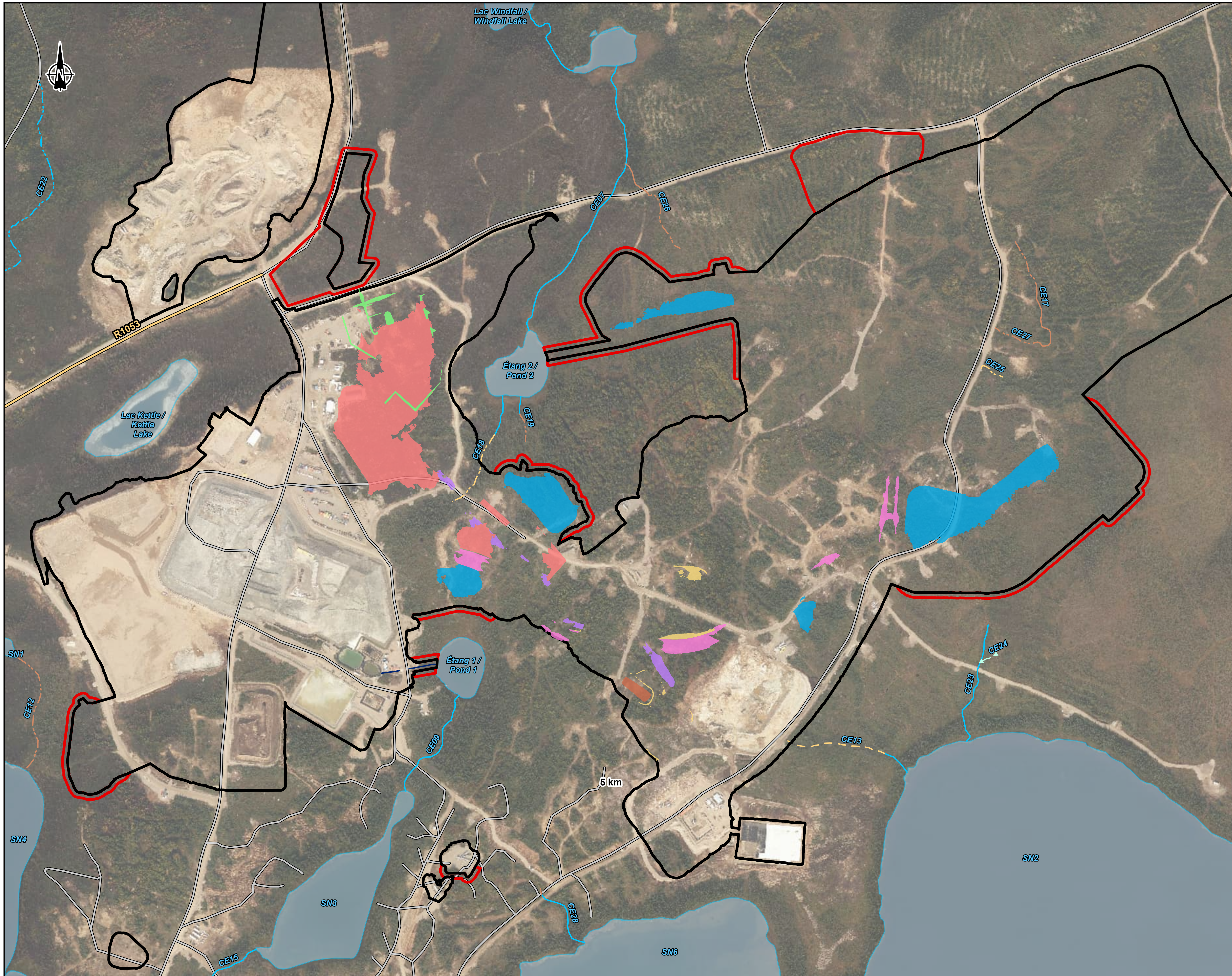
Following additional geotechnical surveys carried out in spring 2024, it was possible to establish more precisely the aggregate supply potential in the targeted borrow pits. These results have allowed optimization of their footprints based on this potential, while taking into account the requirements for construction, maintenance of the site during operations, and restoration of the works. It was necessary to ensure that the volumes withdrawn corresponded to the real needs compiled in the site’s material balance sheet. In particular, certain portions originally targeted were excluded due to their low content of suitable aggregates. The use of spoil from infrastructure during site construction or mine waste rock was also considered where possible.

The Gravtest-3 borrow pit can supply approximately 337,484 m^3 to 460,323 m^3. The material that could be produced is essentially MG 112 and CG-14. The Gravtest-4 borrow pit would supply between 111,412 m^3 and 173,838 m^3 of material. The material present is rather favourable for the production of predominantly sandy MG 112. Only the required quantities of material will be extracted from the borrow pits.

The geotechnical study report presented in Appendix RQC10-2 shows the optimized capacities. The optimized surface areas of Gravtest-3 and Gravtest-4 are 9.14 ha and 6.09 ha respectively.

This report also describes the measures for restoring these banks at the end of the project to comply with the requirements of the Regulation respecting sand pits and quarries (CQLR chapter Q-2, r. 7.1) and the objectives of section 38:

- eliminating unacceptable risks to health and ensuring personal safety;
- preventing the release of contaminants likely to adversely affect the environment;
- eliminating all long-term maintenance or monitoring;
- restoring the site to a condition compatible with its previous use.



Composantes du projet / *Project Components*

Empiètement du projet Windfall / *Windfall Project Footprint*

- Permanent / *Permanent*
- Temporaire / *Temporary*

Roc à dynamiter / *Rock to Blast*

- Tablier industriel / *Industrial pad*
- Tranchée de service / *Service ditch*
- Tranchée principale / *Main ditch*
- Bassin / *Basin*
- Route / *Road*
- Tablier / *Pad*
- Portail Lynx / *Lynx Portal*

Hydrographie

Cours d'eau / *Waterflow*

- Cours d'eau permanent / *Permanent Watercourse*
- Cours d'eau permanent partiellement souterrain / *Partially Underground Permanent Watercourse*
- Cours d'eau intermittent / *Intermittent Watercourse*
- Cours d'eau intermittent partiellement souterrain / *Partially Underground Intermittent Watercourse*
- Cours d'eau souterrain / *Dammaged Underground Watercourse*
- Cours d'eau intermittent souterrain / *Underground Intermittent Watercourse*
- Fossé de drainage / *Drainage ditch*
- Canal / *Channel*
- Plan d'eau / *Waterbody*

Réseau routier / *Road Network*

- Chemin forestier principal / *Main forestry road*
- Chemin forestier secondaire / *Secondary forestry road*

Projet minier Windfall - Réponses aux questions et commentaires - 1re série /
Windfall Mining Project - Answers to Questions and Comments - 1st Series

Site minier Windfall, Eeyou Istchee Baie-James (Québec) / *Windfall Mining Site, Eeyou Istchee Baie-James (Quebec)*

RQC10 / *RQC10*
Zones dynamitées dans l'aire d'empiètement du projet /
Blasted Areas Within the Project Encroachment Area

Sources :
AQréseau+, Réseau routier, MERN Québec, 2020-03
MRNF, Cartographie détaillée des feux 2023 provisoire, 2024
MRNF, Feux de forêts (depuis 1976), 2023
MRNF, Épidémie, chablis et verglas (depuis 1976), 2023

0 75 150 m
MTM, Fuseau 9 / *Zone 9*, NAD83

2024-10-16

Préparation / Preparation : J. Bibeau
Dessin / Drawing : C. Thériault
Vérifié par / Verification : M.-H. Brisson
CA0023271_9538_eie_rqc10_zoneDynamitage.aprx
CA0023271_9538_eie_rqc10_zonesDynamitage_241016

La précision des limites et les mesures montrées sur ce document ne doivent pas servir à des fins d'ingénierie ou de délimitation foncière. Aucune analyse foncière n'a été effectuée par un arpenteur-géomètre. / Boundary accuracy and measurements shown on this document are not to be used for engineering or land delineation purposes. No land analysis was carried out by a land surveyor.

1.3 Combating climate change

QC-11
Environmental Impact Assessment, Volume 1b, Section 9 Resilience to Climate Change;
Environmental Impact Assessment, Volume 1b, Appendix 9-1 Resilience to climate change:

In the climate change resilience study presented in Appendix 9-1 of the impact assessment, it is recommended that the analysis be updated if major changes are made to the components of the Windfall mining project. The proponent must apply this recommendation. The proponent must specify how it intends to apply and implement this recommendation.

Response 11:

The climate resilience analysis has made it possible to propose a number of adaptation measures to be implemented to reduce the level of identified risks and deal with any opportunities that may arise. This analysis was carried out for the construction, operations, and closure phases.

It should be noted that the construction phase should last around 2 years and that the project has a lifespan of just 10 years, so very few major changes are expected for the various components of the Windfall project. In fact, the infrastructure currently planned is designed according to the latest technologies to ensure stability and optimal operation for much longer than the 10-year lifespan.
Furthermore, in a timeframe as short as 15 years, the possibility of major climatic changes beyond those already analyzed in the climate resilience study is low. No infrastructure upgrades or changes to operating activities are therefore planned for the time being.

As a member of the Quebec Mining Association, WMG is in the process of joining the Towards Sustainable Mining (TSM) initiative. One of the nine protocols of this initiative concerns climate change. This protocol addresses the management of climate-related risks and opportunities, including associated mitigation and adaptation strategies, setting targets, establishing monitoring indicators, and producing reports.

WMG is currently working on a corporate climate change strategy that will integrate these elements through defined actions, including the integration of the strategy into corporate planning for existing activities and new projects. It is within this framework that the analysis will be updated if a major change in one of the project's components is identified.

QC-12
Environmental Impact Assessment, Volume 3-4-5, Appendix 6-2 Sectoral Report –
Estimated GHG emissions from the project:

In the study provided in Appendix 6-2 of the EIA, measures to reduce greenhouse gases (GHGs) are suggested. The proponent must specify which of these measures will be put in place and describe how they will be applied. The proponent must justify the reasons for rejecting any other measures suggested in this report.

With regard to fuel consumption in the construction phase, the proponent must specify how it plans to reduce fuel consumption for heating and equipment.

In addition, the proponent must submit the GHG management plan and provide a timetable.

Response 12:

To reduce the carbon footprint of WMG's activities as much as possible, the following measures have already been put in place by WMG, such as using electricity as the energy source for several ore processing activities. Most of Quebec's electricity comes from hydroelectricity. Electrical consumption generates a negligible proportion of greenhouse gases compared with the use of fossil fuels. WMG also took energy efficiency into account when selecting the equipment, keeping up to date with the best technologies available on the market in terms of energy consumption.

The measures in Appendix 6-2 of the EIA, which WMG has undertaken to respect during the construction and operations phases, are set out below in more detail:

- Limiting access to designated areas and the speed of vehicle traffic on the various work sites and during mine operations. Installation of signage in designated areas.

  Application: WMG will use appropriate signage and set up traffic flow procedures. Traffic flow procedures will be explained to staff operating the machinery during training sessions and staff induction. In addition, the traffic management plan submitted in QC-22 includes elements aimed at limiting speeds along the forestry roads leading to the Windfall site. The dust management plan discussed in QC-26 also provides details of the measures being taken to improve energy efficiency.

- Shredding tree-cutting and brush-cutting residues on the work site rather than burning them, wherever possible, and then spreading them.

  Application: No tree burning is planned as part of the project.

- Wherever possible, using electricity from the Hydro-Québec grid as the main source of power.

  Application: Consistent with the response to QC-14, WMG plans to optimize the electrical energy available from the 69 kV power line by using it for project activities as a substitute for energy generation through the combustion of fossil fuels.

- Continuing the evaluation of ongoing energy conservation initiatives to reduce GHG and standard pollutant emissions in equipment selection, construction methods, and operating practices.

  WMG has integrated elements of project design likely to generate energy savings, in particular the installation of on-demand ventilation in mining facilities. The response to QC-13 sets out in detail the energy efficiency measures adopted as part of the project. This initiative will be maintained throughout the project.

- Raising workers' awareness of the factors that influence fuel consumption, including effective management of vehicle acceleration and deceleration, and bringing the vehicle to a complete stop whenever possible when idling.

  Application: Covering ecodriving concepts as part of the training and orientation of drivers and operators of machinery and vehicles, including the prevention of idling/stopping, speed/acceleration management, and the choice of equipment selected for each activity.

- Validating the feasibility of using biofuels, such as biodiesel, in line with the recommendations of machinery manufacturers.

  Application: Checking, by type of machinery, the proportion of biofuel that can be used without affecting the performance, maintenance, and warranty of the machinery. Verifying the commercial availability of biofuels in Quebec over the life of the project.

- Introducing mechanisms for monitoring fuel and electricity consumption in operations management and for maintaining the equipment fleet.

  Application: Compiling fuel invoices as part of the annual monitoring of GHG emissions. Analyzing variations in consumption to assess trends.

- Drawing up and implementing a dust management plan for the various phases of the project.

  Application: The dust management plan was provided in Volume 4 of Addendum 1 (WSP, 2024).

- Ensuring that vehicle and machinery exhaust systems are in good condition and operating optimally to minimize airborne contaminant emissions, and making sure that the same applies to dust collection systems for equipment and machinery fitted with them.

  Application: WMG will carry out machinery maintenance activities in line with manufacturers' recommendations and also based on observations of wear and tear or incidental damage to equipment.

WMG is in the process of joining the TSM initiative. The Climate Change Protocol sets out a clear set of criteria that will enable WMG to set targets for reducing GHG emissions. These targets can be set once the status of the mining location has been defined, in particular using the data collected as part of the GHG monitoring program provided in Appendix RQC12.

QC-13
Environmental Impact Assessment, Page 3-101, Volume 1a, Section 3.9 Carrying out construction
Environmental Impact Assessment, Volume 3-4-5, Appendix 6-2 Sectoral Report –
Estimated GHG emissions from the project:

In the study provided in Appendix 6-2 of the EIA, it is recommended to "Continue the evaluation of ongoing energy conservation initiatives to reduce GHG and standard pollutant emissions in equipment selection, construction methods and operating practices." The proponent must indicate whether eco-construction principles have been incorporated into the design of the various buildings, with a view to minimizing energy demand, GHG emissions, and residual materials generated. The proponent must provide a description of integrated green building principles, where applicable.

Response 13:

WMG is committed to integrating green construction principles. Green construction principles have been incorporated into the development and design of the buildings on the site. The following sections provide details on the integrated elements.

Grouping of buildings

The principle of grouping together certain buildings, usually separated from one another on mining sites, has been applied to several buildings for various services. The following are two major groupings:

- The core library, the analysis laboratory, emergency and safety services, and the mine rescue service are all housed in a single building and share many of the same services;
- The processing plant, warehouse, maintenance garage, dry, and administrative offices are integrated together or adjacent to each other.

By merging several buildings into a single larger building, WMG was able to optimize energy efficiency by minimizing the number of external walls. This approach reduces heat loss and enables centralized management of technical systems, contributing to a significant reduction in energy consumption. It also enables workers to go to their workplaces without having to step outside, which will limit the number of vehicles required on site. What's more, this configuration makes more efficient use of building materials and generates less waste, while offering better soundproofing and thermal insulation. This approach also reduces the carbon footprint and optimizes outdoor space for more sustainable uses.

Use of multiple floors in buildings

Similar to the grouping of buildings, the use of multiple floors in the layout of buildings essentially promotes the same green building principles. This principle applies if the number of floors is not too high, as is the case here. Whereas mine sites are generally designed to have one level, the following are a few examples of buildings that incorporate multi-level construction:

- each of the six dormitory wings will have two floors, i.e., two levels on top of each other;
- the mine rescue service will be on the first floor, above the analytical laboratory and the emergency and safety services;
- the warehouse, administration area, and dry will have three floors.

In addition to the positive points already listed in the first principle, this measure has helped conserve a considerable amount of natural surface area on the site—since separate buildings or buildings without additional floors would have required extensive landscaping and additional roads—and so the ecological footprint is minimized.

Use of wood

Wooden structures are rarer in industrial environments for a variety of technical, standard-related, and durability reasons. However, some facilities allow wood to be integrated as a construction material, mainly in the frame and building envelope. When adapted to a building's intended use, wood is favourable to green building principles in every respect. Wood production consumes little energy and generates little waste. Furthermore, it is renewable and stores CO_2, helping to combat global warming. As wood is an excellent natural insulator, it helps to limit heating requirements, thereby minimizing energy demand and GHG emissions.

At present, the modular complex of dormitories, dining hall, kitchen, infirmary, etc. at the workers' camp is designed using a timber frame, even though modular units in light steel frame are available on the market. In addition, for other buildings in the early stages of design, the option of using wood as the main structure will also be considered and evaluated.

Prefabrication

Factory prefabrication is favoured in design, calls for tenders, and construction planning to minimize the ecological footprint on site during construction. This approach helps to considerably reduce the number of workers on site, while at the same time minimizing facilities (dormitories, dining rooms, etc.), equipment (vehicles/transportation, tools, etc.) and losses (residual materials, waste, surplus, etc.).

Among the prefabricated elements is the modular complex for the dormitories, dining room, kitchen, infirmary, etc. of the workers' camp. Reinforced concrete foundations or parts of foundations for certain buildings will be prefabricated where possible. Prefabricated electrical rooms in specially adapted containers are also available for large-scale buildings. Other equipment and building components will be considered and analyzed to apply the principle of off-site prefabrication as often as possible.

Optimizing energy efficiency and GHG reduction

As part of the project, WMG studied various energy efficiency measures for the heating, ventilation, and air conditioning (HVAC) systems of the various buildings to be located on the mine site. With propane as the main energy source for the HVAC plant, various measures were analyzed firstly to reduce propane consumption, and secondly to replace it with electricity where possible. Overall, six of the eleven measures proposed were selected. These measures all have excellent potential and offer significant annual reductions in greenhouse gases (GHGs). The energy efficiency study is available in Appendix RQC13 and includes details of the six selected measures. Table RQC13 lists the measures selected and their corresponding GHG reductions (in tCO_2eq). This represents a reduction equivalent to 7,370 tCO_2eq annually. WMG has incorporated these six measures into the design of the Windfall project.

In short, WMG incorporates green building principles into the design of its various buildings on the site. These principles serve, among other things, to minimize energy demand, GHG emissions, and waste production. WMG is also committed to pursuing its initiatives to integrate green building principles.

Table RQC13 Energy efficiency measures selected for the Windfall project

Energy efficiency measure	Annual GHG reduction (tCO_2eq)
Water reclamation loop	2,166
Exhaust air recovery (buildings)	1,329
Dual-energy heating	1,294
On-demand ventilation (mine)	975
Exhaust air recovery (camp)	842
Off-peak electric boiler (camp)	764

QC-14
Environmental Impact Assessment, Page 3-99, Volume 1a, Section 3.8.8
Energy supply:

In Section 3.8.8, the proponent mentions that electricity will be supplied via the new 69-kV Kuikuhaacheu transmission line. In its analysis of alternatives, the proponent preferred this 69 kV power line to a 120 kV power line, mainly for economic reasons and the longer lead times associated with delivery of the 120 kV line. The proponent must demonstrate that the 69 kV power line will meet all the mine site's present and future energy needs. If this is not the case, the proponent must indicate how it intends to meet all the infrastructure's energy needs from renewable energy sources.

Response 14:

Energy requirements from the transmission line

In accordance with Section 3.8.8 of the March 2023 environmental impact assessment, the 69 kV transmission line is owned by a subsidiary of the Cree First Nation of Waswanipi (CFNW). The interconnection to the Hydro-Québec grid was completed in 2022–2023 and commissioned in early 2024 to meet Windfall's electricity needs for the current exploration phase and subsequent construction and operations phases. It is also essential to mention that the establishment of such an interconnection has been the subject of analyses of several options by Hydro-Québec and WMG over several years. The option chosen in 2022 has ensured that the Waswanipi community will be able to develop its territory beyond the Windfall project, given that the interconnection's expected lifespan is estimated at over 40 years. The development of the transmission line also enables the rollout of fibre optics all the way to Windfall, providing fibre-optic connection points for local users along the route.

The development of the interconnection is based in part on an estimate of the Windfall project's electrical requirements, which has been updated over the years and during the various phases of the project, and on the availability of Hydro-Québec's energy blocks. Based on the projected mine plan and technical inputs, the maximum electrical demand was set at 27.4 MW. This maximum power was anticipated for 2032, during winter mining operations. This is when power requirements for both the underground mine and the mine complex's surface infrastructure will be at their highest. All requests for electricity supply from Hydro-Québec were made on the basis of this information, and the award of the 27.4 MW peak block with 28.8 MVA available power was confirmed in September 2023 with the signing of the contribution agreement between WMG and Hydro-Québec. WMG must therefore maintain a unity power factor so as to limit losses on the line and maintain an available power of 27.4 MW.

To confirm the capacity of the interconnection, including Hydro-Québec's Waswanipi substation, the 69 kV line, and the MICO and Windfall substations, a technical document[2] has been prepared and is provided with the consent of the client, the Waswanipi community development company (CFNW Transmission Line Limited Partnership) (Appendix RQC14-1).

Hydro-Québec has allocated a block of 27.4 MW, and the 69 kV power line can theoretically supply up to 38.1 MW and 35 MW efficiently with a voltage drop of 10% and a line loss of 7.31% respectively. A voltage drop of 10% is the maximum possible without requiring major changes to Windfall's 69kV-13.8kV transformers. Beyond this threshold, energy losses on the line become too great. Should it be necessary to increase the power transmitted on the line to 35 MW, and potentially beyond the projected life of the mine project under study, modifications may be required to Hydro-Québec's facilities as well as to the CFNW Transmission Line Limited Partnership's substations to meet the demand. Any request exceeding an additional 5 MW would also require ministerial authorization.

For several reasons, electrical distribution via the line will not meet all the projected energy needs of the future mine site. On the one hand, since the adoption of Bill 2 to increase the scope of the obligation to distribute electricity on February 15, 2023, Hydro-Québec's supply contracts now require that a certain portion of energy blocks be shed. WMG's 27.4 MW energy block therefore includes a clause obliging it to shed part (up to 30%) of its supply during periods of high demand (such as winter cold spells), to be met by alternative energy sources. The agreement with Hydro-Québec also requires WMG to sign up to an energy efficiency program. On the other hand, the technologies available for underground heating and ore transport do not currently allow the use of renewable energy sources.

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As far as WMG is aware, there are currently no underground mines operating in northern climates that do not use fossil fuel energy for heating. This is due to the high energy demand associated with providing fresh air for underground mining operations.

Alternative renewable and non-renewable energy sources

A study was carried out in 2018 on electricity generation from renewable energy sources directly on the Windfall site (WSP, 2018). To verify the conclusions of this study, a second assessment was requested to confirm that the study was still valid. This second assessment is provided in Appendix RQC14, and highlights the geographical obstacles encountered in the vicinity of the Windfall site, whether related to wind or solar energy. For wind power, an average output of 0.331 MW could be feasible during the winter, according to the second assessment. This average output is well below the 15 MW required to heat the site's buildings. This heating output does not include that for underground heating. For solar energy, this option is not feasible, given that the energy requirement for heating is during the winter, when sunshine hours are reduced and cold peaks occur at night. The second assessment rules out the feasibility of such projects by demonstrating their unprofitability compared to a transmission line and/or propane gas. It is therefore currently impossible with available technologies, or in a way that is economically viable, to use only the energy from the transmission line. However, WMG will continue to monitor technological developments over the next decade, both in terms of increasing the range of larger mining vehicles and the possibility of storing energy in batteries.

Hydro-Quebec may request a one-time reduction in consumption of up to 30%. Under no circumstances can the energy block received supply the Windfall project with 100% hydroelectricity at any given time. It is important to note that no energy block, even a larger one with a 120 kV line, would have been able to supply 100% of WMG's energy needs due to the lack of existing technology capable of efficiently coping with underground heating and the load shedding required during periods of extreme cold.
Thus, as renewable energy sources are not feasible, as demonstrated by the assessment (Appendix RQC14-2), and to meet the remaining demand, propane and diesel have been chosen as complementary energy sources to meet the energy needs of some mining vehicles, underground mine heating and, in dual-energy mode, building heating.

The main source of heating energy for future buildings on the mine site will be propane gas in a dual-energy configuration. The maximum output required to heat all the buildings on the Windfall site will be around 15 MW. To limit propane consumption in off-peak periods, the plan was for building heating units to be equipped with a dual-energy system (propane and electric). For the time being, it has been estimated that each heating unit will account for around 12% of electrical heating, i.e., a total electrical output of around 1.9 MW.

However, until 2029–2030, the output limit is not expected to be reached with process equipment, nor with underground development. Therefore, during the first years of operation, it is anticipated that Hydro-Québec will have sufficient electrical power available to partially power the electric heating units. To achieve this, an automated electricity demand management system will be required. With the installation of such a dual-energy system, it is planned to limit propane gas consumption annually. Propane gas would then be used during periods of extreme cold only, or during a Hydro-Québec peak event when it's necessary to shed some of the electricity consumption.

As an alternative, energy efficiency measures will be implemented. WMG has already carried out an analysis of energy efficiency measures to minimize propane-related energy consumption (Appendix 13). Among these measures, on-demand ventilation will be used throughout the underground infrastructure to minimize ventilation-related energy requirements. In addition, underground traffic management systems will be installed to maximize vehicle traffic flow.

Reference :

WSP. 2018. *Wind and solar energy feasibility assessment. Windfall Lake mine.* Osisko Mining inc. 18 p. and appendices.

QC-15
Environmental Impact Assessment, Page 3-99, Volume 1a, Section 3.8.8
Energy supply:

The proponent has chosen battery-powered equipment for some machines, but diesel fuel for others. One reasoning was that current battery capacity would not allow the equipment to complete a full shift without needing recharging. In Section 3.8.8, it is stated that the project's power line will be able to supply the 27.4 MW required for the operations phase, with a potential increase of 6 MW during peak demand periods. The proponent must assess whether the current 69 kV capacity of the power line is sufficient for the eventual conversion of its diesel fleet to electric vehicles/machinery.

In addition, the proponent must assess and justify the possibility of introducing electric cabled loaders or electrically propelled haulage trucks with a trolley system.

Response 15:

As mentioned in the response to QC-14, when Hydro-Québec issues a notice of peak demand (known as load shedding) during the winter, WMG will have to contribute to reducing power demand in Quebec by reducing its demand for electrical energy. Hydro-Québec's interruptible electricity option, which WMG has signed up for, requires a 30% reduction in electricity demand. During these periods of high electricity demand in the province, WMG will implement various measures to reduce its electricity consumption. It should be noted that these periods rarely exceed 30 hours per year.

To limit the impact on production, WMG has already identified a number of actions that will be taken. Among other things, a reduction in mining activities and tailings processing is envisaged. During this period, WMG will reduce its consumption by at least 30% of its normal consumption by minimizing electrical heating of buildings, reducing or halting production of certain mining and tailings processing activities, or maximizing maintenance periods. Despite all these initiatives, it is possible that the 30% reduction will not be achieved given that load shedding periods normally occur during very cold weather. Starting up the generators during these periods will enable reliability tests to be carried out, and will support Hydro-Québec during high electricity demand by producing around 6 MW of power. Testing is also required on an annual and monthly basis (ref CSA C282:19). Wherever possible, these tests will be combined with load-shedding periods to reduce GHGs.

Until January 19, 2024, the Windfall site was powered by diesel generators. Since commissioning of the interconnection with the Hydro-Québec network (69 kV line), the generators have been shut down. The plan is to retain these existing generators to provide back-up power in the event of a Hydro-Québec power failure or breakage on the 69 kV line. However, the generators and associated diesel tanks will have to be relocated to a new area of the site, closer to critical infrastructure (process and service buildings). The new location of generators and diesel tanks has been provided in Addendum 1 (Map 1–2), and further details are given in Section 1.3.5.5.

As far as mobile equipment is concerned, tests carried out by Gold Fields (one of WMG's two partners) have shown the difficulties of introducing battery-powered vehicles in underground mines, from both an efficiency and maintenance point of view (Appendix RQC15). Battery performance has a major impact on the availability of large-capacity trucks (+40 tonnes). In the Gold Fields tests, the availability of electric trucks was 56%, compared with 89% for equivalent diesel vehicles. The assessment showed a difference between the perception of technological advancement versus the actual level achievable through vehicle technology. It should be noted that people's perceptions were positive, but that the technology tested for electric vehicles was not sufficiently mature to be implemented on a large scale. The performance, endurance, and costs of diesel equipment remain more competitive. Despite the difficulties encountered, WMG intends to continue the availability analyses associated with improving this technology.

Equipment manufacturers admit that there will be no radical change in the near future (Appendix RQC15). As the energy block allocated to the Windfall site was limited by Hydro-Québec, the focus was on maximizing electrical energy consumption and minimizing all other energy sources. Given that the lifespan of mobile equipment is up to 10–12 years, and in light of the projected lifespan of the mine, assessing the capacity of the current transmission line to demonstrate that WMG would be able to convert the diesel fleet to electric vehicles has not been addressed, but would certainly need to be if the mine were to extend beyond the currently projected lifespan.
As the electrical equipment required for underground mining is not yet available on the market, technical information enabling a thorough and reliable assessment remains difficult to obtain. Once the technical inputs are available, the needs assessment will be addressed, probably in a subsequent phase of the project.

WMG also examined the feasibility of introducing cabled loaders and haulage trucks using electric propulsion. To the best of the company's knowledge, underground cable loaders are not currently available on the market. WMG will continue to be on the lookout for opportunities once they have been tested and brought to market. Technology for an electric-powered haulage truck is also under development. The haulage truck used with a trolley system, however, has a smaller capacity (42 tonnes) and does not meet WMG's requirement for a higher capacity of between 50 and 60 tonnes. Once again, WMG is keeping abreast of industry developments and the latest technological advances in the field so that it can incorporate these possibilities into future plans for the site.

QC-16
Environmental Impact Assessment, Page 3-99, Volume 1a, Section 3.8.8
Energy supply:

The proponent must submit a table summarizing its energy requirements for each phase of the project, specifying the percentage of its project that will be supplied by hydroelectricity, fossil fuels, or any other energy source (wind, solar, etc.). The proponent must demonstrate how it plans to progressively reduce the use of fuels on site, and indicate how much energy will be required for the mine to be powered by 100% renewable energy.

Response 16:

Initial energy balance

Table RQC16-1 below illustrates the anticipated peak energy demand during the various years of construction and operation of the Windfall site. The list of electrical loads used is for design and engineering purposes. The maximum load is appropriate to understand the maximum load at the mine site but should not be taken as an annual average. Also, copper losses for transformers and the power line to the Mico substation, equivalent to approximately 7% of the maximum load, are included.

Current loads at the Windfall site are approximately 3 MW in electrical energy. In early 2025, energy requirements will increase with the commissioning of the advanced exploration phase water treatment plant and the start of construction activities later in that year. The peak in energy consumption is expected to occur in 2032, when the last ventilation raise for the underground infrastructure is commissioned.

The propane and diesel consumptions presented in the table below are those estimated as an annual average in the GHG study provided in Addendum 1 (vol. 1, appendix 1-5). It is important to consider, for propane, that this annual value smooths the consumption for heating throughout the months of the year. It should be noted that winter consumption will be much higher than that of the summer months.

WMG's strategy includes the use of technological tools to monitor average demand to keep it as close as possible to the 27.4 MW associated with the energy block allocated by Hydro-Québec. It should be remembered that the maximum amount of energy that can be transmitted effectively over the 69 kV power line is estimated at around 35 MW.

Energy balance after application of efficiency measures

As mentioned in the response to QC-12, various improvement projects will be deployed to reduce the use of hydrocarbons on site, for example, the installation and adjustment of dual-energy heating system in all buildings to optimize electricity consumption throughout the year. As the maximum energy block is not expected to be reached before 2032, dual energy will make up for the energy not consumed from the planned electricity block during winter periods.

Another initiative is to implement Ventilation on Demand (VOD) for the underground mine ventilation system. This project would reduce the need for ventilation by around 20%, thus reducing the need for propane by the same percentage. This VOD project could represent an energy saving of up to 2.8 MW from propane heating in the underground mine.

The heat recovery loops to be installed and the heat recovery from stale air in the buildings will also contribute to the effort to reduce the use of hydrocarbons, but to a lesser extent. As mentioned in the response to QC-15, when the technology and autonomy of electric haulage vehicles with capacities of 50-60 tonnes become available, it will be possible to extend this possibility and to carry out further analyses on the subject. However, the latter is not expected before the end of the life of the mining project.

Table RQC16-2 shows the possible reduction in propane consumption with the energy-saving measures to be implemented. Thus, after application of these energy-saving measures for the Windfall project, there would be a permanent reduction in propane consumption throughout the operation phase. In fact, this represents a potential reduction in consumption of around 36% annually compared with the initial plan. It also shows an increase in the percentage of energy consumption from hydroelectricity to 64.2% in 2035, reflecting the reduction in propane consumption to 11%.

In the same study, the electrical component of dual energy accounted for a maximum of 12%. Currently, in the project, WMG foresees 56% (or 6.72 MW) of the total building heating capacity to be available as electric power. Depending on availability, WMG will be able to make up the energy not consumed from the energy block. The 15 MW of heating capacity for the building is defined at the coldest point in winter, with a temperature of -38 degrees Celsius. According to figure RQC-16-1, it would be possible to cover up to 90% of electric heating situations, depending on energy block availability. In addition to dual energy heating, the use of heat recovery will, in many cases, cover the entire requirement for 100% renewable energy heating.

Table RQC16-1 Energy balance for the Windfall project

Energy source	Units	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Diesel	Liter	13,923,042	13,148,912	9,710,260	9,517,876	9,619,279	9,553,843	9,577,623	9,539,534	9,577,677	9,512,011	9,589,763	2,594,317
Propane	Liter	5,595,336	8,805,626	11,229,016	11,397,682	11,266,634	11,439,706	11,439,706	11,455,372	11,349,027	11,018,886	10,083,954	3,129,579
Diesel	MW	15.89	15.01	11.08	10.87	10.98	10.91	10.93	10.89	10.93	10.86	10.95	2.96
Propane	MW	4.52	7.12	9.08	9.21	9.11	9.25	9.25	9.26	9.17	8.91	8.15	2.53
Electricity	MW	7.93	7.94	28.21	28.21	28.21	28.21	28.21	28.38	28.38	28.38	28.38	7.94
Diesel	%	56.1%	49.9%	22.9%	22.5%	22.7%	22.6%	22.6%	22.4%	22.6%	22.6%	23.1%	22.1%
Propane	%	16.0%	23.7%	18.8%	19.1%	18.9%	19.1%	19.1%	19.1%	18.9%	18.5%	17.2%	18.8%
Electricity	%	28.0%	26.4%	58.3%	58.4%	58.4%	58.3%	58.3%	58.5%	58.5%	58.9%	59.8%	59.1%

Table RQC16-2 Reductions associated with energy efficiency measures and impact on the energy balance for the Windfall project

Energy source	Units	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Diesel	Liter	9,710,260	9,517,876	9,619,279	9,553,843	9,577,623	9,539,534	9,577,677	9,512,011	9,589,763	2,594,317
Propane without reduction measures	Liter	11,229,016	11,397,682	11,266,634	11,439,706	11,439,706	11,455,372	11,349,027	11,018,886	10,083,954	3,129,579
Propane saving	Liter	-4,086,508	-4,086,508	-4,086,508	-4,086,508	-4,086,508	-4,086,508	-4,086,508	-4,086,508	-4,086,508	-1,267,480
Propane with reduction measures	Liter	7,142,508	7,311,174	7,180,126	7,353,198	7,353,198	7,368,864	7,262,519	6,932,378	5,997,446	1,862,099
Diesel	MW	11.08	10.87	10.98	10.91	10.93	10.89	10.93	10.86	10.95	2.96
Propane	MW	5.77	5.91	5.80	5.94	5.94	5.96	5.87	5.60	4.85	1.51
Electricity	MW	28.21	28.21	28.21	28.21	28.21	28.38	28.38	28.38	28.38	7.94
Diesel	%	24.6%	24.2%	24.4%	24.2%	24.3%	24.1%	24.2%	24.2%	24.8%	23.9%
Propane	%	12.8%	13.1%	12.9%	13.2%	13.2%	13.2%	13.0%	12.5%	11.0%	12.2%
Electricity	%	62.6%	62.7%	62.7%	62.6%	62.6%	62.8%	62.8%	63.3%	64.2%	64.0%

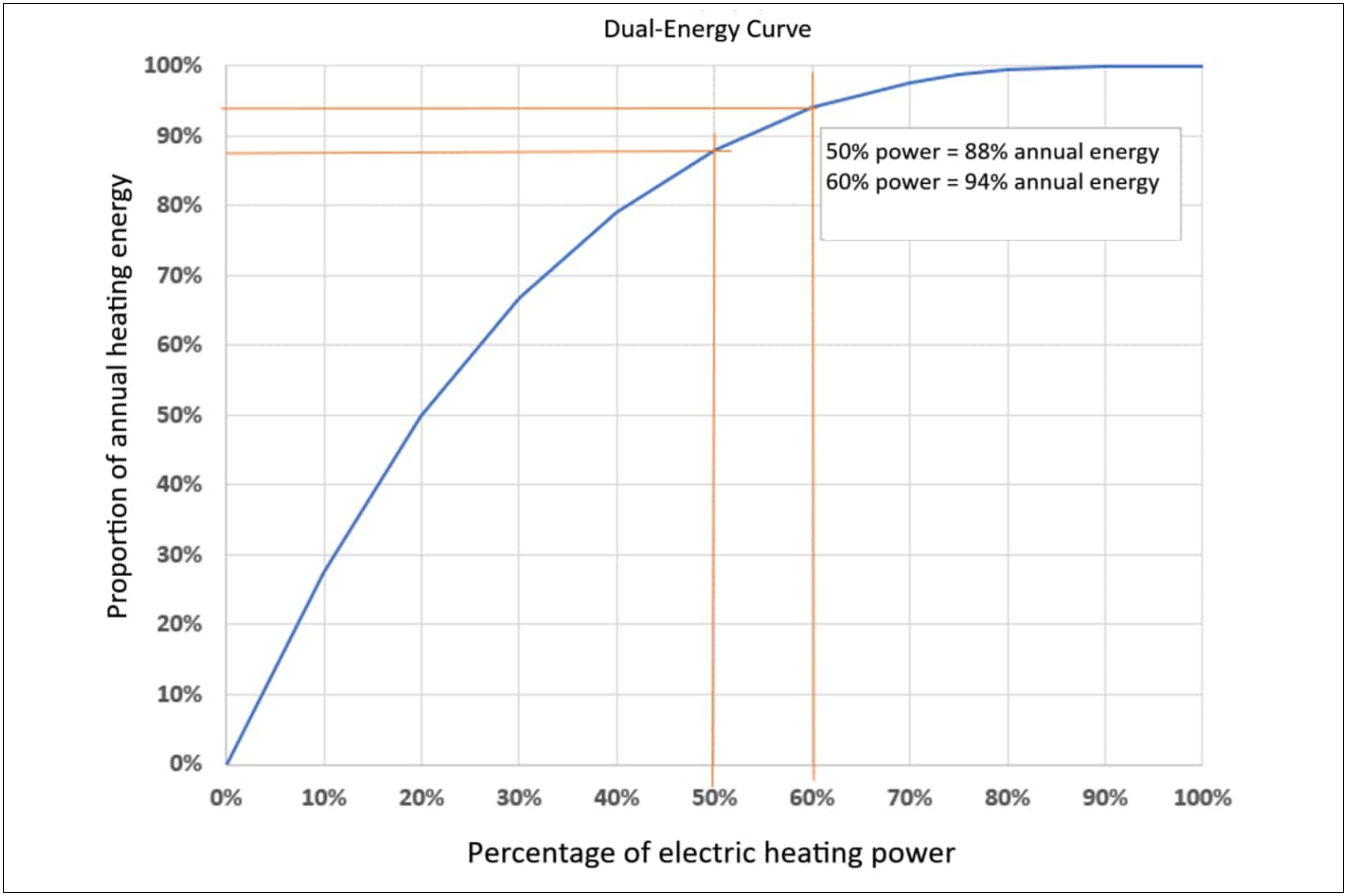


Figure RQC16-1 Proportion of electric heating versus annual heating requirements

Regarding the second part of the question, an average of 9 MW per year would be required to replace propane needs, including fresh-air underground heating, and about 11 MW to replace diesel vehicle needs, for the mine to be entirely powered by renewable energy sources (Table RQC-16-2). Theoretically, therefore, an additional 20 MW of renewable energy would be required on average throughout the year.

However, this is unrealistic for several reasons, as mentioned in the answers to QC-14 and QC-15. The main reason being that no North American underground mine in a northern climate uses heating from electricity for the underground. Heating the underground mine accounts for the bulk of propane consumption, with a peak requirement of 22.8 MW to provide ventilation raise heating if a temperature of -38 Celsius was reached, and an average consumption of 11 MW during the winter period. The size of such a system, its cost and the installation of electrical heating equipment are unthinkable in these conditions, not to mention the electrical load shedding required from Hydro-Quebec at the coldest and worst possible moment.

It should be recalled once again that the diesel-powered underground mining equipment needed for operations, such as haulage trucks, is not yet available for the sizing of the equipment required and represents the 11 MW of diesel energy listed above. This is therefore not feasible in the medium term.

In summary, with the energy efficiency measures that will be deployed, this will increase the contribution of renewable energy from 58.5% to 62.8% by 2032, at maximum consumption. It is important to note that these figures are subject to revision, since with a demand management system deployed in real time at the site, WMG should achieve better performance than that modelled or based on theoretical design, since it is unlikely that all equipment will be operating at once. Nevertheless, it is not realistic at present to foresee an operation using 100% renewable energy, but WMG will keep a technology watch to identify any changes that could increase energy efficiency and maximize the use of energy from renewable sources. In conclusion, to the best of WMG's knowledge, only one open pit mine had set itself the target of being 100% electric when it opened, and had to resort to mobile equipment using non-renewable energy sources at the end. However, beyond the lifetime of the mine, and with technological advances in both mobile equipment and electricity storage technologies, there is reason to believe that the proportion of renewable energy used could continue to increase.

1.4 Transport and road safety

QC-17
Environmental Impact Assessment, Page 8-86, Volume 1b, Section 8.7.1
Current conditions:

The proponent must clarify the description provided of the road infrastructure used. It is recommended that it use Données Québec's Road Network - RTSS dataset to adequately describe the area's road infrastructure. It should be noted that Routes 113 and 167 run from Senneterre through the Jamésie region to the Saguenay-Lac-Saint-Jean region.

The proponent must also identify which section of the road is under the responsibility of the Société de développement de la Baie-James (SDBJ), Transports et Mobilité durable du Québec (MTMD) or others, and describe how it plans to comply with road standards.

Response 17:

At the provincial level, the road infrastructure used to access the Windfall site would be entirely under the responsibility of MTMD, depending on the type of transport, defined as follows.

For freight transport:

- from Québec, Route 175N, then Route 167N to the intersection at Chibougamau, and finally Route 113S to Lebel-sur-Quévillon;
- from the Port of Montréal, the A25N, then the 640O, the A15N, the 117N, and finally the 113N to Lebel-sur-Quévillon;
- from Ontario, via Route 117S and then Route 113N to Lebel-sur-Quévillon.

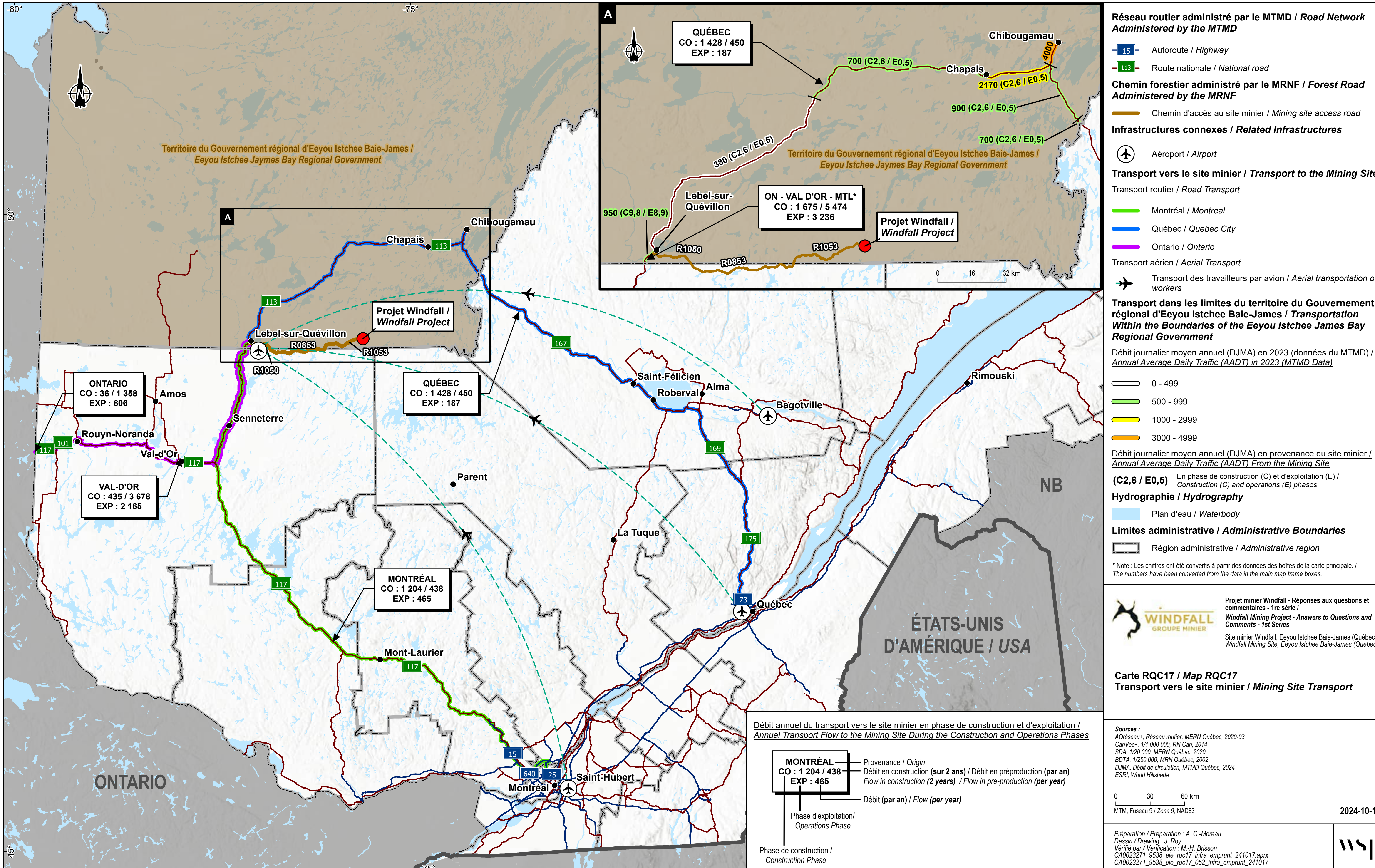
For transporting workers:

- from Rouyn-Noranda, Val-d'Or, and Senneterre, Route 113N to Lebel-sur-Quévillon;
- from Chibougamau, Chapais, and Waswanipi, Route 113S to Lebel-sur-Quévillon.

None of the above routes are under the responsibility of the SDBJ. With regard to compliance with road standards, this subject is covered in the response to QC-22.

Map RQC17 shows the road infrastructure used during the various phases of the project.

At the regional level, the Windfall site is currently accessible by way of a 115 km gravel road that starts on Chemin du Moulin, southeast of Lebel-sur-Quévillon (main access road). Access is via Grade 1 forestry roads, the R1000 (R1050) for 10 km up to kilometre 12, and the R5000 (R0853) for 55 km up to kilometre 66, then a 47 km stretch of Grade 2 forestry road, the R6000 (R1053), up to kilometre 112 (Windfall camp). The main access road is the responsibility of the Ministère des Ressources naturelles et des Forêts (MRNF).



La précision des limites et des mesures montrées sur ce document ne doivent pas servir à des fins d'ingénierie ou de délimitation foncière. Aucune analyse foncière n'a été effectuée par un arpenteur-géomètre. / Boundary accuracy and measurements shown on this document are not to be used for engineering or land delineation purposes. No land analysis was carried out by a land surveyor.

QC-18 **Environmental Impact Assessment, Page 3-99, Volume 1a, Section 3.8.7** **Traffic:** According to the proponent, heavy vehicles will make 3,200 trips between the Port of Montréal and the project site during the construction phase (Table 3-29). The proponent must provide a detailed description of the types of vehicles used, including the width of the trailer with load, and the total length and weight of the vehicle.

Response 18:

During the construction phase, WMG will ensure compliance with the rules set by the MTMD governing the types of vehicles used, overall length, total weight, and load dimensions.

Initially, 3,200 heavy vehicle trips were estimated at the feasibility phase to deliver all the parts and materials needed to build the project. These trips had all been listed as departing from the Port of Montréal for the purpose of calculating indirect GHG emissions from transport during the construction phase. This estimate has been reviewed as the project has progressed and is subject to change. Details of transport departures are provided in Table RQC18-1.

Table RQC18-1 Segment of MTMD road used for the construction phase

Departure point to Windfall	Number
Montréal	1,205
Ontario	36
Québec	1,428
Val d'Or	435
Grand total	**3,104**

Parts from outside the country will be shipped to the Port of Montréal and then trucked to Windfall. Some other parts will be transported by land from the United States, Ontario, or Western Canada. Depending on their point of origin, they were considered to have arrived via Ontario, Montréal, or Québec. Also, parts entering by railway (mainly those arriving from Asia via the Port of Vancouver) have been categorized as leaving by road from Montréal.

Apart from the foreign suppliers who will provide the specialized process equipment, the vast majority of suppliers contributing to the project will be from the province of Quebec (91% of trips). Based on their cities of origin, the departures were designated as being from Montréal, Québec, Val d'Or, or Ontario (for those arriving from west of Abitibi). Overall, around half of the trips will originate in Québec (46%), while 39% will originate in Montréal. Lastly, trips within the Abitibi region will account for around 15%.

Table RQC18-2 summarizes all the transport-related categories. The number of trips required to transport mechanical process equipment (24%), concrete (14%), diesel (14%), various parts (13%), and structural components (11%) represent the highest totals. The rest of the trips involve transport of other categories.

Table RQC18-2 Number of trips by category for delivery of parts and materials to the project—Construction phase

Category	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Total	%
Camp and infrastructure	70	75	80	0	0	0	0	0	225	7.2%
Civil works	32	0	0	0	0	0	0	0	32	1.0%
Concrete	40	125	120	120	40	0	0	0	445	14.3%
Structural	50	125	125	25	0	0	0	0	325	10.5%
Mechanical process equipment	3	79	39	189	297	88	18	17	730	23.5%
Mechanical garage equipment	25	50	25	0	0	0	0	25	125	4.0%
Piping	10	0	40	40	30	0	0	0	120	3.9%
Electrical equipment and power lines	30	58	30	5	52	1	0	0	176	5.7%
Automation	0	12	12	11	4	0	0	0	39	1.3%
Telecommunications	0	2	2	0	0	0	0	0	4	0.1%
Fire protection	0	0	0	25	15	0	0	0	40	1.3%
Deliveries of various parts	40	80	80	80	40	40	40	0	400	12.9%
Diesel	60	60	60	60	53	50	50	50	443	14.3%
TOTAL	**360**	**666**	**613**	**555**	**531**	**179**	**108**	**92**	**3 104**	**100%**

The number of oversize or heavy haul trips is 859 out of 3,104, or 28% of the total. Table RQC18-3 provides details of each MTMD transport class and the corresponding number. Classes 1 and 2 account for around 73% of the total number of oversize or heavy haul trips, which is consistent with the situation in Quebec, where most of these are in Classes 1 and 2. Prefabricated buildings like those in the workers' camp are Class 2. Details of additional classes are given below:

- Class 5: Transport in excess of established weight standards.
- Class 6: Transport in excess of established weight standards, for which expert advice must be obtained from the MTMD.
- Class 7: Transport in excess of size standards, for which expert advice must be obtained from the MTMD.

Table RQC18-3 MTMD transport class with corresponding number of oversize haul trips—Construction phase

MTMD transport class	Nombre
1	383
2	245
5	70
6	77
7	84
Total	**859**

The dimensions of non-standard hauls are listed in Table RQC18-4. Oversize haul trips of prefabricated camp buildings and structural steel were the most numerous, with 245 and 250 trips respectively. It should be noted that some of the lengths listed for the haul loads do not exceed the limit, but the load is considered non-standard due to its weight.

Tableau RQC18-4 Dimensions of non-standard loads—Construction phase

Equipment transported	Dimensions (length x width x height in metres)	Number
Precast concrete	3.5 × 3.5 × 3.5	40
Pebble crusher	3.65 × 3.65 × 3.2	12
Milling station	5.25 × 4.2 × 3.75	60
Milling equipment	5.7 × 2.8 × 3.0	5
Ball mill	5.78 × 5.78 × 3.40	35
Semi-autogenous grinding mill	5.93 × 5.93 × 2.21	25
Semi-autogenous grinding screen	6.5 × 3.65 × 2.6	1
Electrical transformer	7.85 × 3.9 × 280	4
Water recovery barge	8 × 3.5 × 3.5	2
Mobile equipment	9.1 × 3.95 × 3.9	20
Crushed ore silo	15 × 3 × 3	15
Thickener	15 × 4.4 × 3.0	28
Leaching tanks, steel	18 × 3.5 × 3.5	55
Binder silo	18 × 4.2 × 3.9	2
Prefabricated building	18.2 × 4.2 × 3.90	6
Permanent camp and temporary trailer	18.3 × 3.7 × 3.85	245
Structural steel	20 × 2.4 × 2.4	250
Electrical utility pole	24 × 2.4 × 2.4	30
Crane	33.1 × 3.2 × 2.5	24
	Total	**859**

Table RQC18-5 shows the number of oversized or overweight vehicles by weight. The weight of some vehicles remains unavailable despite efforts to determine it, simply because the technical specifications have not yet been finalized. Table RQC18-5 shows the vehicle weights. Some of the weights listed below do not exceed the limit, but are still considered non-standard due to their length.

Table RQC18-5 Weight of oversized or overweight vehicles—Construction phase

Weight (kg)	Number
12,000	28
13,500	20
14,000	225
15,000	79
24,000	1
30,000	32
32,000	60
33,000	25
35,000	41
36,000	4

Weight (kg)	Number
38,000	2
43,850	5
55,000	40
Not available	297
Total	**859**

Finally, a detailed description of the types of vehicles used and the preliminary transport management plan for each phase of the project are provided in the response to QC-22.

QC-19
Environmental Impact Assessment, Page 3-99, Volume 1a, Section 3.8.7
Traffic:

In Table 3-24 on Page 3-84, cement is listed as a reagent that would be delivered approximately 26 times per week in a quantity of 40 t over the 10 years of the mine's operation. Over the course of a year, cement transport is equivalent to 1,346 one-way trips by 40-t truck, which is more than the number of trips listed by the proponent in sections 3.8.1 and 3.8.7. The proponent must explain this discrepancy in the number of trips to the project site and provide a revised version of the relevant sections of its study, if applicable. Furthermore, Table 3-29 shows the transportation of process inputs and fuel. The proponent must specify whether trips to transport these goods are included in the calculation of total round trips.

Response 19:

A revision of Table 3-29 was presented in Addendum 1 (Vol. 1, Appendix 1-5) in the project's GHG emissions estimate. Table RQC19-1 is an update of Tables 11 and 15 presented in Addendum 1 (they have been combined into one). This table shows all the trips planned for the project, by year.

Table RQC19-1 Number of trips by type of transport during construction and operations phases

Type of transport	Number of trips											
	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Materials and equipment	2 194	910	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fuel	537	592	405	397	401	399	400	398	400	397	400	109
Explosives	60	104	156	156	156	156	156	156	156	156	156	43
Propane	104	164	208	212	209	212	212	213	211	205	187	58
Plant process input	0	229	454	454	454	454	454	455	454	454	454	124
WTP	30	110	112	112	112	112	112	112	112	112	112	31
Shotcrete cement	0	156	156	156	156	156	156	156	156	156	156	156
Cemented rockfill (CRF)	0	265	239	84	65	91	82	83	92	90	92	27

Type of transport	Number of trips											
	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Cemented paste backfill	0	0	239	476	369	513	465	468	521	508	516	148
Service camp	104	104	78	78	78	78	78	78	78	78	78	21
Workers' buses	530	682	530	530	530	530	530	530	530	530	530	158
General deliveries	376	342	285	259	259	259	259	259	259	259	259	77
Parts deliveries	730	730	548	548	548	548	548	548	548	548	548	150
Residual materials	551	551	380	380	380	380	380	380	380	380	380	113

Legend : Construction | Operations | Pre-production | Combined construction and pre-production

Details of trips involving materials and equipment during the construction phase are provided in the response to QC-18. In addition, information on trips involving residual materials is presented in the response to QC-89. Process inputs for the process and filtration plants are detailed in Table RQC19-2, which is an update of Tables 3-12 and 3-24 in the EIA (Vol. 1A) (combined in a single table). The number of annual trips for these inputs is 454.

Table RQC19-2 Annual use of process inputs from the process and filtration plants during operations

Product	Sector	Consumption (t/year)	Inventory		Delivery		
			Quantity (t)	Storage type	Truck capacity (t)	Type of delivery	Number of trucks
Quicklime	Process plant (5)	5,070	79	79 t silo	36	Bulk	141
Lead nitrate	Process plant (5)	447	34	34 × 1,000 kg Super Sacks	20	Bags	22
Sodium cyanide	Process plant (5)	1,525	113	100 m^3 bulk tank	33	Bulk	46
Caustic soda	Process plant (7a)	529	54	35 m^3 bulk tank	32	Bulk	17
Hydrochloric acid 28%	Process plant (7a)	919	58	50 m^3 bulk tank	20	Bulk	46
Flocculant (polishing)	Process plant (4)	45	1.5	2 × 750 kg Super Sacks	20	Bags	2
Flocculent (filtration)	Filtration plant	283	2.3	3 × 750 kg Super Sacks	20	Bags	14
25% anti-scaling agent	Process plant (6)	30	4	4 totes of 1 m^3 each	20	Container	2
Activated carbon	Process plant (6)	79	11	22 × 500 kg Super Sacks	20	Bags	4
Liquid SO_2	Process plant (7b)	1,172	50	36 m^3 bulk tank	30	Bulk	39

Product	Sector	Consumption (t/year)	Inventory		Delivery		
			Quantity (t)	Storage type	Truck capacity (t)	Type of delivery	Number of trucks
Copper sulphate	Process plant (7b)	74	2.5	2 × 1,250 kg Super Sacks	20	Bags	4
Sodium salts	Process plant (5)	7	0.5	20 × 25 kg bags	20	Bags	1
Refining fluxes	Process plant (7a)	5	0.5	20 × 25 kg bags	20	Bags	3
2″ mill balls	Process plant (2)	2,065	70	Hoppers	30	Bulk	69
5″ mill balls	Process plant (2)	1,153	70	Hoppers	30	Bulk	38

The number of trips involving different types of cement was calculated by factoring in planned usage (Table RQC19-3) and transport to the site with 40-tonne trucks.

Table RQC19-3 Cement usage in tonnes during pre-production and operations

Type of cement	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Cemented rockfill (CRF)	10,580	9,532	3,357	2,600	3,615	3,276	3,297	3,676	3,582	3,641	1,068
Cemented paste backfill	0	9,532	19,022	14,732	20,483	18,563	18,681	20,829	20,300	20,630	6,054
Shotcrete cement	6,205	6,205	6,205	6,205	6,205	6,205	6,205	6,205	6,205	6,205	6,205

Inputs for general and parts deliveries are shown in Table RQC19-4 below.

Table RQC19-4 Number of general and parts delivery trips during pre-production and operations

Type of delivery	Description	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
General deliveries	Acetylene and other cylinders	26	26	26	26	26	26	26	26	26	26	26
	Wood	26	26	26	0	0	0	0	0	0	0	0
	Oils and greases	52	52	52	52	52	52	52	52	52	52	52
	Ventilation ducts & accessories	13	13	13	13	13	13	13	13	13	13	13
	Pipes, hoses, and fittings	52	52	52	52	52	52	52	52	52	52	52
	Field control equipment	26	26	26	26	26	26	26	26	26	26	26
	Mine wire mesh	26	26	26	26	26	26	26	26	26	26	26
	Mobile equipment	123	57	0	0	0	0	0	0	0	0	0
	Tire repairs	26	52	52	52	52	52	52	52	52	52	52

Type of delivery	Description	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
	Bucket maintenance & repair	6	12	12	12	12	12	12	12	12	12	12
Parts delivery	Consolidation of equipment in one trailer	730	730	548	548	548	548	548	548	548	548	548

WMG estimates that there will be an average of 14 trucks per day during the construction phase, and 10 trucks per day during the operations phase. Sections 3.8.1 and 3.8.7 have not been revised in their entirety as the information presented in this response provides more detail than the content of those sections. However, it should be remembered that the values extracted from the counting survey carried out on forestry roads and presented in Section 8.7.1 of the EIA (Vol. 1B) show an average of 17 truck trips per day on forestry roads, with a maximum of four per hour. Of these, based on data from the gatehouse at the Windfall site, between seven and ten would have been attributable to deliveries to the site. Thus, the marginal daily increase, as assessed above, will not represent a major change for road users.

QC-20
Environmental Impact Assessment, Page 4-11, Volume 1b, Section 4.3.1
Indigenous communities;
Environmental Impact Assessment, Page 4-47, Volume 1b, Section 4.8
Issues arising from EIA consultations:

Two recent road accidents on the access road, including a diesel spill into the Wetetnagami River, have raised a great deal of concern in the Waswanipi community. Also, as mentioned in Section 4.3.1, “Various members of the community are concerned that workers and contractors are not respecting speed limits on the roads for the safety of all users and the environment (risk of accidents with wildlife or other vehicles, dust, and spills.)” The proponent must describe the mitigation measures proposed to address these transportation-related community concerns.

Road traffic is expected to increase during mine operations. A traffic impact assessment was carried out for herpetofauna and other animals, but not for human health impacts. The proponent must identify hazards and provide a risk assessment for driving on roads used by vehicles directly connected to the mine (e.g., the road between Lebel-sur-Quévillon and the mine site). The proponent must use the results of this assessment to propose and implement additional risk mitigation measures.

Response 20:

During the various citizen and community relations activities organized, WMG noted the following concerns from First Nation and non-First Nation users regarding project-related transportation issues during the construction and operations phases:

- accidental spills that may occur during transport and their impact on the environment, particularly on water;
- the safety of road users, risk of accidents and damage to vehicles, loss of visibility due to dust;
- the loss of peace and quiet due to noise, dust, and vibration for users close to the Windfall site;
- the impact of dust raised by trucks on wildlife, plants, water, and human health;

- the impact of noise and vibrations on wildlife, in particular on the movement of animals, for users close to the Windfall site;
- the risk of collision with wildlife.

Specifically concerning the risk of accidental spills of hydrocarbons, contaminants, or hazardous materials, the procedures for transporting chemicals will comply with the Transportation of Dangerous Goods Regulations and the *Guide sur le transport des matières dangereuses* (Direction générale de la sécurité et du camionnage, 2019); Hazardous materials will be placed in compliant, leak-proof containers to limit the risk of a spill should they be tipped over during transport. Furthermore, in the event of a road accident and a spill of hydrocarbons or any other noxious substance, the MELCCFP alert network (1-866-694-5454) will be notified without delay. If the spill reaches a body of water, Environment and Climate Change Canada (1-866-283-2333) will also be notified. All contaminant spills will be dealt with immediately to contain and recover the spilled products. Contaminated soil must be removed and disposed of at an authorized site, and a characterization must be carried out in accordance with MELCCFP's *Politique de protection des sols et de réhabilitation des terrains contaminés* (Measure QUA26). It will be the responsibility of contractors and carriers to report spills to the responsible authorities. They must have the necessary insurance to cover the costs of environmental or road accidents. However, the WMG response team (first responders and firefighters) will always respond during an emergency call to minimize the impact and rescue the injured, if necessary.

As for identifying the risks associated with driving on roads used by vehicles leading to the Windfall site, sharing the road with other users is managed via a radio system that allows users to call in every 5 km and thus avoid passing unannounced vehicles, a particularly important measure during hunting season. Signs at forestry road entrances displaying the WMG radio frequency have already been installed. It should be noted that anyone can currently purchase radios at the Lebel-sur-Quévillon convenience store to use the WMG radio frequencies. WMG has provided a transport management plan (Appendix RQC22) detailing the planned road safety measures (speed control, installation of radar speed signs, roadside checks, traffic procedures, freeze-thaw procedures, hunting procedures) and emergency measures.

To address these concerns and minimize the project's impact on the quality of life and well-being of cottagers and land users, WMG has proposed the following mitigation measures:

- VIE 01 - Maintain ongoing dialogue with targeted stakeholders and local communities.
- VIE 03 - Establish a system for handling complaints and comments.
- VIE 02 - Raise awareness among workers, subcontractors, and transporters of the need to comply with road rules on the main road and the WMG access procedure for forestry roads.
- UTT 02 - Maintain a collaborative communication approach to inform key land users of the start and progress of the work.
- P 02 - During the orientation training, make employees aware of the species with special status that can be observed on the Windfall site. As part of the forest road traffic procedure, large wildlife signage will be added.
- P 14 - Inform the public about the progress of the project, upcoming major work, environmental impacts and preventive measures to mitigate them, as well as safety measures in place.
- P 15 - Continue to raise awareness of all non-First Nations workers and contractors on Cree culture and traditional practices during the orientation meetings and subsequent training activities for supervisors.

- P 18 - Continue to assist land users near the Windfall site with road safety issues.
- P 19: Establish a new Environmental Monitoring Committee, the terms of which will be specified in the IBA, to discuss and determine solutions to the issues that may arise during the mine's phases.
- INF 01 - Continue to ensure that road maintenance is carried out during operations to remove any accumulation of loose material or other debris.
- FAU 04 - Mark areas of high risk of collision with large wildlife with appropriate signage.

It should be noted that appropriate signage is already used, particularly for speed limits, and traffic is currently only permitted between 6 a.m. and 6 p.m. on the main access road. However, it should be noted that traffic hours may be extended in exceptional situations (e.g., weather-related flight delays) as provided for in the Procedure. The radio system can be used to announce extended traffic hours so as to warn other road users.

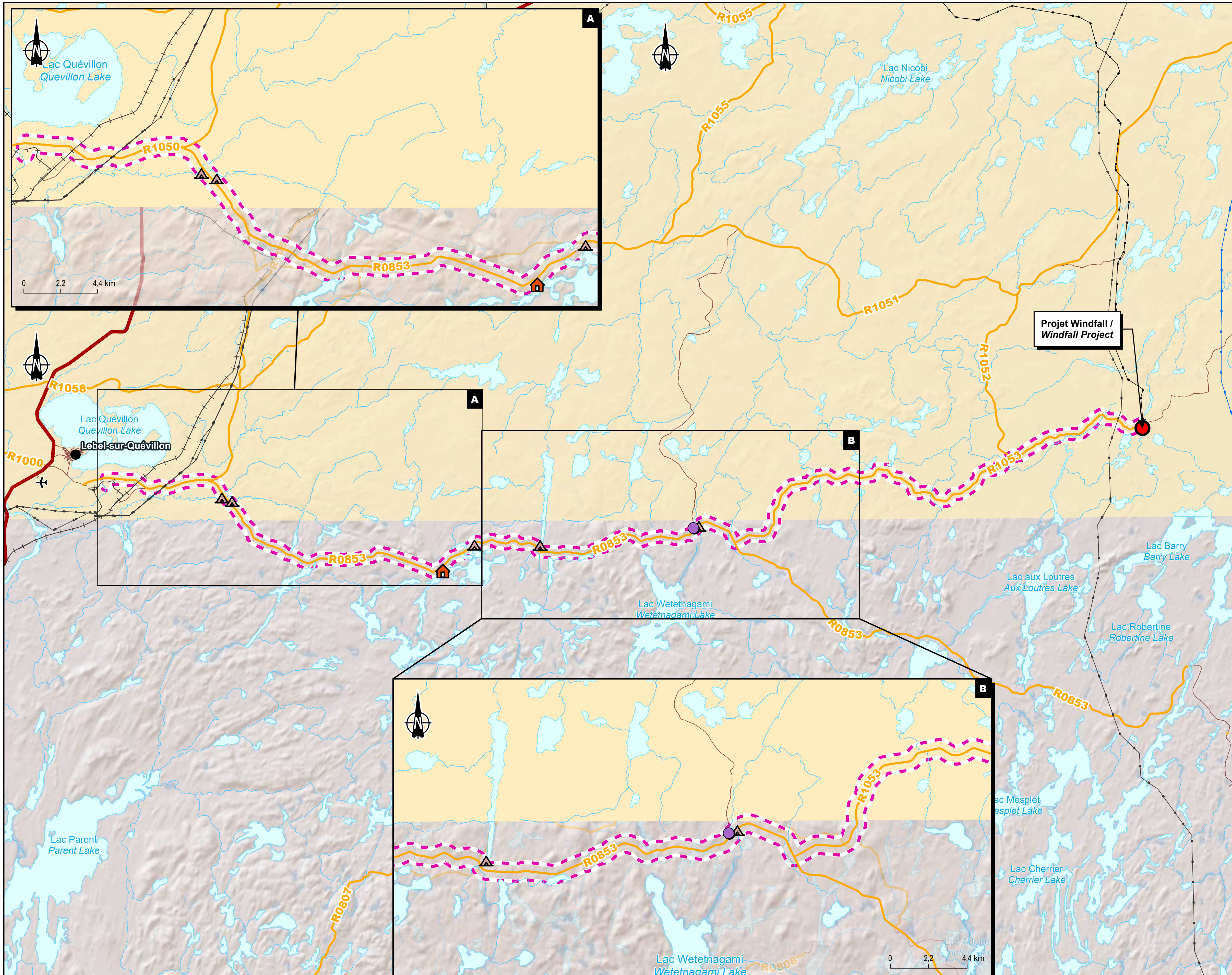
However, it should be mentioned that the increase in traffic on the roads also depends on other businesses in the area, which could also experience an increase in their activities, and this traffic could vary over time.

On the other hand, it should also be considered that WMG's presence can increase the feeling of safety for users since the mine grades and clears snow from the road, which ensures a good quality road surface. It also sees to roadside brush clearing to ensure better visibility. In addition, at the meeting held in Lebel-sur-Quévillon on January 31, 2023, non-First Nation users of the road mentioned that since the WMG's arrival, the road had never been in such good condition. They believed that the access was safer than before because of the frequency with which the road was maintained.

Depending on the concerns that WMG may receive via its complaints handling mechanism, other measures could be considered to reduce the risks.

In addition, as shown on Map RQC20, leases for vacationing purposes and for lodging purposes at an outfitting operation are recorded 500 m either side of the 115 km of forestry roads concerned (R1050 [R1000], R0853 [R5000], and R1053 [R6000]):

- 1 lease for vacationing purposes;
- 0 leases for lodging at an outfitter;
- 0 Cree community camps.



Baux de villégiature / ***Vacation leases***

- Fins d'abri sommaire en forêt / *Temporary forest shelter*
- Fins de villégiature / *For vacationing purposes*
- Autres fins / *Other purposes*

Infrastructures connexes / ***Related Infrastructures***

- Aéroport / *Airport*
- Deux lignes parallèles de transport d'énergie électrique / *Two parallel power transmission lines*
- Ligne de transport d'énergie électrique / *Electric power transmission line*

Réseaux ferroviaire / ***Railway networks***

- Chemin de fer / *Railway*

Réseaux routier / ***Road networks***

- Route nationale / *National road*
- Route régionale / *Regional road*
- Zone tampon de 500 m de la route d'accès / *500 m buffer zone of the access road*

Territoire conventionné (CBJNQ) / ***Territory under agreement (JBNQA)***

- Terre de catégorie I / *Category I lands*
- Terre de catégorie II / *Category II lands*
- Terre de catégorie III / *Category III lands*

WINDFALL GROUPE MINIER

Projet minier Windfall - Réponses aux questions et commentaires - 1re série /
Windfall Mining Project - Answers to Questions and Comments - 1st Series

Site minier Windfall, Eeyou Istchee Baie-James (Québec) / *Windfall Mining Site, Eeyou Istchee Baie-James (Quebec)*

Carte RQC20 / *Map RQC20*
Baux à proximité des chemins forestiers /
Land Leases Near Forest Roads

Sources :
SDA, 1/20 000, MRNF, 2019-01
CanVec, 1/50 000, RNCan, 2012
BDTA, 1/250 000, MRN, 2001
AQréseau+, Réseau routier, MERN Québec, 2020-03
Baux de villégiature, MRNF, 2022-11-15
Contraintes et exclusions, GESTIM, 2024-06-10

0 3,5 7 km
MTM, Fuseau 9 / *Zone 9*, NAD83

2024-10-16

Préparation / Preparation : A. Cordisco-Moreau
Dessin / Drawing : V. Venne
Vérifié par / Verification : M.-H. Brisson
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CA0023271_9538_eie_rqc020_016_Baux_241016

wsp

La précision des limites et les mesures montrées sur ce document ne doivent pas servir à des fins d'ingénierie ou de délimitation foncière. Aucune analyse foncière n'a été effectuée par un arpenteur-géomètre. / Boundary accuracy and measurements shown on this document are not to be used for engineering or land delineation purposes. No land analysis was carried out by a land surveyor.

It should be noted that the intensity of traffic-related health effects is dependent on exposure and frequency. Considering the small number of cottagers located on either side of the forestry roads and the number of trips planned as part of the project (see responses to QC-18 and QC-19), the measures initially proposed and those listed in the transportation management plan presented in the response to QC-22 were deemed sufficient.

In addition, the communication mechanisms in place will also make it possible to continue communicating information about the mine's activities, and to gather the concerns of tallymen, cottagers, and land users. The potential effects on the cottagers' health remain very low.

Reference :

Ministère des Transports (MTQ), 2019. *Guide sur le transport des matières dangereuses.* Direction générale de la sécurité et du camionnage, édition 2019. ISBN 978-2-550-83455-7. 60 p.

QC-21
Environmental Impact Assessment, Page 3-99, Volume 1a, Section 3.8.7
Traffic:

Certain recurring concerns about the cumulative effects of transportation on the Eeyou Istchee James Bay territory for this type of project must be taken into account by the proponent. The proponent must detail the cumulative effects that the contribution of its project will have, particularly for heavy transportation during all phases of the project.

Response 21:

Eeyou Istchee James Bay is crossed by Provincial Route 113 (Map RQC17). Toward the northeast, it connects Lebel-sur-Quévillon to Route 167, passing through Waswanipi and Chapais. The northern end of Route 113 connects with Route 167 to either Chibougamau or the Saguenay-Lac St. Jean region. The southern section of Route 113 links Lebel-sur-Quévillon with Senneterre. To the south, Route 113 then intercepts Route 117 beyond the Eeyou Istchee James Bay Territory, providing access to the Montréal metropolitan region (117S) or to the province of Ontario via the towns of Val d'Or and Rouyn-Noranda (117N).

The roads in Eeyou Istchee James Bay that are used for transport are:

- from Québec, Route 113 (sections 0011331500, 0011333000, 0011336000, and 0011342500) and Route 167 (sections 0016740000 and 0016737500 [partially]);
- from Montréal, Route 113, section 001328500 (partially).

According to data from the Ministère des Transports et de la Mobilité durable, on the segment between the junction of Route 397 and Lebel-sur-Quévillon, the annual average daily traffic (AADT) is 950 vehicles. In 2023, on the segment of Route 113 between Lebel-sur-Quévillon and Waswanipi, the annual average daily traffic was 760 vehicles. The total annual average daily traffic flow on the stretch between Waswanipi and the junction of Routes 133 and 167 is 2,870 vehicles.

Table RQC21 MTMD traffic data for roads crossing the Eeyou Istchee James Bay Territory

Coming from	Route	Traffic Section	Start of route section	End of route section	AADT 2023	Percentage of heavy vehicles in 2023
Montréal	113	11328500	Route 397	Boulevard Quevillon, Lebel-sur-Quévillon	950	39.5*
Québec	167	16737500	Riv. Normandin, Accès Camp Vimont, Donohue et Allience (km 143)	Ch. Joe Mann, La Dauversière (km 189)	700	N. D.
	167	16740000	Chemin Joe Mann (48261), La Dauversière (km 189)	Route 113 (km 220)	900	N. D.
	113	11342500	À la limite est de la ville de Chapais (fin de la chaussée séparée)	Route 167 (Chibougamau)	2170	20
	113	11336000	Rue Poplar, Waswanipi Gand	À la limite ouest de la ville de Chapais (début de la chaussée séparée)	700	27,1
	113	11333000	Rivière O'Sullivan, passage à niveau, Miquelon	Rue Poplar, Waswanipi	380	29.7*
	113	11331500	Boulevard Quevillon, Lebel-sur-Quévillon	Rivière O'Sullivan, passage à niveau, Miquelon	380	26.9

* Percentage of heavy vehicles in 2022 only
Source : Débit de circulation - Jeu de données - Données Québec (donneesquebec.ca)

During the project's construction and operations phases, worker traffic and the transport of materials will generate a negligible volume of additional traffic on these Eeyou Istchee James Bay road networks.

Transporting materials from Route 113 to the project site involves:

1. In the construction phase, 3,104 heavy haulage trips plus 7,054 trips for pre-production and camp services over two years. Overall, this amounts to around 14 trips per day, or the equivalent of 5,079 per year. Heavy haulage trips for the construction phase are broken down as follows:
   - Montréal – Windfall site: 1,204 construction / 438 preproduction;
   - Ontario – Windfall site: 36 construction / 1,358 preproduction;
   - Québec – Windfall site: 1,428 construction / 450 preproduction;
   - Val d'Or – Windfall site: 435 construction / 3 678 preproduction.
2. In the operations phase, 3,838 heavy haulage trips per year, equivalent to nearly 10 trucks per day, broken down as follows:
   - Montréal – Windfall site: 465 trips per year
   - Ontario – Windfall site: 606 trips per year
   - Québec – Windfall site: 187 trips per year
   - Val d'Or – Windfall site: 2 165 trips per year

During the construction and operation phases, some transports will not travel on MTMD roads, as they will stop at Lebel-sur-Quévillon. This involves 1,130 trips during construction (over two years) and 415 annually during operation.

Every Thursday, charter flights will bring workers from Saint-Hubert, Québec, and Bagotville airports to Lebel-sur-Quévillon airport. On the same day, some buses will transport workers from Rouyn-Noranda, Val-d'Or, and Senneterre to Lebel-sur-Quévillon, while other buses will take workers there from Chibougamau, Chapais, and Waswanipi. This means an estimated 530 bus trips for workers, about half of which will travel on the road network. The other half of the trips will be from the airport to the site via forest roads. During the construction period, this number could rise to 682 trips per year. Workers arriving by charter plane and bus will be transported from Lebel-sur-Quévillon by bus to the Windfall site. Workers in unskilled trades will come from the surrounding regions and will also travel by bus.

Considering the above information, it appears that the additional disturbance caused by the transport of materials and workers during the 18-month construction phase, and then during the project's operations phase, does not add up to significant levels of road traffic. It should be remembered that activities at the Windfall site currently generate between 7 and 10 heavy haulage trips to the site. The cumulative effect of transportation is therefore low in Eeyou Istchee James Bay.

Reference :

MTMD. 2024. *Débit de circulation - Jeu de données - Données Québec (donneesquebec.ca).* Site web consulté au : https://www.donneesquebec.ca/recherche/dataset/debit-de-circulation.

QC-22
Environmental Impact Assessment, Page 8-86, Volume 1b, Section 8.7.1
Current conditions:

To assess the project's impact on transportation, the proponent must provide a preliminary transportation management plan for each phase of the project. Transport management plans must contain, as a minimum and without limitation, the following information:

- Maximum vehicle speed;
- Type, maximum weight, and dimensions (length, width, and height) of vehicles;
- Frequency of vehicle passage;
- Number of vehicles to be operated:
  - During the day and at night;
  - During freeze/thaw periods;
  - During spring and fall hunting seasons;
- Mitigation measures put in place near sensitive areas (e.g., the camp);
- Communication instructions between vehicles and the mine;
- Communication plan for transportation related to the mining project;
- Signage instructions;
- Emergency road safety measures;
- Follow-up of road incidents and accidents, including those involving wildlife.

Response 22:

A preliminary transportation management plan has been developed to address the elements listed in the question. It is provided in Appendix RQC22-1. As for the details on the type of travel, maximum weight, and dimensions of heavy transports, they are provided in the response to QC-18.

The procedure for accessing the site via forest roads is presented in Appendix RQC22-2.

QC-23
Environmental Impact Assessment, Page 8-56, Volume 1b, Section 8.4.2
Impacts on quality of life and well-being during the construction phase, and mitigation measures;
Environmental Impact Assessment, Page 4-11, Volume 1b, Section 4.3.1
Indigenous communities:

As part of the information and consultation activities carried out by the proponent from 2015 to the time of submitting the impact assessment, the proponent indicated that it had gathered concerns from the parties it met about the failure of project workers and contractors to comply with speed limits when using the access roads to the site. Given that "*the increase in traffic on the roads also depends on other businesses in the area, which may also experience an increase in their activities*," the proponent must indicate whether it has considered that vehicles involved in operations at the Windfall mine site be visually identified, and must provide justifications. This would enable land users wishing to file a complaint or report to identify who the problem vehicles are affiliated with and what activities are taking place at the Windfall mine site. It must also propose additional mitigation measures to ensure compliance with road speed limits for all vehicles involved in project operations.

Response 23:

WMG vehicles have already been provided with visual identification and will continue to be so in the future. However, WMG has no plans to impose lettering on heavy trucks that make deliveries as the frequent use of brokers to arrange transport makes visual identification of their vehicles impractical.

Road safety measures are detailed in the transportation management plan presented in Appendix RQC22. In fact, WMG will implement several mitigation measures to ensure compliance with the 70 km/h speed limit on forestry roads. This includes checks on the average speed of vehicles between the departure and arrival points, and the implementation of corrective measures in the event of non-compliance. In addition, mobile speed radar signs will be installed along access roads to inform drivers about their speed. Lastly, regular checks will be carried out by WMG's safety team using speed radar detectors to monitor compliance with the limits. These strategies aim to promote road safety while reducing the risk of accidents and encouraging responsible driving by WMG employees and contractors.

WMG's management plan also provides details on the accident monitoring plan. In addition, Appendix RQC137 presents the complaint handling process.

2 Biophysical issues

2.1 Air quality

QC-24
Addendum 1, Responses to MELCCFP recommendations and comments, Volume 4, Appendix 2-1
Air emissions modelling (Revision 1):

The proponent has provided an updated atmospheric model of its project. However, several elements are missing.

The proponent must clarify, correct, and provide the following elements:

1. Emission rates for all emission sources must be included in the modelling report. An Excel file showing emission rates has been provided, but emission rates for some sources are missing. The information provided in the report is not sufficient to calculate the missing emission rates.
2. Section 2.3.2 of the air emissions modelling specifies the contaminants not included in the modelling. The following items must be specified:
   a. Given the large quantities of propane to be used, the proponent must calculate the emission rates of propylene and isobutane contained in the propane and provide the results. If the results are significant, these contaminants will have to be modelled.
   b. The light petroleum distillate fraction (CAS 64742-47-8) contained in SNF Canada's FLOPAM EM 540 CT is an additive contaminant and must be added to the modelling.
3. Emission rate calculations have been carried out for the processing plant (PP), the tailings filtration plant (TFP), and the WTP. A table in Appendix D-1 with emission rates based on certain equipment has been provided. However, examples of the calculations are missing, as are the assumptions on which they are based. These must be provided.
4. The proponent must provide a copy of the files with the input data for the MOVES software for road vehicles.
5. For propane combustion, there are errors in SO2 emission rates for all sources, resulting in overestimated emission rates. In Table 1.5.1 (AP42-US EPA), the emission factor for SO2 expressed in lb/103 gal is 0.1S. According to the "e" index, "S" is equal to the sulphur content, expressed in g/100 ft3 of gas. Sulphur content must be expressed in g/100 ft3 of gas; no conversion is required. An example is given for butane: if the sulphur content of butane is 0.18 g/100 ft3, the emission factor would be: (0.09 × 0.18) = 0.016 lb SO2/103 gal-butane burned. The proponent must revise the calculations for butane combustion.
6. For propane combustion in the camp's cooking and heating facilities (prop03, prop04, prop05 and prop06), an output of 1 kW was assigned to each source. We understand that this does not represent actual power values. However, propane consumption is indicated. The proponent must specify how the propane consumption values were established.
7. For propane combustion, there are propane weights per month, identified in two options (A and B) found in Table A-1-8. It is written that the weighting was estimated by BBA. Details of this weighting must be provided.
8. The summary table of emission rates for propane combustion is not included in the modelling report, only in the Excel file. This table should be added to the report.
9. For emissions from gasoline and diesel tanks, further information or clarification is required because it is not possible to check the calculations in the Excel file since there are no formulas; only the figures were provided. Here is the list of items to be provided:
   a. The CAS number for gasoline given in the modelling report does not correspond to the CAS number in the Excel file.
   b. Gasoline emission rate calculations appear to have been made using a vapour pressure of 648 Pa. This seems to be too low, leading to an underestimation of the emission rate. Furthermore, the vapour pressure indicated on the Petro-Canada document is <10 mm Hg at 25 C, which is higher than 648 Pa. The proponent must correct the values and provide updated calculations.

c. In Table A-1-13, Physical characteristics of sources of vapour loss – tanks - surface activity, the flow rate for the gasoline tanks named rre1 (m01 to m12) is 18 m^3/h. The emission rates for each component should be identical for each source, whereas in the Excel file they are different for each source. The same applies to diesel tank emission rates. The proponent must correct the emission rates and validate the information in the model. It must review the modelling to see if the values have been corrected.

10. For cyanide emissions, details of how the emission rates for the CIP absorption circuit tanks and filter presses presented in the Excel file were determined must be provided. The proponent must also correct any differences between the emission rates presented in the BQE Water report and those in the Excel file used for modelling.
11. For emissions from drilling, the technical data sheet indicating 99% efficiency for the dust collector must be provided.
12. For emissions from loading and unloading activities (CONV1HM sources), based on the assumptions indicated in the modelling report, the emission rate calculations shown in Table A-3-5 of the modelling report appear to be correct. However, they do not correspond to the emission rates shown in the Excel file. Further details are required. The proponent must make any necessary corrections.
13. For off-road vehicle exhaust, examples of emission rate calculations for metals as well as species of volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and dioxins and furans must be provided. In addition, the exhaust emission rates for all off-road equipment shown in Table A-1-33 are not the same as those shown in Table A-1-31. The proponent must justify this difference.
14. For exhaust gases, the sample calculation provided in Table A-3-10 does not reproduce the emission rates (PM, PM2.5, carbon monoxide [CO], nitric oxide [NOx] and crystalline silica [SiO2]) of several off-road vehicles presented in Table A-1-31 – surface activities and Table A-1-49 – underground activities. With the information provided, we have calculated higher emission rates than those shown in the tables. Explanations must be provided. If applicable, the proponent must provide corrected calculations.
15. In Table A-3-12, entitled “Ventilation of underground mine - rock dust – source VR6A,” a value of 1.37E00 g/s (Total emissions from underground vehicles - PM2.5) is used for the calculation. The proponent must provide details of the calculation and the information used to obtain this value. It should also explain how the average PM2.5 emission rates by mining equipment presented in Table A-1-50 were determined.
16. In Table A-3-13, entitled “Metalloid emission from lithologies - crystalline silica – source VR6ABDM,” three values for TMP (1.73E-2 g/s), PM10 (8.97E-3 g/s), and PM2.5 (5.18E-4 g/s) (calculated particle emission rate for source vr6abdm) are used to make the calculation. The proponent must provide details of the calculation and the information used to obtain these values.
17. In the Excel file, several sources are associated with blasting the underground mine (vr1abdm, vr1abds, vr1abpm, vr1bbdm, vr1bbds, vr1abbpm, vr6abds, vr6abpm, vr6bbdm, vr6bbds, vr6abbpm). The proponent must provide the information needed to calculate these emission rates.
18. The emission rates shown in Table A-1-47 are offset in relation to the contaminants. The proponent must ensure that the appropriate emission rates for each contaminant have been used in the modelling. If necessary, corrections must be made and included in the modelling report.
19. According to Table 1-15 in Addendum 1 - Responses to MELCCFP recommendations and comments – Volume 1, approximately 23 diesel-powered Kovaterra KM200 service and transport trucks will be used in the underground mine for production and development. However, the emissions associated with these trucks have not been taken into account in the modelling. The proponent must include emissions from these trucks in the modelling study or justify why these emissions were not considered in the modelling study.
20. Diesel generators will be used during peak periods at Hydro-Québec’s request. They are scheduled to operate at peak times, around 30 hours a year, between December and March. This mode of use does not correspond to a definition of emergency, since it is provided for by an agreement and would not occur as a result of a power failure. The proponent must take these emissions into account in its modelling. Note that section 52 of the Clean Air Regulation (CAR) applies. If the individual rated output of the generators is equal to or greater than 10 MW, then section 53 of the CAR also applies. In addition, if function tests are required, the proponent must add them to the emissions associated with the modelling.

21. On Page 483 of the PDF document entitled Addendum 1 - Responses to MELCCFP recommendations and comments - Volume 1, it is stated that there is a 36 m3 sulphur dioxide tank. The proponent must specify how sulphur dioxide is used in the process. It must also specify whether emissions will result from sulphur dioxide use, storage, or tank filling. Where applicable, the proponent must justify why these emissions have not been included in the modelling.
22. Hourly and annual air quality criteria have been developed for diesel and 1,3-butadiene, provided in the table in Appendix 1. The proponent must use these values when revising the model.

Finally, the proponent must revise the atmospheric modelling based on the above elements and submit a new, corrected version.

Response 24:

A new, corrected version of the air dispersion modelling report (Revision 2) incorporating all the requested elements is provided in Appendix RQC24 of this document.

Response 24-1:

Emission rates for all sources are presented in Appendix F of Revision 2 of the modelling report.

Response 24-2a:

Section 2.3.2 briefly describes the potential emissions associated with propane handling and qualifies them as negligible. Further details are given below to support this statement.

As propane is stored under pressurized conditions, possible emissions would only occur during refuelling, when there is a connection between the tank truck valve and the tank. According to supplier data[3], a liquid propane gas nozzle can release a volume of 1-2 cm^3 per connection, depending on the nozzle model.

Assuming a decompression factor of 275 m^3 gas/m^3 liquid, this corresponds to no more than 0.00055 m^3 propane gas. Assuming a composition of around 1.5% propylene and 1% isobutane by volume, emissions can then be estimated. These are presented in the following table:

Table RQC24-2a-1 Potential emissions calculation during connections

Compound	Propane composition (% V/V)	Volume (m^3)	Density (kg/m^3)	Emitted mass	
				(kg)	(µg)
Propylene	1.5%	0.0000083	1.74	0.000014	14,355
Isobutane	1%	0.0000055	2.51	0.000014	13,805

This potential release mass is considered negligible compared to the criteria limits. The following table calculates the dilution volume required to achieve a concentration equivalent to the limits. Since this is a limited and infrequent event (connection during refuelling), only the 4-minute criteria is really of interest, but the annual criteria have been analyzed as a precautionary measure. The analysis shows that potential emissions diluted over spheres of 1-2 m radius would comply with ambient air limit values. This dilution is achieved rapidly in the vicinity of the source by diffusion alone, even before considering dispersion in the environment. These emissions are therefore assessed as negligible compared with ambient air criteria.

[3] Elaflex, https://elaflex.de/. GasGuard, Handling the Pressure. « Release volume on valve closure »

Table RQC24-2a-2 Dilution volume calculation

Criteria description			Dilution volume required to reach limit value	
Compound	**Period**	**Limit value ($\mu g/m^3$)**	**Volume (m^3)**	**Radius of the equivalent sphere (m)**
Propylene	1 year	1,230	11.7	1.4
Isobutane	4 minutes	4,800	2.9	0.9
	1 year	480	28.8	1.9

Response 24-2b:

Section 2.3.2 briefly describes the use of this product and qualifies potential emissions as negligible. Further details are given below to support this statement.

FLOPAM EM 540 CT, used inside the UTE building, will be delivered and used in 55-gallon (210-liter) drums. During deliveries, there will be no decanting, so no air emissions are expected. Between 6 and 7 drums will be used annually, representing an annual consumption of 1.15 to 1.3 tonnes/year. The drums are hermetically sealed, with two 2-inch diameter openings. Only one of these openings will be used to introduce the dosing pump's suction. This configuration limits potential volatilization emissions. The dosing pump will feed a mixing tank where the polymer emulsion will be diluted several dozen times. It is important to note that only one barrel is used at a time, and that only one barrel is open. The other barrels remain closed and sealed until used. Based on this description, no stage in the product's use presents a higher emission potential over a short period, such as tank filling or decanting.

Finally, annual product use, estimated at 1.3 tonnes/year, corresponds to an average use of 0.0412 g/s. Given that the product contains between 20 and 30% light fraction petroleum distillate, this translates into an average use of 0.0124 g/s of this distillate. This usage, and not the portion emitted into the atmosphere, which would be lower, is low and represents only about 10% of the emissions already taken into account in the modelling for this group of additive compounds. Furthermore, modelling results in the domain of application are low for these compounds, representing only 3% of the limit.

Response 24-3:

The table in Appendix D-1 of the modelling report has been updated in Revision 2, and the “Notes” column details the assumptions used to calculate emissions.

Response 24-4:

A copy of the MOVES software input data is provided in Appendix E.

Response 24-5:

Index “e” in Table 1.5.1 of AP-42 states that the sulphur content “S” must be expressed in gr/100 ft^3 of propane gas and not in g/100 ft^3. There is a distinction between the units “gr,” meaning grain, and “g,” meaning gram; 1 grain is equivalent to approximately 0.0647989 g. Thus, as detailed in the sample calculation in Table A-3-2, conversion factors are used to calculate emissions in g/s based on a sulphur content in propane of 185 mg/kg.

For information purposes, based on the density of gaseous propane, this content is equivalent to approximately 15 gr/100 ft^3 of gaseous propane.

Please note that in Table A-3-2 of Revision 2 of the modelling report, a typo in the units displayed for the variable "EF_{mSO2_met}" has been corrected. Nevertheless, the calculated values of the emission rates remain the same as for Revision 1.

Response 24-6:

The output of 1 kW assigned in Table A-1-6 for each of the sources is a typo and this value was not used to calculate emissions; it is corrected in Revision 2 of the modelling report.

Instead, emissions were calculated using the propane consumption values indicated and estimated by engineering. This consumption (16.6 kL/day) corresponds to expected use on the coldest day of the year, depending on the size of the buildings to be heated and the equipment using propane (hot water, cooking, etc.). This peak day was chosen for the modelling to represent a scenario of peak emissions. According to the weighting by month (Table A-1-8), this peak scenario is modelled continuously and at full power (100%) for the months of November to March inclusive, which considerably overestimates annual emissions.

Response 24-7:

The two options (A and B) consist of an engineering estimate of the propane consumption distribution over the year, based on expected project site temperatures and building heating requirements. These distributions were used in the modelling for heating sources. Note that, before applying these load factor, sources are characterized according to their rated capacity. As a result, all heating sources are considered to be operating at rated capacity continuously during the winter months (November to March; 100% load), which considerably overestimates annual emissions.

Response 24-8:

A summary table of emission rates for propane combustion is presented in Table A-1-51 of Revision 2 of the modelling report.

Response 24-9a:

Firstly, the technical data sheet for the gasoline states that it is made up of four substances with the following CAS numbers: 86290-81-5, 108-88-3, 64-17-5 and 71-43-2. Compounds 108-88-3, 64-17-5, and 71-43-2 have standards, which were directly taken into account in the modelling. Compound 86290-81-5 does not have its own standards, criteria, or SEPR according to document NCQQA version 8. However, the technical data sheet indicates that this compound represents low-boiling naphtha, and naphtha compounds have an additive criterion. It is therefore against this criterion that the emissions of this compound have been compared. Thus, to present the results and emission rates in the Excel file, a CAS number for one of the compounds in this additive group was chosen, i.e., CAS number 64741-66-8. To avoid confusion, a clarification to this effect has been added to Section 4.1.4.2 of Revision 2 of the report, and the CAS numbers in the report's tables are now uniform.

Furthermore, as indicated in Section 4.1.4.2 of the report, for the assessment of the SEPR of gasoline (CAS number 8006-61-9), the sum of the emissions of each of the substances making up the gasoline was considered. Therefore, the emission rates shown in the Excel file for gasoline (CAS 8006-61-9) correspond to the sum of the rates for the four compounds, i.e., the CAS numbers are 64741668, 108-88-3, 64-17-5, and 71432.

Response 24-9b:

The calculations were based on the saturation vapour pressure supplied by WMG of 648 Pa, corresponding to around 4.9 mm Hg. Although the document provided by WMG in Appendix D-3 first indicates a vapour pressure <10 mm Hg at 25 °C, i.e., an upper bound close to the value selected, it also provides a table on the second page showing saturation vapour pressure as a function of temperature for a range from 90 °F to 340 °F (32 °C to 171 °C). The value for 90 °F was selected, corresponding to 0.094 psi, or 648 Pa.

Response 24-9c:

Firstly, to make things easier to understand, the sources of vapour loss from tanks are named with suffixes ranging from "m01" to "m12," representing each of the 12 months of the year. Thus, source "rre1," corresponding to the filling of the gas tank, is modelled by 12 sources "rre1m01" to "rre1m12" representing each month of the year.

Secondly, although the effective flow rate of 18 m^3/h from these sources is the same for each month, since it corresponds to the tank filling rate, the temperature considered for calculating the saturation concentration is variable for each month, as shown in Table 6. The resulting saturation concentrations for each of the compounds and temperatures considered are given in Table A-1-10.

Finally, the variable emission rates (in g/s) for each month (sources "rre1m01" to "rre1m12") are obtained by multiplying the flow rate (18 m^3/h, equivalent to 0.005 m^3/s), the saturation concentration for the corresponding temperature (in g/m^3; Table A-1-10), and the saturation factor of 1.45 (see Section 4.1.4.1; applicable for top-loading fuel tanks). Table A-3-3 shows this calculation for source "rre1m07," i.e., the month of July.

Response 24-10:

All cyanide emission rates considered in the modelling are taken directly from the BQE Water report.

The difference between the values presented in the BQE Water report and the Excel file can be explained by this excerpt from Section 4.1.2 of the modelling report:

"In addition, the emission rates [in the BQE Water report] are given for HCN, however, Quebec air quality criteria apply for hydrogen cyanide expressed as CN. Rates were therefore modelled in CN equivalent by applying a molar mass ratio (26/27 = 0.96)."

Therefore, the difference between the two values is due to this factor of 0.96.

Below are the details for each of the sources demonstrating that the rates presented in the Excel file correspond to the values in Table 1-1 of the BQE report:

A): For the nine tanks of the CIP absorption circuit, since emissions will occur inside the plants, the HCN emissions of 0.55 mg/s (per tank; equivalent to 4.95 mg/s in total) in Table 1-1 of the BQE Water report are distributed by a single plant ventilation point closest to this area (source "cyutmv08"). The emissions presented in the Excel file for this source are 0.0048 g/s, expressed as CN.

B): For the filter presses, HCN emissions of 5 mg/s from Table 1-1 of the BQE Water report are distributed over the two filter press stacks (sources "cyufr03" and "cyufr04"). The emissions presented in the Excel file for each source are 0.0024 g/s, expressed as CN.

C): For surface sources (“cytlch[1-4]”, “cytdtx[1-2]” and “cyttck1”), the emissions presented in the Excel file are expressed as CN and represent “g/m2/s” since these are surface sources. When adjusted by the surface area of the sources (Table A-1-2) and by the molar mass ratio of 0.96, the rates presented correspond well to those in Table 1-1 of the BQE Water report.

The above details are provided in the context of Revision 1 of the modelling report. For Revision 2, the HCN emission rates have been adjusted according to Revision 2 of the BQE Water document, but the explanations remain the same.

Response 24-11:

According to the technical data sheet for the planned drill rig, dust is controlled by a dust collector, although the efficiency is not indicated. In the absence of specific manufacturer data on efficiency, a drill dust control factor of 99% is used for modelling, i.e., the value suggested in Appendix 5 of the *Guide d’instruction – Préparation et réalisation d’une modélisation de la dispersion des émissions atmosphériques – Projets miniers* (MDDELCC, 2017). This suggested value actually comes from Table 4 of the National Pollutant Inventory Emission Estimation Technique Manual for Mining (DSEWPaC, 2012). It should be noted that this is the same assumption used by WSP for all mining projects where a dust collector is available on drill rigs.

Response 24-12:

As specified in Section 4.1.6, emissions for loading and unloading activities have been determined on an hour-by-hour basis, according to wind speed. The sample calculation in Table A-3-5 is based on a typical speed of 3 m/s. However, the emission rates presented in the Excel file correspond to the maximum emission rates, i.e., for the maximum wind speed, as indicated in the text accompanying the Excel file:

“[...], when the calculated rate is variable (for handling, for example, for which the emission factor depends on wind speed, or for propane combustion, for which the emission factor varies according to month), the reported rate corresponds to the maximum rate for all 43,824 hours modelled.”

For the weather sample, the maximum speed is 65 km/h or 18.06 m/s (see Table 21). By using this value in the sample calculation, the emission rates presented in the Excel file can be reproduced.

Response 24-13:

In Revision 2 of the modelling report, the sample calculation in Table A-3-10 has been expanded to include the other compounds mentioned. Table A-1-31 has also been corrected to show all off-road equipment.

Response 24-14:

First, no crystalline silica emissions are present in the exhaust gases.

Next, the example calculation presented in Table A-3-10 is for a specific piece of equipment (Caterpillar 308 CR of tier T4N type). As indicated in this table, the rate calculation depends on several values directly taken from Tables A4, A5, and A6 of the document ‘Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling Compression-Ignition’ (US-EPA, 2010). These values vary for each piece of equipment and depend on the equipment category, the tier certification of the equipment, and the engine power, which are provided for all equipment in Tables A-1-30 and A-1-48 of the modelling report.

For ease of understanding, the corresponding values for each piece of equipment have been added to Table A-3-10b of Revision 2 of the modelling report. These values make it possible to reproduce all emission rates presented in Tables A-1-31 and A-1-49.

Response 24-15:

The PM2.5 emission rates by mining equipment presented in Table A-1-50 represent emission rates for each piece of equipment individually when they are active. This is calculated in the same way as those presented in section 4.2.3, but they have been considered without recent emission reduction technology, i.e., without tier certification (T0). Table A-3-10 shows an example calculation for the off-road equipment estimation method.

The average total emission rate is then determined by the sum of the emission rates of each piece of equipment (Table A-1-50; estimated without tier certification [T0]), multiplied by the number of each type of equipment (Table A-1-48) and their utilization factor (Table A-1-48). This corresponds to an average total emission rate of 1.23 g/s.

Finally, as a conservative estimate, a factor of 10.6% is added to the emission rate to account for electric-powered equipment. This factor is estimated by comparing the power of the electric motors (in equivalent HP) that these equipment would represent if they were powered with diesel with the total power (in HP) of the diesel engines that were considered. The resulting average total emission rate is therefore 1.37 g/s.

Response 24-16:

Table A-3-13 represents an example of metalloid emission rates calculations based on lithologies and already estimated particulate matter emission rates. It is therefore not intended as a direct demonstration of particulate matter emission rates.

However, for clarification, the source 'VR6ABDM' (used for the calculation example) represents the 'VR6A' ventilation exhaust, and the suffix 'bdm' corresponds to the portion of morning development blasts (see section 4.2). The emission rates per blast are given in Table A-1-47. For example, for TSP, emissions of 9.86E-03 g/s are estimated for each blast. According to the description in section 4.2.2, the modelling scenario presents a total of 7 development blasts in the morning, and the total emission rate for TSP is then 6.90E-02 g/s (7 x 9.86E-03 g/s). Finally, as described in section 4.2, the total emissions are then distributed over each emission outlet proportionally to the outlet flow rate, with 25% on each of the four sources. The VR6A ventilation exhaust then presents TSP emissions of 1.73E-02 g/s (25% x 6.90E-02 g/s) for the portion associated with morning development blasts (source 'VR6ABDM'). The same calculation can be performed for PM10 and PM2.5.

Response 24-17:

Answer 24-16 details the calculation of particulate matter emissions for one example of a source associated with blasting in the underground mine. The same method is applied to all blasting-related sources described in section 4.2.2, for the three underground blasting operations modelled: morning development ("bdm"), evening development ("bds") and morning production ("bpm"). The following table summarizes the underground blasting operations and their association with the modelling sources.

Table RQC24-1 Summary of underground blasting operations and their association with the modelling sources

Targeted Blasting Operation	Number of Blasts by Operation	Ventilation Exhaust Source	Fraction of Airflow	Source Modeled	Calculation of PM Emission Rate
Morning development	7	VR01a	25 %	vr1abdm	Emission rate for one development blast from Table A-1-47 x 7 blasts x 25 % du débit
		VR01b	25 %	vr1bbdm	
		VR06a	25 %	vr6abdm	
		VR06b	25 %	vr6bbdm	
Evening development	4	VR01a	25 %	vr1abds	Emission rate for one development blast from Table A-1-47 x 4 blasts x 25 % of the flow
		VR01b	25 %	vr1bbds	
		VR06a	25 %	vr6abds	
		VR06b	25 %	vr6bbds	
Morning production	1	VR01a	25 %	vr1abpm	Emission rate for one production blast from Table A-1-47 x 1 blast x 25 % of the flow
		VR01b	25 %	vr1bbpm	
		VR06a	25 %	vr6abpm	
		VR06b	25 %	vr6bbpm	

Response 24-18:

Table A-1-47 contains a typo that has been corrected in Revision 2 of the modelling report.

Response 24-19 :

This was an oversight in Table 1-15 of Addendum 1. The Kovaterra KM200 truck was originally considered for the project, but this was later replaced by Kubota M9960 HD trucks to reduce atmospheric emissions. The Kubota M9960 HD, which is available with Tier 4F certification, was considered in the modelling.

Response 24-20:

Diesel generators used during peak periods have been included in Revision 2 of the modelling report.

Response 24-21:

Sulphur dioxide is used in the cyanide destruction process. No air emissions have been identified. Storage is in a pressurized tank, so there are no emissions when filling.

Response 24-22:

These criteria have been taken into account in Revision 2 of the modelling report.

References:

Ministère du Développement durable, de l'Environnement et de la Lutte contre les Changements Climatiques (MDDELCC). 2017a. *Guide d'instructions – Préparation et réalisation d'une modélisation de la dispersion des émissions atmosphériques – Projets miniers.*

Australian Gouvernment, Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC). 2012b. *National Polluant Inventory (NPI) - Emission Estimation Technique Manual for Mining.* Version 3.1.

U.S. Environmental Protection Agency (US-EPA). 2010. Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression-Ignition.

QC-25
Addendum 1 – Responses to MELCCFP recommendations and comments, Volume 4, Appendix D4 – Geochemical analysis of mining materials in support of the air quality predictive model
Addendum 1 – Responses to MELCCFP recommendations and comments, Volume 4, Appendices D5 - LCS Laboratory Inc.:

The atmospheric modelling submitted by the proponent uses the analytical results presented in Appendix D-5 to determine the percentage of SiO2 in fine particulate matter (PM10 and PM4). Yet, Appendix D-5 consists solely of certificates of analysis.

The laboratory sample preparation method in Appendix D-5 is the modified ASTM D9728 method (particle sizing and decantation separation), and the analysis method used is the modified NIOSH 7602 method (FTIR analysis). The analytical principle, based on separation by decantation followed by analysis of particles deposited on filters using a modified recognized method, complies with the theoretical principles currently recommended by the Ministère. The changes made to the methods are briefly described, and no reference samples or duplicates appear to have been produced. However, this laboratory has already provided MELCCFP with a more detailed version of its working methods, and the results presented for comparable samples in Appendix D-5 are consistent.

In Appendix D-4, the proponent presents results of electron microscopy analysis (QEMSCAN) of SiO2 in PM10 and PM4 for five samples, also characterized by the modified NIOSH 7602 method (Appendix D-5; CH-1 to CH-5). The crystalline silica results presented in Appendix D-4 for the other samples are DRX analyses carried out on the total materials. The XRD method of analysis on total materials is accepted by the MELCCFP; however, the QEMSCAN method is not recommended by the Ministère for PM4 analysis. In fact, there are still some doubts as to the representativeness of electron microscopy analysis results for such fine materials, as pointed out in the document submitted by the proponent.

It is therefore deemed that the proponent's choice to use the results of Appendix D-5 (modified NIOSH method 7602) to assess crystalline silica concentrations in fine particles in samples CH-1 to CH-5 is acceptable, as these are fine materials by nature. For the other samples, Appendix D-5 reports SiO2 concentrations in fine material fractions (PM4 and PM10), but without describing how the fine materials were formed. Given the discrepancies between the SiO2 percentages reported in Appendix D-5 and analyzed in PM10 and PM4 by FTIR, and those reported in Appendix D-4 and analyzed in total materials by XRD, the proponent should provide comments on this sample preparation step and justify the change in method.

The proponent must revise Appendix D-4 by providing a new version that incorporates the following elements:

- a description of the method used to generate PM_{10} and PM_4 (for all samples other than fine materials collected on forest roads) and a justification that the analyzed materials are representative of future operating conditions.
- a description of the sampling method for samples CH-1 to CH-5, justifying the number of samples taken and their locations.
- a more detailed description of the modified analysis methods used (NIOSH 7602 and ASTM D9728)

- a justification for using results from modified analytical methods (NIOSH 7602 and ASTM D9728) rather than using XRD results on the total fraction of materials.
- integration of results from Appendix D-5 into Appendix D-4, replacing results from XRD and QUEMSCAN for SiO_2 analysis; a quality assurance/quality control (QA/QC) section that should include, at the very minimum, the submission of results from 10% duplicates in accordance with the requirements of Book 1 of the *Guide d'échantillonnage à des fins d'analyses environnementales* [Sampling Guidelines for Environmental Analysis]. Ideally, analyses should have been carried out on reference materials, as the methods used are not standardized.

Response 25:

The revised Appendix D-4 has been attached to the atmospheric modelling report provided in the response to QC-24. This document incorporates all the elements listed above.

This technical note now includes the results of analyses carried out by the LCS laboratory, which determines the percentage of SiO2 in fine particles (PM10 and PM4) using the modified NIOSH 7602 procedure. These results were initially included in Appendix D-5 of the atmospheric modelling study. In addition, the preamble to this technical note identifies each of the sections of its text that have been updated accordingly, in comparison with its previous version.

QC-26
Environmental Impact Assessment, Page 6-18, Volume 1b, Section 6.2.3
Impacts on ambient air during the operations phase and mitigation measures:

Road dust poses a direct health hazard and increases the risk of road accidents. The proponent must propose mitigation measures in its dust management plan. The proponent must also submit the preliminary dust management plan mentioned in mitigation measure AIR09.

Response 26:

The dust management plan is presented in Appendix 2-2 (p. 644) of Addendum 1, dated December 2023. Current mitigation measures are presented in Section 4 of this document, and adaptive mitigation measures are presented in Section 8. A preliminary road watering management programme is also presented. The PMP incorporates mitigation measures AIR 01 to AIR 09, and NOR 01.

QC-27
Environmental Impact Assessment, Page 6-17, Volume 1b, Section 6.2.3
Impacts on ambient air during operations and mitigation measures;
Environmental Impact Assessment, Page 6-61, Volume 1b, Section 6.5.3
Impacts on soil during the operations phase and mitigation measures;
Environmental Impact Assessment, Page 12-17, Volume 1b, Section 12.3.2
Identification of hazards associated with site activities:

The proponent is proposing the installation of misters at the tailings storage facility to control wind erosion. Additional mitigation measures must be proposed to avoid wind erosion and minimize contamination of the surrounding environment, particularly from accumulation areas. The proponent must also propose wind erosion monitoring measures.

Response 27:

WMG has planned mitigation measures to control wind erosion of tailings storage facilities. These were updated in Addendum 1 (Section 1.3.3.2, Vol. 1) and in Revision 1 of the model, where they are detailed in Section 4.1.12 of this report (Addendum 1, Vol. 4, Appendix 2-2). These measures are listed below. Please note that these measures do not include the installation of misters. In addition to these mitigation measures, ambient air quality monitoring is planned and detailed in the monitoring plan presented in QC-122. This program includes the installation of two stations to assess air quality that could affect sensitive receptors near the mine.

Wind erosion control measures for the tailings storage facility

The tailings storage facility will be developed in three zones, thereby limiting the active surface area and enabling progressive restoration of the site. Details of this development were presented in the response to QC-95.

To further reduce dust emissions generated by wind erosion of the filtered tailings stockpile, it was proposed to divide deposition Zone 1 into cells. By operating with cells, the operating footprint is reduced, as is the potential for dust generation. After their operation, each cell can be totally or partially restored (total or partial installation of the closure covering) to limit air emissions. It will also be possible to close all or part of the slopes and final (outer) surfaces before the end of the cells' operation, depending on the sequencing. At the end of a zone, it can be completely closed, and the next one put into operation.

Figure RQC27-1 shows the four cells proposed for the development of Zone 1 of the stockpile. A similar strategy will be implemented for Zones 2 and 3. In addition to the division into cells, further mitigation measures could be applied depending on site conditions and operational requirements to limit dust emissions. Mitigation measures include:

- snow coverage of non-active surfaces in winter—for the winter months, the passive surface, final slopes, and internal slopes are considered covered and inactive;
- water spraying of non-active surfaces using a water truck. A 50 % control factor was then applied to the passive surface, based on the mitigation measure for "Wind erosion from stockpiles – water spray" presented in the *Guide d'instruction – Préparation et réalisation d'une modélisation de la dispersion des émissions atmosphériques – Projets miniers* (MDDELCC, 2017a);
- the installation of dust suppressants on the final (outside) slopes and surfaces. A control factor of 84% was then applied to the final and inside slopes, based on the mitigation measure for "Wind erosion - Apply dust suppressant or gravel" in the *WRAP Fugitive Dust Handbook* (WRAP, 2006), als b reproduce.y the NPRI (INRP, 2023)

Finally, although no additional mitigation due to compaction was considered in the modelling, WMG points out that compaction of tailings is also recognized as an effective measure in the control of dust emissions. In fact, in the literature, several authors present the use of compacted filtered mine tailings as an effective measure for dust control in tailings storage facilities. MEND (MEND, 2017) mentions that dust can be managed using conventional practices, including one or more of the following: compaction, dust abatement, laying down vegetation, hay, or straw, and progressive reclamation. They also specify in their study that certain types of residue form a crust that reduces the risk of wind erosion. In general, compacted residues, saturated residues, and fine residues are less prone to dust generation. The CAP (CAP, 2023) group indicates that to prevent wind erosion, residues are compacted in their deposit when thee reach a h ight of 30 cm.

Finally, in their presentation entitled "Dry Stack Tailings in Cold Regions: Opportunities and Constraints" at the 2015 Alaska Miners Association Convention (SRK consulting, 2015), SRK consulting also described compaction of filtered tailings as a mitigation measure to reduce dust emissions.

Reference :

CANADA, ENVIRONNEMENT ET CHANGEMENT CLIMATIQUE CANADA (INRP). 2023. *Inventaire National des Rejets de Polluants - Calculateur d'érosion éolienne des piles de stockage et des zones exposées : guide de déclaration*.

CAP. 2023. *Proyecto Deposito de Relaves Filtrados Planta de Pellets*. En ligne : https://www.proyectorelavefiltrado.cl/.

QUÉBEC, MINISTÈRE DU DÉVELOPPEMENT DURABLE, DE L'ENVIRONNEMENT ET DE LA LUTTE CONTRE LES CHANGEMENTS CLIMATIQUES (MDDELCC). 2017a. *Guide d'instructions – Préparation et réalisation d'une modélisation de la dispersion des émissions atmosphériques – Projets miniers*.

MINE ENVIRONMENT NEUTRAL DRAINAGE (MEND). 2017. *Study of Tailings Management Technologies – Mine Environment Neutral Drainage Project*.

SRK CONSULTING. 2015. *Dry Stack Tailings in cold Regions : Opportunities and Constraints, Alaska Miners Association Convention*.

WESTERN REGIONAL AIR PARTNERSHIP (WRAP). 2006. *Fugitive Dust Handbook*.

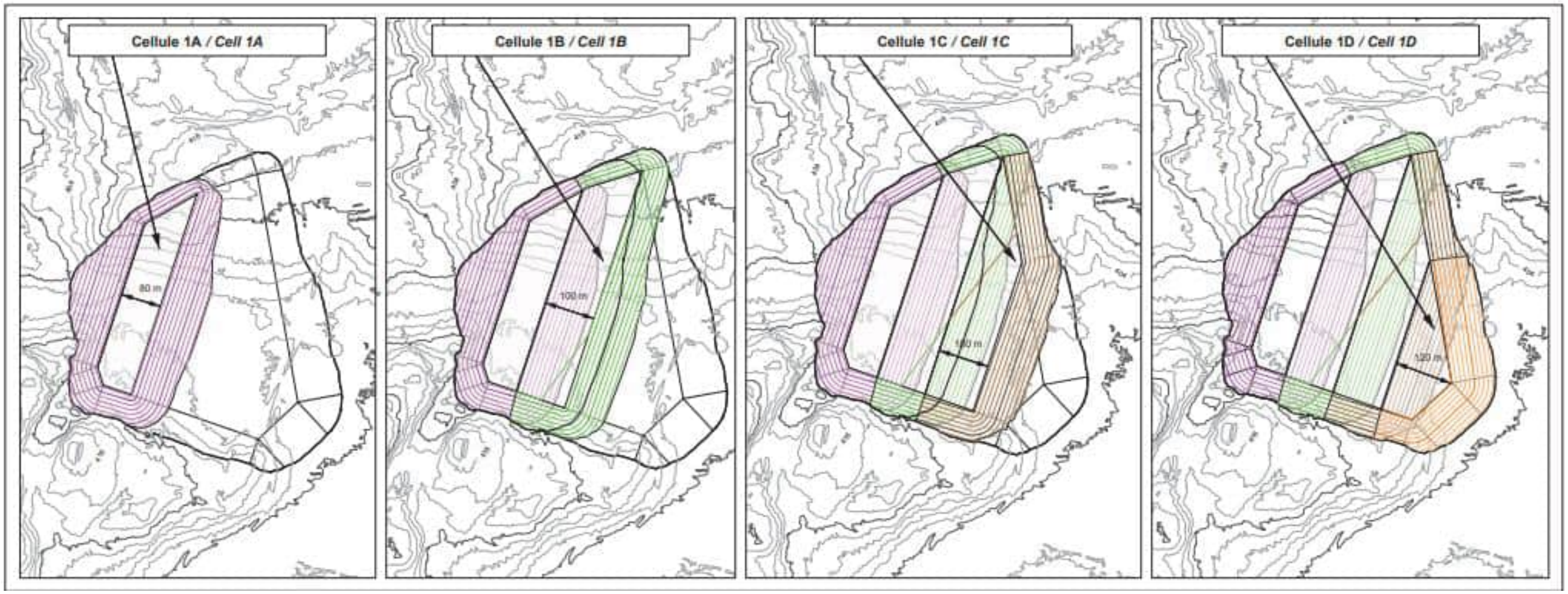


Figure RQC27-1 Development in cells of Zone 1 of the tailings storage facility

2.2 Soil

Several studies on the soil theme have been provided in previous submissions. The following paragraphs detail these studies to help the reader understand the deliverables previously sent. First, upon the submission of the Environmental Impact Assessment study (EIA) in March 2023, an evaluation of the natural background concentrations of the soils (NBC) was provided in Appendix 6-4. The objective of this assessment was to calculate the initial soil concentrations in the two layers of till located within the area of the proposed project infrastructure. This study was conducted using samples collected from exploration trenches and drilling locations distributed across the study site. The method used for assessing the NBC is based on the *Lignes directrices sur l'évaluation des teneurs de fond naturelles dans les sols* (Ouellette, 2012), as well as the *Guide de caractérisation physicochimique de l'état initial des sols avant l'implantation d'un projet industriel* (MDDELCC, 2017).

Next, during the request for additional information of August 2023, and in addition to the requirements of the Project Directive, WMG was asked to conduct a Phase I Environmental Site Assessment (ESA). This study was provided in Appendix 10-1 of Addendum 1 submitted in December 2023. The purpose of the ESA was to establish the environmental history of the study site, specifically to identify contamination sources associated with past and current activities carried out on the proposed infrastructure site and in the immediate vicinity. This document included a large Appendix F, which contained all documents received from authorities as part of a request for access to information. Since these were scanned documents, the size of the appendix was enormous and had to be submitted in a separate submission.

Additionally, Section 10 of Addendum 1 provided further details on the NBC study submitted in March 2023, as well as on the content presented in Section 6.5 "Soils" of the EIA (March 2023). Thus, in the following section, when WMG refers to the NBC study, it pertains to natural background concentrations; the Phase I ESA presents the environmental history of the Windfall site.

Reference :

Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques (MDDELCC), 2017. Guide de caractérisation physicochimique de l'état initial du milieu aquatique avant l'implantation d'un projet industriel, Québec, Direction générale du suivi de l'état de l'environnement, ISBN 978-2-550-79556-8, 12 p. + 3 annexes.

QC-28
Addendum 1 - Response to MELCCFP questions and comments, Volume 3, Appendix 10-1 Environmental site assessment Phase I – Projected infrastructure area:

In addition to the impact assessment, the proponent filed a series of documents in Appendix 10-1 of Addendum 1 (inspection reports, restoration plan, results of exploration work, authorizations, environmental emergency response reports, declaration of compliance of exploration work and emergency plans, summary of closure costs and financial guarantee, restoration work schedule, etc.). However, no interpretation of the information was provided. It is stated on Page 1,123 of 4,278 of Appendix 10-1, in the site description section, that the "following information is taken from the Phase I Environmental Site Assessment finalized in 2017 by WSP and the bulk sampling request filed with MERN in 2017." The proponent must relate the documents presented in the addendum with the Phase I characterization expected for the site. It is the proponent's responsibility to identify and interpret relevant information.

The proponent must therefore provide a complete, self-supporting Phase I characterization report, including interpretation of the results of the studies and documents submitted.

Response 28:

Appendix 10-1 of Addendum 1, Volume 3 does not contain a collection of documents, but a complete, stand-alone Phase I ESA, dated December 2023. Data interpretation is carried out throughout Sections 4 and 5, followed by a summary in Sections 6 and 7. The 4,278-page Appendix 10-1 document to which the question refers is Appendix F of the ESA Phase I report, which was sent under separate cover because reading the full document (Phase I with its Appendix F) would not have been possible due to its size. Furthermore, the MELCCFP's electronic platform did not allow us to submit such a voluminous document. The most recent version of this assessment, dated April 2024 and excluding Appendix F (too voluminous and without any changes) is provided in Appendix RQC28 with the most up-to-date information available for the site. The previously available data interpretation is included in this update (Appendix RQC28).

QC-29
Addendum 1 - Response to MELCCFP questions and comments, Volume 3, Section 10-1 - Environmental site assessment Phase I – Projected infrastructure area:
Addendum 1 – Response to MELCCFP questions and comments, Volume 3, Section 10-2 - Signature page of the Natural Background Soil Content study and certification letter:

In connection with the previous question, the proponent presented a preliminary Phase I site characterization for the proposed activity sector only. However, a characterization for the entire site must be presented. The objective of a Phase I site characterization is to be able to clearly distinguish between areas of the mine site that have been subject to human activity and those that have not.

The proponent must also ensure that the guides are properly applied. For example, areas of the site that have supported human activities (mine waste rock stockpiles, collection basins, etc.) resulting from surface drilling programs conducted between 2018 and 2019 should not be included to determine the initial soil status due to the potential contamination risk associated with them.

The following elements are missing from the Phase I characterization study:

- Identification of all risk zones on the site, according to the following guides:
  - In the case of an area that has been subjected to human activity: As indicated in section 2.1 of the *Guide de caractérisation physicochimique de l'état initial avant l'implantation d'un projet industriel* (MDDELCC, 2016) (hereinafter referred to as the *Guide de caractérisation physicochimique*), if there are current or past human activities in the impact study area that are likely to have contaminated it, it is the *Guide de caractérisation des terrains* (MELCCFP, 2024). Please note that a new *Guide de caractérisation des terrains* was published in 2024 and must be applied as of June 1, 2024. The *Lignes directrices sur l'évaluation des teneurs de fond naturels dans les sols* (MDDEFP, 2012) are used to assess the natural background content in the soils of a potentially contaminated site, primarily with a view to applying section 1 of the Land Protection and Rehabilitation Regulation (LPRR). They can also be used to differentiate between concentrations of metals or metalloids found naturally in the soil and those that may be the result of human activity in the case of current and existing activities.
  - In the case of an area free of human activity or which has never been affected by human activity: The proponent must apply the *Guide de caractérisation physicochimique* (MDDELCC, 2016).
- The application of the guidelines and guides should be more clearly explained in the context of the project under consideration;

- A comprehensive map showing all the risk zones on the site is recommended. Maps 2 and 3 show only portions of the proposed area of activity;
- The proponent must provide a clear explanation of the nature of past, existing and planned activities for each area, and relate this to the results of the Phase I preliminary characterization study;
- Tank types (above-ground or underground), capacities, and installation dates should be identified for tanks on site as well as those on adjacent land;
- The project proponent has made a distinction between real and potential risk areas. All at-risk areas must be considered;
- Recommendations for areas subject to authorization, following completion of Phase I (completion of Phase II, etc.).

Response 29:

For the Phase I ESA (Appendix RQC28), Map 1 (Location of study site - Projected infrastructure area) shows the boundaries of the study site, which is defined as all the land covered by the study. The site (large, bold black rectangle) includes planned infrastructure (grey), existing infrastructure (orange), and land that will not support human activity (green, two shades). Map 2 of the Phase I ESA, based on satellite imagery, shows that most of the site has been subject to recent human activity, although much of it is unrelated to the project, such as the logging roads that were built in the past. Areas free of human activity are wooded plots with no logging roads.

In the WSP report prepared in 2023, the term “sources of contamination” is equivalent to the new term “risk zones” adopted by the MELCCFP in March 2024. Map 3 shows all the risk zones identified for the entire site. In fact, all drilling sites outside the CMAC 1, CMAC 2, and CMAC 3 zones correspond to the SPC-01 risk zone, shown as a yellow rectangle covering the entire area of the site. This was presented in this manner to avoid cluttering the image with dozens of repetitions of the SCP-01 identifier at each “circle” cleared along the paths. The risk of contamination of the rest of the land is deemed insignificant in relation to the identified risk areas. In addition, the Phase I ESA report describes the background of various past, existing, and planned activities, and specifies their location on the site.

In the Phase I ESA report, all the tanks known to WMG were cited. Unfortunately, WMG is not aware of all the capacities and installation dates, as the site has been occupied by various mining and forestry exploration companies in the past. Thus, all known information is included in the report.

The distinction between actual and potential risk zones is required by the Canadian standard CSA Z768 01, to which the study aims to conform, in addition to the provincial requirements of the MELCCFP. This distinction does not affect the level of risk. However, since the actual zones correspond to known contamination (zones already characterized), only a need for more precise delineation or follow-up would prompt a supplementary characterization study (Phase III ESA). Section 7.1.1 contains a discussion of existing monitoring activities for certain at-risk areas. All risk areas were considered in the Phase I ESA report provided.

Section 8 (Conclusion and recommendations) of the Phase I ESA already contains a recommendation for a Phase II ESA. The response to QC-30 provides more details about such an assessment.

For the study of natural background soil content, the Guides were used appropriately, and according to the initial state of the site where the work is to be carried out. In all cases, only natural soil samples were used for background determination. All surface samples that may have been affected by airborne materials or soil reworking, and all backfill samples, were not used for statistical background calculations.

During the field work phase, each sample was carefully examined in terms of stratigraphy, type of material, and elevation above the natural ground surface, so that only natural soil samples were submitted to the analytical program. In the second stage, the analytical results were scrutinized and samples with abnormally high concentrations were excluded from the statistical calculation. The low metal concentrations assessed from samples taken at the Windfall site attest to this. The Guides were properly applied, and background levels were calculated using natural soil samples.

QC-30
Addendum 1 – Response to MELCCFP questions and comments, Volume 3, Appendix 10-2 - Signature page of the Natural Background Soil Content study and certification letter; Addendum 1 – Response to MELCCFP questions and comments, Volume 1, Section 10 – Soils, pages 10-1:

A Phase II study should be discussed and the interpretation of the results presented. The proponent must also provide a clear explanation of the sampling strategy applied in the field, in accordance with the Guide de caractérisation des terrains.

Former mine waste rock stockpiles could have resulted in airborne contamination of areas where planned infrastructure is located. In the case of airborne contamination resulting from the mine’s former human activities, details of composite surface soil sampling according to depth intervals (0-5 cm, 5-10 cm, and 10-20 cm) should be provided. Further information is awaited. It is advisable to clearly identify existing and planned areas of activity.

The proponent must also provide justifications and explanations to clarify the location of the drill holes presented. A distinction must be made between areas free of human activity and impact and natural areas.

Response 30:

The aforementioned Phase I ESA, dated December 2023, was carried out with the aim of identifying all areas at risk of contamination on the site, past and present, so that WMG can plan its environmental characterization work (Phase II ESA) over the next few years, in connection with the planned work that is the subject of this environmental impact assessment, but also more generally (construction work, operations, closure, etc.).
In this context, although conducting a Phase II ESA would provide information on the current quality of the site, the fact that certain activities are continuing without any indication or history of spills means that there is no immediate need to conduct a Phase II ESA. The proponent did, however, carry out a Phase II ESA of former drilling sites or contractors for the purpose of decontamination, prior to the installation of new infrastructure or the arrival of new contractors. The report on this assessment is presented in Appendix RQC30, and the sampling strategy applied is described according to the version of the *Guide de caractérisation des terrains* in effect at the time of its completion (2023), i.e., the 2003 version.

An environmental soil characterization was carried out in 2021 and 2022 to assess the environmental quality of soils in the vicinity of the various planned infrastructure elements. This study was aimed at obtaining information on soil quality to adequately manage soils during the implementation of the planned infrastructure, and did not necessarily focus on the risks of site-specific activities. The work was carried out using boreholes drilled as part of the geotechnical study. Nevertheless, this study gives a very good idea of soil quality over a large area of the site. The study is attached to this document in Appendix RQC30.

An assessment of natural background levels in soils, already provided in Appendix 6-4 of the EIA – Volume 3, was also conducted on a portion of the site that could have received airborne contamination from the existing waste rock stockpile (there is only one waste rock stockpile that has been expanded over the years, and no tailings storage facility at the Windfall site). Ten surface samples were taken at intervals of 0-5 cm, 5-10 cm, and 10-30 cm around existing and planned facilities. Table 9 of the background level assessment presents the analytical results obtained from surface samples. The results indicate metal concentrations below generic criterion A of the *Guide d'intervention*, regardless of whether the samples were taken near an area of human activity or in a pristine area. Making a distinction between these areas does not seem justified since human activities do not seem to have affected surface soils. We would also point out that, due to the grain size of its material, a waste rock stockpile is unlikely to generate airborne contamination, unlike a tailings storage facility, which contains material with a much finer grain size.

QC-31
Environmental Impact Assessment, Volume 3-4-5, Appendix 6-4 - Sectoral Report – Assessment of natural background levels in soils:

The report states that "The following parameters were not included in the statistical analyses, as none of the chemical analysis results exceeded the MDL: antimony (Sb), silver (Ag), beryllium (Be), cadmium (Cd), tin (Sn), mercury (Hg), molybdenum (Mo) and selenium (Se)." In the Guide de caractérisation physicochimique (MDDELCC, 2016), it is mentioned that "if a result is below the detection limit of the method, the result considered is equal to half the detection limit." The proponent must therefore justify why it has eliminated these values.

Response 31 :

Parameters for which all chemical analysis results were below the detection limit have been added to Table RQC31. It is important to specify that for those parameters where values below the detection limit were observed, these values were replaced by half of this limit for the purpose of calculating natural background levels. Table RQC31 is taken from the sectoral report, "Assessment of natural background levels in soils," and provides a summary of background levels for each of the units described in the report.

Table RQC31 Summary of natural background levels in soils

Parameter	Till – Layer 1 (sand matrix with traces to some silt) (mg/kg)	Till – Layer 2 (matrix of silty sand to sand and silt) (mg/kg)
Aluminum	9,863	9,555
Antimony	10	10
Silver	0.25	0.25
Arsenic	0.5	0.5
Barium	10	10
Beryllium	0.5	0.5
Cadmium	0.25	0.25
Calcium	3,246	3,360
Chromium	21	23
Cobalt	6	8.5
Copper	18	22
Tin	2.5	2.5

Parameter	Till – Layer 1 (sand matrix with traces to some silt) (mg/kg)	Till – Layer 2 (matrix of silty sand to sand and silt) (mg/kg)
Iron	13,718	13,040
Lithium	10	10
Magnesium	4,548	4,940
Manganese	191.5	177
Mercury	0.1	0.1
Molybdenum	0.5	0.5
Nickel	16	16
Lead	2.5	2.5
Potassium	341	354
Selenium	0.25	0.25
Sodium	50	50
Total sulphur	**100**	100
Titanium	695.5	817
Vanadium	28.7	31
Zinc	32	30

QC-32
Environmental Impact Assessment, Page 6-47, Volume 1b, Section 6.5
Soil:

In the impact assessment, it is mentioned that "the results from three of the 70 samples analyzed showed a concentration in the A-C range of the generic criteria in the Response Manual." "All other results for total sulphur were below generic criteria 'A'." It also mentions "sample SS21-01-10-30 having indicated a sulphur concentration within the 'A-C' range of the Response Manual." The proponent must clearly specify the relevant "A-B" or "B-C" range for all results presented.

Response 32:

Generic criteria B and C of the Intervention Guide for sulphur are identical (2,000 mg/kg). It is therefore not possible to break down the range concerned more precisely (A-B = A-C), hence the name of the range for sulphur being "A-C."

QC-33
Environmental Impact Assessment, Page 6-55, Volume 1b, Section 6.5
Soil:

Considering the presence of contaminated soil on the site, the proponent must ensure that the soil at the site of the new camp is compatible with the intended use. The proponent must demonstrate this. Otherwise, the proponent must present the decontamination measures that will be carried out on the site prior to construction of the camp.

Response 33:

In the Phase I ESA (Appendix RQC28), no significant sources of contamination were identified for the new camp area. In the background and environmental characterization studies (Appendix 6-4 of the EIA - Volume 3 and Appendix RQC30), boreholes F07-22, F08-22, BE-TR01-21, BE-F01-21, and HMBT-F03-21 were drilled in the area of the new camp. All results for PH C_{10}-C_{50}, PAHs, metals, and sulphur in the samples taken meet criterion A (with the exception of an A-B concentration of arsenic in one sample) and therefore meet the criteria for use in a camp. No environmental rehabilitation is therefore required.

2.3 Surface water and groundwater

2.3.1 Water management

QC-34
Environmental Impact Assessment, Page 3-57, Volume 1a, Section 3.5.2
Water management infrastructure;
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 1, Section 1.3.2.1
Water management infrastructure, Table 1-5, Page 1-23:

Section 2.9.3.1 of D019 stipulates a minimum freeboard of 1.0 m for retention structures. However, only the freeboard for Basins PAR 1, PAR 2 and D is compliant. The freeboard indicated in Table 3-18 for the "other basins" section should be 1.0 m rather than 0.5 m. The proponent must make the necessary corrections.

Response 34:

Section 2.9.3 of D019 deals with tailings accumulation areas, and divides them into two categories: accumulation structures without water retention (waste rock stockpile, thickened tailings storage facilities, etc.), and accumulation structures with water retention. For storage structures with water retention, a minimum freeboard of 1 m or 1.5 m is required for any event less than or equal to the design flood (depending on the sensitivity of the receiving environment).

D019 stipulates that the freeboard of a pond is defined as the distance between the lowest point of the crest of a dike susceptible to erosion and the water level reached during the design flood. This project does not include a tailings accumulation area, since the tailings storage facility is a filtered tailings facility. However, WMG decided to design the PAR1, PAR2, and D (Phase 1) ponds with a 1.5 m freeboard criterion.

The other ponds on the site only collect runoff from various areas of the mine site, and therefore do not have to comply with any official freeboard criteria under D019. However, following the submission of the environmental impact assessment, WMG decided that for the ponds associated with the waste rock stockpile, i.e., Ponds A, F, E, and D (Phase 2), a minimum freeboard of 1 m would be planned. For ponds associated neither with tailings nor with waste rock, i.e., Ponds B, C, J, and P, a minimum freeboard of 0.5 m is planned.

Table RQC34 shows the freeboards planned at this stage of the project for each pond (difference between the crest elevation and the maximum water level during the design flood). In some cases, the planned freeboard is greater than the minimum criterion due to other design criteria (depth of emergency spillway, freeboard on the water level in the spillway during maximum probable flood, etc.). The values may change slightly during the detail engineering process, but the minimum freeboard values proposed above will always be respected.

Table RQC34 Planned freeboard for ponds

Pond	Water source	Planned freeboard (m)
A	Waste rock stockpile	1.0
B	Pads and roads	0.9
C	Pads and roads	0.6
D (Phase 1)	Waste rock stockpile, ore stockpile, tailings storage facility, ads and roads, overburden stockpile	1.5
Phase 2	Waste rock stockpile, ore stockpile	1.0
E	Waste rock stockpile	1.0
F	Waste rock stockpile	1.0
J	Overburden stockpile	0.6
P	Pads and roads	0.9
PAR 1	Tailings storage facility	1.5
PAR 2	Tailings storage facility	1.5

2.3.2 Surface water and sediments

QC-35
Environmental Impact Assessment, Page 3-102, Volume 1a, Section 3.9
Carrying out construction work:

The proponent mentions on Page 3-102 that “to ensure the stability of the infrastructure and to minimize the contact of natural waters with the mine site, an encroachment in a watercourse will be required (CE18).” The proponent must indicate the nature of the work planned in Watercourse CE18. The work must be described (duration, surface area, impact, presence of fish habitat, etc.). The proponent must present the measures that will be implemented to ensure infrastructure stability and minimize contact with natural waters.

Response 35:

The measures that will be implemented to ensure infrastructure stability and minimize contact with natural waters consist of draining the sites containing the infrastructure via collection ditches to direct contact water to collection points, then by gravity or pumping to the WTP before being returned to the environment (EIA, Vol. 1, Section 3.5.2).

The information presented below has been taken from Section 6.6. Hydrology of the environmental impact assessment (Vol. 1, p. 6-64 onwards).

Underground Watercourse CE18 will be backfilled (EIA, Vol. 1, p. 6-74). The surface area of CE-18 will be reduced from 0.07 km^2 to 0.01 km^2, a reduction of 89.8% (Table 6-21, p. 6-75). No common mitigation measures will be applied (p. 6-75). However, the new infrastructure was positioned to maximize compliance with the boundaries of the current watersheds and encroach on as few watersheds as possible.

During the closure phase, common mitigation measures QUA13, QUA17, QUA18, QUA20, QUA21, PLA01, and PLA02 and standards NOR07, NOR14, and NOR16 will be applied to maximize restoration of the natural local flow of the watersheds (Appendix 5-2, Volume 3) (EIA, Section 6.6.4, p. 6-84).

Once the closure phase is completed, and given the mitigation measures that will be implemented, some permanent alterations of the drainage pattern and the local topography will occur. A positive impact on hydrology is anticipated compared to the situation that will prevail during operations. Its extent is local and its duration will be long because the impacts will be felt permanently.

As mentioned above, the underground section of Watercourse CE18 will be backfilled. In fact, this involves a total of 98 m over a length of 241 m. Only the first section (79 m) of Watercourse CE18 (the one deemed permanent) was established as a potential fish habitat. This section will not be directly affected by the project's infrastructure. However, indirect effects on fish habitat, particularly on CE18, were assessed. The report was filed as Appendix 7-2 of Addendum 1, Volume 3 (p. 63 onwards). A summary of the results of the fish habitat and fishery characterization carried out from 2015 to 2022 is provided. The aquatic habitat along the entire length of the permanent watercourse (40 m^2) will no longer be adequate for the needs of fish under future conditions, and the loss is therefore considered to be total on this section of watercourse. This surface area has been included in the project's indirect losses.

QC-36
Addendum 1 - Response to MELCCFP questions and comments, Volume 1, Response Q7-2 h) and i), Addendum 1 - Response to questions and comments from MELCCFP, Volume 3, Appendix 8-1 - Surface water and sediments (Revision 1):

For the characterization of the initial state of the receiving environment, i.e., surface water and sediments, prior to the implementation of an industrial project, the proponent must:

- Clearly distinguish between areas that will be exposed to mine effluent (downstream of the discharge) and control or reference areas (not exposed to the discharge). Exposed areas and reference areas must be identified on a map, together with each of the stations they contain (indicate each exposed station in the exposed area and each reference station in the reference area).
- Only establish as control stations those that will be used for monitoring, i.e., those that will be re-characterized during monitoring.
- Clearly identify, in the presentation of characterization results, each station as either "exposed" or "control." Tables presenting the results of sediment quality analyses must identify results that exceed the sediment quality criteria by indicating which criterion is exceeded for that result. Exceedances of each criterion must be discussed separately.
- Discuss the results for each watercourse, CE(n), or water body, SN(n), separately. The average of the results obtained for stations in the same exposed watercourse must be compared with the average of the results obtained for the station(s) located in the control (unexposed) watercourse(s), while the average of the results obtained for stations in the same exposed water body must be compared with the average of the results obtained for the station(s) located in the control (unexposed) water body(ies).

- Demonstrate the absence of deterioration in the exposed environment by comparing sediment characterization results from each exposed water body with those from stations in the reference zone (unexposed). The consolidation of data from all unexposed stations may be acceptable for this exercise, but does not preclude the need to establish a reference zone with a control station to be used later for monitoring. In the event that this exercise demonstrates a deterioration of the exposed environment, it will then be necessary to establish the historical sediment contamination profile and natural levels by taking a sediment core approximately 30 cm long and cutting 1 cm slices at various depths (e.g., 1-2 cm, 4-5 cm, 9-10 cm, 19-20 cm and 29-30 cm), each of which will be analyzed in accordance with the Guide de caractérisation physicochimique de l'état initial du milieu aquatique avant l'implantation d'un projet industriel (MDDELCC, 2017).

Response 36:

Distinction of areas

Map RQC36 illustrates the area and stations that will be exposed to the mining effluent, i.e. downstream of discharge, as well as reference areas and stations that will not be exposed to the mining effluent.

Identification of stations for monitoring

The stations that will be used for monitoring surface water and sediment quality have not yet been finalized. Two options are being evaluated. Option 1 consists of monitoring in Lake SN2 and watercourse SN2-T1, while in option 2, monitoring would be done in watercourse CE01 and Lake SN1. The monitoring program is detailed in Appendix RQC132.

Presentation of characterization results and discussion of criteria exceedances

The tables presenting surface water and sediment characterization results have been modified to identify and group stations that are respectively in the area exposed to the mining effluent and reference areas. They are found in Appendix RQC36. Tables RQC36-1 and RQC36-2 also present characterization stations according to their exposure or non-exposure to mining effluent.

The tables presenting sediment quality analysis results have been modified to identify results that exceed sediment quality criteria according to the criterion exceeded. These tables are found in Appendix RQC36.

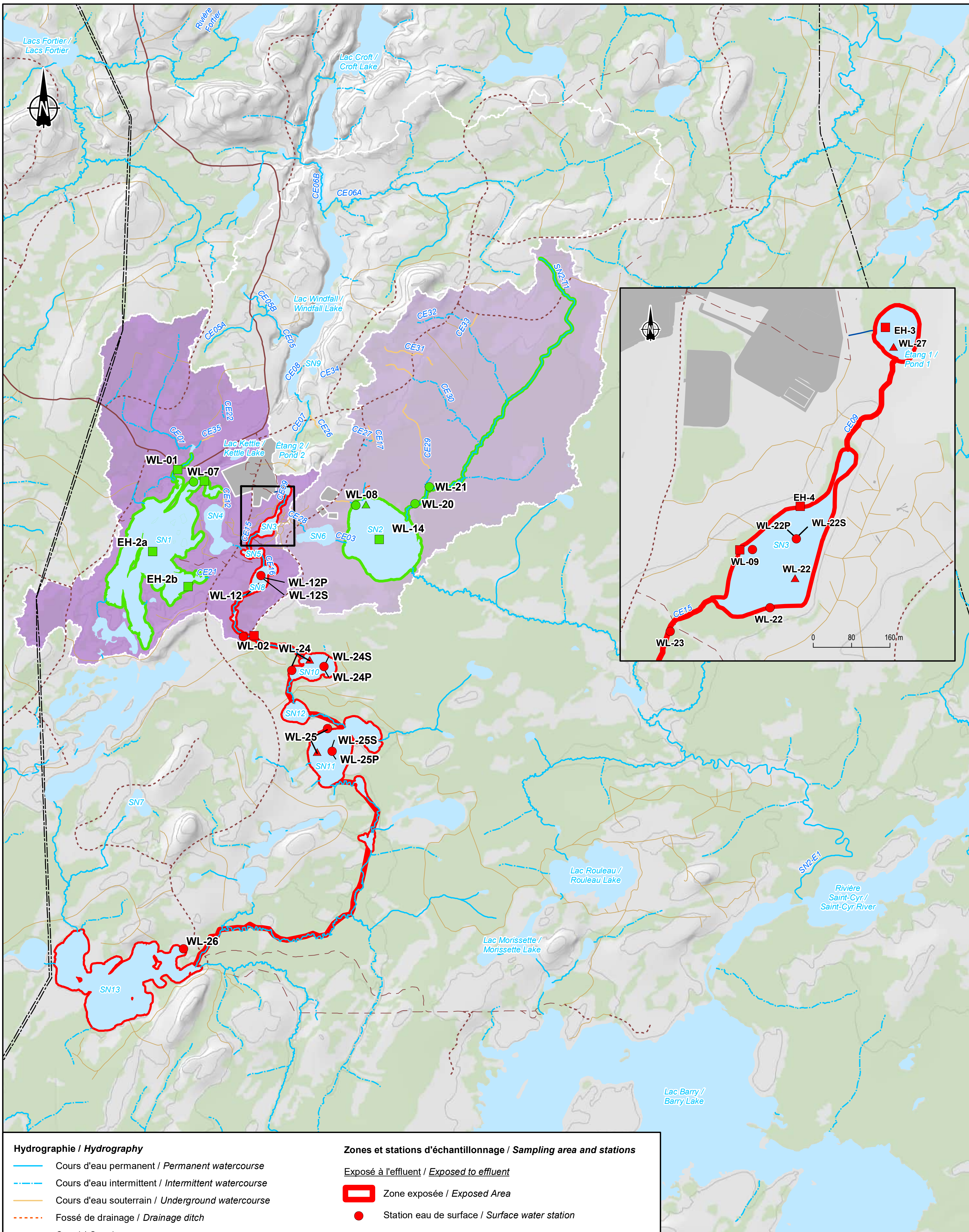
Table RQC36-1 Classification of surface water sampling stations by zone

Zone	Waterbody	Station name
Reference zone (option 2)	Lake SN1	EH-2a
		EH-2b
		WL-07
	CE01	WL-01
Reference zone (option 1)	Lake SN2	WL-08
		WL-14
	SN2-T1	WL-20
		WL-21
Area exposed to the mine effluent	Pond 1	EH-3
	Lake SN3	EH-4
		WL-09
		WL-22
		WL-22S

Zone	Waterbody	Station name
		WL-22P
	CE15	WL-23
	Lake SN8	WL-12
		WL-12S
		WL-12P
	CE02	WL-02
	Lake SN10	WL-24
		WL-24S
		WL-24P
	Lake SN11	WL-25
		WL-24S
		WL-24P
	Lake SN13 (near the Cree camp)	WL-26

Table RQ36-2 Classification of surface water sampling stations by zone

Zone	Waterbody	Station name
Reference zone (option 1)	Lake SN2	WL-08
		WL-14
Reference zone (option 2)	Lake SN1	EH-2a
		EH-2b
		WL-07
	CE01	WL-01
Area exposed to the mine effluent	Lake SN3	EH-4
		WL-09
		WL-22
	Lake SN8	WL-12
	Lake SN10	WL-24
	Lake SN11	WL-25
	CE02	WL-02
	CE15	WL-23
	Pond 1	EH-3
		WL-27



Hydrographie / *Hydrography*

- Cours d'eau permanent / *Permanent watercourse*
- Cours d'eau intermittent / *Intermittent watercourse*
- Cours d'eau souterrain / *Underground watercourse*
- Fossé de drainage / *Drainage ditch*
- Canal / *Canal*
- Plan d'eau / *Waterbody*

Bassins versants / *Watersheds*

- SN2
- CE02

Milieux humides / *Wetlands*

- Milieux humides / *Wetlands*

Infrastructures / *Infrastrutes*

- Ligne de transport d'énergie électrique / *Electric power transmission line*
- Infrastructure du projet existante / *Project existing infrastructure*

Route / *Road*

- Route forestière secondaire / *Secondary forest road*
- Route forestière tertiaire / *Tertiary forest road*
- Sentier / *Trail*
- Chemin d'hiver / *Winter road*

Zones et stations d'échantillonnage / *Sampling area and stations*

Exposé à l'effluent / *Exposed to effluent*

- Zone exposée / *Exposed Area*
- Station eau de surface / *Surface water station*
- Station sédiment et eau de surface / *Sediment and surface water station*
- Station sédiment / *Sediment station*

Référence / *Reference*

- Zone de référence / *Reference Area*
- Station eau de surface / *Surface water station*
- Station sédiment et eau de surface / *Sediment and surface water station*
- Station sédiment / *Sediment station*

WINDFALL GROUPE MINIER

Projet Windfall - Réponses aux questions et commentaires - 1re série /
Windfall Project - Answers to Questions of Comments - 1st Series
Site minier Windfall, Eeyou Istchee Baie-James (Québec) /
Windfall Mining Site, Eeyou Istchee Baie-James (Quebec)

Carte RQC36 / *Map RQC36*
Zone exposée à l'effluent minier et zones de référence /
Area exposed to mine effluent and reference areas

Sources
BDTQ, 1/20 000, MRNF Québec, 2007
MERN, AQréseau+, réseau routier
GRHQ, Réseau hydrique linéaire, 2023
SIEF, MRNF Québec, 2012
Photo-interprétation de la végétation /
Photointerpretation of the vegetation, WSP, 2015 à 2021

0 500 1000 m
MTM, Fuseau 9, NAD83

2024-10-10

Préparée par / Preparation : I. Cartier
Dessinée par / Drawing : S. Samson
Vérifiée par / Verification : M.-H. Brisson
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WSP

Discussion of exceedances of each criterion for sediments

Regarding sediment sampling stations in water bodies in reference areas (watercourse CE01, lakes SN1 and SN2), cadmium is the substance with the most exceedances, namely an exceedance of the rare effect concentration (REC) criterion in one sub-station of Lake SN2, as well as exceedances of the threshold effect concentration (TEC) criterion in three sub-stations of Lake SN2 and in one sub-station of Lake SN1. Mercury has three exceedances of the REC criterion, all from samples from station WL-14 in Lake SN2. Lead and zinc concentrations measured in the sample from sub-station WL-14.4 both show exceedances of the REC criterion. Finally, station WL-14 of Lake SN2 (all sub-stations WL-14.1 to WL-14.5) is the one with the most exceedances, all criteria combined, for a total of nine.

Among sediments sampled in watercourses of the exposed area (CE15 and CE02), those collected in CE02 show no exceedances since measured concentrations are all below the detection limit. Although concentrations measured in sediments from some sub-stations sampled in CE15 show exceedances for cadmium and copper, the averages of concentrations measured in all sub-stations reveal no exceedances.

As for sediments collected in water bodies of the exposed area, results of analyses of samples collected at different sub-stations show that cadmium, arsenic and zinc are the substances with the most exceedances. Indeed, for cadmium, 3 exceedances of the REC criterion, 18 exceedances of the TEC criterion and 1 exceedance of the OEC criterion were observed. As for arsenic, it shows 2 exceedances of the REC criterion, 6 exceedances of the TEC criterion and 11 exceedances of the OEC criterion. Finally, zinc shows 11 exceedances of the REC criterion and 6 exceedances of the TEC criterion. Station WL-24 of Lake SN10 (all sub-stations WL-24.1 to WL-24.5) is the one with the most exceedances, all criteria combined, for a total of 28. Pond 1 (station WL-27) and Lake SN11 (station WL-25) follow closely with 27 exceedances each, all criteria combined. It is in Pond 1 that we find the greatest number of exceedances of the OEC criterion, which is the most restrictive criterion that was exceeded in all analyzed samples from water bodies in the exposed area. In this water body, the OEC criterion was exceeded for arsenic, cadmium, mercury and lead.

Discussion of results by watercourse and water body

Appendix RQC36-5 presents the averages of results obtained for all stations in watercourses and water bodies of the exposed area and those of reference areas.

Watercourses in the reference area (CE01 and SN2-T1) both have high sensitivity to acidification, as evidenced by low calcium concentrations and low alkalinity values measured in almost all samples collected. Exceedances of surface water quality criteria (SWQC) are also observed for most samples in terms of aluminum concentrations (prevention of contamination for water and aquatic organisms-CPC[O], protection of aquatic life-chronic effect-CVAC and protection of aquatic life-acute effect-CVAA), arsenic (CPC[O]), iron (CPC[O]) and lead (CVAC). Averages calculated for all samples collected in watercourse SN2-T1 show exceedances of CPC[O] for arsenic, iron and manganese as well as an exceedance of CVAC for lead. Analyses of the only sample collected in watercourse CE01 revealed exceedances of CPC[O] for aluminum and iron.

As for the two watercourses sampled in the exposed area, they present quite different profiles. Watercourse CE02 is more similar to those in reference areas in terms of sensitivity to acidification, but shows exceedances of surface water quality criteria for different metals. Indeed, exceedances of CPC[O] were observed for mercury concentrations in samples collected in watercourse CE02, while watercourses in the reference area (CE01 and SN2-T1) show exceedances of CPC[O] for aluminum, arsenic, iron and manganese as well as an exceedance of CVAC for lead. As for watercourse CE15, it differs considerably from CE02 in the exposed area as well as from watercourses in the reference area. Its sensitivity to acidification is low and only a few metal exceedances (B, Mn) were observed.

However, almost all samples collected in this watercourse show exceedances in terms of chloride concentrations (CVAC), ammonia nitrogen (CPC[O]) and nitrates (CPC[O] and CVAC). Different sampling years between the two watercourses in the exposed area could explain these differences in terms of exceedances of water quality criteria.

Like watercourses in the reference area, lakes in this area show sensitivity to acidification as evidenced by low calcium concentrations and low alkalinity values measured in all samples collected. In the exposed area, the sensitivity to acidification of lakes SN3, SN8 and SN13 is rather average. However, this characteristic was not observed in all sampling years in lakes SN3 and SN8. In lakes of reference areas as well as those of the exposed area, we note among the averages of values exceedances of SWQC for only a few metals. In reference lakes SN1 and SN2, only lake SN2 shows averages that exceed CPC[O] for arsenic and iron. Averages of mercury analysis results also show exceedances of CPC[O] in these two lakes, but they are attributable to a single high value in both cases. The exceedance of CPC[O] of the average of mercury analysis results in Lake SN3, located in the exposed area, is attributable to a few high values measured at station WL-09.

Lakes in the exposed area stand out mainly for exceedances of average values for ammonia nitrogen and nitrates. Indeed, lakes SN3 and SN8 show exceedances of CPC[O] for ammonia nitrogen as well as exceedances of CPC[O] and CVAC for nitrates. Lake SN10 shows an exceedance of CVAC for the average value of samples analyzed for nitrates. According to results of the study of groundwater background levels at the mine project site (Addendum 1, volume 2, appendix 3-4), estimated background values for ammonia nitrogen exceed groundwater quality criteria. Water from underground galleries, where significant exploration activities took place in 2023, probably contained a larger amount of ammonia nitrogen considering the high concentrations of groundwater background levels. Although treated seasonally at current water treatment units, it is possible that high concentrations of ammonia nitrogen persist in treated water and are discharged in mine effluent, thus explaining concentrations that exceed CVAC criteria in nearby water bodies. High concentrations of ammonia nitrogen and nitrates could also be related to the use of explosive products at the mine site, whose residues are conducive to the predominance of these substances in surface and groundwater of oparting areas.

It should be noted that all samples collected in Lake SN3 (exposed area) in 2023 (stations WL-22, WL-22S and WL-22P) reveal values that exceed CVAC for chlorides (see response to QC-37 for possible causes of exceedances).

In terms of metals, we note exceedances of CPC[O] for iron in lakes SN11 and SN13 as well as for arsenic and manganese in Lake SN13. In addition to ammonia nitrogen, results of the study of groundwater background levels indicate exceedances of groundwater quality criteria for metals, namely aluminum, arsenic, copper and manganese. Higher concentrations of these metals in groundwater could partly explain those in surface water, considering that they are naturally found in the environment (soils, surface water and groundwater) of the mine area. This would also explain exceedances in terms of arsenic concentrations in lakes SN1 and SN2 located in reference areas.

Discussion of sediment characterization results

Sediment quality is evaluated based on Criteria for evaluating sediment quality in Quebec and the application frameworks: prevention, dredging and restoration (EC and MDDEP, 2007), as recommended by the MDDELCC Guide (2017). Among substances analyzed in sediments as part of the Windfall Project, seven metals and metalloids are covered by these criteria, namely As, Cd, Cr, Cu, Hg, Pb and Zn. This response specifically addresses these metals and metalloids.

Table RQC36-3 presents sediment characterization results for each station exposed to effluent (9 stations). Stations sampled in 2010 as part of the Windfall project were not retained due to higher detection limits, which could have introduced biases in results. Values exceeding EC and MDDEP (2007) criteria are highlighted using colors that refer to criteria that have been exceeded.

Table RQC36-3 Comparison of metal concentrations at stations exposed to Windfall effluent with EC and MDDEP criteria (2007)

Metals/ metalloids	Units	Pond 1	Lake SN3	Lake SN3	CE15	Lake SN8	Lake SN8	CE02	Lake SN10	Lake SN11	Assessment criteria for freshwater sediment quality (EC and MDDEP, 2007)				
		WL-27	WL-09	WL-22	WL-23	WL-12	WL-12	WL-02	WL-24	WL-25					
		Average	2017	Average	Average	2017	Average	2015	Average	Average	CER	CSE	CEO	CEP	CEF
		04-09-2023	05-09-2017	04-09-2023	04-09-2023	05-09-2017	29-09-2021	25-10-2015	04-09-2023	04-09-2023					
Arsenic	mg/kg	7.1	0.8	7.5	1.3	2.2	2.8	2.1	13.4	6.7	4.1	5.9	7.6	17	23
Cadmium	mg/kg	1.52	0.15	1.0	0.21	0.15	0.12	0.15	1.48	0.94	0.33	0.6	1.7	3.5	12
Chrome	mg/kg	9	6	21	17.4	10	13.8	12.5	41	34.6	25	37	57	90	120
Copper	mg/kg	23.4	2.5	16.7	17.1	2.5	2.5	10	10.4	9.3	22	36	63	200	700
Mercury	mg/kg	0.217	0.010	0.125	0.025	0.140	0.025	0.025	0.165	0.054	0.09	0.17	0.25	0.49	0.87
Lead	mg/kg	52.4	2.5	33.0	5.4	15.0	9.0	9.0	35.8	24.6	25	35	52	91	150
Zinc	mg/kg	124	5	69	37	16	31	35	124	111	80	120	170	310	770

Note: The color of the cells indicates when criteria have been exceeded.

To compare these results with those obtained at stations not exposed to effluent (14 stations), Table RQC36-4 presents statistics on values observed at the two groups of stations: minimum, median, mean and maximum.

Table RQC36-4 Statistics on metal concentrations at effluent-exposed stations, Windfall unexposed stations and MERN stations

Metals/ metalloids	Units	Stations exposed to effluent					Unexposed stations Windfall					MERN stations					Assessment criteria for freshwater sediment quality (EC and MDDEP, 2007)				
		n	min	median	mean	max	n	min	median	mean	max	n	min	median	mean	max	CER	CSE	CEO	CEP	CEF
Arsenic	mg/kg	9	0.8	2.8	4.9	13.4	14	0.8	1.4	2.2	10.9	10	0.6	4.0	5.4	**15.1**	4.1	5.9	7.6	17	23
Cadmium	mg/kg	9	0.12	0.21	0.63	**1.52**	14	0.05	0.17	0.26	0.7	10	0.31	0.60	0.64	1.03	0.33	0.6	1.7	3.5	12
Chrome	mg/kg	9	6.0	13.8	18.3	41.0	14	3	12.5	11.1	20.7	10	9.4	27.1	33.8	**82**	25	37	57	90	120
Copper	mg/kg	9	2.5	10.0	10.5	23.4	14	1.85	4.01	6.2	13.6	10	4.53	12.2	16.9	**69.7**	22	36	63	200	700
Mercury	mg/kg	9	0.01	0.054	0.087	0.217	14	0.020	0.025	0.080	**0.700**	10	0.021	0.079	0.07	0.108	0.09	0.17	0.25	0.49	0.87
Lead	mg/kg	9	2.5	15.0	20.7	**52.4**	14	2.5	9	7.6	16.0	10	0.96	3.2	4.3	10.1	25	35	52	91	150
Zinc	mg/kg	9	5.0	36.6	61.3	124.0	14	5	24	27.4	62.8	10	36.2	89.8	83.38	**155**	80	120	170	310	770

Note: The color of the cells indicates when criteria have been exceeded.

In addition, additional results published by the Ministry of Energy and Natural Resources (MERN, Solgadi, 2017) concerning stations not exposed to the effluent are presented. These data were collected in the Windfall project area, using methods comparable to those used in the Windfall project. These MERN data were previously presented in Addendum 1 (vol. 1) (Solgadi, 2017) to which one can refer for more details. Recall that they were collected near the Windfall site, in some cases in the same water bodies sampled as part of the project.

Sediment quality at stations exposed to the mining effluent

Results obtained in the area exposed to mining effluent (Table RQC36-1) are presented from upstream to downstream, starting with station WL-27 (2023), located in Pond 1, where the effluent is discharged. At this station, the criterion representing the rare effect concentration (REC) is exceeded for all metals except chromium. The threshold effect concentration (TEC) is exceeded for four metals and metalloids: As, Cd, Hg and Zn. Finally, the occasional effect concentration is exceeded in the case of lead.

Criteria representing the highest risks (probable effect concentration, PEC and frequent effect concentration, FEC) are not reached at any of the stations exposed to the effluent.

At station WL-09, located in Lake SN3 and sampled only in 2017, values are below criteria for all metals for which criteria are defined.

The next station, WL-22 (2023), is located in Lake SN3. At this station, mercury and lead concentrations are above the REC. Those of arsenic and cadmium also exceed the TEC.

At station WL-23 (2023) located in watercourse CE15, concentrations are below quality criteria for the seven metals and metalloids.

Station WL-12 located in Lake SN8, was sampled twice, in 2017 and 2021. Only one criterion exceedance (REC) was observed, in 2017. This is the REC for mercury. It should be noted that concentrations at this station were higher in 2017 than in 2021 for three metals: Cd, Hg and Pb.

At station WL-02 (2015) located in watercourse CE02, no criterion exceedance is observed.

Station WL-24 (2023) is located in Lake SN10. Criteria exceedances are observed for all metals except copper. The arsenic concentration exceeds the occasional effect concentration (OEC) criterion. Those of Cd, Cr, Pb and Zn exceed the TEC.

Finally, station WL-25 was sampled in 2023 in Lake SN11. At this station, the REC is exceeded for As, Cd, Cr and Zn. As and Cd also exceed the TEC, without reaching occasional, probable or frequent effect thresholds.

Upstream-downstream concentrations in sediments

Figure RQC36-1 illustrates graphically the data from Table RQC36-4 for stations exposed to mining effluent. Stations are arranged from upstream (left) to downstream (right), reflecting a gradient of exposure to effluent, which is progressively diluted by intermediate natural inputs as one moves away from Pond 1. Only stations sampled in 2023 were retained to ensure the same duration of exposure to effluent.

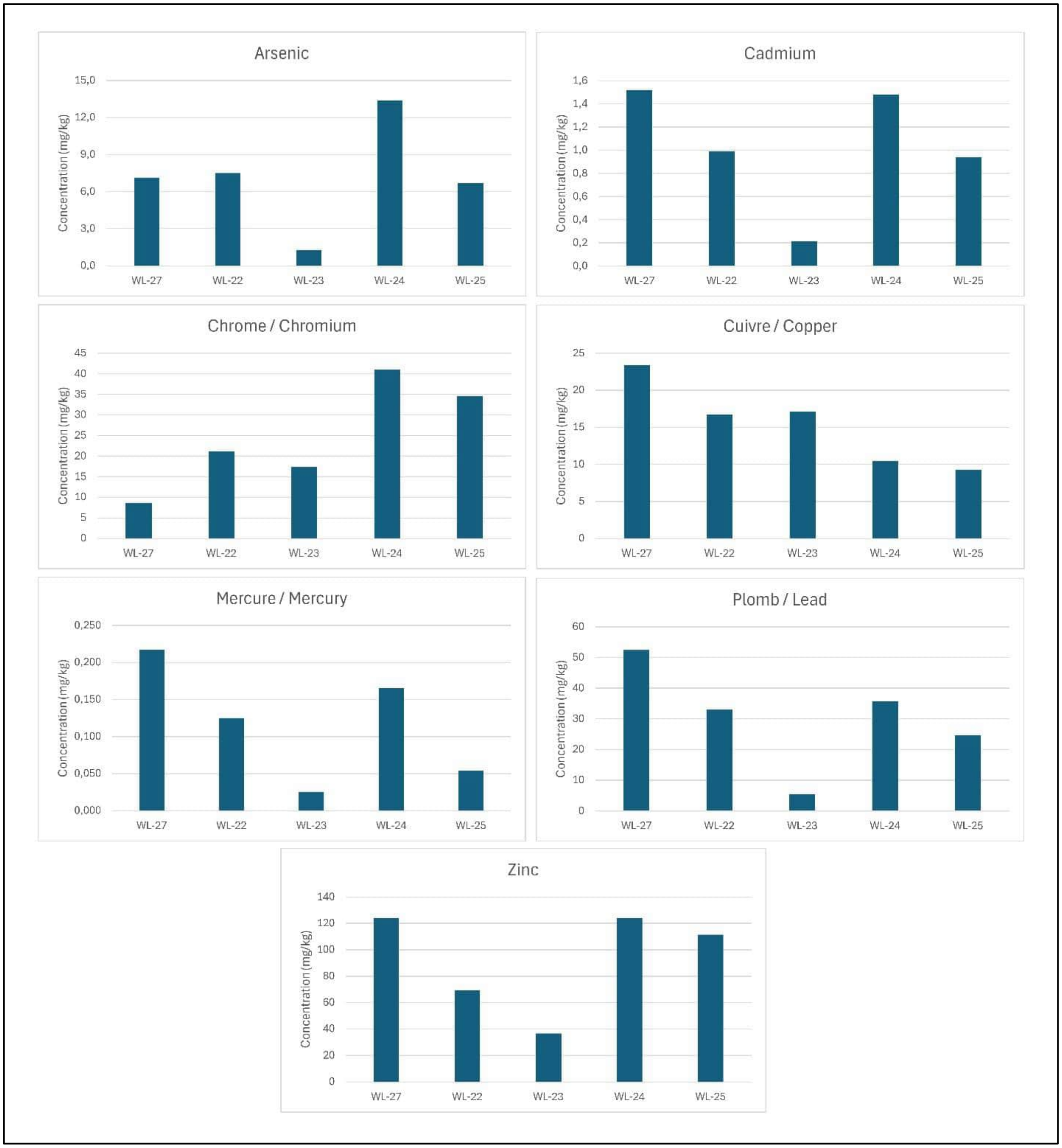


Figure RQC36-1 Metal concentrations in sediment at stations exposed to effluent, from upstream to downstream (stations sampled in 2023 only)

In general, metal concentrations in sediments do not follow a decreasing gradient as one moves away from the effluent. In the case of arsenic and chromium, station WL-24, located a few kilometers downstream of Pond 1, has the highest concentrations. For other metals, the highest concentrations are often found in Pond 1 (station WL-27) then at station WL-24. Only copper shows a pattern that resembles a decreasing gradient.

Comparison of exposed and unexposed sites

Table RQC36-4 allows determining if metal concentrations at exposed stations are within the range of values observed in unexposed areas, by comparing maximum values observed in the three groups of stations. For reference, minimum, median and mean values are also presented for each group.

For arsenic, the highest value observed at exposed stations, 13.4 mg/L, exceeds the range of values observed at unexposed Windfall stations (maximum of 10.9 mg/L). However, they are within the range of values at MERN stations (maximum of 15.1 mg/L). The same is true for chromium and copper, for which maximum values are higher at MERN stations than at exposed stations.

In the case of mercury, the highest value was observed at one of the unexposed Windfall stations. However, values at exposed stations exceed the range observed at MERN stations.

Finally, for cadmium and lead, values at exposed stations exceed the range of values observed at both groups of unexposed stations.

This shows that higher values than those observed at stations exposed to effluent can occur in both unexposed areas (Windfall and MERN) for five of the seven metals and metalloids considered. In the case of cadmium and lead, however, the highest values are observed in Pond 1, which receives the mining effluent.

Frequency of criteria exceedances

The frequency at which sediment quality criteria are exceeded allows for further comparison of sediment quality in areas exposed and unexposed to effluent. These data were previously presented (Addendum 1, vol. 1, response to question 7-2), but are repeated here (Table RQC36-5) to provide a more complete picture of the three groups of stations.

In general, criteria exceedances are less frequent in the unexposed Windfall area than at stations exposed to effluent. This is the case for Cu, Hg and Pb with respect to REC, for As, Hg, Pb and Zn in the case of TEC, and for Pb in the case of OEC. On the other hand, exceedances are more frequent in the unexposed area in the case of Hg (OEC and PEC).

Exceedances are also often more frequent at MERN stations than in the exposed area. For example, for cadmium, the REC is exceeded for 80% of MERN samples, compared to 44% for exposed stations. For arsenic, the OEC is exceeded in 30% of MERN samples, compared to 11% of samples from the exposed area.

These results demonstrate high variability in metal concentrations in sediments in the Windfall project area, including unexposed sites where criteria exceedances are observed in several places.

Table RQC36-5 Frequency of exceedances of sediment quality assessment criteria at exposed, Windfall unexposed and MERN (unexposed) stations

	Exposed area (9 samples)					Non-exposed zone (14 samples)					MERN stations (10 samples)				
	CER	**CSE**	**CEO**	**CEP**	**CEF**	**CER**	**CSE**	**CEO**	**CEP**	**CEF**	**CER**	**CSE**	**CEO**	**CEP**	**CEF**
Arsenic	44 %	44 %	11 %	0 %	0 %	7 %	7 %	7 %	0 %	0 %	50 %	40 %	30 %	0 %	0 %
Cadmium	44 %	44 %	0 %	0 %	0 %	21 %	14 %	0 %	0 %	0 %	80 %	50 %	0 %	0 %	0 %
Chrome	22 %	11 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	60 %	30 %	10 %	0 %	0 %
Copper	11 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	10 %	10 %	10 %	0 %	0 %
Mercury	44 %	11 %	0 %	0 %	0 %	7 %	7 %	7 %	7 %	0 %	20 %	0 %	0 %	0 %	0 %
Lead	33 %	22 %	11 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %
Zinc	33 %	22 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	60 %	10 %	0 %	0 %	0 %

CER: concentration d'effets rares (concentration of rare effects)
CSE: concentration seuil d'effets (effect threshold concentration)
CEO: concentration d'effets occasionnels (concentration of occasional effects)
CEP: concentration d'effets probables (concentration of probable effects)
CEF: concentration d'effets fréquents (concentration of frequent effects)

Note: Highlighted values indicate the area where exceedances are most frequent.

In general, measured concentrations tend to be:

- lower at unexposed Windfall stations;
- intermediate at exposed stations;
- and higher at MERN stations.

Thus, for most metals, available data do not seem to indicate a degradation of sediment quality downstream of the effluent. For lead, however, concentrations at exposed stations are often higher than what is observed at unexposed stations. Median, mean and maximum values in the exposed area are relatively high compared to the two groups of unexposed stations (Table RQC36-4). Criteria exceedances for lead are also observed there, while no exceedances are noted for this metal at the two groups of unexposed stations (Table RQC36-5).

Available data on Windfall effluent (Englobe, 2024) show that average monthly lead concentrations are always below the MDMER standard (0.10 mg/L), and rarely even above the detection limit used (0.00017 mg/L). It is therefore not obvious a priori that the effluent could constitute a significant source of lead at exposed stations.

Conclusion

In summary, metal concentrations in sediments and frequencies of exceedance of applicable criteria at stations exposed to effluent are generally higher than those at unexposed stations characterized as part of the Windfall project, and often lower than those at unexposed stations characterized by MERN. Thus, for most metals, available data do not seem to indicate a degradation of sediment quality downstream of the effluent.

With the realization of the project, the mining effluent will continue to be subject to current discharge standards. In addition, the water treatment system will be improved to allow compliance with these standards when the mine enters production. In this context, the sediment quality monitoring planned as part of the project will detect any changes in sediment quality. The Windfall project will comply with all regulations as well as its authorization conditions, both in terms of water treatment and environmental monitoring.

References :

EC et MDDEP (Environnement Canada et ministère du Développement durable, de l'Environnement et des Parcs du Québec). 2007. *Critères pour l'évaluation de la qualité des sédiments au Québec et cadres d'application : prévention, dragage et restauration*. 39 pages.

Englobe. 2024. *Étude de suivi des effets sur l'environnement au site Windfall. Rapport d'interprétation du cycle 2.* Groupe Minier Windfall, 65 p. + annexes.

MDDELCC (Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques). 2017. *Guide de caractérisation physicochimique de l'état initial du milieu aquatique avant l'implantation d'un projet industriel*, Québec, Direction générale du suivi de l'état de l'environnement, ISBN 978-2-550-79556-8, 12 p. + 3 annexes.

Solgadi, F. 2017. *Nouveau levé géochimique de sédiments de fond de lac dans le secteur d'Abitibi sud-est, Province du Supérieur*, Québec. Ministère de l'Énergie et des Ressources naturelles, DP 2017-08, 13 p.

QC-37
Addendum 1, Responses to MELCCFP recommendations and comments, Volume 3, Appendix 8-1
Surface water and sediments:

It can be seen that physico-chemical characteristics have changed over the years, and that water quality in the receiving environment has deteriorated. For example, for Lake SN3 data, average hardness rose from 19 mg/L $CaCO_3$ in 2016-2017 to 366 mg/L $CaCO_3$ in 2023. In addition, exceedances of the surface water quality criterion for the chronic protection of aquatic life (CALC) were observed in Lake SN3 in 2023 for chlorides and nitrates with average concentrations of 130 mg/L and 30 mg/L respectively, whereas in 2016-2017 the parameters were not observed. According to the 2023 data provided, the impact of effluent is observable up to a few kilometres downstream of the discharge point, i.e., as far as Lake SN10, since there is a permanent exceedance of the nitrate CALC.

The proponent's current activities on the site have an impact on water quality, and the site is highly sensitive to an increase in water pressure. The proponent must explain the causes of the exceedance of criteria for chlorides and nitrates, and the marked increase in ionic charge (hardness, total dissolved solids, conductivity), as well as the measures it intends to implement to reduce its impact when carrying out its project. The proponent must also justify its choice of measures.

Response 37:

Regarding the chloride concentrations measured in 2016-2017, it should be noted that the detection limits were not the same as those for the analyses conducted in 2023. Indeed, the detection limits were 0.5 mg/L during the analyses carried out in 2016 and 2017, while they were 0.05 mg/L for the analyses conducted in 2023. For nitrates, the detection limits were the same for all analyses, at 0.02 mg/L N.

Advanced exploration activities by WMG began in 2018, and water collected on-site started being discharged into the mine effluent. In the interpretation report of the Environmental Effects Monitoring Study (EEM; cycle 2) for the Windfall site, conducted in 2023, water quality monitoring is presented for the watercourse connecting Pond 1 to Lake SN3, which is an area exposed to the mine effluent. Between 2021 and 2023, hardness values ranging from 217 to 644 mg/L CaCO3 were observed. Chloride and nitrate concentrations were also elevated, ranging from 80 to 220 mg/L (CVAC criterion of 120 mg/L) and from 11 to 135 mg/L N (CVAC criterion of 3 mg/L N), respectively.

Ongoing advanced underground exploration requires the use of ammonium nitrate-based explosives. Water from underground galleries, which may contain nitrates, is therefore pumped to the surface and directed to water treatment units for basic treatment. Except during the summer months, no treatment reduces nitrogen load. However, in 2023, WMG began constructing a biological water treatment plant that, once operational, will convert nitrogen compounds into nitrates. It is therefore possible that residual concentrations persist in the treated water and be discharged into the mine effluent, which partly explains the concentrations exceeding CVAC criteria.

Between September 2022 and February 2024, underground development was halted due to a lack of space at the existing waste rock stockpile. During this period, the underground development teams worked, among other things, on setting up the garage. Subsequently, in April 2023, construction began to develop the water basins, expand the waste rock stockpile, and build the new water treatment plant. Thus, the lower nitrate concentrations in 2023 indeed correspond to the decrease in underground development activities. However, it is important to note that the western sector of the Windfall site was also affected by the 2023 forest fires. The site was evacuated during the months of June and July. It is possible that some of the elevated values in SN3 and downstream lakes were caused by changes attributable to the fires.

Exceedances of CVAC criteria for chlorides occurred during 2023 sampling, when exploration activities were at a minimum. Indeed, the high chloride concentrations in water samples from Lake SN3 and the CE15 watercourse may be explained by the use of chlorides as additives in the concrete applied to the underground gallery walls to secure them and prevent rock sections from detaching. It is also used in the concrete brought from outside to build the underground garage. This additive is employed to delay or accelerate the setting of concrete. As a result, mine water may contain higher concentrations of chlorides. Once collected and directed to the treatment plant, this water is subsequently discharged in the mine effluent.

The presence of chlorine in the concrete could also explain the increase in 2023 in conductivity (due, among other factors, to chlorine ions) in lakes SN3, SN8, and the CE15 watercourse, which are the water bodies closest to the mine effluent.

Dissolved solids are mainly composed of inorganic substances dissolved in water, including chlorides, sulfates, bicarbonates, calcium, magnesium, and sodium. Since some of these substances are found in de-icing salts and in the concrete used at the mine site, this could possibly explain the increase in dissolved solids in the surface water of lakes SN3, SN8, and the CE15 watercourse. Conductivity is also related to the presence of dissolved solids in water.

A water treatment plant is currently under construction at the Windfall site and will treat water from advanced exploration activities once it becomes operational in the fall of 2024. Subsequently, as part of the project, an expansion of the current plant will be undertaken to ensure that the quality of water returned to the environment meets the D019 criteria and MDMER standards (SOR 2002-222), and, considering technical and economic limitations, aims to achieve the EDOs that will be defined for the project.

The water treatment planned for the Windfall mine operation will be divided into four treatment streams based on the main problematic contaminants present in each water source. As mentioned in Addendum 1, Volume 1, Section 1.3.2.2, the first three treatment types will aim to treat water containing nitrogen compounds such as cyanates, thiocyanates, and ammonia nitrogen. The fourth stream will be implemented to treat runoff water that will not contain nitrogen compounds. The four types of treatment considered are as follows:

1. pretreatment of mine water to remove the solid fraction;
2. treatment of cyanides (CN), metals, and suspended solids (TSS);
3. treatment of cyanates, thiocyanates, and ammonia nitrogen;
4. treatment of TSS from runoff water from civil infrastructure and the overburden pile.

A modeling study of the potential effect of the effluent on downstream lakes is presented in QC-39.

QC-38
Addendum 1, Responses to MELCCFP recommendations and comments, Volume 3, Appendix C of appendix 8-1, Surface water and sediments:

In the tables in Appendix C of the Surface Water and Sediment report presented in Appendix 8-1 of Addendum 1, underlined parameters represent exceedances of surface water quality criteria (SWQC). However, the comparison between the underlined data for metals (in µg/L) and the SWQC (in mg/L) does not correspond to the exceedances. The proponent must confirm that the results presented in the tables have the correct units and must make any necessary corrections to the tables.

Response 38:

Corrections have been made to the tables in Appendix C of the Surface Water and Sediment study (Addendum 1 – Appendix 8-1). The updated tables for the stations for which the analysis results are presented (see response to QC-36) can be found in Appendix RQC36 of this document.

2.4 Effluent quality

QC-39
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 3, Appendix 7-3 Dilution study of mining effluent in the downstream environment:

The proponent submitted a technical note providing a preliminary prediction of effluent dilution in the receiving environment. The proponent must provide a map showing the extent to which effluent will affect water quality, indicating the effluent dilution ratio determined for each lake and watercourse sampled.

Response 39:

The dilution study is presented in appendix RQC39. This study describes the updated modelling that was made to estimate the impact of constituents in the receiving environment, namely in Pond 1, SN3, SN5, SN8, SN10, SN12, SN11 and SN13.

While stream water quality is not specifically modelled, the projections for each lake are considered to be representative of the water quality at the outlet, and can therefore be interpreted as a conservative estimate of the stream water quality prior to the next lake.

To assess the effluent dilution factor downstream, a tracer with a concentration of 100 mg/L was applied in the model to the effluent discharge. Resulting concentrations of the tracer in the downstream lakes therefore represent the percentages of effluent present in the lakes over time.

Projected dilution percentages show notable seasonal fluctuation which range across the downstream environment. For the purpose of illustrating the impacts of the effluent in the downstream environment on a map, the seasonal trends were defined by four time periods to capture peaks and troughs of the fluctuations:

1. December through May, which represents a period of ice formation over the winter months, and subsequent freshet in the spring. This period is meant to capture the peak of concentrations that occurs under ice conditions.
2. June, which represents a trough in concentrations following freshet.
3. July through September, which represents a slowly increasing trend through the drier summer months, and is meant to capture a smaller peak in concentrations.
4. October through November, which is meant to capture the trough that results from increased precipitation through the fall months.

These seasonal periods are used to present concentration and dilution factor results on Maps RQC39-1 and RQC39-2. Figure RQC39 shows the daily time series of the 92nd percentile of the dilution factor, where the repeating seasonal fluctuations can be seen ranging from approximately 137% in SN8 the winter of 2026, to 13% in SN13 in the summer of 2026.

The concentrating effect (i.e., greater than 100% effluent) in winter is driven by the treated effluent discharge being the only flow into the downstream environment, compounded by ice formation. Ice is assumed to form pure – that is, the existing mass of constituents prior to freeze up will be concentrated in the free volume under ice.

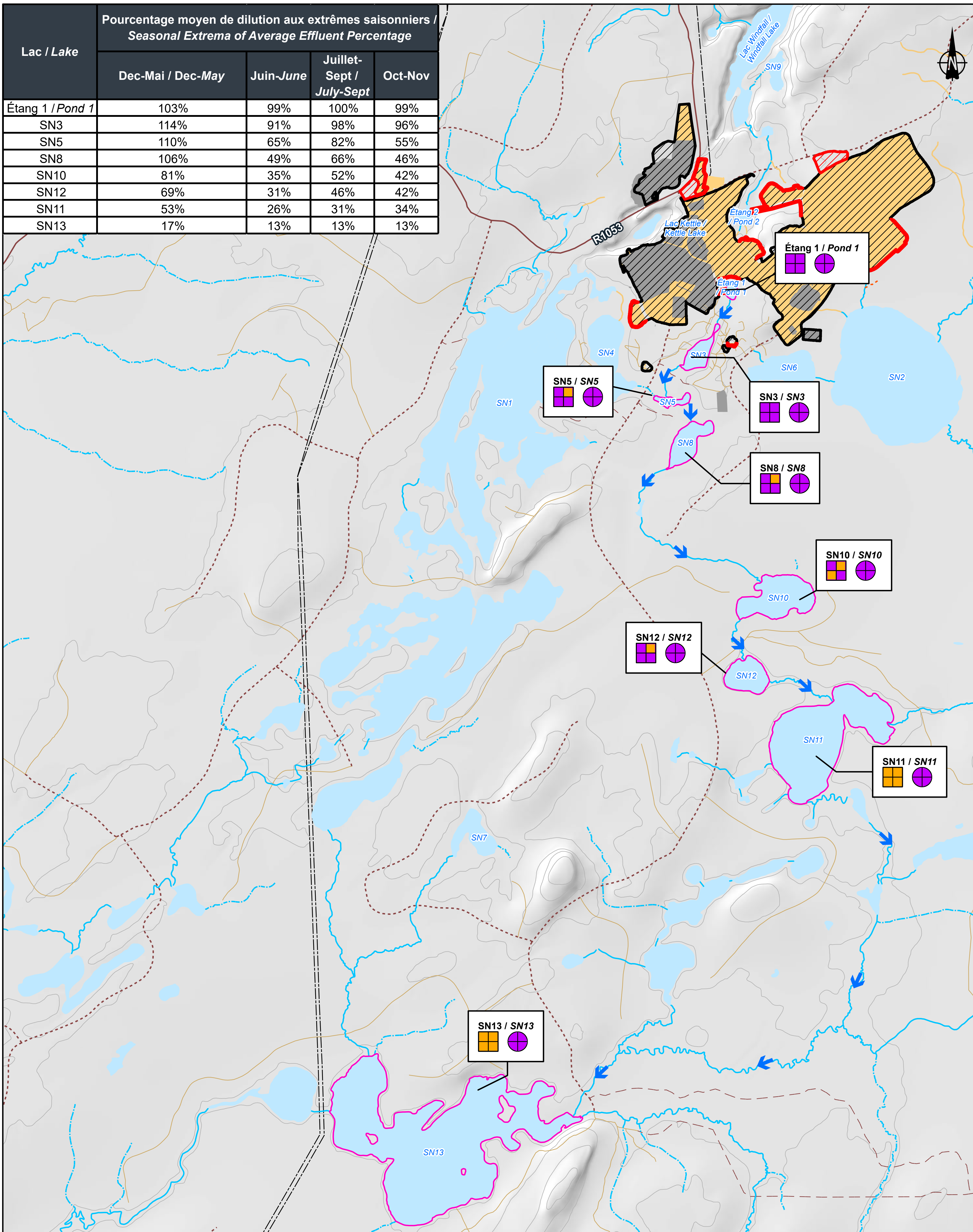
The concentrated water quality in an upstream lake is then transported to the following lake, where it is further concentrated under ice as the ice forms. When the lake volumes are small (Étang 1, SN3, SN5, SN8), the concentrating effect in the model is compounded with each subsequent downstream lake. When the lake volume is large enough to counteract this effect (SN10 and further), this effect is much less pronounced and the dilution factors under ice do not exceed 100%. In the summer (June), dilution is projected to increase with distance downstream for all lakes.

When interpreting the dilution factor results presented above, it is also important to consider the context of the receiving environment guidelines, as having notable concentrations of effluent in the lakes does not necessarily equate to a risk to aquatic health. To provide a more comprehensive understanding of the extent of the effects of effluent discharge downstream, individual constituents in the downstream environment have been assessed against monthly average chronic (CVAC) and daily acute (CVAA) guidelines. Modelled monthly average calculations indicate that out of the thirty modelled constituents that have criteria, twenty-eight remain below their respective chronic criteria, with only two (nitrate and total selenium) showing exceedances in waterbodies downstream. Results for these two constituents are provided in Tables RQC39-1 through RQC39-4, and displayed on the maps RQC39-1 and RQC39-2.

The modelling exercise includes conservative inputs and scenarios, so as to produce conservative results downstream. For instance, no nutrient cycling or other transformation of nutrients has been accounted for; it is anticipated that nitrogen species (nitrate) will be subject to a degree of reduction due to natural ecosystem processes.

With respect to selenium, it is understood that it is driven primarily by the ore processing where the speciation of the different forms of selenium is not available. In all cases, the water quality downstream will be subject to future studies and monitoring to ensure the protection of aquatic life. The detailed monitoring program is provided in response to QC-124.

Lac / *Lake*	Pourcentage moyen de dilution aux extrêmes saisonniers / *Seasonal Extrema of Average Effluent Percentage*			
	Dec-Mai / Dec-*May*	Juin-*June*	Juillet-Sept / *July-Sept*	Oct-Nov
Étang 1 / *Pond 1*	103%	99%	100%	99%
SN3	114%	91%	98%	96%
SN5	110%	65%	82%	55%
SN8	106%	49%	66%	46%
SN10	81%	35%	52%	42%
SN12	69%	31%	46%	42%
SN11	53%	26%	31%	34%
SN13	17%	13%	13%	13%



Periode observée pour le sélénium / *Observed period for selenium*

Dec-Mai / *Dec-May*; Juin / *June*; Juil-Sept / *July-Sept*; Oct-Nov / *Oct-Nov*

Concentrations modélisées par rapport au CVAC / *Modeled Concentrations with Regards to CVAC*

- Dépasse / *Exceedance*
- Ne dépasse pas / *no exceedance*

Periode observée pour le nitrate / *Observed period for nitrate*

Dec-Mai / *Dec-May*; Juin / *June*; Juil-Sept / *July-Sept*; Oct-Nov / *Oct-Nov*

Concentrations modélisées par rapport au CVAC / *Modeled Concentrations with Regards to CVAC*

- Dépasse / *Exceedance*
- Ne dépasse pas / *no exceedance*

Hydrographie / *Hydrography*

- Cours d'eau permanent / *Permanent watercourse*
- Cours d'eau intermittent / *Intermittent watercourse*
- Cours d'eau souterrain / *Underground watercourse*
- Fossé de drainage / *Drainage ditch*
- Canal / *Canal*
- Plan d'eau / *Waterbody*
- Plan d'eau évalué / *Waterbody under evaluation*

Empiètement du projet Windfall / *Windfall Project Footprint*

- Permanent / *Permanent*
- Temporaire / *Temporary*

Infrastructures / *Infrastrutures*

- Ligne de transport d'énergie électrique / *Electric power transmission line*
- Infrastructure existante / *Existing infrastructure*
- Infrastructure projetée / *Proposed infrastructure*

Route / *Road*

- Route forestière secondaire / *Secondary forest road*
- Route forestière tertiaire / *Tertiary forest road*
- Sentier / *Trail*
- Chemin d'hiver / *Winter road*

WINDFALL GROUPE MINIER

Projet minier Windfall - Réponse aux questions et commentaires - 1re série /
Windfall Mining Project - Answers to Questions of Comments - 1st Series

Site minier Windfall, Eeyou Istchee Baie-James (Québec) / Windfall Mining Site, Eeyou Istchee Baie-James (Quebec)

Carte RQC39-1 / *Map RQC39-1*
Impact de l'effluent selon la saison sur l'environnement en aval (moyenne) / *Impact of effluent by season on the downstream environment (average)*

Sources :
BDAT, 1/250 000, MRN Québec, 2002
BDTQ, 1/20 000, MRNF Québec, 2007
CanVec, 1/1 000 000, RNCan, 2020
CanVec Plus, 1/50 000, RNCan, 2015
SDA, 1/20 000, MERN Québec, 2020
Google Earth, Satellite Airbus, 2023

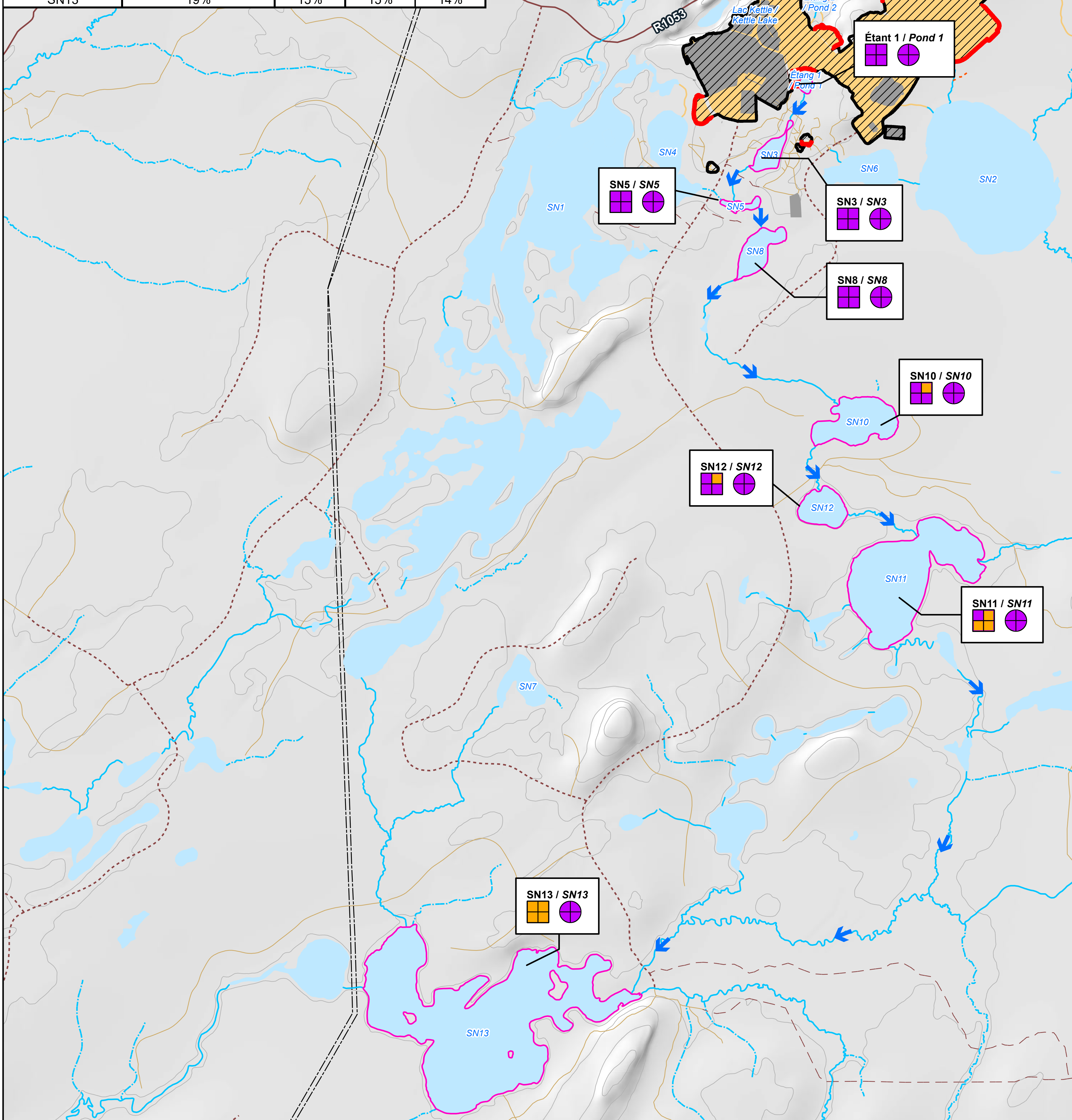
0 250 500 m
MTM, fuseau 9, NAD83

2024-10-15

Préparation : N. Logan
Dessin : S. Samson
Approbation : MH. Brisson
CA0023271_9538_eie_rqc39_effluent_dilution_241015_v2.aprx
CA0023271_9538_eie_rqc39_1_036_effluent_dilution_241015

wsp

Lac / *Lake*	Pourcentage moyen de dilution aux extrêmes saisonniers / *Seasonal Extrema of Average Effluent Percentage*			
	Dec-Mai / *Dec-May*	Juin-*June*	Juillet-Sept / *July-Sept*	Oct-Nov
Etang 1 / *Pond 1*	104%	100%	101%	100%
SN3	117%	96%	100%	98%
SN5	120%	93%	100%	82%
SN8	122%	65%	86%	56%
SN10	97%	43%	60%	51%
SN12	82%	38%	52%	51%
SN11	63%	31%	35%	38%
SN13	19%	15%	15%	14%



Periode observée pour le sélénium / *Observed period for selenium*

Dec-Mai / *Dec-May*
Juin / *June*
Juil-Sept / *July-Sept*
Oct-Nov / *Oct-Nov*

Concentrations modélisées par rapport au CVAC / *Modeled Concentrations with Regards to CVAC*

Dépasse / *Exceedance*

Ne dépasse pas / *no exceedance*

Periode observée pour le nitrate / *Observed period for nitrate*

Dec-Mai / *Dec-May*
Juin / *June*
Juil-Sept / *July-Sept*
Oct-Nov / *Oct-Nov*

Concentrations modélisées par rapport au CVAC / *Modeled Concentrations with Regards to CVAC*

Dépasse / *Exceedance*

Ne dépasse pas / *no exceedance*

Hydrographie / *Hydrography*

Cours d'eau permanent / *Permanent watercourse*

Cours d'eau intermittent / *Intermittent watercourse*

Cours d'eau souterrain / *Underground watercourse*

Fossé de drainage / *Drainage ditch*

Canal / *Canal*

Plan d'eau / *Waterbody*

Plan d'eau évalué / *Waterbody under evaluation*

Empiètement du projet Windfall / *Windfall Project Footprint*

Permanent / *Permanent*

Temporaire / *Temporary*

Infrastructures / *Infrastrutures*

Ligne de transport d'énergie électrique / *Electric power transmission line*

Infrastructure existante / *Existing infrastructure*

Infrastructure projetée / *Proposed infrastructure*

Route / *Road*

Route forestière secondaire / *Secondary forest road*

Route forestière tertiaire / *Tertiary forest road*

Sentier / *Trail*

Chemin d'hiver / *Winter road*

WINDFALL GROUPE MINIER

Projet minier Windfall - Réponse aux questions et commentaires - 1re série /
Windfall Mining Project - Answers to Questions of Comments - 1st Series

Site minier Windfall, Eeyou Istchee Baie-James (Québec) / *Windfall Mining Site, Eeyou Istchee Baie-James (Quebec)*

Carte RQC39-2 / *Map RQC39-2*
Impact de l'effluent sur l'environnement en aval, selon la saison (92e percentile) / *Seasonal effluent impact on the downstream environment (92nd Percentile)*

Sources :
BDAT, 1/250 000, MRN Québec, 2002
BDTQ, 1/20 000, MRNF Québec, 2007
CanVec, 1/1 000 000, RNCan, 2020
CanVec Plus, 1/50 000, RNCan, 2015
SDA, 1/20 000, MERN Québec, 2020
Google Earth, Satellite Airbus, 2023

0 250 500 m
MTM, fuseau 9, NAD83

2024-10-15

Préparation : N. Logan
Dessin : S. Samson
Approbation : MH. Brisson
CA0023271_9538_eie_rqc39_effluent_dilution_241015_v2.aprx
CA0023271_9538_eie_rqc39_2_036_effluent_dilution_241015

wsp

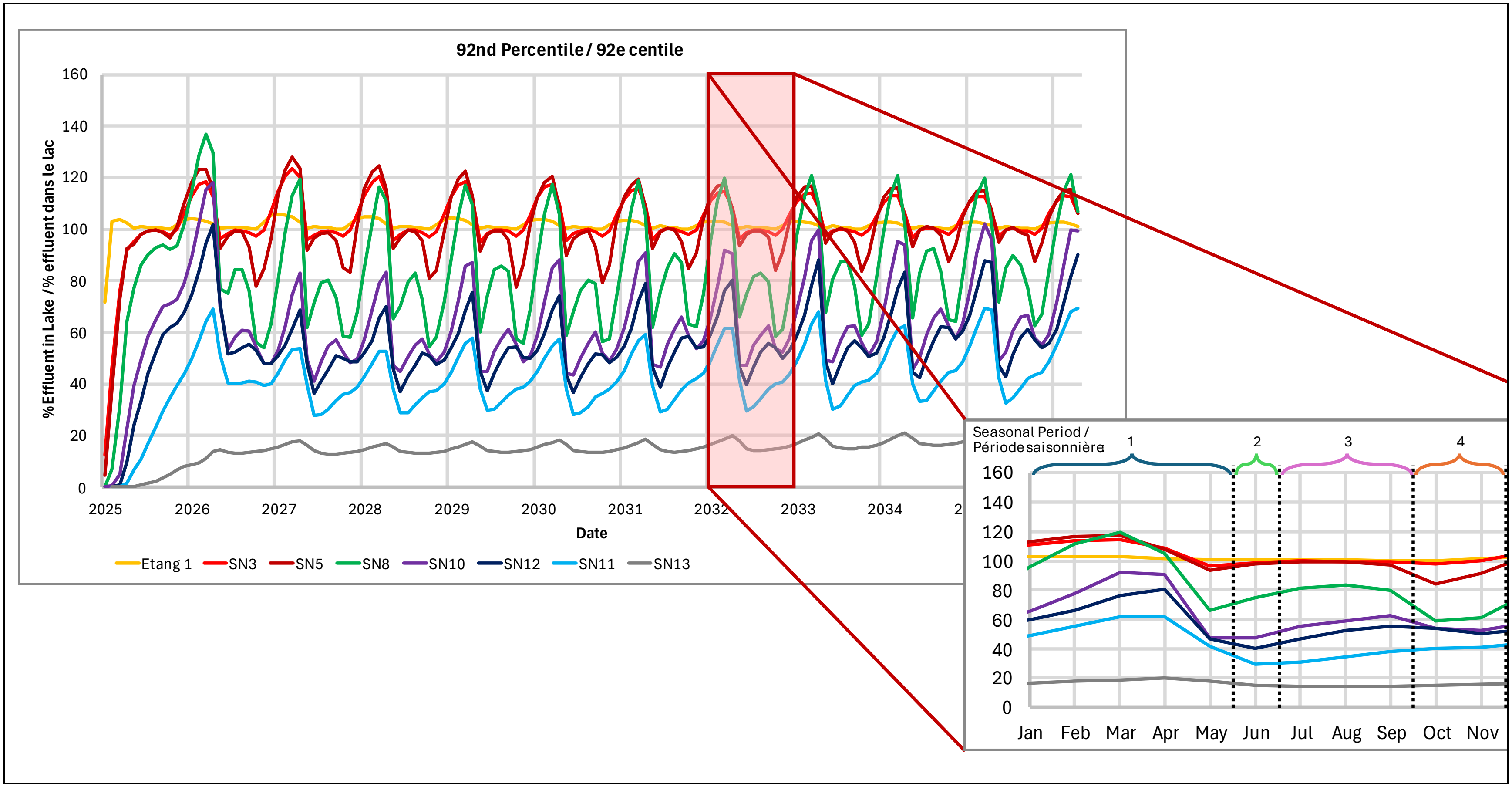


Figure RQC39 Concentration of treated effluent discharge in the downstream lakes, over the length of operations.

Note: One year of results is broken out to display details of the seasonal fluctuations.

Table RQC39-1 Maximum monthly average of life of mine for the mean time series (all values expressed as mg/L)

Month	CVAC	Pond 1	SN3	SN5	SN8	SN10	SN12	SN11	SN13
Total Selenium									
January	0.005	**0.031**	**0.026**	**0.023**	**0.014**	**0.0066**	**0.0053**	0.0045	0.0018
February	0.005	**0.031**	**0.029**	**0.027**	**0.020**	**0.0091**	**0.0063**	**0.0050**	0.0019
March	0.005	**0.028**	**0.03**	**0.026**	**0.023**	**0.013**	**0.0087**	**0.0058**	0.0020
April	0.005	**0.014**	**0.019**	**0.014**	**0.014**	**0.012**	**0.010**	**0.0070**	0.0021
May	0.005	**0.0099**	**0.0073**	0.0049	0.0038	0.0040	0.0045	0.0044	0.0021
June	0.005	**0.016**	**0.011**	**0.0083**	0.0050	0.0030	0.0029	0.0032	0.0019
July	0.005	**0.014**	**0.012**	**0.0097**	**0.0071**	0.0045	0.0035	0.0029	0.0018
August	0.005	**0.015**	**0.013**	**0.0099**	**0.0077**	**0.0056**	0.0046	0.0030	0.0017
September	0.005	**0.011**	**0.011**	**0.0076**	**0.0069**	**0.0058**	**0.0053**	0.0036	0.0016
October	0.005	**0.013**	**0.011**	**0.0059**	0.0049	0.0050	**0.0051**	0.0039	0.0016
November	0.005	**0.020**	**0.012**	**0.0079**	**0.0055**	0.0047	0.0046	0.0038	0.0016
December	0.005	**0.031**	**0.019**	**0.016**	**0.0082**	**0.0052**	0.0048	0.0041	0.0017
Nitrate as N									
January	3.0	**103**	**85**	**77**	**47**	**23**	**18**	**16**	**6.4**
February	3.0	**100**	**96**	**90**	**67**	**34**	**23**	**18**	**6.8**
March	3.0	**92**	**98**	**88**	**79**	**46**	**32**	**20**	**7.2**
April	3.0	**66**	**70**	**51**	**51**	**44**	**37**	**25**	**7.8**
May	3.0	**37**	**35**	**24**	**20**	**18**	**19**	**17**	**7.3**
June	3.0	**53**	**39**	**29**	**19**	**13**	**13**	**13**	**6.7**
July	3.0	**48**	**42**	**34**	**26**	**16**	**14**	**12**	**6.4**
August	3.0	**50**	**43**	**34**	**27**	**19**	**17**	**12**	**6.0**
September	3.0	**41**	**39**	**27**	**24**	**21**	**19**	**13**	**5.9**
October	3.0	**45**	**38**	**21**	**17**	**18**	**18**	**14**	**5.8**
November	3.0	**65**	**42**	**27**	**19**	**16**	**16**	**14**	**5.9**
December	3.0	**102**	**62**	**51**	**28**	**18**	**17**	**15**	**6.1**

Notes:
0.1 : Indicates exceedance of CVAC.

Table RQC39-2 Annual average of life of mine for the mean time series (all values expressed as mg/L)

Month	CVAC	Pond 1	SN3	SN5	SN8	SN10	SN12	SN11	SN13
Total Selenium									
2025	0.005	0.0011	0.00073	0.00068	0.0005	0.00033	0.00028	0.00016	0.000065
2026	0.005	**0.0069**	0.0044	0.0030	0.0019	0.0012	0.00093	0.00053	0.00014
2027	0.005	**0.017**	**0.014**	**0.011**	**0.0079**	**0.0050**	0.0041	0.0029	0.00088
2028	0.005	**0.017**	**0.014**	**0.011**	**0.0083**	**0.0055**	0.0047	0.0037	0.0015
2029	0.005	**0.017**	**0.015**	**0.012**	**0.0088**	**0.0059**	**0.0050**	0.0040	0.0016
2030	0.005	**0.019**	**0.016**	**0.013**	**0.0097**	**0.0064**	**0.0054**	0.0042	0.0018
2031	0.005	**0.0077**	**0.0083**	**0.0073**	**0.0062**	0.0042	0.0034	0.0028	0.0014
2032	0.005	**0.0063**	**0.0057**	0.0047	0.0036	0.0024	0.0020	0.0016	0.00081
2033	0.005	**0.0063**	**0.0056**	0.0047	0.0037	0.0025	0.0021	0.0016	0.00072
2034	0.005	**0.0060**	**0.0054**	0.0046	0.0036	0.0025	0.0021	0.0017	0.00074
2035	0.005	**0.0061**	**0.0056**	0.0047	0.0038	0.0027	0.0022	0.0017	0.00077
2036	0.005	0.0047	**0.0057**	**0.0053**	**0.0051**	0.0036	0.0029	0.0022	0.00084
Nitrate as N									
2025	3.0	**19**	**20**	**20**	**16**	**11**	**9.3**	**4.7**	0.67
2026	3.0	**33**	**25**	**19**	**15**	**12**	**11**	**8.2**	**2.4**
2027	3.0	**59**	**50**	**39**	**28**	**19**	**16**	**12**	**4.3**
2028	3.0	**56**	**49**	**38**	**29**	**19**	**17**	**14**	**5.5**
2029	3.0	**60**	**51**	**40**	**30**	**21**	**18**	**14**	**5.8**
2030	3.0	**65**	**56**	**44**	**33**	**22**	**19**	**15**	**6.3**
2031	3.0	**61**	**53**	**43**	**33**	**22**	**18**	**14**	**6.2**
2032	3.0	**58**	**51**	**42**	**33**	**22**	**18**	**14**	**6.1**
2033	3.0	**57**	**51**	**42**	**33**	**23**	**19**	**15**	**6.3**
2034	3.0	**54**	**48**	**40**	**32**	**22**	**19**	**15**	**6.5**
2035	3.0	**51**	**46**	**39**	**31**	**22**	**18**	**14**	**6.3**
2036	3.0	**36**	**45**	**43**	**41**	**29**	**22**	**17**	**6.4**

Notes:
0.1 : Indicates exceedance of CVAC.

Table RQC39-3 Maximum monthly average of life of mine for the 92nd percentile time series (all values expressed as mg/L)

Month	CVAC	Pond 1	SN3	SN5	SN8	SN10	SN12	SN11	SN13
Total Selenium									
January	0.005	**0.032**	**0.028**	**0.027**	**0.017**	**0.0088**	**0.0071**	**0.0057**	0.0020
February	0.005	**0.032**	**0.031**	**0.031**	**0.023**	**0.011**	**0.0083**	**0.0064**	0.0022
March	0.005	**0.034**	**0.035**	**0.035**	**0.029**	**0.016**	**0.011**	**0.0072**	0.0023
April	0.005	**0.027**	**0.031**	**0.031**	**0.027**	**0.018**	**0.014**	**0.0088**	0.0024
May	0.005	**0.017**	**0.012**	**0.0089**	**0.0072**	**0.0073**	**0.0076**	**0.0067**	0.0024
June	0.005	**0.025**	**0.014**	**0.012**	**0.0066**	0.0042	0.0043	0.0045	0.0022
July	0.005	**0.022**	**0.016**	**0.015**	**0.0099**	**0.0057**	0.0045	0.0040	0.0020
August	0.005	**0.023**	**0.017**	**0.016**	**0.012**	**0.0068**	**0.0055**	0.0038	0.0019
September	0.005	**0.019**	**0.015**	**0.013**	**0.012**	**0.0080**	**0.0065**	0.0042	0.0019
October	0.005	**0.020**	**0.014**	**0.0090**	**0.0071**	**0.0072**	**0.0069**	0.0047	0.0018
November	0.005	**0.028**	**0.016**	**0.011**	**0.0076**	**0.0064**	**0.0062**	0.0049	0.0019
December	0.005	**0.034**	**0.022**	**0.020**	**0.011**	**0.0070**	**0.0063**	**0.0051**	0.0019
Nitrate as N									
January	3.0	**106**	**93**	**90**	**59**	**33**	**26**	**21**	**8.1**
February	3.0	**105**	**104**	**104**	**78**	**46**	**32**	**24**	**8.6**
March	3.0	**111**	**114**	**115**	**95**	**59**	**43**	**28**	**9.1**
April	3.0	**105**	**102**	**103**	**91**	**65**	**52**	**32**	**9.7**
May	3.0	**68**	**58**	**42**	**33**	**29**	**33**	**25**	**9.0**
June	3.0	**86**	**51**	**45**	**29**	**19**	**18**	**16**	**8.0**
July	3.0	**76**	**56**	**55**	**39**	**23**	**20**	**16**	**7.7**
August	3.0	**81**	**58**	**57**	**45**	**27**	**23**	**16**	**7.4**
September	3.0	**69**	**54**	**48**	**42**	**29**	**26**	**17**	**7.3**
October	3.0	**71**	**50**	**34**	**27**	**26**	**25**	**18**	**7.2**
November	3.0	**94**	**54**	**39**	**27**	**23**	**23**	**18**	**7.3**
December	3.0	**111**	**74**	**67**	**39**	**25**	**24**	**19**	**7.7**

Notes:
0.1 : Indicates exceedance of CVAC.

Table RQC39-4 Annual average of life of mine for the 92nd percentile time series (all values expressed as mg/L)

Month	CVAC	Étang 1	SN3	SN5	SN8	SN10	SN12	SN11	SN13
Total Selenium									
2025	0.005	0.0014	0.00093	0.00089	0.00064	0.0004	0.00032	0.00018	0.000069
2026	0.005	**0.009**	**0.0053**	0.0041	0.0024	0.0015	0.0012	0.00069	0.00017
2027	0.005	**0.022**	**0.018**	**0.016**	**0.011**	**0.0066**	**0.0056**	0.0037	0.0010
2028	0.005	**0.021**	**0.018**	**0.016**	**0.011**	**0.0072**	**0.0062**	0.0047	0.0017
2029	0.005	**0.023**	**0.018**	**0.016**	**0.012**	**0.0078**	**0.0067**	**0.0050**	0.0019
2030	0.005	**0.025**	**0.021**	**0.019**	**0.014**	**0.0087**	**0.0073**	**0.0054**	0.0021
2031	0.005	**0.010**	**0.010**	**0.0098**	**0.0085**	**0.0058**	0.0049	0.0039	0.0018
2032	0.005	**0.0084**	**0.0069**	**0.0064**	**0.0050**	0.0032	0.0027	0.0021	0.0010
2033	0.005	**0.0082**	**0.0069**	**0.0064**	**0.0050**	0.0033	0.0028	0.0021	0.00086
2034	0.005	**0.0080**	**0.0068**	**0.0064**	**0.0051**	0.0034	0.0029	0.0022	0.00089
2035	0.005	**0.0080**	**0.0068**	**0.0063**	**0.0051**	0.0035	0.0030	0.0023	0.00091
2036	0.005	**0.0052**	**0.0067**	**0.0067**	**0.0068**	0.0049	0.0038	0.0029	0.00097
Nitrate as N									
2025	3.0	**29**	**26**	**26**	**20**	**13**	**11**	**5.4**	0.80
2026	3.0	**46**	**33**	**28**	**21**	**16**	**15**	**11**	2.8
2027	3.0	**78**	**65**	**58**	**40**	**25**	**22**	**15**	**4.9**
2028	3.0	**74**	**62**	**56**	**40**	**26**	**23**	**17**	**6.4**
2029	3.0	**81**	**65**	**58**	**43**	**29**	**24**	**18**	**6.8**
2030	3.0	**88**	**71**	**64**	**47**	**31**	**26**	**20**	**7.4**
2031	3.0	**85**	**69**	**63**	**49**	**32**	**27**	**20**	**7.6**
2032	3.0	**78**	**64**	**59**	**46**	**30**	**25**	**19**	**7.4**
2033	3.0	**76**	**64**	**59**	**46**	**31**	**26**	**19**	**7.6**
2034	3.0	**74**	**62**	**58**	**46**	**31**	**27**	**20**	**7.9**
2035	3.0	**69**	**57**	**54**	**43**	**30**	**25**	**19**	**7.8**
2036	3.0	**40**	**54**	**55**	**56**	**39**	**30**	**22**	**7.6**

Notes:
0.1 : Indicates exceedance of CVAC.

QC-40
Environmental Impact Assessment, Page 3-52, Volume 1a, Section 3.5
Water management;
Environmental Impact Assessment, Page 2-13, Volume 1a, Section 2.1.4
Water treatment plant and mine effluent;
Addendum 1, Responses to MELCCFP recommendations and comments, Volume 3, Appendix 8-1 - Surface water and sediments:

The proponent must comply with the requirements of 10 mg/L and 20 mg/L for total suspended solids (TSS) in the final effluent, for average monthly and maximum concentrations respectively. This requirement, which is more stringent than that of D019, is justified by the technical feasibility of the treatments available and widely used by the mining industry, and by the associated environmental benefits. This requirement applies to all new projects subject to the environmental impact assessment and review procedure.

Response 40:

Effluent from the Windfall mine project will come from the polishing pond, previously designated as the main collection pond (MCP). At present, the main collection pond receives mine drainage water from the ramp's advanced exploration activities.

The construction phase of the Windfall mine project will include a cleaning operation of the MCP prior to its conversion into a polishing pond. From then on, the pond's inflows will have two main sources:

- Water treatment unit for suspended solids in water (WTU SS/GEOTUBES)
- Water treatment unit for biological water treatment (WTU Bio).

The polishing pond will be fed by these two sources, in addition to runoff water from around the pond itself. Effluent will be discharged into Pond 1.

The water treatment unit for suspended solids (WTU SS/GEOTUBE) will comprise several treatment stages: pH adjustment, followed by coagulation and flocculation. The process is completed by solid/liquid separation in a geotextile bag. The solids are retained in the bag, while the filtrate flows into the Geotube collection pond. This pond recovers the filtrate and pumps it away when necessary.
The filtrate will be transferred from the Geotube collection pond by pumping or gravity to the polishing pond. In the event that the filtrate is not of the expected quality, it will be recirculated to another pond upstream of the treatment process to improve its quality.

Appendix RQC40-1 presents analysis data for effluents from solid/liquid separation processes using a Geotube. These data come from a supplier who designs and distributes modular and containerized processing lines, and who is also a distributor of Geotube bags. The data presented comes from other operating mine sites where these processes are in use. They reflect the performance of processes carried out in accordance with the designer's recommendations. According to these data, the water leaving the geotextile bags should have a suspended solids concentration of less than or equal to 10 mg/L – 20 mg/L.

The biological water treatment unit (WTU Bio) features two-stage biological treatment, first for thiocyanates and cyanides, then for ammonia and nitrites. The water then undergoes coagulation/flocculation to reduce suspended solids and bring about phosphate removal, followed by solid/liquid separation by dissolved air flotation (DAF). The treated water is finally transferred to the polishing pond. According to the supplier of this technology, this system is capable of achieving a suspended solids concentration of 10 mg/L – 20 mg/L, provided it is operated correctly (Appendix RQC40-2).

In the event that the treated water is not of the expected quality, it will be recirculated to another pond upstream of the treatment process to improve its quality.

The polishing pond has inflows from the WTU SS/GEOTUBE and the WTU Bio, which will have suspended solids concentrations of less than 10 mg/L – 20 mg/L. However, the control of suspended solids could prove complex in the face of certain external conditions. Rainfall can carry particles into the pond as runoff from surrounding areas, while high winds can stir up particles deposited at the bottom of the pond. These risks are particularly prevalent during the construction and start-up phases, when operational strategies and infrastructure are not yet fully optimized.

To meet the COMEX target of 10 mg/L – 20 mg/L suspended solids, a turbidimeter will be installed in the effluent pipe, ensuring continuous monitoring of water quality. A pump will draw water from the polishing pond into the effluent ditch, which will feed Pond 1 by gravity. A correlation between turbidity and suspended solids concentration will be established so that an automatic control system can be set up. This device will be able to stop the effluent pump or open a diverter valve to redirect the effluent to an upstream pond. The water will be recirculated until it achieves the required quality.

WMG would be able to comply with the 10 mg/L – 20 mg/L limit for suspended solids in its effluent. However, it is important to note that consistently meeting this target would present significant technical challenges during the construction and initial commissioning phases of the site. These phases are characterized by evolving operating conditions and infrastructure optimization.

As a result, WMG is proposing a phased approach to the application of this requirement, with a lead-in period to allow the site to reach commercial operations before it proceeds. WMG is therefore committed to meeting the 10 mg/L – 20 mg/L suspended solids requirement from the start of commercial production at the Windfall site.

QC-41
Environmental Impact Assessment, Page 6-92, Volume 1b, Section 6.7.1
Current conditions:

The acute toxicity bioassays conducted since January 2019 with daphnia (Daphnia magna) and rainbow trout (Oncorhynchus mykiss) continuously showed the absence of acute toxicity of the final effluent for these two organisms (Table 6-29), except for one event in 2022, which could not be related directly to a non-conformance of a lower effluent water quality (Page 6-92). The proponent must elaborate on the possible causes of this final effluent toxicity event, which could be due to the presence of nitrogen compounds, as well as the measures that have been put in place to prevent this from happening again during the life of the mine.

As a reminder, D019 prohibits the discharge of effluent whose toxicity exceeds the acute lethality level based on rainbow trout and daphnia tests at the final discharge point (Section 2.1.1.1).

Response 41:

The acute toxicity event observed in 2022 in a sample of water discharged into the effluent corresponds to bioassays on *Daphnia magna* carried out on July 25, 2022. This water sample was only lethal in the Daphnia bioassays. No mortality was observed on individual rainbow trout at any of the concentrations analyzed.

Daphnia bioassay mortality results for July 25 are complex to analyze. In fact, 100% Daphnia mortality was observed at the 100% effluent concentration, but the number of dead individuals at the other effluent sample concentrations (50%, 25%, 12.5% and 6.25%) did not correctly reflect the expected mortality profile. Usually, in the case of water that has a significant impact on the mortality of a species, it would have shown a decreasing mortality profile with decreasing effluent concentration.

However, this was not the case for this sample since the results show no mortality for the control test (0%) and the 25% effluent concentration. In addition, there was 10% mortality in the 12.5% and 50% samples and 20% mortality in the 6.25% sample. Table RQC41-1 presents the data values for the Daphnia bioassays and the condition of individuals in the effluent water sample from July 25 (certificate of analysis C238836). The full certificate of analysis is also provided in Appendix RQC41.

Table RQC41-1 Data on Daphnia magna bioassay conditions and the condition of individuals

Concentration	Temperature (ºC)	pH (pH)	Conductivity (uS/cm)	Dissolved oxygen (mg/L)	Temperature (ºC)	pH (pH)	Dissolved oxygen (mg/L)	Immobility (nº)	Immobility (%)	Mortalyé (nº)	Mortality (%)
%v/v	0 hre	0 hre	0 hre	0 hre	48 hres	0 hre	48 hres	48 h	48 h	48 h	48 h
0	20.2	7.7	413	8.8	19.6	7.3	8.9	0	0	0	0
6.25	20.4	7.5	527	8.9	19.6	7.4	8.9	0	0	2	20.0
12.5	20.6	7.5	643	8.8	19.9	7.4	8.9	0	0	1	10.0
25	20.6	7.4	835	8.9	20.0	7.4	8.9	0	0	0	0
50	20.7	7.1	1273	9.0	20.5	7.3	8.7	0	0	1	10.0
100	20.7	6.6	2095	9.5	20.6	7.1	8.7	0	0	10	100

All the operating conditions of the water treatment plant, as well as the parameters for monitoring the quality of the effluent water on July 25, 2022, were within the standard treatment intervals, which up to that point had shown continued compliance with the acute toxicity tests.

Effluent bioassays for rainbow trout and *Daphnia magna* are carried out on a monthly basis, and samples taken before and after July 25 (on July 4, 2022, and August 1, 2022) show no toxicity for rainbow trout or *Daphnia magna*. Yet they had more or less the same treatment plant operating parameters and effluent parameters as the sample declared lethal. This situation illustrates that it is difficult to determine the cause of the sudden toxicity in the sample. It did not lead to the implementation of corrective measures to ensure continued compliance since the operational methods have remained similar and still allow compliance to be achieved to this day. Table RQC41-2 presents the physicochemical and bioassay results obtained from effluent samples in June, July, and August. All the data are similar to those for the July 25 sample. The June sample had a higher level of ammoniacal nitrogen (ionized and non-ionized) and was not toxic to trout or Daphnia. The presence of concentrations of nitrogen compounds is not conclusive as to the cause of toxicity.

Table RQC41-2 Physico-chemical and bioassay results obtained from effluent samples in June, July and August

Sampling date	As (mg/L)	Cu (mg/L)	Fe (mg/L)	Ni (mg/L)	Pb (mg/L)	Zn (mg/L)	MES (mg/L)	pH	Ammoniacal nitrogen (NH3-NH4) (mg/L N)	Non-ionized ammonia (mg/L N)	Acute toxicity Daphnia magna	Acute toxicity Truite arc-en-ciel
2022-06-06	0.0021	0.0005	0.32	0.0021	< 0.00017	0.001	< 1	6.83	27.09	0.02	Compliant	Compliant
2022-07-04	0.0012	0.0008	0.34	0.0016	< 0.00017	0.002	< 1	6.63	11.72	0.01	Compliant	Compliant
2022-07-25	0.0017	0.0011	0.82	0.0017	< 0.00017	0.004	< 1	6.64	10.46	0.01	Failure	Compliant
2022-08-01	0.002	< 0.0005	0.87	0.0019	< 0.00017	< 0.001	3	6.34	8.1	< 0.01	Compliant	Compliant
2022-08-15	< 0.0005	< 0.0005	0.25	0.0005	< 0.00017	< 0.001	< 1	6.48	3.3	< 0.01	Compliant	Compliant

In conclusion, it was not possible to determine the exact cause of the mortality result in the *Daphnia magna* bioassay. There is no explanation for the toxicity to Daphnia at the effluent at this time. Therefore, there does not appear to be any particular reason for the lethal effect on *Daphnia magna* at the effluent on July 25, 2022. This is likely due to an extraordinary event in the context of an analysis involving living organisms. Furthermore, given the sensitive nature of daphnia assays, the federal government only deems effluent to be non-compliant if two consecutive tests have resulted in lethality. However, this is not the case for the Windfall site effluent in July 2022.

All the certificates for the samples taken on July 4, July 25, and August 1 are provided in Appendix RQC41 as examples of similar data and compliance of effluent samples.

QC-42
Environmental Impact Assessment, Page 6-92, Volume 1b, Section 6.7.1
Current conditions – Water quality of mine effluent:

The proponent states that the effluent quality criteria required by D019 and the Metal and Diamond Mining Effluent Regulations (MDMER) were all met between 2019 and 2022, with the exception of one result showing an abnormally high concentration of radium 226. As this is a radioactive nuclide, the proponent must specify the reasons for this value.

Response 42:

The radium values of the effluent samples from the Windfall site have always complied with the quality criteria required by D019 and the Metal Mining and Diamond Mining Effluent Regulations (MDMER), with the exception of one sample taken on November 4, 2019. The established radium concentration in this sample was 4.3 Bq/L, a value considered out of line with the usual values observed at the site over the years. Table RQC42-1 presents the results of radium monitoring in effluent water samples for the weeks prior to and following November 13, 2019. It can be seen that the radium concentrations in the effluent water are all very low, and even almost all below the analytical detection limit (<0.002 Bq/L).

Table RQC42-1 Results for radium in mine effluent samples

Date	Radium (Bq/L)	Certificate
2019-10-16	<0.002	V-93435
2019-10-23	<0.002	V-93681
2019-10-30	<0.002	V-93997
2019-11-04	<0.002	V-94204
2019-11-13	4.3	V-94662
2019-11-20	<0.002	V-95077
2019-11-29	<0.002	V-95354
2019-12-02	<0.002	V-95355
2019-12-11	0.002	V-95698

After obtaining the certificate of analysis for the November 13 analysis, WMG asked the accredited laboratory responsible for carrying out the analysis to explain the reasons for the discrepancy with the effluent values usually obtained at their laboratory, and to determine whether an error could have occurred on their part. An explanatory letter was sent by the accredited laboratory stating that, following their investigations, they were unable to explain the high value of radium obtained in the sample. The letter from the laboratory is appended to the question (Appendix RQC42).

As well as checking with the laboratory that carried out the analysis, WMG validated whether there were any site-specific conditions. General drilling and pumping operations, as well as those of the treatment plant in the days prior to the event of November 13, were all considered normal, and there is nothing to explain a change in the quality of the water in the treatment system. Radium results in effluent water samples from this event in November 2019 to August 2024 are on average below the value of 0.01 Bq/L. The highest value obtained since 2019 was on April 29, 2020, when the value was 0.012 Bq/L, almost 36 times lower than the value of 4.3Bq/L.

It has therefore not been possible to establish the exact cause of this highly abnormal figure. After all the investigations carried out internally and by the external laboratory, WMG believes that it is likely to be an error that occurred in analysis. This appears to be an isolated event, the cause of which remains unknown.

QC-43
Environmental Impact Assessment, Page 3-40, Volume 1a, Section 3.3.1.8 Emission destruction (7b); Addendum 1, Responses to MELCCFP recommendations and comments, Volume 1, Section 1.3.4 Ore processing:

The proponent has indicated that adherence to the Cyanide Code is planned, but not yet confirmed. To determine the project's acceptability, the proponent must ensure that cyanides will be used in an environmentally responsible manner.

The proponent must provide an outline of its cyanide management plan to clearly demonstrate that all necessary monitoring and protection measures and programs are in place. The Plan must contain at least the following items:

- measures to minimize the use of cyanides and cyanide concentrations in tailings from the processing plant;
- preventive cyanide management measures to minimize the risk of contamination or spillage into the environment (surface water and groundwater) when dikes, pipes, etc. break;
- a monitoring and inspection program for pipes and works;
- implementation of a program to protect avian fauna and any animal life that might be affected by cyanide solutions exposed to the open air;
- periodic assessment of the possibility of applying new available technologies to minimize the use of cyanides;
- provide for monitoring of cyanide destruction after use, along with expected results.

Response 43:

WMG has developed a cyanide management plan that complies with the *International Cyanide Management Institute*'s guidelines for adherence to the Cyanide Code. The Cyanide Code is a voluntary, performance-based, best-practice certification program for cyanide management in gold mines. Participation is open to gold mining companies, cyanide manufacturers, and chemical transporters. The Cyanide Code is one of the mining industry's most established certification programs. It has been successfully adopted around the world in mining operations in a wide variety of conditions and climates, in both developing and developed countries. The requested management plan is provided in Appendix RQC43. The items listed in the question are covered in this plan.

QC-44
Environmental Impact Assessment, Page 6-96, Volume 1b, Section 6.7.2
Construction phase impacts on surface water and mitigation measures:

The proponent has indicated that refilling and discharging surplus water from the ponds into the environment will be carried out at minimum distances from watercourses and water bodies. The proponent must take into account that minimum distances must also be respected for wetlands. The proponent must respect a minimum distance of 30 m from all wetlands and water bodies for the refuelling of machinery (oil and gas) and the discharge of water. Should the proponent be unable to comply with the 30 m limit for any reason, it must present adequate mitigation measures to avoid contamination of these sensitive environments.

Response 44:

Section 6.7.2 on page 6-95 of the Environmental Impact Assessment, Volume 1, lists the mitigation measures presented below. The following measures have been modified to incorporate the minimum distances to be respected for wetlands:

QUA11 When installing or replacing a culvert, the work area must first be confined to prevent the release of particulate matter into the water (e.g., partially or totally dewater the area). The work techniques and materials used (e.g., diverting structures, geotextile, polythene) must not generate turbidity in the water as much as possible. The natural flow of the watercourse must be maintained at all times, and the water must return immediately downstream of the work area. As much as possible, the bed of the watercourse should not be narrowed by more than 2/3 during the work. If necessary, accumulations of water in the work area should be pumped to a vegetation area at least 30 m from any watercourse or wetland.

QUA13 A runoff management system will be installed during the construction phase. Where appropriate, suspended solids emission control methods such as temporary water retention basins, sediment barriers, turbidity curtains, or slope stabilization will be used. These structures will be inspected and cleaned as required. In addition, water will be pumped into a vegetation zone at least 30 m from any watercourse or wetland.

QUA16 During snow-clearing operations, pushed snow will be kept, as far as possible, outside a 30 m buffer zone from any watercourse or wetland.

QUA17 Within the 15 m buffer zone bordering the high-water mark of a watercourse or body of water, and within any wetland (pond, marsh, swamp, or bog), the piling up of waste, debris, materials, or temporary spoil (e.g., organic matter from stripping the soil surface) will be prohibited. It will also be forbidden to pile up garbage and woody debris. Runoff will be diverted to a vegetation area at least 30 m from any watercourse or wetland, or intercepted using sediment barriers or a sedimentation basin.

QUA21 Temporary developments (e.g., construction trailers, access roads, storage areas, waste sites) must be located more than 60 m from any watercourse or wetland.

QUA24 During construction, vehicles and surface equipment will generally be serviced on site inside an existing garage. Fuel will be supplied by adequately equipped service trucks and at a distance of more than 60 m from any watercourse or wetland. A pan will be positioned under the transfer points during refuelling to prevent dripping onto the ground.

QUA25 All stationary equipment containing oil and/or fuel (e.g., lighting towers, generators) located within 60 m of any watercourse, water body, or wetland must be equipped with a leakproof recovery system. All equipment must be equipped with absorbents to ensure rapid and effective response in the event of accidental spills.

QC-45
Environmental Impact Assessment, Page 2-30, Volume 1, Section 2.2.3 Water treatment;
Page 3-77, Volume 1, Section 3.5.5 Waste water;
Page 3-77, Volume 1, Section 3.5.7 Other water treatment systems:

The proponent uses the terms domestic water, sewage water, and waste water to discuss what appear to be the same waters. The proponent must confirm that these are the same waters, or provide a description of the differences, if any.

Response 45:

WMG confirms that the terms domestic water, sewage water, and waste water have been used interchangeably in the EIA. In fact, the term individual-use sewage water was used to refer to waste water from domestic use, i.e., mainly from facilities inhabited by workers. When other types of sewage water were mentioned, a distinction was made between industrial sewage water, mining sewage water, and drinking water.

QC-46
Environmental Impact Assessment, Volume 2, Appendix 3.4
Data sheets on domestic water treatment systems:

In the data sheets for domestic water treatment systems (Appendix 3.4 of Volume 2), the proponent presents a SILOTM treatment system that includes fine screening, activated sludge, and membrane filtration, all in a silo. The proponent must ensure that the equipment and technology selected for domestic water treatment is recognized by the Bureau de normalisation du Québec (BNQ) or has a valid certification sheet.

Response 46:

In March 2023, WMG submitted in Volume 1A of the EIA (pages 152 to 157 of the PDF or pages 2-30 to 2-35) an analysis of four technologies for the treatment of domestic sewage water. The results of the comparative analysis showed that SILO™ technology and Enviroseptic technology with infiltration discharge were two options to be considered for the treatment of domestic sewage water from the Windfall project. Enviroseptic technology with infiltration discharge appeared to have the greatest long-term advantages, particularly because it was easy to operate and maintain (mostly passive) and it limited the impact on the natural aquatic environment. The conclusions drawn from this study called for further investigation to find a suitable infiltration site for the installation of this technology.

A field investigation campaign was carried out in September 2023, and its findings have been included in Appendix 1-3 of Volume 1 of the Addendum 1 on page 243 of the PDF, under the heading, Site and soil characterization study. This investigation demonstrated that the appropriate site had been found, enabling the Enviroseptic technology (advanced secondary treatment system with leaching fields) to be installed. An update presenting the selected domestic waste water treatment process has been provided in the Addendum 1, Vol. 1, Section 1.3: Project design optimization, more specifically in Section 1.3.2.3 (page 52 of the PDF or page 1-32). This section confirms that Enviroseptic technology (advanced secondary treatment with leaching fields) is the selected technology.

The System O technology technical data sheet, number: FTEU-DBO-PRTA-02VA, valid until September 30, 2027 (revised January 2023) is available in Appendix RQC46. This technology corresponds to Enviroseptic technology with infiltration discharge. The model referred to in this data sheet is O-AES-30, i.e., the model without disinfection.

QC-47
Environmental Impact Assessment, Page 4-1, Volume 1b, Section 4
Relationships with the environment:

The proponent must describe to what extent the project may have an impact on usage by water users, particularly on the water quality of the receiving watercourse and downstream watercourses (e.g., increased conductivity, physicochemical changes). It must specify how users are to be informed in the event of a deterioration in water quality.

Response 47:

The existing water treatment plant, to which additional equipment will be added as part of the project, will ensure that the quality of water returned to the environment will meet D019 criteria and MDMER standards (SOR 2002-22), while aiming to achieve the EDOs that will be defined for the project. The results of the mine effluent dilution study presented in Appendix RQC39 indicate that only nitrates and selenium are likely to exceed the criteria for the chronic protection of aquatic life in the downstream environment, 3 mg/L and 0.005 mg/L respectively. Currently, users do not fish in the water bodies of the mine effluent watershed, with the exception of Lake SN13. Fishing takes place regularly on this lake during the summer months. There's also a water intake that supplies toilets and showers for the Cree camp at Lake SN13. Thus, the surface water quality criteria to be met for these uses correspond to those for the prevention of contamination of water and aquatic organisms (CPCO), as these concern the potential risk of harmful effects to humans of exposure through consumption of water or aquatic organisms, as well as those for the protection of recreational activities and aesthetic aspects. These criteria are primarily aimed at preventing health hazards related to direct or indirect contact with water, but also cover the aesthetic aspects of the resource (Table RQC47). No quality criteria for nitrate and selenium are set for the protection of recreational activities and aesthetics, but the CPOCs for these parameters are 10 mg/L and 0.01 mg/L respectively. The concentrations of these parameters estimated for lake SN13 in the dilution study are well below the CPOCs (see RQC39 tables). Water uses currently taking place in lake SN13 will therefore not be impacted. If the water to be released to the effluent from the project meets these criteria, the current uses of water in Lake SN13 will not be adversely affected. In addition, the large volume of Lake SN13 and its distance from the mine effluent contribute greatly to the dilution effect.

Current mine effluent quality is measured daily (flow, pH, TSS), weekly (metals), and monthly (acute toxicity) as part of the regular monitoring required by D019. Should any significant deterioration in water quality occur, it will be quickly detected and remedial action will be taken. WMG currently informs Cree users of effluent exceedances through monthly meetings. Obviously, if a major event were to occur, they would be informed on the spot at the same time as the CFNW representatives. Similar mechanisms will be implemented as part of the project to keep key stakeholders informed of effluent water quality issues.

Table RQC47 Comparison between D019 requirements at the final effluent discharge point and MELCCFP surface water quality criteria

Parameter	D019 requirements		Surface water quality criteria (MELCCFP)		
	Acceptable monthly average concentration (mg/L)	Maximum acceptable concentration (mg/L)	Prevention of contamination of water and aquatic organisms (mg/L)	Protection of recreational activities and aesthetic aspects (mg/L)	Protection of aquatic life - chronic effect (mg/L)
Arsenic	0.2	0.4	0.0003	-	0.15
Copper	0.3	0.6	1	-	*
Iron	3	6	0.3	-	1.3
Nickel	0.5	1	0.07	-	*
Lead	0.2	0.4	0.01	-	*
Zinc	0.5	1	5	-	*
Total cyanides	1	2	0.2 (free cyanides)	-	0.005 (free cyanides)
Hydrocarbons (C10-C50)	-	2	-	-	0.2 **
Suspended solids	15	30	-	-	***

* The quality criterion for this metal varies according to hardness.
** The quality criterion for this parameter is defined for gasoline, diesel and home heating oil.
*** The quality criterion for this parameter is defined as an increase over ambient concentration.

QC-48
Addendum 1 - Responses to MELCCFP recommendations and comments Volume 3, Appendix 7-1 Hydraulic study - Assessment of effluent impacts on the downstream receiving environment:

In Appendix 7-1 of Addendum 1, in the study's conclusion, it is stated that low-water flows have been updated and are presented in Section 2.2, whereas this is not the case. Low-water flows are not covered in Appendix 7-1. The proponent must provide this information. It must also provide an interpretation of the results obtained.

Response 48:

The low-water flows had not been updated as part of the Hydraulic study – Assessment of effluent impacts on the downstream receiving environment. The aim of this study was to investigate the risk of flooding and erosion on the watercourse downstream of the mine effluent, and low-water conditions are not an issue in this respect. The reference to low-water flows in the conclusion was incorrect; only average and flood flows should have been mentioned. An update of low-water flows in the Windfall and Lake SN2 watersheds was presented in the study, Indirect effects on fish habitat (Appendix 7-2 of the Addendum 1), but did not include calculation points downstream of the mine effluent.

An update of low-water flows downstream of the mine effluent is therefore presented below (table RQC48), based on the same assumptions as in the Hydraulic study – Assessment of effluent impacts on the downstream receiving environment, and in the study, Indirect effects on fish habitat, using the same methodology as in the environmental impact assessment.

Thus:

- Low-water flows were estimated using the method for estimating low-water flows in the northern regions of Quebec, developed by the MELCCFP (MDDELCC, 2017).
- According to the recommendations of the Centre d'expertise hydrique du Québec (CEHQ, 2020), for very small watersheds (area of less than 5 km²), a zero low-water flow may be considered, due to the high uncertainties presented by all theoretical methods for estimating these low-water flows. This is the case here for the first two calculation points downstream of the effluent.
- Mine effluent flows: As in the environmental impact assessment, for annual and summer 7-day consecutive low flows, it was considered that there is no discharge flow to the effluent, which corresponds to a situation where the water is kept in the polishing pond or recirculated. In the case of low flows over 30 consecutive years, it would not be realistic to consider any discharge into the effluent for one entire month. The minimum value of the flows at the water treatment plant was considered, estimated for the two years of the bulk sampling phase for an average year in terms of climate. The minimum annual value was selected for the annual low-water level (1,251 m³/day, i.e., 14.5 L/s), while the minimum value between May and September was considered for the summer low-water level (1,873 m³/day in May of the first year, i.e., 21.7 L/s). Under projected conditions, the values considered (taken from the water balance dated October 2023) are 1,584 m³/day for annual low-water level (i.e., 18.3 L/s), and 3,862 m³/day for summer low-water level (i.e., 44.7 L/s).
- Impact of mine dewatering under projected conditions: reduction in base flow according to Table 2-2 of the Hydraulic study – Assessment of effluent impacts on the downstream receiving environment (Appendix 7-1 of the Addendum 1).

Table RQC48 Estimated low-water flows under current and projected conditions for calculation points downstream of the mine effluent

Indicator	CE09 P2a_1	CE15 P2a	SN5	SN8	CE02 P2	SN10	SN12	SN11
Distance to effluent (m)	**110**	**1,050**	**1,250**	**1,790**	**2,650**	**3,850**	**4,550**	**5,980**
Low-water flow - Current conditions (L/s)*								
Q2,7 annual	0	0	13	14	15	18	19	27
Q10,7 annual	0	0	7	7	7	9	10	13
Q5,30 annual	15	15	23	24	24	26	27	33
Q2,7 summer	0	0	33	35	37	44	48	67
Q10,7 summer	0	0	15	16	16	20	21	29
Q5,30 summer	22	23	53	55	57	63	67	85
Low-water flow - Current conditions (L/s)*								
Q2,7 annual	0	0	13	12	12	16	17	25
Q10,7 annual	0	0	6	4	5	7	8	11
Q5,30 annual	18	19	27	25	26	28	29	34
Q2,7 summer	0	0	32	32	34	41	45	64
Q10,7 summer	0	0	14	13	14	17	19	27
Q5,30 summer	45	46	75	75	77	84	87	105
Low-water flow - Variation (%)								
Q2.7 annual	0	0	-2	-19	-17	-13	-11	-9
Q10.7 annual	0	0	-2	-37	-33	-25	-21	-17
Q5.30 annual	26	25	16	5	6	6	7	5
Q2,7 summer	0	0	-2	-9	-8	-6	-5	-4
Q10,7 summer	0	0	-2	-18	-16	-12	-10	-8
Q5,30 summer	102	97	42	36	36	32	31	24

* Low-water flow is considered to be zero when the watershed has an area of less than 5 km²

This analysis leads to the following conclusions:

- For the first two calculation points downstream of the effluent, the impact on 7-day low-water flows is zero, since the watershed areas are less than 5 km^2, and the flows are therefore considered to be zero under both current and future conditions.
- Assuming no effluent discharge for 7 consecutive days during low-water periods, a reduction in low-water flows of 2% to 37% is expected, depending on location. It should be noted that while the percentages may appear high in some cases, the variation in terms of absolute value is very small, e.g., a reduction from 7 L/s to 4 L/s (37% reduction).
- For low-water flows on a monthly basis, as the effluent flow has not been considered to be zero, an increase of between 5% and 102% is expected, depending on the points of calculation and the period considered. However, low-water flow values remain very low, with the biggest increase (102% in the summer) corresponding to a flow rising from 22 L/s to 45 L/s, which is still within the order of magnitude of the average flows estimated at this location for this period (from around 30 L/s to 40 L/s).
- As this assessment focuses mainly on the risks of flooding and erosion, no issues are identified in this regard during periods of low water.

2.5 Hydrology

QC-49
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 2, Section 3-1 Supplementary hydrogeological study.
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 3. Appendices 7-1 Hydraulic study - Assessment of effluent impact on the downstream receiving environment;
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 3, Appendix 7-3 Dilution study of mining effluent in the downstream environment:

In the technical note in Section 3-1 of Volume 2 of Addendum 1, it is mentioned that the drawdown is expected to cause greater decreases in Lakes SN2, SN5, and SN6. Also, according to the predictive model under final operating conditions, base flows calculated at various points could decrease by between 1% and 81% for water bodies and watercourses connected to the water table. The model also indicates that water bodies Pond 1 and SN3 would receive no groundwater contribution now or following operations. Water body SN6 would completely lose groundwater inflow, and a reverse flow was noted at the end of operations. It also stated that "drawdown curves show that some wetland areas, outside the established encroachment zone, are expected to be indirectly impacted by mine operations."

The proponent must justify the difference between the base flow rates, i.e., between 1% and 81%. In addition, the proponent must submit an impact assessment based on this predictive model. The proponent must describe the expected impacts of the drawdown on these lakes (total dewatering, reduction in surface area, etc.). It must specify whether these impacts have been accounted for in terms of compensation for loss of wetlands, water environments, or fish habitat, and add this where appropriate.

The proponent must also specify what will happen to Lake SN6 and the affected wetlands. As for water body SN6, the proponent must specify whether it will dry up completely, considering that it will not have any groundwater input. If this is the case, the proponent must describe the loss and include it in the project's permanent encroachments to calculate the areas to be compensated.

Response 49:

Dewatering the planned underground galleries will effectively lower the water table, and therefore reduce the base flow (groundwater contribution to the flow) in nearby lakes and watercourses. This impact is not uniform for all the watercourses and lakes in the study area, but varies according to their location—the lakes and watercourses closest to the underground galleries are the most impacted, and the impact diminishes the further one moves away from the underground galleries. As a result, some lakes and watercourses are experiencing a complete disappearance (100% reduction) of their groundwater inflow (base flow), like Lake SN6, for example. Other locations experience only a partial reduction in this inflow, with percentages varying according to location: at calculation point P3d (CE23), the reduction is around 81%, while at calculation point P3a (SN2-T1), located further away from the underground galleries, the impact is minimal, with a reduction of only around 1%.

This reduction in base flows was taken into account in the hydraulic study provided with the December 2023 Addendum 1 (Appendix 7-1) and in the study, Indirect effects on fish habitat, also appended to the Addendum 1 (Appendix 7-2). Thus, the values in Table 5 - Percentage reduction in base flows from the Supplementary hydrogeological study in the Addendum 1 (Appendix 3-1), were incorporated into the calculations of characteristic flows in these two studies, and therefore included in the calculations of variations in water levels and velocities, and losses of fish habitat, presented in these two studies. For reference, the flow rates estimated under current and projected conditions, as well as the percentage variation, at the outflows of the 3 lakes mentioned (Pond 1, SN3, and SN6), are shown in the table below (Table RQC49).

Specifically with regard to Pond 1 and Lake SN3, the downstream assessment of the mine effluent (Appendix 7-1) led to the following observations and conclusions:

- These two lakes correspond approximately to calculation points P2a_1 (Pond 1) and P2a (Lake SN3) in this assessment.
- Both lakes are in fact affected by the lowering of the water table, which means that they no longer receive any groundwater (100% reduction in base flow). However, the inflow to these lakes will not always be zero as they will continue to receive rainwater.
- These two lakes also receive water from the mine effluent, as shown in Table 2-3 of the assessment. The discharge rate varies from 39.2 L/s to 145.0 L/s on average, depending on the month.
- Taking these two facts into account, it is expected that the average flow at the outflows of these two lakes will actually be increased, by 180% and 134% respectively, as presented in Table 2-4 of the hydraulic study, and as shown in the table below.
- Since average monthly flows are increased, no loss of fish habitat is expected in Pond 1 or Lake SN3.

As for Lake SN6, the study of indirect effects on fish habitat (Appendix 7-2) led to the following conclusions:

- This lake corresponds approximately to calculation point P3b (outflow of Lake SN6) in this assessment.
- This lake is in fact affected by the lowering of the water table, which means that it no longer receives any groundwater (100% reduction in base flow). However, the inflow to this lake will not always be zero as it will continue to receive rainwater. The average flow at the outflow of Lake SN6 is expected to be reduced by an average of 9%. Detailed results are provided in the table below.

– No habitat loss is expected for Lake SN6. The Hec-RAS model predicts a reduction in the average water level of between 0 cm and 2 cm, with an average of 1 cm. Since this reduction is small, it is considered to be part of the annual variation in the water level observed in this water body. It is therefore considered that the indirect impact is negligible and will not result in the harmful alteration or disruption of fish habitat.

Table RQC49 Estimated characteristic flows at the outflows of Pond 1, Lake SN3, and Lake SN6 under current and projected conditions

Parameter	Current conditions			Projected conditions			Variation (%)		
	CE09	CE15	CE03	CE09	CE15	CE03	CE09	CE15	CE03
	Pond 1 (outflow)	SN3 (outflow)	SN6 (outflow)	Pond 1 (outflow)	SN3 (outflow)	SN6 (outflow)	Pond 1 (outflow)	SN3 (outflow)	SN6 (outflow)
	P2a_1	P2a	P3b	P2a_1	P2a	P3b	P2a_1	P2a	P3b
Low-water levels (L/s)*									
$Q_{2.7}$ annual	0	0	0	0	0	0	0	0	0
$Q_{10.7}$ annual	0	0	0	0	0	0	0	0	0
$Q_{5.30}$ annual	15	15	0	18	19	0	26	25	0
$Q_{2,7}$ summer	0	0	0	0	0	0	0	0	0
$Q_{10,7}$ summer	0	0	0	0	0	0	0	0	0
$Q_{5,30}$ summer	22	23	0	45	46	0	102	97	0
Mean monthly flows (L/s)									
January	18	22	7	40	44	6	124	101	-13
February	18	21	5	40	42	5	124	105	-14
March	19	22	5	53	55	5	180	155	-15
April	40	50	19	124	133	17	208	166	-8
May	39	71	61	151	181	56	287	157	-8
June	34	49	28	79	93	26	134	92	-8
July	33	43	19	89	98	18	166	126	-8
August	31	39	15	94	101	14	201	160	-9
September	34	42	15	105	113	14	209	168	-9
October	32	42	19	96	105	18	200	151	-8
November	28	37	18	68	76	16	139	104	-9
December	23	29	10	43	48	9	84	67	-10
Annual	29	39	18	82	91	17	180	134	-9
Floods (m^3/s)									
2 years	0.14	0.22	0.36	0.38	0.42	0.35	171	92	-1
10 years	0.19	0.32	0.56	0.44	0.50	0.56	130	59	-1
25 years	0.22	0.37	0.67	0.47	0.54	0.67	116	49	-1
50 years	0.23	0.40	0.74	0.49	0.57	0.73	109	44	-1
100 years	0.25	0.44	0.83	0.51	0.60	0.82	101	38	-1

* Low-water flow is considered to be zero when the watershed has an area of less than 5 km²

QC-50

Environmental Impact Assessment, Pages 6-65 to 6-85, Volume 1b, Section 6.6 Hydrology; Environmental Impact Assessment, Page 6-79, Volume 1b, Section 6.6.3 Impacts on hydrology during operations and mitigation measures;

Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 3, Appendix 7-1 Hydraulic study – Assessment of effluent impacts on the downstream receiving environment;

Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 3, Appendix 7-3 Dilution study of mining effluent in the downstream environment:

Appendix 7-3 of Addendum 1 contains the "Dilution study of mining effluent in the downstream environment," dated December 2023. The effluent dilution ratio is assessed using mean and low-flow estimates for several points on the watercourses in the study area, taken from the WSP 2022 hydrological study. Sectoral Report - Climatology and Hydrology, Windfall Project. Report 201-11330 November 19. The average flows updated in the Appendix 7-1 study were not used.

It is important to note that all these flows (Appendices 7-1 and 7-3) are very rough approximations of actual values, given the lack of hydrological data available over extended periods at the site and in this region. In fact, although the estimation methods chosen are appropriate for the situation, they are not applicable to very small watersheds, especially in a remote region with no data. No other methods exist, with the exception of recording continuous field measurements over several years. The few field measurements carried out confirm a rough order of magnitude of the results, but the uncertainty remains high. Estimates are approximate for the following reasons:

- With regard to the average flows discussed in Appendix 7-1 Section 2.2.1 and Appendix 7-3 Section 2.2.2, Station 051003—Eaux volées, in the Forêt Montmorency, does not represent water conditions elsewhere in Quebec as this area records the highest precipitation in the province;
- For low-water flow rates discussed in Appendix 7-3, Section 2.2.1, values for watersheds smaller than 5 km2 must be set at 0 L/s, unless field measurements show permanent flow. This involves Junctions 1 and 2, i.e., the outlet of Pond 1 and the outlet of Lake SN3, whose watersheds are smaller than 0.5 km2 according to Table 1. If the flow is intermittent, then no effluent dilution occurs at these two points. Furthermore, it should be noted that the low-flow rate estimation method for the Nord du Québec region, developed by the Direction de l'hydrologie et de l'hydraulique in 2017, does not apply to very small watersheds such as those of the project under study;
- Lastly, for the flood flows presented in Section 2.2.1 of Appendix 7-1, the intensity-duration-frequency (IDF) curves used in the rational method come from two weather stations located approximately 190 km from the project area (Volume 6, Page 6 Section 2.1.1 Available data). This distance leads to significant uncertainty in the results.

Therefore, the proponent is requested to provide the following information:

a) Section 6.6.3 indicates that mine dewatering will lower the water table and thus reduce the flow of certain watercourses (Page 6-79). This reduction could have an impact on the ecosystem. Thus, as part of its annual monitoring program, the proponent must include an instrumentation plan for the watercourses and measure water levels and flows under different flow conditions (low, medium, and high runoff) to establish a rating curve at the location of the probes and track changes in flow. If a change in flow rate is observed, the proponent must propose mitigation measures.

b) It is stated that "*an increase in monthly average flows ranging from 108.0% to 235.5% for Watercourse CE09 could be observed*." Such a dramatic increase in flow could have adverse effects on many species, as well as on shoreline stability.
The proponent must demonstrate and ensure that the increased flow will not affect the stability of the watercourse. It must present, from the outset, mitigation measures should degradation occur.

c) It is indicated that a decrease in water inflow is expected in Watercourse CE06B and Lake SN2. The proponent must document these impacts and propose mitigation measures, as appropriate.

Response 50:

As mentioned by the Ministère, WMG is aware that the characteristic flows presented in the various studies carried out for the project are approximations, with uncertainties due to the absence of hydrological data for long periods and to small watersheds in the sector.

Regarding the specific information requested by the Ministère:

a) A hydrological monitoring program has been drawn up to monitor changes in water levels in the various watercourses potentially impacted by the project, under different hydrological conditions. This monitoring program is provided in response to questions QC-130 and QC-131. Monitoring of aquatic ichtyofauna is also planned. The program details were provided in response QC-135 and will be used, among other things, to validate the impact of these flow changes on the local ecosystem.

b) Given the anticipated increase in flow downstream of the mine effluent in Watercourse CE09, a hydraulic study was conducted to quantify the impacts on the water system downstream of the mine effluent, in terms of levels and velocities (Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 3, Appendix 7-1 - Hydraulic study – Assessment of effluent impacts on the downstream receiving environment).

   This analysis generally has shown that the rise in water levels following the increased flows was relatively moderate, with rises ranging from 0 cm to 10 cm on average, and a maximum of 30 cm in some cases, mainly in the first 1,000 m downstream of the effluent, upstream of Lake SN5. In terms of flow velocities, limited increases were observed on average, although there were some larger variations at times, depending on the local topography. The greatest increases in velocity occur mainly near the mine effluent. Downstream of Lake SN5, the impact is much less marked. And despite the increases, the mean annual velocity under projected conditions remains lower than the velocity during the 2-year flood over the entire watercourse, with the exception of a 200 m section upstream of Lake SN5.

   In the light of these results, it was concluded that the project was not expected to generate significant flooding or erosion/stability problems downstream of the mine effluent, although the section between Pond 1 and Lake SN5 was the most at risk in terms of increased erodibility, with some significant increases in velocity.

   The study also highlighted the fact that the two culverts located on the watercourse upstream of Lake SN5 would not be able to accommodate flood flows under the projected conditions, and would therefore contribute to local increases in water levels in the upstream section. WMG therefore decided to replace the two culverts as a preventive measure, and conducted a study on the subject, available in Appendix RQC50 (Windfall mining project - Repair of culverts P1 and P2 downstream of the mine effluent). It was also decided to replace the culvert on Watercourse CE09 (between Pond 1 and Lake SN3) as a preventive measure. In addition to monitoring water levels, the hydrological monitoring program also includes monitoring bank conditions in the watercourse downstream of the effluent between Pond 1 and Lake SN5.

   If erosion is observed on certain sections of the watercourse, bank stabilization measures may be implemented locally, such as the installation of protective riprap.

c) A slight reduction in water inflow is expected in Watercourse CE06B and Lake SN2. These impacts were described in the study of indirect effects on fish habitat provided in December 2023 (Addendum 1 - Responses to MELCCFP recommendations and comments - Volume 3, Appendix 7-2). In particular, Tables 3-5, 3-6 and 3-7 of this assessment present the characteristic flows (flood, mean and low flow) under current and projected conditions respectively, and their percentage variation. The results are shown below (Table RQC50) for the two points of interest requested, i.e., calculation points P3 (outflow of Lake SN2) and P1 (Watercourse CE06B).

Table RQC50 Estimated characteristic flows of Watercourse CE06B and at the outflow of Lake SN2, under current and projected conditions

Parameter	Current conditions		Projected conditions		Variation (%)	
	SN2-E1	CE06B	SN2-E1	CE06B	SN2-E1	CE06B
	P3	P1	P3	P1	P3	P1
Low-water levels (L/s)*						
$Q_{2.7}$ annual	19	173	15	22	-21	-2
$Q_{10.7}$ annual	9	136	6	11	-35	-2
$Q_{5.30}$ annual	13	132	9	15	-28	-2
$Q_{2,7}$ summer	47	466	41	55	-13	-2
$Q_{10,7}$ summer	21	1498	17	24	-20	-2
$Q_{5,30}$ summer	44	698	38	52	-13	-2
Mean monthly flows (L/s)						
January	144	173	131	169	-9	-2
February	113	136	102	133	-9	-2
March	110	132	100	129	-9	-2
April	388	466	358	455	-8	-2
May	1248	1498	1158	1463	-7	-2
June	581	698	538	681	-7	-2
July	395	474	365	463	-8	-2
August	308	370	284	361	-8	-2
September	313	376	289	367	-8	-2
October	396	475	365	464	-8	-2
November	363	436	335	426	-8	-2
December	212	255	195	249	-8	-2
Annual	381	457	352	447	-8	-2
Floods (m³/s)						
2 years	2.39	2.89	2.24	2.82	-7	-2
10 years	3.78	4.57	3.54	4.46	-6	-2
25 years	4.48	5.41	4.19	5.28	-6	-2
50 years	4.87	5.87	4.55	5.73	-6	-2
100 years	5.52	6.66	5.16	6.50	-6	-2

* Low-water flow is considered to be zero when the watershed has an area of less than 5 km²

The table shows that the expected reductions for these two points of interest are minimal. The following conclusions were drawn from the assessment:

- No habitat loss is expected for Lake SN2. The models predict an average reduction in flow of around 7% of the current flow at the outflow of Lake SN2. The reduction is considered negligible, as it will not result in the deterioration or disruption of the fish habitat found there.
- No fish habitat loss is expected for Watercourse CE06B. Depending on the model, Watercourse CE06B will undergo an average annual reduction equivalent to 2% of its current characteristic flow rate. This reduction is considered negligible as it will have no effect on access to essential habitats by ichthyofauna.

Monitoring of hydrological conditions (in particular water levels) is planned, and includes these two points of interest. This monitoring will help validate the conclusions of this assessment and is detailed in the responses to QC-130 and QC-131.

QC-51
Addendum 1, Responses to MELCCFP recommendations and comments, Volume 3, Appendix 3- 1 Supplementary hydrogeological study:

Appendix B of the report presented in Appendix 3-1 of Addendum 1 contains detailed recharge calculations for the till, esker, and tailings formations used in the numerical model. To calculate potential evapotranspiration (PET), the proponent points out that it used Thorntwait's formula Table 1, "Evaluation of potential evapotranspiration," summarizes the input data. The proponent must provide a modified version of Table 1, which should include the columns "Thermal Index (I)" and "Correction Coefficient (F)."

Response 51:

The modified version of Table 1 is presented in Table RQC51.

Table RQC51 Assessment of potential evapotranspiration (updated)

Month	Average monthly precipitation (mm)	Average monthly temperatures (°C)	Thermal Index (I)	Correction Coefficient (F)	Average potential evapotranspiration (mm)
January	52.4	-17.9	0	0.75	0.0
February	28.8	-15.6	0	0.79	0.0
March	43	-8.7	0	1.02	0.0
April	56.6	0.6	0.04	1.14	5.6
May	81.3	8.4	2.19	1.32	64.7
June	94.1	14.5	5.01	1.34	105.9
July	120.6	17.2	6.49	1.35	123.9
August	103	15.8	5.71	1.24	105.6
September	115.8	10.6	3.12	1.05	63.1
October	95.5	4.2	0.77	0.93	24.9
November	76.7	-4.1	0	0.76	0.0
December	59.8	-12.7	0	0.71	0.0
Year	**927.6**	-	-	-	**493.7**

Source: Environment Canada, Lebel-sur-Quévillon Station (1981-2010).

2.6 Groundwater

QC-52
Environmental Impact Assessment, Page 6-134, Volume 1b, Section 6.10.1 Current conditions;
Environmental Impact Assessment, Volume 6, Appendix 6-8 - Sectoral report Assessment of background levels in water;
Addendum 1 – Response to MELCCFP questions and comments, Volume 1, Section 7 Hydrology:

With regard to the initial state of groundwater, the proponent must provide details on the following elements:

- The reasons why certain parameters were monitored at some wells and not at others, but also during some campaigns but not others. It must justify these variations;
- In principle, to determine a natural background level for the site, it seems appropriate to separate wells with no indication of human contamination from those whose groundwater quality appears to have been affected by human activities. However, it would be necessary to define a pre-project initial state (T0) for all observation wells on the site. One subgroup free of human activity was selected for the determination of background levels. Other subgroups (related to human activities) with similar hydrogeochemical signatures could be used, if relevant, to define background levels;
- If increasing trends in concentrations (Mann-Kendall test) of certain parameters are observed for certain wells, then further analysis should be carried out for these wells to identify possible reasons for the increase;
- According to the Response Manual, the assessment of background levels should not have been limited to only those parameters with drinking water or groundwater quality criteria in the case of resurgence in surface water. The proponent must demonstrate that no potential contaminants due to its activities have been excluded from the analysis;
- Some parameters have been entirely or partially excluded from the assessment of background levels (CO3, H2S, S2-, Se, Sn, Te, V, Cd, Cr, Co, Ni, and U). If the statistical analysis was of little relevance, an explanation must be given of the value of the data usable versus the criteria of drinking water or groundwater quality in the case of resurgence in surface water. In the case of parameters with 100% non-detection, the detection limit must be indicated as the ceiling value of the background content and compared with the criteria;
- A first version of the box-plot graphs should have been presented without the use of logarithmic scales (which cause artificial grouping of data), to accompany the current graphs. Also, with the current scale, the size of the box plots seems skewed. The proponent must submit updated graphs;

The proponent concludes that "*the background concentration level for parameters in the soils (As, Ba, Co) and in the upper portion of the bedrock (Al, Cl, Cu, Mn) appears to be lower than suggested by the interpretation of the cumulative distribution graphs.*" In fact, it seems that for some parameters, the background level does not correspond to a probable 95th percentile estimate (whatever the statistical method), in the sense that a significant proportion of the data are well above the estimated background value (see for example the cumulative distribution graph for soils - Arsenic - page 1268 of the PDF in Volume 6 of the impact assessment). The proponent must revise its calculations for these parameters without waiting for future sampling campaign results.

Response 52:

a) The tables presented in Appendix 2.1 of the assessment provided in Addendum 1 (Vol. 2, Appendix 3-4) present a compilation of all available data acquired during separate campaigns, and not just those from monitoring carried out as part of the establishment of a reference state.

- Prior to 2017, the results presented were compiled from documents resulting from work carried out by the previous owner. Very few analytical results for dissolved metals are presented, as only total metals were analyzed.

- After 2017, additional wells were installed on the site and biannual monitoring to establish a reference state was set up by WMG. The analytical program has been adjusted to include all parameters that could be associated with risks based on the site's activities. The program also included a more exhaustive list of metals to meet the needs of geochemical studies. After an initial scan, certain parameters (e.g., radionuclides, BTEX, PAHs and phenols, certain metals) were removed after showing values below the detection limit. Alongside this monitoring, the proponent also carried out monitoring based solely on the requirements of D019, which explains the differences observed between the variations in the analytical program.

b) An assessment of the pre-project initial state (T0) was carried out by calculating the 95th percentile of each parameter on all available data. Therefore, unlike the natural background levels previously assessed in the study (Addendum 1, Vol. 2, Appendix 3-4), the pre-project initial state T0 also takes into account wells whose concentrations could have been affected by human activities prior to 2023. The assessment is carried out according to the procedure described in step 5.

Although it might have been relevant to present a pre-project initial state for each of the hydrogeochemical signatures, it is clear that most of the wells used to define these signatures have been or will be destroyed during infrastructure construction. They will therefore not be included in the monitoring program. The definition of a pre-project initial state that takes all available data into account seems like a conservative option for characterizing the areas that may have been affected by the activities carried out on the site to date. The natural background levels already presented in the technical memorandum (Addendum 1, Vol. 2, Appendix 3-4) remain representative outside areas where activities may have affected groundwater concentrations.

Thus, Tables B1 (soil) and B2 (rock) in Appendix RQC52-1 provide a statistical summary for all parameters. This summary includes the following elements:

- general statistics;
- criteria and number of exceedances;
- statistics on reported detection limits;
- estimated values for the pre-project initial state, including the selected value.

It should be noted that, in connection with QC-64, the comparison criteria for arsenic and manganese in drinking water have been replaced by those of the Regulation respecting the quality of drinking water (RQEP) (chapter Q-2, r. 40) and the maximum acceptable concentration (Health Canada), respectively.

The value selected for the pre-project initial state depends on the percentage of values below the reporting detection limits (RDL) and the number of different RDLs present for the same parameter:

- For parameters with more than 80% of values below the RDL, the value representative of the pre-project initial state T0 is the most frequent detection limit in the dataset. Note that these values can also be used to define natural background levels for these parameters (see sub-question 52e).
- For parameters with less than 80% of values below the RDL, the value selected for the pre-project initial state T0 corresponds to the 95th percentile assessed with the ROS method if there is 0 or 1 RDL, or the Kaplan-Meier method if there is more than 1 RDL.

c) The assessment of trends using the Mann-Kendall test was carried out as part of the response to question QC-53.

d) Tables B1 (soil) and B2 (rock) in Appendix RQC52-1 present the values for the pre-project initial state T0 for all analyzed parameters. The list of parameters analyzed includes, but is not limited to, all those listed in the *Guide de caractérisation des terrains* (MELCCFP, 2024) under *NAICS code 21222 – Gold and silver ore mining (including gold ore processing)*. It is therefore believed that the initial state covers all potential contaminants that could be caused by the activities planned for the site.

e) All the parameters analyzed are now represented in the pre-project initial state (Tables B1 and B2 in Appendix RQC52-1). The tables provide the number of exceedances of the criteria for each parameter, enabling measured values to be judged against these criteria, regardless of the percentage of data detected.

As stated in the response in b), the value selected for parameters whose non-detection rate did not allow a reliable statistic to be calculated (over 80%) is set at the most frequent detection limit in the dataset. Concentrations subsequently measured during monitoring should be put into perspective with the comparison criteria and the results of the trend assessment.

f) Graphs with a linear scale are presented in Appendix RQC52-2 for all wells (corresponding to Appendix 2.2.4 of Appendix 3-4 attached to Addendum 1, Vol. 2) and those only for the selection of natural background wells (corresponding to Appendix 2.3.2.C of Appendix 3-4 attached to Addendum 1, Vol. 2).

g) It seems that the example given for arsenic refers to the first version of the technical report (Appendix 6-8 of the EIA). This error has already been corrected in the second version (Appendix 3-4) issued in Addendum 1 (Volume 2).

Reference :

MELCCFP. 2024. Guide de caractérisation des terrains. *ISBN:978-2-550-96913-6 (PDF)*

QC-53
Environmental Impact Assessment, Page 6-141, Volume 1b, Section 6.10.1
Current conditions

Section 2.3.2.4 of D019 requires that analytical results from groundwater quality monitoring be compared with each other and over time. To do so, it is recommended to consult the fact sheet entitled, “Analyse des résultats du suivi de la qualité des eaux souterraines (Analysis of groundwater quality results).” The proponent must include in the follow-up program an analysis of groundwater quality data in accordance with the provisions of the fact sheet.

Response 53:

The results of the assessment of groundwater quality data trends are presented in Appendix RQC52-1 for soil and Appendix RQC52-2 for rock. In each case, the results of all the Mann-Kendall tests performed are summarized in a table. It should be noted that the Mann-Kendall test was carried out only for well-parameter combinations meeting the following conditions:

- At least 10 data points available;
- At least one value above the detection limit.

Probable (p-value between 0.1 and 0.005) or significant (p-value <0.005) increases are observed in groundwater in soil and rock. Probable increases present a non-negligible risk of false positives, while this risk is very low in the case of significant increases (MELCCFP, 2019).

Wells showing increases are located in areas where potential or actual sources of contamination have already been identified in the Phase I environmental site assessment (Appendix RQC28). Furthermore, the rising parameters are generally those identified as contaminants associated with these sources.

Thus, the wells showing the most significant increases (p-value <0.005) are located in the areas of the following potential or actual sources of contamination:

- non-compliant discharge and effluent;
- the waste rock stockpile;
- machinery traffic or parking;
- explosives storage.

Increases observed in several wells (such as chlorides, sodium, and calcium) could be due to the use of de-icing salts and dust suppressants on site.

The monitoring program presented in Appendix RQC128 involves data analysis in line with the provisions of the *Analyse des résultats de la qualité des eaux souterraines* fact sheet (MELCCFP, 2019).

Reference :

MELCC. 2019. Fiche d'information : Analyse *des résultats de la qualité des eaux souterraines. Version 2019-08-20. En ligne : fiche-info-analyse-resultats-suivi-qualite.pdf (gouv.qc.ca)*

QC-54
Environmental Impact Assessment, Page 6-113, Volume 1b, Section 6.9
Hydrology:

In line with the numerical modelling of the water table drawdown caused by the dewatering of underground galleries, the proponent must set warning levels for observation wells located between water bodies and underground galleries to anticipate drawdowns exceeding numerical model projections. A warning level must be assigned to each of the observation wells selected for the piezometric monitoring requested in D019 (Section 2.3.3). This warning level should be based on projected drawdowns in the numerical flow model. Warning levels should be set in line with the recommendations of the fact sheet, "Groundwater level monitoring program for quarries and sandpits," or, for example, by setting the threshold at a value equivalent to 50% of the drawdown anticipated by the numerical flow model at the right of the well at the end of operations (maximum drawdown).

The proponent must also notify the Administrator should this threshold be reached, as well as a plan for managing the effects of the lowering of the water table. The plan must include a description of how the proponent intends to assess the impacts of these changes on the surrounding water system, wetlands, and fish habitat, redo groundwater modelling, and adjust offset plans where necessary.

Response 54:

A network of observation wells will be used to monitor piezometric levels. Continuous monitoring of piezometric variation will be carried out in these wells using levelogger and/or barologger sensors. The monitoring program is presented in Appendix RQC128.

Sensors will be installed to measure temperature, water pressure, and air column pressure in the case of barologgers. These sensors will be used to monitor the influence of underground mining on water level elevation near surface watercourses. The sensors will be programmed to take readings every hour. The location of these wells is shown on the following figure, in relation to the anticipated drawdown zone at the end of operations.

Warning thresholds will be used to ensure that the predictive model has not underestimated expected drawdowns. The changes in water levels in these wells will be compared with the model's predictions. Warning thresholds in observation wells act as triggers to determine whether additional checks or corrective work are required.
In this case, warning thresholds are set according to a deviation from predictions. As water levels vary according to weather conditions (rainfall, drought) and time of year (seasons), the average annual level will be used as the reference threshold for each year. A deviation of more than 30% from the predictive slope will be used as a warning threshold criterion (see Figure RQC54). If this warning threshold is reached, the model will be revised to update the environmental impacts.

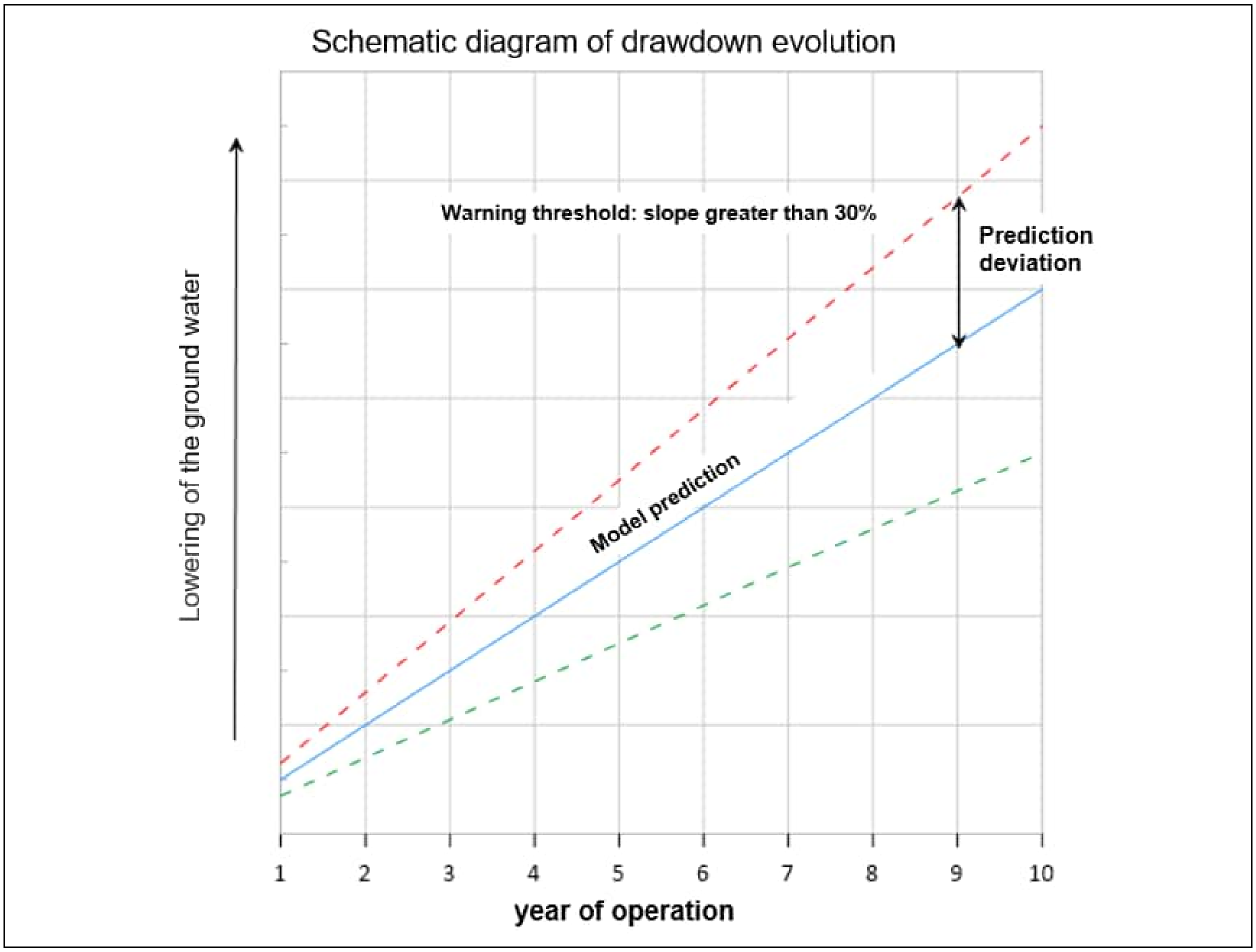


Figure RQC54 Schematic diagram of drawdown changes

QC-55
Environmental Impact Assessment, Page 3, Volume 6, Appendix 6-7 Sectoral report – Hydrogeological studies, Section 2.3 Hydraulic conductivity of hydrostratigraphic units:
It is mentioned that hydraulic tests were carried out in five observation wells located in the area of the tailings storage facility. The proponent must provide a map showing the location of these five wells, as well as a summary table showing the results of these tests (hydraulic conductivity).

Response 55:

As part of the feasibility study for the tailings storage facility, a geotechnical investigation campaign was carried out in 2021 and 2022 (WSP, 2023a). The purpose of this geotechnical campaign was to assess, among other things, the hydraulic conductivity of the unconsolidated deposits and the basement rock, as well as the installation of observation wells within the boundaries of the tailings storage facility. A total of ten (10) hydraulic conductivity tests (slug tests) were carried out at observation wells MW-22-01R, MW-22-01S, MW-22-02S, MW-22-02R, and MW-22-03S. The location of these tests is shown on Map RQC55 (WSP, 2023b).

The results of the hydraulic conductivity tests (slug tests) are presented in Tables 9 and 11 of the WSP report (2023a) for unconsolidated deposits and basement rock respectively.

Table RQC55-1 Summary of hydraulic conductivity test results for unconsolidated deposits

Observation well	Well screen location from surface (m)		Hydraulic conductivity (geometric mean) (m/s)	Horizons tested
	top	bottom		
MW-22-01S	29.70	32.75	9×10^{-8}	Sand and gravelly silt (SM)
MW-22-02S	9.45	10.97	4×10^{-7}	Silty sand with some gravel (SM)
MW-22-03S	1.52	4.57	2×10^{-8}	Sand and gravelly silt (SM)

Table RQC55-2 Summary of hydraulic conductivity test results for basement rock

Observation well	Well screen location from surface (m)		Hydraulic conductivity (geometric mean) (m/s)	Horizons tested
	top	bottom		
MW-22-01R	38.40	41.45	5×10^{-10}	Basement rock
MW-22-02R	12.57	15.62	2×10^{-7}	Basement rock

The hydrogeological properties of the unconsolidated deposits and basement rock used for the hydrogeological modelling study in the area of the tailings storage facility are summarized in Table 2 of the WSP report (2023b), reproduced below in Table RQC55-3:

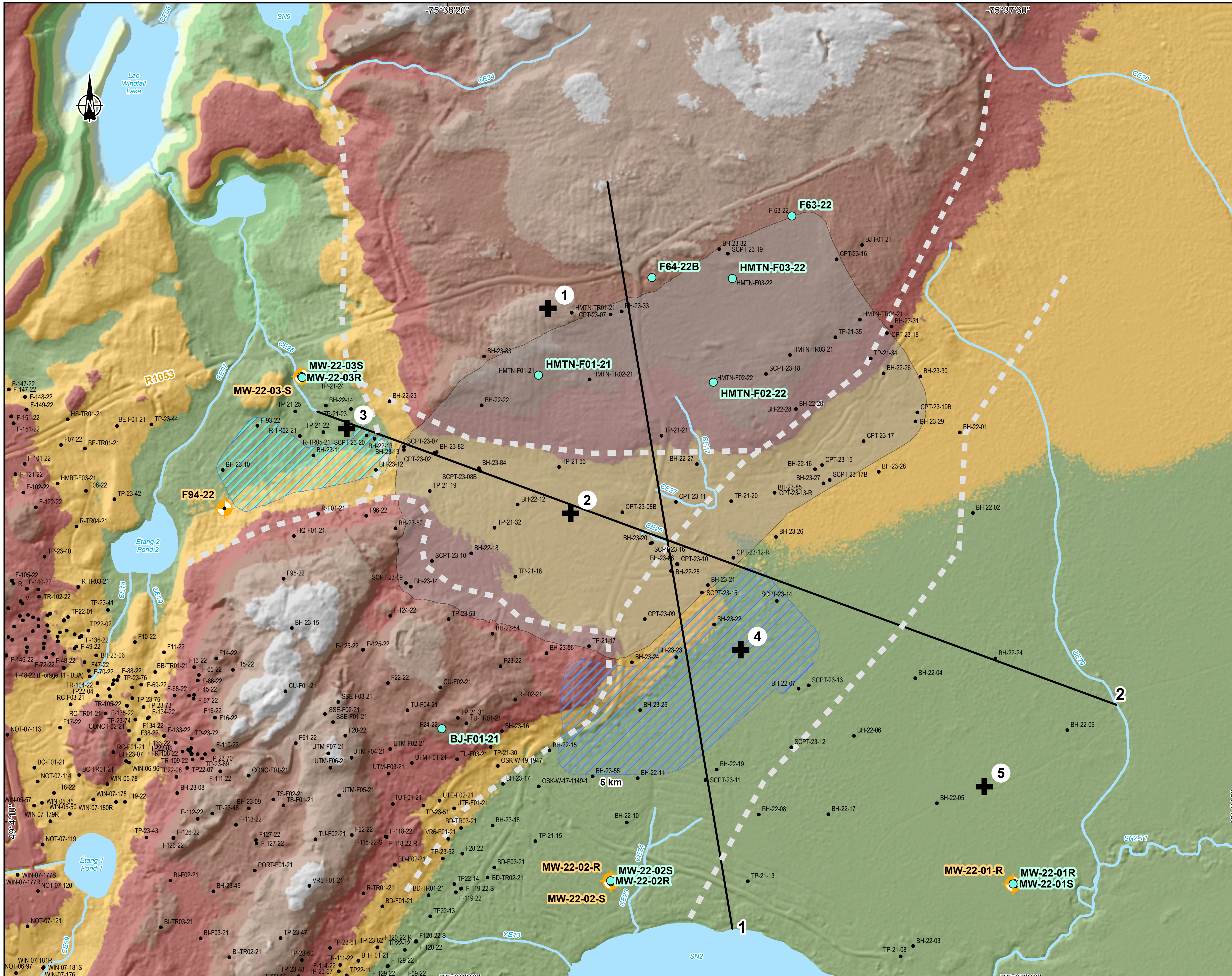
Table RQC55-3 Hydrogeological properties of unconsolidated deposits and basement rock in the area of the tailings storage facility

Sector	Hydrostratigraphic unit (number of tests)	K (m/s) geometric mean
Tailings storage facility	Silty sand (3 tests)	1.1×10^{-7}
	Basement rock (2 tests)	2.7×10^{-8}

References :

WSP. 2023a. 2021-2022 *Geotechnical Investigation at the Tailings Management Facility-Factual Report*. Document nº GAL116-20146303-21006-RA-Rev0 en date 13 mars 2023.

WSP. 2023b. *Étude hydrogéologique pour la conception du parc à résidus minier (Niveau Faisabilité).* Document nº GAL132-21488985706-RF-Rev3 en date décembre 2023.



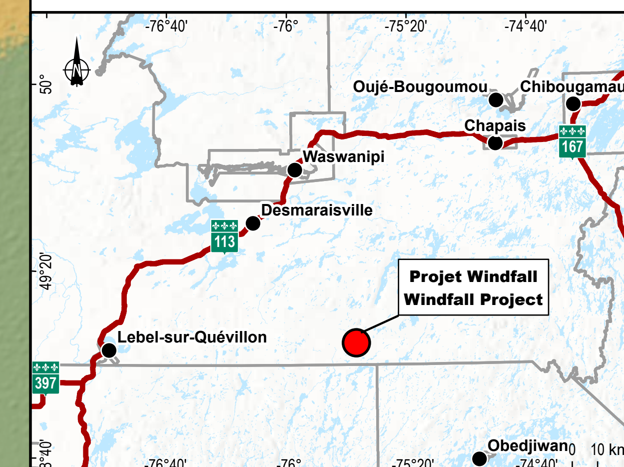
- Coupe SEEP/W / *SEEP/W Cut*
- Contexte stratigraphique / *Stratigraphic context*
- Limite approximative des contextes stratigraphiques / *Approximate limit of stratigraphic contexts*
- Essai hydraulique 2022 / *Hydraulic test 2022*
- Niveau d'eau 2022 / *Water level 2022*
- Forage et tranchée / *Drilling and trench*
- Parc à résidus / *Tailings storage facility*
- Bassin PAR1 / *Pond PAR1*
- Bassin PAR2 / *Pond PAR2*

Hydrographie / *Hydrography*

- Cours d'eau / *Watercourse*
- Plan d'eau / *Waterbody*

Élévation du sol (niveau moyen des mers) / *Ground Elevation (Mean Sea Level)*

380 - 385	406 - 410
386 - 390	411 - 415
391 - 395	416 - 420
396 - 400	421 - 425
401 - 405	426 - 430



WINDFALL GROUPE MINIER

Projet minier Windfall - Réponses aux questions et commentaires - 1re série / *Windfall Mining Project - Answers to Questions of Comments - 1st Series*

Site minier Windfall, Eeyou Istchee Baie-James (Québec) / *Windfall Mining Site, Eeyou Istchee Baie-James (Quebec)*

RQC55 / *RQC55*

Localisation des cinq puits d'observation localisés dans la zone du parc à résidus / *Location of the Five Observation Wells Located in Tailings Management Area*

Sources :
CanVec+, 1/50 000, RN Can, 2014
SDA, 1/20 000, MERN Québec, 2020
BDTA, 1/250 000, MRN Québec, 2002
BDGA, 1/5 000 000, MRN Québec, 2012
GESTIM, MRN Québec, 2022
MRNF, MNT Ombre 32G04SE, 2023

0 70 140 m

MTM, Fuseau 9 / Zone 9, NAD83

2024-10-02

Préparation / Preparation : M.-H. Brisson
Dessin / Drawing : J. Roy
Vérifié par / Verification : M.-H. Brisson
CA0023271_9538_eie_rqc55_context_strati_241002.aprx
CA0023271_9538_eie_rqc55_037_context_strati_241001

wsp

La précision des limites et des mesures montrées sur ce document ne doivent pas servir à des fins d'ingénierie ou de délimitation foncière. Aucune analyse foncière n'a été effectuée par un arpenteur-géomètre. / Boundary accuracy and measurements shown on this document are not to be used for engineering or land delineation purposes. No land analysis was carried out by a land surveyor.

QC-56
Environmental Impact Assessment, Page 18, Volume 6, Appendix 6-7 Section 4.3 Recharge;
Environmental Impact Assessment, Page 8, Volume 6, Appendix 6-7, Section 3.2.3 Boundary conditions;
Environmental Impact Assessment, Page 4, Volume 6, Appendix 6-7, Section 2.6 Recharge:

The proponent has stated that the details of the calculations that led to the recharge values were assigned based on the water balance calculation, including the following values: 200 mm for till, 300 mm for glaciofluvial deposits, 180 mm/year for the waste rock stockpile, 60 mm/year for tailings, 114 mm for glacial deposits, and 18 mm for peat. The proponent must provide details of the calculations that led to these recharge values. In particular, the proponent must provide a copy of the: WSP, 2023c, Site Wide Water Balance. Windfall Project. Document No. GAL138-2148985706-R.

Response 56:

The recharge values of the Windfall project's stratigraphic units, i.e., till, glaciofluvial deposits, glacial deposits and peat, as well as tailings and waste rock, was calculated from the monthly surface water balance by integrating all climatic data. A summary of the general assumptions, model framework, and main results derived from the water balance model was previously provided in December 2023 (Addendum 1, Volume 1, Appendix 1-1).

Details of recharge calculations for stratigraphic units are also provided in Appendix 3-1 (Addendum 1, Volume 2) of the supplementary hydrogeological study report, while details of recharge calculations for tailings and waste rock are presented in Appendices 3-2 and 3-3 (Addendum 1, Volume 2).

In addition, recharge values are calculated from the water balance using the following formula:

$$RE = Precipitation - Ru - AET \pm \Delta S$$

Where: RE = recharge, Ru = Runoff, AET = actual evapotranspiration, ΔS = variation in available water capacity

Recharge values (min, max) are obtained based on site-specific conditions for each stratigraphic unit. Runoff rates are influenced by slope, soil type, and soil use.

When calibrating the hydrogeological model, recharge values were assigned for the various zones based on the values initially obtained (for each stratigraphic unit) from the above water balance (min, max recharge per unit).

As mentioned above, a copy of the report, "WSP, 2023c, Site Wide Water Balance. Windfall Project. Document No. GAL138-2148985706-R," has already been provided in French (Addendum 1, Volume 1, Appendix 1-1). This also served as an update.

QC-57
Environmental Impact Assessment, Volume 6, Appendix C of Appendix 6-7
Sectoral reports – Hydrogeological studies, Methodology for the development of the numerical groundwater flow model; Environmental Impact Assessment, Page 8, Volume 6, Appendix 6-7
Sectoral reports – Hydrogeological studies, Section 3.2.3 Boundary conditions:

The "Lakes and watercourses" section of Appendix C emphasizes that the loads imposed on watercourses are of the "drain" type (in blue) and that the loads imposed on lakes are of the "constant load" type (in red).

However, in the centre of the model (Map 5, Volume 6), the loads imposed on Lakes SN1, SN3, SN4, and part of SN6 include drain-type boundary conditions (zero load). In Section 3.2.3 of the technical note on estimating percolation rates under the mine waste rock stockpile (Appendix D), it is mentioned that some lakes have been represented by zero pressure imposed load boundary conditions. The proponent must explain why certain lakes have been assigned zero load (drain) boundary conditions.

Response 57:

The boundary conditions were updated as presented in the supplementary hydrogeological study (Addendum 1-Vol. 2, Appendix 3-1, Section 2.4 and Map 2) to ensure consistency throughout the model. Thus, all the lakes in the modelled area were represented using constant loads.

QC-58

Environmental Impact Assessment, Volume 6, Appendix 6-7 Sectoral report Hydrogeological studies, Section 5.1.1 Calibration:

Section 5.1.1 of Appendix 6-7 (Volume 6) states that "the hydraulic conductivity of each hydrostratigraphic unit and recharge rates were adjusted during the calibration process." As part of the calibration process, sensitivity analyses must be carried out on certain parameters of interest for which variability is conceivable, such as hydraulic conductivity and recharge. For each sensitivity analysis, the root mean square error (RMSE) must be recalculated. Section 10 of the Guide de présentation des travaux de modélisation hydrogéologique expands on this subject. The proponent must perform a sensitivity analysis on certain parameters of the numerical flow model and present the results.

Response 58:

A sensitivity analysis was carried out to study the uncertainty associated with variations in certain model parameters. The following simulations were carried out during the sensitivity analysis:

- SS1: doubling of the hydraulic conductivity of surface deposits;
- SS2: halving of the hydraulic conductivity of surface deposits;
- SS3: doubling of the hydraulic conductivity of the bedrock;
- SS4: halving of the hydraulic conductivity of the bedrock;
- SS5: doubling of the hydraulic conductivity of faults;
- SS6: halving of the hydraulic conductivity of faults;
- SS7: overall increase in recharge of 30%;
- SS8: overall reduction in recharge of 30%.

The results of the sensitivity analysis for the simulated hydraulic loads are presented in Table RQC58. The NMRS ("Normalized mean root square") is also indicated for each of the simulations carried out to help judge the quality of the calibration.

The model is sensitive to the variation in conductivity of the bedrock units (SS3 and SS4). The increase in hydraulic conductivity for all bedrock units (SS3) favours greater flow and therefore greater load reduction. The permeability of surface deposits has an impact on hydraulic loads. A reduction in hydraulic conductivity (SS2) leads to an overall increase in hydraulic loads, while an increase in hydraulic conductivity (SS1) leads to a reduction in water levels.

Variations in recharge have a major impact on watercourse flows, but also on hydraulic loads. The model is therefore sensitive to this parameter. Finally, scenarios SS5 and SS6 show that fault permeability has a very limited impact on water levels observed in observation wells. Scenarios SS2, SS4, and SS7 show a better NRMS than that obtained for the calibrated model. The scenario with an increase in recharge, however, presents excessively high flows in watercourses and areas with water levels above the ground surface. The reduction in surface deposit conductivity (SS2) results in poorer watercourse flow calibration, and the reduction in bedrock conductivity (SS4) results in poorer dewatering flow calibration for the current ramp. Furthermore, given the reduction in permeability, these two scenarios are less conservative in terms of impact.

Table RQC58 Differences between observed and simulated hydraulic loads for the scenarios tested

Well	Observed piezometric height (m)	Calibrated model	SS1	SS2	SS3	SS4	SS5	SS6	SS7	SS8
WIN-07-177S	402.43	-0.71	-0.84	-0.48	-1.18	-0.46	-0.73	-0.71	-0.49	-0.95
WIN-07-177R	402.47	-0.89	-1.02	-0.66	-1.37	-0.64	-0.91	-0.89	-0.67	-1.13
WIN-07-179R	400.26	1.39	1.39	1.36	0.77	1.71	1.37	1.40	1.57	1.18
WIN-07-180S	402.42	0.47	0.31	0.67	-0.05	0.64	0.44	0.48	0.64	0.20
WIN-07-180R	402.56	0.21	0.06	0.41	-0.32	0.40	0.18	0.23	0.39	-0.06
WIN-07-181S	400.18	-0.56	-0.62	-0.45	-0.79	-0.45	-0.58	-0.55	-0.45	-0.67
WIN-07-181R	400.04	-0.84	-0.89	-0.75	-1.04	-0.82	-0.96	-0.78	-0.73	-0.96
WIN-07-182	399.02	-0.56	-0.58	-0.50	-0.63	-0.53	-0.58	-0.54	-0.51	-0.60
WIN-17-186S	395.11	-0.88	-0.93	-0.74	-6.25	0.44	-1.36	-0.66	0.16	-2.92
WIN-17-186R	395.16	-1.17	-1.21	-1.07	-6.70	0.16	-1.68	-0.95	-0.12	-3.25
WIN-17-187R	396.92	-0.13	-0.62	0.14	-7.65	1.35	-1.70	0.38	1.12	-3.95
WIN-17-188S	402.66	-2.77	-3.20	-2.02	-3.60	-2.35	-2.80	-2.76	-2.28	-3.29
WIN-17-188R	403.85	-4.17	-4.61	-3.39	-5.03	-3.73	-4.20	-5.16	-3.66	-4.71
MW-22-01-S	396.07	-0.85	-0.98	-0.74	-0.96	-0.62	-0.76	-0.85	-0.79	-0.93
MW-22-01-R	396.08	-1.37	-1.47	-1.26	-1.48	-1.12	-1.28	-1.37	-1.30	-1.44
MW-22-02-S	396.81	-2.04	-2.07	-1.99	-7.21	-1.64	-2.13	-2.01	-1.75	-3.31
MW-22-02-R	396.77	-2.12	-2.15	-2.07	-7.39	-1.70	-2.22	-2.09	-1.82	-3.43
MW-22-03-S	395.69	0.13	-0.39	0.79	0.13	0.12	0.13	0.13	0.37	-0.14
MW-22-03-R	395.52	0.29	-0.23	0.95	0.28	0.28	0.29	0.29	0.53	0.01
HMTN-F01-21	409.40	2.45	1.86	2.84	1.38	3.09	2.45	2.45	2.92	1.68
BJ-F01-21	411.78	0.06	-0.34	0.20	-0.24	0.14	0.06	0.06	0.18	-0.24
HMTN-F02-22	409.48	-0.14	-0.32	-0.14	-0.59	0.21	-0.11	-0.16	0.02	-0.46
HMTN-F03-22	412.65	0.42	0.46	0.15	-0.18	0.92	0.43	0.42	0.54	0.06
F63-22	413.81	0.62	0.50	0.46	0.13	1.00	0.62	0.63	0.76	0.24
F93-22	397.00	-0.95	-1.54	-0.20	-0.98	-0.95	-0.95	-0.95	-0.65	-1.28
F65-22	407.51	-3.87	-5.28	-2.40	-6.73	-2.95	-3.99	-3.81	-2.79	-5.68
F94-22	399.31	-1.61	-2.15	-0.82	-1.77	-1.59	-1.61	-1.61	-1.31	-1.96
VR6-F01-21	397.54	-3.65	-2.54	-4.83	-23.15	1.48	-5.63	-2.82	-0.51	-12.06
F-116-22-R	398.94	-2.36	-2.51	-2.08	-2.43	-2.33	-2.36	-2.36	-2.25	-2.47
NRMS		**9.28**	**10.10**	**8.65**	**29.64**	**8.02**	**10.56**	**9.39**	**7.59**	**16.95**

QC-59
Environmental Impact Assessment, Volume 6, Appendix 6-7 Sectoral Report – Hydrogeological studies, Map 6;
Addendum 1 - Responses to MELCCFP recommendatio ns and comments, Appendix 3-1 Supplementary hydrogeological study, Section 3.2.2 Extent of potential groundwater drawdown:

In Section 5.2 of Appendix 6-7 of the impact assessment, the distribution of drawdowns is calculated in relation to the "2017 reference state." Section 3.2.2 of Appendix 3.1 of Addendum 1 states that the drawdown is evaluated by "subtracting the hydraulic loads of the predictive model under final operating conditions from the hydraulic loads of the calibrated model including only the existing galleries." In this context, Map 6 (Appendix 6-7 of the impact assessment) and Map 3 (Appendix 3-1 of Addendum 1) would model the differences between the drawdown generated at the end of the proposed project and the drawdowns resulting from the dewatering of the ramp and galleries in 2017, underestimating the distribution of drawdowns in relation to natural hydraulic loads.

a) The proponent must confirm whether this reference state, based on piezometric data from the "*2017 reference state*," represents static piezometric conditions in its natural state or whether it has been affected by dewatering of the access ramp and exploration drifts. In this case, dewatering activities could potentially have led to a lowering of the piezometric surface. If not, Map 6 (Appendix 6-7 of the impact assessment) and Map 3 (Appendix 3-1 of Addendum 1) must be revised to illustrate the difference between the natural piezometric surface and the modelled piezometric surface at the end of operations.
b) The proponent must specify whether the piezometric levels of the calibrated model, including only the existing drifts, consider hydraulic loads generated by drift dewatering.
c) The area of influence of all withdrawals (cumulative drawdown at the end of operations) must be calculated in relation to initial natural conditions (natural static level) so as to document the impact of the project as a whole on the natural piezometric surface.

Response 59:

According to WMG information, the data used in 2017 would represent static levels. Dewatering began in the summer of 2017 and, as can be seen from the piezometric map shown, dewatering the ramp has no significant impact on the site's piezometry. The data presented therefore do not underestimate the anticipated drawdown. The water levels considered for calibration are the 2017 water levels, i.e., the levels that do not show any impact from dewatering the ramp. Given the negligible impact of dewatering on site piezometry in 2017, the current drawdown cone is representative and can be used to assess impacts.

2.7 Drinking water and domestic water

QC-60
Environmental Impact Assessment, Page 2-30, Volume 1a, Section 2.2.3 Water treatment;
Environmental Impact Assessment, Page 3-77, Volume 1a, Section 3.5.7 Other water treatment systems:

The proponent has mentioned that additional treatment equipment will have to be added during the construction phase, due to the simultaneous presence of 600 workers at the camp. The proponent must specify what this equipment will be. The proponent must confirm and demonstrate that the final treatment facility will have sufficient treatment capacity to handle the maximum number of workers expected on the site in all phases of the project.

Response 60:

Section 1.3.2.3 of the December 2023 Addendum 1 states that domestic waste water from the planned workers' camp will be treated by an advanced secondary waste water treatment system, including a leaching field. More specifically, the equipment used to treat the water will be a grease trap followed by a primary treatment system (septic tank), then an advanced secondary waste water treatment apparatus, the exact nature of which has yet to be defined.

Lastly, the final treatment and disposal of this water will be carried out by means of a leaching field. The total surface area required for infiltration will be around 3,000 m^2, consisting of several sections that will in turn be composed of several cells to ensure even distribution of the water to be treated over the entire surface area.

A site and soil characterization study was carried out in the area, in accordance with Section 3.2 of the Guide pour l'étude des technologies conventionnelles de traitement des eaux usées d'origine domestique [Guide for the study of conventional domestic waste water treatment technologies], and was provided in Appendix 1-3 of the December 2023 Addendum 1. The study concludes that final water treatment and disposal can be achieved using a 3,000 m^2 leaching field at the identified site, for all phases of the project.

It should be remembered that the workers' camp will have the capacity to accommodate 600 people during both the construction and operations phases. The proposed system was selected on the basis of this figure. It will remain in place until the restoration work has been completed.

QC-61
Environmental Impact Assessment, Page 2-16, Volume 1a, Section 2.1.6
Drinking water supply:

The proponent must justify whether the drinking water supply source has sufficient capacity to meet the demand of all workers for the life of the project. The proponent must specify the maximum and average daily flow rate of drinking water supply, for each phase of the project.

Response 61:

The hydrogeological assessment carried out during the search for groundwater for the project's drinking water supply (Appendix RQC61) shows that the aquifer to be tapped by Well P-5 has ample capacity to supply the project at full capacity.

Drinking water requirements for the project, all phases combined, were determined based on a daily occupancy of 600 people, with an average daily consumption of 300 L/d per person. Average daily consumption for the site will therefore be 180 m^3/d. The maximum consumption was set at twice the average daily consumption, i.e., 360 m^3/d, as recommended in the MELCCFP's Design Guidelines for Drinking Water Production Facilities (2021), Volume 1, Table 5-1: Peak coefficient.

The hydrogeological assessment associated with the future P5 drinking water supply well reveals a highly productive aquifer of around 12,216 m^3/d (509 m^3/h). According to the screen manufacturer's recommendation, the submersible pump for Well P5 should have a pumping capacity of 360 m^3/d (15 m^3/h). This maximum capacity also corresponds to the specific design criterion for the drinking water treatment system.

In summary, requirements for the life of the project will be met since the aquifer, the well development, and the raw water supply pump have sufficient capacity to supply the average and maximum daily flows.

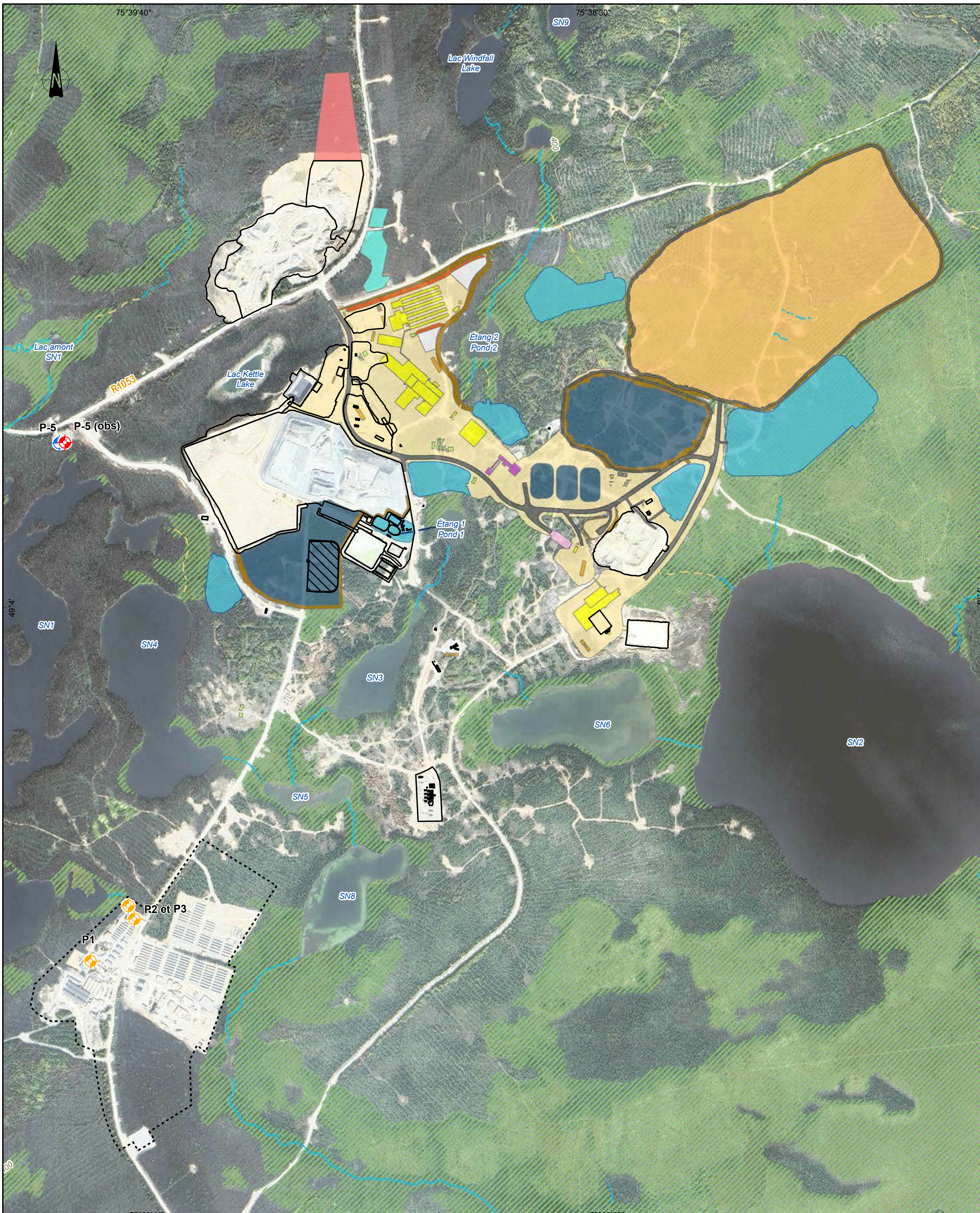
QC-62
Environmental Impact Assessment, Page 3-76, Volume 1a, Section 3.5.5
Drinking water:

The temporary camp is served by three wells (P1, P2 and P3) that were authorized in May 2017. The proponent must explain why wells P1 to P3 will not be used to supply drinking water to the work camp. It must also specify what will happen to wells P1 to P3.

On Page 2-16, the proponent mentions that Well P5, located west of the future camp, will be used to meet workers' drinking water needs during the project's construction and operations phases. The proponent must show the position of the well on a map.

Response 62:

Wells P1 to P3 have not been selected to supply drinking water to the planned camp, as they are used by WMG's mining exploration camp. This camp will continue to be used in the future (it is not a temporary camp). The wells are also too far from the planned facilities. Well P5 is located ± 1.1 km from the project's drinking water treatment and distribution system. Map RQC62 shows all of WMG's drinking water wells, including those for current and projected use.



Composantes du projet / *Project Components*

Infrastructures actuelles / *Current Infrastructures*

- Actuelle / *Current*
- Qui sera retirée / *To be removed*

Infrastructures projetées / *Planned Infrastructures*

- Aire d'activité / *Activity area*
- Banc d'emprunt / *Borrow pit*
- Bassin / *Pond*
- Bâtiment / *Building*
- Champ d'infiltration / *Infiltration field*
- Concasseur / *Crusher*
- Équipement / *Equipment*
- Limite des fossés / *Ditch limit*
- Halde / *Stockpile*
- Parc à résidus miniers / *Tailings storage facility*
- Portail Lynx / *Lynx portal*
- Réservoir / *Reservoir*
- Route / *Road*
- Berme / *Berm*
- Zone de dépôt de neige / *Snow deposit zone*

Autres composantes / *Other Components*

- Campement d'exploration et hélipad / *Exploration camp and helipad*

Puits / *Wells*

- Puits d'eau potable existant / *Existing drinking water well* (WSP, 2017)
- Puits d'observation / *Observation well* (WSP, 2024)
- Puits d'eau potable proposé / *Proposed drinking water well* (WSP, 2024)

Végétation / *Vegetation*

- Milieu humide / *Wetland*

Hydrographie / *Hydrography*

- Cours d'eau permanent / *Permanent watercourse*
- Cours d'eau intermittent / *Intermittent watercourse*
- Cours d'eau souterrain / *Underground watercourse*
- Canal / *Canal*

Projet minier Windfall - Réponses aux questions et commentaires - 1re série /
Windfall Mining Project - Answers to Questions and Comments - 1st Series

Site minier Windfall, Eeyou Istchee Baie-James (Québec) /
Windfall Mining Site, Eeyou Istchee Baie-James (Quebec)

RQC-62 / *RQC-62*
Puits d'eau potable / *Drinking water well*

Sources :
BDTQ, 1/20 000, MERN Québec, 2007
Carte écoforestièere, 4e inventaire, MFFP Québec, 2020
Réseau routier, AQRéseau+, MERN Québec, 2020
Google Earth, Satellite Airbus, 2023

0 120 240 m
MTM, fuseau 9 / *zone* 9, NAD83

2024-10-16

Préparée par / Preparation : K. Cadoret
Dessinée par / Drawing : V. Venne
Vérifiée par / Verification : M.-H. Brisson
CA0023271_9538_eie_rqc62_ces_003_Infras_proj_241016.mxd

QC-63
Environmental Impact Assessment, Page 2-23 to 2-35, Volume 1a, Section 2.2.3
Water treatment:

During pumping tests at drinking water supply Well P5, laboratory analyses showed that iron and manganese concentrations in the well water exceeded drinking water guidelines. Drinking water will be treated with a green sand filter to remove iron and manganese. The proponent must indicate how wastewater from the water treatment system’s green sand filter will be managed (Page 2-27).

Response 63:

The waste water from the green sand filter (backwash) is sent to the domestic water treatment system. The sizing of the domestic water treatment system takes account of this intermittent flow.

QC-64
Environmental Impact Assessment, Page 6-141, Volume 1b, Section 6.10.1
Current conditions

Drinking water quality criteria for natural background levels (NBLs) for Arsenic (As) and Manganese (Mn) parameters must be updated according to the latest version of the Regulation respecting the quality of drinking water (RQEP) (chapter Q-2, r. 40) (As = 10 ug/L) and Health Canada criteria (MAC for Mn = 120 ug/L). The proponent must submit a revised version of Table 6-37 for As and Mn reference values.

Response 64:

Natural groundwater background data were updated in Addendum 1 of the EIA (see Addendum 1, Volume 2, Appendix 3-4, Table 3), and the regulatory change took place after the studies were submitted.

Table RQC64 shows the updated values with natural background levels as requested in the question. In addition, the comparison of pre-project initial state (T0) values with the criteria is presented in detail in the tables in Appendix RQC52-1.

Table RQC64 Estimated natural background levels in groundwater for soils and the upper portion of the bedrock compared with groundwater quality criteria (updated 2024)

Parameter	Natural background level (µg/L)		Quality criterion (µg/L)			Quality criterion (µg/L) (Health Canada, 2014)
	Upper portion of the bedrock	Soil	Drinking water (RQEP[1]) MELCCFP, 2024)	Resurgence in surface water (RES[2])	Alert threshold (RES x 50%)	Drinking water (MAC)
Metals						
Aluminum (Al)	87	**327**	-	-	-	-
Arsenic (As)	**7.5**	**1.3**	10	340	170	10
Barium (Ba)	124.1	37	1,000	600	300	2,000
Copper (Cu)	1.5	**6.5**	1,000	7.3	3.65	2,000
Manganese (Mn)	**340**	**420**	120	2,300	1,150	120
Molybdenum (Mo)	7.7	8	-	29,000	14,500	-
Nickel (Ni)	-	3.8	-	260	130	-
Sodium (Na)	29,200	29,600	-	-	-	200,000

Parameter	Natural background level (µg/L)		Quality criterion (µg/L)			Quality criterion (µg/L) (Health Canada, 2014)
	Upper portion of the bedrock	Soil	Drinking water (RQEP[1]) MELCCFP, 2024)	Resurgence in surface water (RES[2])	Alert threshold (RES x 50%)	Drinking water (MAC)
Other inorganic compounds						
Ammoniacal nitrogen ($N-NH_3$ and $N-NH_4$)	**530**	**370**	-	20,000	10,000	-
Chlorides (Cl)	4,600	48,600	-	860,000	430,000	250,000
Fluoride (F)	328	220	1,500	4,000	2,000	1,500
Nitrites ($N-NO_2$) and nitrates ($N-NO_3$)	1,700	1,500	10,000	-	-	-
Nitrates ($N-NO_3^-$)	1,700	1,500	-	300,000	150,000	45,000
Total phosphorus (P)	350	170	-	1,000	500	-

Notes	
118	: Background level value exceeding RES and drinking water criteria (MELCCFP)
5.5	: Background level value exceeding the alert threshold (50%) of the RES criterion
320	: Background level value exceeding the criterion for drinking water
	: Background level value exceeding Canadian drinking water quality criteria (MAC)
-	: Background level not estimated in the absence of criteria

[1] RQEP, Direction de l'eau potable et des eaux souterraines. Guide d'interprétation du Règlement sur la qualité de l'eau potable, ministère de l'Environnement et de la Lutte contre les changements climatiques. 2019. 124 pages.

[2] BEAULIEU, M. 2021. *Guide d'intervention – Protection des sols et réhabilitation des terrains contaminés*. Ministère de l'Environnement et de la Lutte contre les changements climatiques. 326 p. et annexes.

2.8 Fauna and flora

QC-65
Environmental Impact Assessment, Page 7-1, Volume 1b, Section 7
Description of the biological environment and potential impacts:

The proponent must demonstrate that it has applied the "avoid-minimize-compensate" mitigation approach for infrastructures and activities that affect wetlands and water environments, and whose impacts result in a loss of surface area, ecological functions, or biodiversity, particularly for the tailings storage facility variant.

Response 65:

WMG has worked to integrate the "avoid-minimize-compensate" approach throughout the project's development, in particular during site selection for the tailings storage facility. First of all, it is important to remember that the location of the project is associated with the presence of a mineable deposit, which is difficult to optimize. Secondly, the project is located at the head of three watersheds, which limits the presence of large wetland and water environment complexes. Wetlands and water environments make up almost 45% and 12% respectively of the local study area of the biophysical environment. In comparison, wetland encroachment accounts for 27% of impacts. There are four watercourses that are not used by fish (intermittent and partially underground) and represent a very small surface area: CE17, CE18, CE25, and CE27. The updated map and summary are presented in the response to QC-66.

The analysis of alternatives and the mitigation measures developed as part of the EIA initially focused on avoiding and minimizing impacts on wetlands and water environments, as reflected above. Overall, the Windfall site is extremely compact for the level of activity planned.

For example, the capacity of the existing waste rock stockpile was assessed to maximize the space required to store the total volume of waste rock to be produced by the project and to avoid a larger footprint. Likewise, the location of the final tailings storage facility alternative made it possible to concentrate infrastructure to limit the project's overall footprint on the environment and on the traplines used by the Cree families. Finally, the use of filtered tailings, compared with thickened tailings, reduced the required footprint by 10%. Appendix 1-8 of Addendum 1 presents the alternatives analysis that led to the selection of the proposed tailings storage facility site. This study demonstrates that environmental aspects were taken into account when selecting the site for the tailings storage facility, and that the impacts between the biological components of the environment were assessed to select the best option.

With regard to the offset component, the Project is not subject to the Regulation respecting compensation for adverse effects on wetlands and bodies of water (R.S.Q., C. Q-2, r. 9.1) as it is located north of the 49th parallel. However, WMG has developed the biodiversity program presented in Addendum 1 (Volume 2, Appendix 9-1). This is in line with this approach, acting as a "compensation plan for wetlands and water environments," which could not be avoided by the project, with the aim of achieving the principle of no net loss of biodiversity. In addition, a fish habitat offset project is presented in Appendix RQC75 to counterbalance the indirect impacts of the project associated with the reduction of watersheds and the drawdown of the water table. This offset project will restore an area where the flow between the various water bodies is inadequate, thereby improving the quality of the water system by stabilizing the bank of the watercourse, among other things.

QC-66
Environmental Impact Assessment, Page 7-1, Volume 1b, Section 7.1 Vegetation and wetlands; Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 3, Section 2 Hydrological analyses (flows):

The proponent must specify whether the calculated losses of wetlands and water environments (WWE) include areas with existing infrastructure planned during exploration. The loss of wetlands and water environments caused by the construction of exploration infrastructures must be accounted for.

The proponent must also add the areas destroyed by the addition of the infrastructures presented in Addendum 1. The proponent must provide a map and shape files illustrating the wetland and water environment loss associated with the project.

In addition, the proponent must consider the loss of wetlands and water environments caused by the drawdown of the water table. In particular, the loss calculation must include Watercourses CE03, CE09, CE15 and CE28, which will be subject to a 100% reduction in base flows. Finally, it must also specify the effects on watercourses CE13 and CE23, given the 80% reduction in their base flow.

The proponent must update the map showing the loss of wetlands and water environments.

Response 66:

Impacts of exploration

As presented in Section 1.7 of the main volume of the environmental impact assessment, the site has been the subject of various authorizations in the past related to mineral exploration work.

The authorizations listed in Section 1.7 are those transferred or obtained by WMG. Of all these authorizations, only one (Ref.: 7610-10-01-70090-27, 402199594, AM000004737) had an impact on wetlands, in two open peat bogs covering a total area of 3,328 m². Finally, the work generated 3,282 m² of wetland losses.

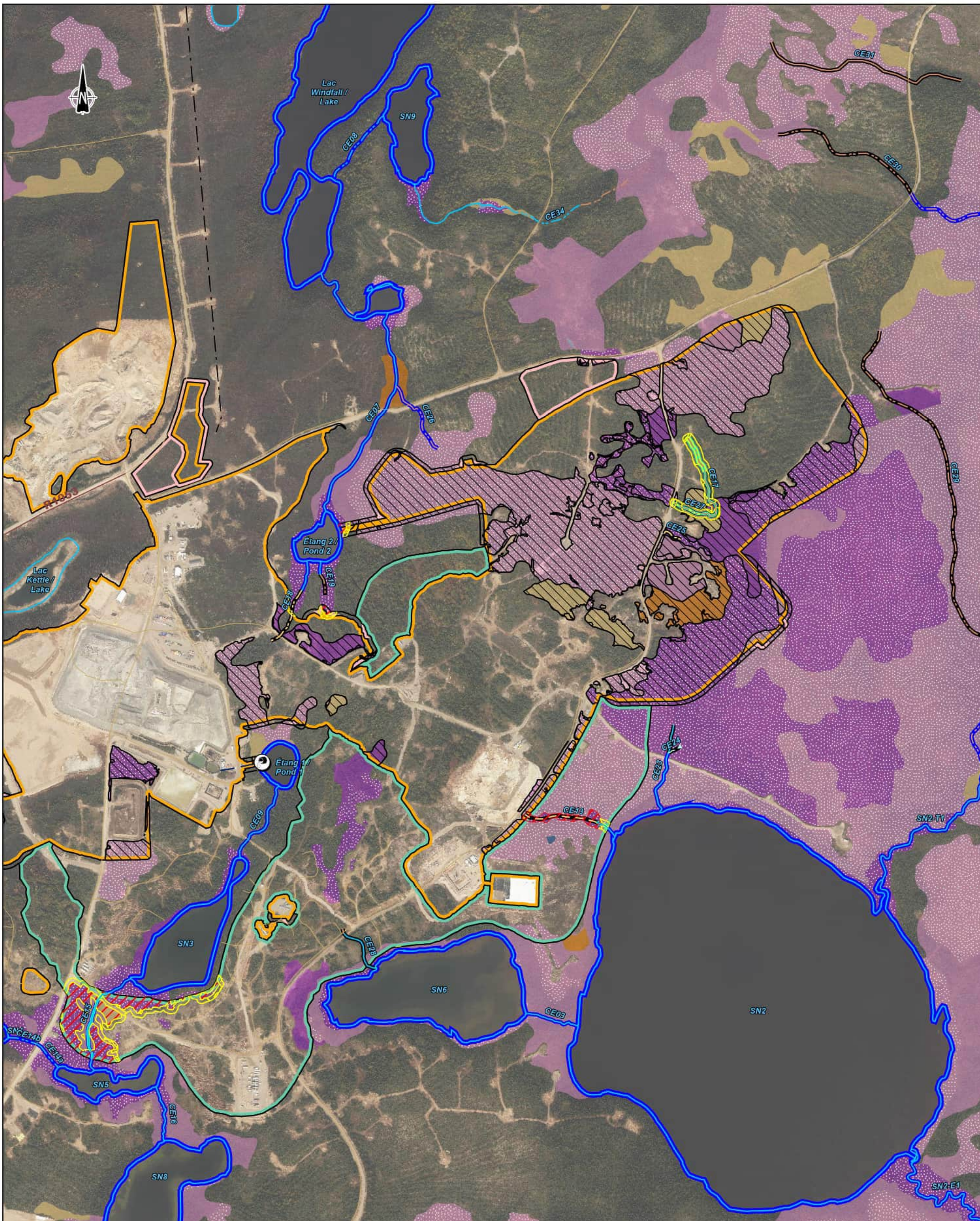
Ecoforest mapping from the Forêt Ouverte site shows that surface deposits near infrastructure built over the years for mining exploration on the site are essentially well-drained fluvio-glacial and juxta-glacial (Figure RQC66-1). To the south, near the existing workers' camp, there is a small section of undifferentiated till of medium thickness (50 cm to 1 m) with rock outcrops. These types of deposits are not likely to favour the presence of wetlands and therefore, by extension, there is no other loss of wetlands or water environments to account for. In addition, as shown in Figure RQC66-2, the vast majority of areas developed through mineral exploration were harvested with the protection of regeneration in 1997 and 1998.

Figure RQC66-1 Surface deposits based on ecoforest mapping (Forêt Ouverte, 2024)

Figure RQC66-2 Forest harvesting operations (Forêt Ouverte, 2024)

Updated impacted areas

Table 1-19 in Addendum 1 presented the updated balance of impacts on the natural environment. This table has been updated to also show the indirect impacts associated with the lowering of the water table and decreases of the original watersheds (Table RQC66). Map RQC-66 includes these updated elements, and the shapefiles are provided electronically.



Types d'empiètement / ***Encroachment Types***

- Permanent / *Permanent*
- Temporaire / *Temporary*
- Impact indirect potentiel / *Potential indirect impact*

Milieux humides et hydriques affectés par le projet / ***Wetlands and Hydrous Environment Affected by the Project***

- Milieux humides affectés par le projet / *Wetland Affected by the Project*

Littoraux / ***Littorals***

- Cours d'eau / *Watercourse*
- Milieu humide (LNHE) / *Wetland (NHWL)*

Rives / ***Riverbanks***

- Rive 10 m / *10 m riverbank*

Composantes de l'écosystème / ***Ecosystem Components***

Milieux humides et hydriques / ***Wetlands and Hydrous Environment***

- Marais / *Marsh*
- Marécage arborescent / *Forested swamp*
- Marécage arbustif / *Shrubby swamp*
- Tourbière minérotrophe boisée / *Forested fen*
- Tourbière minérotrophe ouverte / *Open fen*
- Tourbière ombrotrophe boisée / *Forested bog*
- Tourbière ombrotrophe ouverte / *Open bog*
- Eau peu profonde / *Shallow water*
- Plan d'eau / *Waterbody*

- Canal / *Channel*
- Cours d'eau intermittent / *Intermittent Watercourse*
- Cours d'eau intermittent partiellement souterrain / *Partially Underground Intermittent Watercourse*
- Cours d'eau intermittent souterrain / *Underground Intermittent Watercourse*
- Cours d'eau permanent / *Permanent Watercourse*
- Cours d'eau permanent partiellement souterrain / *Partially Underground Permanent Watercourse*
- Cours d'eau souterrain / *Damaged Underground Watercourse*
- Fossé de drainage / *Drainage ditch*

Habitat du poisson / ***Fish Habitat***

- Non / *No*
- Oui / *Yes*

WINDFALL GROUPE MINIER

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Site minier Windfall, Eeyou Istchee Baie-James (Québec) /
Windfall Mining Site, Eeyou Istchee Baie-James (Quebec)

RQC-66 / ***RQC-66***
Impacts du projet sur les milieux humides et hydriques /
Project Impacts on Wetlands and Hydrous Environment

Sources
BDTQ, 1/20 000, MRNF Québec, 2007
MERN, AQréseau+, réseau routier
GRHQ, Réseau hydrique linéaire, 2023
SIEF, MRNF Québec, 2012
Mosaïque d'orthophotographies aériennes de l'inventaire écoforestier du Québec méridional, MRNF, 2023

0 100 200 m
MTM, Fuseau 9 / *Zone 9*, NAD83

2024-10-17

Préparation / Preparation : J-F. Poulin
Dessin / Drawing : M. Leclair
Vérifié par / Verification : M-H. Brisson
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CA0023271_9538_eie_rqc66_c01_051_241017

wsp

Tableau RQC66 Updated impacts on hydrous and wetlands

Impact	Component	Class	Category	Type	Area (ha)
Permanent encroachment	Hydrous	Littoral	Watercourse		0.10
			Natural high-water line	Open fen	0.06
			Subtotal		*0.15*
		Shoreline	Forest	Mixed	0.20
				Regeneration and plantation	0.00
				Coniferous	0.27
			Wetland	Shrubby swamp	0.26
				Forested fen	0.05
				Open fen	0.02
			Other	Anthropogenic	0.01
				Subtotal	*0.82*
		Subtotal			*0.97*
	Wetland			Forested swamp	1,62
				Shrubby swamp	2,77
				Forested fen	3,54
				Open fen	12,02
				Forested bog	2,15
				Open bog	24,77
				Subtotal	*46,87*
	Forest			Deciduous	7,82
				Mixed	24,99
				Regeneration and plantation	31,81
				Coniferous	17,86
				Subtotal	*82,48*
	Other			Anthropogenic	64,69
	Subtotal				*195.01*
Temporary encroachment	Hydrous	Littoral	Natural high-water line	Open fen	0.06
		Shoreline	Forest	Coniferous	0.06
			Wetland	Shrubby swamp	0.01
				Forested bog	0.01
				Subtotal	*0.02*
			Subtotal		
		Subtotal			0.14
	Wetland			Shrubby swamp	0.02
				Forested fen	0.06
				Open fen	0.76
				Forested bog	0.07
				Open bog	1.08

Impact	Component	Class	Category	Type	Area (ha)
				Subtotal	*1.99*
	Forest			Deciduous	0.09
				Mixed	0.26
				Regeneration and plantation	4.14
				Coniferous	0.27
				Subtotal	4.76
	Other			Anthropogenic	0,30
	Subtotal				*7,18*
Potential indirect impact	Hydrious	Littoral	Watercourse		0.04
			Natural high-water line	Open fen	0.37
			Subtotal		*0.41*
		Shoreline	Forest	Coniferous	0.08
			Wetland	Shrubby swamp	0.00
				Open fen	0.01
				Forested bog	0.55
				Open bog	0.02
				Subtotal	*0.59*
			Other	Anthropogenic	0.64
			Subtotal		*1.31*
		Subtotal			*1.71*
	Wetland			Marsh	0.03
				Forested swamp	0.02
				Forested fen	2.00
				Open fen	2.66
				Forested bog	0.96
				Open bog	6.62
				Subtotal	*12.29*
	Subtotal				*14.00*

Potential indirect impacts on wetlands and water bodies

Indirect impacts were first assessed as part of the study of indirect effects on fish habitat (Addendum 1, vol. 3, appendix 7-2). These calculations were carried out with the projected infrastructures up to date, and include the effect of lowering the water table, and thus reducing the base flows of certain watercourses. Base flow corresponds to the amount of recharge to watercourses from the water table. Thus, a 100% reduction in base flow, combined with a period of severe low water (with no precipitation), would cause a stream to dry up. However, small watercourses surrounding the project are probably already experiencing this type of periodic drying, as suggested in the Guidelines for estimating low-water flows in Quebec (CEHQ, 2023) for watersheds of less than 5 km².

Thus, the potential indirect impacts (lowering of the water table and reduction of the catchment area) on the hydric environments illustrated on map RQC66 will manifest themselves in an increase in the intermittent nature of surface runoff, and hence in prolonged low-water periods. It is assumed, however, that no loss of hydrous habitat will occur, regardless of the reduction in base flow or watershed area. Preferential drainage channels will remain, and these environments will continue to be fed by precipitation and surface runoff. Floristic communities typical of wetlands should persist (e.g. shrub swamp). Furthermore, several of these watercourses flow into peat bogs, which will continue to contribute to recharging the environment, as will water bodies SN2 and SN6, for which no drop in water level is anticipated (Addendum 1, vol. 3, appendix 7-2). Lastly, the duration of the mine's operation, and therefore of the drawdown, will not be long enough to cause changes in the nature of the flow beds.

Regarding streams CE09 and CE15, the Hydraulic Study - Assessment of effluent impacts on the downstream receiving environment (Addendum 1, Vol. 3, Appendix 7-1) led to the following observations and conclusions:

- These streams correspond to calculation points P2a_1 (CE09) and P2a (CE15) in this study.
- These two streams are effectively impacted by the lowering of the water table, so that they no longer receive any groundwater inflow (100% reduction in base flow). Inputs to these watercourses will not always be zero, however, since they will still receive rainwater.
- These two streams also receive water from the mine effluent, as shown in Table 2-3 of the study. Discharge flow varies from 39.2 L/s to 145.0 L/s on average, depending on the month.
- Taking these two facts into account, it is expected that the average discharge at the outlet of these two lakes will actually be increased, by 180% and 134% respectively as presented in Table 2-4 of the hydraulic study.
- Since average monthly flows are increased, no loss of fish habitat (or water environment) is expected in streams CE09 and CE15.

With regard to the wetlands that will potentially be indirectly impacted by the water table drawdown cone, there are three main classes of wetland located within the 1 m drawdown curve. These are shrub swamps, minerotrophic peat bogs and ombrotrophic peat bogs. In the case of shrub swamps, these are associated with hydric environments such as watercourses CE09 and CE15, which will experience flow increases associated with the presence of the effluent. No losses will occur in these environments.

In the case of ombrotrophic peatlands, water inputs are controlled by precipitation, while exchanges between surface water and groundwater are negligible and generally ignored in hydrological budgets (Rydin et al., 2006). Thus, the loss of recharge from groundwater will not impact ombrotrophic peatlands located within the drawdown zone.

Finally, in the case of minerotrophic peat bogs, there is a perched groundwater flow gradient in the peat that runs mainly in the direction of the gently sloping topography of the environment. The study by Carrer (2014) failed to demonstrate the presence of exchanges between the water table and the peat bog, which are very limited at best. The location at the head of the watershed, as at the Windfall mine site, could also limit the impact of recharge (Lambert, 2022). Ultimately, fens are likely to experience fluctuating water levels during mine operation, and this effect will increase as the mine expands in depth (increasing drawdown). On the other hand, the properties of the peat and the topography of the environment will mitigate the significance of this impact on potential modifications to ecological functions and floristic composition. In addition, once mining is complete and the water table has been restored, the environment will be able to return to a balance similar to that which existed prior to the project.

References

Carrer, Gwenael (2014). *Dynamique des écoulements et du stockage d'eau d'un petit bassin versant boréal influencé par une tourbière minérotrophe aqualysée des Hautes-terres de la baie de James, Québec, Canada.* Thèse. Québec, Université du Québec, Institut national de la recherche scientifique, Doctorat en sciences de l'eau, 320 p.

CEHQ, 2023. *Lignes directrices pour l'estimation des débits d'étiage sur le territoire québécois*. En ligne. Consulté en octobre 2024. URL : https://www.cehq.gouv.qc.ca/debit-etiage/methode/

Lambert, Christelle (2022). « Bilan hydrique et apport d'eau souterraine aux tourbières du Moyen-Nord québécois (Canada) dans les conditions actuelles et en conditions de changements climatiques » Mémoire. Montréal (Québec, Canada), Université du Québec à Montréal, Maîtrise en sciences de la Terre.

Rydin H, Jeglum J & Jeglum J (2006) The Biology of Peatlands Oxford University Press. New York.

QC-67
Environmental Impact Assessment, Page 13-16, Volume 1b, Section 13.2
Biodiversity program;
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 3, Section 9-1 – Biodiversity program:

In Section 9-1 of Addendum 1, the proponent has presented its preliminary biodiversity program to compensate for the loss of wetlands and water environments. Initially, the biodiversity program presented in the impact assessment was designed to enhance biodiversity and species with status, while taking into account the real needs of communities.

The proponent must explain how it foresees that the proposed project, which is focused on researching the effects of forest fires, could offset WWE losses. It must specify how it expects this project to provide beneficial support for the destruction of WWE engendered by its project. It must also specify how this project meets the real needs of the communities, and to what extent the consultations have confirmed that the program meets their expectations.

The proponent must propose alternative and more appropriate measures to offset WWE losses.

Response 67:

The biodiversity program is a voluntary program to assess losses and changes in biodiversity following the 2023 forest fires. It was developed in conjunction with the territory's host communities, in response to specific concerns raised by the Cree and Jamesian residents impacted by the 2023 fires.

Under current regulations, WMG is not obliged to carry out a wetland and water environment offset program. However, WMG understands that authorities expect an offset program for projects subject to environmental assessments, regardless of their location in Quebec. Therefore, before embarking on developing the biodiversity program, WMG confirmed with the MELCCFP the possibility of proposing a different project that would respond more directly to wildlife or plant issues in the area. Given that communities have raised concerns about the impact of fires on the wildlife and plants that are present on their territory, WMG has decided to support the community in this regard. The biodiversity program was set up in a much more comprehensive spirit than is usually the case with offset programs. The project covers all the areas affected by the fires, i.e., forests and certain wooded wetlands, such as wooded bogs. In addition, WMG has incorporated benthos and water quality monitoring into its biodiversity program, components that are an integral part of water environments.

In the environmental impact assessment of March 2023, WMG had in fact announced its intention to develop a program that focuses on the value of biodiversity and species with status by considering the real needs of communities. Over the course of 2023, the community's priorities have changed, given the nature and scale of events in the area around Windfall, but the objective has remained the same.

Some species with special status in wetlands, such as the olive-sided flycatcher (*Contopus cooperi*), are likely to be found in burned areas. According to preliminary data collected in June 2023, this species has been detected in areas within or close to burned areas. According to Birds Canada (2024), the olive-sided flycatcher feeds in areas affected by forest fires. It's also worth noting that some of the inventory stations were located close to wetlands (at their edges) and within some of them (e.g., wooded bogs), making it easier to detect this species, as well as many others associated with wetlands.

In particular, the following species were detected in the areas surveyed in 2024: Lincoln's sparrow (*Melospiza lincolnii*), swamp sparrow (*Melospiza georgiana*), solitary sandpiper (*Tringa solitaria*), greater yellowlegs (*Tringa melanoleuca*), alder flycatcher (*Empidonax alnorum*), Wilson's warbler (*Cardellina pusilla*), palm warbler (*Setophaga palmarum*), Northern waterthrush (*Parkesia noveboracensis*), common yellowthroat (*Geothlypis trichas*), and rusty blackbird (*Euphagus carolinus*).

The project's limited impact on wetlands and water environments should also be noted. The project will impact 48.16 ha of wetlands and water environments, and most of the impacted areas (e.g., shrub swamp, wooded ombrotrophic bog, open fen, open ombrotrophic bog) are relatively common in the biophysical study area. A total of 1,073.8 ha of wetlands and water environments in this zone will not be impacted by the project.

As for the biodiversity program, it covers a much wider area and will eventually—depending on the results obtained—provide a better understanding of the impacts of these forest fires on the host communities using the area near the project.

Consultations carried out during the program's development demonstrated strong social support. WMG began with a literature review on the impact of forest fires, at the request of the Chief of the Cree First Nation of Waswanipi, to provide information to her and her members to address the emerging concerns about the long-term impact of fires. Once this review was completed, WMG developed a draft program, which was then discussed at several meetings with the community to ensure that other concerns were taken into account, and that the content of the program was in line with Cree traditional knowledge. One of the points that came up in discussions with the Chief was that the Elders had never seen a fire on the scale of that of 2023, and that there was therefore no basis of comparison for understanding the long-term impact of fires on the environment.

The comments received have been documented in Appendix B of the biodiversity program (Addendum 1, Volume 3, Appendix 9-1). In this summary, the mayor of Lebel-sur-Quévillon declared it an excellent program, while the Chief of the Cree First Nation of Waswanipi also expressed her satisfaction with it. Offset programs that are developed in conjunction with the community and that respond to people's real concerns are the ones that will leave the most positive legacy. This was basically WMG's goal.

QC-68
Environmental Impact Assessment, Page 13-16, Volume 1b, Section 13.2
Biodiversity program;
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 3, Section 9-1 – Biodiversity program:

In the impact assessment, the proponent stated that “Discussions will be part of the strategy to identify interesting projects, document and analyze these projects, and then finalize the selection of the project(s) that will be retained.” When it is considered that the project initially presented was intended to enhance the natural environment for wildlife, the proponent must specify how and to what extent communities and land users participated in determining the selected offset project. It must present the communities’ opinions on the various offset projects evaluated, and explain whether they suggested any projects. Where applicable, the proponent should explain why some of the community’s suggestions were not adopted. The proponent must specify the alternatives that have been suggested to the communities to offset the project’s WWE losses.

If this is not the case, the proponent must consult communities and land users in the selection of the offset project, and respond to all of the above.

Response 68:

The initial request to study the impact of fires on biodiversity came from the host communities in the area. WMG then held several meetings with community members to find out what their concerns were. A literature review was also carried out to identify the components most likely to be affected by forest fires. On the basis of this review, WMG drew up a biodiversity program, which it presented to the communities on November 6, 2023. These communities were invited to share their comments and WMG adjusted the program where possible. It should be noted that the individuals interviewed accepted all the components of the program from the outset, as presented, and that only minor adjustments were made after the meetings. As a result, all the studies put forward were retained in the final program.

As mentioned in QC-67, the Chief of the CFNW was also satisfied with the biodiversity program presented by WMG during a one-on-one meeting. She expressed her appreciation for the involvement of the tallyman of trapline W25B and his wife in the plant study (blueberry and Labrador tea). However, she suggested adding the lynx to the studies, as it is linked to the presence of hare. Although the Canada lynx feeds on different types of prey, its presence is closely linked to the presence of the snowshoe hare (Government of Canada, 2024). The same is true for the great horned owl, which is heavily dependent on the species in winter (Government of Canada, 2024). However, in addition to these two species, the snowshoe hare has several predators such as the red fox, the coyote, the American marten, the fisher, the American mink, and certain species of diurnal birds of prey (Guay, 1994; Brugerolle, 2003). Given that the snowshoe hare has several predators, WMG has decided that the Canada lynx will not be studied as part of the monitoring program.

In addition, where possible, the tallyman’s traplines on Trapline W25B and his wife’s traplines were included in the snowshoe hare inventory plan. The snowshoe hare biodiversity monitoring program will confirm the species’ use of burned areas in the short and medium term. During the consultations, the tallyman’s wife suggested that studies be carried out in the winter, particularly on the snowshoe hare. WMG will conduct an ecotoxicological study starting in winter 2025 (see QC-72).

In addition to the above-mentioned component, several ecosystem components are valued in the biodiversity program. These include surface water, benthos, avian fauna, vegetation, and plants consumed by communities. For all these elements, the main objective is to record the main changes caused by forest fires in the short and medium term, i.e., until 2032 for some components.

Among the assumptions made, plant and bird communities are expected to be impacted by fire. These impacts may vary according to the severity of the fire. As for benthos, the anticipated changes would be an increase in density and a change in community composition. Should this be the case, it could have repercussions on the food chain, particularly for certain fish species. Surface water is also an important component of the ecosystem. The biodiversity program will help assess whether there has been any deterioration in the quality of the habitat for aquatic fauna, and how quickly the initial conditions can be restored. Finally, the plant ecotoxicology program will help confirm the impact of fires on metal concentrations in Labrador tea (leaves) and blueberries (fruit). These aspects were all presented to the host communities in November 2023.

Prior to the 2023 fires, WMG met with CFNW to discuss a moose study project. The moose population in the Zone 17 traplines is declining, and there is currently a moratorium on hunting for non-First Nations hunters. This subject is particularly sensitive in the community, since moose hunting is a major part of the Cree cultural identity. However, after the summer of 2023, concerns about declining moose numbers were combined with concerns about fire. Thus, the program as documented will provide details on the recovery of habitats supporting the moose population. A request to collaborate on another moose research program has been submitted to WMG, but for the moment there has been no concrete action associated with this proposal.

Also, discussions with MELCCFP on caribou have led to a separate collaboration with WMG, details of which are provided in QC-78. The Cree of Waswanipi are generally more concerned about moose than they are about caribou, as they value this species to a much greater extent. As a result, collaboration with the MELCCFP was not discussed much with them.

Reference:

BRUGEROLLE, S. 2003. *Caractérisation de l'habitat du lièvre d'Amérique à différentes échelles spatiales: une étude en forêt mélangée*. Mémoire de maîtrise, Université Laval.

GUAY, S. 1994. *Modèle d'indice de qualité d'habitat pour le lièvre d'Amérique (Lepus americanus) au Québec*. Gouvernement du Québec, Ministère des Ressources naturelles, Ministère de l'Environnement et de la Faune, Gestion intégrée des ressources, document technique 93/6. 59 p.

QC-69
Environmental Impact Assessment, Page 13-16, Volume 1b, Section 13.2
Biodiversity program;
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 3, Section 9-1 – Biodiversity program:

The proponent initially planned to present a biodiversity program focusing on the restoration of environments that had been destroyed or that needed to be enhanced to promote biodiversity. The proponent must explain why this avenue has been excluded from its biodiversity program.

Response 69:

In view of the fires in 2023 and the concerns expressed by host communities, WMG has decided to pursue this avenue, which is much more promising than the option previously considered. By studying the impact of forest fires on biodiversity, a greater number of species are being given due consideration, while the concerns of local host communities are addressed. As indicated in the response to question QC-68, the initial request to study the impact of fires on biodiversity came from the host communities in the territory. Moreover, these communities participated in the development process by giving their opinions and voicing their concerns.

Over the years, the biodiversity program will provide insight into the changes taking place in the components studied, and thus address some of the biodiversity-related concerns of communities and stakeholders, who will have access to the inventory results and will be able to comment on them. WMG would then be able to incorporate all this into the monitoring program and make any necessary modifications and adjustments.

It should also be noted that progressive restoration is already a WMG best practice. Aside from the activities planned as part of the program, the drill sites used to identify the deposit during the exploration phase have been restored or are in the process of being restored, and have therefore not been included in the biodiversity program. The borrow pit authorized under the RADF to the north of the site has also been restored. What's more, the Windfall site is isolated; there has been very little human activity in the vicinity. It is therefore difficult to find nearby locations that could be subject to restoration work over and above the activities already carried out by WMG.

QC-70
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 2, Section 3-1 Supplementary hydrogeological study:

The maps presented in the technical note in Addendum 1, Volume 2, Section 3-1, do not provide a clear picture of the effects of lowering the water table on wetlands and water environments. These maps need to be resubmitted properly reflecting the effects of water table drawdown on WWEs. The proponent must also present the current state of the water level on one map, and the worst-case scenario for wetlands and water environments on another.

Response 70:

The drawdown map presented in the hydrogeological study shows the predictive drawdown in the underlying aquifers at the end of operations, representing the worst-case scenario. Figure RQC70-1, extracted from this map, more clearly shows the different wetlands in the area. To determine the potential impact on wetlands, it is necessary to know the type of wetland present. Two types have been identified within the drawdown cone: ombrotrophic peatlands (dark lilac in the figures below) and minerotrophic peatlands (pink in the figures). Water supply to an ombrotrophic peatland occurs only through meteoric waters, rain, and snow, while minerotrophic peatlands are partly fed by groundwater. Water table drawdown could potentially affect minerotrophic peatlands but would have a negligible impact on ombrotrophic peatlands. It is therefore considered that minerotrophic peatlands located within the 1 m drawdown cone in Figure RQC70-1 could be affected. The greater the drawdown, the higher the risk of impact. Details of the anticipated impacts on wetlands are presented in QC-66 in relation to hydrological balances.

For ombrotrophic peatlands, the impact is considered negligible. The main ombrotrophic wetland is located on the edge of Lake SN2. The water level in the peatland will therefore be controlled by the water level in this lake, given the hydraulic connection between the two. Monitoring of this wetland is still planned to ensure that operations will not change the conditions of the environment. Details of the monitoring program are presented in the monitoring program in Appendix RQC128.

To better visualize the changes in piezometry in the peatland area, the piezometric curves before the start of operations and at the end of operations are presented in Figures RQC70-2 and RQC70-3 respectively. Figure RQC70-4 presents a schematic cross-section showing the variation in water level in the underlying aquifer. As mentioned, the hydraulic connection between the ombrotrophic peatland and the aquifer would be negligible, with a low permeability horizon located below the organic horizon limiting hydraulic connections.

Figure RQC70-1 **Water table drawdown at the end of operations**

Figure RQC70-2 Piezometry before project

Figure RQC70-3 **Piezometry at the end of operations**

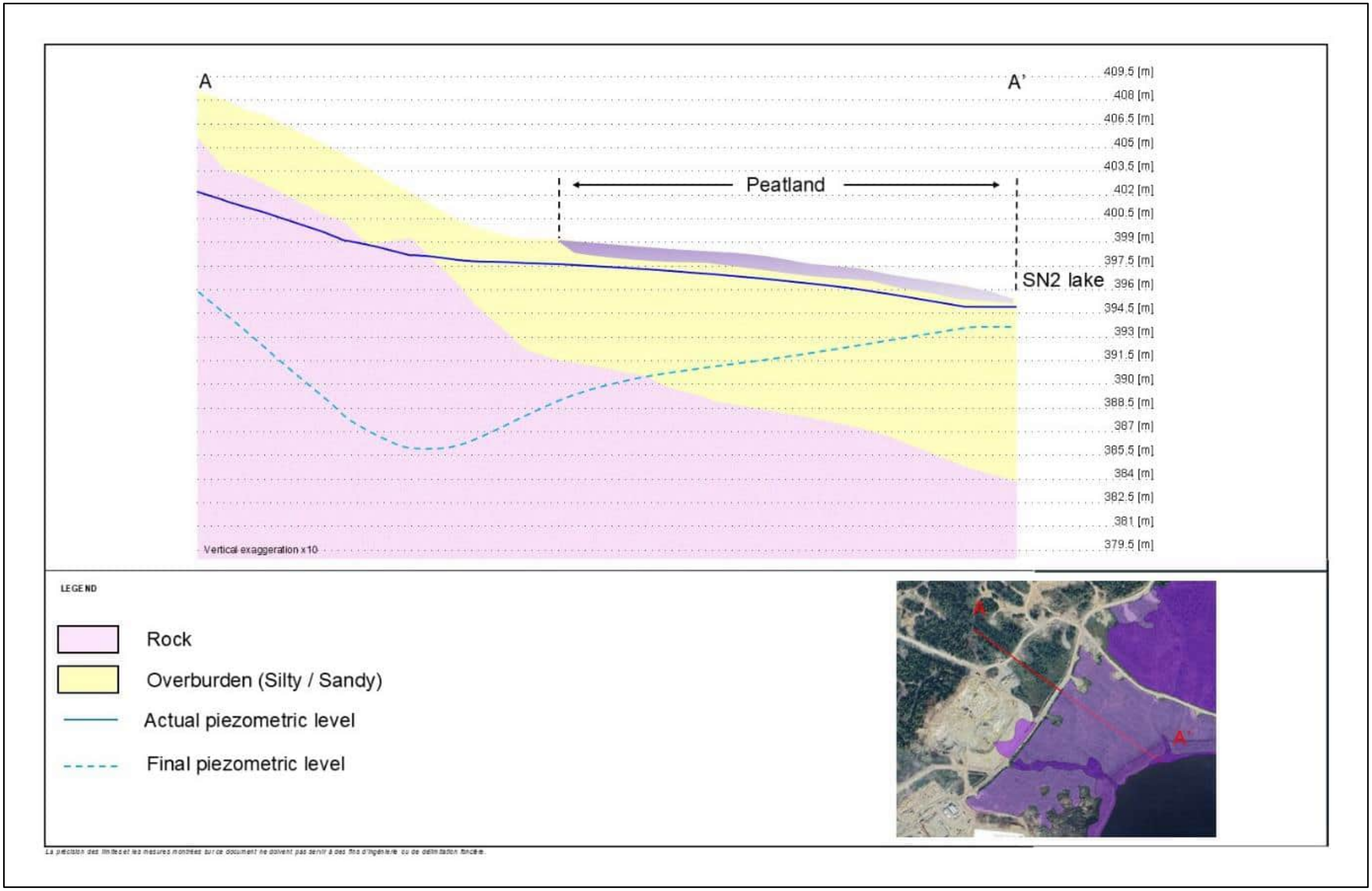


Figure RQC70-4 **Schematic cross-section showing the lowering of water level in underlying aquifers (worst case at end of operations)**

QC-71
Environmental Impact Assessment, Page 7-16, Volume 1b, Section 7.1.1.5
Invasive alien species:

No invasive alien plant species (IAS) were found on the site during the inventories. To reduce the risk of introducing and spreading IAS, the proponent must present how it plans to monitor the progress of IAS and what measures will be applied to limit their spread. The proponent must add IAS monitoring to its annual monitoring program.

Response 71:

First, as described in mitigation measure VEG02, contractors will be required to clean construction equipment before it arrives on the work site. More specifically, this cleaning is aimed at completely removing mud, plant fragments, and visible debris that could be contaminated by IAS. This will be checked during environmental monitoring of the site when the contractors arrive.

During the construction period, when the probability of IAS introduction is highest, IAS detection will be carried out continuously during environmental monitoring rounds. If IAS are discovered, measures will be taken to eradicate them and prevent their spread. The following measures will be implemented to remove the colony:

- All machinery components must be free of mud and plant fragments before entering the work site.
- Before starting work, the contractor must excavate the soil and colonies identified within the boundaries indicated by the site supervisor, to a depth of 2 m, so as to remove the root system.
- The contractor will be required to bury the IAS and any associated excavated soil in a pit, the location of which shall be approved by the supervisor. This pit must be covered with a minimum of 2 m of backfill material free of any IAS or fragments thereof. The pit must be located at least 20 m from any watercourse, water body, or wetland.
- Following colony eradication work, all machinery components must be free of mud and IAS fragments before undertaking any other activities on- or off-site. Cleaning of machinery will be approved by the supervisor.
- Cleaning should be carried out using water, high-pressure air, or other tools such as brushes, brooms, shovels, or vacuum cleaners. This process must be carried out in a washing area that can keep all solid waste contained (e.g., a gravel surface covered with a geotextile membrane).
- If cleaning is carried out using water, the location of the washing area must be approved in advance by the supervisor. Solid waste produced when cleaning machinery must be disposed of in an appropriate manner.

Annual monitoring for 2 years will be carried out on excavated areas that contained IAS, as well as on the disposal site(s), so that IAS eradication can be documented. To do this, a technician specializing in vegetation will visit the work areas to determine the status of the IAS. The following will be documented;

- list of species found;
- location and boundaries;
- abundance/density (low, medium, or high) and average plant size (with photos).

In the operations phase, the risk of IAS introduction will be considerably reduced. The presence of IAS will be an additional element in the overall environmental monitoring of the site. Particular care will be taken during revegetation and restoration work to ensure that imported species or seeds do not contain IAS. The overburden stockpile, which may be a suitable area for the establishment of vegetation, will be visually inspected on a recurring basis.

QC-72
Environmental Impact Assessment, Page 7-1, Volume 1b, Section Description of the biological environment and potential impacts:

The proponent must address the risks associated with contaminant exposure for vegetation, as well as terrestrial and aquatic wildlife (bioaccumulation effect). It should describe the extent to which residual contaminant concentrations are likely to affect flora and fauna. The proponent must provide a study of contaminants in plant and animal species likely to be consumed by Indigenous communities, and conduct a follow-up during the project's operations phase.

Response 72:

In the project's local study area, the main species and groups of species consumed by host communities are moose, fish (particularly northern pike and walleye), snowshoe hare, and certain plant species such as blueberries and Labrador tea.

The main risks associated with contaminant exposure for vegetation and terrestrial wildlife are related to dust emissions, which may in particular contain metals. In general, the project will generate a relatively low level of emissions for a mining operation, and these are mainly concentrated near the emission sources, as demonstrated by the atmospheric dispersion modelling submitted as part of Addendum 1 (Vol. 4, Appendix 2-2). As for plant species, samples of blueberry and Labrador tea were collected at the study site in 2024 as part of the biodiversity program.

The location of sampling plots was determined after consultation with the family of the W25B tallyman. The aim is to measure metal concentrations in the vegetation consumed by the host community. A total of four plots, two in a zone within the local study area of the biophysical environment and two in a zone outside, were set up in the study area (Table RQC72-1). For each zone, one plot was unaffected by the fires and the other was affected. Plots located within the local study area of the biophysical environment are within the radius of influence of project activities, while those located outside this area lie outside the concentrations of particulate matter according to atmospheric modelling. In fact, according to this model, plots PL-01 and PL-02 are located in areas under the influence of the future mine. The plant ecotoxicology monitoring program is presented in Appendix RQC72-1.

Table RQC72-1 Repair of plant sampling plots by type of environment

Study area	Plot name	Latitude	Longitude	Plots in areas subject to the mine's influence	Burned area (2023)
Local study area of the biophysical environment	PL-01	49.081944°N	75.649722°W	Yes	Yes
	PL-02	49.053611 °N	75.648333°W	Yes	No
Outside the local study area of the biophysical environment	PL-03	49.050000°N	75.684444°W	No	Yes
	PL-04	49.048333°N	75.695278°W	No	No

Results of the ecotoxicological analysis obtained in 2024 on plants at the four plots will be considered as the reference state prior to the project's construction phase, and will be used for environmental monitoring. These results are presented in Appendix RQC72-2. The detailed report on the Year 1 biodiversity program will be presented at a later date.

In the case of the snowshoe hare, the effect of bioaccumulation will be assessed on certain tissues of the species, i.e., those consumed by host communities. The protocol will be established in conjunction with the tallyman's family and is presented in Appendix RQC72-3. To avoid increasing harvesting pressure in the area, WMG will ensure that the tissues are harvested from hares captured in the area by the community at the appropriate trapping season, i.e., in winter. In this way, once the biological tissues have been harvested, the trapped hares can be put to good use in the community. Harvesting for the reference state will take place in the winter of 2025.

For aquatic fauna, WMG has carried out and will continue to carry out an EEM study every three years to validate the impact of mining effluent through fisheries monitoring. In addition, a characterization of mercury in fish flesh was carried out mainly on two species, walleye and northern pike (see response to question QC-73). However, it is important to remember that the effluent is not expected to discharge mercury.

As for moose, given its status on the territory, it will not be monitored. The aim is to reduce pressure on this valued resource as much as possible. However, data obtained from the MELCCFP has made it possible to update current conditions for the species and to update the analysis of the project's potential impacts on the species (see responses to QC-81 to QC-85). In any case, as moose are mobile animals, the impact of the project on them would not be perceptible through monitoring, especially since some avoidance of the mine site is to be expected.

QC-73
Environmental Impact Assessment, Page 13-11, Volume 1b, Section 13.1.2
Mining:

The proponent must complete the initial characterization of the receiving environment with a fish mercury characterization. The characterization of mercury in fish must be carried out in accordance with the protocol presented in the document Protocole d'échantillonnage pour le suivi des substances toxiques dans la chair des poissons de pêche sportive en eau douce and the Guide de normalisation des méthodes d'inventaire ichtyologique en eaux intérieures Tome I - Acquisition de données. Fish tissue monitoring may be recommended if effluent values exceed a certain threshold. The proponent must include fish mercury monitoring in its annual monitoring program.

Response 73:

The characterization of mercury in fish was carried out in accordance with the sampling protocol presented in the document *Protocole d'échantillonnage pour le suivi des substances toxiques dans la chair des poissons de pêche sportive en eau douce* and the *Guide de normalisation des méthodes d'inventaire ichtyologique en eaux intérieures Tome I - Acquisition de données*. The report on the characterization of mercury in fish is provided in Appendix RQC73 of this document.

QC-74
Environmental Impact Assessment, Page 7-33, Volume 1b, Section 7.2 Ichthyofauna and benthos; Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 3, Section 3-2 Supplementary hydrogeological study.
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 3, Section 7-2 -– Indirect effects on fish habitat:

Addendum 1 states that the project will have no direct effect on fish habitat, but will have indirect impacts on the surrounding aquatic environment. The total indirect loss of fish habitat is estimated at 1,859 m2. The proponent must map fish habitat losses as well as areas where habitat will be heavily impacted, particularly by mine effluent. The proponent must provide the shape files for these map files.

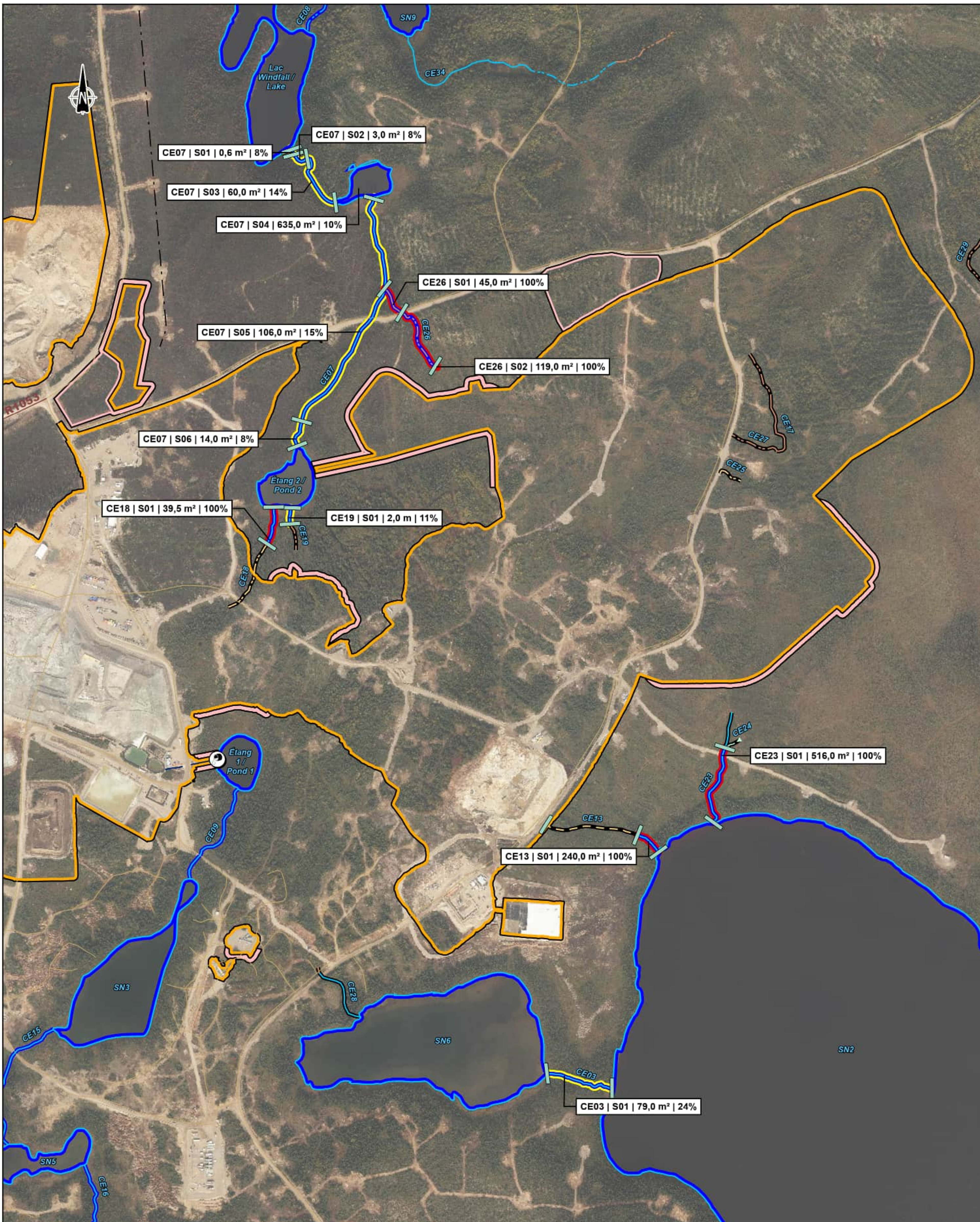
Response 74:

Map RQC74 shows the loss of fish habitat area. The indirect loss of 1,859 m^2 presented is related to watercourses whose flow will be reduced by the capture of groundwater and the detour of runoff from the area targeted for infrastructure development. These watersheds are therefore not those of the mine effluent.

In addition, studies have not shown that fish habitat would be impacted by mine effluent (Addendum 1 – Responses to recommendations and comments – Volume 3, Appendix 7-1). Analysis of water-level variations has established that there will be a rise in water levels following the increase in flow, which will be relatively moderate (0 cm to 10 cm on average). Thus, it is more a question of a probable increase in the surface area of fish habitat due to mining effluent rather than a loss.

It should be noted that despite the increase in flow, the project will not create any major erosion problems, thanks to the implementation of measures and the replacement of three culverts that could create erosion risks. Therefore, no loss of fish habitat related to water quality degradation due to erosion downstream of the effluent is projected. (See response QC-50).

A digital file showing the location of river segments subject to indirect losses is supplied under separate cover.



Types d'empiétement /
Encroachment Types

- Permanent / *Permanent*
- Temporaire / *Temporary*

Perte indirecte des cours d'eau dans leur ensemble / *Indirect Loss of Watercourses as a Whole*

- <50%
- 100%

Nom du cours d'eau et numéro de segment / *Watercourse name and segment number*

CE23 | S01 | 516,0 m² | 100%

Perte indirecte et % de superficie mouillée perdue / *Indirect loss and % of wet area loss*

Hydrographie / *Hydrography*

- Canal / *Channel*
- Cours d'eau intermittent / *Intermittent Watercourse*
- Cours d'eau intermittent partiellement souterrain / *Partially Underground Intermittent Watercourse*
- Cours d'eau intermittent souterrain / *Underground Intermittent Watercourse*
- Cours d'eau permanent / *Permanent Watercourse*
- Cours d'eau permanent partiellement souterrain / *Partially Underground Permanent Watercourse*
- Cours d'eau souterrain / *Damaged Underground Watercourse*
- Fossé de drainage / *Drainage ditch*
- Plan d'eau / *Waterbody*

Habitat du poisson / *Fish Habitat*

- Non / *No*
- Oui / *Yes*

Segmentation / *Segmentation*

- Limite de segment / *Segment boundary*

Projet Windfall - Réponses aux questions et commentaires - 1re série /
Windfall Project - Answers to Questions and Comments - 1st Series

Site minier Windfall, Eeyou Istchee Baie-James (Québec) / *Windfall Mining Site, Eeyou Istchee Baie-James (Quebec)*

RQC-74 / *RQC-74*
Pertes d'habitats du poisson en superficie en m² et en pourcentage /
Loss of Fish Habitat in m² and in Pourcentage

Sources
BDTQ, 1/20 000, MRNF Québec, 2007
MERN, AQréseau+, réseau routier
GRHQ, Réseau hydrique linéaire, 2023
SIEF, MRNF Québec, 2012
Mosaïque d'orthophotographies aériennes de l'inventaire écoforestier du Québec méridional, MRNF, 2023

0 80 160 m
MTM, Fuseau 9 / *Zone 9*, NAD83

2024-10-16

Préparation / Preparation : K. Cadoret
Dessin / Drawing : M. Leclair
Vérifié par / Verification : M-H. Brisson
CA0023271_9538_eie_rqc74_fa_habitat_241017.aprx
CA0023271_9538_eie_rqc74_002_hab_poisson_241016

QC-75
Environmental Impact Assessment, Page 7-33, Volume 1b, Section 7.2 Ichthyofauna and benthos;
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 3, Section 3-2 – Supplementary hydrogeological study.
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 3, Section 7-2 -– Indirect effects on fish habitat:

A fish habitat offset plan must be submitted as part of this environmental impact assessment and review procedure. The proponent must provide details on the elements of the offset plan envisaged to minimize negative impacts, as well as the plan’s chances of success. It must identify the stakeholders consulted in the development of this plan, in particular the Cree communities and land users.

Areas of shoreline and riverbank that have not been accounted for in the fish habitat offset plan must be included in the wetland and water environment offset plan.

Response 75:

The fish habitat offset plan is provided for reference in Appendix RQC75. Discussions have been initiated with Fisheries and Oceans Canada (DFO) to determine the acceptability of the proposed project. Modifications may therefore be made at a later date to meet federal requirements. It should also be noted that, as part of the approval process for offset projects, DFO works closely with provincial wildlife representatives. In summary, the offset project presented includes work on one of the tributaries of Lac James located near km 53 of forest road R0853 (R5000). Ultimately, these interventions will restore the free movement of fish, making an upstream environment accessible to Lac James fish (northern pike, yellow perch, lake whitefish).

QC-76

Environmental Impact Assessment, Page 7-53, Volume 1b, Section 7.2.4
Impacts on ichthyofauna and benthos during the closure phase and mitigation measures:

In the assessment of the residual impact on ichthyofauna and benthos during the closure phase, the proponent stated that “overall, this return to natural conditions will have a positive impact on aquatic fauna, since gains in habitat and habitat functions are expected.” The proponent must detail how the restoration can lead to a positive impact, particularly in terms of gains in habitat and habitat functions.

Response 76:

Habitat losses during the operations phase are indirect losses related to the reduction in flow in certain watercourses caused by drainage, capture (“Hydraulic study - Assessment of effluent impacts on the downstream receiving environment,” Addendum 1, Vol. 3, Appendix 7-1, p. 5) and dewatering of underground galleries (Indirect effects on fish habitat, Addendum 1 - Volume 3, Addendum 1, Appendix 7-2). Stopping pumping to dewater the underground galleries at the end of the operations phase and restoring the site will enable recovery of some of the flow rates prior to the start of operations, and consequently the habitats that were initially lost indirectly. Since the impact is assessed in comparison with the subsequent phase, this would be considered an improvement in conditions.

QC-77
Environmental Impact Assessment, Page 7-60, Volume 1b, Section 7.3.2
Impact on herpetofauna during the construction phase and mitigation measures:

Page 7-60 states that "deforestation and grubbing, stripping and excavation, as well as in-water works (Watercourses CE17, CE18, CE25, and CE27) will cause loss and changes in habitat structure of herpetofauna species." The proponent must present additional mitigation measures to avoid and minimize the impact on herpetofauna.

Response 77:

The measures implemented to mitigate the project's effects on herpetofauna will help avoid and minimize the project's impact. These measures are described in detail on page 7-59 of the Windfall mine project's environmental impact assessment (EIA, Volume 1b, March 2023). In addition to the measures indicated there, mitigation measures FAU02 and FAU03 will also limit alterations to the quality of herpetofauna habitat during one period of the year, i.e., from May 1 to August 15.

In fact, no deforestation will take place during this period. During this period, many species are less mobile, if at all. This is particularly true of anurans (eggs, tadpoles, and adults in water bodies and wetlands) and certain salamander species (eggs in peat mounds), such as the blue-spotted salamander, which has been observed in the biophysical study area, and which breeds in spring. It lays its eggs on the edges of wetlands. Thus, the absence of deforestation activities during this period will protect this breeding stage of the species. In addition, this period of restriction will protect the common garter snake, which is present in the biophysical study area and mates in spring.

Moreover, any particles resulting from leaching, which could alter the habitat of certain species of herpetofauna during the construction phase, will be collected and managed by the water management system. Should water containing suspended solids (SS) reach an adjacent aquatic environment, these occurrences will be of short duration. The situation will be rectified as soon as it is observed by the site supervisor (see Chapter 13 of the EIA, Volume 1b).

These measures will therefore protect several species of herpetofauna at the most critical stage of their development.

QC-78
Environmental Impact Assessment, Page 7-97, Volume 1b, Section 7.5 Mammals - Large Fauna;
Addendum 1 - Responses to MELCCFP recommendations and comments, Appendix 11-1 - Woodland caribou in a context of ecological connectivity, Section 2.3 Habitat conditions;
Addendum 1 - Responses to MELCCFP recommendations and comments, Appendix 11- 1, Section 3.3. Assessment of ecological connectivity:

In Section 3.3 of the document Woodland caribou in a context of biological connectivity presented in Appendix 11-1 of Addendum 1, the proponent's analysis suggests two hypothetical caribou travel corridors. However, the analysis does not consider the less disturbed area directly east of the mine site, between the mine site and the transmission line, within the 5 km to 10 km radius of the mine site centroid. According to the geographic information provided to the proponent, this area is currently used by woodland caribou, particularly during the fall and the spring. The proponent must consider this current use and document it in the project's impact analysis. The proponent must also consider changes to the habitat in this area due to forest fires. Based on the results of this analysis, the proponent must propose measures to limit impacts on caribou.

Response 78:

The lightly disturbed area between the mine site (to the east) and the transmission line (to the west) was considered in Addendum 1 to be within the area of human disturbance for the Windfall mine project. According to telemetry data obtained from the MELCCFP, some moose have indeed been detected within the 5–10 km radius from the mine site centre between 2019 and 2022. These were three females wearing telemetry tracking collars observed in autumn and two of the same females observed in summer. These are all the females tracked by telemetry that have visited the area. Although this area has not been identified as one of the caribou's main travel corridors, some caribou have visited the area during the summer and fall. However, telemetry tracking does not allow the exact number of caribou that visited this area to be determined since collars are only worn by a sample of the population.

For this reason, WMG and the MELCCFP have signed a partnership agreement. The objective is to document the use of the area by the woodland caribou of the Assinica population, Surprise sub-population. More specifically, the project aims to better document the corridors used by the Surprise sub-population during their movements between the heart of the Assinica population, located in the Assinica National Park Reserve area, and the area mainly used by the Surprise sub-population, near Windfall. One of the aims of the project is to identify the forest massifs that are important to this sub-population, which help maintain the connecting corridor between these two areas and that are currently used by woodland caribou. The project also aims to better understand the temporality and spatiality of woodland caribou movements near the future Windfall mine site, so as to identify potential measures to be implemented in mitigating any impacts of future mine site activities on woodland caribou. This partnership is one of the measures WMG has put in place to limit its impact on caribou.

To obtain this information, 4 telemetry tracking collars with programming adapted to the need (high location frequency during movement and other target periods) were deployed in winter 2024 for an estimated lifespan of 3 years. Given the confidential nature of the data, the information was not presented, but it has been considered in the analysis that follows.

The 2023 forest fires reduced the amount of undisturbed habitat usable by woodland caribou on a regional scale, and the impact was assessed in Appendix 11-1 of Addendum 1 (Vol. 3, page 32). The new telemetry data suggest that the lightly disturbed area near the mine was used more heavily in 2024 than in 2019–2022, which could be an indirect effect of the impact of regional fires. Consequently, this area could be considered within the hypothetical travel corridors presented in Appendix 11-1 of Addendum 1.

The table below provides a revised assessment of the impact of mining-related disturbance on woodland caribou. As a result of the data presented in Addendum 1 and the recent use of the area following the forest fires, the probability of impact occurrence has been changed to medium. This brings the residual impact to medium. Based on the analysis of projected rates of habitat disturbance, the Project will have a limited impact on the species' ecological connectivity, since the undisturbed area is already hemmed in by existing disturbances. In this area, noise disturbance was also assessed using a more conservative noise disturbance threshold of 40 dBA, based on simulated operations during the daytime scenario, and extending up to 3.2 km from the Project's main noise source.

<table>
<tr><th colspan="3">Revised impact on caribou during the operations phase (disturbance)</th></tr>
<tr><td>Nature</td><td>Negative</td><td rowspan="5">Significance: Medium</td></tr>
<tr><td>Ecosystem value</td><td>High</td></tr>
<tr><td>Socioeconomic value</td><td>High</td></tr>
<tr><td>Degree of disturbance</td><td>Low</td></tr>
<tr><td>Intensity</td><td>Medium</td></tr>
</table>

Revised impact on caribou during the operations phase (disturbance)		
Range	Limited	
Duration	Medium	
Probability of occurrence	Medium	

As for the potential impact arising from the disturbance caused by the movement of employees or merchandise, the Project will not generate any additional effects related to these operations beyond those caused by mining operations (disturbance area of 5 km around the mine). In fact, trips to Lebel-sur-Quévillon are located outside the identified travel corridors.

QC-79
Environmental Impact Assessment, Page 7-97, Volume 1b, Section 7.5 Mammals - Large Fauna;
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 11-1 - Woodland caribou in a context of ecological connectivity, Section 2.3 Habitat conditions;
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 11, Section 3.3. Assessment of ecological connectivity Mitigation measures:

Although the increased disturbance associated with mining activities would be relatively small compared to the existing high level of disturbance within the 0-5 km and 5-10 km radius of the mine, the proponent must implement, as a minimum and without any limitations, the following mitigation measures for caribou:

- Minimize low-level helicopter flights around the mine site during the woodland caribou calving/rearing season (May 15 to June 30) and the winter (January 15 to April 15). A map of the principal known calving areas can be requested from the Quebec government as part of a wildlife information request. A minimum altitude of 300 m (1,000 ft) above ground level should be maintained wherever possible if these areas are overflown;
- Adapt mining operations (reduce travel, avoid high-noise operations, etc.) when the presence of woodland caribou is documented in an area of activity.

Response 79:

WMG will make only moderate use of the helicopter during the construction and operations phases of the project. What’s more, almost all flights and transport take place to the west of the site (between Lebel-sur-Quévillon and Windfall), which is outside the calving grounds and areas occupied by caribou in winter. Thus, as part of the environmental impact assessment project currently under study (construction and operations of the Windfall mine project), WMG is committed to minimizing low-level helicopter flights near areas occupied by woodland caribou during the calving/rearing season (May 15 to June 30) and in the winter (January 15 to April 15).

WMG will continue to carry out exploration in the area, but these activities will be separated from the operations of the Windfall mine site. As in the past, WMG will apply for forestry permits for the work planned. As such, mitigation measures for woodland caribou will be addressed in ministerial authorization requests required for exploration work.

Mining operations will be adapted when the presence of woodland caribou is confirmed in the area of activity (0–10 km from the site). As mentioned in the response to QC-78, WMG and MELCCFP have entered into a partnership agreement for four telemetry collars for the Surprise sub-population of caribou. The data obtained will be used to adapt mitigation measures to reduce the impact of the Windfall mine project on woodland caribou.

QC-80
Environmental Impact Assessment, Page 7-116, Volume 1b, Section 7.5.2
Impacts on large fauna during the construction phase and mitigation measures:

On Page 7-116, the proponent has stated that “there has been an increase in the number of black bears visiting the mine site since work began.” Poor waste management on the mine site can increase the numbers of black bears and wolves. This situation can pose a threat to public safety, particularly for mine site employees and land users. Increased predator density in the mine area could also influence the survival of woodland caribou and moose. Finally, the consumption of waste by black bears can be detrimental to their health and to the quality of meat for users of this resource.

The proponent must present this issue’s impact in the impact study. It must also propose mitigation measures aimed at better management of residual materials for each phase of the project. The proponent must assess the possibility of implementing various measures used on other mine sites, such as the use of closed waste containers equipped with anti-bear devices, the installation of a buried fence around the waste storage sites to render them inaccessible to wildlife, and the installation of an automated barrier activated as needed for access. The proponent must evaluate the possibility of modifying the garbage collection schedule to reduce bear habituation and entry. The proponent must add monitoring of the applied mitigation measures to its annual monitoring program. It should suggest new mitigation measures if those already in place do not prove effective.

Response 80:

Although the black bear is very present in the area, it should be noted that the site was suitable for black bears even before the arrival of WMG. In fact, several logging operations were carried out in the area between 1997 and 2000. Data from the ecoforestry map and photo-interpretation indicate that more than one third of the vegetation inventory area was logged during this period (see Appendix 7-1, EIA, Volume 7, page 11). These forest cuts are favourable to the establishment of the species in the area. WMG had therefore introduced mitigation measures as part of its advanced exploration project. The natural abundance of bears was confirmed by Cree land users, who told WMG that bears were present in large numbers prior to the start of advanced exploration activities at the site.

Additional details on residual materials management are provided in Addendum 1 (Section 1.3.5.1). Part of the content of this section of Addendum 1 is reproduced below. WMG will have a sorting centre and a composter on its site to manage residual materials in line with the 3R-RD hierarchy, which consists of prioritizing residual material processing activities in an optimal way to reduce final waste. The sorting centre and composter will be located in a dedicated area on the site. An in-ground fence with a motorized gate will also be installed around the sorting centre, making the site inaccessible to wildlife.

To promote proper management of food waste, posters will be on display in the cafeteria for easy reference and to provide a clear understanding of what does and doesn’t go into the compost. Current management of food waste from the cafeteria requires the existing composter to perform a minimum of 24 rotations per day. This rate can be adjusted to reduce noxious odours that can attract wildlife, including black bears. There are also plans to build a shelter for this equipment. The site will also be kept clean at all times. Finally, all the garbage cans outside the buildings are already closed and fitted with anti-bear devices, and this will continue with the project. As collection times are already variable, this does not seem to be a determining factor in the presence of bears. Bulletins are also sent to employees to remind them of the safety rules governing the presence of animals, including bears, on the site. Awareness is raised of the importance of not feeding wildlife on the site, whether deliberately or by leaving food waste outside where it is accessible to wildlife. This is to keep them away, but also for the safety of all workers and animals.

Additional mitigation measures do exist, but they are deterrent measures that could have a negative impact on all wildlife as well as WMG employees, such as the installation of electric fences or scaring methods that use noise, odours, or lights. WMG would like to maintain a preventive approach wherever possible.

Thus, the rigorous implementation of all the preventive measures listed will continue to ensure proper management of residual materials on the site, and thus limit the number of bears present solely to consume the site's waste. In fact, the abundance of this species is not simply due to the presence of residual materials; it is naturally abundant. Moreover, as a considerable proportion of the land has been burned in 2023 to varying degrees of severity, it is expected that the black bear will be just as present in the area, if not more so. According to Samson (1996), black bears feed in old-growth hardwood forests, cultivated fields, forest clearings, and burned areas. WMG will take this into account when monitoring the effectiveness of its residual materials management.

Reference :

SAMSON, C., 1996. *Modèle d'indice de qualité de l'habitat pour l'ours noir (Ursus americanus) au Québec*. Ministère de l'Environnement et de la Faune, Direction générale de la ressource faunique et des parcs. 57 p.

QC-81
Environmental Impact Assessment, Page 7-116, Volume 1b, Section 7.5.2
Impacts on large fauna during the construction phase and mitigation measures:

The proponent compared its moose inventory results with those of more productive areas in southern Quebec. This is not a good reference for the species' current situation in the project area. The proponent must compare the results of its inventory with the results of the most recent Quebec government aerial inventories carried out in neighbouring areas (13, 16, and 17) to better reflect the species' baseline situation in the project area. It must indicate how the comparison of these data modifies the interpretation of the project's anticipated impacts on moose. Data for zones 13 and 17 are available online. The proponent must request the report for Zone 16 from the MELCCFP.

Response 81:

The data obtained as part of the environmental impact assessment for the Windfall Mine Project were compared with the Quebec government's aerial inventories of the surrounding areas (13, 16, and 17) to assess the reference station for the species. The aerial inventory carried out in 2018 estimated the moose population at 0.50/km² in the study area (WSP, 2018). This result is very similar to that obtained in Hunting Zone 17 (Nord-du-Québec) in winter 2021, i.e., 0.52 moose/km^2 (Brodeur et al., 2022). If this result is compared with inventory data from Hunting Zones 13 and 16 (Abitibi-Témiscamingue), the results obtained are higher than those for the study area. In fact, in Hunting Zone 13, moose population density is estimated at 2.6 moose per 10 km^2, accurate to within 12.4% (Gouvernement du Québec, 2017). In Hunting Zone 16, density was estimated at 1.67 moose/10 km² in 2010 (19.7% accuracy), compared with 1.11 and 1.10 moose/10 km² in 2001 and 1990 respectively (Paré and Morin, 2010).

In Section 7.5 (page 7-110) of the Environmental Impact Assessment for the Windfall Mine Project, density is compared to Hunting Zone 15, where estimated densities may exceed 2 moose/10 km². As the highest density corresponds to 2.6 moose per 10 km^2 according to the new analysis, these results do not alter the interpretation of the project's anticipated impacts on moose.

Reference:

BRODEUR, V., W. RONDEAU et C. JUTRAS. 2022. *Inventaire de l'orignal dans la zone de chasse 17 à l'hiver 2021*. Ministère des Forêts, de la Faune et des Parcs, Direction de la gestion de la faune du Nord-du-Québec, 37 p.

GOUVERNEMENT DU QUÉBEC. 2017. *Inventaire aérien de l'orignal – Résultat de l'inventaire aérien de l'orignal dans la zone de chasse 13*. En ligne : https://www.quebec.ca/nouvelles/actualites/details/inventaire-aerien-de-lorignal-resultat-de-linventaire-aerien-de-lorignal-dans-la-zone-de-chasse-13. Consulté le 29 juillet 2024.

PARÉ, M. et M. MORIN. 2010. Inventaire aérien de l'orignal à l'hiver 2009-2010. Zone 16. Direction de l'Abitibi-Témiscamingue et Nord-du-Québec. Rapport préliminaire. 2 p.

QC-82
Environmental Impact Assessment, Page 8-72, Volume 1b, Section 8.5.2
Construction phase impacts on land use and natural resources, and mitigation measures:

In Section 8.5.2 of the impact assessment, the proponent stated that "overall harvesting potential will not be affected because game will move to the periphery of the work areas and resource availability will remain the same." This statement does not consider that habitat loss (net and functional) can have an impact on game density in an area. The proponent must review this section and integrate the concepts of habitat avoidance and functional loss into the description of the impact on moose for each phase of the project.

It must also map the net and functional loss of moose habitat by superimposing a theoretical avoidance radius of the site and access road on the trapline(s) that would theoretically be avoided by moose.

Finally, it must assess the impact on land users, and present community opinions and concerns, as well as any mitigation measures put in place.

Response 82:

To facilitate reading, the detailed description of the residual impact concerning the "one-time modification of the practice of certain wildlife harvesting activities" has been revised in its entirety.

The inventories and interviews conducted in 2018 and 2022 show that the local study area (LSA) is used for wildlife harvesting activities. In this regard, discussions with the leaseholders show that the area is visited for moose and bear hunting. Noise, dust, and vibrations caused by clearing, machinery traffic, and blasting, could disturb certain wildlife species of interest that are present near the new infrastructure sites, causing them to move to quieter areas. Hunters and land users of will therefore have to modify their practices and move to other areas.

To update the assessment of the project's potential impact on moose, a request for information was sent to the MELCCFP in August 2024 to obtain the moose telemetry collar data available in the study area, as well as the habitat quality index (HQI). To assess the potential effects of the Project on moose habitat conditions, an area of projected human disturbance with a 5 km area of influence around the periphery of the projected mine infrastructure was assumed. As with the assessment of the impact on the biological environment, the access road was not included in the project's planned infrastructure since it was built several decades ago. However, this aspect was considered in the cumulative effects assessment.

All available data have been mapped (see Maps RQC82-1 and RQC82-2). In addition to HQI, telemetry collar data, and projected disturbances, forest fires and moose sightings were also shown on the maps. Forest stands and wetlands are shown on Map RQC82-2 along with all of the above, with the exception of the HQI.

As mentioned in Section 7.5.1 (page 7-109) of the Windfall mine project EIA, according to the tallymen of the lands bordering the moose inventory zone (W25A and W25B), the area is rather swampy and therefore not suitable for moose. However, some of the more densely wooded areas beyond the 5 km moose inventory zone boundary would be suitable for moose use. These suitable areas are shown on Map RQC82-2 (hardwood, softwood, and mixed forest stands). Regenerating stands provide suitable feeding areas. Regenerating environments created by fire, logging, and spruce budworm epidemics are generally used in the first year following disturbance. Moose then leave these areas for a period of about four years, until the shrub layer is sufficiently developed to meet their needs (Forbes and Theberge, 1993; Edenius et al., 2002; Potvin et al., 2005; Mumma et al., 2020).

Thus, some areas burned in 2023 could be avoided as of 2025, particularly those with a high fire severity index. It should be noted that in 2024, inventories carried out in the study area revealed few signs of moose presence. Burned feces were found in an area where signs of moose presence had been detected during the 2018 helicopter survey (see Maps RQC82-1 and RQC82-2). Telemetry collar data show that moose were present in the areas of planned human disturbance and the advanced exploration site, in the northern and western portions. In 2024, the data obtained point to a location a bit further north, at the limit of the projected human disturbance area. These data suggest that moose will be visiting certain burned areas in 2023. As previously mentioned, regenerating environments resulting from fires are favourable to the presence of moose in the first year following the forest fires.

When potential moose habitat is juxtaposed with planned infrastructure, a net habitat loss of 35.8 ha will be caused by the project (Table RQC82), if areas with a habitat quality index (greater than 0.75) are considered. As for the functional loss of habitat, a 5 km buffer zone has been added to the planned infrastructure, as for woodland caribou. This is a conservative assessment, since moose are less sensitive to disturbance than woodland caribou. Taking this area into account, the project will result in a functional habitat loss of 1,028 ha (habitat quality index greater than 0.75). Compared with the area of influence of human disturbance at the advanced exploration site, this represents an additional 43.9 ha.

Taking into account forest fires in 2023, which could reduce the quality of moose habitat, the net loss of habitat falls from 35.8 ha to 31.9 ha. As for functional loss in the area of influence of the planned infrastructure, it decreases from 1,028 ha to 767 ha. This represents an additional 29.5 ha compared to the human disturbance area at the advanced exploration site.

If forest stands that could be used as resting areas are considered, and the areas burned in 2023 are subtracted, 31.7 ha of these areas will be directly impacted (net loss) by the planned infrastructure. This result is very similar to that obtained by calculating estimated losses in terms of HQI. With regard to losses associated with feeding habitats, 13.7 ha are directly impacted by the project. In terms of loss of functional habitat, after removing the areas impacted by fire, functional losses are of the order of 1,503 ha for forest stands and 1,002 ha for regenerating stands.

Table RQC82 Net and functional loss of moose habitat

Zone	Type of habitat loss	Habitat type without areas impacted by 2023 fires			Habitat type with areas impacted by 2023 fires		
		HQI > 0.75	Forest stand	Regenerating stand	HQI > 0.75	Forest stand	Regenerating stand
Planned infrastructure	Net	35.8	37.8	26.4	31.9	31.7	13.7
Area of influence of planned infrastructure	Functional	1,028.1	2,749.2	2,074.5	767.0	1,502.9	1,001.7
Area of influence of advanced exploration site	Functional	984.1	2,770.1	2,017.5	737.5	1,609.4	961.5
Difference between the area of influence of planned infrastructure and that of the advanced exploration site	Functional	43.9	-20.9	57.0	29.5	-106.5	-54.3

The effect of noise has been shown in the literature to have a potential negative effect on mammals (Shannon et al., 2015; Kunc and Schmidt, 2019, Mancera, 2017). The threshold at which impacts would be felt is 52 dBA. To be conservative, isophones have been mapped to 40 dB (Maps RQC82-1 and RQC82-2). According to Lavoie and Dussault (2024), the main sources of human activity that can affect moose populations are hunting and habitat disturbance.

Noise from infrastructure construction, site traffic, and refuelling and maintenance of mobile equipment could cause avoidance of certain noisy areas, changes in the reproductive success of certain species, as well as changes in interspecies communication. However, the noise caused by the project will not exceed this threshold beyond 700 m from the central point of the emission sources for all scenarios studied. Noise levels during operations will not exceed 50 dBA beyond a distance of 1 km centred on the noise sources for all scenarios studied. By considering this area, the estimated functional loss of moose habitat would be reduced compared to the area of influence of the proposed infrastructure. Therefore, the decisions taken during project development to minimize noise have definitely contributed to limiting the impact.

However, the overall harvesting potential will not be affected because game will move to the periphery of the work areas and resource availability will remain the same. The area of influence of these nuisances will be limited. It should be noted that land users have made adjustments to their practices since the advanced exploration activities on the site have already resulted in the displacement of large wildlife.

References :

EDENIUS L, BERGMAN M, ERICSSON G, et K. DANELL. 2002. *The role of moose as a disturbance factor in managed forests*. Silva Fennica 36 : 57-67.

FORBES G. J., et J. B. THEBERGE. 1993. *Multiple landscape scales and winter distribution of moose, Alces alces, in a forest ecotone.* Canadian Field-Naturalist 107 : 201.

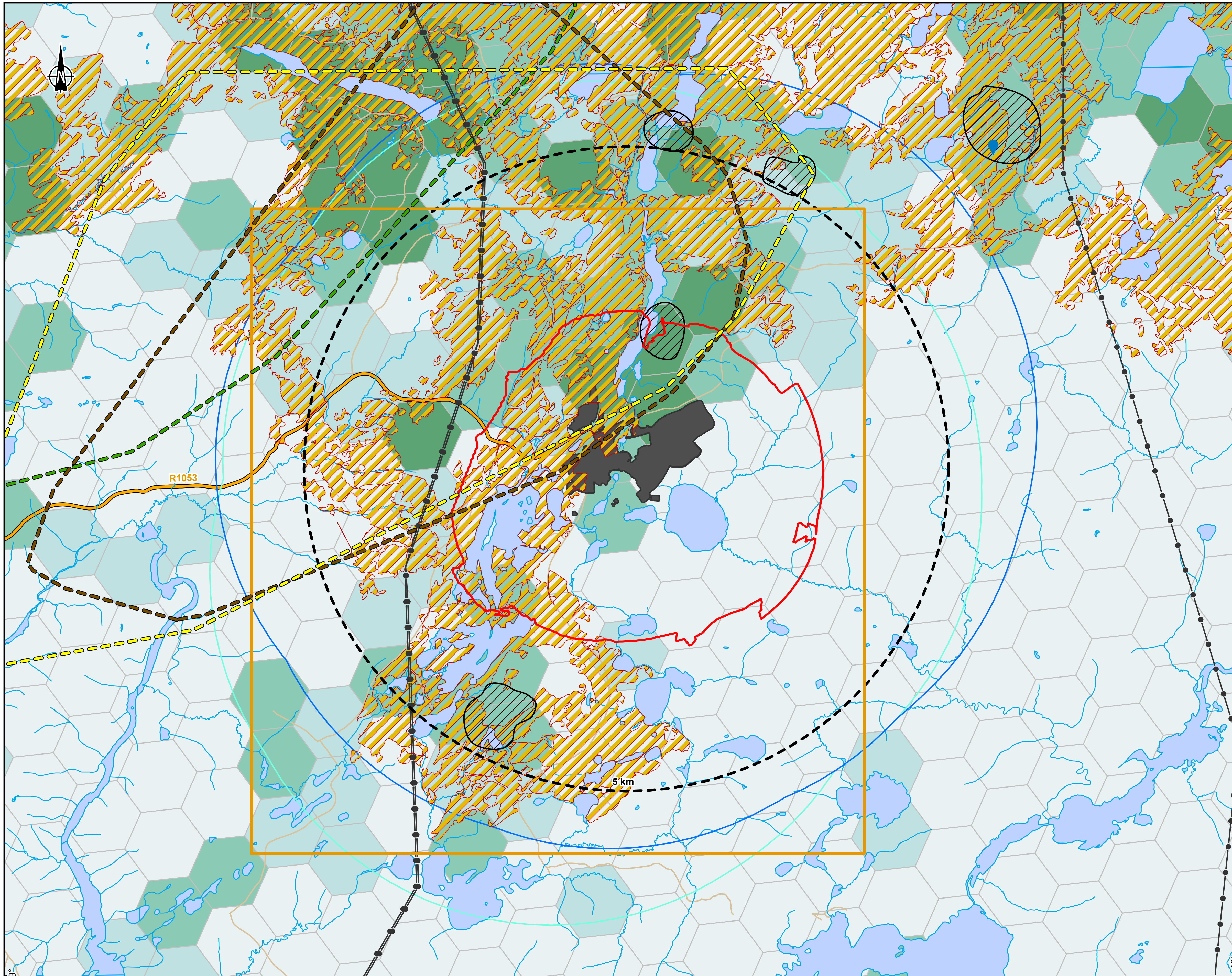
KUNC, H. P. et R. SCHMIDT. 2019. *The effects of anthropogenic noise on animals: A meta-analysis*. Biology-Letters, 15 (11): 20190649. [En ligne] : HTTP://DX.DOI.ORG/10.1098/RSBL.2019.0649. Page consultée le 23 novembre 2023.

MANCERA, K. F., A. LISLE, R. ALLAVENA et C. J. C. PHILLIPS. 2017. *The effects of mining machinery noise of different frequencies on the behaviour, faecal corticosterone and tissue morphology of wild mice (Mus musculus).* Applied Animal Behaviour Science, 197: 81–89p.

MUMMA M.A., M.P. Gillingham, S. Marshall, C. Procter, A.R. Bevington et M. Scheideman. 2020. *Regional moose (Alces alces) responses to forestry cutblocks are driven by landscape-scale patterns of vegetation composition and regrowth*. Forest Ecology and Management : 118763.

POTVIN F., BRETON, L. et R. COURTOIS. 2005. *Response of beaver, moose, and snowshoe hare to clear-cutting in a Quebec boreal forest: a reassessment 10 years after cut*. Canadian Journal of Forest Research 35 : 151-160.

SHANNON, G., M.F. MCKENNA, L.M. ANGELONI, K.R. CROOKS, K.M. FRISTRUP, E. BROWN, K.A. WARNER, M.D. NELSON, C. WHITE, J. BRIGGS, S. MCFARLAND et G. WITTEMYER. 2015. *A synthesis of two decades of research documenting the effects of noise on wildlife*. Biological Review, 91 (4): 883-1148 p.



Éléments du projet / *Project Elements*

Infrastructures projetées / *Projected infrastructures*

Éléments spécifiques à l'orignal / *Moose Specific Elements*

Zone d'inventaire de l'orignal / *Moose survey area*

Zone d'influence des perturbations anthropiques projetées / *Zone of influence of projected anthropogenic disturbances*

Zone d'influence des perturbations anthropiques du site d'exploration avancée / *Zone of influence of anthropogenic disturbances of the advanced exploration site*

Inventaire de WSP en 2018 / *2018 WSP inventory*

Observation opportuniste / *Opportunistic observation*

Limites des points de localisation des colliers / *Limits of Collar Location Points* (MELCCFP, 2024)

2020

2021

2024

Indice de qualité d'habitat / Habitat Quality Index

0,00 - 0,25

0,26 - 0,50

0,51 - 0,75

0,76 - 1,00

Feux de forêt / *Forest Fires* (MELCCFP, 2024)

2023[1]

Perturbations sonores / *Sound Disturbance*

Seuil de perturbation sonore de l'orignal (40 dB) / *Sound disturbance threshold for moose (40 dB)*

Hydrographie / Hydrography

Cours d'eau permanent / *Permanent water course*

Plan d'eau / *Waterbody*

Infrastructures / Infrastructures

Route / *Road*

Chemin forestier de classe III et IV / *Class III and IV forestry road*

Ligne de transport d'énergie / *Transmission line*

[1] Certaines parcelles de feux ont été retirés de la donnée source après validation terrain. / *Some fire plots were removed from the source data after field validation.*

Projet minier Windfall - Réponses aux questions et commentaires - 1re série /
Windfall Mining Project - Answers to Questions of Comments - 1st Series

Site minier Windfall, Eeyou Istchee Baie-James (Québec) / *Windfall Mining Site, Eeyou Istchee Baie-James (Quebec)*

RQC82-1 / *RQC82-1*
Perturbations projetées de l'habitat de l'orignal - Indice de qualité de l'habitat / *Projected disturbances to moose habitat - Habitat quality index*

Sources :
AQréseau+, Réseau routier, MERN Québec, 2020-03
MRNF, Cartographie détaillée des feux 2023 provisoire, 2024
MRNF, Feux de forêts (depuis 1976), 2023
MRNF, Épidémie, chablis et verglas (depuis 1976), 2023

0 0,6 1,2 km

MTM, Fuseau 9 / *Zone 9*, NAD83

2024-10-09

Préparation / Preparation : É. D'Astous
Dessin / Drawing : J. Roy
Vérifié par / Verification : M.-H. Brisson
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CA0023271_9538_eie_rqc82-1_013_orignal_241009

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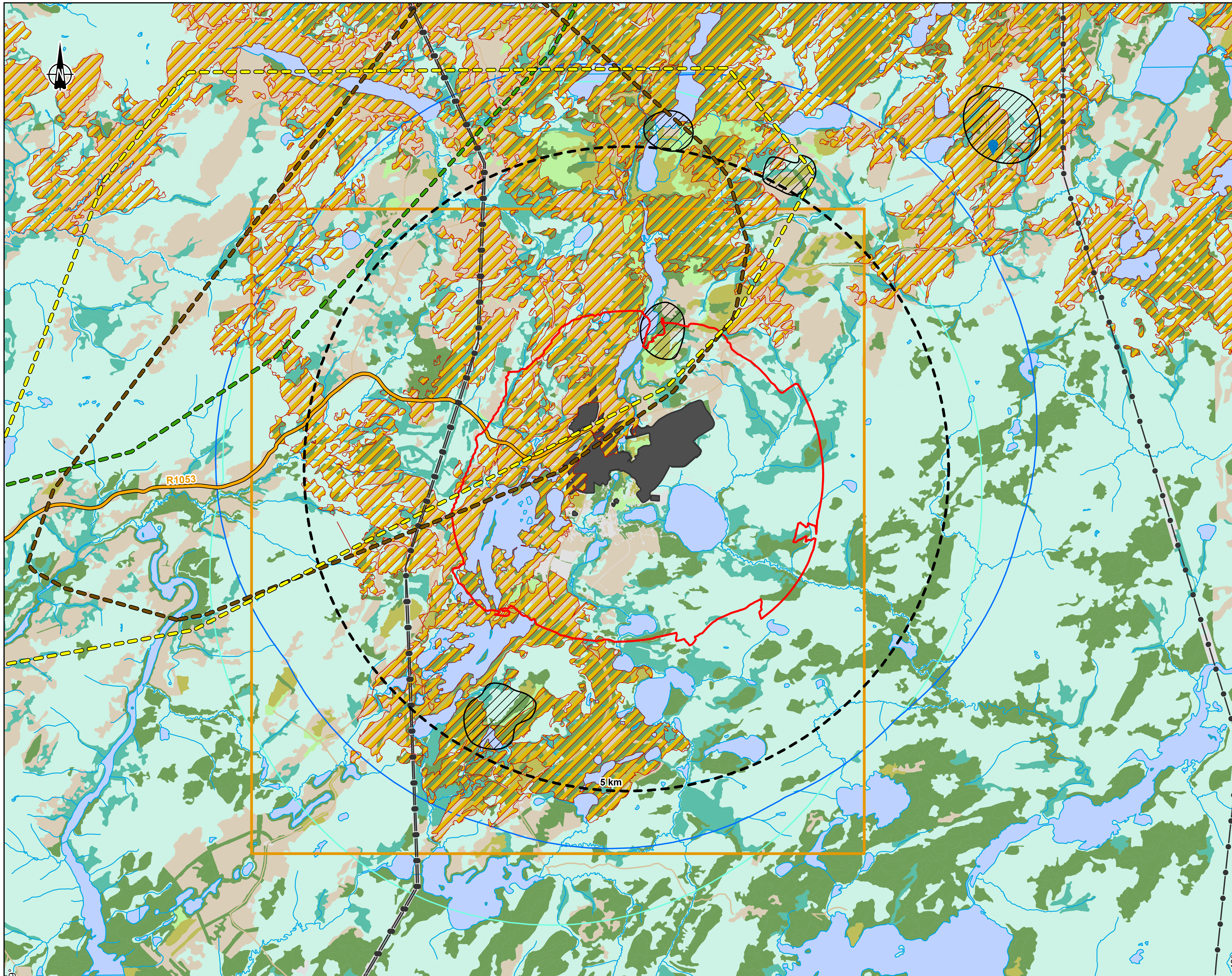

Éléments du projet / *Project Elements*

Infrastructures projetées / *Projected infrastructures*

Éléments spécifiques à l'orignal / *Moose Specific Elements*

Zone d'inventaire de l'orignal / *Moose survey area*

Zone d'influence des perturbations anthropiques projetées / *Zone of influence of projected anthropogenic disturbances*

Zone d'influence des perturbations anthropiques du site d'exploration avancée / *Zone of influence of anthropogenic disturbances of the advanced exploration site*

Inventaire de WSP en 2018 / *2018 WSP inventory*

Observation opportuniste / *Opportunistic observation*

Limites des points de localisation des colliers / *Limits of Collar Location Points* (MELCCFP, 2024)

2020

2021

2024

Feux de forêt / *Forest Fires* (MELCCFP, 2024)

2023[1]

Perturbations sonores / *Sound Disturbance*

Seuil de perturbation sonore de l'orignal (40 dB) / *Sound disturbance threshold for moose (40 dB)*

Peuplements forestiers / *Forest Stands*

Feuillu / *Deciduous*

Résineux / *Softwood*

Mixte / *Mixed*

Regénération et plantation / *Regeneration and planting*

Milieux humides / *Wetlands*

Milieu humide ouvert / *Open wetland*

Milieu humide boisé / *Wooded wetland*

Hydrographie / Hydrography

Cours d'eau permanent / *Permanent water course*

Plan d'eau / *Waterbody*

Infrastructures / Infrastructures

Route / *Road*

Chemin forestier de classe III et IV / *Class III and IV forestry road*

Ligne de transport d'énergie / *Transmission line*

[1] Certaines parcelles de feux ont été retirés de la donnée source après validation terrain. / *Some fire plots were removed from the source data after field validation.*

Projet minier Windfall - Réponses aux questions et commentaires - 1re série /
Windfall Mining Project - Answers to Questions of Comments - 1st Series

Site minier Windfall, Eeyou Istchee Baie-James (Québec) / *Windfall Mining Site, Eeyou Istchee Baie-James (Quebec)*

RQC82-2 / *RQC82-2*
Perturbation projetées de l'habitat de l'orignal – Peuplements forestiers et milieux humides / *Projected disturbances to moose habitat – Forest stands and wetlands*

Sources :
AQréseau+, Réseau routier, MERN Québec, 2020-03
MRNF, Cartographie détaillée des feux 2023 provisoire, 2024
MRNF, Feux de forêts (depuis 1976), 2023
MRNF, Épidémie, chablis et verglas (depuis 1976), 2023

0 0,85 1,7 km

MTM, Fuseau 9 / *Zone 9*, NAD83

2024-10-09

Préparation / Preparation : É. D'Astous
Dessin / Drawing : J. Roy
Vérifié par / Verification : M.-H. Brisson
CA0023271_9538_eie_rqc82_orignal_241009.aprx
CA0023271_9538_eie_rqc82-2_014_orignal_241009

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QC-83
Environmental Impact Assessment, Page 11-1, Volume 1b, Section 11.1 Analysis parameters; Environmental Impact Assessment, Page 7-122, Volume 1b 7.5.4 Impacts on large fauna during the closure phase and mitigation measures:

The use of the concept of positive impact on moose due to site restoration seems unjustified. For example, Page 11-1 mentions that “minimizing the loss of vegetation cover” contributes to the protection of biodiversity, including moose. On Page 7-122, the expected positive impact on moose habitat is not supported by a description of the improvement. The proponent must justify the positive impacts by describing the habitat improvement, if any, and not the minimization of losses.

Response 83:

As mentioned on page 7–122 of the Windfall mine project environmental impact assessment, once the closure phase is over and rehabilitation work has been completed, a positive impact is expected due to habitat restoration, mainly for moose, black bear, and grey wolf. This is positive compared to the operations phase. It should be noted that the immediate area affected by the project is not currently used regularly by moose.

QC-84
Environmental Impact Assessment, Page 7-109, Volume 1b, Section 11.2.8 Moose:

The proponent indicates that the type of habitat in the project area is unfavourable to moose. On Page 7-109, it explains that, “The low density of moose in Quebec’s boreal region is due in large part to the low productivity of the habitat.” The moose habitat potential of the study area appears to be greater than that reported by the proponent. For example, as part of a habitat study, the MELCCFP’s telemetry monitoring shows that the area west of Windfall Lake was used by moose in the summer. The mapping presented appears to be based essentially on the results of aerial surveys carried out in winter. Mapping of stands suitable for moose, taking into account recent forest fires, must be provided to complete this picture and establish the pre-project habitat baseline in the study area.

Response 84:

A request was made to the MELCCFP in August 2024 to obtain moose occurrence data from telemetry collars. Habitat quality index (HQI) data from Dussault (2006) were also obtained from the MELCCFP. Maps RQC82-1 and RQC82-2 show areas where the presence of moose has been noted in the project’s zone of influence and on its periphery, i.e., within a 10 km radius centred on the project. These data, in addition to those on forest stands and wetlands, as well as the 2023 fire footprint, are also presented.

The telemetry point data obtained (last updated on August 1, 2024) come from three moose wearing radio collars. For one of these animals, data was collected in 2020 and 2021, and for the other two, in 2024. All telemetry points are located to the north and west of the Windfall mine project. Data from 2020 and 2021 show that this moose was found within 500 m of the planned infrastructure in all four seasons. Furthermore, several of these occurrences are located in areas where the moose HQI is high (> 0.75). As for the data obtained in 2024, the telemetry points are located more than 4 km from the planned infrastructure. These data were collected between April 14 and August 1, 2024.

In 2023, fires in the area may have had an impact on moose numbers, particularly in areas with a high fire severity index, reducing available food resources and wintering areas (moose yard). The species feeds mainly on a wide variety of tree and shrub leaves. In winter, it prefers wooded areas with dense canopies to keep snow depth to a minimum (Gouvernement du Québec, 2024). The 2023 fire could well have an impact on the quality of the species' habitat, causing it to move away from the area.

Given the forest stands available to the north of the proposed infrastructure, blocks of potential moose habitat are indeed present, but some of these areas were burned in 2023. However, the project will not result in any significant net loss of moose habitat, i.e., 31.7 ha if forest stands are considered (see response RQC-82). As for the loss of functional habitat, the anticipated impact is on the order of 1,503 ha, and details are presented in response RQC-82.

References :

DUSSAULT, C. COURTOIS, R., et J-P. Ouellet. 2006. *A habitat suitability index model to assess moose habitat selection at multiple spatial scales*. Can. J. For. Res. 36 : 1097-1107.

GOUVERNEMENT DU QUÉBEC. 2024. *Orignal*. En ligne : https://www.quebec.ca/agriculture-environnement-et-ressources-naturelles/faune/animaux-sauvages-quebec/liste-des-especes-fauniques/orignal

QC-85
Environmental Impact Assessment, Page 11-1, Volume 1b, Section 11.1.2
Determination of valued components:

In Table 11-1 on Page 11-3, it is stated that moose are selected for a cumulative impact analysis because of their rarity. The proponent must complete the analysis of cumulative impacts on moose by considering the importance of this species for subsistence. The proponent is encouraged to contact the Direction de la gestion de la faune du Nord-du-Québec (Nord-du-Québec wildlife management branch) for further details and data to complete the information.

Response 85:

The cumulative impact on the moose component has been assessed twice (Chapter 11 of the Environmental Impact Assessment, Volume 1b), in Section 11.2.8, which deals specifically with moose populations and habitat use, and in Section 11.2.9, which deals with traditional use, including subsistence. This demonstrates the importance attached to this component. Cumulative effects were considered medium to high. This cumulative impact analysis was based on the impact assessment carried out previously, for which a medium socioeconomic value (see Sections 7.5.2 and 8.6.2 of the Environmental Impact Assessment, Volume 1b) had been assigned due to the interest of the Cree community. In fact, as specified on page 7-109 of the EIA, moose habitat preservation is a concern for tallymen, since this species is an integral part of the traditional diet of Cree communities. Ultimately, despite the statement in Table 11-1, the significance of the assessed cumulative impact already took into account the value placed on moose by the Cree community. The assessment remains unchanged.

Updated data on moose abundance are presented in responses 81 and 84.

QC-86
Environmental Impact Assessment, Page 7-126, Volume 1b, Section 7.6
Mammals–Chiropterans:

On Page 7-126, it is stated that activities to assess and validate the potential presence of chiropteran maternity colonies have been carried out in the field during the birthing and young-rearing season. However, the absence of maternity colonies does not guarantee that sites for birthing and nursing of pups are not used in the local study area of the biophysical environment. The proponent must remain vigilant for signs of bat presence in man-made and natural structures that may be located in the vicinity of the mine. Should the presence of a maternity colony be suspected, the proponent must inform the MELCCFP. The proponent must include chiropteran monitoring in the follow-up program to assess their presence on the mine site.

Response 86:

During the various phases of the project, particular attention will be paid to signs of bat presence in man-made and natural structures in the vicinity of the mine. These signs can be noises (scratching or vocalization), the presence of guano (similar to mouse feces, but longer, tapered, and segmented) on walls or on the ground, or the smell of damp earth (“old damp cellar”) (MELCCFP, 2023a). These signs of their presence should preferably be sought during the chiropteran breeding season, which at this latitude extends from June 15 to August 14 (MELCCFP, 2023b).

As for potential sites of man-made origin, buildings or other structures with potential entry routes for chiropterans will be searched for. These may include cavities in exterior cladding, poorly joined sheet metal, or unscreened ventilation, all of which are likely to give them access to any concealed spaces. In terms of natural structures, the elements sought were essentially snags or cavities in trees with a fairly large diameter at breast height (DBH) (30 cm and more) that could be used by chiropterans (Tremblay and Jutras, 2010).

Should the presence of a maternity colony be suspected, the MELCCFP will be promptly informed. This monitoring of the possible presence of chiropteran maternity colonies on the site is part of the chiropteran monitoring program presented in Appendix RQC86.

References

MINISTERE DE L’ENVIRONNEMENT, DE LA LUTTE CONTRE LES CHANGEMENTS CLIMATIQUES, DE LA FAUNE ET DES PARCS (2023a). Recueil des protocoles standardisés pour l’inventaire des colonies estivales de chauves-souris au Québec, Gouvernement du Québec, Québec, 24 pp. + appendices.

MINISTERE DE L’ENVIRONNEMENT, DE LA LUTTE CONTRE LES CHANGEMENTS CLIMATIQUES, DE LA FAUNE ET DES PARCS (2023b). Recueil des protocoles standardisés d’inventaires acoustiques de chauves-souris au Québec, Government of Quebec, Québec, 44 pp. + appendices.

TREMBLAY, J. A. and J. JUTRAS. 2010. *Les chauves-souris arboricoles en situation précaire au Québec – Synthèse et perspectives*. *Le Naturaliste Canadien*, vol. 134 No. 1. pp. 29-40.

QC-87
Environmental Impact Assessment, Page 7-123, Volume 1b, Section 7.6
Mammals–Chiropterans:

Considering the potential presence of five (5) chiropteran species with status in the study area, the proponent must propose mitigation measures to reduce the project's impact, particularly through noise and light, and propose measures to be carried out during site restoration. For example, the proponent must assess the possibility of:

- converting the mine galleries after mining to create bat hibernacula;
- restricting the cutting of large trees and snags that can provide daytime shelter and maternity sites;
- installing bat nesting boxes on identified migration corridors near a quiet pond or river;
- respecting the birthing and nursing periods (June 1 to August 31) and avoiding clearing during this period to limit disturbance to bats during breeding.

The proponent must include an assessment of the effectiveness of the proposed mitigation measures in the chiropteran monitoring program.

Response 87:

The standard mitigation measures to be implemented for noise and light as part of the project will help reduce the impact of these disturbances on chiropterans. These include measures NOR 03, FAU 08 and FAU 09 cited in the Environmental Impact Assessment for the Windfall mining project (WSP, 2023).

Furthermore, as mentioned in mitigation measure FAU 03, clearing activities will be carried out outside the young bat denning and rearing period, which according to the standardized inventory protocol for this wildlife component extends approximately from June 15 to August 14 at the latitude of the Windfall project (MELCCFP, 2023).

It will not be possible to restrict the cutting of large-diameter snags or cavity trees in areas to be cleared. These would constitute obstacles to the construction activities planned in these areas. On the other hand, particular attention will be paid to the presence of this type of tree/snag on the periphery of the cleared areas, particularly at the edges where there is a good sun exposure. Should such sites be discovered, any signs of use by bats (calls, faeces, etc.) will be monitored if activities likely to cause disturbance are to be carried out in the vicinity during the chiropteran breeding period, in accordance with the monitoring and follow-up program.

Passively heated bat houses will also be installed to compensate for the effects of the project in terms of habitat loss for chiropterans. These bat houses will ideally be installed in areas where the acoustic inventory of chiropterans has revealed significant chiropteran activity. The proposed bat house model (a passively heated one) was developed by the Ministère des Forêts, de la Faune et des Parcs (MFFP) in collaboration with an architectural firm to recreate appropriate conditions for the establishment of a maternity colony. Once the bat houses installed, their integrity will be checked annually throughout the project. Their occupancy by chiropterans during the breeding season will also be monitored.

Regarding the bat management of certain tunnels after operation, it is unlikely that the tunnels created by the underground activities of the Windfall project will be conducive to the establishment of a hibernacula for chiropterans. The project area is moderately hilly, and it is therefore likely that the underground galleries will begin to flood as soon as the operating phase is over. This is what happened with an access ramp built in 2007 and 2008, in the current Windfall mine site, which flooded after its creation and had to be dewatered before it could be used for the project (ÉIE, Vol. 8, Annexe 7-6; WSP, 2022). Very specific conditions are required for the creation of a hibernacula, and it is impossible to make a commitment without knowing whether suitable (unflooded) galleries will be available at the end of the project for a development of this type.

The chiropteran monitoring and follow-up program is presented in Appendix RQC 87.

References:

Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP). 2023. Recueil des protocoles standardisés d'inventaires acoustiques de chauves-souris au Québec, gouvernement du Québec, Québec, 44 p. + annexes.

WSP. 2023. Projet minier Windfall. Étude d'impact sur l'environnement. Rapport produit pour minière Osisko inc. Pagination multiple et annexes.

WSP. 2022. Projet minier Windfall. Rapport sectoriel – Chiroptères. Rapport produit pour minière Osisko inc. 29 pages et annexes.

2.9 Waste management

QC-88
Environmental Impact Assessment, Page 3-76, Volume 1a, Section 3.6
Residual materials management;
Addendum 1 - Responses to MELCCFP recommendations and comments, Page 1-44, Volume 1, Section 5
Residual Materials Management:

On Page 3-76, the proponent has indicated that residual materials (RM) will be sent to the Lebel-sur-Quévillon trench landfill (LEET). The proponent must provide the landfill site's agreement to receive RM and proof that its capacity is sufficient for the life of the mine. The proponent must specify how often residual materials will be recovered.

Response 88:

A letter and a resolution document are provided in Appendix RQC88. They come from the town of Lebel-sur-Quévillon and from the LEET operator. Details on the number of trips between the Windfall site and LEET are provided in Response QC-89.

QC-89
Addendum 1 - Responses to MELCCFP recommendations and comments,
Volume 1, Section 1.3.5.1 Residual materials management;
Addendum 1 - Responses to MELCCFP recommendations and comments,
Volume 1, Section 1.3.2.3 Waste water:

The proponent presented an update to its residual materials management plan in Addendum 1. The list of all residual materials generated during the construction and operations phases of the project found in Table-1-12 (Page 1-44), however, presents the following inconsistencies:

- In terms of recyclable materials (paper, glass, plastic, cans, uncontaminated metal, tires), only estimated volumes for metals are presented, and only one metal recovery site is mentioned. The proponent must provide a residual materials management plan that includes an estimate of the quantities of all residual materials generated, as well as a detailed description of the proposed management methods for each of the above-mentioned categories of residual materials. In addition, the method of transporting residual materials, the transport routes including the distance to be covered, and the number of trucks per week must be specified;
- Tires are found in two places in the table. The proponent must clarify whether this is an error;

- For batteries, it is stated that they will be collected by a specialized collection company (AmNor Industries), whereas in the text preceding the table (Page 1-43), it is stated that "*WMG will collect used batteries and send them to a specialized location. However, the search continues for a partner willing to accept this type of waste material*." The proponent must explain how the batteries will be managed.

The proponent must submit a new residual materials management plan correcting the above points.

Response 89:

The residual materials management plan has been revised and updated, and is presented in Table RQC89. It includes the following additions:

- estimated annual quantities produced (for the construction and operations phases);
- frequency of off-site shipment of materials generated (for the construction and operations phases);
- material management method (reclamation or disposal);
- the mode of transport;
- planned routes including distances to be covered.

WMG is still looking for a centre to collect and sort residual materials such as paper, glass, and plastic. The capacity of the region's sorting centres is limited. Despite this, WMG is still committed to recycling these residual materials. Validations are underway for the Val d'Or site. It is estimated that around 253 tonnes per year (paper, glass, plastic, and non-compostable cardboard) will be generated during the construction phase, and 170 tonnes per year during the operations phase. Until a solution is found, these quantities are included in the residual materials to be disposed of at the Lebel-sur-Quévillon trench landfill (LEET).

The quantities of compostable materials have been reassessed to reflect the increase in capacity of the permanent camp to 600 rooms during operations. Information on this subject is given in greater detail in QC-92.

WMG wishes to reduce the quantities of wash water from the mechanical workshops that will be sent off-site by integrating a water treatment and recirculation system, so the quantities shown in Table 1 are conservative. In addition, WMG currently collects used batteries on its site and stores them at its dedicated storage facility. AmNor Industries currently handles the transportation of the batteries and their final disposal at an authorized site. During the construction and operations phases, dedicated collection and storage will continue, and a specialized company such as AmNor Industries will be commissioned to transport and finally dispose of the batteries at an authorized site.

It is still planned that during the operations phase, WMG will reduce the amount of CRD wood sent to the trench landfill (LEET) in Lebel-sur-Quévillon. In fact, WMG wants its suppliers to use only untreated wood so as to enhance its value. The goal would be to place the segregated wood on the overburden stockpile and shred it on a yearly basis. The shredded wood could then be finally disposed of on the overburden stockpile and used as organic material during site restoration. This requirement will be specified in the contractual clauses sent to suppliers. The finer details of this project will be developed over the coming months for implementation during the operations phase.

It should be noted that for certain categories of residual materials, such as liquid RHMs or contaminated soil, the impact of adding workers to the camp is deemed not to impact the quantity of RHMs produced between the construction and operations phases.

Table RQC89 Updated estimates of annual volumes of residual materials

Category	Description	Estimated annual quantities produced (construction)	Estimated off-site shipping frequency (construction)	Estimated annual quantities produced (operations)	Estimated off-site shipping frequency (operations)	Material management method	Mode of transport	Planned routes with distances to be covered	Collection and transport company	Disposal site
Reusable materials	New residual materials, uncontaminated packaging	Variable	N/A	Variable	N/A	Reclamation	N/A	N/A	N/A	Reuse on site
Recyclable materials[4]	Uncontaminated metal	Scrap metal: 575 tonnes Copper: 615 tonnes	Scrap metal: 48 trips/year: Copper: 51 trips/year	Scrap metal: 385 tonnes Copper: 410 tonnes	Scrap metal: 32 trips/year: Copper: 32 trips/year	Reclamation	By road - roll-off truck	Windfall mine site - AIM Recyclage Amos/(265 km)	Specialized collection company (contractual)	Metal recovery site (currently AIM-Amos)
Compostable materials	Cafeteria food waste, expired food	245 tonnes	N/A	165 tonnes	N/A	Reclamation	N/A	N/A	Internal management	Overburden stockpile
	Brown cardboard (cardboard from recycling that is mixed with compostable materials)	75 tonnes	N/A	50 tonnes	N/A	Reclamation	N/A	N/A	Internal management	Overburden stockpile
RHMs - Liquids	From mechanical shops or spill clean-ups.	32 m^3	2/year	32 m^3	2/year	Disposal	By road (bulk or tanker, depending on volume)	Windfall mine site - AmNor Industries, Malartic (315 km)	Specialized collection company (currently AmNor Industries)	AmNor Industries transfer centre, Malartic
	Used oil, grease, wash bay sludge, and contaminated snow	24 m^3	4/year	40 m^3	7/year	Disposal	By road (bulk or tanker, depending on volume)	Windfall mine site - AmNor Industries, Malartic (315 km)	Specialized collection company (currently AmNor Industries)	Transfer centre - AmNor Industries - Malartic
	Wash water from mechanical workshops (without intermediate effluent), oily water	5,000 m^3	60/year	10,000 m^3	120/year	Disposal	By road (tanker depending on volume)	Windfall mine site - AmNor Industries, Malartic (315 km)	Specialized collection company (currently AmNor Industries)	AmNor Industries transfer centre, Malartic
RHMs - Industrial and household solids	Aerosols, paints, fluorescent bulbs, lamps, batteries, smoke detectors, oil filters, rags, packaging, contaminated containers, halocarbons, used absorbents, computer scrap, laboratory products	625 tonnes	25/year	375 tonnes	15/year	Disposal	By road - bulk	Windfall mine site - AmNor Industries, Malartic (315 km)	Specialized collection company (currently AmNor Industries)	AmNor Industries transfer centre, Malartic
Contaminated soils	Spill clean-up	960 tonnes	48/year	960 tonnes	48/year	Disposal/Reclamation	By road - bulk or roll-off container	Regional disposal sites are preferred - depending on contamination levels, soil may be disposed of at different sites (e.g.: GFL Val d'Or, Northex - Malartic, etc.)	Specialized collection company (currently AmNor Industries)	Disposal site authorized and approved by MELCCFP
Construction, renovation, and demolition debris	Wood, aggregate, drywall, uncontaminated dry materials	2,305 tonnes	150/year	25 tonnes	2/year	Disposal	By road - truck with roll-off container	Windfall mine site - LEET Lebel-sur-Quévillon (140 km)	Specialized collection company (Éric Bisson et fils/contractual)	Lebel-sur-Quévillon trench landfill site (LEET)
Wood (non-contaminated) from CRD	Non-contaminated wood	-	-	220 tonnes	N/A	Reclamation	N/A	N/A	Internal management	Overburden stockpile

[4] No selective collection (recyclables; paper, plastic, etc.) is carried out at the Windfall site. It is very difficult to find a local site willing to recover the materials produced at the site (all at full capacity). GMW is currently looking for alternatives.

Table RQC89 Updated estimates of annual volumes of residual materials

Category	Description	Estimated annual quantities produced (construction)	Estimated off-site shipping frequency (construction)	Estimated annual quantities produced (operations)	Estimated off-site shipping frequency (operations)	Material management method	Mode of transport	Planned routes with distances to be covered	Collection and transport company	Disposal site
Residual materials for disposal	Bulky waste, litter bags, polystyrene foam, packaging, sanitary pads, composite objects, contaminated objects, non-recyclable plastic, rubber, ashes, plastic bags, plastic bottles, process waste, various empty containers.	1,000 tonnes	50/year	600 tonnes	30/year	Disposal	By road - truck with roll-off container	Windfall mine site - LEET Lebel-sur-Quévillon (140 km)	Specialized collection company (Éric Bisson et fils/contractual)	Lebel-sur-Quévillon trench landfill site (LEET)
Sanitary sludge	Septic tank sludge	1,080 m^3	108/year	720 m^3	72/year	Disposal	By road - vacuum/dust collector truck	Windfall mine site -Val-d'Or or Lebel-sur-Quévillon	Contract (AmNor Industries or Saine-Ville Environnement)	Disposal site authorized and approved by MELCCFP
Biomedical waste	From the infirmary; handled in accordance with CQLR, Q-2, r.12	9 × 5.1 L containers	2/year	6 × 5.1 L containers	2/year	Disposal	By road - collection truck	Windfall mine site - Val d'Or Pharma access (302 km)	Specialized collection company (currently Accès Pharma, Val d'Or)	Disposal site authorized and approved by MELCCFP
Tires	Used tires	450 tires	12/year	450 tires	1/year	Reclamation	By road - collection truck	Route and distance depend on the service provider serving the client - 5 recognized disposal sites in Quebec	Specialized collection company/Recyc-Québec	Disposal site authorized and approved by MELCCFP via Recyc-Québec
Cans	Aluminum cans	37.5 - 75 kg	N/A	25 - 50 kg	N/A	Reclamation	Internal management	N/A	Internal management	Authorized location for receiving returnable cans
Electronic products	Computer screens, computers, small electrical appliances, etc.	1,500 – 3,000 kg	1/year	1,500 – 3,000 kg	1/year	Disposal	By road - collection truck	Windfall mine site - AmNor transfer centre, Malartic (315 km)	Specialized collection company (currently AmNor Industries)	Disposal site authorized and approved by MELCCFP

QC-90
**Addendum 1 - Responses to MELCCFP recommendations and comments,
Volume 1, Section 1.3.5.1 Residual materials management;
Addendum 1 - Responses to MELCCFP recommendations and comments,
Volume 1, Section 1.3.2.3 Waste water:**

The proponent must submit a residual materials management plan for infrastructure dismantling work, at least one year before the work is carried out. When dismantling work is carried out as part of the permanent cessation or change of land usage of a site that has supported an activity belonging to one of the categories designated by the Land Protection and Rehabilitation Regulation (LPRR) (chapter Q-2, r. 37), the proponent may also refer to Fiche technique 11 – Contenu d'un plan de démantèlement (Technical Data Sheet 11 – Contents of a dismantling plan) to learn what other information must be provided.

Response 90:

In addition to meeting the requirements associated with the Windfall redevelopment and restoration plan, WMG will be able to provide additional inputs associated with all the authorizations needed to carry out the work before the closure phase begins.

QC-91
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 1, Section 1.3.5.1 Residual materials management:

The proponent must assess the possibility of using residual materials and residual granular materials in place of new raw materials for the construction and operations phases. Aggregates made from concrete, brick, asphalt, and dimension stone residues can replace quarry and sand pit materials as building materials. For the time being, the plan seems to be to send construction, renovation, and demolition debris to the LEET in Lebel-sur-Quévillon.

For their use in a project, please refer to the Regulation respecting the regulatory scheme applying to activities on the basis of their environmental impact (REAFIE), the Regulation respecting the reclamation of residual materials (RVMR) and the Lignes directrices relatives à la valorisation de résidus de béton, de brique d'enrobé bitumineux, du secteur de la pierre de taille et de la pierre crassée résiduelle (Recovery guidelines for concrete, asphalt brick, dimension stone, and residual crushed stone residues). For non-hazardous inorganic residual materials from industrial sources, please refer to the Guide de valorisation des matières résiduelles inorganiques non dangereuses de source industrielle comme matériau de construction (Recovery guidelines for non-hazardous inorganic residual materials from industrial sources as building materials).

Response 91:

WMG does not expect to produce concrete, brick or asphalt (or even dimension stone) residues in sufficient quantities to justify setting up a project for replacing new materials. It is still planned to send construction, renovation, and demolition debris to the trench landfill (LEET) in Lebel-sur-Quévillon. However, WMG plans to set up containers that can be used to reclaim certain materials, including wood and metals, during the site's construction and operations phases.

In the event that demolition work has to be carried out during the operations phase, the Regulation respecting the reclamation of residual materials (RVMR) and the *Lignes directrices relatives à la valorisation de résidus de béton, de brique d'enrobé bitumineux, du secteur de la pierre de taille et de la pierre crassée résiduelle* (Recovery guidelines for non-hazardous inorganic residual materials from industrial sources as building materials) will be applied.

QC-92
Environmental Impact Assessment, Page 3-79, Volume 1a, Section 3.6
Residual materials management:

In Section 3.6 of the impact assessment, it is mentioned that the composter at the exploration camp will be moved to the residual materials storage area, and it is anticipated that composting activities will continue on site. The proponent must specify whether this equipment has the capacity to process all compostable materials during the project's operations phase. If not, it must present the alternatives planned.

Response 92:

After updating the manpower demand curve for the construction and operations phases, it was determined that the composter currently in use would not have the capacity to process all the compostable materials produced. In fact, the maximum capacity (organic matter and cardboard) of the composter currently on site is 115 Mt/year, while the quantity of organic matter that would be produced during construction is estimated at 320 Mt/year, and 215 Mt/year during operations. These estimates are based on the quantity currently produced at the site and on the camp's capacity.

Steps are therefore being taken to find an alternative compatible with these estimates. Two options are currently being assessed: either the addition of an extra composter that would operate in parallel with the current unit, or the purchase of a larger-capacity composter that would enable all compostable materials generated at the site to be processed with just one unit. The assessment is ongoing, and the final alternative will ensure optimal treatment of compostable materials and compliance with applicable environmental measures for the construction and operations phases to come. The original location will remain unchanged, with sufficient space to accommodate a second or larger composter.

QC-93
Environmental Impact Assessment, Page 3-79, Volume 1a, Section 3.6
Residual materials management;
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 1, Section 1.3.5.1
Residual materials management:

The proponent plans to use the compost produced for revegetation work during the restoration. It must specify to what extent the quantity of compost produced is sufficient to meet needs. It must also specify whether other sources of fertilizing residual materials are planned, and provide their description.

Response 93:

The volumes of compost produced will not be sufficient to restore the entire site. Therefore, for restoration purposes, the organic matter produced from the stripping of structures is planned to be used. These materials will be stored in the overburden pile for the life of the mine.

Revegetation methods, including plant species and fertilizers (if required) to be used to restore the site, will be determined in a subsequent phase of site restoration design. The species selected must meet the requirements of the *Guide de préparation du plan de réaménagement et de restauration des sites miniers au Québec* (MRNF, 2022). Progress in relation to revegetation methods will be described in updates to the restoration plan.

Reference:

MERN. 2022. Guide de préparation du plan de réaménagement et de restauration des sites miniers au Québec. Ministère de l'Énergie et des Ressources naturelles, Direction de la restauration des sites miniers, Gouvernement du Québec, ISBN : 978-2-550-92682-5 (PDF). 2022, 87 pages.

2.10 Restoration

QC-94
Environmental Impact Assessment, Page 4-42, Volume 1b, Section 4.6.1
Indigenous communities:

Considering that this project involves the management of potentially acid-generating and leachable tailings and mine waste rock, the proponent must ensure that the remediation concepts set out in the remediation plan are:

1) compatible with the management and progressive reclamation approaches planned during mine operations;
2) suitable and safe for this type of material.

The proponent must detail the expected timeframe for the progressive restoration of accumulation areas.

Response 94:

Ongoing studies support the advancement of tailings and mine waste rock storage area design in parallel with the advancement of remediation concepts. A comparative study of covering methods was completed, with the objective of identifying those best suited for the waste rock stockpile and tailings storage facility. The second objective of the study was to identify the low-permeability materials best suited to the environmental, operational, and technical constraints of the project. This study is attached in Appendix RQC94.

Both the design of the tailings storage facility and the reclamation covering are based on the most up-to-date deposition plan, which is one of the main inputs to the project. The tailings deposition plan for the storage facility was developed in accordance with the mining plan. According to this plan, tailings deposition is planned in three zones, the first of which is also subdivided into 4 cells to allow for progressive surface restoration (see response to QC-95). The other zones will also be divided into cells at a later date.

Thus, restoration methods and materials will be specifically chosen to allow progressive restoration of tailings storage facility cells so as to limit dust emissions and to minimize exposure of tailings to weathering, which could contribute to the triggering of acid mine drainage reactions. The method presented in the restoration plan is the installation of a low-permeability cover using a geomembrane. This method was judged to be the best in the attached comparative study. The final choice of the type of membrane to be used is still under analysis. In all cases, the chosen covering can be installed quickly after the end of cell operation, or when the final surfaces are available.

For the waste rock stockpile, the current filling plan proposes deposition in benches. The surfaces can only be restored once the filling of the two benches has been completed, since the stockpile is already present. In all cases, current conditions are well documented through continuous surface water quality monitoring at the water treatment units. It appears that no evidence of AMD has been detected since the waste rock was stockpiled. In all cases, measures to control the risk of generating acid mine drainage will be assessed by WMG in the preparation of the backfill plan currently under development. Final surfaces will be able to be restored when available.

QC-95
Remediation plan for mining operations, Volume 1, Section 2.6.4 Geochemical characterization; Operations phase restoration plan, Volume 1, Appendix C Geochemistry:

The proponent plans to divide the filtered tailings accumulation area into cells that will be mined and restored as they are filled. However, according to the results of the characterization study (WSP, 2023), milling residues have the potential to generate acid in about 1 to 15 years, depending on laboratory conditions.
As a result, there is a risk that filtered tailings will start generating AMD before the final restoration of the accumulation area. In this context, the proponent must provide further explanations regarding the approximate duration of operations for each active deposition cell, the start of restoration work, and the type of covers planned for progressive restoration, in order to demonstrate that the necessary preventive measures will be put in place before the filtered tailings begin to generate AMD.

Response 95:

The assumption that acid generation can be initiated in 1 year mentioned in the question and presented in the characterization study is a theoretical conservative value that has since been revised. According to the most recent data, milling residues have the potential to generate acid in 3 to 15 years (see Response QC-1).

WMG plans to implement several control measures to limit the risk of AMD reactions being initiated in the tailings storage facility. Operational controls, progressive restoration, and environmental protection measures are detailed below.

Operational controls

The tailings storage facility deposition plan was developed based on the most up-to-date mine plan, which takes into account the operational schedule and annual capacity required (Figure RQC95-1). Operations at the tailings storage facility are planned over a 10-year period and are divided into three distinct zones. The first zone is also subdivided into 4 cells (1A, 1B, 1C, 1D) (Figure RQC95-2). The sequencing shown in Figure 2 (Addendum 1, Volume 1) predicts that the cells in Zone 1 will be filled within a maximum of two years and 3 months. These sectors can therefore be gradually restored within the AMD initiation timeframe, estimated at between 3 and 15 years. It is intended that Zones 2 and 3 will also be developed through cells. The sequencing of Zones 2 and 3 will be developed in subsequent phases of the project, taking into account constraints related to AMD generation and dust emissions.

It should be remembered that the initiation time was established on the basis of geochemical tests in which the tailings were continuously exposed. The tailings storage facility is planned to be filled in successive layers of compacted tailings. The compaction of tailings layers reduces the hydraulic conductivity of the tailings and the diffusion of oxygen into the stockpile, which is the main reagent in AMD. The formation of an indurated layer on the surface of exposed slopes can also limit the infiltration of precipitation into the stockpile and contribute to delaying the triggering of AMD reactions.

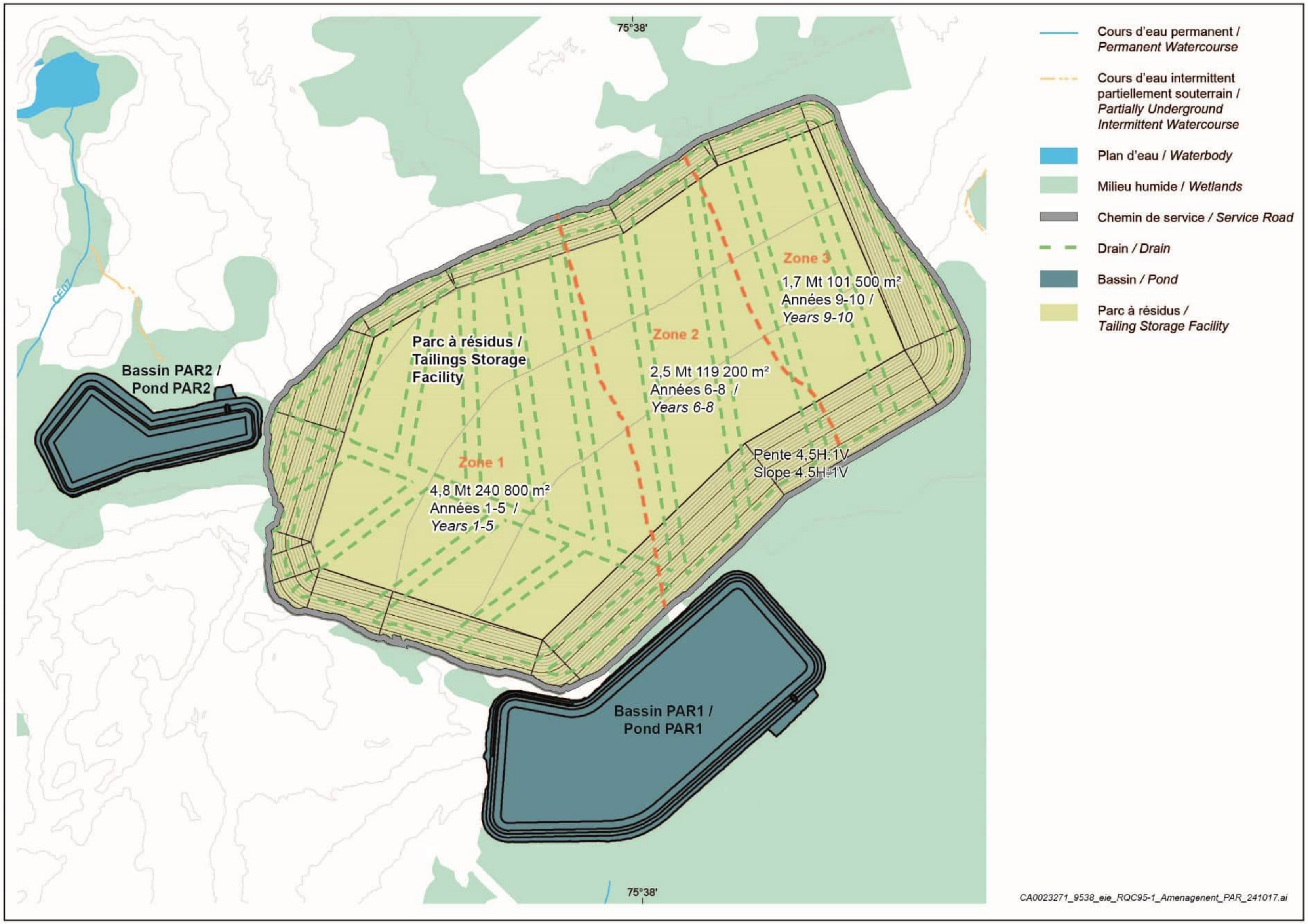


Figure RQC95-1 **Filtered tailings deposition zones**

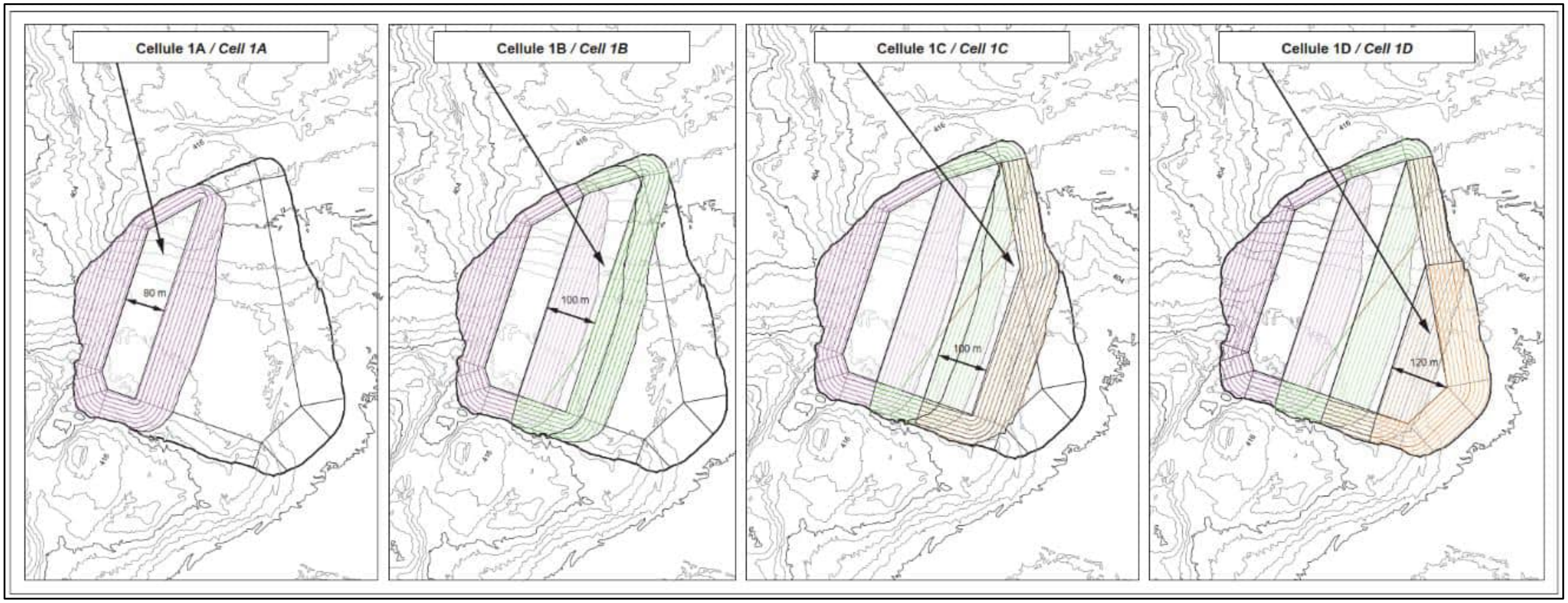


Figure RQC95-2 **Cells proposed for the development of Zone 1 of the filtered tailings stockpile**

Table RQC95 Filling periods by cell and zone.

Cell/Zone	Deposition period	Deposition duration	3D surface area of exposed slopes (final and temporary) (m^2)
Cell 1A	Years 1 to 2	2 years and 3 months	74,040
Cell 1B	Years 2 to 4	1 year and 5 months	95,948
Cell 1C	Years 4 to 5	1 year and 4 months	106,924
Cell 1D	Years 5 to 6	9 months	118,287
Zone 2	Years 6 to 9	2 years and 10 months	Not available
Zone 3	Years 9 to 10	1 year and 1 month	Not available

Note: The 3D surface areas of exposed slopes are given for information purposes only.

Progressive restoration

To optimize dust management during operations and reduce the risk of triggering AMD reactions, progressive restoration of the tailings storage facility will be carried out as soon as the first cell is full. WMG will be able to cover the final surfaces of the tailings storage facility with a low-permeability membrane within the anticipated timeframe of AMD initiation, estimated at 3 to 15 years. Covering the tailings surfaces will limit the infiltration of precipitation water and the diffusion of oxygen into the stockpile.

A review of restoration methods applicable to the Windfall tailings storage facility was carried out and is presented in QC-94. The methods best suited to the site's constraints are low-permeability covers and dry covers (which include capillary barrier covers). Given that the chosen method must enable relatively rapid recovery of tailings following completion of the zone/cell filling, a low-permeability cover using a geosynthetic membrane was selected by WMG, as specified in the restoration plan filed in March 2023. Low-permeability covers are a proven method of limiting the infiltration of water and oxygen that initiate the AMD reaction, and use materials frequently found in the mining industry. The type of geosynthetic material required to meet the operational and restoration constraints specific to the Windfall site is still being assessed. The next step is to begin preliminary engineering of the cover.

Environmental protection measures

WMG believes that operational control measures and progressive site remediation will prevent the initiation of acid mine drainage reactions. However, environmental protection measures are planned to limit the spread of contaminants to the natural environment, in compliance with current regulations (D019, EQA). These measures are described in the following paragraphs.

The tailings storage facility is designed with a high-density polyethylene (HDPE) geomembrane to limit seepage into the natural environment. A percolation study was carried out demonstrating that the maximum daily percolation rate does not exceed 3.3 L/m^2, in accordance with D019 (MDDEP, 2012). This study was supplied with Addendum 1 (Volume 2, Appendix 3-2) and updated in the response to QC-3. It shows that even if the liner were perforated, there would be no migration of contaminants to groundwater around the tailings storage facility.

Ponds and ditches lined with geomembranes will also collect contact water and convey it to the water treatment plant (WTP), which in all cases will remove metals before returning the water to the environment.

Monitoring water quality during operations will also serve to detect changes and verify the performance of the controls put in place by WMG.

Reference:

Windfall mine project – Environmental impact assessment: *Addendum 1 – Responses to MELCCFP recommendations and comments.* Produced for Osisko Mining Inc. Ref. No. CA0004658.7070

WSP. 2023. Windfall mine project. *Plan de restauration – Travaux d'exploitation (Restoration plan – Mining work).* Report prepared for Osisko Mining Inc. Ref. No. 201-11330-19. 95 pages and appendices.

International Network for Acid Prevention (INAP), 2014. *Global Acid Rock Drainage Guide (GARDGuide),* Chapters 4 and 6. Online: http://www.gardguide.com/index.php?title=Main_Page. Consulted in September 2024.

QC-96
Environmental Impact Assessment, Page 3-79, Volume 1a, Section 3.6 Residual materials management; Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 1, Section 1.3.5.1 Residual materials management:

Under D019, the proponent must separate the topsoil (organic fraction) and reserve this material for restoration work. The proponent must separate the overburden for restoration of the mine site.

Response 96:

The use of overburden in the vicinity of the infrastructure planned for the project has been considered in the materials balance for the construction phase. It is planned to segregate the overburden by separating organic matter (topsoil), which will be used for restoration work, from inorganic and competent unconsolidated deposits, which will be used for subsequent construction work.

The deposition plan for the overburden stockpile is currently being drawn up and will be submitted with the application for ministerial authorization. It will show, among other things, the deposition sectors separating organic and inorganic matter, as well as the area reserved for maturing compost and storing wood for its reclamation.

QC-97
Environmental Impact Assessment, Page 3-79, Volume 1a, Section 3.6
Residual materials management;
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 1, Section 1.3.5.1
Residual materials management:

In Section 1.3.5.1 of Addendum 1, it is mentioned that compost will be transferred to the overburden storage area. The proponent must specify whether the compost will be mixed with the overburden. It needs to provide more information on how overburden and compost stockpiles will be stored and separated.

Response 97:

The compost generated will be transported to the overburden stockpile in a dedicated sector and placed in windrows covered with a Compostex® type membrane until mature "P1" hygienized compost is obtained, in accordance with Appendix 1 of the guidelines for composting activities. Mature compost is used for site revegetation activities. There is no mixing of the planned materials with the existing overburden.

3 Social Issues

3.1 Land use

QC-98
Environmental Impact Assessment, Page 8-1, Volume 1b, Section 8
Existing conditions and project impacts on the human environment:

The directive states that “Indigenous communities with a potential interest in the project are the Cree community of Waswanipi, the Algonquin Anishinabeg community of Lac-Simon, and the Atikamekw community of Obedjiwan.” Although the project is subject to the environmental and social impact assessment and review procedure specific to the James Bay and Northern Québec Agreement, the proponent must provide comments received from all Indigenous communities concerned or communities that have affirmed to the government and the proponent that they have a claimed interest in the territory covered by the project. It must specify what mitigation measures, if any, it has put in place following receipt of these comments.

Response 98:

First, it is important to put the Directive in its original context. In preliminary information submitted in May 2017, Osisko Mining (then the project proponent) identified three communities with an interest in the Windfall project.

“The ore processing plant is located on trap lines belonging to the Lac Simon Algonquin Anishinabeg community. Three First Nations communities have been identified as having an interest in the project: the Cree community of Waswanipi, the Anishinabeg community of Lac Simon and the Atikamekw community of Opitciwan.”

Osisko Mining (2017) Windfall Lake Project—Preliminary Project Information (page 43)

At the time, the project was geographically divided into two parts: the Windfall deposit and the ore processing plant in Lebel-sur-Quévillon. This resulted in a significant increase in haulage along forestry roads, potentially impacting other Nations. Since the discovery of the Lynx deposit, all project infrastructure has been located near Windfall.

The interest of the Cree First Nation of Waswanipi (CFNW) in the project is obvious and stems from the various territorial agreements between the Government of Quebec and the Cree Nation Government. GMW works closely with this community, as demonstrated in detail in Chapter 4 of the EIA (vol. 1B). In addition, the response to QC-104 adds to the nature of the concerns and comments received since the submission of the EIA in March 2023.

Anishnabe Community of Lac Simon

As previously mentioned, since the project was redesigned, no components are located on beaver reserves belonging to the Anishnabe community of Lac-Simon. With a view to openness, GMW has maintained contact with the community; Table RQC-98-1 shows all the meetings that have taken place with the community. GMW has met with representatives 14 times since 2018.

Representatives of the Anishnabe community of Lac Simon told GMW that they have a vested interest in the project area. Their main concerns relate to their land claims versus the lands included in the James Bay and Northern Quebec Agreement. No environmental concerns were shared by the Lac-Simon community. Moreover, no land users in the vicinity of the Windfall site were introduced to GMW representatives, despite several requests to that effect. However, the community members are keen to maximize the economic spinoffs from GMW’s activities.

GMW is therefore continuing its discussions with the community to jointly agree on mechanisms to optimize the participation of Anishnabe businesses and workers. GMW continues to keep representatives of the Lac-Simon Anishnabe community informed and meets with them whenever a request is made to this effect.

Atikamekw Community of Opitciwan

Since 2018, GMW has met with community representatives at least once a year for a total of 12 meetings. These meetings have enabled representatives of the Atikamekw community of Opitciwan to assert their claimed interests in the territory comprising the Windfall project lands. They share the same grievances as the Anishnabe community of Lac-Simon on lands covered by the James Bay and Northern Quebec Agreement. It should also be noted that GMW has asked community representatives to meet with land users in the vicinity of the project. In April 2024, during a public presentation, the land user closest to the Windfall site was met, but the location of his traditional activities was well beyond the boundaries of the local social environment study area. He also expressed expectations in terms of economic benefits. Table RQC-98-2 shows all the meetings held with the Atikamekw community of Opitciwan.

Representatives of the Opitciwan Atikamekw community see good job opportunities for their members in the mining sector. They are interested in the training that could be available for First Nations to qualify for the jobs. The Mining Essentials program was presented to them. Feedback from the community is awaited, validating their interest in participating and organizing of such a cohort.

In all cases, GMW continues to work with representatives of the Opitciwan Atikamekw community to define mechanisms for integrating businesses and workers from the community. A networking meeting with the business community has been proposed but has yet to be organized.

Table RQC98-1 Meetings held with the Lac-Simon community

Date	Location	Representatives of the Anishnabe community of Lac-Simon	Meeting objective
2018-01-18	Lebel-sur-Quévillon	Lucien Wabanonik, Lac Simon Anishnabe Nation Council, Councillor Jean-Marie Papatie, Council of the Anishnabe Nation of Lac Simon, Councillor	Presentation of the Quévillon project and questions about the Rapides-des-Cèdres sector
2018-05-11	Lake Simon	Ronald Brazeau, Lac Simon Anishnabe Nation Council, Mining Sector Coordinator George Wabanonik, Lac Simon Anishnabe Nation Council,	Windfall and Quévillon project update presentation
2018-07-09	Lake Simon	Adrienne Jérôme, Council of the Anishnabe Nation of Lac Simon, Chief Lucien Wabanonik, Lac Simon Anishnabe Nation Council, Councillor Pamela Papatie, Lac Simon Anishnabe Nation Council, Councillor Jean-Marie Papatie, Council of the Anishnabe Nation of Lac Simon, Councillor	Introducing the Lac Simon community Presentation of Osisko Mining, the Windfall and Quévillon projects
2020-11-17	Lake Simon	Adrienne Jérôme, Council of the Anishnabe Nation of Lac Simon, Chief Lucien Wabanonik, Lac Simon Anishnabe Nation Council, Councillor Pamela Papatie, Lac Simon Anishnabe Nation Council, Councillor Randy Pien, Lac Simon Anishnabe Nation Council, Councillor Brian Dumont, Lac Simon Anishnabe Nation Council, Councillor Ghislain Nequado, Lac Simon Anishnabe Nation Council, Political attaché Geneviève Richard, First Nations of Quebec and Labrador Sustainable Development Institute, Legal Counsel Karl Masson, First Nations of Quebec and Labrador Sustainable Development Institute, Mining Sector Advisor	Windfall project update
2021-04-19	Lake Simon	Lucien Wabanonik, Lac Simon Anishnabe Nation Council, Councillor Pamela Papatie, Lac Simon Anishnabe Nation Council, Councillor Ghislain Nequado, Lac Simon Anishnabe Nation Council, Political attaché Ronald Brazeau, Acting Director of Natural Resources, Lac Simon Anishnabe Nation Geneviève Tremblay, Biologist, Lac Simon Anishnabe Nation Geneviève Richard, First Nations of Quebec and Labrador Sustainable Development Institute, Legal Counsel Karl Masson, First Nations of Quebec and Labrador Sustainable Development Institute, Mining Sector Advisor	Introducing Osisko Mining
2021-06-03	Videoconferencing	Adrienne Jérôme, Council of the Anishnabe Nation of Lac Simon, Chief	Discussion on the desire to continue building a relationship between Lac Simon and Osisko
2021-06-03	Phone	Adrienne Jérôme, Council of the Anishnabe Nation of Lac Simon, Chief	Discussion on the desire to continue building a relationship between Lac Simon and Osisko
2021-09-14	Lake Simon	Adrienne Jérôme, Council of the Anishnabe Nation of Lac Simon, Chief Lucien Wabanonik, Lac Simon Anishnabe Nation Council, Councillor Pamela Papatie, Lac Simon Anishnabe Nation Council, Councillor Ghislain Nequado, Lac Simon Anishnabe Nation Council, Political attaché Randy Pien, Lac Simon Anishnabe Nation Council, Councillor Brian Dumont, Lac Simon Anishnabe Nation Council, Councillor Andréeanne Laure, Biologist, Lac Simon Anishnabe Nation Geneviève Richard, First Nations of Quebec and Labrador Sustainable Development Institute, Legal Counsel Karl Masson, First Nations of Quebec and Labrador Sustainable Development Institute, Mining Sector Advisor	Progress of work and final estimate of resources
2021-10-18	Lake Simon	Lucien Wabanonik, Lac Simon Anishnabe Nation Council, Councillor Pamela Papatie, Lac Simon Anishnabe Nation Council, Councillor Randy Pien, Lac Simon Anishnabe Nation Council, Councillor Brian Dumont, Lac Simon Anishnabe Nation Council, Councillor Geneviève Richard, First Nations of Quebec and Labrador Sustainable Development Institute, Legal Counsel Karl Masson, First Nations of Quebec and Labrador Sustainable Development Institute, Mining Sector Advisor	Windfall project update

Table RQC98-1 (cont.) Meetings held with the Lac-Simon community

Date	Location	Representatives of the Anishnabe community of Lac-Simon	Meeting objective
2022-09-13	Lake Simon	Adrienne Jérôme, Council of the Anishnabe Nation of Lac Simon, Chief Pamela Papatie, Lac Simon Anishnabe Nation Council, Vice-Chief Lucien Wabanonik, Lac Simon Anishnabe Nation Council, Councillor Ghislain Nequado, Lac Simon Anishnabe Nation Council, Political attaché Jean-Marie Papatie, Council of the Anishnabe Nation of Lac Simon, Councillor and President of Assibi Industries Olivier Courtemanche, First Nations of Quebec and Labrador Sustainable Development Institute, Lawyer Karl Masson, First Nations of Quebec and Labrador Sustainable Development Institute, Mining Sector Advisor	Windfall project update
2023-05-11	Videoconferencing	Pamela Papatie, Lac Simon Anishnabe Nation Council, Chief Negotiator Adrienne Jérôme, Lac Simon Anishnabe Nation Council, Natural Resources Director	Quévillon project update Windfall Mining Group presentation Continued relationship between Osisko and the community
2023-11-21	Quebec	Lucien Wabanonik, Council of the Anishnabe Nation of Lac Simon, Chief Ghislain Néquado, Lac Simon Anishnabe Nation Council, Political attaché	Defining a mechanism to ensure community benefits Work planned for autumn 2023 on the Quévillon project
2023-12-04	Lac Simon and videoconferencing	Ronald Brazeau Assistant Manager Natural Resources Lac-Simon Rachel Pelletier, Environmental Analyst Lac-Simon (via Teams)	Exploration update for the Quévillon project Defining a mechanism to ensure community benefits
2024-08-19	Val-d’Or	Ronald Brazeau Assistant Manager Natural Resources Lac-Simon Rachel Pelletier, Environmental Analyst Lac-Simon (via Teams)	Exploration update for the Quévillon project

Table RQC98-2 Meetings held with the Opitciwan community

Date	Location	Opitciwan representatives	Meeting objectives
2017-05- 29	Opitciwan	Christian Awashish, Opitciwan Atikamekw Council, Chief Philippe Dubé, Opitciwan Atikamekw Council, Councillor Roger Chachai, Opitciwan Atikamekw Council, Councillor Sonia Chachai, Opitciwan Atikamekw Council, Councillor Louis-Michel Dubé, Territorial Resources Coordinator Yvon Racine, Opitciwan, Forestry Engineer	Introducing Osisko Mining and the Windfall Project
2017-11-27	Opitciwan	Christian Awashish, Opitciwan Atikamekw Council, Chief Philippe Dubé, Opitciwan Atikamekw Council, Councillor Roger Chachai, Opitciwan Atikamekw Council, Councillor Sonia Chachai, Opitciwan Atikamekw Council, Councillor Clément Clary, Opitciwan Atikamekw Council, Councillor Steven Dubé, Opitciwan, family member of lot 19 Louis-Michel Dubé, Opitciwan, Territorial Resources Coordinator Marie-Soleil Weizineau, Opitciwan, Environment Department Manager	Windfall follow-up meeting
2018-05-23	Opitciwan	Christian Awashish, Opitciwan Atikamekw Council, Chief Philippe Dubé, Opitciwan Atikamekw Council, Councillor Roger Chachai, Opitciwan Atikamekw Council, Councillor Sonia Chachai, Opitciwan Atikamekw Council, Councillor Jean-Claude Méquish, Opitciwan Atikamekw Council, Councillor Jules Chachai, Opitciwan, family of the territory Louis-Michel Dubé, Opitciwan, Territorial Resources Coordinator Olivier Courtemanche, First Nations of Quebec and Labrador Sustainable Development Institute Laurence Maher, First Nations of Quebec and Labrador Sustainable Development Institute Alain Bédard, First Nations of Quebec and Labrador Sustainable Development Institute	Windfall project update Discussions surrounding collaboration between Opitciwan and Osisko Mining
2019-05-21	Chibougamau	Christian Awashish, Opitciwan Atikamekw Council, Chief Philippe Dubé, Opitciwan Atikamekw Council, Councillor Roger Chachai, Opitciwan Atikamekw Council, Councillor Sonia Chachai, Opitciwan Atikamekw Council, Councillor Jean-Claude Méquish, Opitciwan Atikamekw Council, Councillor Clément Clary, Consultant Louis-Michel Dubé, Opitciwan, Territorial Resources Coordinator Olivier Courtemanche, First Nations of Quebec and Labrador Sustainable Development Institute Laurence Maher, First Nations of Quebec and Labrador Sustainable Development Institute Alain Bédard, First Nations of Quebec and Labrador Sustainable Development Institute Catherine Fortin, First Nations of Quebec and Labrador Sustainable Development Institute	Windfall project update

Table RQC98-2 (cont.) Meetings held with the Opitciwan community

Date	Location	Opitciwan representatives	Meeting objectives
2019-07-03	Windfall	Christian Awashish, Opitciwan Atikamekw Council, Chief Philippe Dubé, Opitciwan Atikamekw Council, Councillor Roger Chachai, Opitciwan Atikamekw Council, Councillor Sonia Chachai, Opitciwan Atikamekw Council, Councillor Jean-Claude Méquish, Opitciwan Atikamekw Council, Councillor Clément Clary, Consultant Laurence Maher, First Nations of Quebec and Labrador Sustainable Development Institute Alain Bédard, First Nations of Quebec and Labrador Sustainable Development Institute	Project update Windfall site visit
2020-11-23	Videoconferencing	Jean-Claude Méquish, Opitciwan Atikamekw Council, Chief Yvan-Rock Awashish, Opitciwan Atikamekw Council, Councillor Roger Chachai, Opitciwan Atikamekw Council, Councillor Louis-Michel Dubé, Opitciwan Atikamekw Council, Territorial Resources Coordinator Valentin Clary, Opitciwan Atikamekw Council, Territorial Resources	Windfall project update
2022-08-08	Videoconferencing	Jean-Claude Méquish, Opitciwan Atikamekw Council, Chief Yvan-Rock Awashish, Opitciwan Atikamekw Council, Councillor Roger Chachai, Opitciwan Atikamekw Council, Councillor Hélène Dubé, Opitciwan, legal advisor	Windfall project update
2023-06-02	Quebec	Yvan-Rock Awashish, Opitciwan Atikamekw Council, Councillor Roger Chachai, Opitciwan Atikamekw Council, Councillor Denis-Damée Fernand, Opitciwan Atikamekw Council, Councillor Carole Jean-Pierre, Opitciwan Atikamekw Council, Councillor Hélène Dubé, Opitciwan, legal advisor	Windfall project update Windfall Mining Group presentation
2024-03-13	Quebec	Hélène Dubé, Opitciwan, legal advisor Fernand Denis-Damée, Opitciwan Atikamekw Council, Councillor	History of relations with Opitciwan Opportunity follow-up for Mining Essentials Agreement with Bonterra Exploration work on the Phoenix and Urban Barry projects
2024-04-30	Opitciwan	Jean-Claude Mequish, Opitciwan Atikamekw Council, Chief Carole Jean-Pierre, Opitciwan Atikamekw Council, Councillor Yvan-Rock Awashish, Opitciwan Atikamekw Council, Councillor Martine Awashish, Opitciwan Atikamekw Council, Councillor Régina Chachai, Opitciwan Atikamekw Council, Councillor Billy Clary, Opitciwan Atikamekw Council, Councillor Cécile Mattawa, Opitciwan Atikamekw Council, Councillor Fernand Denis-Damée, Opitciwan Atikamekw Council, Councillor Helene Dubé, Opitciwan, legal advisor	Windfall project update Opportunity follow-up for Mining Essentials Board’s request for economic benefits
2024-04-30	Opitciwan	Public presentation	Windfall project update
2024-09-10	Trois- Rivières	Yvan-Rock Awashish, Opitciwan Atikamekw Council, Councillor Fernand Denis-Damée, Opitciwan Atikamekw Council, Councillor Roger Chachai, Opitciwan Atikamekw Council, Councillor Helene Dubé, Opitciwan, legal advisor	Opportunity follow-up Mining Essentials Introducing Gold Fields

QC-99
Environmental Impact Assessment, Page 8-59, Volume 1b, Section 8.4.3
Impacts on quality of life and well-being during the operations phase, and mitigation;
Environmental Impact Assessment, Volume 8, Appendix 12-2 Preliminary emergency measures plan:

The facilities and the mine could pose a physical hazard to land users who might venture into dangerous areas on foot or snowmobile. The proponent must explain what safety measures, agreements, or communications have been put in place to minimize these risks.

Response 99:

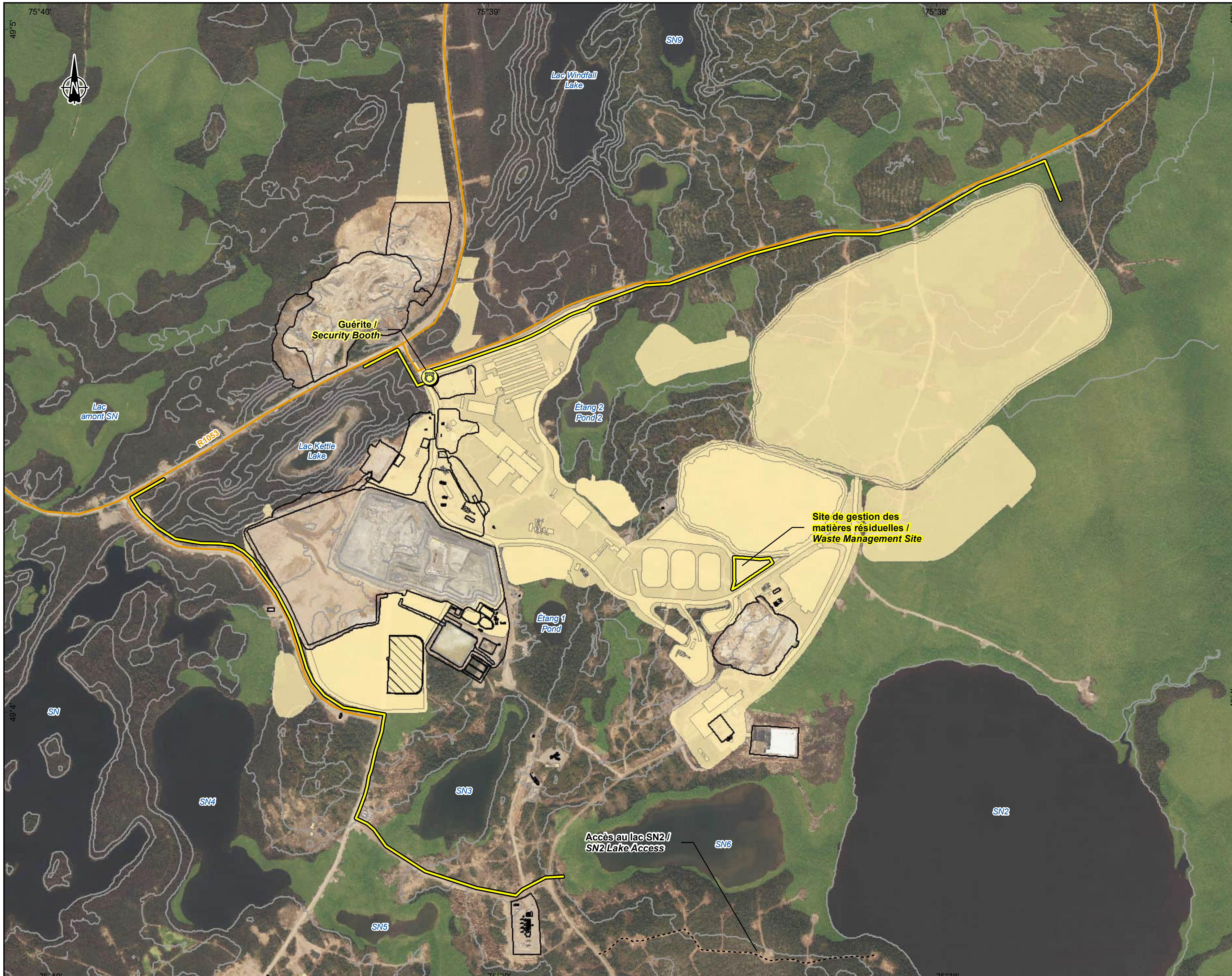
Map RQC99 shows that the fences and gatehouse will be strategically positioned close to the main road to discourage access to the site and enhance security. Natural obstacles, such as the topography in the Lac Kettle area, will also prevent users from reaching the industrial zone. In addition, wetlands and lakes to the east of the site naturally limit access to the site. It should be remembered that the wetland in this sector covers a very large area, ensuring that no individual will inadvertently venture into this area of the project.

It should be noted that the Cree community does not currently use the area except to fish at Lake SN2. To keep the lake accessible to users, WMG has kept an exploration road open to allow boat launching. This launching point is located at the other end of the lake, outside the project's area of operation and also outside the fences surrounding the proposed WMG facilities.

However, while recognizing the right to fish on Lake SN2, an exclusion zone for traditional activities is also planned, to be determined in conjunction with the community to ensure the safety of all users and WMG workers on the land.

Lastly, the two non-First Nations land users who used the local study area of the social environment sold their leases for vacationing purposes to WMG after their camps were destroyed by the forest fires of 2023. As a result, there are no hunting and fishing activities left in the area near the project's planned infrastructure.

On a final note, as this is a future gold mining and production site, additional safety measures will be taken to restrict access to the site. It goes without saying that these measures are required to protect the trade secrets associated with operating such a site.



Sécurité du site / *Site Security*

Guérite / *Security Booth*

Clôture / *Fence*

Composantes du projet / *Project Components*

Infrastructures actuelles / *Current Infrastructures*

Actuelle / *Current*

Qui sera retirée / *To be removed*

Infrastructures projetées / *Planned Infrastructures*

Proposé / *Planned*

Infrastructures connexes / *Related Infrastructures*

Chemin d'accès principal / *Main road*

Milieux humides et hydrique / *Hydrology and Wetlands*

Cours d'eau permanent / *Permanent watercourse*

Cours d'eau intermittent / *Intermittent watercourse*

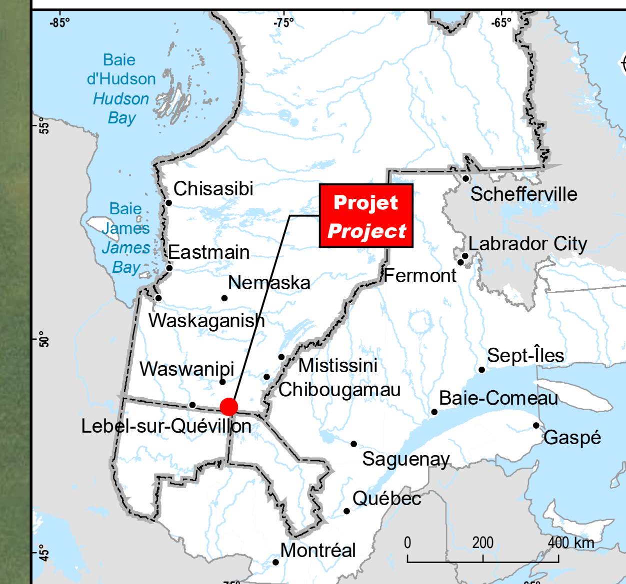
Cours d'eau souterrain / *Underground watercourse*

Canal / *Canal*

Milieux humides / *Wetlands*

Hypsométrie / *Hypsometry*

Courbe de niveau / *Contour line*



Projet minier Windfall - Réponses aux questions et commentaires - 1re série /
Windfall Mining Project - Answers to Questions and Comments - 1st Series

Projet minier Windfall, Eeyou Istchee Baie-James (Québec) /
Windfall Mining Project, Eeyou Istchee Baie-James (Quebec)

RQC99 / *RQC99*
Plan des clôtures, de la guérite et des endroits du sites non-cloturés et non-accessibles / *Plan of fences, the gatehouse and locations of unfenced and inaccessible sites*

Sources :
BDAT, 1/250 000, MRN Québec, 2002
BDTQ, 1/20 000, MRNF Québec, 2007
CanVec, 1/1 000 000, RNCan, 2020
CanVec Plus, 1/50 000, RNCan, 2015
MRNF, Orthophotographies aériennes de l'inventaire écoforestier, 2023
SDA, 1/20 000, MERN Québec, 2020
WSP, Infrastructures - CAWL-301-G-0602-AP, 2024-08

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2024-10-07

Préparée par : A. Poirier-Borduas
Dessinée par : J. Roy
Vérifiée par : M.-H. Brisson
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La précision des limites et des mesures montrées sur ce document ne doivent pas servir à des fins d'ingénierie ou de délimitation foncière. Aucune analyse foncière n'a été effectuée par un arpenteur-géomètre. /Boundary accuracy and measurements shown on this document are not to be used for engineering or land delineation purposes. No land analysis was carried out by a land surveyor.

QC-100
Environmental Impact Assessment, Page 4-32, Volume 1b, Section 4.4.3
Non-Indigenous community:

The proponent has indicated that current employees and workers at the Windfall mine site were met as part of the information and consultation process in February 2023. The proponent must specify whether current employees and workers (on site or teleworking) have voiced any concerns, comments, or suggestions about the project. Where applicable, the proponent must indicate the nature of the concerns expressed by workers and how they have been taken into account in the development of its project.

Response 100:

Between February 1 and 23, 2023, WMG organized 7 meetings in French and English (including one specifically for Cree workers) to reach as many employees as possible. Around 125 employees (more than 80% of our workforce) attended these meetings, which were held in person and virtually.

Main feedback received:

- Employees were very satisfied to be informed about the content of the feasibility studies and the environmental impact assessment, and requested copies of the presentations for future reference. They thanked the team for taking the time to consult them and to include them in the same way as the other stakeholders in the project.
- They had specific questions about the process associated with the ore treatment and tailings filtration plants.
- They asked questions about the inventory methods used to document the reference state, for example how the density of fish in lakes can be calculated.
- They commented on the wildlife inventory results and provided details of their own observations of wildlife on the site.
- They asked for examples of measures that had been taken to minimize environmental impacts (relocation of effluent, reduction of GHGs by adding the northern corridor, etc.).
- They asked about the amount of work required to finalize the studies necessary to obtain the authorizations to start the construction phase.
- They also expressed their commitment to the project.

Main concerns received:

- Some employees expressed their impatience to see the project get off the ground and asked whether there were any factors blocking approval of the project by the relevant authorities.
- Others expressed concern about their jobs in the event of delays in the authorization process.

Measures taken to address the concerns of WMG employees

WMG places its employees at the centre of all its decisions. This is why the company is proactively carrying out additional environmental assessments to speed up the process of obtaining permits as much as possible, to ensure that jobs can be maintained at the site. WMG regularly informs its employees of the progress of the environmental assessment process, including when deliverables are sent to the Environmental and Social Impact Review Committee (COMEX). Messages are sent by e-mail to the whole company.

Photo RQC100 Presentation of the project to Windfall site employees

QC-101
Environmental Impact Assessment, Page 8-28, Volume 1b, Section 8.3.1
Current conditions;
Environmental Impact Assessment, Page 4-33, Table 4-6, Volume 1b, Section 4.5.1
Indigenous communities;
Environmental Impact Assessment, Page 8-52, Volume 1b, Section 8.4.2
Impacts on quality of life and well-being during the construction phase, and mitigation:

The proponent has put forward a mining job-readiness training initiative for the Cree to teach them the work skills required to obtain employment in the sector. Given that the difficulty of integrating into the workplace has been identified as a potential quality-of-life issue for Indigenous workers, and that it was also one of the concerns expressed during the consultations for both the construction and operations phases, the proponent must put in place programs or measures to integrate Cree workers into the workplace and work teams. Where applicable, the proponent must describe the specific measures and programs envisaged. Should the programs and measures put in place fail to achieve the desired objectives, the proponent will be required to take corrective action.

Response 101:

WMG's objective of integrating First Nations employees begins with training. A summary of the measures currently in place or already planned is listed below.

Mining Essentials

Mining Essentials is a teaching program developed by the Mining Industry Human Resources Council (MiHR) and the Comité sectoriel de main-d'œuvre de l'industrie des mines (CSMO-Mines). It teaches the essential and work readiness skills which have been validated and deemed necessary by industry to gain employment in the mining sector. The training program is designed specifically for Indigenous peoples by incorporating teachings that are culturally relevant to this group. *Mining Essentials* was created to help companies and communities meet joint hiring and employment targets. This program also allows companies to benefit from a local, skilled, and safety-conscious workforce that also fosters economic development, resulting in healthier communities.

In practical terms, a cohort of 8 students, on a 7/7 schedule, spends 5 rotations at the site. The mornings consist of classroom learning, and the afternoons are devoted to cultural activities and hands-on observation of all the jobs on a mine site. In the case of the cohorts established at the Windfall site, the teacher was from a Cree community.

To date, 3 cohorts have been set up. The first cohort trained at Windfall from June 23 to August 25, 2022, and graduated on August 25, 2022. There were 5 graduates and WMG celebrated the end of the program by sharing a dinner in Waswanipi with their families. The second cohort started at the site on May 4, 2023, and ended in Waswanipi on July 6, 2023. For the record, the summer of 2023 was marked by forest fires all around the site and in several regions of Nord-du-Québec. Despite this, WMG managed to deliver the entire program and the graduation of the 6 students took place on July 18, 2023, in Waswanipi. The third cohort ran from March 7 to May 9, 2024, and graduation took place on May 14, 2024, with 6 graduates.

Windfall Discovery Program

The *Windfall Discovery Program* would be similar to what was done at Newmont's Eleonore site. WMG has initiated discussions with Minopro-Cree and Apatisiiwin Skills Development (ASD) to implement the project.
The program would be rolled out in two phases. WMG would first like to train workers from the Cree First Nation of Waswanipi. The program would include instruction and practice in the more skilled carpenter, mechanic, and

environmental labourer trades—all designed to increase the employability of Cree workers so that they can grow within the company. The second phase to be rolled out would be the "standard" discovery program. This would involve recruiting and training new employees to process the ore.

Diploma of Vocational Studies (DVS) – Machine Operations, Mineral and Metal Processing

WMG is also working in partnership with the Centre de formation professionnelle de la Baie-James (CFPBJ) to roll out a Cree cohort for the Machine Operations, Mineral and Metal Processing DVS. Among other things, this DVS teaches how to operate and maintain ore processing machinery. Although it cannot officially give a date, WMG would like to aim for autumn 2025.

Other opportunities

WMG is looking into the possibility of introducing appropriate training for Cree employees currently working on water treatment. The aim would be to support them in their transition to operator jobs at the planned water treatment plant, which will be more complex to operate.

WMG also plans to collaborate with Services Québec's Workplace Apprenticeship Program (PAMT), which offers the opportunity to obtain a skills certificate for the mining trade. This model, based on mentoring, can be spread over three (3) years, compared with the Diploma of Vocational Studies (DVS), which takes around six months, and could lead to Prior Learning Assessment and Recognition (PLAR) for a Diploma of Vocational Studies in Mineral Extraction, after a few years. This program would be established as part of a collaboration between the CFPBJ, the Institut nationale des mines (INMQ), and WMG.

Discussions have also been held with the Sabtuan Regional Vocational Training Centre (SRVTC) to look into the possibility of taking on trainees in the heavy equipment mechanics program in spring 2025. Internships will last 120 hours.

In addition to training and programs for First Nations, all new employees will be required to take the *Les Saisons des peuples* [Seasons of the Peoples] training course developed by the Université du Québec en Abitibi-Témiscamingue and CSMO-Mines. There are two versions: one for employees and the other for managers. Depending on the position, one of the two versions will be included in the induction and integration plan for new WMG employees.

Finally, it is planned to have a Cree liaison officer employed by WMG, ideally from the Waswanipi community, during the operations phase. This individual will be able to support the Cree workers and help them deal with the challenges associated with their integration at the Windfall site.

QC-102
Environmental Impact Assessment, Page 4-33, Table 4-6, Volume 1b, Section 4.5.1 Indigenous communities;
Environmental Impact Assessment, Page 3-111, Volume 1a, Section 3.11 Employment and training:

Among the concerns voiced by Indigenous participants during the information and consultation process, some stakeholders identified the retention of Cree workers as a potential problem for the project. Although this is a complex issue involving many factors, stakeholders and the proponent have identified career development opportunities as a measure to encourage the retention of Indigenous workers.

In this regard, the proponent mentions in Section 3.11 of the impact assessment that mechanisms for retaining Indigenous workers will be presented in an Impact and Benefits Agreement (IBA) with the Windfall project host communities currently being discussed. The proponent must present the status of the IBA process discussions, in particular on the mechanisms and measures planned to promote the retention of Indigenous workers.

Response 102:

The response to QC-101 outlines WMG's initiatives to prepare Cree workers for jobs at the site. This response addresses the first part of the question, i.e., the measures planned to promote job retention among First Nation workers. As far as the ERA is concerned, the content of discussions remains confidential, but WMG can confirm that the process is still underway. With the agreement of the parties, WMG is ready to communicate the purpose and objectives of the sections associated with the use of the ERA still being developed:

Purpose

The purpose of this document is to develop a skilled and productive workforce and to promote the employment, integration, advancement, and retention of Cree employees in all Project business units through the joint efforts and cooperation of the Parties.

Objectives

The objectives include that the Parties cooperate in the following areas:

a) the establishment of their respective training programs and initiatives and in the establishment of joint training programs and initiatives;

b) the implementation of initiatives facilitating the recruitment of Cree employees in all business units of the Project;

c) the establishment of Cree employment goals to promote Cree employment in the Project; and

d) initiatives to promote the integration, advancement, and retention of Cree employees in the Project.

Each of the stated objectives is or will be developed in the Final Agreement.

QC-103
Environmental Impact Assessment, Page 4-49, Volume 1b, Section 4.9
Subsequent information and consultation activities:

The proponent states that it will improve its information and consultation approach "by developing a formal mechanism for gathering and processing comments, concerns, or complaints." The proponent must provide more details on the complaints, comments, and concerns handling mechanism it intends to put in place (how it works, how it is received and processed, feedback provided to the stakeholders behind the complaint or comment, etc.). In addition, the proponent must indicate whether it intends to implement the system as soon as the construction phase begins, and whether it intends to maintain it during the operations and closure phases of its mining project.

Response 103:

WMG will set up a mechanism to handle complaints, comments, and concerns. This mechanism will be designed to ensure formal and transparent management of feedback from land users. Users will be able to submit their complaints, concerns, or comments in a number of ways, including by e-mail or by directly contacting staff at the Windfall site (by telephone, e-mail, or in person). When a complaint or comment is registered in the mechanism, the relevant parties will be notified. A resolution process will then be initiated, including analysis of the complaint or comment and formulation of an appropriate response. Each case will be tracked and documented to ensure transparency and efficient handling.

The user who has made a complaint or comment will be kept informed throughout the process about the measures taken and the resolutions reached. The mechanism will be operational from the start of the construction phase of the mining project, and will be fully integrated into the operations phase. Moreover, the mechanism will be maintained throughout the restoration phase. This continuity will ensure that stakeholder feedback is always appropriately considered and handled throughout the project lifecycle. In short, this mechanism will ensure proactive and effective management of complaints, strengthening communication and transparency between the proponent and land users.

Monitoring of the complaints management mechanism is detailed in the response to QC-137.

QC-104
Environmental Impact Assessment, Page 4-49, Volume 1b, Section 4.9
Subsequent information and consultation activities:

The proponent does not appear to have included a representative of the Ville de Lebel-sur-Quévillon, the Eeyou Istchee James Bay Regional Government (EIJBRG), or citizens in a follow-up committee. The proponent must present the communication initiatives it has maintained and intends to maintain with these parties. The proponent must provide details of how it will ensure that these parties are adequately represented on its future follow-up committee.

Response 104:

The response to the question was divided into four sub-sections, where activities with the town of Lebel-sur-Quévillon (mayor and town council) were presented, followed by those with the EIJBRG. Next, the citizen activities in Lebel-sur-Quévillon were described, and finally the details of the monitoring committee were presented. To date, WMG has carried out exploration activities at the Windfall site where impacts are local, occurring around the perimeter of the facilities. As a result, the land users who are closest to the site are those who have been targeted for follow-up meetings.

An environmental monitoring committee was set up jointly by CFNW and WMG. It is made up of representatives from CFNW and WMG. The purpose of the committee is to keep CFNW informed of data and statistics relating to the project’s environmental management, such as details of accidental spills, waste and hazardous materials management, and drinking water and effluent quality compliance. Exploration and construction activities are also discussed. The environmental monitoring committee, which also acts as a liaison committee, ensures ongoing consultations with the tallyman, responds to concerns, presents the results of sectoral EIA reports on the environment, and collects traditional knowledge and land use information.

To date, 42 environmental monitoring committee meetings have been held by videoconference or in person in Waswanipi, at the Windfall site, or in Montréal. Some of the committee’s recommendations have already been considered to improve the Windfall project. Examples can be found in Chapter 4 of the EIA (Vol. 1B).

Town of Lebel-sur-Quévillon

WMG and the town of Lebel-sur-Quévillon signed a collaboration agreement in 2017, creating a de facto Collaboration Committee. Its aim is to ensure transparency and effective communication with the town, to foster the social acceptance of the project, and to maximize socio-economic benefits for the town, all in a spirit of partnership.

Since 2019, a representative of the Administration régionale Baie-James (ARBJ) has been attending committee meetings. In August 2021, the town of Lebel-sur-Quévillon passed a resolution confirming its support for the Windfall project. Since 2017, 14 meetings of the Collaboration Committee have been held by videoconference or in person. The most recent meeting was held in Lebel-sur-Quévillon in May 2024.

Table RQC104-1 List of Collaboration Committee meetings since 2017

Date	Representatives
2017-08-14	Alain Poirier, Mayor, Town of Lebel-sur-Quévillon
	Luce Paradis, Director General and Town Clerk, Town of Lebel-sur-Quévillon
	François C. Gibeault, Director of Urban Planning and Assistant Director General, Town of Lebel-sur-Quévillon
	Chantal Plante, Director, Société de développement économique de Lebel-sur-Quévillon
2017-10-02	Alain Poirier, Mayor, Town of Lebel-sur-Quévillon
	Luce Paradis, Director General and Town Clerk, Town of Lebel-sur-Quévillon
	François C. Gibeault, Director of Urban Planning and Assistant Director General, Town of Lebel-sur-Quévillon
	Chantal Plante, Director, Société de développement économique de Lebel-sur-Quévillon
2018-02-28	Alain Poirier, Mayor, Town of Lebel-sur-Quévillon
	Luce Paradis, Director General and Town Clerk, Town of Lebel-sur-Quévillon
	François C. Gibeault, Director of Urban Planning and Assistant Director General, Town of Lebel-sur-Quévillon
	Chantal Plante, Director, Société de développement économique de Lebel-sur-Quévillon
	Jacques Trudel, Director of Public Works and Urban Planning, Town of Lebel-sur-Quévillon
	Johanne Paradis, Director of Recreation & Culture, Town of Lebel-sur-Quévillon
2019-04-11	Alain Poirier, Mayor, Town of Lebel-sur-Quévillon
	Luce Paradis, Director General and Town Clerk, Town of Lebel-sur-Quévillon
	Anik Racicot, Director, Economic Development of Lebel-sur-Quévillon

Date	Representatives
	Jacques Trudel, Director of Public Works and Urban Planning, Town of Lebel-sur-Quévillon
	Marie-Claude Brousseau, Director General, ARBJ
2019-12-10	Alain Poirier, Mayor, Town of Lebel-sur-Quévillon
	Luce Paradis, Director General and Town Clerk, Town of Lebel-sur-Quévillon
	Anik Racicot, Director, Economic Development of Lebel-sur-Quévillon
	Jacques Trudel, Director of Public Works and Urban Planning, Town of Lebel-sur-Quévillon
	Marie-Claude Brousseau, Director General, ARBJ
2020-09-09	Alain Poirier, Mayor, Town of Lebel-sur-Quévillon
	Anik Racicot, Director General and Town Clerk, Town of Lebel-sur-Quévillon
	Catherine Lagacé, Director, Economic Development of Lebel-sur-Quévillon
	Annie Payer, Legal Affairs Coordinator, ARBJ
2021-01-19	Alain Poirier, Mayor, Town of Lebel-sur-Quévillon;
	Anik Racicot, Director General and Town Clerk, Town of Lebel-sur-Quévillon
	Catherine Lagacé, Director, Economic Development of Lebel-sur-Quévillon
	Jacques Trudel, Director of Public Works and Urban Planning, Town of Lebel-sur-Quévillon
	Marie-Claude Brousseau, Director General, ARBJ
2021-04-14	Catherine Lagacé, Director, Economic Development of Lebel-sur-Quévillon
2022-01-25	Guy Lafrenière, Mayor, Town of Lebel-sur-Quévillon
	Anik Racicot, Director General and Town Clerk, Town of Lebel-sur-Quévillon
	Catherine Lagacé, Director, Economic Development of Lebel-sur-Quévillon
	Marie-Claude Brousseau, Director General, ARBJ
2022-09-16	Guy Lafrenière, Mayor, Town of Lebel-sur-Quévillon
	Denis Lemoyne, Councillor, Town of Lebel-sur-Quévillon
	Violaine Audet, Councillor, Town of Lebel-sur-Quévillon
	Jacques Trudel, Director of Public Works, Town of Lebel-sur-Quévillon
	Michael Sandapen, Acting Director, Economic Development Department
	Stéphane McKenzie, Société du Plan Nord Marketing Office
2023-02-01	Guy Lafrenière, Mayor, Town of Lebel-sur-Quévillon
	Anik Racicot, Director General, Town of Lebel-sur-Quévillon;

Date	Representatives
	Michael Sandapen, Acting Director, Economic Development Department
	Marie-Claude Brousseau, Director General, ARBJ
2023-07-19	Guy Lafrenière, Mayor, Town of Lebel-sur-Quévillon
	Jacques Trudel, Public Works
	Michel Simard, Assistant Director
	Mike Sandapen, Economic Development Director
	Marie-Claude Brousseau, Director General, James Bay
2023-12-20	Guy Lafrenière, Mayor, Lebel-sur-Quévillon
	Anik Racicot, DG, Lebel-sur-Quévillon
2024-05-15	Guy Lafrenière, Mayor, Town of Lebel-sur-Quévillon
	Anik Racicot, Director General, Town of Lebel-sur-Quévillon
	Michael Sandapen, Director, Economic Development Department
	Marie-Claude Brousseau, Director General, ARBJ

In addition to the meetings of the collaboration committee and various meetings with town representatives, WMG participated in various public activities organized by the town or jointly:

- Mining Week in April 2016, which included meetings with entrepreneurs, a public presentation at the local theatre, and an information booth;
- Mining Week in April 2017, which included meetings with entrepreneurs, a public presentation at the local theatre, and an information booth;
- Mayor's visit to the Windfall site in August 2017;
- open house at Lebel-sur-Quévillon in October 2017;
- open house at Lebel-sur-Quévillon in February 2018;
- Mining Week in April 2018, which included meetings with entrepreneurs, a public presentation at the local theatre, and an information booth;
- presentation at the Société d'aide au développement des collectivités (SADC) annual meeting in September 2019;
- public information sessions in September 2022, including a meeting with entrepreneurs and a public presentation at the community centre;
- visit to the Windfall site by town representatives in September 2022;
- networking day, organized by Société du Plan Nord in November 2022, which included a public presentation at the local theatre and scheduled business meetings;
- open house in January 2023.

In addition to these meetings, WMG has made follow-up presentations to the Town Council on 14 occasions since 2016.

Eeyou Istchee James Bay Regional Government

At least once a year, WMG follows up on its exploration activities with EIJBRG representatives. Depending on the issues at stake and specific situations, additional contacts are made. To this end, between 2017 and 2024, ten letters were sent to inform EIJBRG of project updates.

In addition, when the new authorization process for impact work was being set up, WMG met with an EIJBRG representative to agree on an efficient and straightforward consultation process for both parties.

Citizen activities in Lebel-sur-Quévillon

Several information and consultation meetings were held with the residents of Lebel-sur-Quévillon.

Open house activities were held in October 2017, February 2018, and January 2023 in Lebel-sur-Quévillon to inform the local residents about the project description and project alternatives, answer questions, and document concerns raised to identify mitigation measures and facilitate coexistence in the area.

The three open houses were attended by between 50 and 80 people. Several local service providers and job seekers also took part in the Lebel-sur-Quévillon event. Reactions were overwhelmingly in favour of the project, as evidenced by the comment forms and oral statements made by participants.

In addition to the activities listed above, networking activities with local businesses were organized in September 2022 and March 2023 to present them with a project update and explain WMG's needs. These activities brought together more than twenty entrepreneurs.

Activities since March 2023

Since the last publication of consultation activities in the EIA, and pending the establishment of the monitoring committee, WMG has continued to keep the residents of Quévillon, Jamesian stakeholders, and the Cree First Nation of Waswanipi (CFNW) community informed of the project's progress.

In April 2023, WMG met with representatives of the Town of Chapais and also participated in a networking event with local businesses. A similar activity also took place in the CFNW. As a result of the forest fires of 2023, community activities slowed considerably during the summer. In the fall, activities resumed with a few meetings focusing on WMG's exploration activities.

In the winter of 2024, a regional visit enabled WMG to meet with representatives from Matagami, Senneterre, and EIJBRG. Finally, since March 2024, WMG has been organizing information sessions on various topics associated with the mine project. For these sessions, WMG travels to Lebel-sur-Quévillon and the CFNW. WMG meets with elected representatives, as well as with various stakeholders concerned by the issue in question, and then holds a public information session on the subject, open to all. The content of the public presentations is available in Appendix RQC104.

Planned monitoring committee

As stipulated in the Mining Act, WMG will set up a monitoring committee within 30 days of issuing the mining lease. WMG will ensure that, in addition to company representatives, the members selected reflect the demographic profile of the local and regional population. At present, since WMG does not have a mining lease, the company has no formal obligation to set up a monitoring committee under the Mining Act, but this has not prevented it from putting forward several mechanisms. The details presented in Chapter 4 of the EIA have been repeated above (Section 4.1, Volume 1B).

At first glance, the future monitoring committee will be made up of a WMG representative, a representative of the Town of Lebel-sur-Quévillon, and representatives of local or regional players (such as EIJBRG). WMG will ensure that the monitoring committee membership is as representative as possible, so as to best reflect the expectations and concerns of the local community. A representative of the Waswanipi community will also be invited to sit on the committee, but it is possible that the community will consider the mechanisms put forward under the IBA preferable to participation on the monitoring committee.

The monitoring committee will include institutional members appointed by their respective bodies, citizens, and WMG representatives. The member representing citizens will be appointed after consultation with the institutional members. They will need to identify the socio-economic groups, land users, environmental organizations, and community organizations affected by the project, as well as the number of members from these groups.

The method of recruiting other committee members and the recruitment process will be subject to a structured public selection process; for example, issuing a public notice, a specially mandated selection committee, confirmation of interests and eligibility interviews, recommendations and, finally, approval by the committee.

Once the committee has been set up, the members will establish a number of elements, such as the committee's rules governing operations, ethics, independence of members and confidentiality, mandate and objectives, expected results, members' responsibilities towards the committee and, where applicable, towards the organizations they represent, external communications and feedback procedures, and the committee's name.

The mandate will be defined in consultation with all members, and should reflect the issues, expectations, concerns, challenges, and questions raised by the local community, as well as the project's maturity level. The monitoring committee's mandate should be sufficiently broad to give it the room to maneuver and make changes where necessary throughout the course of its activities, but it should also be sufficiently well defined to foster a common understanding of its scope and limits among its members.

Table RQC104-2 List of activities organized since March 2023

Date	Type of activity	Stakeholders	Representatives	Objectives
2023-04-18	Presentation meeting	Town of Chapais	Isabelle Lessard, Mayor Mélanie Gagné, Director General	Project update and presentation of the procurement process
2023-04-18	Economic networking breakfast	Chapais businesses	Local businesses Isabelle Lessard, Mayor, Chapais Mélanie Gagné, Director General, Chapais Stéphanie Houde, Director of Economic Development, Chapais Christian Sasseville, Regional Geologist, Direction régionale du Nord-du-Québec, MRNF Pascale Masson-Trottier, Director General, FaunENord	Presentation of the project to local entrepreneurs and presentation of the procurement process
2023-04-18	Economic networking lunch	CFNW	Local entrepreneurs (5) Tallyman of W24D Joshua Blacksmith, Mining Coordinator CFNW	Presentation of the project to local entrepreneurs and presentation of the procurement process
2023-10-18	Information session	Town of Chapais	Mélanie Gagné, Director General Stéphanie Houle, Economic Development Department	Project update
2023-10-18	Information session	Town of Chibougamau	Manon Cyr, Mayor Louis Lalancette, Director General	Project update
2024-01-31	Information session	Town of Lebel-sur-Quévillon	Guy Lafrenière, Mayor Anik Racicot, Director General	Working meeting
2024-04-23	Public information session	CFNW	Allan Oblin, CFNW Economic Development	Project update, economic benefits and jobs
2024-04-23	Information session	The Waswanipi community	Waswanipi community members	Project update, economic benefits and jobs
2024-04-24	Information session	Town of Lebel-sur-Quévillon	Anik Racicot, Director General-Treasurer Jacques Trudel, Director of Public Works, Urban Planning, and the Airport Denis Lemoyne, Municipal Councillor, ext. 1 Charles Goyer, Municipal Councillor, ext. 4 Violaine Audet, Municipal Councillor, ext. 6	Project update, economic benefits and jobs
2024-04-24	Public information session	Town of Lebel-sur-Quévillon	Michael Sandapen, Economic Development Director	Project update, economic benefits and jobs

Date	Type of activity	Stakeholders	Representatives	Objectives
2024-04-24	Information session	Residents of Lebel-sur-Quévillon	Citizens	Project update, economic benefits and jobs
2024-05-14	Information session	CFNW	Chief Irene Neeposh, CFNW Jarred Benac, Mining Coordinator, CFNW	Presentation on waste management
2024-05-14	Public information session	Waswanipi community	Waswanipi community members	Presentation on waste management
2024-05-15	Information session	Town of Lebel-sur-Quévillon	Guy Lafrenière, Mayor Anick Racicot, Director General Michael Sandapen, Director, Economic Development Denis Lemoyne, Municipal Councillor, ext. 1 Charles Goyer, Municipal Councillor, ext. 4 Violaine Audet, Municipal Councillor, ext. 6	Presentation on waste management
2024-05-15	Public information session	Residents of Lebel-sur-Quévillon	Citizens	Presentation on waste management
2024-06-19	Information session	CFNW	Chief Irene Neeposh, CFNW Jarred Benac, Mining Coordinator, CFNW	Water management presentation
2024-06-19	Public information session	The Community of Waswanipi	Waswanipi community members	Water management presentation
2024-06-18	Information session	Town of Lebel-sur-Quévillon	Guy Lafrenière, Mayor; Anick Racicot, Director General Michael Sandapen, Economic Development Director Denis Lemoyne, Municipal Councillor, ext. 1 Charles Goyer, Municipal Councillor, ext. 4 Marc Blain, Municipal Councillor, ext. 5	Water management presentation
2024-06-18	Public information session	Residents of Lebel-sur-Quévillon	Citizens	Water management presentation
2024-08-20	Information session	CFNW	Jarred Benac, Mining Coordinator, CFNW; Danny Happyjack, Community Liaison Advisor, Windfall Mining Group; Jacob Ottereyes, Director of Economic Development, CFNW; Alan Oblin, Economic Development Deputy, CFNW	Project update and presentation on archaeology and land use

Date	Type of activity	Stakeholders	Representatives	Objectives
2024-08-20	Public information session	The Community of Waswanipi	Waswanipi community members	Project update and presentation on archaeology and land use
2024-08-21	Information session	Town of Lebel-sur-Quévillon	Guy Lafrenière, Mayor Anick Racicot, Director General Michael Sandapen, Economic Development Director Denis Lemoyne, Municipal Councillor, ext. 1 Charles Goyer, Municipal Councillor, ext. 4 Marc Blain, Municipal Councillor, ext. 5 Pier-Yves Baril, Municipal Councillor, ext. 3	Project update and presentation on archaeology and land use
2024-08-21	Public information session	Residents of Lebel-sur-Quévillon	Citizens	Project update and presentation on archaeology and land use
2024-09-24	Information session	The Community of Waswanipi	Waswanipi community members	Project update and wildlife and plant presentation
2024-09-25	Information session	Town of Lebel-sur-Quévillon	Guy Lafrenière, Mayor Anick Racicot, Director General Michael Sandapen, Director, Economic Development Denis Lemoyne, Municipal Councillor, ext. 1 Charles Goyer, Municipal Councillor, ext. 4 Marc Blain, Municipal Councillor, ext. 5 Pier-Yves Baril, Municipal Councillor, ext. 3	Project update and wildlife and plant presentation
2024-09-25	Public information session	Residents of Lebel-sur-Quévillon	Citizens and workers of the WMG core library	Project update and wildlife and plant presentation

QC-105
Environmental Impact Assessment, Page 3-111, Volume 1a, Section 3.11
Employment and training;
Environmental Impact Assessment, Page 8-56, Volume 1b, Section 8.4.2
Impacts on quality of life and well-being during the construction phase, and mitigation measures;
Environmental Impact Assessment, Page 8-59, Volume 1b, Section 8.4.3
Impacts on quality of life and well-being during the operations phase, and mitigation measures:

During the consultations conducted by the proponent, some Cree stakeholders identified racism in the workplace as a major concern. The proponent has explained in the impact assessment that, "Some stakeholders working or having worked at the Windfall site mentioned that this issue was real, despite the efforts of the mine to raise awareness of cultural diversity." In response to these concerns, the proponent states that it will put in place various mitigation measures, including a mechanism for handling harassment complaints, the employment of a Cree liaison officer, mechanisms for raising awareness of Cree culture during induction sessions for new employees, and the holding of cultural activities at the site.

In addition, the proponent has mentioned in Section 3.11 of the impact assessment that it plans to include, as part of the Impact and Benefits Agreement (IBA), training on intercultural issues for "certain groups of employees." On Page 8-59, it states that Cree cultural training activities will be offered to supervisors. Regardless of what will be included in the IBA, the proponent must provide more details on the Cree cultural awareness mechanisms that will be put in place. It should indicate how it intends to structure this awareness-raising process in a more formal way. The proponent must submit its internal policies relating to quality of life at the mine, including the harassment policy, and describe how it intends to apply them. The proponent must present the follow-up that will be carried out on the implementation of these measures. If the follow-up carried out does not allow the objectives to be achieved, it will have to propose additional measures and adapt its policies accordingly.

Response 105:

As mentioned in the environmental impact assessment, various initiatives will be put forward to raise awareness of Cree culture among workers. One of the mechanisms currently in place to raise awareness of Cree culture is the Seasons of the Peoples training course, which is compulsory for all site supervisors. When new project employees are hired for operations, as mentioned in question QC-101, all employees will follow suit. A Sabtuan-style Cree cultural space is also planned for the workers' camp. This space will provide an opportunity for intercultural exchange and will also be a meeting place for Cree workers on the site.

Activities will also be held to celebrate Cree culture. WMG is currently planning a celebration of Indigenous Peoples on June 21. As part of the project, it is expected that such events will be maintained, enhanced, and adjusted to continue raising awareness of Cree culture among non-Indigenous workers, but also to enable Cree workers to get together and see everyday expressions of their culture.

WMG also has a series of posters on the bulletin boards in its offices and at the camp that present various aspects of Cree culture, including the seasons, hunting seasons, language, the community, tools, elders, wildlife, *Chiwetau,* traditional medicine, and valued plants. Examples of posters installed at the Windfall site are provided in Appendix RQC105-1. WMG's Cree liaison officer also organized a few meetings to teach Cree vocabulary to interested workers. The Teams video sessions are available to all workers who might not be able to attend, and the words being taught are recorded, so that by listening to them one can become familiar with their intonation.

Other measures will be developed jointly with the Cree parties as part of the ERA and will be rolled out according to the timetable set out in the agreement.

As for the complaints process, WMG's Policy on the Prevention of Harassment and the Handling of Complaints (RH-PLT-015 – Appendix RQC105-2) is very clear. When a complaint is found to be admissible, WMG mandates a neutral, external party to carry out an impartial investigation. When the complainant or the subject of the complaint (or both) is from a Cree community, WMG awards the mandate to a third-party Indigenous company, recognized by the federal government, which helps mitigate any cultural bias that may arise and ensures that WMG is provided with a fair and neutral investigation. This external party also brings a cultural awareness and cultural safety component to the investigation process, making it seamless and fair. WMG has a Code of Ethics (RH-PLT-003 – Appendix RQC105-3), the Policy on the Prevention of Harassment and the Handling of Complaints, and the Human Rights Policy (RH-PLT-013 – Appendix RQC105-4) to provide a framework for the rules of conduct at its facilities. There is zero tolerance of harassment, incivility, or racism at WMG facilities. As soon as WMG becomes aware of a situation, an investigation is launched and the necessary measures are implemented to put an end to it.
For example, these measures include changing an employee's working hours or prohibiting access to the site for the duration of the investigation. As each case is unique, a separate analysis is carried out each time.

A training course on preventing harassment through civility in the workplace—offered by the APSM, a joint sector-based association on occupational health and safety in the mining industry—will be compulsory for all employees as of January 2025.

A short presentation on harassment and incivility in the workplace was put together for all supervisors to present as an important reminder (of zero tolerance) at the start of shift meetings. The plan is to present it to all employees every 6 months.

QC-106
Environmental Impact Assessment, Page 3-111, Volume 1a,
Section Employment and training;
Environmental Impact Assessment, Page 4-34, Table 4-6, Volume 1b, Section 4.5.1
Indigenous communities;
Environmental Impact Assessment, Page 8-53, Volume 1b, Section 8.4.2
Impacts on quality of life and well-being during the construction phase, and mitigation:

Various players and stakeholders have expressed concerns about the health and safety of women working at the mining site as part of the project. The proponent must specify what specific mechanisms and measures are envisaged to ensure the safety of workers at the mining project site, particularly for the prevention of harassment situations.

Response 106:

In terms of accommodation, each woman currently has a female roommate at the exploration camp. This is important because the washroom is shared by two bedrooms. Women's changing rooms are also available on site. Emergency radios are located on each floor of the camp wings. Calls from anywhere in the camp can also be made via the private LTE network.

WMG has also made plans for women's changing rooms at the processing plant, and the rooms in the mining camp will be equipped with individual washrooms.

This year, WMG rolled out the *Place des femmes dans le secteur minier* training course (the place of women in the mining sector), in partnership with CSMO-Mines. WMG's first objective was to train all managers.

As mentioned above, all new employees will be required to take the Seasons of the People training course. This will be an integral part of the induction and integration plan for new Windfall employees. Finally, every year, all employees will take the APSM's training course on preventing harassment through civility in the workplace. A shortened version is provided to supervisors for distribution at the start of shift meetings to raise awareness among all our employees and contractors about incivility and harassment, both towards women and towards different cultures and religions. WMG also insists on the notion of zero tolerance.

QC-107
Environmental Impact Assessment, Page 8-56, Volume 1b, Section 8.4.2
Impacts on quality of life and well-being during the construction phase, and mitigation measures; Environmental Impact Assessment, Page 8-60, Volume 1b, Section 8.4.3
Impacts on quality of life and well-being during the operations phase and mitigation measures:

The proponent has mentioned that it intends to maintain the "psychosocial support program to assist Cree and non-Cree workers in reconciling work and family" already in place, for both the construction and operations phases. The proponent must provide more details on the nature of this program (summary description, program outline, operation, collaboration with health institutions, etc.).

Response 107:

WMG is currently working with a partner (Global Watch) to implement the psychosocial risk (PSR) management program. WMG will first carry out a diagnosis/inventory of PSR for all its employees. Particular care was taken to select a partner with experience working with First Nations, specifically the Cree, to assist WMG in its assessment. An action plan will then be rolled out, followed by a PSR prevention program. A working committee will then be set up. This committee will support the organization's commitment and act as a partner in implementing the approach to preventing psychological health problems in the workplace. The members of the committee will have to meet regularly to ensure rigorous monitoring of the process.

QC-108
Environmental Impact Assessment, Page 4-5, Volume 1b, Section 4.1.5
Donations and sponsorships:

The proponent mentions having subsidized a research study conducted by the Cree Board of Health and Social Services of James Bay (CBHSSJB) on the impacts of commuting on workers, their families, and Cree communities. According to the proponent, a report containing the results of this study was expected in spring 2023. The proponent is encouraged to provide the full report as well as an interpretation of the results of this study and describe how the results will be considered in the project. It must also specify whether mitigation measures have been put in place to limit the anticipated impacts.

Response 108:

The original version of the report produced by the CBHSSJB is provided in Appendix RQC108. The document summary appears in the following paragraphs.

“*The aim of this project was to better understand the social, health and mental wellness impacts experienced by Cree FIFO workers and their families. In addition, the study attempts to better understand the positive and negative impacts on the community and to identify initiatives or recommendations that can be channeled through services or programs to support commuters and their families.*

The results of the present study are based on the experiences and perceptions of FIFO workers, their spouses and community members at large. The methodology applied a snowball recruitment method and included:

1. *Individual interviews with 18 FIFO workers and 2 spouses.*

2. *Short online surveys targeting workers (n=18), their spouses (n=2) and community members at large (n=28).*

3. *Focus groups with knowledge holders and elders (n=12).*

4. *Community discussions in 5 communities (n=72)*

The interviews conducted shed light on the challenges faced by mine workers, including mental strain, separation from loved ones, and disruptions to their daily routines. Additionally, the participants talked about issues of equitable and fair treatment of employees and emphasized the need for support programs and resources to assist workers both at the job site and in the community. Various other topics arise, such as housing shortages, community development, language skills, cultural identity, and the significance of self-sufficiency and sustainable planning for the Cree Nation.

Employment benefits: Mining and other resource development employers offer benefits such as good wages, free food and lodging, and favorable working hours. These factors positively impacted workers' ability to support their family and was identified as the main factor in seeking FIFO employment. Recognizing and promoting such positive work experiences can help attract and retain workers in the future.

Language Skills and Job Opportunities: Cree individuals who do not speak French may face difficulties in the mining industry. It is encouraged to provide language support and ensure fair employment opportunities for all workers.

Work-life balance: The interviewees discussed the challenges of working in the mining industry, being away from home, and the impact it can have on relationships and family dynamics. Most workers underlined increased levels of stress and anxiety about being away from their family, as well as a certain emotional disconnect needed to be able to perform in a dangerous and demanding working environment.

Personal growth and healing: The interviewees reflect on their personal journey of self-improvement, including the importance of opening up, seeking counseling, and letting go of past traumas. They underline the importance of having support from family, friends, and the community during difficult times, as well as the potential benefits of programs and services that cater to the needs of mine workers and their families.

Community involvement and volunteering: FIFO workers underlined their willingness to contribute to their community and their desire to use their education and skills to make a positive impact. They emphasize the value of self-education, reading, and acquiring new skills, highlighting their own experiences in learning languages and technology.

Equitable employment: There seems to be a lack of discussion or awareness about the stereotyping that Cree individuals face in mining camps. This issue should be acknowledged and addressed to ensure equal treatment and opportunities for all workers.

Housing and Population Growth: The Cree Nation is experiencing population growth, but the construction of new houses is not keeping up with the demand. Overcrowding and limited housing options are becoming significant challenges. Efforts should be made to address the shortage of housing and ensure that infrastructure development keeps pace with population growth.

Cultural identity: Participants expresses a strong connection to the land, engaging in activities such as fishing, hunting, and trapping for personal enjoyment and sustenance, as well as to address the stress and wellness challenges of their work. They also discuss the importance of passing down traditional practices to future generations.

Identity and Environmental Conservation: There is concern about the increasing development and destruction of natural resources. Balancing economic development with environmental conservation and protecting Cree cultural heritage should be a priority."

With regard to the other highlights of the study, several of the detailed topics do not fall within WMG's areas of expertise (e.g., the housing shortage). However, cultural elements and working conditions are relevant to the Windfall project. Overall, the study concluded that 53% of the workers who took part in the survey described their work experience as positive, while 46% were neutral. None of the workers described their work experience as negative. Also, 46% of workers indicated that working long stretches at a time had no impact on them, their families, or their communities, while 16% felt there was little or a slight impact, and 38% felt there was some or an extreme impact. Of those workers who said that work had an impact on them, their families, or their communities, 31% said it was positive (compared to 23% negative).

Overall, the community members who took part in the survey were neutral about their peers working in a mine. Around 32% felt very positive, while 21% felt that working in a mine was somewhat negative. A very small proportion (4%) was either very negative or somewhat positive.

Generally speaking, the community members and workers encountered had different perceptions of the time spent in the community. Community members underestimated the amount of time rotational workers spend in the community. While 42% of rotational workers said they spend most of their time in the community, only 11% of community members believed this to be the case. The study therefore suggests that it would be worthwhile raising community awareness of the local contribution of rotational workers.

Therefore, the measures to promote the integration of workers and the processes put in place to raise awareness of Cree culture detailed in the previous questions are deemed sufficient.

QC-109
Environmental Impact Assessment, Page 4-34, Table 4-6, Volume 1b, Section 4.5.1
Indigenous communities;
Environmental Impact Assessment, Page 4-39, Table 4-7, Volume 1b, Section 4.5.2
Non-Indigenous community:

The concerns and suggestions gathered by the proponent from various land users (land users, vacationers, outfitters without exclusive rights, etc.) surrounding the project area include possible sources of noise and light pollution likely to have an impact on the practice of activities, the peace and quiet of the site, and the quality of rest periods for site workers.

In addition, some of the activities of land users have changed as a result of exploration activities at the mine site. Considering that project's mining operations will take place day and night, the proponent must specify the mitigation measures it plans to put in place to limit the impacts of its project and the nuisances for the various land users and workers at the mine site.

Response 109:

Workers at the camp

According to the noise modelling carried out for the project, the estimated noise level outside the workers' camp would be around 50 dB (see Map 12 of the Noise Study - Addendum 1, Vol. 1, Appendix 1-6). The 50 dB threshold is equivalent to the noise of a modern refrigerator. The camp will be built to current standards, significantly reducing interior noise.

During the project design phase, particular attention was paid to the well-being of workers during their rest periods. The noisiest equipment, the primary crusher, was positioned as far as possible from the accommodation facilities. In addition, to further reduce noise propagation, noise berms will be erected around the camp. At the camp, a cultural space will be set up to make rest periods more enjoyable. Workers will also have access to a recreation centre with fitness facilities right in the camp.

Also, the results of the noise level assessment are lower at night than for the daytime scenarios. The main reason for this decrease is that there are no plans for night operations at the tailings storage facility. All transportation and placement of equipment is planned for the daytime.

Non-First Nation users

As mentioned in the response to QC-99, in 2023 WMG acquired the two leases for vacationing purposes that are located near the Windfall site. As a result, calculation point P2 in the environmental noise assessment no longer exists.

As for the Lac Berthelot outfitter, whose site with non-exclusive rights is located approximately 5.5 km southeast of the site, WMG has initiated a conversation with the outfitter's operator to discuss the project and the coexistence of the site's activities with those of the outfitter, but it should be noted that this outfitter's site is located outside the project's zone of influence.

Finally, given that WMG already operates in this area, light levels should not differ greatly from those currently measured. Mitigation measures FAU08 and FAU09, "Limit the emission of light towards the sky by using moderate, even lighting that meets actual lighting needs and whose light is directed towards the surface to be lit," and "Carefully direct portable lights and moving light sources," will limit the project's impact on night-time light levels.

Cree users

In the case of the Cree camp belonging to the family of the tallyman of trap line W25B (identified as P1 in the Sectoral Noise Environment Report - Addendum 1, Vol. 1 Appendix 1-6), it is located nearly 7 km from the project and about 3.6 km from the 40 dB line assessed. Noise levels outside the camp are likely to be very low, if not imperceptible. Since the beginning of activities in the area, even before the arrival of WMG, some hunting activities had shifted elsewhere in the area. Possible nuisances caused by activities on the site are not the cause of this change.

The family of the W25A tallyman has no permanent presence in the local study area of the social environment.

As mentioned above, given that WMG already operates in this area, night-time light levels are not expected to differ significantly from those currently associated with advanced exploration activities.

QC-110
Environmental Impact Assessment, Page 8-62, Volume 1b, Section 8.4.3
Impacts on quality of life and well-being during the operations phase, and mitigation measures:

On Page 8-62, it is mentioned that "Cree education and training stakeholders also raised concerns about drug and alcohol use problems that might be pronounced due to the higher wages and long rest periods after intensive work." The proponent must specify whether it has planned measures to limit these effects, in particular through an employee assistance program.

Response 110:

The Windfall site is what is known in mining jargon as a "dry camp." The policy on managing alcohol and drugs in the workplace (RH-PLT-002 - Appendix RQC110-1) is intended to be preventive, but also sets out the concept of zero tolerance.

First of all, as soon as employees are hired, the Health Department informs them confidentially about the zero tolerance policy at the Windfall site. All new employees are also required to read certain policies, including the policy on managing alcohol and drugs in the workplace. Workers must sign a document to confirm that they agree to adhere to the policies. WMG also has a detector at the site entrance, similar to the type found in airports. Intended above all as a deterrent, this check at the site entrance also serves to seize and stop entry to the site of prohibited substances or items (drugs, alcohol, weapons, etc.). WMG will evaluate the feasibility of installing a detector (or equivalent device) into the new workers' camp.

All WMG employees will have access to the employee and family assistance program as soon as they are hired. WMG is working with an external supplier (Telus Health) (Appendix RQC110-2), which offers telemedicine and psychological health and well-being services. WMG also has a Health Services unit on site, staffed by nurses with an expanded role, acting as a point of contact for employees in distress. Lastly, WMG offers its support when it is informed that an employee has a dependency problem.

WMG is currently working with an external group (Global Watch) to implement the PSR management program detailed in QC-107.

QC-111
Environmental Impact Assessment, Page 8-62, Volume 1b, Section 8.4.3
Impacts on quality of life and well-being during the operations phase, and mitigation measures:

The proponent must provide its drug and alcohol policy for the mining project site.

Response 111:

The contents of the policy and the complete document were presented and are attached in Appendix RQC110-1.

QC-112
Environmental Impact Assessment, Page 3-107, Volume 1a, Section 3-11
Employment and training:

The proponent has mentioned that workers will be transported by bus from Rouyn-Noranda, Val-d'Or, Chibougamau, Chapais, Waswanipi and Senneterre to Lebel-sur-Quévillon, and then from Lebel-sur-Quévillon to the Windfall mine site, also by bus. However, the proponent makes no mention of how workers from other Cree communities will be transported to the mine site. To facilitate the employability of Cree workers, the proponent must specify how these workers will be transported from their region to the mine site.

Response 112:

Parking facilities have already been set up in the various home ports, and employees from the various Cree communities will be able to leave their vehicles there during their work rotation. They will be bussed back to the same point at the end of the rotation. WMG could add home ports according to where workers are travelling from if there are enough employees to warrant it.

QC-113
Environmental Impact Assessment, Page 4-1, Volume 1b, Section 4
Relationships with the community:

The proponent must indicate how it has considered the additional pressures of its project on employment and the availability of human resources. In a context where the region is currently experiencing a labour shortage, the proponent must deal with the combined effect of its project and other current and future mining projects, which require the same workforce on the same territory. The proponent must also assess the additional pressure exerted by the project on the workforce available to local businesses and the provision of services within communities.

Response 113:

WMG has no interest in uprooting the workforce essential to the smooth running of its host communities. Although the hiring policy as well as for travel to exploration sites and home ports (Appendix RQC113-1 and Appendix RQC113-2) favours local recruitment (Nord-du-Québec and Abitibi-Témiscamingue), WMG will have to find the right balance. The permanent closure of Stornoway's Renard mine, announced in April 2024, has freed up some of the mining industry's specialist workforce.

WMG is currently working in partnership with the Québec Mining Association (QMA), CSMO-Mines, the Institut national des mines du Québec, and the MiHR to monitor trends, keep abreast of training programs offered in the various regions of Quebec, and keep an eye on mining technologies, all with a view to seizing any technological opportunities that could reduce the pressure on the Nord-du-Québec workforce (e.g., the possibility of automation).

WMG also works proactively with the CFPBJ to set up training programs and develop its workforce. For example, WMG has the Matagami mine-school, which has been returned to the Windfall site. Two cohorts per year have graduated from this program in the last 2 years. The CFPBJ is also in contact with the Cree Vocational School to create program synergies and set up Cree cohorts for mining-related DVS programs.

QC-114
Environmental Impact Assessment, Page 7-16, Volume 1b, Section 7.1.1.6
Vascular plants for traditional use:

The proponent reports the presence of 36 plant species of traditional interest used by the Crees in the study area. The proponent must consult Cree land users to incorporate traditional knowledge into the choice of species used to revegetate the areas to be restored.

Response 114:

WMG already consults local users about plants for traditional Cree use. The Cree traditional knowledge gathered was used to develop the detailed follow-up to the response to QC-72, identifying Labrador tea and blueberries as the two most valued species in the area. In all cases, WMG will continue to integrate Cree knowledge of plant species in the preparation of revegetation work for the project under study.

QC-115
Environmental Impact Assessment, Page 4-1, Volume 1b, Section 4
Relationships with the community:

The proponent must indicate whether any synergies with other mining projects have been considered, including the possibility of coordination with other projects involving vocational training, waste management, transportation, ore processing, or any other coordination efforts.

Response 115:

In the field of vocational training, synergies are achieved through WMG's participation in various QMA committees, in particular the human resources committee, on which several major mining companies sit to discuss and consider solutions, particularly on the subjects of manpower, training, and staff retention. The company's current Human Resources Director is also co-chair of CSMO-Mines, which gives Windfall visibility on projects, programs, and resources available to the mining sector.

The Windfall site is isolated and there has been little mineral exploration by other companies in the area since Bonterra Resources optioned a 70% interest in the claims in the area surrounding the Windfall site in November 2023. With this announcement, activities will be consolidated around WMG's existing and planned infrastructure. The option of combining the transportation of workers associated with exploration and mining activities will be pursued, as well as combining trips for residual material disposal.

There are no plans to transport ore around the project's infrastructure.

4 Emergency measures and the risk of technological accidents

QC-116
Environmental Impact Assessment, Volume 8, Appendix 12-2
Preliminary emergency measures plan:

The proponent must identify the warning mechanism it will use to notify other users in the area (outfitters, Cree camps, other mine sites, cottagers, and forest users) in the event of sulphur dioxide (SO2) fumes within an estimated impact radius of up to 9 km. The proponent must inform users in the surrounding area beforehand of the risks and safety instructions to be followed in the event of an emergency, and specify the means used to inform them. The proponent must explain how the emergency response plan takes this scenario into account.

The proponent must inform the communities concerned of any incident, particularly in the event of a major spill. The proponent must provide a distribution list of persons to whom the emergency measures plan will be sent.

Response 116:

Map RQC116 shows land users within a 9,84 km radius of the SO_2 sulphur dioxide reservoir. This radius corresponds approximately to the largest impact radius of the alternate worst-case scenario for sulphur dioxide.

The land users within the radius indicated in the question (up to 9 km) include users of:

- Two temporary forest shelters;
- Two locations for outfitters without exclusive rights;
- Two vacation resorts;
- Two traplines and a Cree camp;
- One deposit (Gladiator-Bonterra);

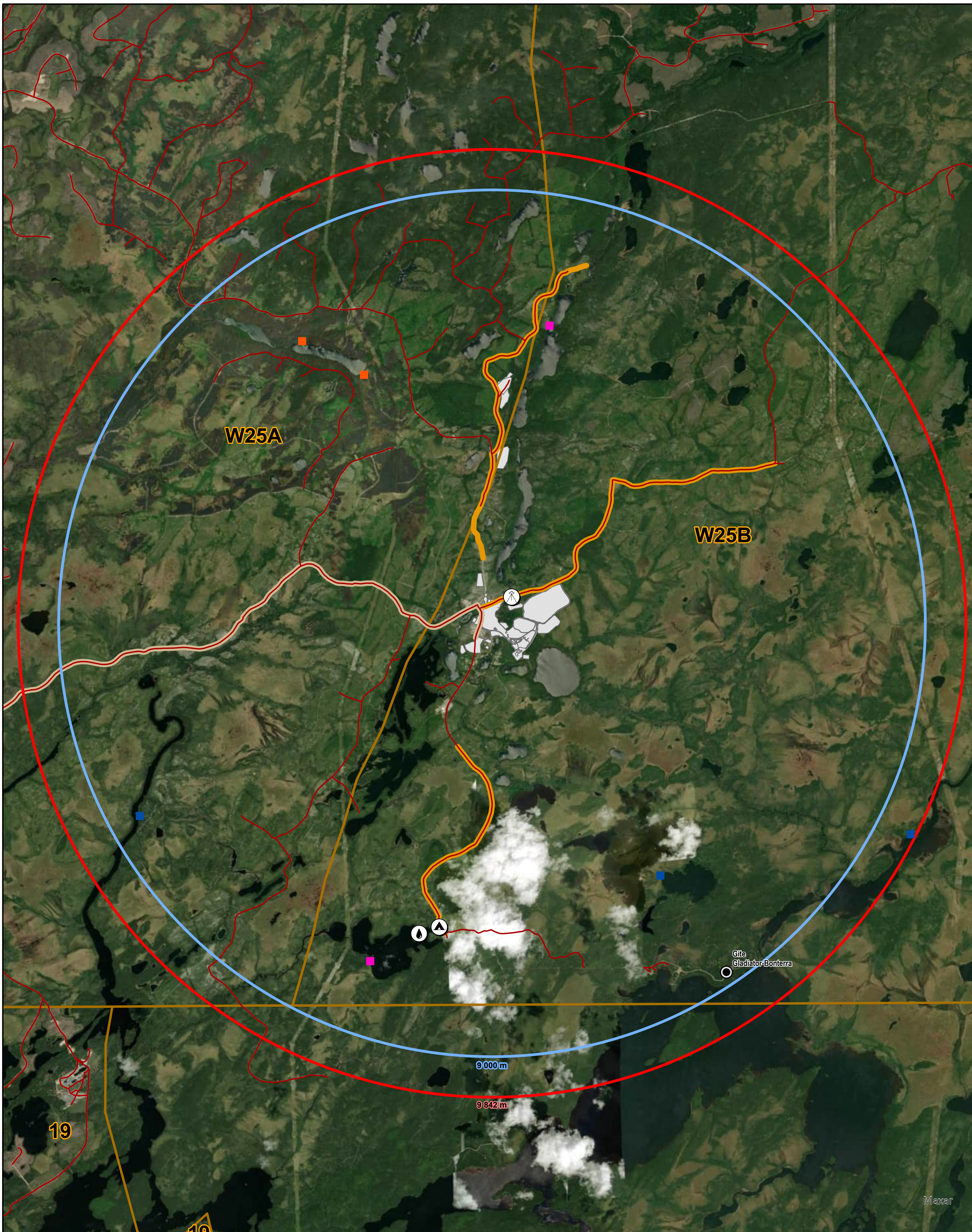
In the event of sulphur dioxide fumes, these users should be contacted. They could then apply the previously communicated instructions on how to get to safety.

WMG undertakes to:

- Obtain the contact details of permanent or regular users in the area.
- Set up a notification system to reach users likely to be in the area affected by the incident.
- Provide users of the affected area with safety instructions. These instructions will include confinement to lodging facilities or evacuation of the affected area.
- Document the warning procedure currently in place and the safety instructions in the Emergency Measures Plan (EMP) for the Windfall mine site.

WMG will communicate with the designated responder of the CFNW and the regional government of Eeyou Istchee James Bay in the event of an incident having a major impact on the environment, such as an incident having an environmental impact outside WMG's facilities. In addition, the Windfall mine site emergency response plan will be shared with the following authorities:

- The municipality of Lebel-sur-Quévillon's fire protection services;
- CFNW;
- The Eeyou Istchee James Bay Regional Government.



Rayon de dispersion du S02 / *S02 scattering radius*

- Distance à AEGL-2 (m) : 1,5/F / *Distance to AEGL-2 (m) : 1,5/F*
- Rayon de 9 km
- Route d'accès / *Access road*

Infrastructure routière / *Road Infrastructure*

- Route / *Road*
- Infrastructure projetée / *Projected Infrastructure*

Mines et industries / *Mines and Industries*

- Site minier / *Mining Site*

Bail de villégiature /*Vacation lease*

- Fins d'abri sommaire en forêt / *Temporary forest shelter*
- Fins d'hébergement dans une pourvoirie sans droits exclusifs / *For lodging at an outfitter without exclusive rights*
- Fins de villégiature / *For vacationing purposes*

Utilisation crie du territoire / *Cree land use*

- Campement cri / *Cree Camp*
- Caméra de suivi de la faune (initiative crie) / *Wildlife tracking camera (Cree Initiative)*
- Source d'eau pour usage domestique / *Water source for domestic use*
- Route de trappage / *Trapping Road*
- Terrain de trappage cri / *Cree trapline*

Projet Windfall - Réponses aux questions et commentaires - 1re série /
Windfall Project - Answers to Questions of Comments - 1st Series

Site minier Windfall, Eeyou Istchee Baie-James (Québec) / Windfall Mining Site, Eeyou Istchee Baie-James (Quebec)

Carte RQC-116 / *Map RQC-116*
Utilisateurs du milieu (Rayon SO2) /
Area users (SO2 radius)

Sources :
BDAT, 1/250 000, MRN Québec, 2002
BDTQ, 1/20 000, MRNF Québec, 2007
CanVec, 1/1 000 000, RNCan, 2020
CanVec Plus, 1/50 000, RNCan, 2015
SDA, 1/20 000, MERN Québec, 2020
Google Earth, Satellite Airbus, 2023

0 1 2 km
MTM, fuseau 9, NAD83

2024-10-04

Préparation : M. Cool
Dessin : S. Samson
Approbation : N. Martet
CA0023271_9538_eie_rqc116_RayonS02_241004.aprx
CA0023271_9538_eie_rqc116_012_RayonS02_241004

QC-117
Environmental Impact Assessment, Volume 8, Appendix 12-2
Preliminary emergency measures plan:

The proponent must identify the worst possible accident scenario, i.e., the event that, without the presence of mitigation measures, is likely to cause the most damage to the environment. To limit the scope of this scenario, only correlated events should be considered and added to the same scenario. Events whose simultaneity is not correlated should be considered as separate scenarios.

For the worst-case scenario identified, the proponent must summarize the costs associated with environmental decontamination and restoration, and indicate how it expects to meet these costs.

Response 117:

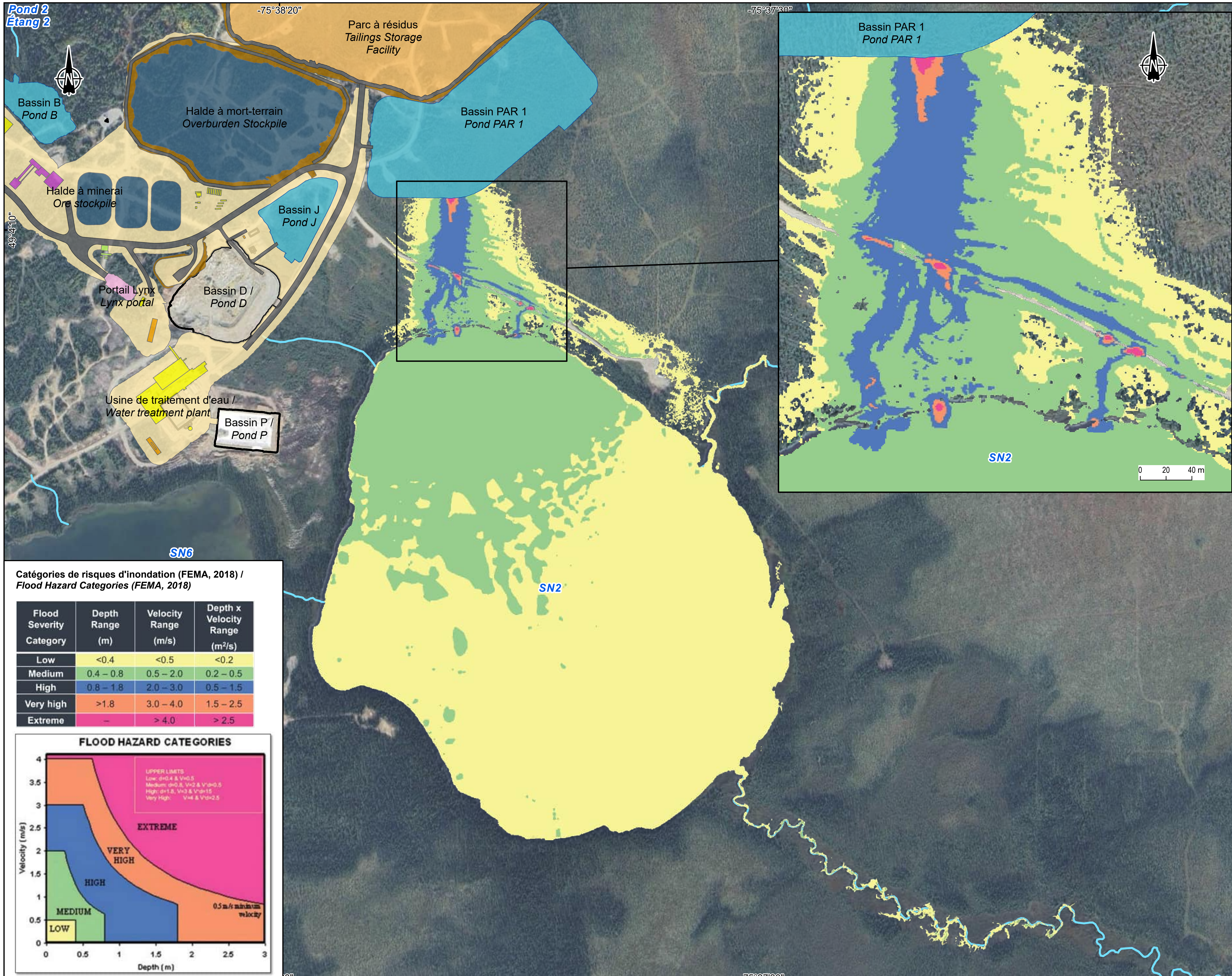
The worst possible accident scenario in terms of impacted area is undoubtedly the catastrophic rupture of the sulfur dioxide reservoir leading to the emission of toxic gas. This scenario would cause major damage to humans and animals. However, it is not the scenario likely to cause the most environmental damage nor the one requiring the most interventions related to environmental decontamination and restoration.

GMW expects that the scenario likely to cause the most environmental damage would instead be the catastrophic failure of a retention dam of the water basin in the tailings park located in the northeastern part of the site. A dike breach study has been prepared for the Project and is provided in appendix RQC117-1. According to the flood hazard maps presented in this study, a dike breach on Pond PAR1 would be the event likely to cause the most environmental damage for the Project. It should be noted that the study did not consider possible damages incurred to potential archaeological sites since GMW conducted a field inventory in July 2024 that allowed for the declassification of such areas. Appendix RQC117-2 presents a letter detailing the completed work.

As such, a dike breach on Pond PAR1 dam would result in the release of a water volume of 201,400 m^3 in the most severe failure mode, which is internal erosion, and 201,300 m^3 if the failure was caused by a collapse due to foundation instability. To assess the impact of this release on the environment, the results from water quality simulations on the site were used. The projected water quality results for Pond PAR1 were taken from the daily maximum for the 92nd percentile over 60 climate scenarios.

The months of November, December, January, February, and March were removed from the source data since these months represent periods where the maximum water volume reached is approximately 25,000 m^3, which is less than 10% of the maximum capacity of Pond PAR1. Subsequently, considering that snowmelt, for some climate scenarios, occurs mainly in April, while for others it occurs in May, the month of April was also eliminated from the data. Finally, the 92nd percentile of the daily maximum for the volume of Pond PAR1 is approximately 108,000 m^3, which is 36% of its maximum capacity.

Table RQC117-1 therefore presents the daily maximums for the 92nd percentile of the 60 climate realizations for the projected life of the mine, for the months of May, June, July, August, September, and October. The volume of Lake SN2 is estimated at 2,019,901 m^3 (calculated in February 2021 based on bathymetry data by WSP).



Catégories de risques d'inondation (FEMA, 2018) / *Flood Hazard Categories (FEMA, 2018)*

Flood Severity Category	Depth Range (m)	Velocity Range (m/s)	Depth x Velocity Range (m^2/s)
Low	<0.4	<0.5	<0.2
Medium	0.4 – 0.8	0.5 – 2.0	0.2 – 0.5
High	0.8 – 1.8	2.0 – 3.0	0.5 – 1.5
Very high	>1.8	3.0 – 4.0	1.5 – 2.5
Extreme	–	> 4.0	> 2.5

Hydrologie / *Hydrology*

- Cours d'eau / *Watercourse*

Composantes du projet / *Project Components*

- Infrastructure actuelle / *Current infrastructure*

Infrastructures projetées / *Proposed Infrastructures*

- Aire d'activité / *Activity area*
- Banc d'emprunt / *Borrow pit*
- Bassin / *Pond*
- Bâtiment / *Building*
- Champ d'infiltration / *Infiltration field*
- Concasseur / *Crusher*
- Équipement / *Equipment*
- Limite des fossés / *Ditch limit*
- Halde / *Stockpile*
- Parc à résidus miniers / *Tailings storage facility*
- Portail Lynx / *Lynx portal*
- Réservoir / *Reservoir*
- Route / *Road*
- Berme / *Berm*
- Zone de dépôt de neige / *Snow deposit zone*

Notes:

-Les cartes d'inondation doivent être lues et interprétées conjointement avec le rapport DBA / *The inundation maps should be read and interpreted in conjunction with the DBA report*

-Les cartes d'inondation visent à guider l'évaluation des conséquences de la rupture d'une digue et l'élaboration de plans d'intervention d'urgence globaux; l'exactitude et la précision des zones d'inondation prévues reflètent cet objectif / *Inundation maps are intended to guide the assessment of the consequences of dike failure and the development of overall emergency response plans; the accuracy and precision of the predicted inundation zones reflects this purpose*

WINDFALL GROUPE MINIER

Projet minier Windfall - Réponses aux questions et commentaires - 1re série /
Windfall Mining Project - Answers to Questions and Comments - 1st Series

Site minier Windfall, Eeyou Istchee Baie-James (Québec) / *Windfall Mining Site, Eeyou Istchee Baie-James (Quebec)*

RQC117
Bassin PAR1 - Carte de risque d'inondation /
PAR 1 Pond - Flood Hazard Map

Sources :
AQréseau+, Réseau routier, MERN Québec, 2020-03
Airbus, Image satellitaire tirée de Google Earth, 2023

0 60 120 m

UTM, Zone 18N /
UTM, Fuseau 18N , NAD83

2024-10-16

Preparation / Préparation : M. Rodier
Drawing / Dessin : C. Thériault
Verification / Vérifié par : A. Cobbina
CA0023271_9538_eie_rqc117_InondationPAR1_241016.aprx
CA0023271_9538_eie_rqc117_InondationPAR1_054_241016

wsp

La précision des limites et les mesures montrées sur ce document ne doivent pas servir à des fins d'ingénierie ou de délimitation foncière. Aucune analyse foncière n'a été effectuée par un arpenteur-géomètre. / Boundary accuracy and measurements shown on this document are not to be used for engineering or land delineation purposes. No land analysis was carried out by a land surveyor.

Table RQC117-1 Water Quality Conditions in the PAR 1 Basin

Parameter	As (mg/L)	Cu (mg/L)	Fe (mg/L)	Pb (mg/L)	Ni (mg/L)	Zn (mg/L)	TCN (mg/L)	CNS (mg/L)	NH_3 (mg/L)
Daily Maximum	0.015	1.05	4.08	0.27	0.19	0.41	1.31	14.3	0.000028
Instant criteria (D019, REMMMD)	0.4	0.6	6.0	0.2	1.0	1.0	1.0		1.0
Final acute value in effluent	0.68	0.0032	6.9	0.0087	0.13	0.034	n.d.	4.2	n.d.

In the event of a dike breach on Pond PAR1, the costs associated to environmental interventions would primarily concern monitoring of the water quality and fish communities in the lakes and streams downstream of the potential discharges (i.e. Lake SN2 and its outflow). GMW estimates that the costs associated with the aforementioned interventions would amount to approximately CA$ 2.5 million. A breakdown of the costs according to the necessary interventions is provided in Table RQC117-2.

Table RQC117-2 Estimated Costs for Environmental Interventions

Environmental Aspect	Description of the Intervention	Approximate Costs (estimated values)
Water quality of the affected body of water	Initial assessment of the water quality of Lake SN2 following the accident	CA$ 20,000
Water quality of the affected body of water	Recurrent (annual) follow-up of the water quality of Lake SN2 for an estimated period of five (5) years	CA$ 100,000
Soil Quality	Assessment of soil quality (ex. Phase II study) of soils contained in the land area between Pond PAR 1 and the shores of Lake SN2 following the accident	CA$ 120,000
Soil Quality	Rehabilitation of potentially contaminated soils contained in the land area between Pond PAR 1 and the shores of Lake SN2 following the accident	CA$ 2,250,000
Erosion of the shores of the affected body of water	Correction for the erosion of the shores of Lake SN2 , if necessary. Note that the shores of Lake SN2 are not likely to be severely eroded since the land elevation changes in these areas are relatively minor (see photos 27 to 30 of the Appendix F-1 study -Ichtyofaune and benthos [EIE, vol. 7, Appendix 7-2])	CA$ 10,000
Cost Summary		
Cost (approximate) associated to the assessment and follow-up of the water quality of the affected water body (Lake SN2)		CA$ 120,000
Cost (approximate) associated to the environmental rehabilitation (soils)		CA$ 2,380,000
Total Cost (approximate) associated to the interventions		**CA$ 2,500,000**

In all cases where environmental decontamination and/or restoration interventions would be necessary, GMW would be able to cover the costs with the specific insurance policies that the company has already taken out for these risks.

It should be noted that the present question concerns a theoretical event involving the worst possible accident scenario, regardless of the mitigation and control measures that will be implemented by GMW. The conducting of a dam failure study does not imply an inherent weakness in the design or construction of a structure, nor a probability of failure. This study is theoretical and was conducted as a preventive measure to plan for the worst-case emergency scenarios and thus to ensure that GMW will be ready to respond to any eventuality.

QC-118
Environmental Impact Assessment, Page 12-15, Volume 1b, Section 12.3.2
Identification of hazards related to site activities, Environmental Impact Assessment, Volume 2, Appendix 3-3 Material Safety Data Sheets for chemicals used:

The information contained in the environmental impact assessment does not allow us to formulate a complete assessment of technological risks.

The proponent has stated that the hydrochloric acid (HCL) used will have a concentration of 28%. According to Appendix 6 of the Guide - Analyse de risques d'accident technologiques majeurs, a threshold quantity of HCl of 6.8 metric tonnes at a concentration equal to or greater than 30% could be the cause of a major industrial accident. According to the proponent, the simple fact of not having a concentration equal to or greater than 30% allows this hazardous material to be excluded from the risk assessment process. However, storing HCL at a concentration 2% lower, but in quantities almost three times the threshold, does not rule out the potential for a major technological accident.

In addition:

- The safety data sheet provided in Appendix 3-3 (Page 2) of Volume 2 of the impact assessment indicates a concentration of 31-33% (w/w);
- The summary table presented in Appendix 3-3 (page number absent/page 1008 of the PDF) of Volume 2 of the impact assessment indicates that the concentration of hydrochloric acid would be 32% and the quantity stored would be 20 tonnes, which is almost 3 times higher than the threshold.

Considering that the HCl distributor selected does not appear to offer 28% hydrochloric acid, that a concentration of 28% is very close to 30%, and that the anticipated storage quantity listed in the above table is 20 tonnes (above the threshold), the proponent must produce a risk assessment by developing scenarios involving gasoline and diesel.

Response 118:

Hydrochloric acid at a concentration of 28% is in fact planned for use by WMG. No safety data sheet is currently available as no supplier has been found. However, the CNESST has drawn up a data sheet for hydrochloric acid in 28% aqueous solution (Annexe RQC118-1)

The 28% concentration is, in fact, very close to the RUE threshold of 30%. WMG therefore commissioned WSP to carry out consequence modelling for scenarios involving hydrochloric acid (HCL). In addition, as a result of changes in the detail engineering of the Project, the maximum planned storage quantity is now 50 m^3 (i.e., 57.085 tonnes, and therefore still above the RUE threshold of 6.8 tonnes).

The HCL modelling report is attached to this document (see Appendix RQC-118).

In collaboration with WMG and the WSP project team, the following scenarios were selected to assess the consequences for the 50 m^3 HCL tank:

- Worst-case scenario: Catastrophic rupture of the 50 m^3 tank (spillage of the maximum quantity of HCl).
- Alternate scenario : A leak on the transfer hose during filling of the HCl tank (spillage at a rate of 4.75 kg/s for a period of 30 seconds).

The PHAST (Process Hazard Analysis Software Tool) model, version 7.2, was used to perform the HCL consequence modelling. Analytical models included in PHAST for release, dispersion, and explosions of gaseous and liquid hazardous materials include flow and spray discharge, pool evaporation, vapour cloud dispersion, vapour cloud explosion, heat flux of fires (jet fires, pool fires, and boiling liquid expanding vapour explosion), and vessel rupture.

The modelling was carried out taking into account the absolute worst-case weather and the recommended worst-case weather. The model was run for atmospheric conditions at 25ºC and 50% humidity, in accordance with the risk management guidelines of the Major Industrial Accidents Reduction Council (Conseil pour la réduction des accidents industriels majeurs—CRAIM). The atmospheric pressure modelled was 100.4 kPa.

More details on the methodology and limits used for modelling are presented in Appendix RQC118-2.

The threshold value for AEGL-2 hydrogen chloride (i.e. the concentration above which irreversible effects or serious long-term effects could be observed in the population, including sensitive individuals) for an exposure of 60 min (22 ppm) was used. The estimated impact radii for each modelled scenario are detailed in the table below. They are shown in the figures of the modelling report (Appendix RQC118-2).

Table RQC118 Impact distances for a toxic cloud of hydrogen chloride (HCl)(AEGL-2)

Scenario	Meteorological Conditions (wind/stability)	Distance to AEGL-2 (m)
Worst-case	1,5/F	150
	4/D	32
Alternate	1.5/F	31
	4/D	3

QC-119
Environmental Impact Assessment, Page 12-16, Volume 1b, Section 12.3.2
Identification of hazards associated with site activities:

A total of 181,000 L of diesel and 10,000 L of gasoline are stored. Although the threshold indicated in the Guide - Analyse de risques d'accidents technologiques majeurs (MDDELCC, 2022) is not reached for gasoline, when it is considered that the tanks are located near one of the site's only access roads and that a fire in these tanks could hinder traffic or evacuation of the site, the proponent must assess the risks associated with storing these products.

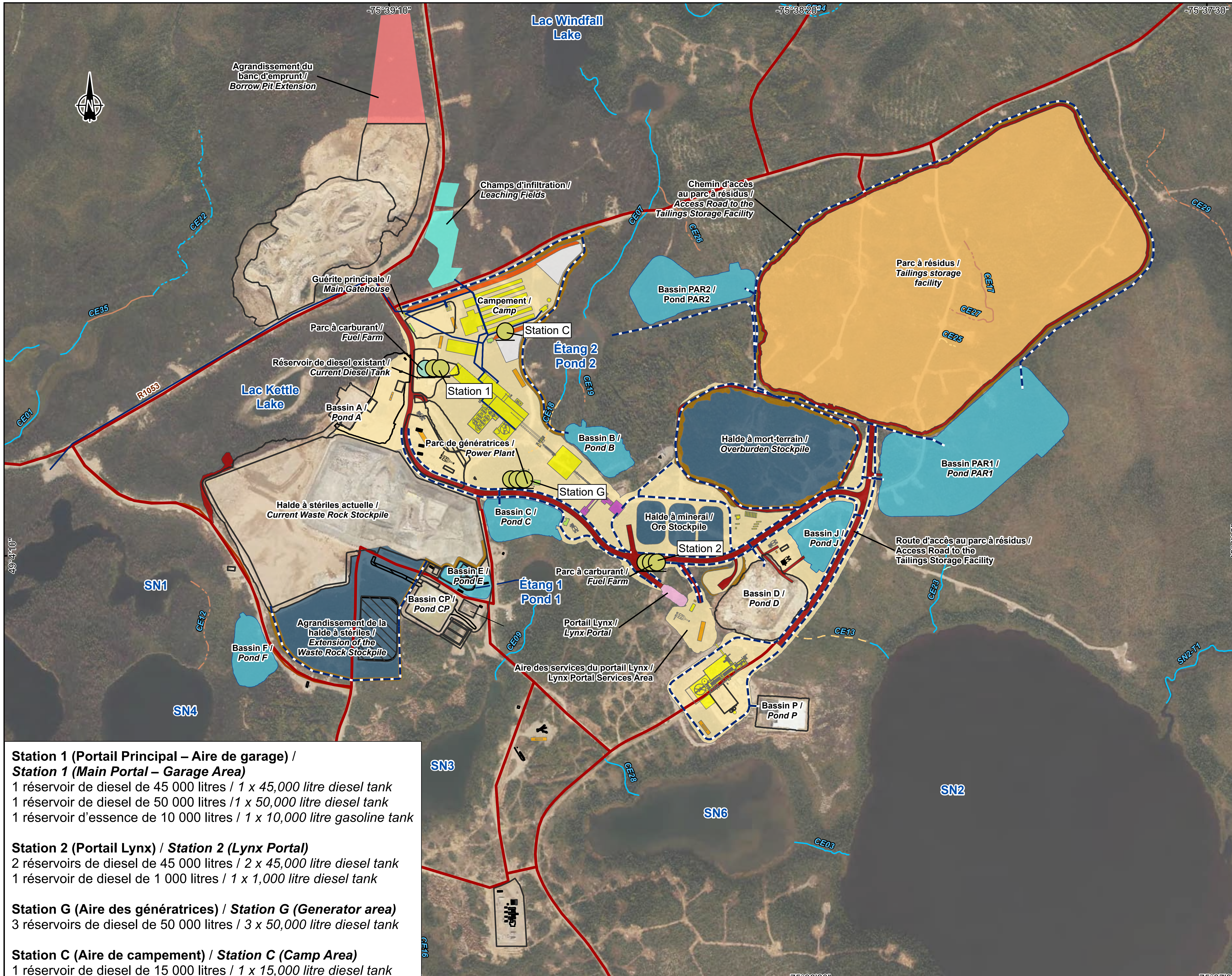
Response 119:

As shown in Table 1-18 of Addendum 1 (Vol. 1), the project calls for petroleum product tanks to be installed at four different stations (see Map RQC119):

- At Station 1 (Main Portal – Garage Area):
  - 1 × 45,000-litre diesel tank;
  - 1 × 50,000-litre diesel tank;
  - 1 × 10,000-litre gasoline tank.
- At Station 2 (Lynx Portal):
  - 2 × 45,000-litre diesel tanks;
  - 1 × 1,000-litre diesel tank.
- At Station G (Generator area):
  - 3 × 50,000-litre diesel tanks
- At Station C (Camp area):
  - 1 × 15,000-litre diesel tank.

Therefore, the total quantity of diesel expected to be stored on site is 351,000 litres.

The tanks are planned to be installed on either side of the site's main access road. However, in the event of a fire involving one of these tanks, circulation or evacuation from the site (by joining Route R1053) will be possible via the various routes indicated in red on Map RQC-119.



Station 1 (Portail Principal – Aire de garage) /
Station 1 (Main Portal – Garage Area)
1 réservoir de diesel de 45 000 litres / *1 x 45,000 litre diesel tank*
1 réservoir de diesel de 50 000 litres /*1 x 50,000 litre diesel tank*
1 réservoir d'essence de 10 000 litres / *1 x 10,000 litre gasoline tank*

Station 2 (Portail Lynx) / ***Station 2 (Lynx Portal)***
2 réservoirs de diesel de 45 000 litres / *2 x 45,000 litre diesel tank*
1 réservoir de diesel de 1 000 litres / *1 x 1,000 litre diesel tank*

Station G (Aire des génératrices) / ***Station G (Generator area)***
3 réservoirs de diesel de 50 000 litres / *3 x 50,000 litre diesel tank*

Station C (Aire de campement) / ***Station C (Camp Area)***
1 réservoir de diesel de 15 000 litres / *1 x 15,000 litre diesel tank*

Type de réservoir / ***Tank Type***
- Réservoir d'essence / *Gasoline tank*
- Réservoir de diesel / *Diesel tank*

Infrastructures connexes / ***Related Infrastructures***
- Route existante / *Existing Road*

Infrastructures actuelles / ***Current Infrastructures***
- Actuelle / *Current*
- Qui sera retirée / *To be removed*

Infrastructures projetées / ***Planned Infrastructures***
- Conduite de traitement de l'eau potable / *Drinking water treatment pipe*
- Fossé canalisé / *Canalized ditch*

Catégories d'infrastructures projetées / *Categories of Planned Infrastructures*
- Aire d'activité / *Activity area*
- Banc d'emprunt / *Borrow pit*
- Bassin / *Pond*
- Bâtiment / *Building*
- Champ d'infiltration / *Infiltration field*
- Concasseur / *Crusher*
- Équipement / *Equipment*
- Limite des fossés / *Ditch limit*
- Halde / *Stockpile*
- Parc à résidus miniers / *Tailings storage facility*
- Portail Lynx / *Lynx portal*
- Réservoir / *Reservoir*
- Route / *Road*
- Berme / *Berm*
- Zone de dépôt de neige / *Snow deposit zone*

WINDFALL GROUPE MINIER

Projet Windfall - Réponses aux questions et commentaires - 1re série /
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Site minier Windfall, Eeyou Istchee Baie-James (Québec) / *Windfall Mining Site, Eeyou Istchee Baie-James (Quebec)*

Carte RQC119 / ***Map RQC119***
Emplacement des réservoirs de diesel et d'essence /
Diesel and Gasoline Tank Locations

Sources :
AQréseau+, Réseau routier, MERN Québec, 2020-03
MRNF, Cartographie détaillée des feux 2023 provisoire, 2024
MRNF, Feux de forêts (depuis 1976), 2023
MRNF, Épidémie, chablis et verglas (depuis 1976), 2023

0 95 190 m

MTM, Fuseau 9 / Zone 9, NAD83

2024-10-15

Préparation / Preparation : M. Cool
Dessin / Drawing : S. Samson
Vérifié par / Verification : N. Martel
241015_eie_rqc119_reserve_petrol_voie.aprx
CA0023271_9538_eie_rqc119_ces_011_reverse_petrol_voie_241015

wsp

La précision des limites et des mesures montrées sur ce document ne doivent pas servir à des fins d'ingénierie ou de délimitation foncière. Aucune analyse foncière n'a été effectuée par un arpenteur-géomètre. / Boundary accuracy and measurements shown on this document are not to be used for engineering or land delineation purposes. No land analysis was carried out by a land surveyor.

QC-120
Environmental Impact Assessment, Page 3-81, Volume 1a, Section 3.8.1
Site access and facility security;
Environmental Impact Assessment, Volume 8, Appendix 12-2
Preliminary emergency measures plan:

The proponent has stated that “the site is also accessible via 145 km of Level 2 forest roads from Chapais. These roads could be used for emergencies, but are not currently maintained.” The proponent must clarify how this access could be used in an emergency, even if it is not maintained. In addition, the proponent must specify whether other traffic routes can be used and outline alternative evacuation plans.

Response 120:

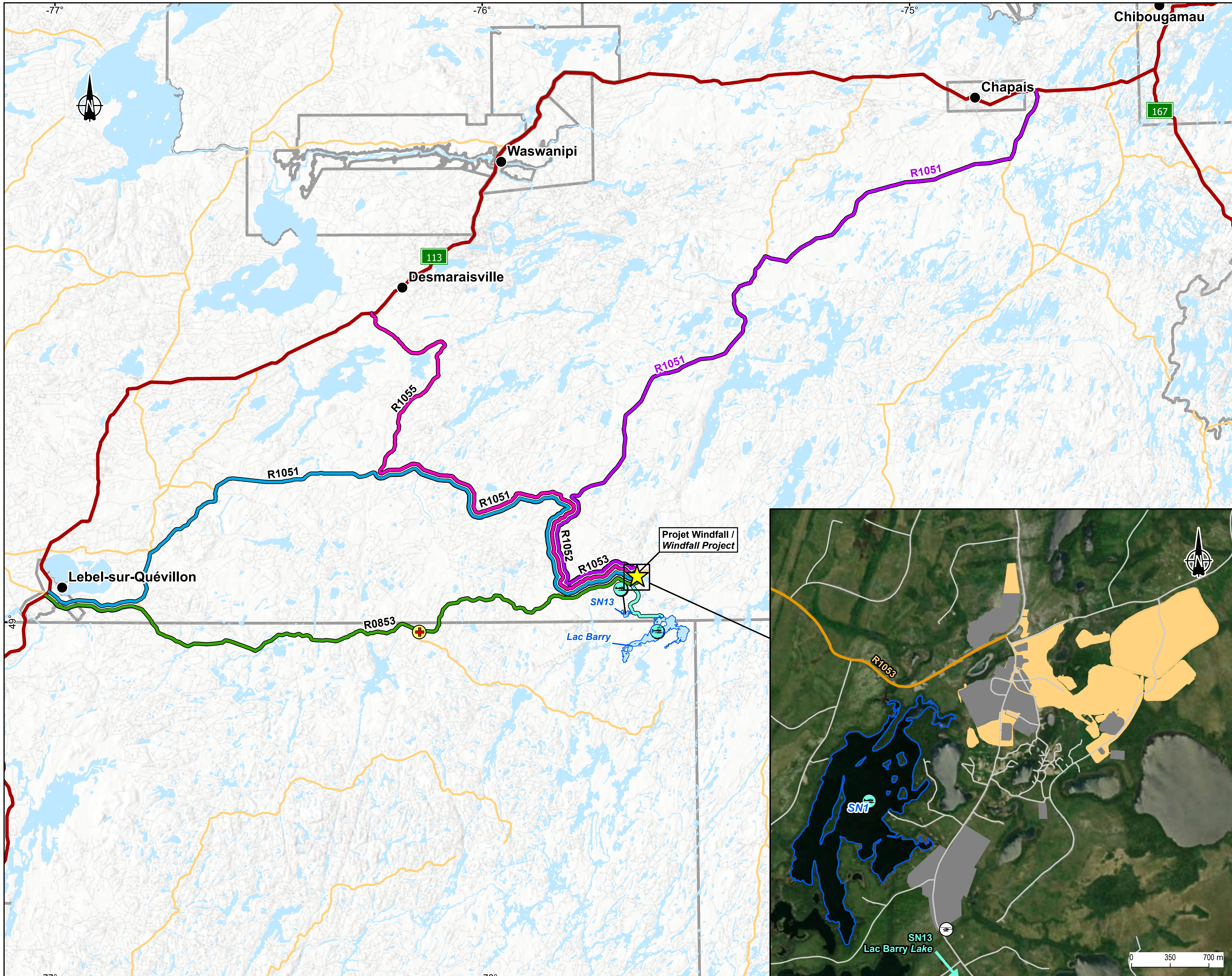
The site is accessible via 145 km of forest roads from Chapais. These roads are not maintained by WMG, but they are regularly maintained by the logging companies, since they are the main transportation routes. They can therefore be used in emergencies.

Map RQC120-1 shows possible evacuation alternatives for the site. Four land route alternatives have been identified:

- Option 1: Lebel-sur-Quévillon can be reached from the west via Routes R1053, R0853, and R1051.
- Option 2: Lebel-sur-Quévillon can also be reached from the west via Routes R1053, R1052, and R1051.
- Option 3: Evacuation could also proceed towards Desmaraisville, taking Routes R1053, R1052, R1051, and R1055 to the northwest.
- Option 4: Evacuation could also proceed towards Chapais, via Routes R1053, R1052, and R1051 to the northeast.

Finally, an evacuation could also be carried out by air, either by helicopter via the helipad at the exploration camp, or by seaplane using Lake SN1. If evacuation were to take place further south, it could be carried out at Lakes SN13 and Barry.

The map RCQ120 also identifies the meeting point with the town of Lebel-sur-Quévillon’s emergency services should a Windfall worker need to be evacuated for a medical issue.



Limite administrative / *Administrative boundary*

Composantes du projet / *Project Components*

Infrastructures actuelles / *Current Infrastructures*

Infrastructures projetées / *Planned Infrastructures*

Évacuation / *Evacuation*

<u>Méthode d'évacuation / *Evacuation Method*</u>

Point de rencontre avec une ambulance provenant de Lebel-sur-Quévillon / *Meeting point with an ambulance from Lebel-sur-Quévillon*

Évacuation par l'hélipad / *Evacuation through the helipad*

Évacuation par hydravion (dernier recours) / *Float plane evacuation (last option)*

<u>Options d'évacuation par le réseau routier / *Road Evacuation Options*</u>

Option 1 : Transport vers Lebel-sur-Quévillon / *Transport to Lebel-sur-Quévillon*

Option 2 : Évacuation vers Lebel-sur-Quévillon / *Evacuation to Lebel-sur-Quévillon*

Option 3 : Transport vers Lebel-sur-Quévillon / *Transport to Lebel-sur-Quévillon*

Option 4 : Évacuation vers Chapais / *Evacuation to Chapais*

Option finale : Évacuation vers les lacs SN13 ou Barry pour un transport par hydravion / *Evacuation to Lake SN13 or Lake Barry for transport by float plane*

Réseau routier / *Road Network*

Route principale / *Main road*

Chemin forestier principal / *Main forestry road*

Chemin forestier secondaire / *Secondary forestry path*

Projet minier Windfall - Réponses aux questions et commentaires - 1re série /
Windfall Mining Project - Answers to Questions and Comments - 1st Series

Site minier Windfall, Eeyou Istchee Baie-James (Québec) / *Windfall Mining Site, Eeyou Istchee Baie-James (Quebec)*

RQC120 / *RQC120*
Voies d'évacuation du site minier /
Mine Site Evacuation Routes

Sources :
AQréseau+, Réseau routier, MERN Québec, 2020-03
SDA, 1/20 000, MERN Québec, 2019-01
SOPFEU, Carte interactive, Feux éteints, 2023
ESRI, World Imagery, Résolution de 0,5 m, 2012-06
ESRI, World Hillshade

0 6,5 13 km
MTM, Fuseau 9 / *Zone 9*, NAD83

2024-10-11

Préparation / Preparation : M. Cool
Dessin / Drawing : J. Roy
Vérifié par / Verification : M.-H. Brisson
CA0002449_5772_eie_rqc120_evacuation_site_241011.aprx
CA0002449_5772_eie_rqc120_008_evacuation_site_241011

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QC-121
Environmental Impact Assessment, Volume 8, Appendix 12-2
Preliminary emergency measures plan:

An incident involving cyanide could pose a health risk. The emergency plan must take this possibility into account, and provide for a response that includes rescuing the driver (or worker), decontamination, medical support (including antidote kits), and evacuation.

Response 121:

WMG has a cyanide management program. This is presented in Appendix RQC43. However, while measures are built into the design, construction, and operation of processing facilities to prevent cyanide releases to the natural environment as well as workplace exposure, cyanide-related emergencies can occur and WMG must be prepared to respond quickly and effectively to these situations.

Potential release of cyanide could occur in the following situations:

- During unloading and mixing;
- When pipes, valves, or tanks break;
- During failure of a retention, treatment, or recovery system;
- When a retention pond overflows;
- During a fire or explosion;
- During transport by truck.

Transport will be under the responsibility of the sodium cyanide transporter, and response measures in the event of an incident occurring during transport will be described in the transporter's EMP. However, WMG's EMP will be activated to deal with any cyanide-related situations arising on the project site.

Sodium cyanide is dangerous mainly because, like hydrogen cyanide, it can release a gas that is fatal if inhaled and it is highly flammable, particularly in a fire or when it comes into contact with water, moisture, carbon dioxide, or acids. Hydrogen cyanide can be ignited by heat, flame, or certain oxidizing agents. Fumes may spread to an ignition source and cause flashback. Hydrogen cyanide can also form an explosive mixture with air.

The odour of hydrogen cyanide can be detected at concentrations of 0.58 ppm and above, i.e., below the ceiling value of 4.7 ppm. It smells like bitter almonds. However, only a measuring instrument can identify the product and quantify its concentration. The threshold value for it to be immediately dangerous to life and health (IDLH) is 50 ppm.

<u>In the event of hydrogen cyanide release</u> (detector alarm), the following measures will be taken:

- Initiate evacuation of the affected area;
- Make sure you and everyone else in the area is all right;
- Evacuate yourself away from all ignition sources;
- Notify your immediate supervisor and the emergency measures coordinator, who will mobilize the emergency response team (EMP activation);

Any emergency response (rescue, mechanical intervention, etc.) will be carried out by the emergency response team, which will mobilize using air-supplied respiratory protection equipment with full face masks, taking wind direction into account.

- Isolate the area, if possible.
- On-site lockdown of personnel may be declared by the emergency measures coordinator. The personnel in question will gather in a confined area with controlled ventilation systems. They will then await instructions from the emergency measures coordinator.
- Evacuation of the entire site may also be required, depending on the severity of the incident. The evacuation procedure set out in the EMP would then be followed. If there is a risk of cyanide fumes penetrating underground through the ventilation system, the mining operations manager should be contacted. In collaboration with the OHS manager, the mining operations manager will decide whether to initiate the underground personnel evacuation procedure, or to declare the lockdown procedure for underground mine personnel.
- In case of fire, the EMP fire procedure will also be initiated.

Signs of cyanide poisoning:

- Weakness, headache, confusion, dizziness;
- Nausea, vomiting;
- Difficulty breathing;
- Convulsions.

If it is suspected that a person outside the area affected by the fumes has suffered cyanide poisoning:

The response team will act as first responders and contact the on-site medical team:

- No mouth-to-mouth resuscitation should be administered;
- If it’s safe to do so, the affected person can be moved to a ventilated area or put on oxygen.
- Antidote kits for cyanide poisoning (Cyanokit) will be available and can be used on the advice of a medical professional, should the need arise.
- The site ambulance can be mobilized to transport the person to the Lebel-sur-Quévillon health centre. A member of the first responder brigade will accompany the injured person(s) and keep Lebel-sur-Quévillon medical services and the emergency measures coordinator informed.
- The medical team will contact the Centre de santé de Lebel-sur-Quévillon to report the suspected source of the poisoning. The WMG ambulance and the ambulance from the Lebel-sur-Quévillon hospital centre will meet halfway (see meeting point on Map RQC120).

Even when the emergency situation is under control, the area impacted by hydrogen cyanide fumes may remain hazardous, and precautions will be taken to reduce the risks (e.g., risk of explosion in the air). The emergency measures coordinator will ensure that all required inspections have been carried out before authorizing the resumption of normal operations.

Individuals (workers, drivers, emergency responders, etc.) involved in response operations will be able to wash in the employee shower facilities before leaving the premises. Clothing and other materials contaminated with cyanide must be collected and cleaned or disposed of as hazardous waste.

5 Monitoring and follow-up program

QC-122
Environmental Impact Assessment, Page 13-1, Volume 1b, Section 13
Environmental programs:
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 3, Appemdix 12-1:

The proponent must submit a detailed sampling specification that includes all information pertaining to the ambient air quality monitoring program, including the exact location of stations, the sampling schedule, and the equipment and analytical methods to be used. The proponent must take into account the atmospheric quality criteria to be met. It should also refer to, but not be limited to, the following documents when drawing up its monitoring program:

- *Guide d'instructions – Préparation et réalisation d'une modélisation de la dispersion des émissions atmosphériques – Projets miniers*;
- *Lignes directrices concernant les stations de surveillance de la qualité de l'air*.

In addition, with regard to station location, the proponent must demonstrate that station positions meet all the siting criteria specified in the preceding guidelines. More specifically, it must check that sampling will not be influenced by the presence of obstacles (buildings and trees) or sources of interference. A crystalline silica monitoring station must be set up at least near the sensitive receptor most impacted by the mining project.

This monitoring program may be reviewed annually depending on the results obtained. Should changes from the initial state be observed, or standards and criteria exceeded, the proponent will be required to implement additional mitigation measures.

Response 122:

The detailed ambient air quality monitoring program is presented in Appendix RQC122. A crystalline silica monitoring station is also to be set up near the sensitive receptor most impacted by the mining project.

QC-123
Environmental Impact Assessment, Page 6-96, Volume 1b, Section 6.7.2
Construction phase impacts on surface water and mitigation measures:

The proponent must implement a discharge monitoring program for all final effluents according to the terms prescribed in D019, or any other recent requirements. Effluent monitoring requirements will be updated, in particular to include ammoniacal nitrogen monitoring. The proponent will have to make the appropriate changes to its monitoring program when these requirements are updated.

Also, the annual monitoring is to be replaced by a quarterly monitoring. The parameters to be analyzed are presented in Appendix 2 of this document.

Response 123:

The final effluent monitoring program has been adjusted to incorporate the MELCCFP requirements presented in Appendix 2 of the Questions and Comments document. The program is presented in Appendix RQC123 of this document. The monitoring program available in Chapter 13 of the impact assessment was developed based on the requirements and documents in force at the time the study was submitted, in particular the 2012 version of D019.

QC-124
Addendum 1, Responses to MELCCFP recommendations and comments, Volume 3, Appendix 8-1
Surface water and sediments:

The proponent must also provide a plan for monitoring water quality and the impact of effluent on the receiving aquatic environment. The plan must be carried out in accordance with the stations selected for the initial characterization of the receiving aquatic environment (Appendix 8-1) and the Guide de caractérisation physicochimique de l'état initial du milieu aquatique avant l'implantation d'un projet industriel (MDDELCC, 2017).

Response 124:

A program for monitoring water quality and the impact of effluent on the receiving aquatic environment is provided in Appendix RQC123. The basic elements of the monitoring plan are available in Chapter 13 of the Environmental Impact Assessment, in the EDO section, and in the Surface Water Quality section (page 13-7 and subsequent pages).

QC-125
Environmental Impact Assessment, Volume 3, Section 13.2.12
Stability of retaining structures:

Every tailings accumulation area and every structure associated with tailings management must be subject to a stability monitoring program designed to ensure the integrity of the structure during its useful life, up to and including restoration, and in the post-restoration period. The proponent must submit a stability monitoring program for filtered tailings accumulation areas and waste rock stockpiles. It must provide the studies carried out in relation to the geotechnical stability of the works.

Response 125:

A stability monitoring program for the filtered tailings accumulation areas and waste rock stockpile is presented in Appendix RQC125. The preliminary instrumentation program is included in the program.

Monitoring program

Details on the identification of signs of erosion and the general maintenance of the surface water collection and treatment system to which the perimeter ditches of the stockpile are connected are already presented in the response to QC-5. More generally, at the end of the inspections, any report of the appearance of a structural anomaly will trigger the development and application of a response plan.

In addition, the filling of the waste rock stockpile, tailings storage facility, and overburden stockpile will be monitored on an annual basis to ensure compliance with the deposition plans issued and the design fill rate.

Additional monitoring

Stability analyses for the waste rock stockpile and site water-retaining structures in the operations phase were previously provided in Appendix E of the Restoration plan issued in March 2023. The stability analyses have been included in this document as Appendices to QC-9. In addition, the response to QC-9 provides details of future updates.

The geochemical performance of the filtered tailings stockpile will be assessed by means of oxygen sensors installed at the stockpile. A program for monitoring the geochemistry of mine materials is also presented in QC-126.

To meet the requirements of D019, a groundwater quality monitoring program was developed that included the location of observation wells to be installed. Recommendations concerning the location of observation wells, the parameters to be measured, and the sampling frequency are presented in QC-128.

Reference :

MINISTÈRE DU DÉVELOPPEMENT DURABLE, DE L'ENVIRONNEMENT ET DES PARCS DU QUÉBEC (MDDEP). 2012. *Directive 019 sur l'industrie minière*. ISBN : 978-2-550-64507-8 (PDF). 66 pages + appendices.

WSP. 2023. Projet Minier Windfall. *Plan de restauration - Travaux d'exploitation*. Rapport produit pour Minière Osisko Inc. 95 pages et annexes.

QC-126
Environmental Impact Assessment, Page 13-2, Volume 1b, Section 13.1.2
Operations;
Addendum 1 - Responses to MELCCFP recommendations and comments Volume 3, Section 13.2.4
Geochemistry of ore, waste rock, and tailings:

The proponent has stated that "geochemistry of ore, waste rock and tailings" will be monitored. The monitoring presented by the proponent is rudimentary. The objectives of this monitoring are to validate the predictions and conclusions made during the initial characterization stage, and to monitor the progression of the properties of the tested materials over time to ensure that the chosen management method is still optimal from an environmental point of view, and in line with the requirements and concerns of land users. The proponent must submit an updated tailings management plan, outlining the plan for periodic characterization of mill tailings and mine waste rock. It must also add the following items:

- Periodically updated acid-generating potential and leaching potential data when measuring changes in acid-generating potential;
- The details of these periodic reviews, including the materials tested, the number of samples, and the tests carried out, should be established in such a way as to achieve the objectives stated above;
- Certain basic analyses should be carried out continuously throughout the year at a frequency defined by the proponent in accordance with the operating plan (e.g., chemical composition, sulphur content and, if necessary, static and leaching tests, etc.);
- The characteristics of fresh materials and those already stored in the tailings storage facility and waste rock stockpiles must be monitored to verify variations in characteristics according to the different areas mined and the state of acidification of materials exposed to climatic conditions.

Response 126:

A monitoring program for the geochemistry of ore, waste rock, and tailings is presented in Appendix RQC126.

QC-127
Environmental Impact Assessment, Page 4-2, Volume 1b, Section 4.1.1
Environmental monitoring committee;
Environmental Impact Assessment, Page 8-53, Volume 1b, Section 8.4.2
Impacts on quality of life and well-being during the construction phase, and mitigation measures;

Environmental Impact Assessment, Page 8-60, Volume 1b, Section 8.4.3
Impacts on quality of life and well-being during the operations phase, and mitigation;
Environmental Impact Assessment, Page 11-54, Volume 1b, Section 11.2.10 Cumulative impact assessment:

The proponent states that it intends, during the construction phase, to "Establish a new environmental monitoring committee, the conditions of which will be specified in the IBA, to discuss and establish solutions to the various problems that could arise during the different phases of the mine" (Page 8-53). The same measure is also proposed for the operations (Page 8-60) and closure (Page 8-65) phases.

The proponent must provide details on the nature of these committees (current, new) and their mandates, putting them in perspective with the mandates of the various monitoring committees (environmental aspects, training and employment, business opportunities) that it identifies on Page 11-54.

Response 127:

Since July 2019, WMG has established an environmental monitoring committee with CFNW representatives as well as the family of the W25B tallyman. This committee met 42 times.

Monitoring committee meetings include:

- a review of exploration activities completed the previous month;
- a map showing proposed exploration activities for the coming month;
- an update on activities at the Windfall site;
- environmental statistics for the previous month;
- other concerns of the W25B family.

Members:

- a representative of the W25B family;
- a representative of the Waswanipi community;
- a WMG environmental representative;
- the WMG Cree liaison officer;
- a WMG community relations representative.

This committee is the only one currently active in connection with Cree communities, and is tailored to the activities of the advanced exploration phase. As mentioned in the EIA (page 11-54), this committee will remain in place until the provisions of the IBA come into force.

As far as the construction and operations phases are concerned, all the elements discussed during the IBA negotiation process are confidential. In fact, in the text of the EIA, these themes had been given as examples of possible monitoring committees in connection with the cumulative impact assessment on traditional land use and natural resources. The text of the EIA already provides a great deal of detail on the possible content of such an agreement. Furthermore, after discussions with the Cree representatives, this is what the parties have agreed to communicate, subject to a final text, with regard to the discussions surrounding the IBA negotiation process and concerning the said committees.

The parties agree that certain monitoring committees will be set up to carry out the necessary monitoring for the implementation of the agreement. It is quite possible that a monitoring committee on environmental issues will be set up, as well as a second one on cultural issues. The proposed monitoring committees will be composed of members appointed by the three parties: WMG, CFNW and, the Cree Nation Government, and will meet at regular intervals to discuss relevant issues. An amount will be available to carry out certain activities deemed relevant by committee members to mitigate the impacts of the Windfall project.

QC-128
Environmental Impact Assessment, Page 13-15, Volume 1b, Section 13.1.3 Closure;
Environmental Impact Assessment, Page 6-141, Volume 1b, Section 3.10.1 Current conditions:

The proponent states on Page 13-15 that "Details of the groundwater monitoring program are presented in Section 13.2.7." Volume 1b of the impact assessment contains no Section 13.2.7. The proponent must submit the contents of this section, ensuring that it contains a location plan showing the position of all the wells making up the proposed monitoring network, a layout diagram for each well selected, and a list of the parameters analyzed. The proponent must ensure that the content of its plan follows the requirements of the Fact Sheet: Analyse des résultats du suivi de la qualité des eaux *souterraines* and the *Guide technique du suivi de la qualité des eaux souterraines* (Technical guide to groundwater quality monitoring), which specify recognized procedures for the statistical interpretation of qualitative water quality data.

Also, section 2.3.2.4 of D019 requires that analytical results from groundwater quality monitoring be compared with each other and over time. The proponent must include an analysis of water quality data in accordance with the provisions of the fact sheet cited above. The proponent must include the analysis of groundwater quality data in accordance with the provisions of the fact sheet.

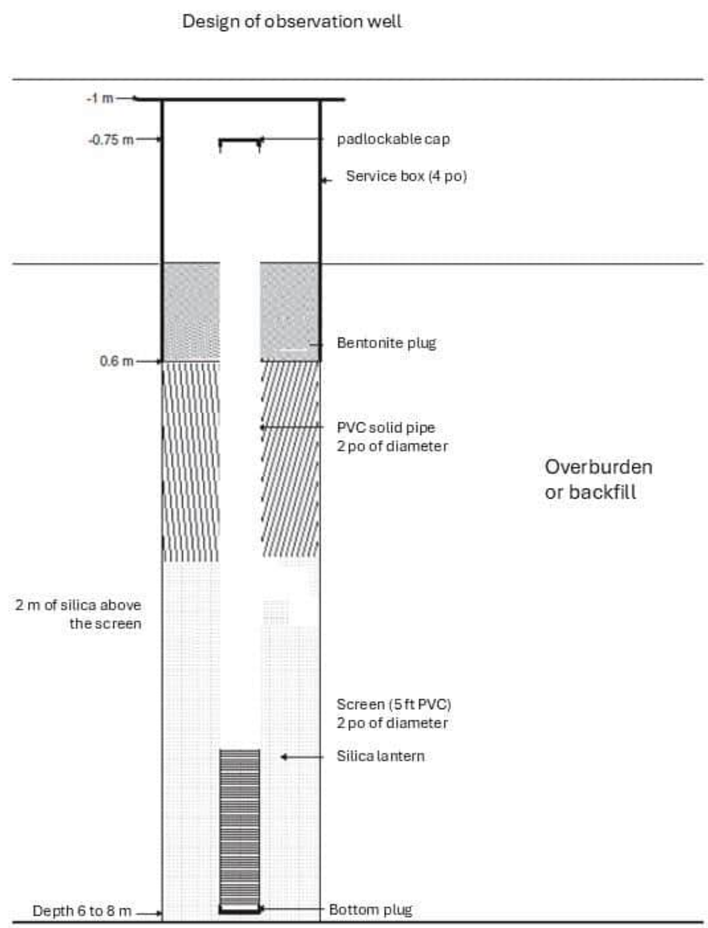
Similarly, drinking water (DW) quality criteria for background levels (As and Mn) must be updated according to the latest version of the Regulation respecting the quality of drinking water (RQEP) (As = 10 ug/L) and Health Canada criteria (MAC for Mn = 120 ug/L).

Response 128:

According to D019, a groundwater quality monitoring program, including piezometry monitoring, must be set up near any high-risk development such as a process plant, a tailings accumulation area, a petroleum or chemical storage area, etc. The monitoring thus verifies the potential for significant degradation of groundwater quality during mining operations. This monitoring will continue into the post-restoration period.

There is currently a network of observation wells on the site. This monitoring network will be enhanced to ensure that the upstream and downstream hydraulics of all high-risk developments are covered. The locations of existing and proposed wells is shown on Map QC128. They may be adjusted as operations progress and new infrastructure is built. Typical layout diagrams for wells intercepting rock and unconsolidated deposits are shown in the figures below. Monitoring will consist of sampling and measuring groundwater elevation on a biennial basis, in spring following snowmelt when the water table is at its highest, and in summer during low-water periods. The general procedure will consist of:

- identifying the observation well;
- taking GPS coordinates (if previously surveyed);
- measuring the height of the casing in relation to the ground;
- measuring water elevation (static level) relative to the casing prior to sampling;
- sampling groundwater.



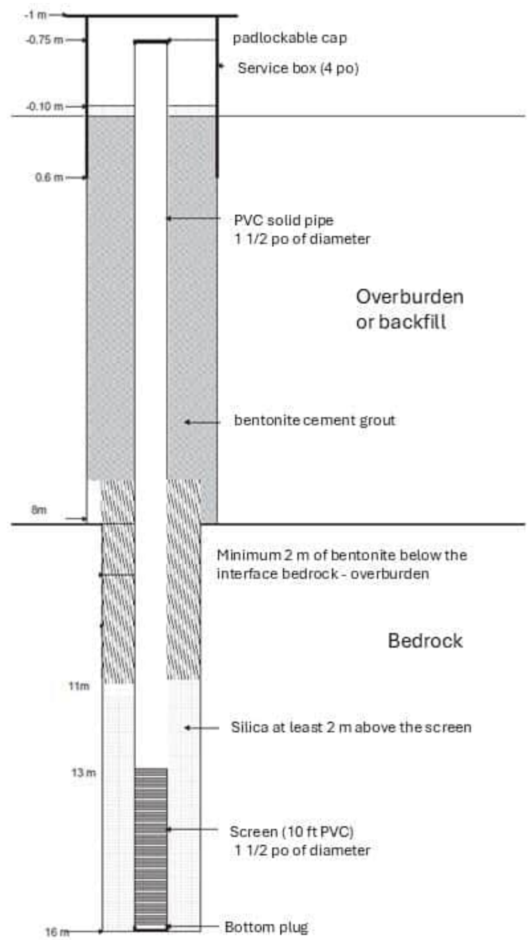


Figure RQC128-1 Layout diagram of a well in unconsolidated deposits.	**Figure RQC128-2 Layout diagram of a well in bedrock.**
The diagonal zone is filled with cement-bentonite grout above the filter sand.	

Groundwater sampling will be carried out according to recognized standard methods. During sampling, physicochemical parameters such as pH, electrical conductivity, dissolved oxygen, ORP, and temperature will be measured. Procedures are described in the *Guide d'échantillonnage aux fins d'analyses environnementales : cahier 3 - Échantillonnage des eaux souterraines* (MDDEP, 2011). Well water is usually sampled using dedicated systems in each well to limit the risk of cross-contamination.

The parameters analyzed will be those required in Table 2.1 of Section 2.1.1.1 of D019, in addition to those targeted for site-specific risks. Depending on the nature of the ore, process, or tailings, other parameters will be added to groundwater quality monitoring in authorizations issued by government authorities. Analytical parameters will therefore include the following:

- petroleum hydrocarbons C_{10}-C_{50};
- major ions (bicarbonates, carbonates, calcium, chlorides, magnesium, potassium, sodium, and sulphates);
- dissolved metals (Ag, Al, As, B, Cd, Co, Cr, Cu, Fe, Hg, Mn, Mo, Ni, Pb, Se, Sb, Sn, Sr, U, Zn);
- total and available cyanides;
- sulphides, total phosphorus;
- ammoniacal nitrogen, nitrites, and nitrates.

To confirm the validity of the methods used to measure the various parameters, a quality control program will be implemented. Duplicate samples will be taken during monitoring, corresponding to at least 10% of the samples taken. These samples will be sent to the laboratory for analysis and to check that their results match those of the original samples. Field blanks and travel blanks are also taken during each campaign and sent to the laboratory.

The results of the chemical analyses will be compared with the resurgence in surface water (RES) criteria set out in the *Guide d'intervention – Protection des sols et réhabilitation des terrains contaminés du Beaulieu* (2021), with the applicable drinking water criteria, and also with the adjusted regional background values determined in the natural groundwater background study. In addition, RES criteria for metals will be adjusted according to a hardness that is representative of the water in the surrounding environment. Parameters with no criteria will be compared with values obtained during previous monitoring to detect any significant trends or variations. Monitoring results will be analyzed in accordance with the *Guide technique du suivi de la qualité des eaux souterraines*.

A program for monitoring water levels in relation to the drawdown of the water table has also been drawn up and is presented in Appendix RQC128.

Reference :

BEAULIEU, M. 2021. *Guide d'intervention – Protection des sols et réhabilitation des terrains contaminés*. Ministère de l'Environnement et de la Lutte contre les changements climatiques. 326 p. et annexes.

QC-129
Étude d’impact sur l’environnement, Page 6-134, volume 1b, Section 6.10.1 Conditions actuelles;
Étude d’impact sur l’environnement, volume 6, Annexe 6-8 l’étude d’impact sur l’environnement - Rapport sectoriel – Évaluation des teneurs de fond dans l’eau :

As part of the groundwater quality monitoring to be carried out, the network of observation wells selected should not be limited to those unaffected by current human activities. Any activity likely to generate contaminants in the environment must be subject to groundwater quality monitoring. The proponent must adjust its groundwater quality monitoring program to include control wells as well as those in the planned operations area.

Response 129:

Elements of the responses requested have been provided in the response to QC-128.

QC-130
Environmental Impact Assessment, Page 7-45, Chapter 7 Point 7.2.2 Impacts on ichthyofauna and benthos during the construction phase and mitigation measures – Modification of the hydrological regime;
Environmental Impact Assessment, Page 6-65 to 6-85, Volume 1b, Section 6.6 Hydrology;
Environmental Impact Assessment, Page 6-79, Volume 1b, Section 6.6.3 Impacts on Hydrology during the operations phase, and mitigation measures;
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 3, Section 7-1 – Assessment of effluent impacts on the downstream receiving environment;
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 2, Section 4 Conclusion;
Addendum 1, Responses to MELCCFP recommendations and comments, Volume 1, Q6-2;
Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 3, Appendix 7-3 Dilution study of mining effluent in the downstream environment;
Addendum 1, Responses to MELCCFP recommendations and comments, Volume 3, Appendix 12-1 Chapter 13 - Environmental programs (updated):

According to the hydrological and hydraulic studies carried out, mine discharge into Pond 1 would not cause overflow or bank erosion problems in local lakes and watercourses. However, since the studies involve significant uncertainties stemming from several sources, a follow-up of field conditions must be included in the environmental monitoring program to ensure that their integrity is maintained over time (Volume 3, Appendix 12-1). In the hydraulic study (Addendum, Volume 3, Appendix 7-1), it is recommended that erosion conditions be monitored downstream of the mine effluent to validate the hydraulic conclusions and take action in the event of erosion. The proponent must add this monitoring to its annual monitoring program.

Response 130:

A hydrological monitoring program has been drawn up to monitor changes in water levels in the various watercourses potentially impacted by the project, under different hydrological conditions. It also includes monitoring bank conditions and signs of erosion in the watercourse downstream of the effluent between Pond 1 and Lake SN5. This program is presented in Appendix RQC130.

As a preventive measure, WMG decided to replace the three culverts and conducted a study on the subject, available in Appendix RQC50 (Windfall mining project – Repair of culverts P1 and P2 downstream of the mine effluent). In addition, if erosion is observed on certain sections of the watercourse during monitoring, bank stabilization measures may be implemented locally, such as the installation of protective riprap.

QC-131
Environmental Impact Assessment, Page 7-45, Chapter 7 Point 7.2.2 Impacts on ichthyofauna and benthos during the construction phase and mitigation measures – Modification of the hydrological regime; Environmental Impact Assessment, Page 6-65 to 6-85, Volume 1b, Section 6.6 Hydrology; Environmental Impact Assessment, Page 6-79, Volume 1b, Section 6.6.3 Impacts on Hydrology during the operations phase, and mitigation measures; Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 3, Section 7-1 – Assessment of effluent impacts on the downstream receiving environment; Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 2, Section 4 Conclusion; Addendum 1, Responses to MELCCFP recommendations and comments, Volume 1, Q6-2; Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 3, Appendix 7-3 Dilution study of mining effluent in the downstream environment; Addendum 1, Responses to MELCCFP recommendations and comments, Volume 3, Appendix 12-1 Chapter 13 - Environmental programs (updated):

The proponent must demonstrate and ensure that the increased flow will not affect the stability of the watercourse. In addition to question QC-130, the proponent must provide the preliminary hydrology monitoring program to distinguish the project's effects on the hydrology of the receiving environment from natural variations under the influence of meteorological conditions. Hydrological monitoring makes it possible to document the effects of the project on the hydrological regime in the study area, to facilitate interpretation of environmental monitoring data on the biophysical environment, and to distinguish the direct effects of the project from those related to natural variations in the environment and those caused by climate change. The program must include the following information: objectives, monitoring methodology and hydrological parameters, frequency and duration of monitoring. Bank monitoring from the effluent discharge point in Pond 1 and downstream of Lake SN5 must be included in the environmental monitoring program for the operations and post-operation phases. The proponent must validate the Cree communities' interest in participating in hydrological monitoring. Where appropriate, Cree traditional knowledge should be incorporated into the monitoring.

Finally, if erosion is observed, the plan must present mitigation measures to limit erosion and degradation of watercourse stability. In the case of proven erosion problems, the proponent will have to apply mitigation measures quickly.

Response 131:

A hydrological monitoring program has been drawn up to monitor changes in water levels in the various watercourses impacted by the project, under different hydrological conditions. This program is presented in Appendix RQC130. To distinguish the project's effects on the hydrology of the receiving environment from natural variations under the influence of meteorological conditions, this program includes the installation of a station to measure precipitation, and there are plans for a station to measure water levels in a watercourse and a lake not impacted by the project.

QC-132
Addendum 1 - Response to MELCCFP questions and comments, Volume 3, Appendix 8-1 - Surface water and sediments (Revision 1):

The proponent must carry out sediment monitoring at the same "control" and "exposed" stations as those established for the initial characterization. Guidelines for establishing the follow-up plan are presented in the Guide de caractérisation physicochimique de l'état initial du milieu aquatique avant l'implantation d'un projet industriel (MDDELCC, 2017). For information purposes, the first monitoring report must be submitted three years after the start of the operations phase.

Response 132:

Sediment will be monitored at the same "control" and "exposed" stations as those established for the initial characterization. The monitoring program is attached in Appendix RQC132. The sediment monitoring program is briefly presented in the environmental impact assessment and is included in Addendum 1 (Volume 3, Appendix 12-1). It is mentioned in particular that the same sampling stations will be used, and that sampling will be carried out in parallel with monitoring of benthic invertebrate communities.

QC-133
Environmental impact assessment, Restoration plan for work during operations:

The proponent must provide the containment, planned control, and follow-up measures that will be maintained in the event that the proponent must temporarily cease mining activities for more than one month.

Response 133:

Chapter 7 of the restoration plan submitted as part of the environmental impact assessment describes the controls and monitoring that will be maintained in the event of temporary cessation of activities for a period of six months or more. The contents are set out below. Pursuant to sections 224 and 226 of the Mining Act (c. M-13.1), in the event of a temporary suspension of mining activities for a period of six months or more, the MRNF will be notified and WMG undertakes to transmit, within four months of the beginning of the suspension, certified copies of the plans of underground works and surface facilities.

In accordance with the MRNF Guide, in the event of a temporary suspension of activities of six months or more, WMG will present the safety measures adopted to ensure public safety and environmental protection. These measures are intended to restrict access to the mine site and the various facilities, maintain effluent quality control, and ensure the physical and chemical stability of the various accumulation and storage areas. The following measures, without limitation, will be applied during a temporary shutdown of mining activities lasting six months or more:

- pumping will continue at a rate that will keep the mine openings dry until work resumes, or until the equipment can be recovered from underground. Mine drainage water will continue to be treated and discharged as part of the final effluent;
- access to the sites will be secured and restricted. NPGA boulders will be placed at the entrances to the various facilities on the site to ensure site safety;
- reinforced concrete slabs will be installed to close off and secure each raise;
- the portal will be blocked with boulders;
- "danger" signs will be installed every 30 m around the portal and at the ventilation raises;
- programs to monitor the integrity of works and the environment will be maintained to ensure public safety and environmental protection during the temporary shutdown.

In the event of mining activities ceasing for more than one month, WMG undertakes to continue the regulatory monitoring activities listed in its authorizations to ensure environmental protection. It is important to specify that this monitoring will be carried out to the extent possible, since short-term temporary stoppages are often due to force majeure, which means that access to the site may be restricted.

References:

MERN. 2022. Guide de préparation du plan de réaménagement et de restauration des sites miniers au Québec. Ministère de l'Énergie et des Ressources naturelles, Direction de la restauration des sites miniers, Gouvernement du Québec, ISBN : 978-2-550-92682-5 (PDF). 2022, 87 pages.

WSP. 2023. Projet Minier Windfall. *Plan de restauration - Travaux d'exploitation*. Rapport produit pour Minière Osisko Inc. 95 pages et annexes.

QC-134
Environmental Impact Assessment, Volume 1b, Section 4.8.1 Indigenous communities:

Considering that Lake SN2 has the greatest biodiversity in the study area, the proponent must monitor it. Mitigation measures must also be put in place for the construction, operations, and restoration phases to protect against possible contamination, particularly from dust that may come from the accumulation areas. It must also monitor these measures and make the necessary adjustments if they prove ineffective. The proponent must indicate whether access to this body of water and others used for fishing will be maintained after mine closure. Should changes from the initial state be observed, the proponent will be required to implement additional mitigation measures.

Response 134:

Mitigation measures

The following standard and specific mitigation measures will apply during the various phases of the project (see Windfall Project Highlights in this document): AIR01, AIR09, QUA01 to QUA26, HYD01, VEG04 and NOR04 to NOR16.

Among other things, these measures will protect the lake from contamination, including airborne contamination. Mitigation measures will be monitored by the environmental monitor during the construction phase, and the follow-up measures listed will also be integrated into the site's environmental management. If necessary, and depending on the results of the studies, corrective measures may be applied if the measures proposed above prove ineffective.

Monitoring programs

Numerous monitoring programs have been developed to ensure the protection of the environment, including SN2 lake. These programs are presented in the following appendices:

- Appendix RQC123 - Monitoring program - Mining effluent and surface water
- Appendix RQC125 - Preliminary monitoring program for Windfall site water management structures and storage areas
- Appendix RQC126 - Waste rock and tailings management plan
- Appendix RQC128 - Water level and groundwater quality monitoring program
- Appendix RQC130 - Environmental monitoring program - Hydrology
- Appendix RQC132 - Monitoring program - Sediment
- Appendix RQC135 - Monitoring program – Ichthyofauna

Lake SN2 is also included in the biodiversity monitoring program for the surface water (section 3.1) and benthos (section 3.4) components of the program (Addendum 1, vol. 3, appendix 9-1).

Access to SN2 lake

Access to southwestern lake SN2 (map RQC99) will be maintained at all times during mine construction, operation and closure. This access may, after mine closure, be maintained by the tallyman if he wishes to maintain this access for his fishing activities on SN2 lake.

QC-135
Environmental Impact Assessment, Page 13-11, Volume 1b, Section 13.1.2 Operations:

As part of the biological monitoring plan, the ichthyofauna protocol should enable a comparison of communities and density of species of interest (char and walleye) before, during, and after mine operations. Thus, the proponent must carry out inventories on Lake SN11 (exposed area) and SN2 (reference area) to ensure their presence in these lakes in order to carry out a comparative study. It is therefore important that the biological monitoring study plan continue over a sufficiently long post-closure period to be able to assess the long-term effects on the fish community in the area's water bodies. The proponent must refer to the Metal Mining Technical Guidance for Environmental Effects Monitoring, particularly Section 3.3, and to D019 to define the biological monitoring plan to be submitted and approved.

Response 135:

The regulatory biological monitoring study required by the federal government under the Metal and Diamond Mining Effluent Regulations (MDMER) and the Fisheries Act includes the monitoring of fish fauna. The content of the fish fauna component of this study is presented in Appendix RQC135. This monitoring will allow for a comparison of communities and the density of certain species of interest during and after the operation of the mine. The second cycle of the Environmental Effects Monitoring (EEM) program was conducted in 2023 (Englobe, 2024) and will serve as a baseline for future monitoring. In this regard, the next field monitoring study is scheduled for 2026, during the construction phase. WMG will ensure, among other things, to follow the recommendations of the Technical Guide for Environmental Effects Monitoring of Metal Mines.

Reference :

Englobe. 2024. *Étude de suivi des effets sur l'environnement au site Windfall – Rapport d'interprétation du cycle 2- version finale.* Rapport produit pour Groupe Minier Windfall. Mai 2024. Référence Englobe : 16-002211236.001-0100-EN-R-0100-01. 65 pages et annexes.

QC-136
Environmental Impact Assessment, Page 13-11, Volume 1b, Section 13.1.2 Operations:

The proponent must add monitoring of birds with status throughout the project to verify whether species with special status and land use occur in and around the project area.

If active nests of birds with status are identified during any phase of the project, the proponent must establish and implement, in consultation with the appropriate authorities, mitigation measures to avoid the destruction, disturbance, or removal of the nests.

Response 136:

A program to monitor birds with status throughout the project has been added and is presented in Appendix RQC136. The procedure to follow if a nest is discovered is also presented in the same appendix. The monitoring program will begin in Year 1 of construction, after the clearing work has been completed. Data collected in 2016, 2021, and 2024 will serve as a baseline.

For this purpose, as part of the biodiversity program, bird inventories were carried out in 2024 in and around the study area of the biophysical environment. The aim of the program is to assess the impact of forest fires on bird communities. However, analysis of these data will also enable the reference state to be adjusted to take account of changes caused by fire. According to the preliminary analysis, a total of 47 species or groups of species were detected using the listening point inventory method in June 2024. In 2016, 39 species were detected using the same method, and 35 species in 2021, for a total of 49 species for the two years combined.

The species detected in greatest densities in the inventoried fire-free areas are the Nashville warbler (*Leiothlypis ruficapilla*), Tennessee warbler (*Leiothlypis peregrina*), golden-crowned kinglet (*Regulus satrapa*), and white-throated sparrow (*Zonotrichia albicollis*) in wooded areas, and the white-throated sparrow, Tennessee warbler, dark-eyed junco (*Junco hyemalis*), and Nashville warbler in areas burned in 2023. In the case of stands located on burned land, white-throated sparrow and dark-eyed junco are the species detected at the highest densities, both in habitats that were originally wooded and in regeneration before the 2023 fires.

In addition, bird densities found in fire-free stands in 2024 are 4.37 IP/ha in wooded areas and 4.73 IP in regenerating areas. In burned areas, the results obtained in terms of density appear to be lower, i.e., 3.31 IP/ha in post-fire wooded areas and 3.40 IP/ha in post-fire regenerating areas. In comparison, bird densities in the biophysical study area in 2016 and 2021 ranged from 2.99 to 4.16 IP/ha in wooded areas and from 3.16 to 4.33 IP/ha in regenerating areas, slightly lower than the data obtained in 2024.

The biodiversity program will enable further analysis of the results obtained to validate whether the trends observed are significant.

QC-137
Environmental Impact Assessment, Page 13-1, Volume 1b, Section 13 Environmental programs: Addendum 1 - Responses to MELCCFP recommendations and comments, Volume 3, Appemdix 12-1:

The proponent must add monitoring of the effectiveness of mitigation measures related to transportation and land users to the annual monitoring program. Monitoring should include recording road accidents involving all project-related vehicles (transport, subcontractor, employee), wildlife collisions, and complaints. If problem situations are observed, the proponent must improve existing mitigation measures or suggest new ones.

Response 137:

A program to monitor the effectiveness of mitigation measures related to transportation and land users will be added to the annual monitoring program. Details of this monitoring, and of the social environment, are given in Appendix RQC137. The following elements are part of the program:

- Road accidents will be recorded in a logbook with the following information: date of event, time, location, type of event, and whether any material was spilled.
- Cases of collisions with wildlife will be documented, noting the species, date, and location of the collision.
- Complaints from land users will be documented. Follow-up via a complaint and reporting mechanism will be noted. Each year, the nature of the complaints will be summarized.

6 Comments

QC-138
Environmental Impact Assessment, Page 7-19, Volume 1b, Section 7.1.2
Impacts on vegetation and wetlands during the construction phase and mitigation measures:

The proponent has mentioned that it wishes to use a "chemical dust suppressant." At all stages of the project, the proponent must bear in mind that only the use of dust suppressants certified by the Bureau de normalisation du Québec with standard BNQ 2410-300 is authorized.

Response 138:

At all phases of the project, WMG will bear in mind that only the use of dust suppressants certified by the Bureau de normalisation du Québec with standard BNQ 2410-300 is authorized.

QC-139
Environmental Impact Assessment, Page 7-14, Volume 1b, Section 7.1.1.4
Plant species with special status:

The proponent should note that the Act respecting threatened or vulnerable species (LEMV) prohibits the mutilation or destruction of any specimen of a designated plant species. In the event of the subsequent discovery of a specimen of a threatened or vulnerable plant species in the work zone, the project will have to be adapted to avoid impacts on them. Specimen avoidance remains the only alternative.

Response 139:

WMG takes due note of the elements mentioned in the comment concerning the Act respecting threatened or vulnerable species (LEMV), and the project will be adapted should a threatened or vulnerable plant specimen be discovered in the work area.

QC-140
Environmental Impact Assessment, Page 2-6, Volume 1a, Section 2.1.2 Tailings storage facility
Environmental Impact Assessment, Volume 2, Sectoral Report 3-2 Reports signed by a member of the Ordre des géologues attesting to the absence of geological potential under the accumulation areas:

The proponent submitted a report signed by a member of the Ordre des géologues attesting to the absence of geological potential under the accumulation areas (tailings storage facility and waste rock stockpile) and the basins. This report must be submitted to and approved by the MRNF in accordance with section 241 of the Mining Act.

Response 140:

WMG confirms that it will be submitting the accumulation area report to the MRNF for approval in accordance with section 241 of the Mining Act.

QC-141
Environmental Impact Assessment, Volume 1b, Section 9 Resilience to Climate change
Environmental Impact Assessment, Volume 3-4-5, Appendix 6-2 Sectoral Report – Estimated GHG emissions from the project
Environmental Impact Assessment, Volume 8, Appendix 9-1 Sectoral Report Resilience to climate change:

When it is considered that the annual GHG emissions attributable to mine operations are expected to be below the threshold of 25,000 metric tonnes of CO_2eq, the mine will not necessarily be subject to the Regulation respecting a cap-and-trade system for greenhouse gas emission allowances (RSPEDE). However, since annual GHG emissions for fuel combustion by mobile and stationary equipment are estimated at 30,000 metric tons CO_2eq, the proponent must take note of the following comments:

- GHG emissions monitoring is a legal requirement under the *Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere* (RDOCECA). This requirement applies to the operations phase of the mine site. The Windfall project will therefore be added to the mine site's current GHG emissions monitoring program. This program will track the quantities of fuel used to carry out activities and the associated GHG emissions. This report must be submitted to the Administrator, for information;
- The proponent must consider energy efficiency measures or fuel substitution;
- An emitter may request that an establishment it operates and which is not subject to the RSPEDE become so if all the eligibility conditions are met. If it carries out an activity eligible for free allocation, it could receive GHG emission units to minimize the impact of the carbon cost on its business. Information on voluntary membership is available on the departmental website at the following address http://www.environnement.gouv.qc.ca/changements/carbone/adhesion-volontaire/index.htm

Response 141:

WMG takes due note of the comments made concerning the monitoring of GHG emissions, energy efficiency measures and fuel substitution, and adherence to the RSPEDE.

QC-142
General

The document presented on pages 1,603 to 3,088 of the PDF in Appendix F-1 of Addendum 1 is in English. In force since June 2023, An Act respecting French, the official and common language of Quebec requires the Administration to use French in an exemplary and exclusive manner, subject to certain exceptions. This Act proposes a number of changes with regard to French as the language of government. It gives the Administration the duty to use French in an exemplary and exclusive manner, subject to certain exceptions.

Following assent to this Act, the government updated its language policy, which covers requirements for legal entities and companies established in Quebec, as well as documents submitted by companies.

The Ministère requires that corporate bodies and businesses provide French-language documentation as part of their application for a grant, contract, permit, other form of authorization or, more generally, for compliance with an obligation arising from a law or regulation.

The validity of an important analysis document could be considered null and void if it is filed in English only. For example, it is not necessary to translate certain appendices (e.g., certificate of laboratory analysis in English).

In future documents, the proponent will be required to submit all studies to the MELCCFP in French. It is also recommended to submit an English version of the copies for COMEX analysis.

Response 142:

WMG has submitted all documents produced as part of the EIA in French, and will continue to do so in subsequent submissions.

In addition, the documents referred to in the commentary (on pages 1,603 to 3,088) were provided by the Government of Quebec through an access to information request for the Site Characterization Study – Phase I. Appendix F-1 of the Site Characterization Study – Phase I has therefore reproduced the documents sent as is (originals received from the government) and they have been added as such.

WMG also takes note of the COMEX recommendation to receive a copy of deliverables in English. An English version has been produced for the Environmental Impact Assessment document, Addendum 1, and this Response to questions document.

QC-143
General

Addendum 1 shows shortcomings in the organization and quality of the information provided, which have hampered the analysis of the project in terms of efficiency and comprehensibility. In particular, future submissions are expected to be better structured and easier to navigate. The information presented must be complete, and the results must be interpreted according to the rules of the trade.

Response 143:

The way the Addendum 1 was to be assembled and organized had been discussed with the MELCCFP in September 2023. Therefore, WMG does not understand the comment addressed to it. Moreover, for several questions in this document, the requested content had been provided. To help the reader navigate and to facilitate the understanding in this document, cross-references were systematically added in each response where necessary. These references will allow the reader to see that the information was often complete and that the results had been interpreted according to best practices. Furthermore, WMG representatives invite the authorities to communicate directly with them if any ambiguities remain regarding the organization of this document, in the interest of mutual efficiency.