CRITICAL ELEMENTS LITHIUM CORPORATION

LITHIUM-TANTALUM ROSE PROJECT – ANSWERS TO THE SECOND INFORMATION REQUEST FROM THE IAAC

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1. INTRODUCTION

Following a technical review of the Environmental Impact Study (EIS) Critical Elements Lithium Corporation (CEC) for the Lithium-Tantalum Rose Project in James Bay and the answers to the first information request, The Impact Assessment Agency of Canada (IAAC) sent to CEC, on March 27th, 2020, a second information request. This information request contains questions and comments aiming to obtain information and clarifications in order to continue the analysis as part of the environmental assessment.

Section 2 of this document transcribes the information requested by IAAC, followed by CEC's responses. To facilitate the distinction between different texts, the information requested by the IAAC on March 27th, 2020 is in *italic*.

2. QUESTIONS FROM THE IAAC

SCOPE OF THE PROJECT

CCE 1 Effects of the Workers' Camp

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, sections 6 (Scope of the Project) and 10.1 (Environmental Effects).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Answers to questions CEAA-1 and CEAA-3.

BACKGROUND

In response to question CEAA-1, the proponent explains that the preferred choice of camp for housing workers is the Eastmain camp located 25 km from the mine site. However, "if this option fails, Critical Elements Lithium Corporation (CEC) has identified a site 4 km from the pit on which a permanent camp could be installed. There is currently no infrastructure in place." In response to question CEAA-3, the proponent provides a brief comparative table of the two options. However, the environmental and Indigenous community effects of the construction and operation of the camp located near the mine site were not assessed. These effects must be assessed in the event that the first option fails. Since the final selection of the camp will be made at a later date, the proponent must present the effects of each of the two alternatives.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) For each of the two alternatives considered for the workers' camp, submit a detailed analysis of: 1) environmental effects; 2) effects related to changes in the environment on Indigenous people in terms of health, natural and cultural heritage, current use of lands and resources for traditional purposes, and construction, site or thing of historical, archaeological, paleontological or architectural significance; and 3) social effects[1] on Indigenous people. For environmental effects, this analysis should include an assessment of the effects on air, water, wildlife and wetland quality, among others. The proponent must describe the mitigation measures that will be implemented to reduce the effects of each of these options. The proponent must follow the approach described in section 8 of the Agency's guidelines to draft the environmental impact statement.

ANSWER

As specified in answer CEAA-1 of the first information request (Answers to the questions and comments received from CEAA, December 2019), the preferred choice of camp is that of the Eastmain camp. The potential impacts of this camp are discussed in answer CEAA-1c of the

[1] The social effects on Indigenous people are being assessed under the agreement signed in June 2019 between the Canada Impact Assessment Agency and the Cree Nation Government regarding the continuation of the environmental assessments of the Rose Lithium-Tantalum Mining Project and the James Bay Mine Project (available at the following link: *https://iaac-aeic.gc.ca/050/evaluations/document/132804?culture=en-CA*).

request for additional information (Answers to the non-compliance of the first request of information from the IAAC, February 2020).

As this camp already exists and will not be managed by CEC, it will be the camp promoter's responsibility to present a detailed analysis of the impacts of the camp.

B) *Compare the two alternatives, namely on the basis of their environmental effects and their effects on established or potential Indigenous and treaty rights.*

ANSWER

The choice of camp will be Eastmain camp. The comparison presented in table CEAA -3 (Answers to the questions and comments received from CEAA, December 2019), demonstrates that this choice is more advantageous.

OTHER MEANS OF CARRYING OUT THE PROJECT

CCE 2 Alternatives - Ore Transportation and Storage

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 8 (Other means of carrying out the project).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-2.

BACKGROUND

In question CEAA-2, the proponent was asked to provide a detailed analysis of alternatives for ore transportation and storage as requested in section 8 of the Agency's guidelines for drafting the environmental impact statement. In its response, the proponent mentions that two transshipment sites are being considered, namely Matagami and Chibougamau. It presents a summary analysis of the routes between the mining project site and each of these transshipment sites as well as a table summarizing the characteristics of the two alternatives (Table CEAA-2e). However, the environmental effects and potential adverse effects on established or potential Indigenous and treaty rights of each of these two alternatives have not been assessed, as required in the approach described in section 8 of the Agency's guidelines to draft the environmental impact statement. Since the final choice of the transshipment site will be made at another stage in the project, the proponent must present the effects of each of the two alternatives.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) For each of the two alternatives considered for the transportation and storage or ore, submit a detailed analysis of: 1) environmental effects; 2) effects related to changes in the environment on Indigenous people in terms of health, natural and cultural heritage, current use of lands and resources for traditional purposes, and construction, site or thing of historical, archaeological, paleontological or architectural significance; and 3) social effects[2]

[2] The social effects on Indigenous people are being assessed under the agreement signed in June 2019 between the Canada Impact Assessment Agency and the Cree Nation Government regarding the continuation

on Indigenous people. For environmental effects, this analysis should include an assessment of the effects on air, water, wildlife and wetland quality, among others. The proponent must describe the mitigation measures that will be implemented to reduce the effects of each of these options. The proponent must follow the approach described in section 8 of the Agency's guidelines to draft the environmental impact statement.

ANSWER

The chosen option will be the Matagami transshipment site as the Chibougamau transhipment site has not yet been built. Given that the Matagami transshipment site is an existing project already in operation, the impacts are known.

B) *Compare the two alternatives, namely on the basis of their environmental effects and their effects on established or potential Indigenous and treaty rights.*

ANSWER

The comparison between the two choices is found in answer CEAA-2 (Answers to the questions and comments received from CEAA, December 2019), however since the Chibougamau transhipment site is neither constructed nor in operation, the only viable option is the Matagami transhipment site.

C) Justify the option selected (A and B).

ANSWER

Please refer to answer B).

CCE 3 Alternatives - Contaminated Water Treatment and Effluent Discharge Points

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 8 (Other means of carrying out the project).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-4.

BACKGROUND

In response to question CEAA-4 A), the proponent presents alternatives for the treatment of mine water and the discharge of water from mine effluents, including those from pit dewatering. The proponent explains which option was selected for each of these two components and provides summary information on the alternatives. It does not present criteria to determine the technical and economic feasibility of these options. Nor does it explain the effects of each of the options assessed.

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of the environmental assessments of the Rose Lithium-Tantalum Mining Project and the James Bay Mine Project (available at the following link: *https://iaac-aeic.gc.ca/050/evaluations/document/132804?culture=en-CA*).

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Provide a multi-criterion analysis for: 1) mine water treatment and domestic wastewater treatment, and 2) effluent discharge points (water treatment plant effluent and dewatering effluent). The proponent must follow the approach described in section 8 - Other means of carrying out the project, in the Agency's Environmental Impact Statement Guidelines. The proponent must explain the selection of criteria and the values assigned to each criterion, and present the results of this analysis of alternatives in a comparison table.*

B) *For each of the alternatives assessed for mine water treatment, domestic water treatment and effluent discharge points, present a detailed analysis of: 1) environmental effects; 2) effects related to changes in the environment on Indigenous people in terms of health, natural and cultural heritage, current use of lands and resources for traditional purposes, and construction, site or thing of historical, archaeological, paleontological or architectural significance; and 3) social effects[3] on Indigenous people. The proponent must summarize this analysis in the comparative table referred to in A). The proponent must follow the approach described in section 8 - Other means of carrying out the project, in the Agency's Environmental Impact Statement Guidelines.*

ANSWER

The technical note presented in Appendix CCE 3 answers the IAAC's questions.

CCE 4 Alternatives - Energy Sources

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 8 (Other means of carrying out the project).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-5.

BACKGROUND

For question CEAA-5, the proponent was asked to provide additional details on the economic and environmental criteria (including greenhouse gases (GHGs)) of the various options to justify its choice of energy sources to be used, namely to power mobile equipment. The proponent indicates in its response the economic and environmental criteria that were used to analyze the energy sources. However, GHG emissions are the only environmental criterion used in the analysis.

Environment and Climate Change Canada is of the opinion that other environmental criteria must also be considered, including emissions of criteria air contaminants (NO_2, CO, PMT, PM_{10}, $PM_{2.5}$,

[3] The social effects on Indigenous people are being assessed under the agreement signed in June 2019 between the Canada Impact Assessment Agency and the Cree Nation Government regarding the continuation of the environmental assessments of the Rose Lithium-Tantalum Mining Project and the James Bay Mine Project (available at the following link: *https://iaac-aeic.gc.ca/050/evaluations/document/132804?culture=en-CA*).

SO_2 and NH_3) as well as any other relevant contaminant, i.e., specific to mine site activities.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Include emissions of criteria air contaminants (NO2, CO, PMT, PM10, PM2.5, SO2 and NH3) in the analysis and selection of energy sources, as well as any other relevant contaminants.

ANSWER

No, the GHG emissions were not the only factor taken into account: In table CEAA-5a, economic and technical (kw/h price) criteria are shown in terms of realism of the scenario.

«Environment and Climate Change Canada are of the opinion that other environmental criteria must also be considered, namely, the emissions from the main atmospheric contaminants (NO_2, CO, PMT, PM_{10}, $PM_{2.5}$, SO_2 and NH_3) as well as all other relevant contaminants, in other words those specific to activities on a mining site. »

This must be evaluated only if combustibles are used and would add very little to the analysis. It would only show the difference between diesel and natural gas.

CCE 5 Alternatives - Ore Processing

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 8 (Other means of carrying out the project).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-6.

BACKGROUND

In its response to question CEAA-6, the proponent provides information on the two process options for the extraction of lithium, either by brine or by spodumene concentration. However, it does not compare the two processes and does not explain why spodumene concentration extraction was selected. It does not present criteria to determine the technical and economic feasibility of these options. Nor does it explain the effects of each of the ore processing options evaluated.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Provide a multi-criterion analysis for ore processing. The proponent must follow the approach described in section 8 - Other means of carrying out the project, in the Agency's Environmental Impact Statement Guidelines. The proponent must clearly explain the criteria used to determine the option selected for each ore processing option. The proponent must explain the selection of criteria and the values assigned to each criterion, and present the results of this analysis of alternatives in a comparison table.*

ANSWER

Treatment of the ore, either by means if brine or by concentration of spodumene, is not the

promoter's choice but rather is determined by the nature of the deposit. In CEC's case, the lithium deposit is found in pegmatite and not in brine and as such, the only possible option for CEC is to extract the lithium (spodumene) by crushing and grinding followed by concentration by flotation.

B) *For each of the ore processing options assessed, present a detailed analysis of: 1) environmental effects; 2) effects related to changes in the environment on Indigenous people in terms of health, natural and cultural heritage, current use of lands and resources for traditional purposes, and construction, site or thing of historical, archaeological, paleontological or architectural significance; and 3) social effects4 on Indigenous people. The proponent must summarize this analysis in the comparative table referred to in A). The proponent must follow the approach described in section 8 - Other means of carrying out the project, in the Agency's Environmental Impact Statement Guidelines.*

ANSWER

A comparative analysis of the two treatment options is not possible as the treatment by brine is not a viable option for CEC du to the nature of the deposit.

CCE 6 Alternatives - Secondary Ore Processing

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 8 (Other means of carrying out the project).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-7.

BACKGROUND

In response to question CEAA-7, the proponent describes the option of on-site secondary processing of spodumene ore in a second project phase. However, it does not conduct an analysis of alternatives using criteria to determine the technical and economic feasibility of these options. Nor does it explain the effects, other than a qualitative overview of greenhouse gas emissions, of each of the options evaluated.

In addition, the proponent does not consider various options that exist or that could be developed in the near future, other than abroad, for the secondary processing of spodumene. While a second transformation of spodumene by the proponent requires a feasibility analysis, the proponent may conduct a summary analysis of alternatives by considering local, Canadian and/or North American second transformation options.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Provide a multi-criterion analysis of alternatives for secondary ore processing. The proponent must follow the approach described in section 8 - Other means of carrying out the project, in the Agency's Environmental Impact Statement Guidelines. The proponent must clearly*

[4] The social effects on Indigenous people are being assessed under the agreement signed in June 2019 between the Canada Impact Assessment Agency and the Cree Nation Government regarding the continuation of the environmental assessments of the Rose Lithium-Tantalum Mining Project and the James Bay Mine Project (available at the following link: *https://iaac-aeic.gc.ca/050/evaluations/document/132804?culture=en-CA*).

explain the criteria used to determine the selected option for each of the secondary ore processing options. The proponent must explain the selection of criteria and the values assigned to each criterion, and present the results of this analysis of alternatives in a comparison table. Consider local, Canadian and/or North American secondary processing options.

ANSWER

In the current project, there is no second transformation.

B) *For each of the options assessed for the second ore processing, present a detailed analysis of: 1) environmental effects, not limited to greenhouse gas (GHG) emissions, but by providing quantitative data on GHG emissions; 2) effects related to changes in the environment on Indigenous people in terms of health, natural and cultural heritage, current use of lands and resources for traditional purposes, and construction, site or thing of historical, archaeological, paleontological or architectural significance; and 3) social effects[5] on Indigenous people.*

ANSWER

Given that a second transformation is not part of the current project, it is not necessary to conduct a detailed analysis.

CCE 7 Dam Removal at Lake 3 - Security and Infrastructure Map Update

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 8 (Other means of carrying out the project).

WSP (February 2019). Rose Lithium - Tantalum Mining Project. Information requested by the CEAA for concordance with the environmental impact statement. Report produced for Critical Elements Lithium Corporation.

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-8.

BACKGROUND

In response to question CEAA-8, the proponent indicates that there will be no more dams at Lake 3. However, on page 31 of the Supplementary Information to the Environmental Impact Statement Concordance (WSP, February 2019), the proponent indicated that the dam planned for Lake 3 must be built for the pit to be operated safely and that it would provide a safe distance to the pit.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

[5] The social effects on Indigenous people are being assessed under the agreement signed in June 2019 between the Canada Impact Assessment Agency and the Cree Nation Government regarding the continuation of the environmental assessments of the Rose Lithium-Tantalum Mining Project and the James Bay Mine Project (available at the following link: *https://iaac-aeic.gc.ca/050/evaluations/document/132804?culture=en-CA*).

A) *Present an updated map of the general development of the proposed mining infrastructure, reflecting the decision to no longer build a dam at Lake 3.*

ANSWER

Map 3-2 of the EIA shows the general development of the project without the dam at Lake 3. This map can be found in Appendix CCE-7.

B) *Specify whether the pit can be operated safely and that a safe distance can be maintained from the pit, despite the removal of the dam at Lake 3.*

ANSWER

The damn was placed as a precaution. The stability study of the pit walls does not show a risk at the north wall concerning this. The pumping wells around the pit lower the hydraulic pressure around the pit and contribute to the stability of the walls. Additional studies will take place for the detailed engineering as well as at the beginning of the project. They will be updated periodically during exploitation as additional information is collected. Amongst this information can be found the seismic data from blasting, geotechnical data obtained about new walls exposed by the progression of excavation works, the behavior of walls as measured and observed by instrumentation, and data from pumping of the pit and the pumping wells. This will allow improvement of the geotechnical model of the pit and to bring adjustments to the operations if needed. Instruments will be installed to measure the behavior of the pit walls in real time.

ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

CCE 8 Criteria for Assessing the Significance of Residual Effects

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Assessment. Part II, section 10 (Evaluation of Effects).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-33.

BACKGROUND

In response to question CEAA-33, the proponent presents its analysis of residual effects for each valued component. It justifies the values placed on each sub-criterion of intensity (magnitude), namely: ecosystem value, socio-economic value and degree of disturbance. However, the same justification exercise is not systematically presented for the values assigned to the following criteria: spatial extent, duration and probability of occurrence.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Justify the values given in the assessment of the spatial extent, duration and probability of occurrence criteria for each valued component assessed as part of the assessment of the project's residual effects.

ANSWER

The justification of the values given in the assessment of the spatial extent, duration and

probability of occurrence criteria for each valued component assessed as part of the assessment of the project's residual effects can be found in Table CCE-8 in Appendix CCE-8.

AIR QUALITY AND SOUND ENVIRONMENT

CCE 9 Air Quality Monitoring - Monitoring Stations

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 11.4 (Monitoring Program).

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Expected Effects on Valued Components - Indigenous Peoples).

WSP (February 2019). Rose Lithium - Tantalum Mining Project. Answers to supplementary questions from Quebec's MELCC. Appendix Q-7Bis.

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-58.

BACKGROUND

The proponent provided an air quality monitoring program in Appendix Q-7Bis of the Responses to the Ministère de l'Environnement et de la Lutte contre les changements climatiques (MELCC) (February 2019), which considers following up on a receptor deemed sensitive, namely the workers' camp. However, users of trapline RE1 use the area occasionally, especially for moose hunting in winter and goose hunting in spring. That said, no Cree camps have been identified as sensitive receptors. Exposure is nevertheless likely and it seems important to reassure users to minimize avoidance of the territory.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Consider adding an air quality monitoring station at a location representative of the use of RE1 trapline, even in the absence of a camp. If not, justify the choice of worker camp as the only air quality monitoring station.

ANSWER

CEC has taken into consideration the territory usage in the conception of its project, in the evaluation of the impacts, and for the environmental follow-ups. Field experience has shown that the degree of confidence and serenity of the user sis not directly proportional to the quantity of measures and follow-ups. The inverse effect could even be felt in the case where too many follow-ups are done as it this could increase doubts that there is an environmental risk when there is not. The stations were placed according to the scientific evaluation of risks, CEC believes that the best way to reassure the population is by means of clear and frequent communication adapted to the audience.

CCE 10 Air Quality Monitoring - Compliance with Sensitive Receptor Standards and Addition of NO2

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 11.4 (Monitoring Program).

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Expected Effects on Valued Components - Indigenous Peoples).

WSP (February 2019a). Rose Lithium - Tantalum Mining Project. Updated environmental impact statement. Report produced for Critical Elements Lithium Corporation. Sector study RS-6 (Air quality).

WSP (February 2019b). Rose Lithium - Tantalum Mining Project. Answers to supplementary questions from MELCC. Appendix Q-7Bis.

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-58.

BACKGROUND

In terms of the scope, the Air Quality Monitoring Program refers only to verifying compliance with the standards of Air Quality Regulations (AAR), without considering the National Ambient Air Quality Standards. The selection of contaminants to be monitored should, in part, be motivated by the results of the modelling study on atmospheric dispersion. For example, for nitrogen dioxide (NO2) over a period of one hour, maximum values corresponding to 92% (construction phase) and 102% (operations phase) of the limit value were modelled at the C2 Cree camp.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Consider compliance with National Ambient Air Quality Standards for sensitive receptors in the Air Quality Monitoring Program. If not, justify.*

ANSWER

The Canadian Ambient Air Quality Standards (CAAQS) were added to the air quality monitoring program presented in the updated Plan de gestion des poussières (Dust Management Plan) in Appendix CCE-10. In particular, the CAAQS includes a fine particulate standard.

B) Consider adding NO2 to the Air Quality Monitoring Program. If not, justify.

ANSWER

Modelling results presented in the CEAA-60 answer to the first set of questions show modelled concentrations at the Cree camp as high as 73.1 µg/m3, which represents 92% of the 1-hour CAAQS standard for NO2 for the construction scenario and 80.4 µg/m3, which represents 102% of the standard for the operation scenario. As discussed in this answer, two components are responsible for the levels reached: the emission rates of machinery exhaust gases, which account for 94% of the maximum modelled concentrations for the project (in operation) and the initial concentration considered, which already represents 63% of the limit value. However, both of these components present a conservative assessment of ambient air concentrations and it is expected that actual concentrations will be lower and meet the 1-hour CAAQS standard. The degree to which these components are conservative is discussed below.

Emission rate

Machinery emission rates are assessed according to the Tier level certification of the engines. In the absence of precise data on the actual equipment that will be used, a conservative choice of the distribution of Tier certifications is made during the modelling exercise. However, the proponent agrees to use only Tier 4-certified machinery for the operation phase, when available.

For the operation phase modelling scenario, the exclusive use of Tier 4 certification machinery reduces NOx emissions by 43%, from 11.4 g/s to 6.5 g/s. Considering that this equipment is identified as the main contributing source of the modelled maximum concentrations, this is a significant reduction that will considerably reduce the project's impact.

Initial concentration

As discussed, the initial concentration considered in the modelling is derived from the generic initial concentrations recommended by the MELCC for remote projects. This concentration is 50 µg/m3 and already represents a significant part of the threshold. However, it has not been specifically assessed for the study site and likely conservatively estimates the actual initial concentration.

To determine a site-specific initial concentration, it is customary to use air quality monitoring data in the vicinity or a comparable environment from, for example, the Réseau de surveillance de la qualité de l'air du Québec (RSQAQ). However, no RSQAQ station that measures NO2 is present near the site, or even for comparable sites. The majority of stations performing this type of measurement are located near urban centres such as Montreal or the City of Québec, where several major sources influence NO2 levels.

For this exercise, one station is still selected for comparison. The station selected is the RSQAQ's Saint-Anicet station (number 6804). This station is located on map CCE-10. This station is located outside urban centres, such as Montreal, and serves as a control station for this sector. This station is probably the most representative in Quebec for a remote site, but still provides a conservative picture of the mine site. Table CCE-10-1 presents the statistical analysis of the hourly concentrations measured at this station from 2016 to 2018. To determine the initial concentration over an hourly period, the MELCC methodology requires a 3-year average of the 99th percentile of the hourly data. In this case, this concentration would therefore be 29.4 µg/m3, or approximately 60% of the generic concentration used in the modelling. Based on this new initial concentration, the modelling results, therefore, indicate maximum modelled concentrations at the Cree camp of 52.4 µg/m3, or 66% of the 1-hour CAAQS standard for NO2 for the construction scenario and 59.8 µg/m3, or 76% of the standard for the operation scenario. The results, therefore, show compliance with the threshold for both scenarios.

In the absence of site-specific data, a second approach to assess an initial concentration in the area of the site mined is the use of NO2 remote sensing measurements. In particular, NASA offers measurements of NO2 concentrations in the atmosphere using the Ozone Monitoring Instrument (OMI) equipment onboard the Aura satellite. This data has a spatial resolution of approximately 13 km x 24 km at nadir and provides daily global coverage. One measurement per day is available for a given grid point, which corresponds to the time when the satellite flies over this sector. The data analyzed in this exercise corresponds to the product OMNO2d6, which corresponds to the NO2 tropospheric column and presents surface concentrations in molecules/cm2. Therefore, this data is not directly transposable to ambient concentrations at ground level. However, in the case of NO2, since the main sources are at ground level and since it is a short-lived compound, the distribution of NO2 is, therefore, mainly concentrated at ground level. Column data is, therefore, a good indicator of ground-level concentrations. For analysis purposes, data was extracted for a grid point near the Saint-Anicet station and a grid point near the mine site. The statistical analysis of these

[6] The full name of the product is "OMI/Aura NO2 Cloud-Screened Total and Tropospheric Column L3 Global Gridded 0.25 degree x 0.25 degree V3".

values is presented in Table CCE-10-2 for the years 2016 to 2018. The data shows that NO2 concentrations are much lower in the area of the mine site for both average and maximum values. For example, the average of the values measured at the mine site represents 22% of those near the Saint-Anicet station, while a 34% ratio is observed for the 99th percentile. This demonstrates the conservative use of the Saint-Anicet station to establish the initial concentration. By applying this ratio to the Saint-Anicet station concentration, the initial concentration would therefore be 29.4 x 34% = 9.9 µg/m3, or about 20% of the generic concentration used in the modelling. Based on this new initial concentration, the modelling results, therefore, show modelled concentrations at the Cree camp of 33.0 µg/m3, which is 42% of the 1-hour CAAQS standard for NO2 for the construction scenario and 40.4 µg/m3, which is 51% of the standard for the operation scenario.

In conclusion, it appears that the NO2 concentration assessment presented in answer CEAA-60 of the first set of questions presents a conservative picture due to the initial concentration considered. A more accurate assessment of the initial concentration showed that no exceedance of the standards is expected at the Cree camp. Furthermore, the proponent's commitment to use only Tier 4 certification equipment will contribute to a significant reduction in emissions. In this context, no NO2 monitoring is planned.

Table CCE-10-1: Hourly NO2 concentrations measured at the Saint-Anicet station

Year	Measured hourly NO_2 concentrations (µg/m^3)		
	Average	99th percentile	Maximum
2016	4.8	28.3	69.6
2017	4.3	28.3	49.9
2018	4.8	31.5	64.7
Average	4.6	29.4	61.4

Table CCE-10-2: NO2 tropospheric column measured by OMI

Measure point position	Year	NO_2 tropospheric column measured (molecules/cm^2)		
		Average	99th percentile	Maximum
Near the Saint-Anicet station	2016	1.99E+15	5.60E+15	7.45E+15
	2017	1.73E+15	5.16E+15	7.15E+15
	2018	1.57E+15	4.72E+15	5.90E+15
	Average	1.76E+15	5.16E+15	6.83E+15
Near mine site	2016	4.03E+14	1.85E+15	2.62E+15
	2017	4.00E+14	1.77E+15	2.97E+15
	2018	3.80E+14	1.61E+15	2.26E+15
	Average	3.94E+14	1.74E+15	2.62E+15
Ratio of averages (mine site / St-Anicet)		22%	34%	38%

CCE 11 Air Quality Monitoring - Toxic Gases (CO and NO_2) during blasting, dust, $PM_{2.5}$, PM_{10} and Total and Fine Particles

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section

10.1.2 (Environmental changes).

WSP (February 2019a). Rose Lithium - Tantalum Mining Project. Updated environmental impact statement.

Report produced for Critical Elements Lithium Corporation. Section 8.3.4.2 (Use of study area).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Answers to questions CEAA-58, CEAA-76 and Appendix CEAA-58.

BACKGROUND

In question CEAA-58 a), the proponent was asked, among other things, to develop a dust management plan and an air quality monitoring program. In its response, the proponent indicates that the dust management plan is presented in Appendix CEAA-58.

ECCC believes that the plan provided answers the question overall but that some information is missing regarding the preliminary air quality monitoring program presented in section 5 of the dust management plan. According to this program, total particulate matter (TPM), certain metals and crystalline silica will be monitored. In its response to question CEAA-76, the proponent explains why it does not consider certain substances for air quality monitoring, such as certain metals and gases. It does not address the issue of PM2.5, however. ECCC believes that PM2.5 and PM10 should be considered for air quality monitoring.

In addition, the proponent did not consider continuous monitoring of particulate matter (total and fine). Such monitoring would allow the impact of mining activities on local air quality to be measured in real time, and thus facilitate adaptive action where necessary.

Nor does the monitoring program consider the monitoring of dust fallout. The proponent mentions in section of the environmental impact study (p. 8–52) that "users of the camp at km 42 obtain water for consumption from a nearby lake located to the south of the camp (in Lake 3 presented in Figure 7-1). A special value is thus assigned to this water body." While there are plans to relocate the camp from km 42 to km 51, it is not clear whether members of the Cree community could continue to use Lake 3 occasionally. Therefore, Environment and Climate Change Canada is of the opinion that monitoring the dust deposition may be required to measure the impact on Lake 3 and to take additional mitigation measures if necessary.

Furthermore, the proponent did not explain whether spot monitoring of toxic gases (CO and NO2) was planned during blasting and what methods would be used to do so.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Add PM2.5 and PM10 monitoring to the Air Quality Monitoring Program and complete the dust management plan by specifying the sampling and analytical methods to be used for these contaminants, and the frequency of analyses.*

ANSWER

An update of the Plan de gestion des poussières (Dust Management Plan), including the air quality monitoring program, is presented in Appendix CCE-10. This update includes $PM_{2.5}$ and PM_{10} monitoring as well as a description of all sampling methods and analysis frequencies.

B) Complete the Air Quality Monitoring Program by adding continuous monitoring of total and fine particles and explaining the methodology that will be used.

ANSWER

Continuous particulate monitoring is not considered in the first instance. Indeed, monitoring by the sampling of particulate matter (PMT, PM_{10} and $PM_{2.5}$) is first considered. Nevertheless, continuous monitoring will be implemented if the monitoring by sampling shows concentrations higher than the air quality standards.

C) Evaluate the relevance of adding a monitoring of dust deposition to the Air Quality Monitoring Program for Lake 3 or for any other watercourse or water body in the vicinity of the mining project that could be used by the Cree community, for example for fishing or water consumption. Justify the choice to add such monitoring or not.

ANSWER

As presented in answer CEAA-59 of the first series of questions, the modelling does not predict any problems in terms of dust fall compared to the former deposition standard of 7.5 g/m^2 per 30 days that was previously stipulated in section 6 of the Regulation respecting the quality of the atmosphere (RQA), for all sensitive receptors and lakes near the mine site. Furthermore, the Plan de gestion des poussières [Dust Management Plan] already provides for the monitoring of total particles in ambient air to ensure the effectiveness of the modelled mitigation measures.

As for Lake 3 in particular, the nearby Cree camp will be relocated and the tallyman does not intend to use (fishing, beaver trapping, water source) Lake 3 once mining operations have begun.

In this context, no monitoring of dust fall is considered.

D) Explain in detail the methods that will be used to carry out spot monitoring of toxic gases (CO and NO_2) during blasting.

ANSWER

The potential emission of NO_2 generated during blasting will be monitored mainly through the observation of blasting events. No CO monitoring is planned. NO_2 emissions mainly occur when blasting conditions are sub-optimal. The presence of larger rocks and weaker front movements than projected will be signs monitored by the proponent to qualify the effectiveness of explosives detonation. If sub-optimal detonation conditions are observed or forecasted, the following measures may be used, if necessary, in the definition of blasting plans:

- Use of dual detonators;
- Use of electronic detonators;
- Formulation of explosives adapted to the conditions and the blasting site;
- Adapted firing procedure;
- Use of an adapted type of explosive such as water resistant explosives.

The use of these measures, where appropriate, can contribute to the best possible management

and reduction of NO_2 emissions.

CCE 12 Air Quality Monitoring - Adaptive Management with Respect to Dust

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 11.4 (Monitoring Program).

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project.

Sections 10.1.3 (Expected Effects on Valued Components - Indigenous Peoples).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-58.

BACKGROUND

In its response to question CEAA-58, the proponent provided a dust management plan (Appendix CEAA- 58). The plan sets forth that the position of the sampling station will be determined to provide an adequate picture of the air quality moving toward the sensitive areas, namely the camp at kilometre 37 of the Nemiscau-Eastmain-1 Highway. It does not, however, specify the measures that would be taken in the event of exceedance.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Describe how mine operations would be modified to reduce dust emissions if air quality criteria are exceeded.

ANSWER

If air quality monitoring measures exceed air quality criteria, the Plan de gestion des poussières (Dust Management Plan) provides for an adaptive mitigation management program. This program provides a framework for implementing the additional mitigation measures and specifies when to implement these. It provides for the addition of continuous particulate matter monitoring and will ensure that standards are met at all times. The mitigation measures that will be implemented are described in the overall Plan de gestion des poussières (Dust Management Plan). The effectiveness of the mitigation measures can be verified through continuous particulate monitoring, which will then be implemented. The operation experience and monitoring results will be used to determine the choice of measures.

CCE 13 Enhancements to the Environmental Management Program via the Dust Management Plan

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 10.1.2 (Environmental changes).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-58.

BACKGROUND

In response to question ACEE-58 B), the proponent states that a copy of the environmental management program for ambient air quality (Appendix Q-7Bis sent to MELCC), enhanced by the Dust Management Plan, will be sent as soon as it is available.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Provide a copy of the Enhanced Environmental Management Program along with the Dust Management Plan as soon as it becomes available.

ANSWER

An update to the dust management plan, including the air quality monitoring program, is presented in Appendix CCE-10.

CCE 14 Methodology for Estimating Dust Deposition Rates at Sensitive Receptors

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 10.1.2 (Environmental changes).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-59.

BACKGROUND

In response to question CEAA-59, the proponent presented the results of modelling the maximum monthly deposition of dust at sensitive receptors in Tables CEAA-59-1 (construction phase) and CEAA-59-2 (operation phase). However, the proponent did not present the method used to estimate dust deposition rates. This information is needed to assess the value of the results obtained.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Explain the methodology used to estimate the dust deposition rates presented in Tables CEAA-59-1 and CEAA-59-2.

ANSWER

The methodology for estimating dust fall rates is presented in the modelling report (WSP, 2018)[7] in section 3.9.1. This methodology uses the DRYDPLT option of the AERMOD model. Furthermore, it takes into account the specific granulometry of each emission source and the density of materials of a particular mine site.

[7] WSP. MARCH 2018 Projet minier Rose Lithium-Tantale, Étude spécialisée sur la qualité de l'air [The Rose Lithium – Tantalum Mining Project, Specialized Study on the Air Quality]. 49 pages and appendices.

CCE 15 NO2 Exceedances and Additional Mitigation Measures

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section (Environmental changes).

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Expected Effects on Valued Components - Indigenous Peoples).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-60 and Appendix CEAA-60.

BACKGROUND

In response to question CEAA-60, the proponent provided an update on atmospheric dispersion modelling (Appendix CEAA-60). It also updated the interpretation of the results for the construction and operation phases by including heating sources and generators in its modelling. It also took into account the new [Canadian Council of Ministers of the Environment] Canadian Ambient Air Quality Standards (CAAQS) for nitrogen dioxide (limit values applicable for the year 2025). The results are presented in Tables CEAA-60- 2 to CEAA-60-5 in Appendix CEAA-60.

This new interpretation of the modelling results highlights some exceedances for nitrogen dioxide (NO2). Indeed, we noted that the concentration of NO2 modelled over a one-hour period in the field of application exceeds the limit value applicable for the year 2025 by 285% during the construction phase and 184% in the operational phase. The limit value for the sensitive receptor (C2 Cree camp) was also exceeded by 102% during the operational phase. Since there is no no-effect level for NO2, any increase could generate an effect on human health. The proponent states that the main sources contributing to the maximum concentrations modelled over a 1-hour period are exhaust gases from mobile equipment. However, it does not explain what additional mitigation measures will be put in place to try to reach CAAQS limit values (e.g., reduce idling of mobile equipment).

The proponent states that the concentrations obtained by modelling nitrogen oxide (NOx) emissions are below the air quality standards in Schedule K of the Clean Air Regulation for this pollutant.

***Note to the proponent:** Environment and Climate Change Canada wishes to specify that CAAQS do not include a scope of application, as does the Clean Air Regulation (CAR).*

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) Explain the significance to human health of exceeding the Canadian Ambient Air Quality Standard for NO2 over one hour (102% result).

ANSWER

As presented in response CCE-10-B, the NO2 assessment apparently presents a conservative picture due to the initial concentration considered and the proponent's commitment to exclusively use Tier 4 certification equipment, which will contribute to a significant reduction in emissions. A more accurate assessment showed that no exceedance of the standards is expected at the Cree camp.

Compliance with standards ensures a safe environment for human health and the environment. Consequently, the anticipated effects on human health and the environment can be considered negligible or acceptable when standards are met.

B) Explain how the principles of protecting clean areas and continuously improving Canadian Ambient Air Quality Standards (CAAQS) will be considered in the design of mitigation measures, monitoring and air quality monitoring activities.

ANSWER

According to the document clarifying the roles and responsibilities of governments[8] in the implementation and operation of the Air Quality Management System[9] [2] and Table 5 of the Guidance Document on Air Zone Management[10], the provincial government, not the proponent, is responsible for ensuring that good air quality is maintained through proactive air management measures and protecting unpolluted areas.

However, the proponent agrees to collaborate with the authorities if provincial authorities are required to establish an air zone management plan to take early and permanent measures to ensure continuous improvement of air quality (moving from a green to a yellow management level) in the air zone of the project under assessment. Accordingly, the proponent agrees to share its monitoring data to allow a more accurate assessment of the air quality in the project's atmospheric zone, determine possible solutions to reduce emissions and apply, where possible, new mitigation measures to its operations.

C) Explain what additional mitigation measures will be put in place to meet the CAAQS limit values for NO2 over a one-hour period, during construction and operation phases.

ANSWER

Mitigation measures are described in the Plan de gestion des poussières [Dust Management Plan], presented in Appendix CCE-10, to reduce the project's NO_2 emissions and comply with the CAAQS limit value for NO2 over a one-hour period. These measures include, for example, reducing idling of machinery and monitoring potential NO2 emissions during blasting.

Furthermore, the proponent agrees to purchase only Tier 4 certified mobile equipment for operation purposes, when available. As discussed in response CCE-10-B, this has the effect of reducing exhaust emissions by 43% compared to what was considered in the modelling. Finally, a more accurate assessment of the initial representative concentration at the mine site demonstrated that no NO_2 exceedances are expected at the Cree camp.

CCE 16 Impacts of Forest Fires on Air Quality

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 9.1.2 (Biophysical environment).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-61.

[8] https://www.ccme.ca/files/Resources/air/pn_1475_roles_and_respn_final_e.pdf
[9] http://airquality-qualitedelair.ccme.ca/en/
[10] https://www.ccme.ca/files/Resources/air/Guidance/Document_on_Air_Zone-Management.pdf

BACKGROUND

For question CEAA-61, the proponent was asked to describe the impact of forest fires on air quality in the region and at the site. In its response, the proponent stated that the initial $PM_{2.5}$ concentration of 15 µg/m³ takes into account the impact of forest fires on air quality in the study area of the future mine site. To support its conclusion, the proponent analyzed a single case study using the "Playground Canada utility developed using the BlueSky Framework (BSF)". Developed in the United States, this utility models the atmospheric dispersion of forest fires and provides an order of magnitude of the concentrations that can be found in the ambient air during these fire episodes. However, the quality of the results depends, among other things, on the quality of the weather data used and the vegetation data. Based on the explanations provided, it is uncertain whether the data used are representative of the study site. In fact, the utility's default parameters were used for the case studied. If the U.S. data were used without having adapted them for Canada, the quality of the results would be affected, and the degree of uncertainty would increase accordingly. The proponent in fact states that caution is in order when interpreting the conclusions.

Moreover, smoke plumes typically generate very high concentrations of $PM_{2.5}$. In fact, some observation stations in Quebec's Far North, indicate that $PM_{2.5}$ concentrations can reach a few hundred µg/m³ at different times during the summer. By dividing observations of forest fire events over a full year, it is possible to generate much lower observed averages than those representative of such events. However, regarding the proponent's response (3rd paragraph, p. 96), the results seem instead to indicate high concentrations of $PM_{2.5}$ near the mine site, and the explanation provided to demonstrate that $PM_{2.5}$ concentrations from forest fires have been incorporated into the average concentration of 15 µg/m³ has not been substantiated.

Environment and Climate Change Canada is of the view that the influence of forest fires on air quality during warm periods of the year should normally be considered in determining initial concentrations of contaminants, including $PM_{2.5}$. However, the modelled concentrations were likely underestimated during the summer months with forest fire episodes.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Consider the influence of forest fires on air quality during warm periods of the year and incorporate these events in the design of the air quality monitoring and surveillance program, namely at sensitive receptors (e.g., implement measures that will allow for adaptive management during air quality deterioration events caused by forest fires).

ANSWER

Concerning the representativeness of the parameters used to configure the Playground Canada utility program, note that the user guide[11] mentions that "fuel loading" and "consumption" are determined using the FWI-FBP model implemented using methodologies developed by Natural Resources Canada. The parameterization is therefore expected to be adapted for a Canadian site, even though the BlueSky Framework (BSF) software suite was developed in the United States. Furthermore, please recall that the Playground Canada utility program was used to illustrate a hypothetical situation to provide an order of magnitude of the concentrations likely to be present in the ambient air when a fire is raging.

As for the concentrations measured by the observation stations in Quebec's Far North, these can indeed reach a few hundred µg/m³. However, careful attention must be paid to the reported values since they often concern hourly maximum concentrations, compared to the values studied by WSP

[11] http://firesmoke.ca/playground/assets/docs/canada/UserGuide.pdf

in the answer CEAA-61, which correspond to daily average concentrations to allow a direct comparison with the $PM_{2.5}$ standard measured over 24 hours.

That being said, please recall that the modelling exercise for the CEAA-61 answer mainly determined that at a distance of approximately 50 km from the study site, an average 75 km^2 fire could increase the $PM_{2.5}$ concentration to the same level as the initial concentration used in the dispersion study, which is a daily average of 15 $\mu g/m^3$.

Furthermore, the statistics studied in answer CEAA-61 also indicate that an average of one to two fires are reported in this 50 km radius area. However, since the procedure for determining the initial concentration according to Section 202 of the CAR uses the 98th percentile of daily average concentrations, more than seven fires per year would be needed in this zone to justify the underestimation of the initial concentration used in the dispersion study during the summer months with forest fire episodes.

Therefore, even considering the addition of a few greater fires that could increase the daily $PM_{2.5}$ concentration above 15 $\mu g/m^3$ if located more than 50 km from the site, using the 98^{th} percentile of daily average concentrations removes these extreme values from the data set.

Consequently, according to the above, the impact of forest fires on air quality can be considered included in the determination of the initial $PM_{2.5}$ concentration when we use an initial concentration of 15 $\mu g/m^3$. The MELCC suggests this concentration for a project located in a northern environment and far from other industrial sources in the Guide d'instructions - Préparation et réalisation d'une modélisation de la dispersion des émissions atmosphériques - Projets miniers, which is the case for the project under study.

However, note that the conclusions of the answer CEAA-61 must be interpreted with caution since the analysis made several assumptions. In this context, it is important to point out that if the air quality monitoring by sampling, as part of the air quality monitoring program, shows concentrations above the air quality standards, continuous particulate monitoring will be implemented. This continuous monitoring will allow the adaptive mitigation measures management program to be implemented. This is an important component in the analysis of ambient air quality conditions, both when the main contributors are from the mine and when the main contributor is a forest fire in the sector. The modification or interruption of certain mining activities will therefore be scaled according to these two sources of particulate matter.

CCE 17 Generator Emissions if Power Line Displacement Delayed

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Assessment. Part II, section 10.1.2 (Environmental changes).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-69.

BACKGROUND

With respect to question CEAA-69 c) on what would be the likelihood that the power line would not be constructed prior to the operation phase, the proponent stated: "CEC believes that it is unlikely that the power line would not be constructed prior to the operation phase. The impact of this situation on air quality has thus not been estimated." However, the proponent does not present any justification to support its claim that the power line is unlikely to be built before the operation phase and therefore an analysis of the effects on air quality is not required.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Support the answer provided to question CEAA-69 c) by justifying why the proponent considers it unlikely that the power line will be built prior to the operation phase (for example: an agreement or ongoing discussions with Hydro-Québec) or assess the effects of this scenario on air quality, if applicable.

ANSWER

The mine development planning does not change. The Hydro-Québec power line will, therefore, be constructed before the CEC operation phase. Indeed, the CEC never planned to operate the mine with generators. Generators will only be used for the construction phase, during which Hydro-Québec will move their power line. In effect, if the Hydro-Québec power line is not ready after the construction phase, CEC will not begin operations at the mine.

CCE 18 Effects of Road Transport

REFERENCE

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Expected effects on valued components - Indigenous Peoples).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-137.

BACKGROUND

In its response to question CEAA-137, the proponent identifies the effects of increased road transportation on traffic and Cree camps along the Eastmain-1 Road, but it does not provide data on these effects, including air quality and noise levels.

In addition to the increased risk of accidents, off-site transportation related to mine construction and operation may affect human health by modifying air quality and the sound environment, even if standards are met.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Provide a quantitative assessment of the potential effects (noise and air quality) associated with increased traffic on the road network at an appropriate distance from the project. Justify the selected distance. To carry out this assessment, a comparison with similar roads (average annual daily flows, running surface (asphalt or gravel), etc.) for which air quality and noise data are available at the approaches to these roads could be useful.

ANSWER

During the mine's construction, there will be a total of 24 truck trips per day in both directions, i.e. 12 round trips. During the operation, according to the critical scenario, there will be a total of 68 truck trips per day in both directions, i.e. 34 round trips (according to the average scenario, 44 truck trips per day).

Most of the trucks (64 trips) will take the route from the mine site to Matagami on the Nemiscau-Eastmain-1 Road, then the Route du Nord (towards Matagami), and finally the James Bay Highway.

A small proportion of trucks (4 trips) will take the route from the mine site to Chibougamau and will use the Nemiscau-Eastmain-1 road and the Route du Nord (towards Chibougamau).

Of these roads, only the James Bay Highway is paved. The Route du Nord and the Nemiscau-Eastmain-1 road are gravel roads.

According to the 2019 traffic data from the Ministère des Transports Québec12 (MTQ), the Route du Nord to Chibougamau has an annual average daily traffic (AADT) of 220 vehicles; however, the proportion of heavy vehicles data is not available. The MTQ has no data on the other segments. For the present analysis, it is assumed that traffic on the entire Route du Nord and the Nemiscau-Eastmain-1 road will be similar to that on the Route du Nord to Chibougamau. In terms of the percentage of heavy vehicles, an assumption of 50% is made based on data from the Mistassini Highway (Route 167), which is a similar road located a little further east.

According to data from the Société de développement de la Baie-James13, an average of about 57,000 vehicles currently access the James Bay Highway each year. This means an AADT of about 314 vehicles, considering round trips. About 31% of this number consists of heavy vehicles of various types.

Table CCE-18-1 summarizes the current features of the road network used by trucks. Whereas Table CCE-18-2 shows an increase in the AADT on the road network used by trucks for critical operational conditions.

Table CCE-18-1: Description of the Current Road Network Used by Trucks

Road Segments	Type of Road Surface	AADT	Percentage of Heavy Vehicles	References
Nemiscau-Eastmain-1 road	Unpaved	220	50%	Hypothesis: Similar to the Route du Nord (towards Chibougamau)
Route du Nord (towards Matagami)	Unpaved	220	50%	Hypothesis: Similar to the Route du Nord (towards Chibougamau)
Route du Nord (towards Chibougamau)	Unpaved	220	50%	MTQ 2019 Traffic Data; Assumption for heavy vehicles
James Bay Highway	Paved	314	31%	Data from the Société de développement de la Baie-James

[12] https://www.donneesquebec.ca/recherche/fr/dataset/debit-de-circulation [Accessed August 2020]
[13] James Bay Highway traffic data compiled for the years 2014 to 2017. E-mail communication, Société de développement de la Baie-James.

Table CCE-18-2: Increase in the AADT on the Road Network Used by Trucks - Critical Operational Scenario

Road Segments	Before Project	With Project (critical operational scenario)		
	AADT	AADT (Only Project)	AADT (Current + Project)	Increase in AADT (%)
Nemiscau-Eastmain-1 road	220	68	288	31%
Route du Nord (towards Matagami)	220	64	284	29%
Route du Nord (towards Chibougamau)	220	4	224	2%
James Bay Highway	314	64	378	20%

An assessment of the potential effects on air quality and noise levels associated with traffic increase on the road network is provided below.

Air Quality

With respect to air quality, no modelling is presented since currently available information on the emission source attributes is not comprehensive enough to perform this exercise. However, it was possible to complete an estimate of particulate matter emissions, based on the project data presented in Table CCE-18-2, for the operational period with the highest off-site traffic.

The road traffic is a source of particulate matter through the suspension of dust on the ground. In addition, fuel use is also a source of particulate matter and combustion gases (CO, NO_x, SO_2). The increase in combustion gases is directly related to the use of fuel and is, therefore, proportional to the AADT.

At the particulate level, dust suspension generally represents the main source and these emissions can be estimated from Section 13.2.2 of AP-42 for paved[14] roads and Section 13.2.2 of AP-42 for unpaved[15] roads.

The increase in AADT due to the project therefore translates to an increase in particulate matter suspension of about 45% on the Nemiscau-Eastmain-1 road and the Route du Nord towards Matagami and about 62% on the James Bay Highway. For the portion of the Route du Nord towards Chibougamau, the increase is minimal.

Although these increases are relatively non-negligible, it is useful to put the impact of AADTs on air quality into context. For comparison, stations of the Québec air quality monitoring network located near roads similar to those under study can be used to anticipate effects on air quality.

In the case of James Bay Highway, which is a paved road, the Forestville station of Québec air quality monitoring network measures particulate matter (TMP). This station is located about 125 m from a paved road on Route 385. The AADT on Route 385 is 490 vehicles, including 78 heavy

[14] Emissions from a paved road are estimated using the parameters recommended in Table 13.2.1-2 of AP-42 for public roads, with no additional mitigation measures.
[15] Emissions from an unpaved road are estimated using equation 1a, i. e. the equation for an industrial site, given the high proportion of heavy-duty vehicles, without additional mitigation measures. In addition, in the absence of values specific to the roads under study, a generic silt rate for an industrial site is used.

vehicles, which is comparable to the James Bay Highway. The results of ambient air monitoring from 2016 to 2018 show a maximum daily TMP concentration of 31 µg/m^3, i. e. about 26% of the MELCC standard. The effect of additional traffic on air quality along this paved road is, therefore, considered to be low, even in the immediate vicinity of the road.

For the Route du Nord and the Nemiscau-Eastmain-1 road, which are unpaved roads, no Québec air quality monitoring network stations are available near unpaved roads with similar AADTs. Generally, most stations are located near paved roads and for those stations that are located near an unpaved road, the AADT is not available. For example, the Mont Saint-Michel station is located 150 m from an unpaved road, but the traffic data is not available. The results of ambient air monitoring from 2016 to 2018 show a maximum daily TMP concentration of 51 µg/m_3, i. e. about 43% of the MELCC standard. Another example would be the Saint-Hilaire-de-Dorset station, which is located less than 100 m from an unpaved road. The results of ambient air monitoring there also show a maximum daily TMP concentration of 51 µg/m^3. However, since the traffic on nearby roads is not known, these results do not enable us to verify with confidence whether exceedances of the standard are contemplated.

However, traffic on an unpaved road has considerably higher emissions than on a paved road and additional traffic on these roads could have a potential effect on air quality. The samples of air quality monitoring that were analyzed, although imperfect, show that exceedances of standards would not necessarily be expected near roads. Nevertheless, additional traffic due to the project remains low in terms of absolute number of trips. In addition, CEC will set up a system for receiving and resolving complaints that will include traffic-related complaints, thereby, reducing the impact of additional traffic on these roads.

Ambient noise

With regard to the ambient noise, it should be noted from the outset that the distance of the Cree camps from the Eastmain-1 road is not known. Various distances were, thus, considered. The calculations were made using TNM v. 2.5 on a straight and flat gravel segment. The land adjacent to the road was found to be wooded. The truck speed at 70 km/h with 48 daily trips (i.e., 24 round trips) during the construction phase and 136 daily trips during the operation phase (i.e., 68 round trips). The noise indicator represents an average of daily truck noise. This average is calculated from the silence and noise wave (increase and decrease of noise) during each truck trip.

The calculated distances consider that there are no obstacles blocking the receiving point and the path.

During construction

The average noise level of 40 dBA is measured at 55 metres from the road while the average noise level of 45 dBA is measured at 37 metres.

Distance (m)	**Noise ($L_{Aeq, 24h}$)**
15	52
30	46
50	41
100	33
150	27

During operation

The average noise level of 40 dBA is measured at 85 metres from the road while the average noise

level of 45 dBA is measured at 55 metres.

Distance (m)	Noise ($L_{Aeq, 24h}$)
15	57
30	51
50	46
100	38
150	32

Comment 1 Criteria for Determining Significance

REFERENCE

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project.

Sections 10.1.3 (Expected effects on valued components - Indigenous Peoples).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-33.

COMMENTS AND ADVICE

In Table CEAA-33 (response to question CEAA-33), under the column "degree of disturbance," the proponent should not use compliance with standards as the sole criterion for determining the degree of disturbance. This is because population health effects can occur at levels below the standards (e.g., there is no no-effect level for fine particulate matter). For some of the modelled contaminants, the project's contribution to total modelled concentrations can be relatively significant, in excess of 50%. The proponent is invited to take preventive measures to reduce anthropogenic emissions to the extent possible to prevent a deterioration of air quality and to uphold the principle of protection of unpolluted regions.

GROUNDWATER QUALITY

CCE 19 Location of the Hydrocarbon Refuelling Area

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 11.1 (Environmental mitigation).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-52.

BACKGROUND

In its response to question CEAA-52 C), the proponent refers to a map locating the hydrocarbon supply zone on the mine site. However, the map presented is of low quality and does not distinguish the identified area.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Clearly identify the hydrocarbon refueling area on a general map of the mining infrastructure.

ANSWER

Map CEEA-52 with the hydrocarbon refueling area clearly identified by a red rectangle can be found in Appendix CCE-19.

HYDROGEOLOGY

CCE 20 Hydrogeological Modelling

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Assessment. Part II, section (Environmental changes).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-38.

BACKGROUND

According to Figures 3, 4, 5 and 6 presented in Appendix 38 of the response to question CEAA-38, the imposition of constant hydraulic loads on the lakes near the pit (e.g., lakes 3, 4 and 6) appears to limit the spread of drawdown caused by dewatering of the mine pit. Without the loads on the lakes, drawdown would be expected to be greater further away from the mine. This should also influence the anticipated pumping rates from the mine dewatering pits. In addition, the model predicts that the lakes in the vicinity of the pit will be completely dewatered by the mine pumping operations due to the groundwater table at the new conditions being well below lake levels.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Assess the need to review the lake modelling methodology to make it more representative of anticipated hydrogeological conditions and revise the methodology, as appropriate. If not, justify.*

B) *Present any new results associated with changes to lake modelling, if applicable, including results related to the impact of dewatering on water levels in streams and water bodies in the study area.*

ANSWER

The lakes were depicted as having imposed loads during dewatering of the pit because the water pumped around the periphery of the pit will be discharged into the lakes at the head of the watershed (lakes 3, 4, and 6). This operation will maintain the lakes' water levels as well as the streams' base flows.

Therefore, updating the model does not seem to be necessary.

CCE 21 Monitoring - Quantity and Location of Piezometers

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section (Environmental changes).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to supplemental questions and comments from MELCC. Appendix QC2-74, Map 1.

BACKGROUND

The proponent presents a Groundwater Monitoring Program in Appendix QC2-74 of the Responses to supplemental questions and comments from MELCC (WSP, December 2019). During the operation of the mine, if the quality of this water is lower than forecast in the Environmental Impact Study (EIS), the proponent must assess the risks associated with this contamination and, where applicable, proceed with an analysis of measures to minimize the impacts of this contamination.

To verify the potential contaminant concentrations forecast in the EIS as early as possible, piezometers should be located near the tailings and waste rock area. When piezometers are closer to potential sources of contamination, more time is available to adequately protect nearby water bodies in the event of higher contamination than forecast in the EIS. Some piezometers may need to be relocated to take this into consideration.

For example:

- *Piezometer PO-16-10 could be closer to the tailings facility and further away from Lake 16.*
- *Piezometer PO-16-08 could be closer to the tailings facility and be directed toward stream C instead.*
- *Additional piezometers could be placed within the perimeter of the tailings facility between piezometers PO-18-08 and PO-16-05 in the southwestern area of the tailings facility.*

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Justify the number and location of piezometers presented in the Groundwater Monitoring Program (Appendix QC2-74). If necessary, adjust the Groundwater Monitoring Program by adding piezometers or changing the location of planned piezometers.

ANSWER

The groundwater quality monitoring network is based on existing observation wells and supplemented by wells that will be installed before the start of operations. Each of the wells is used to monitor the quality of water upstream and downstream from various infrastructures in order to detect possible contamination.

Observation wells PO-16-10 and PO-16-08 are existing wells, that cannot be moved. These wells are located upstream of the hydraulic infrastructure, so there is no need to add piezometers closer to the infrastructure in this area.

For the southwest section of the park, two observation well sites (PO-18-09 and PO-18-10) will be added to monitor all flow directions. The location of the new wells is included in the updated

Monitoring Program (Appendix CCE-21).

With the addition of these two new observation well sites, the location and number of wells will be sufficient to monitor groundwater quality at the site.

CCE 22 Monitoring - Location of Piezometers Based on Flow Directions

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 10.1.2 (Environmental changes).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to supplemental questions and comments from MELCC. Appendix QC2-74, Map 1.

BACKGROUND

The proponent presents a Groundwater Monitoring Program in Appendix QC2-74 of the Responses to supplemental questions and comments from MELCC (WSP, December 2019). In this program, the proponent identifies a single piezometer for each of the different groundwater flow directions. This may be sufficient for the start of operations; however, once the initial concentrations are measured in the piezometers, additional piezometers would have to be installed in order to quantify the spatial and depth distribution of dispersion plumes of possible contamination.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Justify the presence of a single piezometer for each of the different groundwater flow directions as presented in the Groundwater Monitoring Program (Appendix QC2-74) and specify whether additional piezometers are planned during operations.

ANSWER

Tables 2 and 3 of the work program (Appendix CCE-21) indicate that several wells are used to monitor water quality for every upstream and downstream hydraulic infrastructure during different periods of mine operation.

In addition, as indicated in the response to question CCE-21, wells have been added in the southwestern section of the park to monitor all flow directions. Thus, the spatial distribution of the wells allows to monitor all flow directions using several wells.

Finally, when the thickness of the surface deposits becomes adequate (greater than 4.5 m), a well in the surface deposits will be installed in addition to the well in the bedrock, as indicated in Section 2, Table 1 of the Monitoring Program. The double wells will help in monitoring the dispersion plumes of possible deep contamination.

CCE 23 Monitoring - Water Quality Comparison Criteria

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 10.1.2 (Environmental changes).

WSP (February 2019). Rose Lithium - Tantalum Mining Project. Updated environmental impact

statement. Report produced for Critical Elements Lithium Corporation. Section 6.5 Groundwater Quality.

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to supplemental questions and comments from MELCC. Appendix QC2-74, Map 1.

BACKGROUND

The proponent presents a Groundwater Monitoring Program in Appendix QC2-74 of the Responses to supplemental questions and comments from MELCC (WSP, December 2019). The objective of this program is to confirm the forecasts for groundwater quality presented in section 6.5.6 (Groundwater Quality - Likely Environmental Effects) in the Environmental Impact Statement (EIS; WSP, February 2019) regarding the likely effects on the quality of the groundwater.

In section 7 of Appendix QC2-74, the proponent presents its comparison criteria for groundwater monitoring. While it is common practice to compare the concentrations obtained in groundwater with environmental protection criteria, taking into account the natural concentrations at the site, it is also important to compare the measured concentrations with those forecast in the dispersion models presented in the EIS. If these forecasts are not met, the quality criteria can then be used to determine the risk to nearby water bodies.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Justify the selection of comparing the background levels measured during the monitoring with the existing comparison criteria identified in Section 7 of the Groundwater Monitoring Program (Appendix QC2-74).

ANSWER

The results obtained will first be compared to the calculated background levels, since they represent the closest approximation of the groundwater quality at the site before work and will possibly highlight an increase in the concentrations of the monitored parameters. The results will also be compared to the surface water resurgence (SWR) criteria and alert thresholds (AS) as defined by the MELCC. The SWR quality criteria are calculated from the surface water quality criteria. The work program has been updated to further refine the comparison criteria for the Monitoring Program. No dispersion model was developed for this project as the tailings and waste rock were deemed to be non-leachable.

CCE 24 Monitoring - Measuring Frequency

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 10.1.2 (Environmental changes).

WSP (February 2019). Rose Lithium - Tantalum Mining Project. Updated environmental impact statement. Report produced for Critical Elements Lithium Corporation. Section 6.3 Hydrogeology and section 6.5 Groundwater Quality.

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to supplemental questions and comments from MELCC. Appendix QC2-74, Map 1.

BACKGROUND

The proponent presents a Groundwater Monitoring Program in Appendix QC2-74 of the Responses to supplemental questions and comments from MELCC (WSP, December 2019). In section 8 of Appendix QC2-74, the proponent proposes to measure the concentration of contaminants in groundwater twice a year, in the spring and summer. However, the sampling frequency should also take into account the groundwater flow velocity presented in sections 6.3 (Hydrogeology) and 6.5 (Groundwater Quality) of the environmental impact study (EIS; WSP, February 2019).

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Justify the frequency of groundwater contaminant concentration measurements presented in section 8 of the Groundwater Monitoring Program (Appendix QC2-74).

ANSWER

The frequency of monitoring parameters twice a year has been defined in accordance with MELCC Directive 019. The monitoring of parameters in spring and summer represents periods of high and low water.

For assessing average groundwater flow velocity in the bedrock unit, the average gradient (2.5%, determined from the piezometric map, Map 2, Appendix CCE-21) as well as the average hydraulic conductivity of the bedrock horizon (1.38 x10-6 m/s) were used. Assuming an effective porosity between 0.1 and 0.05, it is possible to assess the average migration velocity of water using the following equation:

$$v = {K * i}/{n_{eff}}$$

where,
$v = flow\ velocity\ [m/s]$;
$K = hydraulic\ conductivity\ [m/s]$;
$i = \rightleftarrows\ hydraulic\ gradient\ [m/m]$;
$n_{eff} = effective\ porosity$.

The average flow velocity in the upper horizon of the rock varies between 11 and 22 m/year. Given the distance of the monitoring wells from the infrastructure (at least 50 m), sampling twice a year is sufficient enough to avoid missing any possible contamination.

Subsequently, and as indicated in the work program, this schedule may be revised in the light of the results obtained during monitoring.

CCE 25 Environmental Risks Associated with Tantalum

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 10.1.2 (Environmental changes).

Borgmann et al. (2005). Toxicity of sixty-three metals and metalloids to Hyalella azteca at two

levels of water hardness. Environmental Toxicology and Chemistry, 24(3):641–652.

Espejo et al. (2018). Biomagnification of tantalum through diverse aquatic food webs. Environmental Science and Technology Letters, 5(4) 196–201.

WSP (February 2019). Rose Lithium - Tantalum Mining Project. Updated environmental impact statement. Report produced for Critical Elements Lithium Corporation. Sections 3.4. (Ore Processing), 3.5.4 (Accumulation Pond and Water Treatment Plant), 3.6.2 (Geochemical Characterization of Tailings), 6.4 (Surface Water and Sediment Quality), 7.2 (Aquatic Fauna) and Appendix 3-3 (Characterization of Mine Waste Rock - Lamont Inc. Report).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-10.

BACKGROUND

In its response to question CEAA-10 regarding the risks associated with chemical reagents, the proponent did not explain how it intends to manage the risks associated with tantalum.

In section 3.4 (Ore Processing) of the Environmental Impact Statement (EIS; WSP, February 2019), the proponent states that the recovery rate for tantalum will be 40% compared to approximately 90% for lithium. As a result, 60% of the tantalum would end up in tailings, effluent or sludge. Tantalum is a potentially toxic element with a lethal 50% concentration (LC50) of 2 µg/L in fresh water compared to 650 µg/L for lithium (Borgmann et al. 2005). Chronic effects could thus be observed below this level. Tantalum has the potential to biomagnify in the food chain, as reported by Espejo et al. (2018). This information justifies that the proponent pay particular attention to the risks of exposure to tantalum for groundwater, surface water, sediment and the fish habitat.

In the EIS, there is little information on the risks of tantalum to water, sediment and groundwater quality, aquatic species and fish habitat and fish flesh. Tantalum concentrations in tailings leachate were identified in the certificates of analysis in Appendix 3-3 in the EIS (WSP, February 2019) on the geochemical characteristics of waste rock and tailings. The TCLP 1311 test, using acetic acid, was unable to detect tantalum (detection limit of 1 µg/L). In contrast, the SPLP leaching tests, using acid rain water, measured tantalum at 0.8 µg/L, while the WTC-9 leaching test, using distilled water, measured 2.9 µg/L tantalum. Quality assurance/quality control information on tantalum measurements was not available. In addition, there is little information on the rate of tantalum removal from the water treatment plant and the proportion of tantalum that will end up in the sewage sludge. There is also no information on where sewage sludge containing tantalum concentrations will be deposited. According to the available information, waste rock piles are not a source of tantalum.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) Present a mass balance of tantalum in tailings, waste rock piles, water treatment plant effluent and resulting sewage sludge.

ANSWER

The mass balance of tantalum begins with determining the amount of minerals containing tantalum in the tailings, waste rock and process sludge. A reminder of the geological context should be presented again, but the reader is invited to consult the documentation presented in the feasibility study and the environmental impact assessment for further details.

The Rose project plans to mine a granitic pegmatite deposit in which the aim is to extract and concentrate spodumene and tantalite. The feasibility study indicates that around 26.8 Mt of ore will be mined from the pit for approximately 17 years. To exploit this ore, nearly 11.0 million tonnes of overburden will be moved and nearly 182.4 Mt of waste rock will be stacked. The mine tailings will be filtered and co-deposited with the waste rock.

The mass balance calculation for tantalum (Ta) includes tantalum present in solids and tantalum present in water. First, the concentrations of Ta in the solid phase were evaluated for the rocks of the Rose project (ore, tailings, process sludge and waste rock). Second, the aqueous tantalum concentrations measured in water in contact with rock and tailings are explained. The source tantalum concentration in water for the entire site is then estimated to determine the dispersion of Ta outside the mine site.

It is important to note that practically no solids such as the mine tailings or waste rock will be released outside the mine site to the receiving environment. In fact, mining operations provide for the piling of tailings and waste rock, and interception and capture structures will help retain suspended solids (SS) to prevent their propagation off the site. Therefore, the final effluent discharge standards will comply with Directive 019 and the REMMDD so that a limited amount of SS will be released into the receiving environment. Therefore, the only possibility of releasing Ta into the surrounding environment will be limited to treated water leaving the site or through exfiltration to groundwater and through SS. However, as requested, the mass balance of Ta in the solid phases on site is presented here.

TANTALUM MASS BALANCE IN SOLIDS

To estimate the amount of tantalum potentially present in the waste rock, tailings, process sludge and final effluent, a combination of different sources of information was consulted, including:

- Database and analysis of exploration works for Critical Elements Lithium Corporation
- NI 43 101 Technical feasibility study dated November 2017
- Geochemical characterisation reports prepared by Lamont in 2018
- Data from ongoing kinetic testing (Lamont, 2019)
- Bibliographic references (available at the end of this document)

The database and analysis of exploration works allowed us to compile the analysis results on more than 4,796 rock samples tested according to a 4-acid digestion protocol and the dosage by ICP-MS or fluorescence of X-rays. The analysis were carried out mainly on pegmatites since it is in pegmatites that we find the minerals associated with lithium and tantalum. The host rocks will form the waste rock which will be deposited on the site near the pit. The host rocks do not present a geological potential in lithium and tantalum, and were therefore sampled less during exploration and definition drilling work. The results obtained are presented below and allow us to estimate the amount of tantalum that is likely to end up in tailings and waste rock.

The exploration database was used to compile the results and to estimate average tantalum grades in the waste rock and ore, although virtually all of the results were obtained from ore testing. The tantalum results obtained by ICP-MS after a 4-acid digestion made it possible to measure tantalum concentrations with an upper limit of detection of 100 ppm. For samples with a concentration greater than 100 ppm, an X-ray fluorescence method was used. Although this is not common, the results which combine analyses by the two methods have been compiled in the

same graphs to derive statistics. Figure 25.1 shows tantalum concentrations in relation to the number of occurrences.

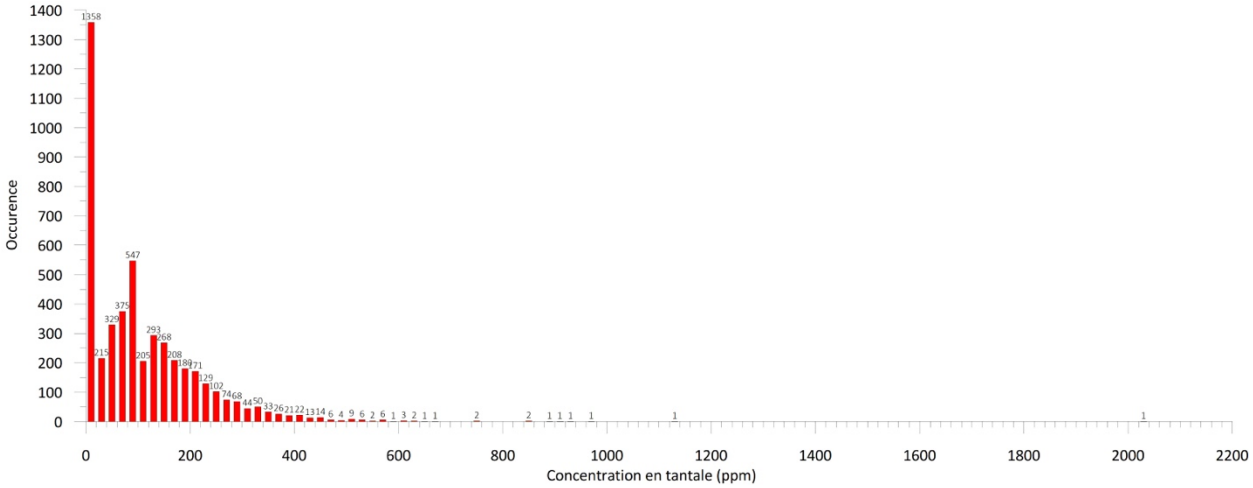


Figure 25.1. Occurrence of tantalum in relation to the concentration obtained after digestion with 4 acids followed by ICP-MS or X-ray fluorescence (XRF) analysis for 4,796 analyzes

Of the 4796 samples tested, only 41 samples had values greater than 500 ppm. The graph has therefore been redesigned to get a better idea of the distribution between 0 and 500 ppm of tantalum. The result is shown in figure 25.2.

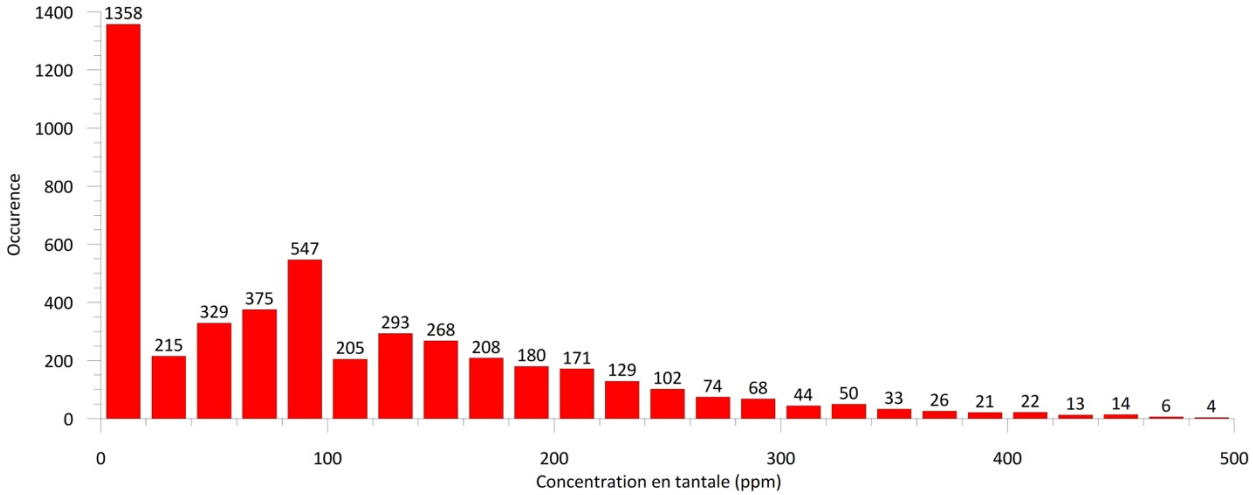


Figure 25.2. Occurrence of tantalum in relation to the concentration obtained after digestion with 4 acids followed by ICP-MS or X-ray fluorescence (XRF) analysis for 4,755 analyzes

The graph in Figure 2 shows that around 29% of the samples have a concentration of less than 21 ppm tantalum and that there appears to be a second peak around 100 ppm tantalum. We therefore reduced the interval to see the occurrences between 0 and 21 ppm and we obtained the graph in Figure 25.3.

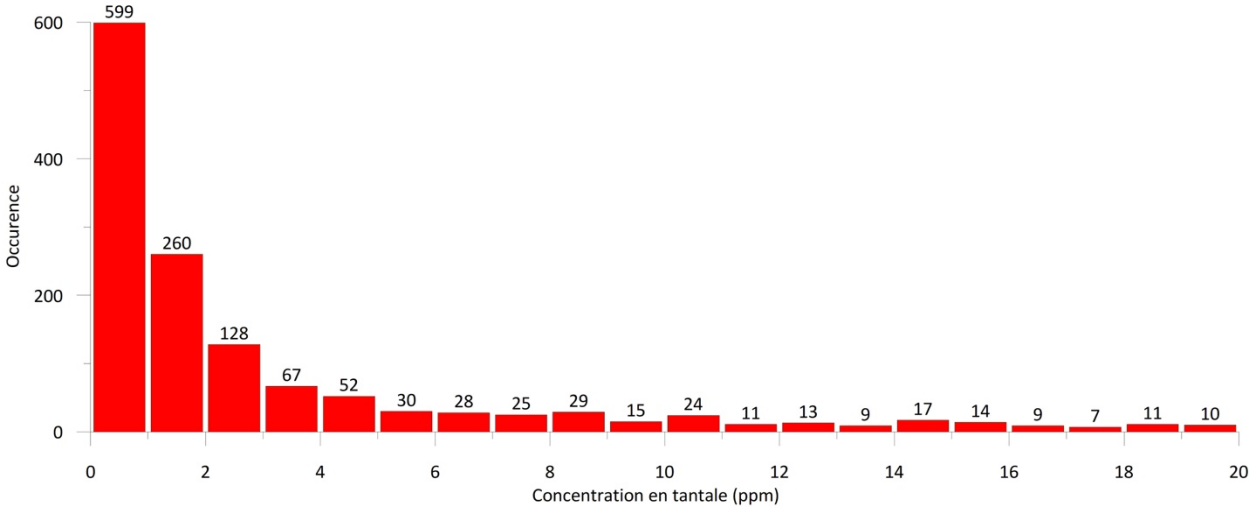


Figure 25.3. Occurrence of tantalum in relation to the concentration obtained after digestion with 4 acids followed by an ICP-MS or X-ray fluorescence (XRF) analysis for 1358 analyzes

The graph in Figure 25.3 therefore shows that nearly half of the samples from this latter population had a tantalum concentration below 1.4 ppm. If we compare this number back to the initial total population, then we can say that nearly 15% of the samples tested have a concentration of less than 1.4 ppm. This value brings us closer to the probable value of the waste rock that will be deposited on the surface during the mining operation. These are waste rock that would be close to the mineralized zones since laboratory tests were not done on all the drill core but only on the mineralized intervals or in the transition zone (geological contact zone). It is likely that the tantalum concentration for the more distant waste rock is lower.

As for the more highly mineralized zone, we note that nearly 463 samples out of a total of 4796 have a tantalum concentration of around 100 ppm, which represents 10% of the samples. There are 1930 samples with a concentration between 105 and 505 ppm or 40% of the samples.

Figures 25.1 to 25.3 show that there are two statistical populations of rock based on tantalum concentration for the Rose project. The highest population contains a weighted average of 149 ppm Ta, while the lowest population contains an average of 3 ppm.

Based on these observations, conservative assumptions can be made about tantalum content at the mine site after recovery of tantalum from the ore. From the feasibility study it is known that tantalum is recovered from the spodumene concentrate and that the recovery is in the order of 40%. It can therefore be reasonably assumed that the tailings would contain approximately 89 ppm of tantalum. We also know that all the pegmatite is considered to be mineralization but that we must assume a loss of ore of around 5% which will be in the waste rock. Therefore, the concentrations of tantalum potentially present in the waste rock and tailings pile can be assumed as shown in Table 25.1.

Table 25.1: Possible concentration of tantalum in mine waste

Type of waste	Tonnes	Concentration in Ta
Tailings	23.3 Mt	89 ppm
Waste rock (host rock)	181.0 Mt	3 ppm
Pegmatite waste rock	1.4 Mt	149 ppm
Treatment sludge	n.a.(1)	149 ppm

(1) The quantity of treatment sludge is already included in mining wastes

The geochemical characterization carried out by Lamont in 2018 presents the analysis results on nearly 76 waste rock samples representing a representative population of future waste rock. The analyses to determine the distribution of metals were carried out in accordance with the specifications of Directive 019, therefore by aqua regia digestion followed by ICP-MS analysis. All samples showed tantalum concentration below the detection limit of 0.01 ppm. It is important to remember that aqua regia digestion is much less aggressive than 4 acid digestion. In addition, the tests carried out by Lamont in 2018 on the ore (aqua regia digestion) also showed concentrations close to the detection limit for tantalum. Despite the limited data on the quantity of tantalum in the waste rock, we believe that assigning them a concentration of 3 ppm is entirely justified.

Indeed, a review of the literature shows that tantalum is more associated with carbonatite or pegmatite type rocks such as those from the Rose project deposit. According to Goldschmidt (1958) and Parker and Fleischer (1968), tantalum is mainly found in a mineral called tantalite and which is mainly found in granitic pegmatites of the LCT type (lithium, cesium, tantalum). The Rose Project pegmatite host rocks consist of gneiss, amphibolite, porphyry and a small amount of metasediment. The genetic model of granitic pegmatite-type deposits is not dependent on the type of host rock compared to other types of so-called syngenetic deposits. It is rather of the epigenetic type, that is to say that the mineralization is put in place late to the placement of the host rocks. A pegmatite is an intrusion resulting from a highly differentiated granitic magma enriched in volatile elements and which is formed by primary crystallization (Sinclair, 1996). Pegmatites are often found in the form of a swarm. They sometimes have an internal zonation and they are easily identifiable by the very coarse grain size of their minerals. The so-called parental magma usually comes from a granite intrusion that may be miles away. The lithium and tantalum enriched pegmatites are the most distal of the source granite intrusion. The pegmatites crystallize in the planes of weakness of the host rocks and the contacts are generally clear. The placement is controlled by fracture zones and generally results from hydraulic fracturing in the host rocks (Jébrak and Marcoux, 2008). It is unlikely to find significant concentrations of lithium or tantalum in the host rocks, since these predate the establishment of pegmatites and there is no pervasive alteration phenomenon for this type of lodging.

Regarding the treatment sludge, it will be composed of suspended solids mainly from the waste rock and tailings pile. SS are therefore fine particles of waste rock, mine tailings or soil washed away by water erosion during precipitation. In the sedimentation basin, the suspended solids will be treated and the sludge will be transported to the dump so the tantalum balance remains the same and this is the reason why no quantity of sludge is assumed in the mass balance presented in Table 1. However, part of the suspended matter will be released into the receiving environment.

CEC aims to comply at least with Directive 019 and the REMMDD. For the purposes of this exercise, we will consider that a maximum of MES will be released into the receiving environment in order to simulate the worst case scenario. Given that SS are rock particles, we will assign them the maximum concentration of 149 ppm tantalum, ie that of pegmatite waste rock. These values will be used later in the answers to question 25.

CONCENTRATION OF TANTALUM IN WATER

The second part of question A deals with the possible amount of Ta in the final effluent. We have worked out what could be the amount of tantalum in suspended solids, it now remains to estimate the amount of tantalum dissolved in water, ie tantalum in the aqueous phase. The concentration that we are going to calculate will allow us subsequently to calculate the dispersion of tantalum in the receiving medium. To estimate the maximum amount of tantalum that can be dissolved in water, we reviewed several documents from the literature but also from other mining sites. It is only when the mine is in operation that the aqueous phase tantalum values in the contact water will be known.

Data available on the concentration tantalum in water

From data from the Tanco mine, which is a tantalum mine located near Lake Bernic in Manitoba, the average dissolved Ta concentration would be in the order of 0.000007 mg/l (0.007 µg/l), and the Total Ta concentration would be in the order of 0.000019 mg/l (0.019 µg/l) (Environment Canada, personal communication). These data indicate the low solubility of tantalum and the low concentrations observed even at a mine site where tantalum is extracted.

At the European Union level, the following information can be found (Salminen et al., 2010):

> *"Tantalum values in stream water range from <0.002 µg l^{-1} to 0.014 µg l^{-1} (excluding two outliers up to 0.12 µg l^{-1}), with about 80% of the data below the analytical limit of quantification…. Low Ta values in stream water (<0.002 µg l^{-1}) are distributed almost all over Europe, with the exception of restricted areas of higher values, due to the poor data resolution. Highest Ta concentrations in stream water (>0.006 µg l^{-1}) are found in central Sweden (probably related to Nb-bearing granite and pegmatite, but alum shale can contribute to higher Ta values in soil and stream water), in western Finland, in north-eastern England, in southern Portugal, and in all Albania. Enhanced values (between 0.003 and 0.006 µg l^{-1}) also occur in western Finland, southern Lithuania, along the border between Germany and Poland, northern Ireland, western Portugal and southern Italy."*

Consequently, the concentrations of tantalum in surface waters in Europe, including in mineralized zones, are equal to or less than 0.0001 mg/l which tends to demonstrate once again, the low solubility of tantalum in water.

The US Geological Survey (Schulz et al., 2017) summarized several references showing that the global average concentrations of tantalum dissolved in river water are of the order of 0.000001 mg/l (0.001 µg/l). According to the European Chemicals Agency of the European Union (2020), the solubility of tantalum in water at 20°C is 23.1 µg/l or 0.0231 mg/l, however, such a high concentration has never been measured in natural waters, not even on mining sites and in mineralized zones, which suggests that the maximum concentration of tantalum cannot reach the value of the maximum theoretical solubility of tantalum in water. In addition, Filella (2017) points out that the data "clearly show that it is highly unlikely that it is the solubility of Ta2O5 (s) that

controls its concentration in natural waters" and that the maximum aqueous concentration observed in waters of surface area was 0.00018 mg/l (0.18 µg/l).

Consequently, the aqueous concentrations of dissolved Ta observed in several places in the world are generally around and well below 0.0001 mg/l which suggests that this value would be a maximum value at equilibrium and that above this value, tantalum precipitates.

Results and compilation of the data following leaching tests on rocks from the Rose project

Waste rock and tailings samples were subjected to leaching tests such as TCLP, SPLP, SFE and CTEU-9 during geochemical characterization (Lamont, 2018). Most tantalum concentrations measured as a result of testing were below the method detection limit (Figure 25.4), only a few samples showed tantalum results above the detection limit. Only one sample showed a higher concentration of tantalum and this is a tailings sample submitted to the CTEU-9 test. The measured tantalum concentration was 0.0029 mg/l in the context of this test. It should be remembered that the objectives of the leaching tests are to determine under which conditions elements can be mobilized. The measured concentrations cannot be extrapolated to predict the concentration in the receiving medium. What the tests show is that the tantalum contained in the minerals forming the rocks of the Rose project is poorly soluble and therefore unlikely to end up in the receiving environment.

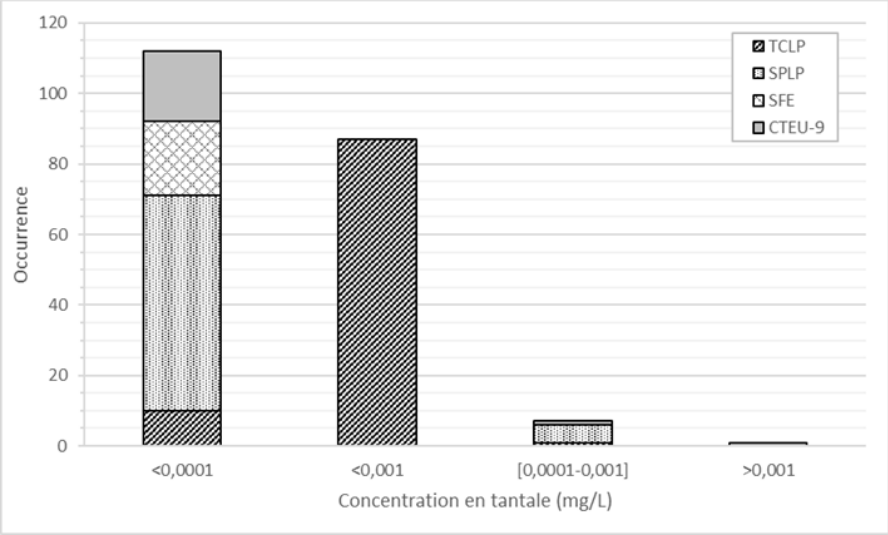


Figure 25.4. Tantalum Test Results for TCLP, SPLP, SFE and CTEU-9 Leach Tests

In addition to the leaching tests presented above, kinetic humid cell leaching tests were performed on thirteen waste rock and ore samples. The results for tantalum are shown in Figure 25.5. Most of the results obtained for tantalum are below the detection limit of 0.0001 mg/l. These low values, obtained in a different leaching context compared to the TCLP and SPLP tests, show consistency in the low solubility of tantalum.

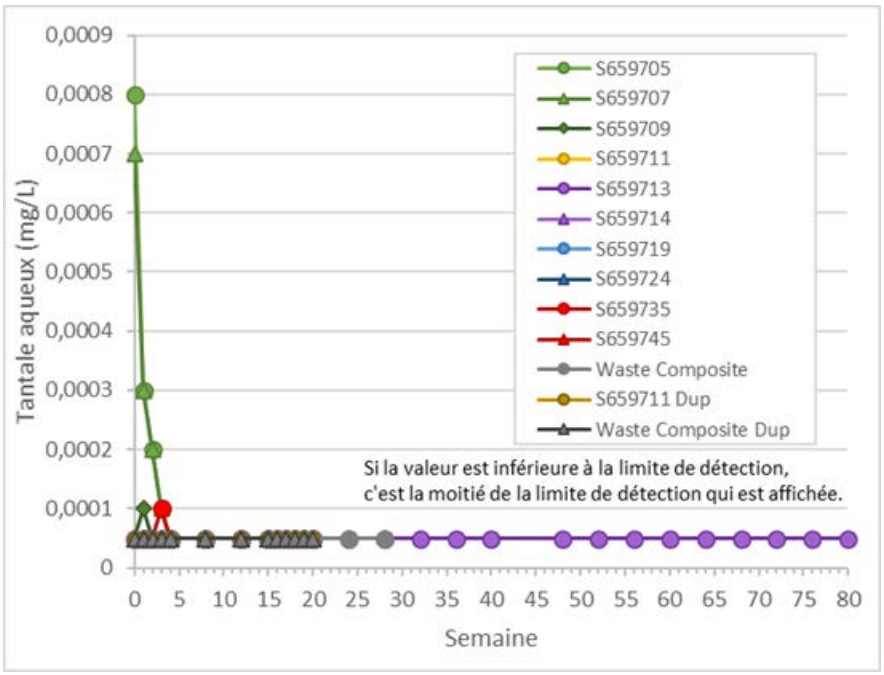


Figure 25.5. Tantalum results for the 13 humid cell tests

However, in Figure 5, two cells containing the mineral showed concentrations as high as 0.0008 mg/l (0.8 µg/l) during the first few weeks. Therefore, a higher short-term leaching of Ta can be assumed from ore or from rock with tantalum concentration in the order of 149 ppm.

In addition to the higher concentrations observed during the first weeks of rinsing, it is observed that the aqueous concentration of tantalum in the humid cells is of the order of less than 0.0001 mg/l (Figure 525.) and is similar to the concentration obtained following a leaching test using the SPLP protocol which is of the order of 0.0003 mg/l. The maximum tantalum concentration observed by the European Union in natural waters is 0.00012 mg/l and by Filella (2017), the maximum is of the order of 0.00018 mg/l. Table 25.2 summarizes the values.

Table 25.2 : Concentration of tantalum in water according to various sources

Source	Average concentration of Ta (mg/l)
European Union data in natural watercourses	0.00012
Filella (2017)	0.00018
Rose rocks by TCLP and SPLP	<0.0001
Rose rocks in humid cells	<0.0001

Considering all of this information, we cautiously establish that the maximum source concentration of tantalum in the Rose Project contact waters should not exceed the concentration of 0.0001 mg/l. This applies to the waste rock and tailings pile. Based on the results obtained from the humid cells,

there could be occasional or localized aqueous concentrations above this value although this is unlikely given the small amount of material with high tantalum concentrations that might be found in the stockpile compared to the amount that contains little or none.

B) Indicate where on the mine site the sewage sludge will be disposed of.

ANSWER

The sludge from the treatment system will be stored in the co-disposal stockpile.

C) Determine a critical threshold value (i.e., chronic effect preference) for tantalum.

ANSWER

There is no critical threshold value for tantalum and Lamont carried out an exhaustive review of the data available in the scientific community to come to the conclusion that the researchers have not yet examined exhaustively the toxicity of this metal in the environment. There are several reasons for the lack of interest in studying the toxicity of tantalum compared to other metals that have been the subject of many detailed studies. First, tantalum was not a metal of interest until the advent of technologies such as electric cars, electronic components, the aerospace industry, and biotechnology. Furthermore, tantalum, when present in the environment, is in low concentration and difficult to measure accurately in several mediums (Filella, 2017). New technologies will promote greater demand for tantalum and there are no scientific studies on the effects of tantalum in the environment, especially in the aquatic environment. The determination of critical threshold values for a chronic effect requires laboratory tests on numerous samples, under specific controlled conditions and according to rigorous protocols, over several years. In the absence of criteria on tantalum concentrations in the environment at both the federal and provincial levels, Lamont proposes a cautious approach to water management and close monitoring during the operation phase. The results of water quality and effects on the environment will be made available to teams of researchers at the federal level so that the Rose project can contribute to the acquisition of knowledge on the effects of tantalum in the environment if it is shown that the operations indeed generate tantalum concentrations. The mass balance presented in answer 25A and the dispersion models proposed in answers 25D and 25E are made assuming conservative assumptions. Measurements in the field during operation will confirm or invalidate the assumptions made by CEC.

The tantalum mass balance was presented in response to question 25A of this memo. Source tantalum concentrations were estimated to be in the order of 0.0001 mg/l at the final effluent. It is important to know whether this concentration will actually be released into the environment and whether tantalum can have an effect on the components of the biological environment downstream of the mining site.

Tantalum is not known to be an environmentally problematic element. Indeed, it is even an element that goes into the composition of prostheses and it is used in dentistry (Filella, 2017). However, knowledge about its safety is limited. The study by Borgmann et al. (2005) investigated the toxicity of 63 metals and metalloids to hyalella azteca for two different waters: water from the city of Burlington and a mixture of water from the city of Burlington (10%) and deionized water (90%) (Milli-Q). The researchers presented the experimental protocol in order to establish, as precisely as possible, what could be the lethal concentrations resulting in 50% of the mortality of individuals observed during a determined period of time (LC50).

One of the challenges noted with regard to tantalum in the study by Borgmann et al. (2005) is the low solubility in water of this element. For the tests carried out in the water of the city of Burlington, the concentration introduced into the water was of the order of 353 µg/l while the researchers measured only 2 µg/l at the end of the test. The question arises as to what is the concentration to which hyalella azteca was actually exposed during the duration of the test to arrive at causing 50% mortality. For the test carried out in the mixture of water (city and deionized), 1,977 mg/l were introduced to observe 50% mortality but unfortunately the actual concentration in the water was not measured at the end of the test. Based on the observation in the city water where the solubility of tantalum appeared to be relatively low, the lethal concentration of tantalum for this test cannot be determined. Therefore, the suggested value of 2 µg/L applies to a test conducted in City of Burlington water that has been dechlorinated and has a hardness of 124 mg/L. This water was previously treated in a municipal water treatment plant and a supply system made of pipes that may contain various trace elements. The second test was done with a mixture of City of Burlington water (10%) and deionized water. Because deionized water is not conducive to aquatic life, we have not seen an explanation for the relevance of testing this mixture. This mixture had a hardness of around 18 mg/l. In this mixture, however, 5.6 times more tantalum was introduced before 50% mortality was observed. The suggested value of 2 µg/l as the LC50 toxicity criterion may thus be underestimated or overestimated. The receiving environment at the Rose Project is different from the water that was used for testing by Borgmann et al. (2005). Indeed, the hardness of the medium is very low and of the order of 5 to 7 mg/l. For many metals, toxicity increases with decreasing hardness. Thus, for the Rose project, toxicity could be reached at a lower concentration than the value proposed by Borgmann et al. (2005). Table 1 presents some comparative parameters of the waters of the study by Borgmann et al. and that at the Rose project site (WSP, 2017).

Several parameters must be considered when establishing the toxicity of an element. The study by Borgmann et al. (2005) is an interesting starting point and although this study is already over 15 years old, no more recent studies on the toxicity of tantalum in the environment were found. A publication by Espejo et al. (2018) suggest that tantalum accumulates in aquatic organisms such as fish and invertebrates. The toxicity associated with this accumulation has not been demonstrated but caution should be exercised since no studies demonstrate the effect of this accumulation.

Table 25.3 – Water parameters from the study by Borgmann et al. (2005) and the Rose project

Parameters	Water from the city of Burlington	Mixture of City of Burlington water (10%) and deionized water (90%)	Surface water at the Rose project for 7 samples
Hardness (mg/l)	124	18	5 to 7
Alcalinity (mg/l)	84	14	<5 to 11
Ca (mg/l)	35	5.6	<2
Mg (mg/l)	8.7	0.9	<2
Na (mg/l)	13	1.4	<2
K (mg/l)	1.6	0.15	<1
SO4 (mg/l)	32	3.4	<2 to 4
Cl (mg/l)	25	2.5	<1
pH	8.39	7.37	6.2 to 6.8
LC50 Ta (nominal) (mg/l)	1 977	353	
LC50 Ta (measured) (mg/l)	N/A	2	

In the absence of data from the scientific community, CEC will closely monitor the levels of tantalum that will be released into the receiving environment at the final effluent. From the start of construction, the receiving watercourse will be sampled every month in order to monitor the evolution of the concentration of trace elements. During the operation, the effluent will be tested according to the specifications of Directive 019 and the REMMDD and tantalum will be added to the list of parameters to be followed. Toxicity tests will be carried out according to the specifications of Directive 019. Every 5 years, CEC will carry out a monitoring study of the effects on the environment and special attention will be paid to the evolution of tantalum concentrations in the receiving environment, in particular, in the food chain of aquatic organisms.

Should the concentration of tantalum released increase over the years of operation, CEC will implement a closer monitoring program to identify the source of the tantalum. For now, the value that was modeled for response A appears to be a probable maximum concentration, but only field measurements will be able to confirm this value. Considering that the majority of tantalum will come from granitic pegmatite (the ore), CEC will study means to promote greater recovery of tantalum at the concentrator in order to reduce the concentration of tantalum released in mine tailings. It should be noted that a loss of 5% of the ore will end up in the waste rock. If tantalum were to prove to be a problem, efforts should be made to reduce the loss of ore in the dump. In addition, at the ore level, if it is not possible to increase recovery, tailings management scenarios could also be proposed in order to limit the dispersion of tantalum in the receiving environment. Among the scenarios, more frequent sampling of tailings would identify the variability in the composition of the latter and establish whether a separation of tailings with a higher concentration of tantalum is possible. If this were the case, the tailings with the greatest potential for leaching could be stored differently in order to limit the dispersion of tantalum in the environment. Another scenario would be to modify the water treatment system in order to capture the tantalum before it is released into the receiving environment. Since the concentrations are very low, water treatment may not be effective. Finally, a modification of the discharge point to bring water to a larger water basin could be a solution considered. These scenarios are hypothetical and if it turns out that tantalum is released at concentrations greater than the background levels and that they tend to increase, CEC will put in place an action plan to ensure the safety of the final effluent to the receiving environment.

D) Provide a conservative model of the environmental dispersion of tantalum, lithium and other metals in the water treatment plant effluent and surface water, and in the sediments of lakes 4 and 6 (including downstream lakes), covering the periods of construction, operation and site remediation. Then compare the model to the established critical threshold value (question C) for all these periods.

ANSWER

Tantalum

Regarding the dispersion of tantalum, as explained in answer 25A, the probable maximum concentration of tantalum in water is 0.0001 mg/l and is based on a conservative approach. It is not practically possible to have a concentration above this value given the solubility of tantalum in the environment as shown by the review of several scientific publications. Therefore, this value is retained as that which will be discharged from the final effluent and which it is likely to measure as the maximum concentration in surface and groundwater.

For lake sediments, it should be remembered that the final effluent from the treatment plant flows into stream A, downstream of lakes 4 and 6. Lakes 4 and 6 will receive dewatering water from wells located in the periphery and it is not expected that there is suspended matter coming from the groundwater. Consequently, the effluents from these wells, discharged into lakes 4 and 6, will not contribute suspended matter that could have an effect on the quality of the sediments of lakes 4 and 6 or of those located downstream. As for the effluent released into stream A, a significant discharge of suspended matter is not expected since the discharge standards are severe and set at less than 15 mg/l. The first lake after the discharge point is located several kilometers downstream. As expected during the environmental effects monitoring studies, the quality of the sediment is a parameter that will be monitored over the years of operation and special attention will be paid to tantalum.

Lithium

Unlike tantalum, the Ministry of the Environment and the Fight against Climate Change (MELCC) proposes criteria in water for lithium. The criteria are as follows[16]:

Acute final effluent value: 1.8 mg/l

Protection of aquatic life (acute effect): 0.91 mg/l

Protection of aquatic life (chronic effect): 0.44 mg/l

To predict what could be the lithium concentration in the effluent of the treatment plant and in the receiving environment, several data were compiled. First, the results of the humid cell kinetics tests for the waste rock samples were compiled and the graph of lithium concentration versus pH was plotted to see if there could be a trend between the two. The results come from the Lamont report (2019). The graph is shown in Figure 25.6. The maximum concentration reached in the humid cell tests was 0.1 mg/l for a pH of 7.8. This is the highest concentration that was achievable under the conditions of the test. We can therefore assume that this would be the maximum concentration that would be likely to be found at the entrance to the collection basin. The water will be treated for suspended solids and treatment is not expected for other parameters. We can therefore assume

[16] http://www.environnement.gouv.qc.ca/eau/criteres_eau/details.asp?code=S0300

that the lithium concentration in the final effluent would be of the order of 0.1 mg/l.

In the receiving environment, it seems that the maximum lithium concentrations did not exceed the value of 0.017 mg/l in groundwater and 0.0033 mg/l in surface water, although the site is located in an area where lithiniferous pegmatite is present (WSP, 2019). This information suggests that the capacity of the medium to dissolve lithium would be limited to these values. Although the mine effluent could contribute to the lithium load, it is unlikely that this increase will be noticeable in the receiving environment. The values are all well below the criteria for surface water quality, therefore, no specific action for lithium should be considered.

CEC will monitor the evolution of lithium concentration in surface water and in groundwater in order to validate the assumptions made in this memo. If the concentrations are found to increase substantially in the medium, CEC will need to identify the sources of lithium and improve recovery by modifying the process where necessary or by working on the water treatment plant.

As for sediment, the same explanation as for tantalum applies to lithium.

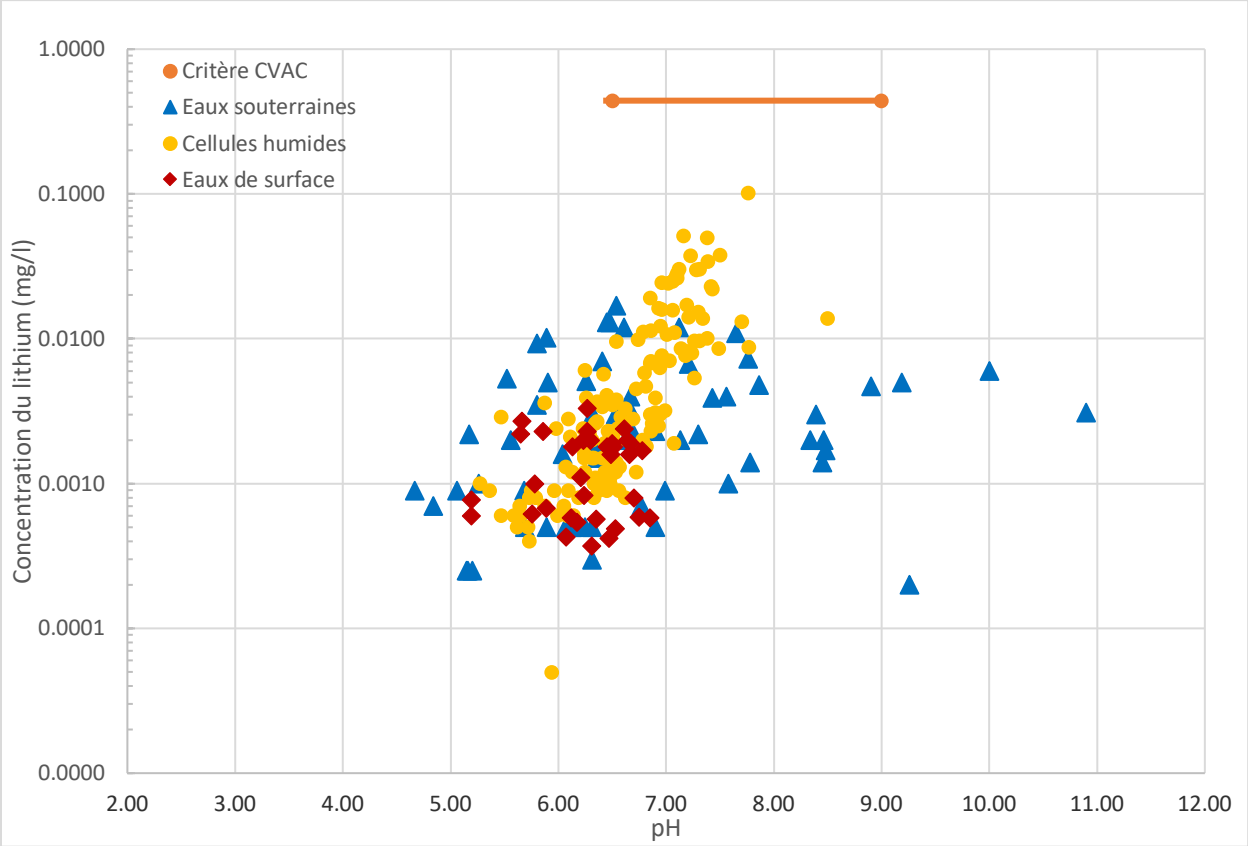


Figure 25.6. Changes in lithium concentration as a function of pH under different conditions

Other metals

A characterization of the pegmatite (ore) was carried out as part of the exploration work of the Rose

project and the results presented in Table 25.4 show that the rocks, in general, do not exhibit any metal enrichment in comparison with data from the earth's crust (Taylor, 1964). According to Price (1997), for an element to be considered to be enriched, the concentration must be considered to be at least 10 times greater than the average for the earth's crust. However, the database, which presents the results of nearly 4,796 analyses, shows that none of the metals specified in the REMMDD shows an enrichment compared to the average of the earth's crust.

Table 25.4. Comparison of the 4-acid digestion analyses with the average contents of the earth's crust and 10 x the average content

Parameter	Median	Standard deviation	Average in the Earth's crust	10x the average in the Earth's crust
Al_%	6.74	1.012	8.23	82.3
As_ppm	<0.2	1.637	1.8	18
Cd_ppm	0.1	0.657	0.2	2
Co_ppm	0.7	1.,819	25	250
Cu_ppm	4.4	122.553	55	550
Fe_%	0.48	2.307	5.63	56.3
Mg_%	0.03	1.227	2.33	23.3
Mo_ppm	0.57	348.841	1.5	15
Ni_ppm	1.4	59.060	75	750
P_ppm	120	431.578		
Pb_ppm	11.3	30.609		
Se_ppm	<1	1.533	0.05	0.5
Th_ppm	3.4	2.94		
U_ppm	4.7	6.18		
Zn_ppm	61	117.77	70	700

As for the waste rock, the characterization done by Lamont (2018) shows that there is no overshoot for the parameters for which we have criteria in Directive 019 on metals of interest. For metals where the PPSRTC does not present a criterion, we compared the results with 10 times the average contents of the earth's crust as recommended by Price (1997) and no exceedance was observed.

Therefore, as no metal issue is anticipated, the dispersion study will not be carried out since the concentrations in the medium should always be below the water quality criteria.

Table 25.5: Concentration of metals in waste rock compared to PPSRTC A criteria and 10x the average concentration in the earth's crust

Parameter	Median	PPSRTC Criterion A	10x the average in the Earth's crust
Al_%	1.2%		82.3
As_ppm	0.25	5	
Cd_ppm	0.02		2
Co_ppm	8.7	30	
Cu_ppm	18	65	
Fe_%	1.7		56.3
Mg_%	0.68		23.3
Mo_ppm	1.3	8	
Ni_ppm	8.8	50	
P_ppm	340		
Pb_ppm	2.2	40	
Se_ppm	0.35	3	
Th_ppm	0.1		
U_ppm	0.61		
Zn_ppm	46	150	

E) Present a conservative model of the environmental dispersion of tantalum, lithium and other metals originating from the tailings facility. The model should predict concentrations in groundwater from existing piezometers and in surface water and lake sediments in the surrounding area. The time period modelled should correspond to the period when concentrations will be highest in the receiving lakes and streams.

ANSWER

As the tailings site presented in the first version of the impact study no longer exists, the agency has modified the question and asked to present a model whose source would come from tailings.

Sub-question 25A asked for the mass balance of tantalum including the effluent from the water treatment plant. To complete this assessment, tailings, waste rock, sludge and water were considered.

Sub-question 25D asked for an environmental dispersion model for tantalum, lithium and other metals, in particular, in the effluent of the water treatment unit. This model therefore considered all sources (waste rock, tailings, ore).

Sub-question 25E asks to present an environmental dispersion model for tantalum, lithium and other metals by considering only the contribution of mine tailings. The tailings will be co-disposed with the tailings and will contain the highest concentrations of tantalum and lithium since they are

composed of pegmatite minerals from which spodumene and tantalite have been removed. Therefore, tailings were considered to be those that would control the chemistry of surface water. Therefore, the results presented in the previous questions apply to this answer.

F) *Present tantalum concentrations in groundwater, surface water and sediments in the watersheds of lakes 4 and 6 and in the periphery of the tailings impoundment area.*

ANSWER

Currently, CEC does not have information on the background contents of tantalum. It is planned to add this parameter for the next measurement campaigns.

G) Once the risk assessment of tantalum to the aquatic environment is completed (Questions A to F), determine:

a) whether co-disposal of tailings and waste rock is still a viable approach; and,

b) whether it is still justified to discharge mining effluent into lakes 4 and 6 rather than in the Eastmain Reservoir.

ANSWER

The study carried out to answer questions A to F has shown that tantalum does not represent an issue for the quality of the environment. Consequently, it is absolutely appropriate to continue to manage mine tailings and waste rock in co-disposal, given all the advantages associated with this practice. The International Council on Mining and Metals (ICMM) published in August 2020 a document entitled: Global Industry Standard for Tailings Management. This document presents 15 principles for the management of tailings, principles to which the management of tailings and waste rock from the Rose project responds. Therefore, given the global desire of the mining industry to strive for zero risk of dyke breakage, the management approach chosen by CEC is not only viable but also responsible.

Lakes 4 and 6 will receive the dewatering water from the pits. This study shows that the maximum concentration of tantalum in groundwater could be of the order of 0.0001 mg/l. The lithium concentration would be around 0.017 mg/l, therefore well below the MELCC criterion. The choice to conserve lakes 4 and 6 based on this study remains relevant.

HYDROLOGY

CCE 26 Low-Level Streamflows

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, sections (Human Environment), 9.2 (Established or Potential Indigenous and Treaty Rights and Related Interests), 10.1.2 (Environmental Changes), 10.3 (Public Concerns) and 11.2 (Measures to Address Adverse Effects on Indigenous Rights)

WSP (February 2019). Rose Lithium - Tantalum Mining Project. Updated environmental impact statement. Report produced for Critical Elements Lithium Corporation. RS-1 Sector study (Climatology and Hydrology).

BACKGROUND

The method for estimating the project's effects on the hydrological regime, presented in the sector study RS-1 Climatology and Hydrology, is based on changes to the watersheds and the various mine inputs (such as dewatering) during the various phases of the mining project. The evaluation of average and low flow rates under current conditions is done using the basin transfer method. The Rivière à l'Eau Claire station was selected by the proponent as the benchmark station for estimating mean flows and the Rivière Giard station for estimating low water flows. However, the watersheds of these benchmark stations (Rivière à l'Eau Claire and Rivière Giard) are 450 to 3,000 times larger than the watersheds of the streams under study (SR-1, Section 3.2.3.3). With such watershed area ratios, the basin transfer method could result in the overestimation of low flow rates at the mine site. In other words, the proponent's method of estimating low water flows could result in calculated low water flows that are greater than actual low water flows.

In addition, the flow values calculated by the pond transfer method were compared with flows obtained by gauging during summer 2011 to ensure consistency between the estimates and observations. However, the hydrological conditions that prevailed at the time of these gaugings were not indicated. For example, it is not clear whether low-flow gauges for a dry year would differ from those in a wet year. Estimating streamflows can contribute to assessing the effects of the project on fish and fish habitat, as well as aquatic species. However, in the context of a possible overestimation of the low flow rates calculated with this method, the project's effects on these components may have been underestimated.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) Identify and explain the uncertainty and limitations of the method used to estimate streamflows in the study area.

B) Re-evaluate the effects of the project on streamflows.

C) Identify mitigation measures that could be implemented in the event that low water levels in these watercourses are greater than expected.

ANSWER

The technical note presented in Appendix CCE-26 answers the IAAC's questions.

Fish and Fish Habitat

CCE 27 Effects on Fish and Fish Habitat of Changes in Surface Water and Groundwater Supplies

REFERENCES

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section (Environmental changes).

WSP (February 2019). Rose Lithium - Tantalum Mining Project. Information requested by the CEAA for concordance with the Environmental Impact Statement. Appendix E (Hydrology), Appendix H (Damage to Fish Habitat) and Appendix I (Hydrogeology).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation.

Responses to questions CEAA-4, CEAA-8 and CEAA-41.

BACKGROUND

The assessment of effects on fish and fish habitat is dependent on the modelling completed in the hydraulic study (Appendix E; WSP, February 2019) and the hydrogeological study (Appendix I; WSP, February 2019). The assessment of effects on fish and fish habitat (Appendix H; WSP, February 2019) is based on a scenario where the pumping water from the peripheral wells, used to dewater the pit, is directed to three discharge points (Table 2–3 in Appendix E; WSP, February 2019), namely, the water from:

- *Two wells to water body A;*
- *Five wells to Lake 4; and,*
- *A well to Lake 6.*

According to the response to question CEAA-4 (WSP, December 2019), the three-point discharge scenario presented in Table CEAA-4b, would instead direct water from:

- *Four wells to Lake 3;*
- *Two wells to Lake 4; and*
- *Two wells to Lake 6.*

Based on the response to CEAA-8 (WSP, December 2019), the construction of the dam at Lake 3 is dropped, and therefore the planned dewatering of the upstream portion of Lake 3 as well. Based on the response to question CEAA-41 (WSP, December 2019), the effects of dewatering the pit are more extensive and reach additional water bodies and streams.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Re-evaluate water level and flow changes for water bodies and watercourses and the resulting effects on fish and fish habitat, to take into account the new elements set forth regarding modifications to peripheral well outlets, the removal of the dam at Lake 3, greater than anticipated effects on water bodies and watercourses and any new modifications related to the models used that may be necessary.

The Joint Committee points out to the proponent that, considering that some of the questions in this information request involve hydrogeological and hydrological modelling, the necessary modifications to the hydrological and hydrogeological models must be made before proceeding with the re-assessment of the effects on fish and fish habitat.

ANSWER

The technical note presented in Appendix CCE-27 answers the IAAC's questions.

Water Quality

CCE 28 Selection of Tailings Samples for Analysis

REFERENCES

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section (Biophysical Environment) and 10.1.2 (Environmental Changes).

WSP (February 2019a). Rose Lithium - Tantalum Mining Project. Updated environmental impact

statement. Report produced for Critical Elements Lithium Corporation. Appendix 3-3 (Geochemical Characteristics of Mine Waste Rock- Lamont Inc. Report).

WSP (February 2019b). Rose Lithium - Tantalum Project - Information requested by the CEAA for concordance with the environmental impact statement. Report produced for Critical Elements Lithium Corporation. Appendix G (Geochemical Characterization, Lamont Inc.).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Responses to question CEAA-13 and Appendix CEAA-15.

BACKGROUND

In question CEAA-13, the proponent was asked to explain the selection, composition and representativeness of samples for geochemical analyses of mine tailings. The responses provided by the proponent do not determine whether the samples are representative of the materials to be extracted and, therefore, to properly assess the potential environmental effects of mine tailings disposal in the short and long term.

For example, the proponent does not explain the basis on which the sources were selected (location in the deposit) and the composites were made. It also is not explained why these cores were chosen, nor why the different portions (depths) of the cores were selected to make up the composite samples. Additionally, the proponent states that each tailings sample comes from a separate ore sample, but the type of ore is not indicated.

Furthermore, the information provided in the geochemical characterization reports (Appendix 3-3 of the Environmental Impact Statement (EIS), Appendix G of the EIS Concordance Information Supplement and Appendix CEAA-15 of the CEAA's Q&A document) is not highly detailed.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Justify the selection of the set of tailings samples to be analyzed, i.e., number, type, location within the deposit, and the selection of core sections to make up the composite samples. Explain why these selections were made and/or what methodology was used.

ANSWER

The methodology and the choice of samples is illustrated in the report: ÉCHANTILLONNAGE GÉOCHIMIQUE PROJET ROSE BAIE JAMES, QUÉBEC, CANADA NTS 33C0, section 5.2 (see Appendix CCE-28). It can be observed that the distribution of ore samples covers the entire surface and depth of the proposed pit, which allows for an adequate representation of the deposit.

The tailings were obtained following metallurgical tests done in a laboratory by taking ore and passing it through the various steps of the process, mainly crushing, grinding, and flotation. This greatly limits the quantity of tailings available due to the low capacity of the metallurgical pilot plants. It is also for this reason that composites were made. Furthermore, a mixture of ore for the pilot tests is representative of one operation, over the course of which several zones of the pit can be collected simultaneously.

CCE 29 Water Management Plan - Water Management during Each Project Phase

REFERENCES

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 5.7 (Project Activities) and 10.1.2 (Environmental Changes).

Environment Canada (2009). Environmental Code of Practice for Metal Mines. Electronic resource: www.ec.gc.ca/lcpe-cepa/documents/codes/mm/mm-eng.pdf Consulted March 10, 2020.

WSP (February 2019). Rose Lithium - Tantalum Mining Project. Updated environmental impact statement. Report produced for Critical Elements Lithium Corporation. Section 3.7 (Water Management) and Sector Study RS-2 (Hydrogeological Study and Modelling of the Future Pit).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Responses to questions CEAA-18, CEAA-19, CEAA-20, CEAA-21, CEAA-24, CEAA-25, CEAA-30

WSP (February 2020). Rose Lithium - Tantalum Mining Project. Responses to the incongruities in the first IAAC request for information. Report produced for Critical Elements Lithium Corporation. Responses to questions CEAA-19.

BACKGROUND

When assessing the effects of a mine project, a water management plan must clearly describe and provide a detailed explanation of how drainage and the collection, treatment and transfer of all water from the mine site to final discharge points at all phases of the project will be carried out. Specifically:

- *Contact and non-contact water should be included in the Water Management Plan, as well as all mine site infrastructure, including roads and the overburden dump.*

- *It is important to identify, on a map, all ditches, dams, pumps, pipes, conduits and basins used to drain and collect water, as well as the connections between them. The direction of water flow should be clearly indicated. The type of pipe should also be clearly indicated (e.g. ditch, closed pipe).*

- *The Water Management Plan should also include detailed explanations demonstrating the effectiveness of the drainage system. Water collection and management should be illustrated on maps and show that it will prevent non-contact water from mixing with contact water to contain and/or treat potentially harmful substances. These explanations should include a description of the level of impermeability of the infrastructure and/or materials used to construct the various drainage and collection components (e.g., ditches, ponds).*

- *The treatment of mine water at the Water Treatment Unit (WTU), in sedimentation ponds and using any other water treatment infrastructure should also be explained. The effectiveness of the treatment should be demonstrated.*

The documents already provided by the proponent (references indicated above) contain several elements of the Water Management Plan. However, essential information is missing to assess the short- and long- term effects of the mining project on surface water, groundwater and related environmental components. The proponent is encouraged to refer to the Environmental Code of Practice for Metal Mines (Environment Canada, 2009) for guidance on the management of

contaminated water during the construction, operation, closure and post-closure phases.

In addition, in question CEAA-30, a note mentions that the proponent was notified in September 2018, during discussions between ECCC and the proponent, that the water pumped from the 9 peripheral wells around the pit is considered mine water effluent within the meaning of the Metal and Diamond Mining Effluent Regulations (MMER) and must be managed according to the requirements of these same regulations.

The proponent did not consider this information in its answers to questions CEAA-18, CEAA-19, CEAA-21, CEAA-24, CEAA-25, CEAA-27 and CEAA-30. The mine site Water Management Plan should take this notice into account by incorporating MMER requirements into the management of all mine water effluents, including water from peripheral pumping.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) Complete the Water Management Plan by integrating all of the information listed above into the context and any other relevant information to adequately assess the effects of the project on water quality. For ease of understanding, all information related to water management could be presented in a single document.

ANSWER

I. Construction phase:

Based on answers CEAA-25 a), CEAA-18 and CEAA-20, the work will begin with deforestation and surface stripping. The sequence of ditch and sedimentation pond installation based on the construction work is as follows:

1. Construction of the temporary access road to Lake 1 and Lake 2 and the temporary sedimentation ponds for the dewatering of the two lakes. Lakes 1 and 2 will be emptied by pumping water into each lake's temporary pond to reduce fluid velocity and remove any suspended solids. The temporary pond overflow will flow into the stream downstream of each lake:

- Lake 1 will be pumped to its natural outlet (the approximate volume drained is 90,050 m^3), taking care to locate the discharge point at a well-defined location in the watercourse. Lake 2 will be pumped into Lake 3 (the approximate volume drained is 186,300 m^3).
- Pumping will be limited to periods of dry weather, ideally from July to September (after the spring melt). The water will be pumped through a sedimentation pond or sediment bag before being discharged downstream to limit suspended solids in the watercourse.
- Due to the small volume of the lakes, pumping should be of short duration. Thus, the discharge flow will be limited to a recurrence flood flow rate of 1:2 years. Precautions will be taken to ensure that the discharge flow is always below the recurrence flood flow rate of 1:2 years. The discharge flow for Lake 1 is 0.58 m^3/s and 0.60 m^3/s for Lake 2. (Ref. Environmental Impact Assessment Update Report, WSP, March 2018)

No watercourse diversion will be required. However, some watercourses with a hydraulic connection to the two affected lakes will disappear as a result of the drainage works, namely:

- Stream A (Lake 1 outflow), to the projected effluent channel – equivalent to approximately 1,165 m^2 (excluding groundwater flow sections);
- Entire Stream K (a tributary to Lake 2) – equivalent to approximately 90 m^2;
- Entire Stream B (Lake 2 outflow and Lake 3 tributary) – equivalent to approximately 278 m^2.

2. Stripping of part of the pit and overburden storage: the stripping of part of the pit (in the south/southwestern sector) will be performed during the construction phase to obtain gravel for the construction of roads and ditches. The rainfall that accumulates in the pit will be pumped to the overburden pile. A semi-permeable berm surrounding the entire overburden pile will be installed to capture the SS. The design of the berm will be optimized considering the available construction materials, but the exterior will be constructed of rock material (0-300 mm) with an inner layer of gravel (MG-20). The goal is to prevent the migration of suspended solids and allow the berm to drain. An inspection will be made to ensure that the overburden erosion cannot pass over the berm.

3. Construction of the access road to the industrial deck (main road): along the main access road, two semi-permeable ditches on each side of the road will be constructed to collect runoff from the road and to direct it by gravity to four sedimentation ponds in the following chains: 10+250, 11+250, 12+025 and 12+650 as these four locations represent low points. These sedimentation ponds will be used to buffer the 1:100-year flood recurrence and at the same time ensure compliance with the requirements of Directive 019 for the SS discharge to the environment (≤15 mg/l).

4. Construction of the effluent water treatment plant (WTP) and its accumulation pond: the treatment plant will be built first, followed by the accumulation pond. Runoff from the plant construction site will be directed to Stream A. Visual inspections of the discharge points will be conducted daily by the site supervisor to ensure that the WTP construction water discharged to Stream A meets the discharge criteria. The discharge criteria during the construction period will be 15 mg/L for suspended solids, 15 mg/L for hydrocarbons and a pH between 6 and 9.5 in compliance with Directive 019. During these inspections, if the effluent discolouration indicates a concentration of suspended solids (water discolouration) or iridescence (hydrocarbons), a sample will be taken (grab sample) and sent to a laboratory for analysis. Sampling will be conducted in compliance with the Guide d'échantillonnage à fins d'analyse environnementale [Sampling Guide for Environmental Analysis]. A record will be kept of visual inspections with comments and observations, as well as the compilation of the samples taken and the available results. Water management during the construction of the accumulation pond will be processed in the WTP.

   The water treatment plant will be built at the beginning of the project to be operational in the first year of the construction phase. It will have a final effluent treatment capacity of 500 m^3/h during years -2 to 4 and its capacity will be increased during the operation and maintenance phase to reach 920 m^3/h as of year 5. The runoff water will be discharged by gravity into the final effluent (stream A). An audit procedure with a record of the quality of the water discharged will be implemented to validate compliance with the criteria of Directive 019 and the Metal and Diamond Mining Effluent Regulations (MDMER). (Rose Lithium-Tantalum Project - Information requested by the CEAA for the concordance of the Environmental Impact Assessment, CEAA File 005327, Section 5.7, WSP, February 2019). Note that as soon as the storage pond and the WTP are in operation, the pumping to the overburden pile will be dismantled. The pit water will be sent to the accumulation pond and then to the WTP, as it will during mining operations.

5. Installation of the PP-1 pump on the south-western periphery of the pit to supply the construction area with fresh water, if required, and construction of the industrial deck and buildings: The PP-1 pump in the southwestern periphery of the pit (see map 03-03) will be installed during the construction period and will supply the construction zone with fresh water if required. It will not function full time, only on-demand to fill a reservoir during this period. It will also function during the operation phase. Runoff water during the construction of the industrial deck will be collected

in the ditches (built first) and directed to the accumulation pond and then to the WTP as during mining operations;

The data for surface water management during the construction period are as follows:

- Maximum runoff volume of 17,727 m³ for rainfall of 24 hours/100 years.
- The area under construction 284,080 m²
- Percolation Coefficient (PC) apron: 0.65
- Intensity, duration, frequency (IDF) of highly recurring rains: 4 mm/hr

6. Construction of the access road around the pit and its ditches: The road ditches surrounding the pit will direct runoff from the road to the pit and another ditch will be built on the other side of the road and will be used to drain non-contact water to Lake 3.

II. Operation phase:

1. Pit:

In addition to the PP-1 well, eight other drawdown wells will be added around the pit. A submersible pump will be installed in each well and will have an estimated flow rate of 50 m³/hr. The water from well PP-1 will be used to supply fresh water to the concentrator for daily operational needs. Water from the other wells will be pumped to sedimentation ponds near the receiving environments at the three discharge points (lakes 3, 4 and 6). These ponds will remove suspended solids, reoxygenate the groundwater and stabilize its temperature, and mobile units will be used to stabilize the pH to standard. (APPENDIX CEAA-18, Water Balance).

Water from the bottom of the pit will be directed to the accumulation pond (Map 03-03). The submersible pumps for dewatering the pit will be installed in containers (one pump per container) and will operate year-round.

2. Co-deposition pile and industrial deck:

During the first phase of operations (0 to 3 years), the runoff from the co-deposition pile will be intercepted by the ditch that runs along the east and south sides of the pile, and will ultimately be discharged into the accumulation pond.

During the second phase of operation (4 to 17 years), a second section of the co-deposition pile will be built northwest of the first pile. Since the footprint of the second pile will encroach on three different watersheds, a network of peripheral ditches will be built to collect runoff water. The northern part of the runoff will be channelled to Lake 2. While the southern part flows to Lake 3. The water from Lake 2 will be pumped to the accumulation pond.

Ditches direct surface runoff from the industrial deck and the ore stockpiles to the accumulation pond (Map 03-03).

III. Closure and restoration phase:

A preliminary assumption, according to the NI 43-101 Feasibility Study, is that approximately 500 mm of mud will accumulate at the bottom of the sedimentation ponds. Therefore, the restoration of these ponds will include the excavation and transportation of the sludge to the bottom of the pit. The dikes of the sedimentation ponds will then be excavated and the material will be levelled.

The overburden around the pit will be re-profiled on a 3H:1V slope before being re-vegetated. Finally, water will fill the pit and create a lake.

The ditches will be backfilled to restore the distribution of runoff similar to that of the natural state

(before mine site operation). Therefore, the part of the co-deposition pile that drains northward will no longer be intercepted by the peripheral ditch to discharge into Stream A but will contribute to the water supply of the natural watershed that feeds watercourse M (Outlet M2).

The site will be restored progressively during operations until closure for a quicker return to nature. No active or passive treatment will be required, the restoration of the site as designed will ensure that the water quality is at a level that does not pose any long-term risk to the environment or human health.

The annual discharge from the site will decrease after closure due to the elimination of water flows from mine operations and the changes in retention and moisture evaporation characteristics.

The annual discharge volume from the mine site footprint to Stream A is expected to decrease from 5.79 m^3 to 1.56 m^3 under average climatic conditions. Site runoff after closure will be intermittent and will depend on weather conditions.

Drainage system efficiency and description of the level of impermeability of the infrastructure and/or materials used to construct the various drainage and collection components (e.g. ditches, ponds):

1. Ditches:

Ditch slopes are 1.5:1 and riprap will be provided to reduce erosion. Furthermore, ditch capacity has been assessed with a 1:100 year recurrence rainfall. Ditch design flows were calculated using the rational method. For each of the sub-watersheds, a 100-year recurrence rainfall of a duration equal to the watershed concentration time is considered to determine the design flows. A runoff coefficient (C) of 0.5 was selected for the design of these structures. The Intensity-Duration-Frequency curves for the La Grande Rivière A station (Environment Canada, 2011) are used. Water velocities and heights in ditches were determined from Manning's equation.

The value of 0.5 for the runoff coefficient is considered conservative for predominantly coarse soils in mountainous areas, as defined in particular in the Ministère des Transports du Québec's culvert design manual (MTQ, 2014).

The specified ditch depths are suitable to maintain a minimum freeboard of 1 m in the while maintaining maximum flow velocities below 3 m/s. To protect the ditches from erosion, a stone pack composed of 0-400 mm stones is provided on the walls and bottom of the ditch. A Manning's coefficient of 0.06 was selected for the riprap ditch protection.

The Ministère des Transports du Québec (Culvert Design Manual MTMDET) engineering standards were used.

2. The stockpiles:

A semi-permeable berm surrounding the tailings included in the co-deposition and overburden piles will be constructed to filter the SS. The exterior will be constructed of rock material (0-300 mm) with an inner layer of gravel (MG-20) to prevent the tailings from migrating to the receiving environment.

3. The ponds:

Two ponds around the waste rock and filtered tailings pile are also planned to contain the design recurrence flood of 1:100 years over 24 hours (82.51 mm/24 hrs) (Environment Canada, 2018) in addition to the recurrence snowmelt of 1:100 years over 21 days (17.57 mm/24 hrs). These ponds have a minimum retreat of 1 m. ponds 2 and 3 will be constructed during phase 2 of the waste rock and filtered tailings pile. To preserve the integrity of the ponds, an emergency overflow is planned and each pond a 1 m freeboard.

Ponds 2 and 3 are equipped with pumps that keep the water level as low as possible for maximum storage. The strategy is to be able to empty ponds 2 and 3 to the accumulation pond over 72 hours. Considering that 90% of the rainfall is less than 20 mm and that statistics show an average of 27.3 days of rainfall of more than 5 mm from April to October or a significant rainfall every 8 days, this strategy is considered conservative.

Runoff and surface drainage from the industrial area will be directed by gravity to the accumulation pond.

This accumulation pond will have a capacity of 267,200 m³ (see Appendix CCE-18 Water Balance).

The water pumped from the peripheral wells will be sent to sedimentation ponds. The ponds have been identified on Map 03-03. Details are shown in Table CCE 29.

Table CCE 29-1: Lake 3, Lake 4 and Lake 6 sedimentation ponds

Sedimentation pond	SP-Lake 3	SP-Lake 4	SP-Lake 6
Total volume required (m^3)	11,549	11,549	10,285
Length (m)	160	160	150
Width (m)	53	53	50
Average depth (m)	1.36	1.36	1.36

To seal the sedimentation ponds, it is planned that the till, collected during pit stripping, will be used in the construction of the ponds and will render them watertight. Note that the characterization of the till present in the overburden of the pit will be conducted before the construction of the ponds to confirm that the material is sufficiently watertight to limit water infiltration into the ground.

4. Processing plant:

The processing plant will operate 24 hours/day for 365 days/year. The plant will be located near the accumulation pond, which is located approximately 100 meters from the industrial deck. The water treatment plant is required to treat runoff water from the waste rock pile and filtered tailings as well as water from the pit for dewatering. The variant selected for the final effluent water treatment plant will be Variant 1 (See answer to Question CCE 3). This variant provides for treatment on a leaching field with a leach field element modified with low-pressure distribution system (LPDS) for highly permeable soil. The treatment modules will have a treatment capacity of 500 m³/hr each and can possibly reach a capacity of 920 m³/hr taking into account the same water characteristics. The design criteria are based on the maximum values that can be discharged to the effluent, in compliance with the Directive 019 pertaining to the mining industry and the MDMER criteria.

More details on the water treatment system are mentioned in the answer to question CCE 3 a:

5. Final effluent:

The final effluent, with an average flow of 470 m3/hr to 857 m3/hr (depending on runoff conditions), will be directed to Stream A via a channel. This channel will have a width of 3 m at the base, a height of 2 m and a slope of 1.5H:1V. To stabilize the channel and protect it from erosion, a stone pack composed of 0-400 mm stones is provided on the walls and the bottom of the ditch. A Manning's coefficient of 0.06 was selected for the riprap ditch protection.

B) *Review water management from peripheral pumping, taking MMER into account, and include it in the Water Management Plan.*

ANSWER

See answer to question 32 A.

CCE 30 Water Management - Construction Phase

REFERENCES

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 5.7 (Project Activities) and 10.1.2 (Environmental Changes).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Responses to questions CEAA-18, CEAA-20, CEAA-25 a), Appendix CEAA-18 and Appendix CEAA-20.

BACKGROUND

Some elements of the response to question CEAA-25 a), regarding water management during the construction phase, appear to be complementary to the responses to questions CEAA-18 and CEAA-20. The answer to CEAA-25 explains that "water from the construction site will be directed and accumulated based on the topography and discharged into the natural environment. Temporary sedimentation ponds will be installed when required to collect the water. The water from these ponds will be discharged into the natural terrestrial environment more than 30 m from any watercourse or water body. "The explanations in section 1.2 of Appendix CEAA-18 (Mine Water Management during Construction) and the associated maps in Appendix CEAA-20 do not show ditches or temporary sedimentation ponds for construction work after the dewatering of lakes 1 and 2, i.e., after the removal of the two temporary ponds shown on map 20-1.

In response to CEAA-25 a), the proponent states that if staining (suspended solids) or iridescence (hydrocarbons) in the water indicates contamination, the environmental monitor will take a sample and send it to a laboratory for analysis.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Explain the installation sequence for the ditches and sedimentation ponds referred to in the response to CEAA-25, a) relative to the explanations in responses CEAA-18, CEAA 20 and Appendix CEAA-18. Specify at which stage(s) of the construction phase the measures presented in response CEAA-25 a) will be applicable and explain when and how these measures will be implemented.*

ANSWER

Same answer as the previous question 29 - A pertaining to the Construction Phase.

B) *Explain what water will be sent to the overburden berm, how it will be collected (e.g. through natural topography, ditches) and when.*

ANSWER

The water sent to the overburden pile is only sent during the stripping of the pit during the

construction phase. The overburden pile will be surrounded by a semi-permeable berm to capture SS. As soon as the storage pond and the WTP are in operation, the pumping to the overburden pile will be dismantled (see maps 20-1 to 20-5).

C) *Identify on maps 20-2 to 20-5 the exact location of each type of infrastructure that will be put in place, including the direction of water flow.*

ANSWER

Please refer to previous answer B.

D) *Explain the estimated timeframe for sample collection and analysis in the event of staining or iridescence of the water and how potentially contaminated water will be managed during this time to avoid adverse environmental effects.*

ANSWER

The hydrocarbons will be captured at the pump inlet in the pit and at the pipe outlet in the overburden pile with floating booms to prevent the hydrocarbons from dispersing in the overburden pile and spilling into the wild.

The discharge points will be visually inspected daily by the environmental monitor. During these inspections, if the effluent discolouration indicates a concentration of suspended solids (water discolouration) or iridescence (hydrocarbons), a sample will be taken (grab sample) and sent to a laboratory for analysis. Sampling will be conducted in compliance with the Guide d'échantillonnage à fins d'analyse environnementale [Sampling Guide for Environmental Analysis]. A record will be kept of visual inspections with comments and observations, as well as the compilation of the samples taken and the available results.

CCE 31 Water Management during the Operations Phase

REFERENCES

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 5.7 (Project Activities) and 10.1.2 (Environmental Changes).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to questions CEAA-21 and Appendix CEAA-21.

BACKGROUND

The information presented on the maps regarding drainage of non-contact water and water from the mine site, including the work site roads, is not sufficient to understand how the proponent will be able to ensure adequate water management. For example, maps 21-1 and 21-2 in Appendix CEAA-21 do not show any details regarding the management of these waters, other than runoff (black arrows). Furthermore, according to the legend, the black arrows represent only non-contact water. However, ECCC is of the opinion that a large percentage of these arrows are in fact mine site water and should therefore be managed based on Metal and Diamond Mining Effluent Regulations requirements.

With respect to the overburden pit, the semi-permeable berm may not be a sufficient water collection system, since it only treats suspended solids.

In addition, an orange arrow line is visible between the pit and the overburden berm on map 03-

03. During the operation phase, drainage of water from the pit to the overburden disposal area is not adequate because it is mine water. Therefore, this water should also be managed to meet MMER requirements.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Review the management of mining and non-contact waters (black arrows and orange arrows) in catchment areas A and F to ensure that they are properly collected and managed. Update the maps in Appendix CEAA-21 by adding all elements that will ensure adequate water management on the site (e.g., all ditches including road ditches).*

ANSWER

The ditches around the infrastructures have been designed with a berm to prevent runoff water from entering the peripheral of the infrastructures and, therefore, becoming contact water that requires treatment. These ditches were considered in the hydrological analysis of the site (Appendix QC-30). No ditches are required for the northern part of the co-deposition pile because it is supported on a hillside, therefore, runoff water flows naturally out of the pile in Phase 2 (years 4 to 17), while contact water flows into the drainage ditches. As such, modifications will be made to the footprint of the co-deposition pile during detailed engineering to ensure that it does not encroach on the watershed of watercourse C.

Note that the main access road is not adjacent to infrastructure that is considered part of the mine (Ore Stockpile, Pit, co-deposition Pile, Industrial Site). Therefore, runoff from this road is not subject to the requirements of the Metal and Diamond Mining Effluent Regulations (MDMER), but the quality in terms of SS of this water must meet the discharge criteria (≤15 mg/l) in compliance with Directive 019.

Along the main access road, two semi-permeable ditches on each side of the road will be constructed and will be used to collect runoff water from the road and direct it by gravity to four sedimentation ponds at the following chains: 10+250, 11+250, 12+025 and 12+650 as these four locations represent low points. These sedimentation ponds will be used to buffer the 1:100-year flood recurrence and at the same time ensure compliance with the requirements of Directive 019 for the SS discharge to the environment (≤15 mg/l).

The road ditches surrounding the pit will direct runoff from the road to the pit and another ditch will be built on the other side of the road and will be used to drain non-contact water to Lake 3.

During the operation phase, there will be no drainage from the pit to the overburden pile, the pit water will be pumped to the WTP. At this stage, the overburden pile will be covered with soil and vegetated. Runoff water from the overburden pile is therefore considered non-contact water.

Runoff from watershed A (between the ore stockpile and the main road and between the road surrounding the pit and the overburden pile) is non-contact water (black arrows) and will follow the natural flow direction of the land and will be intercepted mostly by Stream A, a small portion of the runoff could flow to the non-contact water ditch of the main access road.

Runoff from watershed F (between the overburden pile and the main access road) will also be intercepted by the non-contact water ditch along the main access road.

The operation phases of the project are shown on Plans 21-1 and 21-2 for years 0 to 3 and 4 to 17

B) *Complete the overburden disposal site water management plan to ensure that water from*

the overburden disposal site is properly collected and managed. Add all the elements on the maps in Appendix ACEE-21.

ANSWER

As specified in the answer to the previous question (Part A of question CCE 31), mining water from the pit will not be directed to the overburden pile during the operation phase, it will be sent to the accumulation pond. Consequently, after revegetation of the overburden pile, runoff water on the overburden pile is non-contact water. Therefore, it is not governed by the requirements of the Metal and Diamond Mining Effluent Regulations (MDMER). Precipitation falling on the overburden pile will flow in a natural flow direction and will be intercepted by the non-contact water ditch along the main access road (See corrected Map 03-03).

C) *Revise the drainage of the dewatering water to prevent it from passing through the overburden disposal site and update map 03-03 of Appendix ACEE-21 accordingly.*

ANSWER

As soon as the mine water treatment plant (WTP) is in operation, all pit water will be directed to this plant. The water will no longer be directed to the overburden pile. The corrected map 03-03 shows the operations in the operation phase. Maps 20-2 to 20-5 present the sequence of construction work and demonstrate when the water is directed into the overburden pile and then into the mine water treatment plant.

CCE 32 Water Management - Options for Dewatering in the Operations Phase

REFERENCES

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 5.7 (Project Activities) and 10.1.2 (Environmental Changes).

WSP (February 2019). Rose Lithium - Tantalum Mining Project. Updated environmental impact statement. Report produced for Critical Elements Lithium Corporation. Sector Study RS-2 (Hydrogeological Study and Modelling of the Future Pit).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to questions CEAA-21 and Appendix CEAA-21.

BACKGROUND

Map 03-03 in Appendix ACEE-21 shows that to lower the water table, the water from the nine pumps at the periphery of the pit is directed to sedimentation basins and then to lakes 4, 3 and 6. This type of water management is not sufficient since this water is considered mine water, according to ECCC. This water should be thus managed based on the requirements of the Metal and Mining Effluent Regulations (MMER). The sedimentation ponds shown on the maps at discharge points in lakes 4, 3 and 6 are only suitable for treating suspended solids. Proper water management should consider all potential contaminants.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Revise the management of water from peripheral pumping so that it can be managed as mine water, i.e., taking into account all potential contaminants and in compliance with the requirements of the Metal and Mining Effluent Regulations (MMER).*

ANSWER

Two groundwater samples were collected during the pumping tests at wells PP1 and PP2, which are located in the pit footprint.

The results obtained during these samplings allow us to anticipate the quality of the water pumped during the dewatering of the pit. The pumping wells are located on Map 11 of Appendix I (Hydrogeology) (WSP, 2019[17]) and Table CCE 32-1 presents the list of wells sampled, as well as the sampling date.

The quality of these samples from the pumping tests reflects the same quality of the water from the peripheral wells of the pit.

Table CCE 32-1 List of Groundwater Samples - Pumping Test

Survey	Date of collection	
	24 hr	72 hr
PP-1 (Pump test)	-	2017-02-10
PP-2 (Pump test)	2017-02-03	2017-02-05

Samples were taken directly from the outlet of the pumped water discharge pipe after 24 hours and 72 hours of pumping. Physicochemical parameters were measured using a multi-parameter YSI probe during sampling, including electrical conductivity, temperature, oxidation reduction potential and dissolved oxygen. The results of the analyses of the groundwater collected during the pumping test are presented in Table CCE 32-2:

[17] Critical Elements Corporation. Rose Lithium-Tantalum Project - Information requested by the CEAA for the concordance of the Environmental Impact Assessment. CEAA File 005327

Table CCE 32-2 Groundwater Quality

Parameters	Groundwater samples			MDMER – Authorized limit (µg/L)		
	PP2-24hr	PP2-72hr	PP1-72hr	Monthly average	Composite sample	Sample taken
	2017-02-03	2017-02-05	2017-02-10			
Major Ions (mg/L)						
Chlorides (Cl)	0.7	0.7	0.8			
Calcium	9.06	8.95	8.13			
Magnesium	1.77	1.76	1.82			
Potassium	4.40	4.28	2.97			
Sodium	6.40	6.32	9.49			
Petroleum hydrocarbons (C10-C50) (µg/L)						
PH C 10 - C 50	<100	<100	<100			
Metals (µg/L)						
Aluminium	26	22	<10			
Corrected aluminium	-	-	-			
Antimony	<1.0	<1.0	<1.0			
Silver	<0.2	<0.2	<0.1			
Arsenic	3.0	3.0	<1.0	500	750	1,000
Barium	3.0	3.0	6.0			
Beryllium	<1.0	<1.0	0.2			
Boron	<40	<40	<40			
Cadmium	<0.2	<0.2	<0.1			
Chromium	<1.0	<1.0	0.9			
Cobalt	1.1	<0.5	<0.5			
Copper	1.0	<1.0	<1.0	300	450	600
Tin	<5.0	<5.0	<5.0			
Iron	120	114	197			
Lithium	24	24	18			
Manganese	33	34	43			
Molybdenum	112	108	24			
Nickel	<1.0	<1.0	<1.0	500	750	1,000
Lead	<0.5	<0.5	<0.5	200	300	400
Selenium	<1.0	<1.0	1.0			
Thallium	<1.0	<1.0	<0.2			
Titanium	4.0	4.0	<2.0			
Uranium	1.8	1.1	0.1			
Vanadium	2.0	2.0	<0.5			
Zinc	4.0	<3.0	<3.0	500	750	1,000
Other inorganic compounds (µg/L)						
Total cyanide	<5.0	<5.0	<5.0	1,000	1,500	2,000
Fluoride (F)	460	420	640			
Nitrates + nitrites	<40.00	<40.00	-			
Total phosphorus	<20.00	<20.00	40.00			
Total sulphur	<20.00	<20.00	30.00			
Physicochemical parameters						
Suspended solids (SS) (µg/L)	<2,000	<2,000	<2.0	15,000	22,500	30,000
Conductivity (µS/cm)	100	110	126			
Dissolved oxygen (mg/L)	7.1	5.5	2.3			
Total solids (µg/L)	82,000	78,000	58,000			
pH	6.8	7.1	7.7			

The results presented in Table CCE 32-2 show that no pollutant exceeds the limits allowed by the MDMER. Therefore, the water from the eight pumps around the perimeter of the pit is directed to sedimentation ponds, where suspended solids will be removed and the pH will be adjusted and discharged to lakes 3, 4 and 6.

If further geochemical analyses show that certain contaminants exceed the limits authorized by the MDMER, small treatment plants will be installed downstream of the sedimentation ponds. Water from the eight drawdown wells around the pit (other than PP-1) will be sent to sedimentation ponds and then to small treatment plants to ensure that the water meets the requirements of the Metal and Diamond Mining Effluent Regulations before being released to the receiving environment (lakes 3, 4 and 6).

B) Update map 03-03 of Appendix CEAA-21 and identify any required infrastructure modifications.

ANSWER

The corrected map 03-03 includes the piping, water treatment plant and peripheral pumps.

CCE 33 Water Management - Decommissioning and Restoration Phases

REFERENCES

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 5.7 (Project Activities) and 10.1.2 (Environmental Changes).

Environment Canada (2009). Environmental Code of Practice for Metal Mines. Electronic resource: www.ec.gc.ca/lcpe-cepa/documents/codes/mm/mm-eng.pdf Consulted March 10, 2020.

WSP (February 2019). Rose Lithium - Tantalum Mining Project. Updated environmental impact statement. Report produced for Critical Elements Lithium Corporation. Sector Study RS-2 (Hydrogeological Study and Modelling of the Future Pit).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to questions CEAA-21 and Appendix CEAA-21.

WSP (February 2020). Rose Lithium - Tantalum Mining Project. Responses to the mismatch with the first information from IAAC. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-19.

BACKGROUND

The future mine site is likely to produce effluent(s) that may contain contaminants and could constitute a deleterious substance as defined by the Fisheries Act several years after its operation. As a result, it may not be possible to remove the water treatment plant and other water collection and treatment components before a long period of stabilization of the effluent from the mine site, including water from the waste rock co-deposit pile, and from residue.

According to the proponent's response to the mismatch in the Agency's first request for information, it is mentioned on page 5 that "restoration work will be done gradually during operations until closure for a quicker return to nature." It also states that "No active or passive treatment will be required, site restoration as designed will ensure that water quality is at a level that poses no long-term risk to the environment."

The information regarding the management and treatment of mine water during restoration is not sufficiently detailed or justified. The design of the restoration work and water management should be presented in detail to demonstrate that negative environmental impacts will be minimized. The proponent must justify its approach to ensure effluent water quality during the restoration and closure periods.

Information on water management during open-pit mine restoration is available in Environment Canada's Environmental Code of Practice for Metal Mines and Climate Change Canada (2009).

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Provide an estimate of the flow (flows and flow direction) and water quality at the site during the various stages of restoration through to closure. This information should take into account the significant changes in topography generated by the increase in volume of the co-disposal pad and the expansion of the pit.*

ANSWER

Mine restoration work is expected to take place over two years as described in the 'Update of the Environmental Impact Statement' report produced by WSP in 2018 and the 'Plan de réaménagement et de restauration du site pour le projet Rose Lithium tantale [Site Refurbishment and Restoration Plan for the Rose Lithium-Tantalum Project]' report prepared by SNC-Lavalin in 2019.

Two hydraulic and hydrological (H&H) models were developed to provide estimates of flow direction and drainage rates at the mine site. The U.S. Environmental Protection Agency's Personal Computer Storm Water Management Model software (PCSWMM), version 5.1.013, was used to calculate the flows for a 1:100-year recurrence flood.

The H&H models are based on the following assumptions:

- Natural watersheds were not included in the models, which only show the different compartments of the mine site;
- A runoff coefficient C equal to 0.6 for revegetated areas;

The flow rates in the restored mine site were assessed for a 24-hour, 1:100-year recurrence flood, combined with the average snowmelt over 21 days (the amount of snow corresponds to the maximum forecast for a 100-year recurrence). The rainfall used included an 18% increase in compliance with the recommendations on the increases to be considered for the Intensity-Duration-Frequency (IDF) curves for the 2040-2070 and 2070-2100 horizons for all of Quebec, PHASE II, conducted by the Institut national de la recherche scientifique (INRS) on behalf of the Ministère des Transports du Québec (MTQ) (Mailhot et al., 2014)[18].

[18] Mailhot, A., Panthou, G., & Talbot, G. (2014). *Recommandations sur les majorations a considérer pour les courbes Intensité-Durée-Fréquence (IDF) aux horizons 2040-2070 et 2070-2100 pour l'ensemble du Québec PHASE II* (No. R1515). INRS, Centre Eau Terre Environnement.

Table 33-1: Flood used for flow estimates for the restoration period[19]

Recurrence rainfall of 1:100 years	**82.51 mm/24 hrs**
Recurrence rainfall of 1:100 years increased by 18% (Mailhot et al., 2014)	97.36 mm/24 hrs
Snowmelt over 21 days (based on a recurrence snow quantity of 100 years)	17.57 mm/24 hrs
Total project flood	114.93 mm/24 hrs

A two-year period is planned for mine restoration work. The mine site will be secured during the restoration work. Map 33-1 shows the mine site during years 1 and 2 of restoration.

Description of the work and activities during the restoration (Years 1 and 2)

Pit

Dewatering water pumping will stop while well pumping will phase out when mining activities terminate.

The perimeter of the pit will be surrounded by blocks of blasted rock forming a protective berm. During the first year of the restoration, the pit will receive runoff from the road surrounding the pit as well as a portion of the water from the road between the pit and the co-deposition pile. For the flood under consideration, the maximum total flow entering the pit is 50.44 m³/s, including water that falls directly into the pit.

Overburden pile

The overburden pile will be progressively vegetated during the operation phase. In the first year of restoration, the overburden pile will be completely revegetated. During the restoration, approximately 10% of the total volume of the overburden pile will be used for spreading on the different sectors. It is therefore considered that the reprofiling of 10% of the pile will be required during the restoration, while 90% will not be reprofiled at all. A runoff coefficient of 0.6 was considered for the revegetated overburden pile.

Runoff from the overburden pile will be directed naturally to nearby ditches on the main access road and eventually reach Stream A or Lake 7, depending on the direction of flow in the road ditches.

The maximum runoff flow down the pile is 14.09 m³/s. A flow of approximately 7.5 m³/s will drain to the ditches of the main access road with Lake 7 as its final outlet (through the sedimentation ponds constructed in this part of the road) and 6.6 m³/s to the ditches of the road with Brook A as its final outlet.

Waste rock and filtered tailings pile (co-deposition pile)

As shown on the 'Tailings and waste co-deposition pile by year group' maps 3320-C-0301, 3320-

[19] Rapport technique de conception des infrastructures de gestion de l'eau (bassins)et bilan d'eau Rose Lithium-Tantale [Rose Lithium-Tantalum technical report for the water management design (ponds) and water balance]

C-0302, 3320-C-0303, 3320-C-0304, 3320-C-0305 and 3320-C-0306, the co-deposition pile is revegetated progressively during the operating years. The entire co-deposition pile will be revegetated in the first year of restoration. A runoff coefficient equal to 0.6 (revegetated area) has been assigned to the co-deposition pile. Precipitation that falls on the pile will run off toward the ditch surrounding the pile and will flow by gravity toward the sedimentation ponds no. 2 and no. 3 and then pumped toward the accumulation pond.

Pond no. 2 receives a maximum flow from the co-deposition pile of about 28.16 m³/s while the flow from pond no. 3 is estimated at a maximum of 17.57 m³/s. The runoff from the phase I part of the co-deposition pile will be directed, via the ditch surrounding this part of the pile, directly to the accumulation pond with a maximum flow of 16.96 m³/s.

Ore stockpile

According to the post-operation work schedule, the already depleted ore stockpiles will be revegetated during the second year of restoration. In the model of the first year of restoration, a runoff coefficient of approximately 0.8[20] was assigned to this area.

At this stage of restoration, the runoff water on the bed of the ore stockpile is considered to be contact water and therefore the pit of the ore stockpile would remain. Precipitation that falls on the bed of the ore stockpile will run off and be intercepted by the contact water ditch built around the old ore stockpile and directed to the accumulation pond.

The maximum flow intercepted by the ditch from the bed of the ore stockpile is 3.95 m³/s for the design flood (114.93 mm/24 hrs).

Water management buildings and infrastructure

All culverts that are no longer required to maintain the free flow of surface water will be removed and redirected to an authorized site. Drainage ditches will remain in place during the first year of restoration.

During this restoration phase, only the SP-lake 3, SP-lake 4 and SP-lake 6 sedimentation ponds will be backfilled and revegetated as the peripheral pumping of the pit's dewatering water stopped.

The co-deposition pile water management infrastructures (ditch, pond no. 2 and pond no. 3) will remain at least during the first year of restoration. Consequently, the contact water pumping from these two basins to the accumulation pond would continue until the water quality meets discharge standards. The pumping flows from pond no. 2 to pond no. 3 and from pond no. 3 to the accumulation pond are respectively 0.31 m³/s and 0.85 m³/s. The pond capacities considered in the H&H model for the first year of restoration are 72,700 m³ for pond no. 2, 95,000 m³ for pond no. 3 and 267,200 m³ for the accumulation pond[21].

At this stage of restoration, the industrial sector infrastructure will be dismantled, the ditch will

[20] Rapport technique de conception des infrastructures de gestion de l'eau (bassins)et bilan d'eau Rose Lithium-Tantale [Rose Lithium-Tantalum technical report for the water management design (ponds) and water balance]

[21] Rapport technique de conception des infrastructures de gestion de l'eau (bassins)et bilan d'eau Rose Lithium-Tantale [Rose Lithium-Tantalum technical report for the water management design (ponds) and water balance]

remain in place and will receive runoff from the demolished industrial sector. The flow intercepted by this ditch is estimated at 9.58 m³/s.

Furthermore, the explosives warehouse will be demolished. The flow intercepted by the road ditch (also taking into account the runoff from the part of the road leading to the warehouse) is 1.17 m³/s.

The runoff coefficient considered for the warehouse (the same for the industrial sector) is 0.8 and for the roads is 0.75[22].

Post restoration phase (Year 3 and after)

Since the backfilling of ditches and ponds depends on the quality of the water discharged, it will not be possible at this stage to determine until what year, after operations end, these infrastructures will remain in place. Therefore, the second H&H model does not necessarily represent the second year of restoration, but rather the final phase of restoration (or even post-restoration, closure) where the entire mine site will be revegetated.

An H&H model of the final phase of restoration was developed based on the post-operation and post-restoration work schedule presented on page 72 of the Plan de réaménagement et de restauration du site pour le projet Rose Lithium tantale (Site Refurbishment and Restoration Plan for the Rose Lithium-Tantalum Project) developed by SNC-Lavalin in 2019. During this restoration phase, the ditches, collection ponds and accumulation pond will be backfilled and revegetated. The industrial sector, ore stockpile, explosives warehouse and all roads will be revegetated (map QC-95 Mine Site after Restoration). Map QC-95 shows the mine site during this phase, including the direction of flow.

Runoff from the ore stockpile, the industrial sector, the former accumulation pond areas and the processing plant will flow toward Stream A.

Runoff for the co-deposition pile will be shared between the pit, lakes 18 and 19 and streams A, N and M. The ditch to the northwest of the pile will be kept to avoid discharging water from the co-deposition pile to lakes 15 and 16 and Stream C until the water quality of the revegetated pile is proven to be acceptable.

The former explosives warehouse site and a portion of the access road to this warehouse drain to Lake 14.

Precipitation falling on the overburden pile will flow in a natural flow direction to Stream A and Lake 7.

[22] Manuel de calcul et de conception des ouvrages municipaux de gestion des eaux pluviales [Municipal Rainwater Facilities Calculation and Design Manual]

Table 33-2: Estimated maximum flows for design flood during the final phase of restoration

Drained watershed[23]	Receiving environment	Flow (m^3/s)
Co-deposition pile (including the revegetated areas of the ditch, ponds no. 2 and no. 3 and the road around the pile)	Pit*	15.59
	Lake 15	8.52
	Lake 16	5.32
	Stream C	5.27
	Lake 18	5.28
	Lake 19	27.80
	Stream M	11.81
	Stream A	18.35
	Total flow	**97.94 m^3/s**
Bed of the ore stockpile	Stream A	3.63
Industrial sector	Stream A	9.26
Backfilled accumulation pond area and WTP[24]	Stream A	2.22
Overburden pile	Stream A	6.61
	Lake 7	7.28
	Total flow	**13.89 m^3/s**
Former explosives warehouse and its road	Lake 20	2.09

* The report “Plan de réaménagement et de restauration du site pour le projet Rose Lithium tantale: (SNC-Lavalin, 2019) mentions that some infrastructures will be reprofiled, if required, to facilitate water drainage to the pit. Therefore, the H&H model of the final phase of restoration assumes that the road and the ditch, located between the pit and the co-deposition pile, will be reprofiled, thus allowing water runoff from part of the pile to the pit.

The maximum flow entering the pit from the old road surrounding the pit, and from part of the co-deposition pile, is 61.85 m³/s, taking into account the precipitation that falls directly into the pit. This flow value is approximate since the model does not take into account the natural watersheds draining into the pit.

At this stage, the quality of the discharged water is not well determined. However, the water management infrastructure should remain in place during the restoration and post-restoration phases until on-site measurements demonstrate that the water meets discharge standards.

Hydraulic/hydrological modelling was used to estimate water flows in the mine site restoration stage. The numerical model uses scientific laws and assumptions derived from professional judgment to integrate available data into a mathematical representation that conceptualizes the essential characteristics of a hydrological system. Although a numerical model cannot represent the complete detailed reality of a hydrological system, a valid numerical model is a tool capable of reasonably simulating the behaviour of the system under a variety of constraints and conditions. The validity and accuracy of the model depend on the quantity, quality and distribution of available data, as well as the complexity of the soil characteristics. Thus, each hydrological model simplifies a real system and the results obtained must be interpreted and used with caution and judgment.

[23] All these areas are revegetated
[24] Water treatment plant

The model described in this report is no exception. The lack of field data and site-specific water level and flow records at this stage of the project makes model validation impossible. The models used in this report to estimate flows during the mine site restoration phase have not been validated. These models are a scientific forecasting tool to assess the impacts of imposed modifications on an existing hydrological system and/or to compare different scenarios as part of a decision-making process.

However, the accuracy of the model remains tied to the normal uncertainty inherent in hydrological modelling work and, even though professional care was taken in its construction and simulations, no direct or indirect guarantee is given.

These limitations are considered an integral part of this response to the question.

B) *Explain the water management measures at each stage of decommissioning and restoration. These measures should be adapted to the flows and water quality levels generated at the mine site.*

ANSWER

The CEAA should refer to section 4.5 of the restoration plan produced for the project (SNC-Lavalin, 2019) and presented as an appendix to the same document. Restoration work that will take place during the post-operation period will likely result in surface modifications to the site, however, these changes will be directly related to the work methods that will be defined during the detailed engineering phase that will be conducted for the site restoration implementation. Therefore, the water balance for this period will be developed during the detailed engineering phase and cannot be produced at the current stage of the project.

C) *Provide a schedule or plan explaining the decommissioning and restoration steps, explaining namely:*

- *When and how the various water collection and treatment infrastructures (for example, pumps, pipes, ponds, water treatment plant) will be dismantled;*
- *When and how the various components of the drainage and water collection system (or example, ditches, ponds, dams) will be backfilled;*
- *Where, when and how additional ditches and/or ponds will be added if required, if water flow needs to be altered during the restoration work.*

ANSWER

The CEAA should refer to section 4.5 (water management infrastructure) and 8.3 (schedule) of the restoration plan produced for the project (SNC-Lavalin, 2019).

D) Provide detailed maps to illustrate the progress of the restoration work and changes to associated water management infrastructure.

ANSWER

The restoration plan is currently under review with the Ministère de l'Énergie et des Ressources naturelles (MERN). Maps illustrating the progress of the restoration work will be available once the restoration plan is approved by the MERN. The final post-restoration site map can be found in Figure 4.1 - Post-restoration site map of the restoration plan produced for the project (SNC-Lavalin, 2019).

E) Define and explain the surface water quality monitoring that will be conducted during the restoration work to validate and adjust remediation activities as required.

ANSWER

The CEAA should refer to sections 6.2 and 8.3 of the restoration plan produced for the project (SNC-Lavalin, 2019).

F) *Include a plan for geochemical monitoring of waste rock and tailings samples, which will have been collected during mine operations and/or during reclamation, to track changes in water quality in the co- disposal pad. This will help validate the estimates and adjust the mine site restoration plan as required.*

ANSWER

Under Directive 019, site operations must include annual monitoring of groundwater and effluent quality of the site. Therefore, this monitoring is planned and will be conducted under the terms and conditions described in sections 2.1 and 2.3 of D019, and to the satisfaction of the MELCC and the MERN. This monitoring will, if necessary, identify any problems with the final effluent from the site and allow corrective measures to be applied. Therefore, since a water treatment plant will be in operation for as long as necessary, possible exceedances of the criteria applicable to the site's final effluent would reveal a problem not suspected in the geochemical studies previously conducted, and this situation would be particularly addressed by modifying the treatment process at the water treatment plant. Monitoring, including the collection of samples of solids in the co-deposition pile as well as in the drainage water from the pile, or any other alternative deemed necessary by the experts who would address the issue, could be implemented to target and address the source of the observed problem. However, this program would have to be adapted to the problem observed, which cannot be described at this time.

CCE 34 Water Management - Closure and Post-closure Phases

REFERENCES

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 5.7 (Project Activities) and 10.1.2 (Environmental Changes).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-95.

WSP (February 2020). Rose Lithium - Tantalum *Mining Project. Responses to the mismatch with the first information from IAAC. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-19.*

BACKGROUND

The proponent states on page 5 of the response to the mismatch in the first information request (WSP, February 2020) that approximately 500 mm of sludge will accumulate at the bottom of the sedimentation ponds and that as such, the restoration of these ponds will include the excavation and transport of the sludge to the bottom of the pit. ECCC questions whether other options would not be more beneficial for managing this sludge. Measuring the contaminants in this sludge could help determine the best option for its final disposal.

The document also states that upon closure, the annual discharge from the Rose Lithium-Tantalum mine site will decrease due to the elimination of water flows from mine production and the change in retention, moisture evaporation and retention characteristics. The annual discharge volume from the Rose Project site footprint to Creek A is anticipated to decrease from 5.79 Mm3 to 1.56 Mm3 under average climatic conditions. Post-closure runoff from the site will be intermittent, and will depend on climatic conditions.

This information is not sufficiently fleshed out to identify potential adverse effects on the environment and the water management measures required to minimize these effects. The results of the flows obtained should also be supported, and the assumptions and calculation methods that led to these values should be presented.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Determine and explain whether the proposed sedimentation pond sludge management method is the best option and whether other options could be considered in order to minimize negative environmental impacts.*

ANSWER

There are currently no on-site operations, so the sedimentation ponds have not yet been constructed. Samples cannot, therefore, be taken. Considering that the sludge from the sedimentation ponds will be composed of fine waste rock and ore and will have essentially the same geochemical characteristics as the waste rock and tailings, this management method seems the most conservative, in the situation where the actual composition of the sludge cannot currently be characterized. Sludge samples from the bottom of the ponds could be taken during operations, and other management alternatives could be assessed. If appropriate, these alternatives would be presented in future revisions to the site restoration plan.

B) *Provide an estimate of the flow (flows and direction of flow) and water quality at the site at closure and post-closure. This information should take into account the significant changes in topography generated by the increase in volume of the co-disposal pad and the expansion of the pit.*

ANSWER

Refer to the “Post Restoration Phase (Year 3 and after)” described in Answer 33 A).

C) *Update map QC-95 in Appendix CEAA-95 by indicating topographic curves and direction of surface water flow.*

ANSWER

Map QC-95 has been updated (see Appendix CCE-33).

D) *Provide information related to the monitoring of water from the co-deposit pile after closure, and the mitigation measures that will be applied if necessary.*

ANSWER

The CEAA should refer to section 6.2 of the restoration plan produced for the project (SNC-Lavalin, 2019).

E) Provide an estimate of the volume of water and level of water in the pit at closure and post-closure. The proponent will be required to determine if there will be any effluent that will eventually exit the pit after closure, or if the pit will remain a closed water body. The proponent must also determine if there will be connectivity between the pit water and groundwater post-closure.

ANSWER

Table 34-1 shows the pit filling times taking into account groundwater flows, effective precipitation and average annual precipitation. The average annual effective precipitation over the pit is 940 m3/d and the average annual total precipitation over the pit is 1,850 m3/d.

Based on the available topography, the pit will overflow toward Lake 3 when the water level in the pit reaches elevation 285 m. The results show that groundwater inflows decrease as the water level in the pit rises. The most likely result is still the one taking into account the effective precipitation, as it takes into account evapotranspiration. The pit would therefore take approximately 26 years to fill. The total volume of the pit when it reaches its maximum level would be approximately 5.7 x 107 m3. The pit will be fed by resurgent groundwater from the lake created at the pit and by precipitation, also considering that the pit water will not enter the groundwater.

Table 34-1: Evaluation of the pit filling time

Filling interval	Volume associated with the interval (m^3)	Groundwater flow (m^3/d)	Filling time taking into account only groundwater inflow (year)	Filling time taking into account effective precipitation	Filling time taking into account total precipitation
(mASL)				(year)	(year)
90 (bottom of pit) - 150	1.84×10^6	14,770	0.3	0.3	0.3
150 - 200	9.49×10^6	10,879	2.7	2.5	2.4
200 - 250	2.28×10^7	7,433	11.2	10	9.1
250 - 275	1.64×10^7	3,743	23.2	19.6	17.1
275 - 285	6.12×10^6	1,480	34.5	26.6	22.2

Note 1: More information on water management during the closure of an open-pit mine is available in the ECCC's Environmental Code of Practice for Metal Mines: www.ec.gc.ca/lcpe-cepa/documents/codes/mm/mm-eng.pdf

Note 2: ECCC would like to reiterate that it is the proponent's responsibility to ensure compliance with the pollution prevention provisions of the Fisheries Act at all times.

CCE 35 Management of Water in Contact with Service Roads

REFERENCES

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 5.7

(Project Activities) and 10.1.2 (Environmental Changes).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation CEAA-23 and Appendices CEAA-18, CEAA-20 and CEAA-21.

BACKGROUND

In its response to question CEAA-23, the proponent states: "Contact water from the service roads will be collected in basins where it will be controlled. The water will be analyzed on a regular basis. If necessary, it will be pumped to the accumulation basin and treated at the treatment plant. The water will be measured to ensure it meets the criteria of Directive 019. Tailings and waste rock have been shown to be non-acid generating and non-leachable.

ECCC would like to reiterate that roads are part of the mine site and their contact and runoff water should be managed as mine water. The proponent's response is not detailed enough to fully answer question CEAA-23 regarding the management of water in contact with service roads (the required details were also not found in the other documents provided to date as part of the Environmental Impact Statement). In addition, the water balance presented in Appendix CEAA-18 does not include the volumes of water coming from the roads, which raises questions about the capacity of the contaminated water collection and treatment system at the mine site.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Clearly identify on the maps in Appendices CEAA-20 and CEAA-21 the stormwater collection system for all roads (e.g., ditches, ponds) and the direction of flow.*

ANSWER

CEC has provided all available information on water management at this stage of development of the project.

B) *Explain, in the Water Management Plan, how water collected from road ditches will then be managed in accordance with applicable standards and regulations (including the Metal and Diamond Mining Effluent Regulations and the Fisheries Act):*

- *The location of all ditches and other infrastructure to collect water from roads and the direction of water flow;*
- *The location and dimensions of the basins referred to in the proponent's response;*
- *The parameters measured and the frequency of monitoring to verify water quality, as well as the locations where sampling will be done;*
- *Updating the water balance and design of various collection and treatment structures, if applicable.*

ANSWER

CEC has provided all available information on water management at this stage of development of the project.

CCE 36 Water Treatment Unit and Accumulation and Sedimentation Ponds

REFERENCES

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 5.7 (Project Activities) and 10.1.2 (Environmental Changes).

WSP (February 2019). Rose Lithium - Tantalum Mining Project. Updated environmental impact statement. Report produced for Critical Elements Lithium Corporation. Section 3.7 (Water Management).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Responses to questions CEAA-24, CEAA-27 and CEAA-28.

BACKGROUND

In light of the above comments regarding the management of water and additional water that may need to pass through the Water Treatment Unit (WTU), ECCC questions the ability of the main accumulation pond, the WTU and other accumulation or sedimentation ponds to contain and treat all water from the mine site.

Questions CEAA-24 B) and C) asked the proponent to further describe and justify the performance and effectiveness of the WTU. The proponent's response is not sufficiently detailed. For example, in the event of an incident, if water quality thresholds (suspended solids and pH) are exceeded at the WTU effluent, the proponent states that the water will be recirculated in the accumulation pond. However, the response time between exceeding the water quality thresholds and the start of the recirculation of the discharge water must be sufficient to meet the effluent discharge criteria. Nor does the sponsor mention the potential failure of the sensor that measures suspended solids and pH.

In addition, the proponent mentions that the recirculation principle is used by different suppliers at several sites. Obtaining this information would be very useful to analyze the effectiveness of the treatment system.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Update the water balance with respect to the possibility of additional water being collected in road ditches. Where appropriate, assess the need to modify the design of the main storage pond and the Water Treatment Unit (WTU), as well as other storage and sedimentation ponds as required.*

ANSWER

The design of facilities was done taking into account climatic changes, as recommended by the D019 for the mining industry.

B) Provide the following information and incorporate it into the Water Management Plan:

- *The response time between failure to meet the quality indicators, i.e., suspended solids and pH measurement by the sensor at the WTU effluent, and the start of recirculation of the discharge water. Describe the mechanism and its operation in detail, including whether this will be done automatically or manually. Indicate the robustness of this system and the measures that will be*

taken in the event of sensor failure.

- *Estimated capacity of the storage tank, in number of days, should an incident occur that requires recirculation of the discharge water:*
  - *And that ore processing was not stopped;*
  - *And that ore processing was stopped.*
- *Examples of mine sites that use recirculation and water treatment system suppliers. Present this information in a detailed manner, including information on the performance of this type of system.*
- *If the discharge standards, criteria or objectives are not met at the point of discharge to water body A, indicate what the response time will be from the time the non-compliance is observed to the start of recirculation of the discharge water.*

ANSWER

CEC can provide an order of magnitude concerning the reaction time at this stage, but the conception at the level of detailed engineering is not known.

CCE 37 Impermeability of Accumulation Basins

REFERENCES

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 5.7 (Project Activities) and 10.1.2 (Environmental Changes).

WSP (February 2019). Rose Lithium - Tantalum Mining Project. Answers to supplementary questions from MELCC. Response to question QC2-17.

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-26 and Appendix CEAA-21.

BACKGROUND

Given that a geomembrane will be used to seal the accumulation basin, but not for basins 2 and 3, question CEAA-26 asked that the design of basins 2 and 3 be revised, if necessary, based on the results of additional geochemical tests, including kinetic tests. The proponent stated that based on the preliminary reports and kinetic tests, "the waste rock and tailings are still considered to be non-acid generating, or leachable.

However, the proponent did not demonstrate that the degree of impermeability of basins 2 and 3 was sufficient to prevent the risk of infiltration of potentially contaminated water from these basins into groundwater.

Water management in basins 2 and 3, as presented, could be insufficient. In fact, the water flowing through them will contain substances from the ore processing process. ECCC is of the opinion that the proponent may have to make these two basins more watertight. If so, it must describe the method and materials it will use to do so.

In addition, lakes 18 and 19 are located near basins 2 and 3 and two ditches where contact water will circulate. To prevent contaminants from basins 2 and 3 from entering these lakes, sealing measures may also be necessary.

Furthermore, on map 03-03 in Appendix CEAA-21, there is a blue zone east of the co-deposit pile identified as a ditch, which is surprising given its size. It appears to be more of an accumulation

basin. If this is indeed the case, it should be explained whether the same design and sealing criteria used for the other accumulation basins on the site will be applied for this one.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Demonstrate that the degree of impermeability of basins 2 and 3 will be sufficient to prevent the infiltration of potentially contaminated water from these ponds into the groundwater, or update their design by describing the materials that will be used. Where appropriate, incorporate this information into the Water Management Plan.*

ANSWER

CEC has provided information on water management along with all information available at this stage of the development of the project.

B) *Explain what the blue area east of the co-deposit pad represents on map 03-03 in Appendix CEAA-21 and what design and sealing criteria are planned for this infrastructure.*

ANSWER

CEC has provided information on water management along with all information available at this stage of the development of the project.

CCE 38 Surface Water Monitoring Plan - Operation, Closure and Post-Closure Phases

REFERENCES

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Assessment. Part II, section 11.4 (Monitoring Program).

WSP (February 2019). Rose Lithium - Tantalum Mining Project. Updated environmental impact statement. Report produced for Critical Elements Lithium Corporation. Sections 14.3.4 (Surface Water and Sediment Quality), 14.4.3 (Monitoring Final Effluent and Surface Water Quality), 14.5.1 (Groundwater Quality) and Appendix 3-3 (Geochemical Characteristics of Mine Waste Rock - Lamont Inc. Report).

WSP (February 2019). Rose Lithium - Tantalum Mining Project. Answers to supplementary questions from MELCC. Appendix QC2-74.

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Appendix QC2-74.

BACKGROUND

The information presented in Chapter 14 of the Environmental Impact Statement for monitoring surface water quality during the operation, closure and post-closure phases refers to regulatory requirements, but does not contain all the elements describing how this monitoring will be carried out (e.g., parameters, frequency and locations of sampling). No information is provided on the actions that would be taken to address situations where irregular releases in excess of applicable standards and objectives are observed.

Appendix QC2-74 of the responses to the Ministère de l'Environnement et de la Lutte contre

les changements climatiques (MELCC) (December, 2019) contains a "Groundwater Monitoring Program." There is no equivalent plan for surface water, however.

Appendix CEAA-46 of the responses to the Agency's questions (December, 2019), which establishes the initial status of water bodies, is a reference for identifying the parameters to be measured as part of the surface water monitoring plan during operations and after closure.

In addition to the metals identified in the initial status of water bodies in Appendix CEAA-46, tantalum and lithium should be included in the surface water monitoring plan because they are the components sought by the Rose Project. Particular attention should be paid to the monitoring of tantalum. The comparison criterion for tantalum could be determined and justified in light of recent studies on the toxicity of this metal, as there are no existing criteria in Quebec and Canada.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Provide the surface water monitoring plan for the operation, closure and post-closure phases. A good example that could be adapted for the surface water monitoring plan is the groundwater monitoring plan in Appendix QC2-74 from the Responses to supplementary questions from the Ministère de l'Environnement et de la Lutte contre les changements climatiques (December, 2019). Indicate which parameters will be measured. Results should be compared to the recommendations in the Canadian Council of Ministers of the Environment Canadian Water Quality Guidelines and the standards of the Metal and Diamond Mining Effluent Regulations when the mine is subject to these standards. Mitigation and remedial actions to be taken in the event of an improper discharge exceeding the applicable standards and objectives should also be included in the plan.*

ANSWER

CEC commits to providing the surface water monitoring plan for the operation, closure and post-closure phases as described above.

B) Ensure that lithium and tantalum are included in the Surface Water Monitoring Plan. The results obtained for tantalum should be compared with results from baseline characterization or with reference stream characterization results.

ANSWER

CEC commits to including lithium and tantalum in the Surface Water Monitoring Plan as described above.

CCE 39 Lake 7 Road and Surface Water Monitoring

REFERENCES

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Assessment. Part II, section 11.4 (Monitoring Program).

WSP (February 2019). Rose Lithium - Tantalum Mining Project. Information requested by the CEAA for concordance with the environmental impact statement. Report produced for Critical Elements Lithium Corporation. Appendix C.

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Appendices

CEAA-20 and CEAA- 21.

BACKGROUND

Appendix C of the February 2019 Supplementary Information Document on the Environmental Impact Statement, as well as the maps in CEAA Appendices CEAA-20 and CEAA-21 of the responses to CEAA questions show a section of road that runs at right angles to the access road and extends to Lake 7 (referred to as "Lake #7 Road" in Appendix C). Based on the cross section of the road shown in Appendix C, this road appears to be designed for heavy vehicles, as is the access road, since it has the same characteristics (e.g., width, type of foundation).

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Indicate the types of vehicles that will use the section of road between the access road and Lake 7, and for what purposes it will be used.*

ANSWER

The road between the access road and Lake 7 has no use and will not be built; as such no vehicles will travel on this road.

B) Depending on the nature of the activities to be carried out on this road, include Lake 7 in the Surface Water Monitoring Plan, if necessary, otherwise justify.

ANSWER

As this road will not be built, no follow-ups are required.

CCE 40 Certificates of Analysis for Leaching Tests

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section (Biophysical Environment) and 10.1.2 (Environmental Changes).

WSP (February 2019a). Rose Lithium - Tantalum Mining Project. Information requested by the CEAA for concordance with the environmental impact statement. Report produced for Critical Elements Lithium Corporation. Appendix G (Geochemical Characterization, Lamont Inc.).

WSP (February 2019b). Rose Lithium - Tantalum Mining Project. Updated environmental impact statement. Report produced for Critical Elements Lithium Corporation. Appendix 3-3 (Geochemical Characteristics of Mine Waste Rock- Lamont Inc. Report).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-14.

BACKGROUND

In its response to question CEAA-14, the proponent indicates that tests on acid generation potential in the overburden are planned for the spring of 2020 and are thus not provided. In addition, an incomplete summary of the leaching test results is presented in Appendix G of the information document provided for concordance (WSP, February 2019a). To support a thorough review of the proponent's results by experts, the complete results of the parameters tested

should be provided.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Provide certificates of analysis issued by the SGS laboratory on the leaching test results (MA200 method) of ore and tailings analyzed in 2018.*

ANSWER

The certificates of analysis for the leaching test results (MA200 method) of the ore and tailings analyzed in 2018 can be found in Appendix CCE- 40A.

B) *Provide certificates of analyses issued by SGS laboratory on the leaching test results (SPLP method) of ore and tailings analyzed in 2018.*

ANSWER

The certificates of analysis for the leaching test results (SPLP method) of the 15 samples of ore and tailings analyzed in 2018 can be found in Appendix CCE- 40.

C) *Provide the quality assurance/quality control (QA/QC) tests performed as part of the geochemical testing program, including the evaluation of the results obtained. If a QA/QC program was not conducted, explain the reasons.*

ANSWER

The quality/assurance control (QA/QC) tests performed as part of the geochemical testing program and the evaluation of the results obtained can be found in Appendix CCE- 40.

CCE 41 Overburden and Sediment Geochemical Characterizations

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section (Biophysical Environment) and 10.1.2 (Environmental Changes).

Mine Environment Neutral Drainage (MEND, 2009). Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials. MEND Report 1.20.1. Mining Environment Neutral Drainage Program, Natural Resources Canada. December 2009.

WSP (February 2019a). Rose Lithium - Tantalum Mining Project. Information requested by the CEAA for concordance with the environmental impact statement. Report produced for Critical Elements Lithium Corporation. Appendix G (Geochemical Characterization, Lamont Inc.).

WSP (February 2019b). Rose Lithium - Tantalum Mining Project. Updated environmental impact statement. Report produced for Critical Elements Lithium Corporation. Section 3.6 (Ore, Waste Rock and Tailings Management), 3.7 (Water Management), 6.4 (Surface Water and Sediment Quality) and Appendix 3-3 (Geochemical Characteristics of Mine Waste Rock - Lamont Inc. Report).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-14.

BACKGROUND

In its response to question CEAA-14, the proponent indicates that tests on acid generation potential in the overburden are planned for the spring of 2020 and are thus not provided. In Appendix G (Geochemical Characterization, Lamont Inc.) of the concordance information document (WSP, February 2019a), the proponent presents a comprehensive geochemical characterization program for all materials that will be disturbed by mining activities. According to the Manual for Prediction of Drainage Chemistry of Sulphide Geologic Materials (MEND, 2009), all geological materials must be assessed, including non-lithified surficial materials, as well as material in relatively low volumetric proportion that may be responsible for landfill development that could cause significant environmental impacts.

Over the life of the mine, 11 megatonnes of overburden will be removed during pit development and stored in a separate stockpile. The proponent states that surface water that comes into contact with mining infrastructure but has no potential for contamination, such as the overburden pit and service road ditches, will not be captured. It added that passive means of controlling suspended solids will be implemented during construction and operation to meet discharge standards for concentrations of suspended solids. However, to date, the proponent has not submitted a geochemical characterization program to support its premise of no adverse effects of the overburden on contact water, other than the risk associated with suspended solids. A thorough assessment of the overburden is required to evaluate its potential for acid mine drainage and leaching to support the current project design and the overburden disposal site water management plan.

Lake 1 and Lake 2 will be drained prior to pit mining and lake bottom sediments will be disturbed. The management of these lake sediments has not been described. Lake sediments may contain metals and produce contact water that could cause environmental impacts.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Provide a sampling and analysis plan for the overburden characterization program planned for spring 2020, as mentioned in the response to question CEAA-14. The sampling and analysis plan must specify the methods for sample collection and analysis, and explain the sample selection to demonstrate that the program will achieve an appropriate spatial distribution of samples, on the pit footprint and at various depth profiles.*

ANSWER

CEC undertakes to provide a sampling and analysis plan for the overburden characterization program. This plan will be submitted for approval prior to sample collection and analysis. The samples will be collected during planned soil characterization survey. This will help in completing the geochemical characterization of all mining materials.

B) *Provide a complete geochemical characterization (acid rock drainage and metal leaching) of the sediments from Lake 1 and Lake 2.*

ANSWER

The characterization of the sediments from Lake 1 and Lake 2 has already been carried out as part of the impact assessment. The characteristics of these sediments with respect to acid rock drainage and metal leaching can be determined, if required, by collecting two new samples from these lakes during the planned soil and overburden campaign.

C) Identify where the sediments will be stored and confirm whether the lake sediments will be exposed in-situ during mining.

ANSWER

The sediments from Lake 1 and Lake 2 will be stored with the overburden in a co-disposal stockpile and will be quickly covered with overburden to limit exposure to water and oxygen.

CCE 42 Waste Rock Sampling Method

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 9.1.2 (Biophysical Environment) and 10.1.2 (Environmental Changes).

Mine Environment Neutral Drainage (MEND, 2009). Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials. MEND Report 1.20.1. Mining Environment Neutral Drainage Program, Natural Resources Canada. December 2009.

WSP (February 2019a). Rose Lithium - Tantalum Mining Project. Information requested by the CEAA for concordance with the environmental impact statement. Report produced for Critical Elements Lithium Corporation. Appendix G (Geochemical Characterization, Lamont Inc.).

WSP (February 2019b). Rose Lithium - Tantalum Mining Project. Updated environmental impact statement. Report produced for Critical Elements Lithium Corporation. Section 3.6 (Ore, Waste Rock and Tailings Management) and Appendix 3-3 (Geochemical Characteristics of Mine Waste Rock - Lamont Inc. Report).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-12.

BACKGROUND

In its response to question CEAA-12, the proponent explained the choice of materials used for kinetic testing. As detailed in the Manual for Drainage Chemistry Prediction of Sulphide Geological Materials (MEND), the waste rock sampling program must be representative of the spatial, geological and geochemical variability of the repository. The Manual recommends that core samples be recorded in block models and presented on cross-sections and plan view maps to better illustrate the presence of the sample in space, within the material it is expected to represent. In addition, each sample should be fully described, particularly with respect to mineralogy, grain size, colour and visible signs of alteration.

Section 2.1 of Appendix G (WSP, February 2019a) describes the waste rock sampling programs conducted in 2017 and 2018. The company that conducted the study presented in Appendix G (Lamont Inc.) indicates that it did not participate in the selection and collection of samples in 2017, but that according to the information available, the samples represent the different lithologies that make up the future waste rock to be extracted from the pit, and that the surface and depth distribution covers several sectors of the planned pit. The purpose of the 2018 sampling program was to complete the 2017 program and cover the footprint of the future pit. Lamont Inc. added that a proportional number of samples were taken to represent the lithologies that will be mined. The 2018 samples were taken by the proponent.

Appendix G (WSP, February 2019a) indicates that the proponent provided the position of the samples, drilling logs and photographs of the drill core to Lamont Inc., and that such information is presented in Appendix A of the same document. However, Appendix A contains only a table showing the sample identification number, the borehole identification, the depth interval and the rock group for each sample. Figure 2-2 (WSP, February 2019a) shows the location of the boreholes

that were sampled, but it does not provide any context for the depth and location of the sample in relation to the geological units represented. The information provided does not demonstrate that the samples are representative of the waste rock units that will be disturbed during mining operations.

The average length of the waste rock sampling interval is 1.2 metres. The Manual for Prediction of Drainage Chemistry of Sulphide Geological Materials recommends that the size of the samples reflects the height of the pit benches. In addition, long sampling intervals capture the possible heterogeneity of the sampled unit, while short sampling intervals may distort the representativeness of the composition with respect to the overall rock composition.

In addition, the proponent's geologist indicated that the sample cores occasionally had disseminated sulphide veinlets or grains, but that overall the waste rock and ore contained almost no sulphides.

The total tonnage of waste rock to be produced is 184.2 megatonnes (Mt). Table 2.1 in Appendix G (WSP, February 2019a) shows the proportion of each waste rock lithology and the total number of samples taken per lithology. The tonnage per rock varies from 6.75 Mt to 118.9 Mt, while the sample count varies from 3 to 47 samples per rock. This is less than the initial sampling frequency set out in the Manual, which is presented as a recommended starting point from which the final number of samples should be determined based on site-specific conditions and objectives.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Provide a detailed summary of the waste rock sampling method, including: how samples were taken from the intervals where visible sulphide was identified and the rationale for the length of the sampling intervals. Include a description of the roles of the consultant (Lamont Inc.) and proponent staff.*

ANSWER

The samples were selected to be representative of the lithologies of the pit. They were chosen to have a spatial representation throughout the pit. They were selected by a geologist who is a member of the Ordre des géologues du Québec. From the location of the boreholes on a plan and sections of the pit, the geologist selected holes distributed over the entire pit from which samples could be chosen. He then looked at the drill logs and identified the depth intervals at which the different lithologies were intercepted. He went to the core bank and collected bits of core representative of each lithology. Each sample was numbered and placed in a closed plastic bag. Each bag contained a sample identification ticket. The bags were placed in closed pails with a sealed cover. They were then shipped to the SGS laboratory in Lakefield, Ontario by freight service.

The report entitled "*Geochemical Sampling Lithium-Tantalum Rose Project*" (Échantillonnage Géochimique Projet Rose Lithium-Tantale) by the geology consultant Mr. Vincent Jourdain, ing., Ph.D., from September 2020 gives a description of the samples and validates their representativeness of the lithologies of the pit and their spatial distribution. The report can be found in Appendix CCE-42A of this document.

Ten (10) ore samples and seventy-six (76) waste rock samples were taken. The number of samples from each waste rock lithology was taken according to their proportion in the pit. The following table shows the proportion of the different lithologies of waste rock inside the pit as well as the number and proportion of waste rock samples taken. It can be seen that the proportion of samples taken inside the lithologies making up the waste rock is similar to the proportion of these lithologies inside the projected pit.

Table 42: Proportions of lithology categories inside the projected pit

Lithology category	Proportion of volume in the pit (%)	2017 Campaign	2018 Campaign	Total	Proportion of the number of samples (%)
Gneiss	65,2	11	36	47	61,8
Porphyry	20,5	2	15	17	22,4
Amphibolite	10,6	6	3	9	11,8
Metasediment	3,7	2	1	3	3,9
TOTAL	**100**	**21**	**55**	**76**	**100**

Visible sulphides, when present, are traces of pyrite (see *Description of waste rock report*, Jourdain, October 2020 in Appendix CCE-42C). The samples selected are similar to all lithologies and may therefore contain traces to a few percentages of visible sulphides.

Lamont designed the tests and interpreted the results.

B) *Provide images of cross-sections or a block model showing the location of waste rock samples from the 2017 and 2018 sampling campaigns. The images must clearly illustrate drill tracks, geological surfaces, ore zones and pit location, and be accompanied by a legend to allow for interpretation.*

ANSWER

The location of samples taken in 2017 and 2018 is shown in the plan view and sections of Figures 42.1 to 42.6, found in Appendix CCE-42B. The figures illustrate drill traces, lithologies, ore zones, and the pit, along with a legend.

C) *Provide a quantitative justification for the number of samples taken relative to the initial sampling frequency provided in the Manual for Drainage Chemistry Prediction of Sulphide Geological Materials. A statistical analysis of each lithology may be required to demonstrate that the number of samples collected is sufficient to capture the possible compositional variability of each sample group with respect to environmental parameters.*

ANSWER

Please refer to the Description of Waste Rock found in Appendix CCE-42C.

CCE 43 Sulphide Ore and Acid Generation Potential

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section (Biophysical Environment) and 10.1.2 (Environmental Changes).

Mine Environment Neutral Drainage (MEND, 2009). Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials. MEND Report 1.20.1. Mining Environment Neutral Drainage Program, Natural Resources Canada. December 2009.

WSP (February 2019a). Rose Lithium - Tantalum Mining Project. Information requested by the CEAA for concordance with the environmental impact statement. Report produced for Critical Elements Lithium Corporation. Appendix G (Geochemical Characterization, Lamont Inc.).

WSP (February 2019b). Rose Lithium - Tantalum Mining Project. Updated environmental impact statement. Report produced for Critical Elements Lithium Corporation. Section 3.6 (Ore, Waste Rock and Tailings Management) and Appendix 3-3 (Geochemical Characteristics of Mine Waste Rock -

Lamont Inc. Report).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-12 and Appendix CEAA-15.

BACKGROUND

In its response to question CEAA-12, the proponent explained the choice of materials used for kinetic testing. In Appendix G of the concordance information document (WSP, February 2019a), the proponent's geologist indicates that a minimum amount of visible sulphide ore was observed during the collection of waste rock and ore samples. The predominant sulphide ore was identified as pyrite, although no mineralogical tests were performed. In addition, the presence of sulphide ores is not anticipated in the geological deposit and therefore acid mine drainage should be conservatively assessed on a total sulphur basis rather than on a sulphide basis, as any detectable sulphate is likely related to alteration of the sample cores. In Appendix G (WSP, February 2019a), it is stated that since the acid generation potential is calculated from Ssulphides and not Stotal; Ssulphides is represented in Figures 3.1 and 3.2. However, in the tables and the interpretation, the Stotal is used to meet the criteria of Directive 019 for the mining industry.

Materials with low levels of sulphide mineralization have been identified as generating acid mine drainage as they have insufficient neutralizing potential (MEND 2009). Therefore, a careful assessment of acid mine drainage potential is required for materials with both low levels of sulphide mineralization that have formed sulphides and low neutralization potential. Acid mine drainage can develop in deposits where the waste rock has insufficient buffering capacity to neutralize the acidity generated by these low levels of sulphide mineralization, especially when the sulphur-bearing waste rock is pooled rather than distributed throughout the deposit. In these cases, waste rock management practices should consider ways to minimize and control acid mine drainage.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) Specify how pyrite was identified as the predominant sulphide ore in the samples.

ANSWER

The ore from the Rose Project is a pegmatite. Pegmatite is granitic in composition and contains silicates, mainly quartz, feldspars and micas. The Rose Project pegmatite also contains spodumene (silicate) and tantalite (oxide) which are the minerals that give it commercial value. These minerals that make up pegmatite are all silicates and oxides. In this sense, the pegmatite ore from the Rose project is not a sulphide ore which must be composed mainly of sulphide minerals such as sphalerite, chalcopyrite and galena as found in zinc, copper and lead deposits.

The descriptions of the holes in the Rose project were all carried out by professional geologists who are members of the Ordre des géologues du Québec. They noted a few occasional grains of pyrite. These are sulphides easily identifiable by a geologist. Quantification is more difficult at the ppm scale, however, even using more advanced mineralogy tools. The fact remains that the quantity is very low, which is confirmed by chemical analyses for sulfur.

Lamont's report presented in Annex G of the WSP document (February 2019) states that:

"As noted in the section on sampling, the irregular presence of veins and grains of sulphides is sometimes observed in the drill core. Since the majority of samples are below 0.05% Stotal, it is highly likely that the higher concentrations were caused by the somewhat more abundant presence of sulphides in some samples. The sulphides identified by geologists are pyrite

(FeS2). A sulfur concentration of 0.3% corresponds to a percentage (by mass) of 0.56% of pyrite. Such a small amount is difficult to identify with the naked eye, and even with certain mineralogical analysis devices such as XRD (x-ray diffraction)."

Thus, the occasional, but non-local presence of veinlets or grains of sulphides was observed in the waste rock and not in the ore. Moreover, the results on the ore samples presented in Lamont's report show that the total sulfur concentration for the 10 ore samples were below the detection limit, therefore less than 0.005%. Remember that the ore is a granitic pegmatite in which sulphides are not present.

B) *Explain the use of total sulphur and sulphides in evaluating the acid mine drainage potential of the waste rock.*

ANSWER

The total sulfur is used for the first criteria of Directive 019 on the mining industry. For the second criteria (NNP and NPR), it is the NP values (neutralisation potential) and the AP values (acidity potential) supplied in the analysis certificates from the laboratory which are used.

The analytical laboratories supply in their analysis certificates the calculated acidity potential (AP) using the sulfur contained in the sulfides. This allows for measuring the acid generation potential of the sample in its current state, and not to evaluate the alteration of sample cores. The analysis of sulfates done in a laboratory does not allow for identification if the sulfates present are of primary origin (rock composition) or secondary (alteration of the sulfides). In a conservative manner, it is thus appropriate to calculate the acidity potential using total sulfur rather than sulfur contained in the sulfides, as is answered in the following question (43 C).

C) *Re-evaluate the acid mine drainage potential of all waste rock using the total sulphur value to calculate the acid generation potential and the neutralization potential ratio (NPR) on the acid generating potential and provide an updated version of Table 4.1 (Appendix G; WSP, February 2019a) summarizing the acid mine drainage potential of each lithology.*

ANSWER

In the geochemical characterisation studies conducted in 2017 and in 2018, there were 5 waste samples which were potentially acid generating (PAG) according to the MEND (2009) criteria. There were also 6 samples in the uncertainty zone. The re-evaluation of the acid mine drainage potential using the total sulfur values now places 8 samples in the PAG category and 5 samples in the uncertainty zone (figure 1). In total, that makes 13 samples (7 gneiss, 4 amphibolites and 2 porphyries) out of a total of 76 waste samples. The total sulfur values for these 13 samples vary between 0.075 and 0.353 % S.

The updated version of Table 4.1 from Appendix G of the WSP (February 2019) document is presented below in Table 43.1.

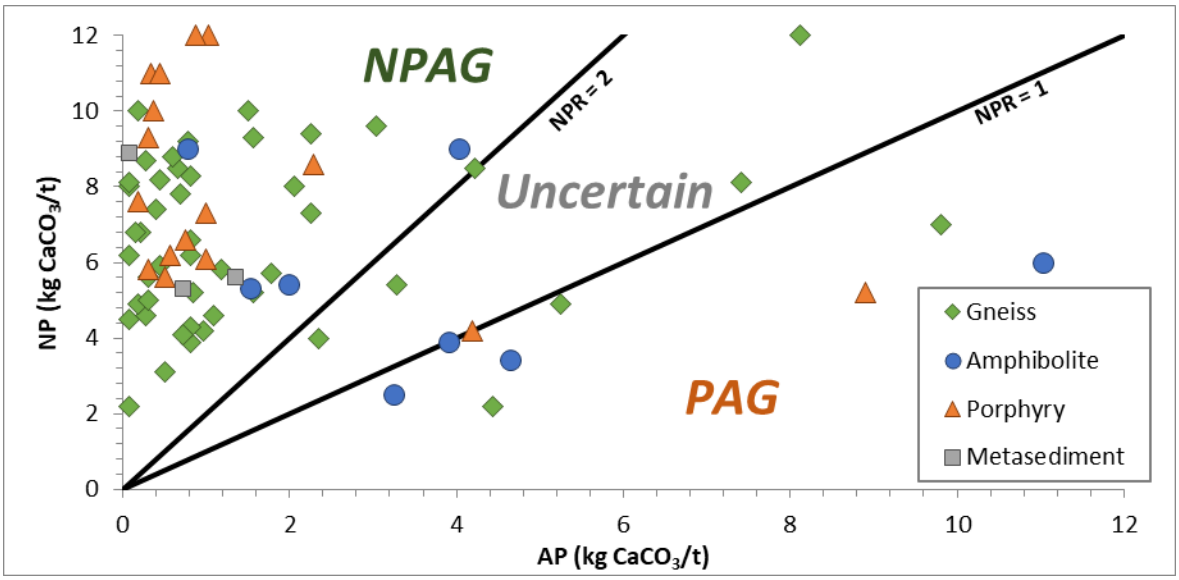


Figure 43 – Re-evaluation of the acid mine drainage potential using the total sulfur values to calculate the acidity potential (AP) and according to the MEND (2009) criteria

Tableau 43.1 – Update of Table 4.1 (WSP, February 2019): Averages of the results from the analysis for evaluating the acid mine drainage potential

Lithology (No. samples)	S_{total} (%)	$S_{sulfide}$ (%)	$S_{sulfate}$ (%)	NP (kg $CaCO_3$/t)	AP (kg $CaCO_3$/t)	NNP (kg $CaCO_3$/t)	NPR
Gneiss (47)	0.052	0.04	0.02	6.6	1.63	4.97	17.4
Amphibolite (9)	0.123	0.10	0.02	6.5	3.85	2.65	3.00
Porphyry (17)	0.044	0.03	0.02	8.3	1.38	6.95	16.8
Metasediment (3)	0.023	0.02	0.01	6.6	0.71	5.89	41.8

D) *Using cross sections or a block model, graphically present the spatial distribution of all samples reporting an NPR of less than two (based on the re-evaluation in C), including total sulphur and NPR values. Provide an analysis of the distribution of these samples, including a comparison with the anticipated mining sequence to determine whether the ore will be mined concurrently and whether it is likely to be located in the waste rock pile.*

ANSWER

No ore sample reports an RPA of less than two according to the re-evaluation carried out in C. The sequence of mining of the ore, whatever it is, does not therefore present a risk for the waste rock deposit.

Of the 81 waste rock samples analyzed, 13 had an RPN less than two according to the re-evaluation carried out in C. They are presented in Table 43.2. The distribution of these in the pit, relative to all the samples, shows that they are dispersed so that the excavation sequence will have no impact on the concentration of waste rock with an RPA less than two in the deposit of

waste rock.

The spatial distribution of samples reporting an RPN less than two is shown in the plan view and the five sections shown in Figures 43.1 through 43.6, found in Appendix CCE-43. They show the drill trace, lithologies, ore zones, total sulfur values and RPN values.

Table 43.2: Samples reporting an RPA less than 2

Sample	Lithology	S total	RPN
650915	amphibolite	0.149	0.73
650918	amphibolite	0.125	1.00
650925	amphibolite	0.104	0.77
650930	amphibolite	0.353	0.54
650933	porphyry	0.134	1.00
S659722	porphyry	0.285	0.58
650911	gneiss	0.314	0.71
650922	gneiss	0.075	1.71
S659741	gneiss	0.237	1.09
S659744	gneiss	0.105	1.65
S659753	gneiss	0.168	0.93
S659762	gneiss	0.260	1.48
S659764	gneiss	0.142	0.50

CCE 44 Sample Selection and Acid Generation Potential

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section (Biophysical Environment) and 10.1.2 (Environmental Changes).

Mine Environment Neutral Drainage (MEND, 2009). Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials. MEND Report 1.20.1. Mining Environment Neutral Drainage Program, Natural Resources Canada. December 2009.

WSP (February 2019a). Rose Lithium - Tantalum Mining Project. Information requested by the CEAA for concordance with the environmental impact statement. Report produced for Critical Elements Lithium Corporation. Appendix G (Geochemical Characterization, Lamont Inc.).

WSP (February 2019b). Rose Lithium - Tantalum Mining Project. Updated environmental impact statement. Report produced for Critical Elements Lithium Corporation. Section 3.6 (Ore, Waste Rock and Tailings Management) and Appendix 3-3 (Geochemical Characteristics of Mine Waste Rock - Lamont Inc. Report).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-12 and Appendix CEAA-15.

BACKGROUND

The report on wet cell kinetic testing (Appendix CEAA-15 of WSP, December 2019) states that the samples are representative of future waste rock and ore. In its response to question CEAA-

12, the proponent explains that the selection of its samples is justified since, generally speaking, the samples do not represent the minimum or maximum extreme values, to be as representative as possible of future waste rock and ore. Table CEAA-12 (WSP, December 2019) presents the classification of samples based on the mining industry's Directive 019. Based on the rationale provided, no samples with acid-generating potential, as per Directive 019, were selected due to their maximum concentration of sulphur.

In its response to question CEAA-12, the proponent explained the choice of materials used for kinetic testing. However, kinetic test samples should be selected to conservatively represent parameters reflecting environmental concern for acid mine drainage potential (such as total sulphur and site buffering capacity) and metal leaching. Based on the samples selected, it is not possible to assess the long-term acid mine drainage potential of units classified as having acid generating potential (MEND, 2009) based on low total sulphur and low buffering capacity.

The information provided is not sufficient to assess the representativeness of each sample with respect to the geochemical database for each lithology.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *For each kinetic test sample, provide a statistical comparison of the concentrations of the potential parameters of environmental interest (total sulphur, neutralization potential, copper, tantalum, etc.) as well as all geochemical data of the sample's lithology. These data may be presented in the form of a graph or a summary table.*

ANSWER

Table 44.1 presents a statistical comparison obtained from the results of static testing for acid generation (modified Sobek ABA) against the results from the selected samples. Generally, the selected samples do not represent minimally or maximally extreme values, and are representative of the waste in its entirety.

Table 44.2 shows a statistical comparison obtained from the results of the metal analysis done by the MA.200 – Mét 1.2 (CEAEQ, 2012) protocol against the results from the selected samples. Generally, the selected samples do not represent minimally or maximally extreme values, and are representative of the waste in its entirety. The metals having criteria in Appendix 2 of the Intervention Guide for the protection of soils and the rehabilitation of contaminated grounds (Guide d'intervention de la Protection des sols et de réhabilitation des terrains contaminés, Beaulieu, 2019) are presented (Ag, Ba, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Zn), as well as those that are part of the elementary composition of the samples (Al, Ca, Fe, K, Mg, Na, P, Ti). It should be noted that some metals have not been presented despite there being existing criteria as, for these metals, more than 50 % of the analysis results were below the limit of detection values (Hg, As, Se et Sn). This is also the case for tantalum.

Table 44.1 – Statistics (by lithology) of the results for acid generation potential of the waste samples

Parameters	Sample	Sample Value	Minimum	Average[1]	Median[1]	Maximum	Lithology
Total sulfur (%)	S659711	< 0.005	< 0.005	0.023	0.023	0.043	Metasediment
	S650713	0.129	0.025	0.123	0.110	0.353	Amphibolite
	S659714	0.025					
	S659719	0.073	0.006	0.044	0.018	0.285	Porphyry
	S659724	0.006					
	S659735	0.007	< 0.005	0.052	0.026	0.314	Gneiss
	S659745	0.050					
	For all waste samples		*< 0.005*	*0.058*	*0.026*	*0.353*	-
Sulfur in the sulfides (%)	S659711	< 0.02	< 0.02	0.02	0.01	0.04	Metasediment
	S650713	0.11	< 0.02	0.10	0.08	0.31	Amphibolite
	S659714	< 0.02					
	S659719	0.06	< 0.02	0.03	0.01	0.17	Porphyry
	S659724	< 0.02					
	S659735	< 0.02	< 0.02	0.04	0.01	0.25	Gneiss
	S659745	0.04					
	For all waste samples		*< 0.02*	*0.04*	*0.01*	*0.31*	-
AP Acidification Potential (kg $CaCO_3$/t)	S659711	0.62	0.62	0.83	0.62	1.25	Metasediment
	S650713	3.44	0.62	3.06	2.50	9.69	Amphibolite
	S659714	0.62					
	S659719	1.88	0.62	1.12	0.62	5.31	Porphyry
	S659724	0.62					
	S659735	0.62	0.62	1.35	0.62	7.81	Gneiss
	S659745	1.25					
	For all waste samples		*0.62*	*1.48*	*0.62*	*9.69*	-
NP Neutralisation Potential (kg $CaCO_3$/t)	S659711	8.9	5.3	6.6	5.6	8.9	Metasediment
	S650713	9.0	2.5	6.5	5.4	14	Amphibolite
	S659714	9.0					
	S659719	8.6	4.2	8.3	7.6	13	Porphyry
	S659724	7.6					
	S659735	6.8	2.2	6.6	6.6	12	Gneiss
	S659745	9.3					
	For all waste samples		*2.2*	*7.0*	*6.6*	*14*	-
Total Carbon (%)	S659711	0,012	0.005	0.008	0.008	0.012	Metasediment
	S650713	0,013	0.006	0.015	0.013	0.030	Amphibolite
	S659714	0,022					
	S659719	0,010	0.008	0.017	0.012	0.066	Porphyry
	S659724	0,044					
	S659735	0,010	0.005	0.012	0.010	0.049	Gneiss
	S659745	0,007					
	For all waste samples		*0.005*	*0.014*	*0.011*	*0.066*	-

[1] The average and median were calculated using half the value of the limit of detection when the values were inferior to this.

Table 44.2 – Statistics (by lithology) of the results in metals for the waste samples

Parameter	Samples	Sample value	Minimum	Average [1]	Median [1]	Maximum	Lithology
Silver (Ag)	S659711	0.09	0.04	0.06	0.04	0.09	Metasediment
	S650713	0.05	0.04	0.07	0.06	0.13	Amphibolite
	S659714	0.06					
	S659719	0.02	< 0.01	0.03	0.03	0.07	Porphyry
	S659724	< 0.01					
	S659735	0.01	< 0.01	0.07	0.02	1.6	Gneiss
	S659745	0.02					
	For all waste samples		*< 0.01*	*0.06*	*0.03*	*1.6*	-
Aluminum (Al)	S659711	12000	9800	10600	10000	12000	Metasediment
	S650713	9200	2500	7778	7800	13000	Amphibolite
	S659714	7400					
	S659719	15000	8100	12053	11000	17000	Porphyry
	S659724	8100					
	S659735	12000	4000	12138	12000	20000	Gneiss
	S659745	15000					
	For all waste samples		*2500*	*11542*	*11500*	*20000*	-
Barium (Ba)	S659711	71	71	86	76	110	Metasediment
	S650713	12	4.3	39	8.2	250	Amphibolite
	S659714	18					
	S659719	160	19	124	110	240	Porphyry
	S659724	19					
	S659735	300	16	140	130	300	Gneiss
	S659745	160					
	For all waste samples		*4.3*	*122*	*110*	*300*	-
Calcium (Ca)	S659711	4800	3100	3700	3200	4800	Metasediment
	S650713	9400	2500	5544	4700	9400	Amphibolite
	S659714	8800					
	S659719	4400	2500	4735	4300	10000	Porphyry
	S659724	4300					
	S659735	2100	960	4231	4000	8000	Gneiss
	S659745	7300					
	For all waste samples		*960*	*4478*	*4150*	*10000*	-
Cadmium (Cd)	S659711	< 0.02	< 0.02	0.01	0.01	< 0.02	Metasediment
	S650713	0.04	< 0.02	0.05	0.03	0.18	Amphibolite
	S659714	0.06					
	S659719	< 0.02	< 0.02	0.04	0.02	0.19	Porphyry
	S659724	0.03					
	S659735	< 0.02	< 0.02	0.03	0.02	0.19	Gneiss
	S659745	0.03					

Parameter	Samples	Sample value	Minimum	Average [1]	Median [1]	Maximum	Lithology
	For all waste samples		*< 0.02*	*0.03*	*0.02*	*0.19*	-
Cobalt (Co)	S659711	7.8	7.8	8.0	7.9	8.3	Metasediment
	S650713	15	6.1	13.2	8.8	32	Amphibolite
	S659714	8.8					
	S659719	11	3.3	7.9	8.1	13	Porphyry
	S659724	4.2					
	S659735	6.0	2.4	7.9	7.6	14	Gneiss
	S659745	12					
	For all waste samples		*2.4*	*8.5*	*8.0*	*32*	-
Chromium (Cr)	S659711	83	24	47	33	83	Metasediment
	S650713	48	11	57	45	230	Amphibolite
	S659714	45					
	S659719	85	40	67	64	100	Porphyry
	S659724	83					
	S659735	71	24	64	60	130	Gneiss
	S659745	43					
	For all waste samples		*11*	*63*	*58*	*230*	-
Copper (Cu)	S659711	1.1	1.1	16	21	25	Metasediment
	S650713	92	29	105	92	310	Amphibolite
	S659714	54					
	S659719	54	2.8	22	18	63	Porphyry
	S659724	2.8					
	S659735	8.2	1.1	33	22	230	Gneiss
	S659745	31					
	For all waste samples		*1.1*	*39*	*22*	*310*	-
Iron (Fe)	S659711	13000	13000	17333	19000	20000	Metasediment
	S650713	15000	4200	14267	11000	28000	Amphibolite
	S659714	11000					
	S659719	18000	11000	17706	17000	25000	Porphyry
	S659724	13000					
	S659735	18000	6200	18468	18000	36000	Gneiss
	S659745	26000					
	For all waste samples		*4200*	*17755*	*18000*	*36000*	-
Potassium (K)	S659711	5700	5700	7067	7700	7800	Metasediment
	S650713	1500	190	1831	490	10000	Amphibolite
	S659714	920					
	S659719	7600	1700	5824	5100	9200	Porphyry
	S659724	1700					
	S659735	7300	960	6142	6100	15000	Gneiss
	S659745	7200					
	For all waste samples		*190*	*5597*	*5900*	*15000*	-

Parameter	Samples	Sample value	Minimum	Average [1]	Median [1]	Maximum	Lithology
Magnesium (Mg)	S659711	8000	6300	6900	6400	8000	Metasediment
	S650713	7000	1300	6100	6800	15000	Amphibolite
	S659714	6800					
	S659719	10000	3000	6665	7400	11000	Porphyry
	S659724	3600					
	S659735	5200	1800	6366	6500	13000	Gneiss
	S659745	8700					
	For all waste samples		*1300*	*6422*	*6650*	*15000*	-
Manganese (Mn)	S659711	190	180	213	190	270	Metasediment
	S650713	260	56	196	230	420	Amphibolite
	S659714	260					
	S659719	290	160	298	280	480	Porphyry
	S659724	190					
	S659735	260	93	287	260	540	Gneiss
	S659745	450					
	For all waste samples		*56*	*276*	*260*	*540*	-
Molybdenum (Mo)	S659711	0.2	0.2	0.6	0.8	0.8	Metasediment
	S650713	1.3	0.8	1.9	1.5	3.8	Amphibolite
	S659714	3.8					
	S659719	< 0.1	< 0.2	0.9	0.9	2.1	Porphyry
	S659724	0.1					
	S659735	2.1	0.2	2.2	1.2	25	Gneiss
	S659745	1.2					
	For all waste samples		*< 0.2*	*1.8*	*1.2*	*25*	-
Sodium (Na)	S659711	1500	380	777	450	1500	Metasediment
	S650713	1400	260	667	510	1400	Amphibolite
	S659714	1300					
	S659719	1300	360	1146	1200	2100	Porphyry
	S659724	890					
	S659735	1100	300	1037	1100	2000	Gneiss
	S659745	1500					
	For all waste samples		*260*	*1007*	*1100*	*2100*	-
Nickel (Ni)	S659711	38	5.4	17	8.8	38	Metasediment
	S650713	34	6.7	50	19	220	Amphibolite
	S659714	48					
	S659719	28	3.1	14	11	42	Porphyry
	S659724	6.1					
	S659735	8.2	3.6	11	8.3	29	Gneiss
	S659745	6.7					
	For all waste samples		*3.1*	*16*	*9.1*	*220*	-

Parameter	Samples	Sample value	Minimum	Average [1]	Median [1]	Maximum	Lithology
Phosphorus (P)	S659711	310	310	477	500	620	Metasediment
	S650713	330	190	410	340	740	Amphibolite
	S659714	220					
	S659719	200	200	469	350	1500	Porphyry
	S659724	300					
	S659735	350	19	421	400	1400	Gneiss
	S659745	530					
	For all waste samples		*19*	*432*	*395*	*1500*	-
Lead (Pb)	S659711	1.1	0.67	1.0	1.1	1.3	Metasediment
	S650713	0.68	0.68	2.6	1.9	8.2	Amphibolite
	S659714	8.2					
	S659719	4.3	1.1	3.9	2.5	23	Porphyry
	S659724	3.6					
	S659735	1.6	1.0	2.7	2.3	13	Gneiss
	S659745	1.7					
	For all waste samples		*0.67*	*2.9*	*2.2*	*23*	-
Titanium (Ti)	S659711	1100	1100	1233	1200	1400	Metasediment
	S650713	1600	200	928	990	1900	Amphibolite
	S659714	1300					
	S659719	1400	590	1269	1200	2200	Porphyry
	S659724	590					
	S659735	1700	320	1342	1400	2500	Gneiss
	S659745	2100					
	For all waste samples		*200*	*1272*	*1200*	*2500*	-
Zinc (Zn)	S659711	33	33	39	38	46	Metasediment
	S650713	20	7	25	26	50	Amphibolite
	S659714	32					
	S659719	48	30	54	47	150	Porphyry
	S659724	48					
	S659735	41	9	44	45	80	Gneiss
	S659745	62					
	For all waste samples		*7*	*44*	*44*	*150*	-

[1] The average and median were calculated using half the value of the limit of detection when the values were inferior to this.

B) Explain why the selected samples do not include any samples considered to have acid-generating potential as defined in the Manual for Prediction of Drainage Chemistry of Sulphide Geological Materials (MEND, 2009).

ANSWER

The samples were selected in order to be representatives of each lithology found in the pit. They were chosen such that they would be spatially representative of the pit. No lithology or area of the pit was identified as being potentially acid generating during the geochemical characterisation study as the deposit is essentially free of sulfide, with the exception of occasional grains of pyrite, and that the concentration of total sulfur is mostly inferior to 0.3 %.

The samples for which enough material was available for kinetic testing were those form the 2018 geochemical study. The two samples having a total sulfur concentration greater than 0.3 % during the 2017 study were thus no longer available for kinetic testing.

CCE 45 Amphibolite lithology used in road construction

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section (Biophysical Environment) and 10.1.2 (Environmental Changes).

Mine Environment Neutral Drainage (MEND, 2009). Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials. MEND Report 1.20.1. Mining Environment Neutral Drainage Program, Natural Resources Canada. December 2009.

WSP (February 2019a). Rose Lithium - Tantalum Mining Project. Information requested by the CEAA for concordance with the environmental impact statement. Report produced for Critical Elements Lithium Corporation. Appendix G (Geochemical Characterization, Lamont Inc.).

WSP (February 2019b). Rose Lithium - Tantalum Mining Project. Updated environmental impact statement. Report produced for Critical Elements Lithium Corporation. Section 3.6 (Ore, Waste Rock and Tailings Management) and Appendix 3-3 (Geochemical Characteristics of Mine Waste Rock - Lamont Inc. Report).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to questions CEAA-16 and CEAA-23.

BACKGROUND

In section 3.6.4 (Waste Rock and Filtered Tailings Management) of the Environmental Impact Statement (WSP, February 2019b), the proponent states that a portion of the waste rock will be used as construction material, mostly for road and deck construction and for filling boreholes. The roads will be constructed using waste rock from amphibolite lithology. In its response to question CEAA-16, the proponent explains the effects of the mining materials on water quality.

Of the 76 samples tested, the maximum sulphur content observed was 0.353%. The highest average total sulphur content was observed in the amphibolite lithology (0.140%). Conversely, the buffer capacity of the sterile is also low, with a reported neutralization potential of less than 10 kg $CaCO_3$/t for all samples. Amphibolite lithology thus reports the highest total sulphur content (0.140%) and the lowest buffer capacity (4.42 kg $CaCO_3$/t) of all lithologies. This situation can lead to the generation of acid mine drainage if the buffer capacity is not sufficient to counteract the acidity generated by the oxidation of sulphide ores.

In its response to question CEAA-23, the proponent states that contact water from service roads will be collected and then controlled.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Re-evaluate the acid mine drainage potential of amphibolite lithology using total sulphur and present an updated acid mine drainage potential for all amphibolite samples.*

ANSWER

The re-evaluation of the acid mine drainage potential for the amphibolitic lithology is presented in Table 45.1 for each sample of this lithology. According to the MEND (2009) criteria, there are 3 samples of amphibolite which are categorized as being PAG and 11 that is potentially uncertain following the interpretation of the results from the statistical analysis of acid mine drainage.

Table 45.1 – Evaluation of the acid mine drainage potential for the amphibolitic lithology using total sulfur

Sample	Total sulfur (%)	NP (kg $CaCO_3$/t)	AP (kg $CaCO_3$/t)	NNP (kg $CaCO_3$/t)	NPR
650914	0.049	5.3	1.53	3.77	3.46 (>2)
650915	0.149	3.4	4.66	-1.26	0.73 (<1)
650918	0.125	3.9	3.91	-0.01	1.00 (>1;<2)
650925	0.104	2.5	3.25	-0.75	0.77 (<1)
650926	0.064	5.4	2.00	3.40	2.70 (>2)
650930	0.353	6.0	11.0	-5.03	0.54 (<1)
S659712	0.110	14	3.44	10.56	4.07 (>2)
S659713	0.129	9.0	4.03	4.97	2.23 (>2)
S659714	0.025	9.0	0.78	8.22	11.5 (>2)

However, the results obtained from the humidity cells (Lamont, 2019) from amphibolitic samples did not show any acid generation. The majority of the pH values oscillated between 5.5 and 6.0 for one sample, and around 6.5 for the other. These pH values are similar to that of the deionized water used as rinse water for the tests.

The depletion rates of the neutralising and acidogenic elements were calculated for the kinetic tests. This interpretation shows that there is no potential for acid mine drainage in the long term.

Calcium and aluminum were retained as elements representative of neutralising minerals, and the sulfates (SO4) as acidogenic elements. Given the diversity of silicates and their chemical formulas, the mass concentrations in calcium and aluminum were not added and are presented independently. It is not possible to use the results of silicon to calculate the depletion rates as the analysis method for the initial chemical composition (aqua regia digestion) does not allow for analysis of this element.

The results of the depletion rates from the amphibolitic samples (S659713 and S659714) are shown in Table 45.2.

Table 45.2 – Depletion rates and times of neutralising and acidogenic elements

Parameter	Unit	S659713	S659714
Al - [initial]	mg/kg	9 200	7 400
Al - Rate	mg/kg/year	0.10	0.95
Al – Depletion time	years	92 000	7 789
Ca - [initial]	mg/kg	9 400	8 800
Ca - Rate	mg/kg/year	10	39
Ca - Depletion time	years	936	223
S - [initial]	mg/kg	1 290	250
S - Rate	mg/kg/year	14	4.5
S - Depletion time	years	90	55

All elements show a depletion of the acidogenic elements more rapidly than the depletion of the neutralising elements. The depletion of aluminum, which can represent the depletion of

aluminosilicates, is always greater than the depletion of sulfur. There is no potential for acid mine drainage in the long term.

It is important to remember that the analysis of acid-base accounting conducted at the SGS Lakefield laboratory includes the measure of paste pH which allows for quick identification of the samples presenting a potential AMD. The pH values obtained are between 9.10 and 10.77, with an average of 9.88, including the samples having a potential AMD based on interpretation of the static tests. Analysis of the paste pH did not detect any acid released by the samples.

B) *Graphically present the amphibolite samples using cross sections or a block model, and show figures representing the distribution of total sulphur content and acid mine drainage potential.*

ANSWER

The location of the amphibolite samples collected in 2017 and 2018 is shown on the plan view and sections of Figures 45.1 to 45.6, found in Appendix CCE-45. The figures illustrate the drilling traces, the lithologies, the ore zones, the pit, as well as the values of total sulfur and RPN. Table 45.3 gives the total sulfur and RPN values for the amphibolite samples.

Table 45.3 Total sulfur and RPN values of amphibolite samples taken in 2017 and 2018

Sample	*Total Sulphur (%)*	*RPN*
650914	*0.049*	*3.46*
650915	*0.149*	*0.73*
650918	*0.125*	*1.00*
650925	*0.104*	*0.77*
650926	*0.064*	*2.70*
650930	*0.353*	*0.54*
S659712	*0.110*	*4.07*
S659713	*0.129*	*2.23*
S659714	*0.025*	*11.5*

CCE 46 Composite and Tailings Samples

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 9.1.2 (Biophysical Environment) and 10.1.2 (Environmental Changes).

Mine Environment Neutral Drainage (MEND, 2009). Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials. MEND Report 1.20.1. Mining Environment Neutral Drainage Program, Natural Resources Canada. December 2009.

WSP (February 2019a). Rose Lithium - Tantalum Mining Project. Information requested by the CEAA for concordance with the environmental impact statement. Report produced for Critical Elements Lithium Corporation. Appendix G (Geochemical Characterization, Lamont Inc.).

WSP (February 2019b). Rose Lithium - Tantalum Mining Project. Updated environmental impact statement. Report produced for Critical Elements Lithium Corporation. Section 3.6 (Ore, Waste Rock and Tailings Management) and Appendix 3-3 (Geochemical Characteristics of Mine Waste Rock - Lamont Inc. Report).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-13 and Appendix CEAA-15.

BACKGROUND

The proponent indicates that the PP17 Comb Tails sample represents all residues generated by the treatment process. In its response to question CEAA-13 C), the PP17 Comb Tail sample is described as consisting of the lithium circuit, mica circuit, and de-flammability residues, which are all generated by the treatment process. Figure 2–3 in Appendix 3-3 of the Environmental Impact Statement (WSP, February 2019b) shows two separate flash stages: one after tantalum recovery and one between mica and spodumene flotation. It is not clear how this sample is produced, including the various steps in the metallurgical process, the inclusion of tantalum recovery and the representativeness of the composition of the thickened residue.

In the geochemical characterization program (Appendix G in WSP, 2019a), 15 residue samples were added. However, the location of these samples in the metallurgical processing circuit is not clearly identified and the tailings streams they represent are not noted. As such, these data cannot be evaluated relative to the composition of the filtered residues.

The PP17 Comb Tails sample contains tantalum in its process water (0.0003 mg/L), SPLP leachate (0.0008 mg/L) and WTC9 leachate (0.0029 mg/L) at concentrations that may be toxic in the receiving environment. Tantalum is below the reported limit of detection (<0.001 mg/L) in the SPLP leachate tests, which Lamont Inc. believes is not consistent with the expected neutral drainage of residues with no potential for acid generation.

The filtered tailings will be managed with the waste rock in a shared facility. However, the EIS does not clearly describe how this facility will be covered, for example, in a phased manner during operation or at closure. Based on static testing of the PP17 Comb Tails sample, the runoff from the tailings may contain high concentrations of tantalum. The geochemical tests conducted to date do not adequately characterize the long-term potential for tantalum leaching from the filtered tailings.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Specify whether the PP17 Comb Tails and process water sample was produced using a pilot plant process that included tantalum recovery.*

ANSWER

The *PP17 Comb Tails* tailings and process water sample was produced at a pilot plant that included tantalum recovery.

B) *Provide a balance of the 15 tailings samples (presented in the report in Appendix G in WSP, 2019a), specifically the location in the metallurgical process where each sample was taken. Relate these samples to the overall process, i.e., identify the type of tailings they represent.*

ANSWER

Table 46.1 shows, for each of the residue samples presented in Appendix G of WSP 2019a, the location in the metallurgical laboratory process where it was taken, and the product it represents in the process flow of the process. 'factory. The plant process flow is shown in Figure 46.1. The laboratory process flow for samples F13, F18, F20, F21, F23, and F24 is shown in Figure 46.2. The laboratory process flow of 'Li Ro Tail Composite' samples 1, 4, 6, 7, and 8 is shown in Figure

46.3. The pilot plant process flow for the sample “Thickener Feed PP-17 Combined Tails” is shown in Figure 46.4.

Table 46.1: Sources of plant residue samples

	Tests métallurgiques en laboratoire			Flux de procédé de l'usine		
Échantillon pour tests chimiques	**Type d'essai**	**Produit**	**Réf.**	**Area**	**Produits**	**Réf.**
Li Ro Tail Rose (F13)	Laboratoire	Spodumene rougher tails	6	6500	Li scavenger flotation tailings	G
Li Ro Scav Tail South Rose (F18)	Laboratoire	Spodumene rougher & scavenger tails	6	6500	Li scavenger flotation tailings	G
Li Ro Scav Tail Rose 2 (F20)	Laboratoire	Spodumene rougher & scavenger tails	6	6500	Li scavenger flotation tailings	G
Ro Scav Tail Rose 3 (F21)	Laboratoire	Spodumene rougher & scavenger tails	6	6500	Li scavenger flotation tailings	G
Ro Scav Tail Rose 4 (F23)	Laboratoire	Spodumene rougher & scavenger tails	6	6500	Li scavenger flotation tailings	G
Ro Sc Tail RSE2 (F24)	Laboratoire	Spodumene rougher & scavenger tails	6	6500	Li scavenger flotation tailings	G
Li Ro Tail Composite 1	Laboratoire	Spodumene rougher flotation	7	6500	Li scavenger flotation tailings	G
Li Ro Tail Composite 4	Laboratoire	Spodumene rougher flotation	7	6500	Li scavenger flotation tailings	G
Li Ro Tail Composite 6	Laboratoire	Spodumene rougher flotation	7	6500	Li scavenger flotation tailings	G
Li Ro Tail Composite 7	Laboratoire	Spodumene rougher flotation	7	6500	Li scavenger flotation tailings	G
Li Ro Tail Composite 8	Laboratoire	Spodumene rougher flotation	7	6500	Li scavenger flotation tailings	G
Thickener Feed-PP 17 Combined Tails	Usine pilote	Cyclone #1 tails	A	Fera parti de l'alimentation à la séparation magnétique du tantale		A
		Magnetic concentrate	B	6300	Magnetic Ta concentrate	B
		Cyclone #2 tails	C	6300	Desliming cyclones #1 O/F	C
		Mica concentrate (tails)	D	6400	Mica cleaner flotation concentrate	D
		Cyclone #5 slimes	E	6500	Desliming cyclones #2 O/F	E
		Combined Li rougher and 1st cleaner tails	F	6500	Li scavenger flotation tailings	G

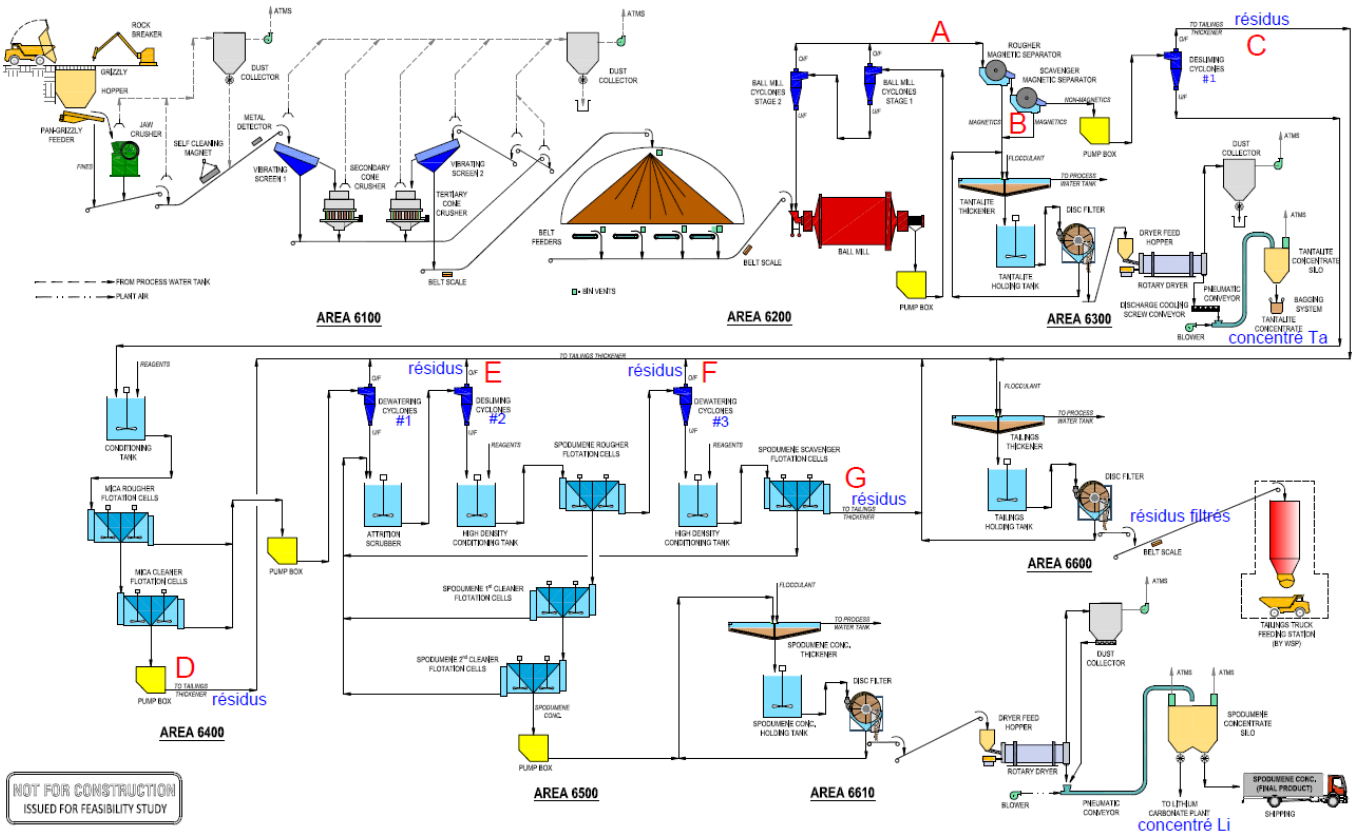


Figure 46.1 : Plant process flow

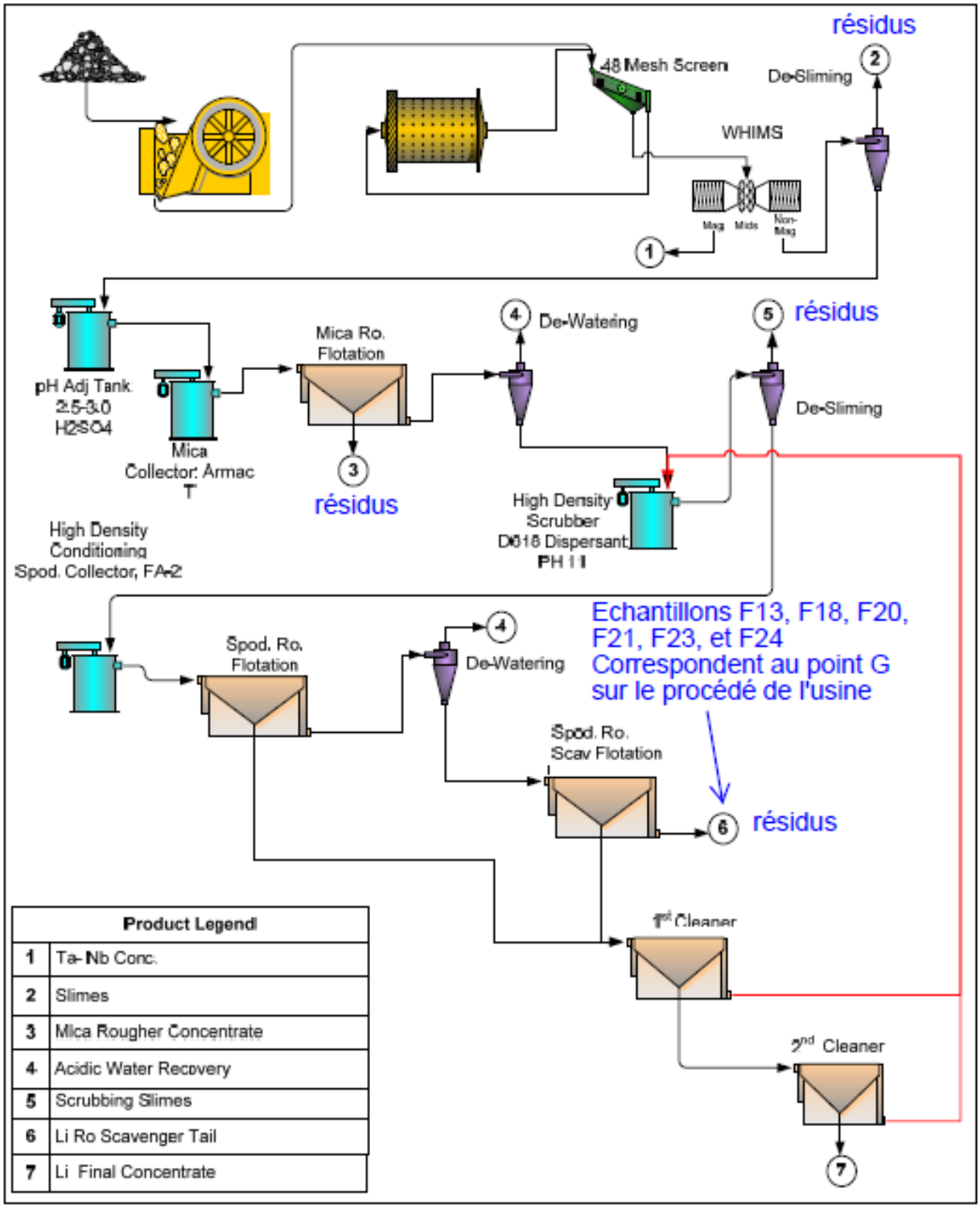
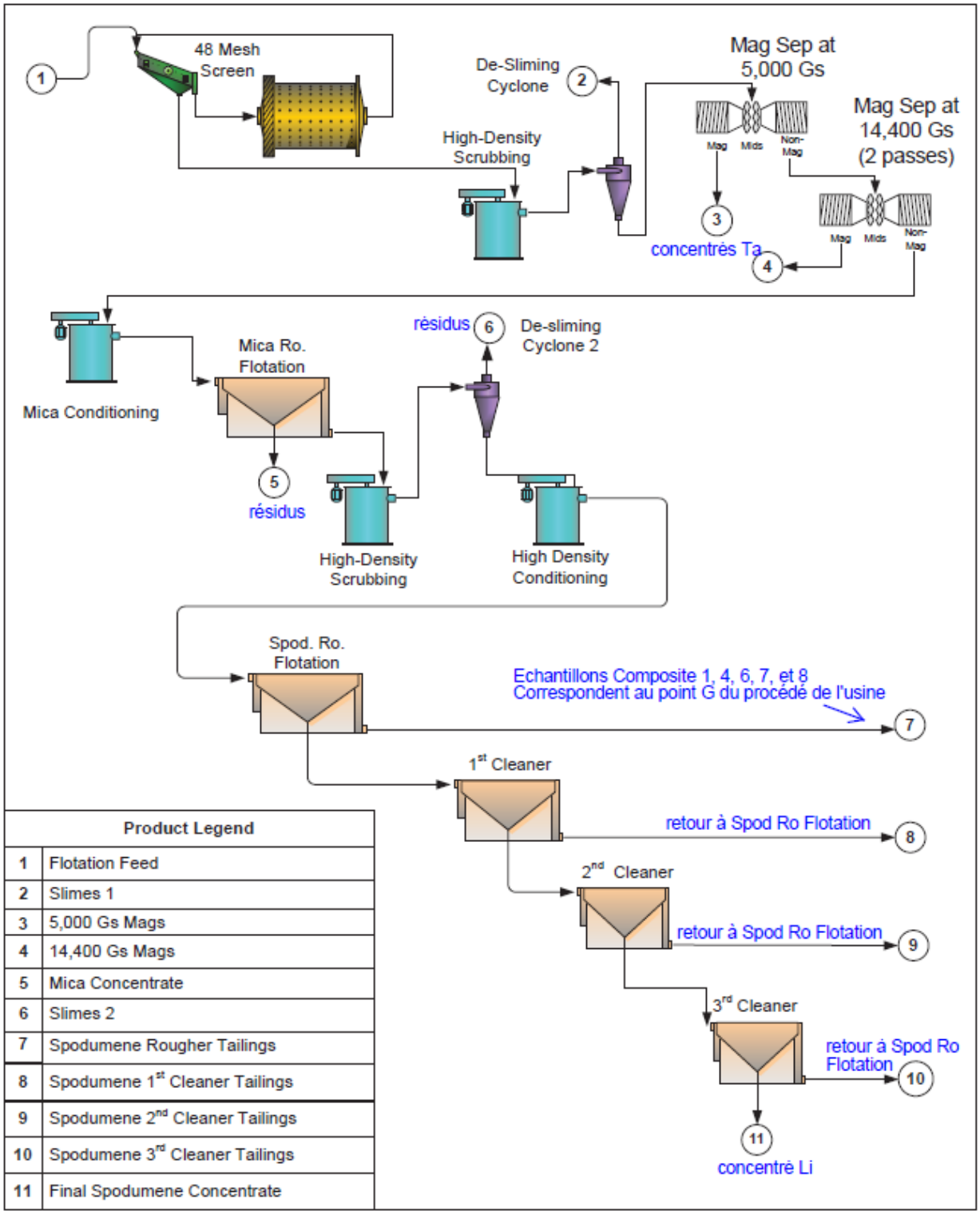


Figure 46.2 : Laboratory process flow of samples F13, F18, F20, F21, F23, and F24



Product Legend	
1	Flotation Feed
2	Slimes 1
3	5,000 Gs Mags
4	14,400 Gs Mags
5	Mica Concentrate
6	Slimes 2
7	Spodumene Rougher Tailings
8	Spodumene 1st Cleaner Tailings
9	Spodumene 2nd Cleaner Tailings
10	Spodumene 3rd Cleaner Tailings
11	Final Spodumene Concentrate

Figure 46.3 : Laboratory process flow of Composite samples 1, 4, 6, 7, and 8

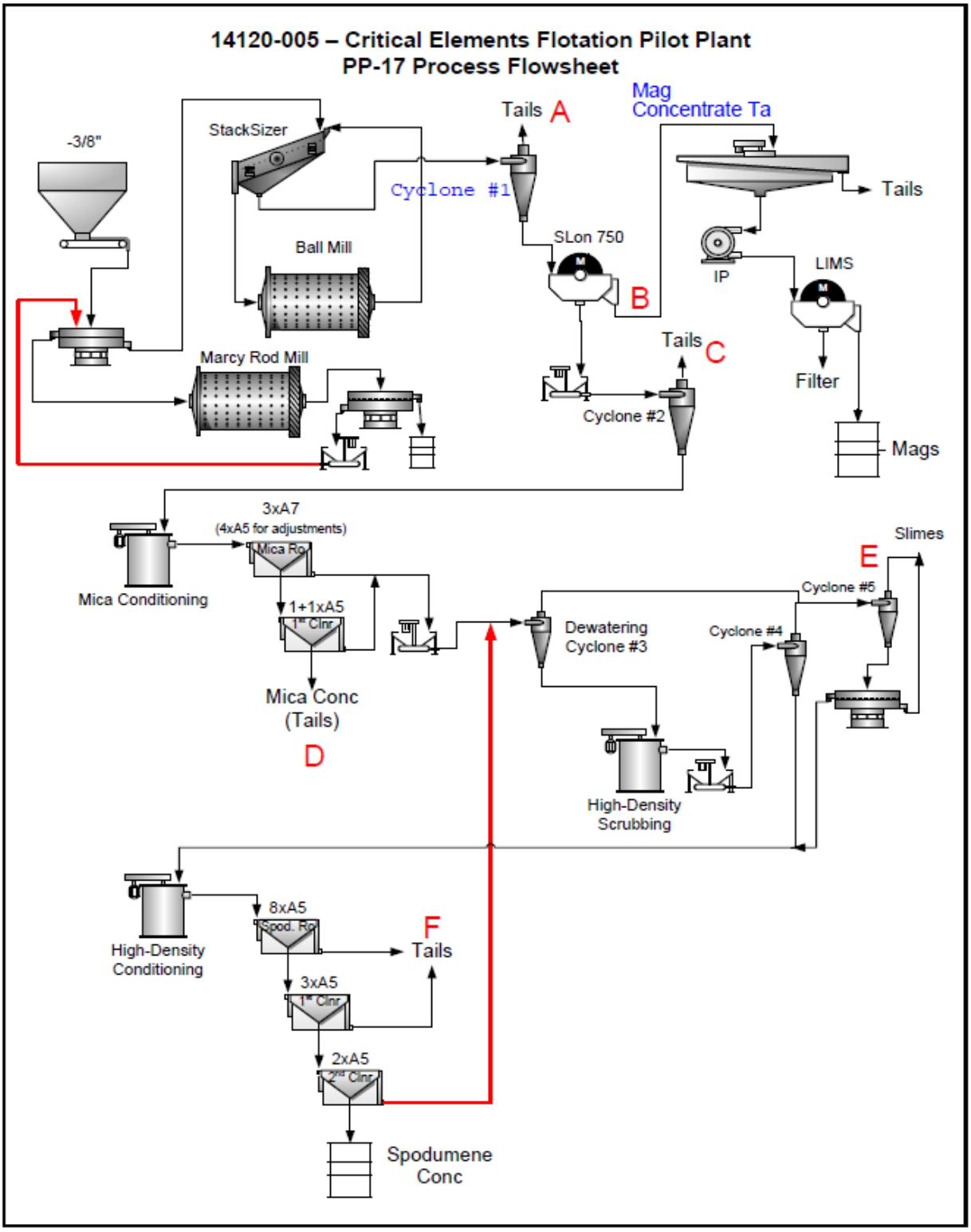


Figure 46.4 : Pilot Plant Sample PP-17 Process Flow

C) *Justify which sample(s) are most representative of the expected composition of the filtered residues in relation to the different residue streams that the filtered residues will comprise. This representative sample could be the PP17 Comb Tails composite sample or a*

combination of the 15 residue samples.

ANSWER

Samples F13, F18, F20, F23, F24, and Composite samples 1, 4, 6, 7, and 8 are the most representative of the filtered residues from the plant. They were collected at the tailings of the lithium flotation and represent 84% to 91% of the residues from their respective circuits of laboratory tests. To represent all of the circuit residues, they lack the mica concentrate and cyclone slurries which each represent 4% to 10% and 5% to 6% of the residue respectively. The residue from the lithium circuit will represent approximately 88% of the filtered residue from the plant. Table 46.2 shows the distribution of products from plant residues and laboratory tests.

Table 46.2: Distribution of plant residue products and laboratory tests

Produit de résidus	Usine		Tests F13 à F24		Tests Comp. 1 à 8		Test PP-17	
	% Masse de l'Alim.	% Masse des Résidus	% Masse de l'Alim.	% Masse des Résidus	% Masse de l'Alim.	% Masse des Résidus	% Masse de l'Alim.	% Masse des Résidus
Résidus du circuit de lithium	77.1%	88.7%	**71.9%**	**91.1%**	**65.2%**	**84.3%**	53.7%	64.0%
Concentré de mica	2.7%	3.1%	3.5%	4.5%	7.6%	9.6%	5.0%	6.0%
Résidus des cyclones de déschlammage	5.2%	6.0%	3.4%	4.4%	4.7%	6.1%	23.1%	27.5%
Résidus des cyclones de dénoyage	1.9%	2.2%	-	-	-	-	-	-
Résidus total	**86.9%**	**100.0%**	78.9%	100.0%	77.4%	100.0%	81.8%	97.5%
Concentré de tantale	-	-	-	-	-	-	2.1%	2.5%
Échantillon PP-17 total							**83.9%**	**100.0%**

Regarding sample PP-17, the primary purpose of the pilot plant was to produce lithium concentrate for further processing tests at another pilot plant. Its secondary goal was to demonstrate the robustness of the metallurgical process on a continuous operation and to generate additional information that could be used for subsequent studies. The pilot plant operated for a short period of time, insufficient time to be optimized and achieve the optimal recoveries obtained in the laboratory. However, the robustness of the process has been demonstrated and, once commissioned and after a period of development, the plant will obtain laboratory results.

The results of the PP-17 test do not reflect those that will be obtained in the factory since the optimization of the process on a scale larger than that of the laboratory has not been made. Although it is composed of products from different places in the process circuit, the PP-17 tailings sample is not representative of the filtered tailings that will be obtained at the large-scale plant. The PP-17 residue sample consists of the products presented in the table below. It contains 26% of the lithium and 86% of the tantalum contained in the PP-17 test feed while the filtered tailings from the plant will contain less than 10% of the lithium and less than 40% of the tantalum contained in the feed to factory.

Table 46.3 : Composition of sample PP-17

Produit de résidus (voir la figure 46.4)	Réf.	% Masse de l'Alim.	Distribution % Li	Distribution % Ta	% Masse des Résidus
O/F Cyclones	A & E	23.1%	17.6%	15.7%	27.5%
Mag Conc. (SLOAN 750 magnetics))	B	2.1%	3.3%	48.9%	2.5%
Mica Conc.	D	5.0%	1.3%	2.1%	6.0%
Li Ro Tail	F	52.5%	3.2%	17.3%	62.6%
Li 1st Cl Tail	F	1.2%	0.6%	2.3%	1.4%
Total Tails		83.9%	26.0%	86.3%	100.0%

The PP-17 residue sample consists of the products presented in the table below. It contains 26% of the lithium and 86% of the tantalum contained in the PP-17 test feed while the filtered tailings from the plant will contain less than 10% of the lithium and less than 40% of the tantalum contained in the feed to factory.

In addition, the ore used in laboratory tests better represents the ore in the entire pit. The PP-17 test was carried out with ore coming from an outcrop while the F13 to F24 and Composites 1 to 8 tests were carried out with composites of core samples from the exploration holes selected at different locations in the pit that represent better the whole ore.

In conclusion, the results of the pilot plant metallurgical tests obtained from the bulk sample of ore collected from the surface allowed CEC to confirm the effectiveness of the metallurgical process for the concentration of spodumene. The tailings sample from this test, however, is not representative of future tailings that will be produced at the mine scale.

D) Provide a detailed justification for why kinetic testing was not conducted on the residue samples to assess the long-term leaching potential of metals, particularly tantalum. Then present a plan to address this data gap.

ANSWER

The mill tailings come from the ore concentration process. The ore is composed of quartz, feldspar, mica, spodumene, and tantalum pentoxide. 85% of the spodumene and 60% of the tantalum pentoxide will be recovered in their respective concentrate.

Of the ore fed to the mill, 13% of the mass will make up the spodumene and tantalum pentoxide concentrates, and 87% of the mass will make up the mill tailings. As a result, the factory tailings will be composed of quartz, feldspar, mica, and what remains of spodumene and tantalum pentoxide. The concentrations of spodumene and tantalum pentoxide in the tailings will be 0.15% Li2O and 60 ppm Ta2O5.

As the tailings come from the ore only, they will have the same geochemical characteristics as the ore. Therefore, wet cell kinetics tests were performed on the ore and were presented to the Agency.

The residues available for analysis were obtained from metallurgical tests carried out in the laboratory and in the pilot plant. There are no more residues left to perform kinetic analyzes.

Comment 2 Secondary Ore Processing Plant

REFERENCES

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Section 5.7 (Project Activities).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Appendices CEAA-30 and CEAA- 52

COMMENTS AND ADVICE

Plan 8000-D-0503 in Appendix CEAA-30 shows a lithium carbonate plant for year 4 of the project on the flow diagram. Plan 6000-C-0104 in Appendix CEAA-52 also shows this plant on the industrial deck. This secondary ore processing plant is not within the scope of this EA. Should the proponent wish to add this plant, the proponent would be required to submit an updated environmental assessment for review.

The Committee reminds the proponent that any changes to the project must be reported to the Agency and that the Minister of the Environment and Climate Change may modify the terms and conditions of the project (if the project is approved). Any changes to the project will require an analysis of the effects of the changes made.

The proponent must also consider that the Indigenous consultations carried out by the joint committee in 2019 and early 2020 focused on a project evaluated without a secondary ore processing plant. In the event that the proponent plans to establish such a plant, communities will need to be consulted on this aspect to gather their concerns, namely regarding the additional chemicals used and the associated effects and risks.

SOIL QUALITY

CCE 47 Soil Characterization of Ore Storage and Transshipment Areas in the Closure Phase

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 10.1.2 (Environmental changes).

WSP (February 2019a). Rose Lithium - Tantalum Mining Project. Updated environmental impact statement. Report produced for Critical Elements Lithium Corporation. Section 6.6.4.4 (Statistical Analysis and Evaluation of Naturally Occurring Backgrounds).

WSP (February 2019b). Rose Lithium - Tantalum Mining Project. Answers to supplementary questions from MELCC. Appendix QC2-74.

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Answers to questions CEAA-53 and CEAA-55.

BACKGROUND

In question CEAA-53, the proponent was asked to explain how the soil in the ore storage and transshipment areas will be managed in the event of contamination. The proponent stated in its

response that "The soil quality of the ore storage and transfer areas will nevertheless be monitored when the site is closed, by making a comparison with the natural background levels established prior to the start of construction of the mining complex. Should contamination be observed, as stated in the impact study, the soils would be treated on site or in an authorized centre if it is not possible to do so. "

It further states in its response to question CEAA-55 that "soil quality after the remediation phase will be similar in quality to the natural background levels established prior to the construction phase and adequate to allow for replanting of vegetation and future activities. "However, the proponent does not describe which analytical parameters will be used to characterize the soils of the ore storage and transshipment areas during the closure phase and to make comparisons with the natural background levels established prior to construction.

In addition, Environment and Climate Change Canada (ECCC) reviewed the document entitled Programme de travail pour l'évaluation de la teneur de fond naturel en métaux dans les sols naturels, Rose Lithium Project, presented in Appendix QC2-43 of the document in response to the second round of questions from the MELCC, and noted that tantalum was not included in the parameters of the proposed analytical program. ECCC is of the view that tantalum should nevertheless be part of the parameters analyzed when characterizing the ore storage and transshipment areas during the closure phase. As such, tantalum should thus be included in the program for the assessment of natural background levels.

Given that soil quality may affect the quality of habitats for flora and fauna as well as the quality of groundwater and surface water, the proponent should ensure that the soil characterization of the storage and transshipment areas is complete.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Describe the analytical parameters that will be used to characterize the soils in the ore storage and transshipment areas during the closure phase and to make comparisons with the natural background levels established prior to construction. To this end, ECCC recommends that:

1) *Closure phase characterization be conducted for all inorganic and organic substances likely to be emitted or released from the project activities, including tantalum;*

2) *Natural background levels be established for these substances as specified in the Guide de caractérisation physico-chimique de l'état initial des sols avant l'implantation d'un projet industriel (MDDELCC, 2016) for the establishment of background levels. If some parameters were not analyzed, justify why they were not considered relevant.*

ANSWER

Critical Elements Lithium Corporation takes note of these recommendations. The analytical parameters used to characterize the soils in the ore storage and transshipment areas during the closure phase will be the same as those used for establishing natural background levels. Some inorganic parameters (e.g. C10-C50 petroleum hydrocarbons, PAHs and MAHs) may also be analyzed if there is a suspicion of machine leakage.

Wetlands and Wildlife

CCE 48 Wetland Loss Compensation Project

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, sections (Biophysical Environment) and 10.1.2 (Environmental Changes).

WSP (February 2019a). Rose Lithium - Tantalum Mining Project. Updated environmental impact statement. Report produced for Critical Elements Lithium Corporation. Section 7.1 (Vegetation and Wetlands.

WSP (February 2019b). Rose Lithium - Tantalum Mining Project. Answers to supplementary questions from MELCC. Response to question CEAA-47.

WSP (December 2019a). Rose Lithium - Tantalum Mining Project. Answers to supplementary questions from MELCC. Response to question QC2-68.

WSP (December 2019b). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Responses to questions CEAA- 81, CEAA-82 and map QC-86.

BACKGROUND

In its response to question CEAA-81, the proponent confirms its commitment to develop and implement a project to compensate for wetland losses. Environment and Climate Change Canada (ECCC) has also reviewed the proponent's response to question QC2-47 from the Ministère de l'Environnement et de Lutte contre les changements climatiques (MELCC) in which it outlines two potential offset project options being considered. One of the options presented is intended, among other things, to create wetlands that will provide functions similar to those lost and to help restore environments of low ecological value that are currently impacted. However, based on the information presented, it appears that some wetlands that will be lost are of high ecological value, particularly those corresponding to polygons R46 and 379 (see the answer to question QC-68, from the first round of questions submitted by the MELCC). These environments, which are within the footprint of the pit, also appear to be close to the locations where the American Nighthawk, a species at risk, has been identified, if we refer to map QC-86-1.

In its response to question CEAA-82, the proponent states that "Among the mitigation measures that will be implemented during the construction phase, the compensation plan for the loss of wetlands will be the most effective at reducing losses of habitat function, especially for migratory birds and other species at risk." The proponent uses this argument to assess that the disturbance caused by residual effects on wetlands will be low. However, it provides very little information on the compensation plan and does not demonstrate how this plan will reduce the loss of wetland functions affected by the project, including habitat function.

In order to determine the significance of the project's residual environmental effects on the avian fauna that uses the wetlands, including certain species protected under the Species at Risk Act, ECCC believes it is necessary to have a sufficiently detailed snapshot of all mitigation measures to be implemented by the promoter, including compensation measures.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Provide an outline of the compensation program, including the type of compensation to be provided and the objectives of the compensation, and the function(s) that will be compensated.*

ANSWER

CEC's Lithium Mining Project involves the development of a pit and infrastructure that will result in the loss of 173.55 ha or 5.6% of the study area's wetlands. According to the analyses carried out, it consists mainly of 82.5 ha of wooded bogs, 79.1 ha of open bogs and 11.7 ha of treed swamps. The land lost also includes two other wetland types, namely a pond and shrub swamp, for which the losses represent 0.08 ha and 0.24 ha, respectively.

In return, the concept of compensatory development consists of creating mosaics of wetlands and terrestrial environments in five former borrow pits, which will form complexes within adjacent natural environments. The compensation plan (Appendix CCE-48) proposes to develop a minimum of 42.1 ha of wetlands and a maximum of 5.8 ha of terrestrial environments. After development, these environments will include marshes and shallow water areas (11.6 ha), treed swamps (14.7 ha) and shrub swamps (15.8 ha). Work will include grading and surface preparation, adding typical wetland plant material and plantations.

The wetland design considered maximizing marsh-swamp and shallow water areas, a measure that increases water retention capacity of the sites and regulation of water levels. In the longer run, the accumulation of organic matter in wetlands and terrestrial environments will also promote water retention on the sites. During the inventories for Rose Mining Project, shrub swamps and treed swamps were found to have the highest ecological values, thus, the interest in prioritizing them for compensation plans.

Providing vegetative cover on all sites will improve water quality through runoff filtration and bank stabilization.

The vegetation, shallow water layout (ponds) and site-specific development will create favourable conditions for site usage by different wildlife species.

The increase in plant number that will be introduced in wetlands and terrestrial environments will result in carbon sequestration. In the longer run, shrubs and trees having reached maturity will have a considerable effect on the microclimate of the sites, which will become more temperate. The shade and coolness provided by trees and shrubs will also help limit the rise in water temperature in ponds.

On a purely mathematical basis, the wetland gains proposed in this compensation plan (Appendix CCE-48) represents only a portion of the areas potentially lost during the construction of the CEC Rose Lithium-Tantalum Mining Project. However, the regional context should be considered to analyze the adequacy of the losses and gains of the proposed compensation measure.

Firstly, with the exception of mines, road infrastructure and infrastructure associated with the production and transmission of hydroelectricity, the territory targeted by the project is poorly developed. Compensating in the same area as the losses leave few options for wetland restoration or creation.

Furthermore, the nature of the losses should be considered. The ecological functions of wetlands will be less affected than for equivalent losses in a more densely developed area given the widespread presence of wetlands in the region. For example, losses of open or wooded bogs and

treed swamps, which account for almost all of the destroyed areas, represent about 5.7% of these wetland types in the study area. The creation of even small areas of shrub swamps or proposed marshes by optimizing the concepts and being prudent in carrying out the work and monitoring the development has the potential to create environments of greater ecological value than those currently found there and even above the average wetlands that will be destroyed. The creation of habitat mosaics at the compensation sites will also create favourable conditions for various wildlife species, including some of the special-status bird species that frequent the area. Some functions such as carbon sequestration will be difficult to restore on compensation sites at levels comparable to those of lost environments.

For more details on the proposed developments, refer to the preliminary compensation plan in Appendix CCE-48.

B) *Demonstrate how the proposed compensation plan will reduce the loss of habitat function, especially for migratory birds and species at risk.*

ANSWER

The development concept for compensatory wetlands involves the implementation of elements to increase habitat diversity and promote wildlife use of the sites, among other things. Thus, rocks and woody debris (branches, tree trunks) will be added to the various environments to create shelters for herpetofauna and small mammals (Fondation de la faune, 1996b). The woody debris along the edges of ponds and partially in the water absorbs wave energy and helps stabilize the banks, especially in the early stages before planting. These debris also contribute to increasing the carbon in water that supports proliferation of microorganisms that form the base of the trophic chain.

In order to create favourable habitat conditions for birds, other developments could be planned. Dead trees, poles or platforms could be installed in shallow water areas. These could be used as perches by several species of birds, including the Olive-sided Flycatcher, which uses the perches to pounce on its prey (Environment Canada, 2015). These perches could also be used by several birds of prey species that regularly hunt in wetlands. The planting of islands of herbaceous or shrubby vegetation will also help recreate nesting or feeding habitat conditions for several species (especially for Waterfowl, Shorebirds and Passerines, including Rusty Blackbirds). If sand excavation is required to obtain the desired depths in shallow water areas, the material can be used to create artificial embankments for Bank Swallow, Belted Kingfisher among others. The barren areas surrounding the wetlands could also be used to support nesting of the Common Nighthawk. The latter could also use wetlands for food. This diversity of habitat conditions thus created, in addition to the natural habitats already present, will add value and act as an additional attraction for several species present in the area.

CCE 49 Migratory Birds - Risk of Contamination

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section

(Biophysical environment).

WSP (February 2019a). Rose Lithium - Tantalum Mining Project. Updated environmental impact statement. Report produced for Critical Elements Lithium Corporation. Sections 7.4 (Avian Wildlife), 10.5.1 (Valued Ecosystem Components) and 10.7 (Analysis of the Significance of Cumulative Effects).

WSP (February 2019b). Rose Lithium - Tantalum Mining Project. Answers to supplementary

questions from MELCC. Response to question QC2-24.

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-87.

BACKGROUND

In its response to question CEAA-87(c), the proponent does not address the risks to birds that could be associated with basins 2 and 3. Maps 21-2 and 03-03 indicate that these would be ponds where contact water would accumulate and could likely pose a risk to wildlife. The proponent also does not address the risks to wildlife associated with the peripheral pumping ponds. The groundwater to be pumped into these basins would be more laden with certain elements than surface water. As stated by the MELCC in question QC2-24: "Based on the results of the baseline groundwater quality presented in Appendix QC-62, exceedances of up to five times the value of the surface water quality criterion are noted for certain parameters".

Furthermore, the proponent states that it is committed to "developing a specific response plan for migratory birds" to mitigate the potential impacts on the waters in the accumulation basin for birds likely to use this basin. The proponent also undertakes to install recognized deterrent systems to prevent the use of the accumulation basin, which poses a risk to avian fauna on the mine site. Environment and Climate Change Canada (ECCC) is of the opinion that the mitigation measures taken to reduce the effects of water contained in the accumulation basin on wildlife could also be required for basins 2 and 3 and for all other mining infrastructure (basins, ditches, etc.) where water and harmful substances are likely to accumulate.

To determine the significance of the project's residual effects, including the effects of harmful substances present at the mine site on migratory birds, including certain species protected under the Species at Risk Act, ECCC is of the view that the full range of the mitigation and monitoring measures to be implemented must be known to reduce the risks of contamination for migratory birds.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *As with the accumulation basin, assess the risk of contamination for migratory birds using basins 2 and 3 and any other permanent or temporary structures that may also present an attraction and risk (e.g., perimeter pumping sedimentation ponds, contact water ditches, etc.).*

ANSWER

As mentioned in the response to question 87 of the document "*Responses to the CEAA's questions and comments*", the main risk of contamination will be at the accumulation basin. However, contact water will accumulate in basins 2 and 3, and could potentially pose a risk to avian fauna as well. The same is also true for the peripheral pumping ponds and associated ditches.

The contaminants found in the accumulation basin could also be present in basins 2 and 3 since these basins first collect accumulated contact water (via ditches), which is then directed to the accumulation basin. Thus, as in the accumulation basin, the risks of contamination for birds at basins 2 and 3 are related to the potential presence of different metals such as copper, zinc and silver as well as the presence of suspended solids. With respect to groundwater, in the document "Groundwater and Soil Baseline Assessment - Addendum" (*Évaluation de l'état de référence de l'eau souterraine et des sols – Addenda*) dated December 11, 2019, some samples would have exceedances for silver and copper, contaminants that were also found in basins 2, 3 as well as in

the accumulation basin.

A few studies have shown a link between the presence of metals in the environment and their accumulation in the tissues of prey and predators such as waterfowl and aquatic birds (Antoine et al., 1992; Mazak et al., 1997; Environment Canada, 2002; Environment Canada, 2013). However, it is too early to speculate whether there are aquatic organisms in different basins that could potentially be food for aquatic birds. Moreover, due to the alkalinity of the water, it is unlikely that invertebrates will be present. When present in high concentrations, copper and zinc would tend to bioaccumulate in bird tissues (Antoine et al., 1992).

The proponent undertakes to monitor the parameters of the final effluent from sedimentation ponds in accordance with Directive 019. In addition, a more in-depth annual follow-up will also be carried out for each release point.

Thus, in light of this additional information, with respect to the effect of contaminants on avian fauna, the magnitude is considered to be moderate (socio-economic and ecosystem values are rated as high and the degree of disturbance is rated as low).

In fact, considering the various mitigation measures to eliminate contamination risks (refer to response 87B of the document "*Responses to the CEAA's questions and comments*"), the probability of contaminants found in ditches and basins 2, 3 and sedimentation ponds having a significant impact on local bird populations is negligible. Thus, the magnitude (intensity) of the effect is medium. This effect has a limited geographical range since the structures in question occupy only a small area. The duration of this effect has been considered to be average. In fact, although the presence of a contaminant may be permanent on the prey populations (invertebrates, fish) upon which birds may feed, the effect is not permanent (dilution, decantation, decontamination). Finally, the probability of a contamination occurring is low, given the various preventive measures that will be undertaken during the project.

Overall, the residual effect of the contamination risks from structures previously mentioned on the "avian fauna" is, thus, low and insignificant.

B) Provide an outline of the specific migratory bird response plan to be put in place to reduce the risk of contamination associated with mine water and harmful substances and demonstrate that the measures implemented will be adequate for the assessed level of risk (e.g., life cycle of birds relative to mine activities). This plan should include all mitigation and environmental monitoring measures that will be implemented to minimize the risk of contamination to migratory birds using the mine infrastructure.

ANSWER

CEC will implement a Basin Monitoring Program to prevent and minimize adverse effects of the project on migratory birds that would use all of the basins. The main points are as follows:

- Monitor the basins at least twice a month when no ice is present, approximately from mid-May to mid-November;

- Monitoring will be done by visits at the beginning or end of the day, when visibility conditions are favourable for observation and counting of birds that are likely to frequent the basins;

- Monitoring shall be conducted by a person capable of identifying and counting the specimens present. If such a resource is unavailable, the monitoring manager shall use the camera at their disposal to take pictures and forward them to a person qualified to identify birds. Data will be compiled in a log book which will, then, be a part of the global monitoring and follow-up reports

that will be made available to the monitoring committee. A copy of this log book will also be kept by CEC;

- Increase the frequency of visits to weekly basis, or more often as required, during the spring and fall migration periods;

- Where applicable, analyze the data pertaining to sites' used by the migratory birds in relation to the monitoring of basin water quality which will be an integral part of the global monitoring and follow-up program;

- As specified in response CEAA-87b, the proponent undertakes to install recognized deterrent systems at the accumulation basin that poses a risk to avian fauna on the mine site;

If required, one or more cameras with the functionality of remotely viewing images could be installed to facilitate site surveillance as well as control the triggering of deterrent systems.

CCE 50 Woodland Caribou - Cumulative Effects

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, sections (Biophysical Environment) and 10.1.2 (Environmental Changes).

WSP (February 2019a). Rose Lithium - Tantalum Mining Project. Updated environmental impact statement. Report produced for Critical Elements Lithium Corporation. Section 10.7 (Analysis of the Significance of Cumulative Effects).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Answers to questions CEAA-92 and CEAA-94 C).

BACKGROUND

The proponent states in its response to question 94 c) that the project will have no foreseeable effects on caribou and their habitat during both construction and operation activities. However, ECCC is of the opinion that even after mitigation measures are implemented, the project will have residual effects on the boreal woodland caribou (rangifer tarandus caribou) and its habitat (e.g., disturbance of individuals, loss of habitat, etc.). Consequently, ECCC believes that a detailed assessment of the cumulative effects on this species is required.

To assess cumulative effects on woodland caribou (rangifer tarandus caribou), a boreal population, the proponent established a spatial boundary corresponding to a radius of 50 km from the centre of the proposed mine. The rate of habitat disturbance is the main indicator selected for analysis. However, the proponent did not describe the impact of cumulative effects on the population and distribution objectives identified in the Woodland Caribou Recovery Strategy, as requested in question CEAA-92.

The proponent should provide an analysis to understand how the effects of the project could be combined with those of other disturbances considered, at the scale of the study area corresponding to a radius of 50 km from the centre of the proposed mine. At minimum, the proponent should consider the existing rates of disturbance in the study area from natural and anthropogenic sources, as well as reasonably foreseeable anthropogenic disturbances (including a 500 m buffer zone added for all identified anthropogenic disturbances). The analysis should be conducted for each habitat with the biophysical characteristics required by woodland caribou to complete their vital processes and described in Appendix H of the recovery strategy for the species. The proponent

should then be able to describe the impacts of cumulative effects on the population and distribution objectives identified in the Woodland Caribou Recovery Strategy.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Present an analysis of cumulative effects on woodland caribou, taking into account the habitats found within the 50 km study area that have the biophysical characteristics required by woodland caribou to complete their vital processes.*

ANSWER

Context

The main difficulty in considering the habitats within the 50-km radius of the study area, which exhibit biophysical characteristics required by caribou to complete their vital processes, is related to the available vegetation databases. As mentioned in response of CEAA-92 (WSP, 2019), no ecoforestry database published by the MFFP is available for this area. In addition, the description of caribou habitat (Appendix H of the Woodland Caribou Recovery Strategy, Environment Canada, 2012) indicates criteria that are difficult to transpose with the available vegetation databases for the area.

For the area to be covered within a 50-km radius of the project, data are available from the Northern Quebec Forest Inventory Program (NFIP) or from the Land Cover, circa 2000-Vector (2009), which helps to analyze and describe the biophysical characteristics of the different types of habitats frequented by woodland caribou to carry out their vital processes. However, these sources of information are less accurate and are not regularly updated, as is the case with the ecoforestry databases available for the territory further south. Nevertheless, the circa database seems to provide more details and, therefore, a better level of characterization compared to the NFIP, so as to interpret this data with regards to caribou habitat.

The description of the caribou habitat (Appendix H of the Woodland Caribou Recovery Strategy, Environment Canada, 2012) presented below, indicates criteria that are difficult to transpose with the available vegetation databases for the area. As stated in the EIA, the project site is located in the central and eastern ecoregion of the Boreal Shield, and the few woodland caribou that may frequent the project area are from the local population (herd) known as the Nottaway herd inhabiting the territory north of Matagami. There may also be an exchange of individuals between this population and that of Assinica, located further east.

ENVIRONMENT CANADA. 2012. Woodland Caribou (Rangifer tarandus caribou) Recovery Strategy, boreal population, in Canada. Environment Canada, Ottawa. ISBN 978-1-100-99310-2. xii + 152 p

WSP. 2019. WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Answers to questions CEAA-92 and CEAA-94 C.

Table CCE-50A. Biophysical Characteristics for Critical Boreal Caribou Habitat in the Boreal Shield Ecoregion (Central)

Habitat Type	Description
Broad scale	Late seral-stage black spruce-dominated lowlands and jack pine-dominated uplands. Open black spruce lowlands. Low-density late seral-stage jack pine or black spruce forests and black spruce/tamarack-dominated peatlands with abundant terrestrial and moderate arboreal lichens. Caribou also use areas with dry to moist sandy to loamy soils and shallow soils over bedrock. Elevations of 300 m. Intermediate values of Normalized Difference Vegetation Index. Selection of old (>40 years) burns.
Calving	Open canopies of mature black spruce and mesic peatland with ericaceous species for calving are selected for calving in the Claybelt region. Females with calves selected areas with more abundant ericaceous shrubs and terrestrial lichens during the summer compared to females without calves.
Winter	Large areas of contiguous forests dominated by black spruce. Open conifer forests or forests with lower tree density where terrestrial and arboreal lichen are abundant and there is significantly less snow (e.g. shorelines) are also selected.

Source: Environment Canada, 2012

With respect to the biophysical characteristics listed above that are derived from the recovery strategy, the strategy itself states that:

> *Biophysical attributes will vary both between and within boreal caribou ranges. As the biophysical attributes presented in this recovery strategy were developed at a national scale by ecozone and ecoregion, and not by the local population, it is anticipated that each provincial and territorial jurisdiction may have or will develop over time, a more refined description of the biophysical attributes required for each range.*

As such, information collected by the Government of Québec since the implementation of the recovery strategy, should first be considered when analyzing the biophysical characteristics of the critical caribou habitat of the populations likely to frequent the proposed mine site.

As stated in the EIA, telemetry data acquired from 1998 to 2019 have provided additional information, in particular on the selection and use of habitats, which are used in these studies. It should also be noted that in 2018, the MFFP launched a major inventory and monitoring program of woodland caribou populations across their range using telemetry. The objectives of this programme are to further develop information on the number of populations, their range, abundance and trend. This data constitutes the main indicators for assessing the self-sufficiency of these populations as prescribed in the recovery strategy for the species (Environment Canada, 2012) and in the caribou recovery strategy. Eventually, long-term monitoring for each population will be continued. It is mainly based on this new information, the most recent available at the time, that the analysis of the effects of the Rose Lithium-Tantalum Mining Project was carried out as part of the EIA (WSP, 2019)[25].

As part of its strategy for creating protected areas and forest harvesting, Quebec's leading specialists,

[25] WSP (February 2019a). Rose Lithium-Tantalum Mining Project. Mise à jour de l'étude d'impact sur l'environnement. Rapport produit pour Corporation Lithium Éléments Critiques. Section 10.7 (Analyse de l'importance des effets cumulatifs).

who possessed the scientific knowledge at the time, came together to conduct a major study on woodland caribou habitat selection in Quebec's[26] boreal forest in order to prioritize the critical areas to be protected for woodland caribou. This study highlighted the characteristics of habitats selected to ensure that the species' activities continue and thus, gain a better understanding of the caribou's needs.

Habitat selection analyses helped spatialize areas of suitable caribou habitat by determining the relative probability of caribou presence based on models that best describe habitat selection. As part of this study, the James Bay sector covering approximately 105,000 km^2 corresponds to the distribution ranges of the local caribou populations (herds) known as Nottaway, Témiscamie and Assinica in the area subjected to forestry activities. Most of the caribou monitored in this sector were found in the area between the east side of James Bay and west of Lake Mistassini. This sector corresponds to the most indicative habitat, likely to be selected by the caribou that might frequent the area of the proposed mine. This study showed that the woodland caribou requires a very large annual home range to meet these annual needs (often > 1 000 km²). Spatial distribution and habitat heterogeneity play an important role in adequately meeting boreal (woodland) caribou needs on an annual cycle. The importance of large range areas to meet the needs of the caribou, especially in winter, is well known. The "large areas of contiguous forest" criterion is one of the biophysical characteristics for critical boreal caribou habitat in the Boreal Shield Ecoregion (central).

Recall that, in Quebec, the management strategy to protect woodland caribou is based on the conservation of large coniferous forest stands (Courtois et al. 2004[27], 2008[28]). The results of the latest studies have shown the importance of maintaining a certain heterogeneity in the habitats within the range areas. The protection of range areas is mainly intended to protect winter habitats, which also are often selected during calving and rutting. It has been shown that the probability of woodland caribou occurrence varied from 40 to 48% in 100 km2 range area and from 53 to 62% for 250 km^2 (Lesmerises, 2011[29]). To achieve a 75% probability of occurrence, a minimum area of 500 km2 is required while a maximum probability of occurrence is achieved with an area greater than 1,000 km2. It also mentions that mature coniferous forests outside the range areas are also widely selected, especially during the rutting and juvenile rearing periods. Finally, the study concludes that the large area of land used annually by caribou indicates that the current size of the protected range areas proposed by Courtois et al. (2004), i.e., 250 km^2, is not sufficient to ensure the long-term conservation of woodland caribou.

Analyses of habitat selection in the above-mentioned study demonstrated the importance of different environments in establishing annual and seasonal home ranges for woodland caribou. It states that the results obtained were, by and large, consistent with what was previously documented by Quebec (Courtois et al. 2008; Courbin et al. 2009[30]; Hins et al. 200931). The key findings with respect to

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26 Bastille-Rousseau, G., C. Dussault, S. Couturier, D. Fortin, M.-H. Stlaurent, P. Drapeau, C. Dussault And V. Brodeur (2012). Sélection d'habitat du caribou forestier en forêt boréale québécoise, Québec, ministère du Développement durable, de l'Environnement, de la Faune et des Parcs, Direction générale de l'expertise sur la faune et ses habitats, 66 p.

27 Courtois, R., J.-P. Ouellet, C. Dussault, and A. GINGRAS (2004). "Forest management guidelines for forest-dwelling caribou in Québec", Forestry Chronicle, 80: 598-607

28 Courtois, R., A. Gingras, D. Fortin, A. Sebbane, B. Rochette And L. Breton (2008). "Demographic and behavioural response of woodland caribou to forest harvesting", Canadian Journal of Forest Research, 38: 2837-2849.

29 Lesmerises, R. (2011). Évaluation de la valeur des massifs de forêt résiduelle pour la conservation du caribou forestier (Rangifer tarandus caribou), Master's thesis, Université du Québec à Rimouski, Rimouski, 113 p.

30 Courbin, N., D. Fortin, C. Dussault And R. Courtois. 2009. "Landscape management for woodland caribou: the protection of forest blocks influences wolf-caribou co-occurrence". Landscape Ecology, vol. 24. p. 1375-1388.

31 Hins, C., J.-P. Ouellet, C. Dussault And M.-H. St-Laurent. 2009. Habitat selection by forest-dwelling caribou in a managed boreal forest of eastern Canada: Evidence of a landscape configuration effect. Forest Ecology and Management, vol. 257. p. 636-643.

habitat selection are as follows:

- It is the dry, barren areas that have the greatest and constant influence on caribou use of an area, both annually and seasonally;
- During winter, caribou seem to prefer dry, barren areas and coniferous stands aged 40 years and older, with no significant distinction made between open or closed spruce and fir stands and other coniferous trees;
- During winter, wetlands are widely selected in areas having an abundance of wetlands. Thus, such areas were particularly sought-after in winter by caribou in the James Bay territory;
- The mature coniferous stands aged 40 to 80 years and 80 years and older are also sought after by caribou on an annual and seasonal basis;
- Open coniferous trees (percentage of cover between 25 and 40%) made up of spruce and fir stands are usually selected much more than the same closed stands, particularly on an annual basis and during rutting;
- Wet barren lands were mainly selected during calving and rutting, but caribou use appears to be limited since the selection of wet barren areas decreased as their availability increased;
- The young stands aged 5 to 40 years, areas of fire, recent clear cuts, and mixed and deciduous forest stands are hardly selected throughout the year.

Thus, several authors acknowledge that woodland caribou prefer peatlands, mature coniferous stands containing lichens, and other lichen-rich sites when selecting habitat (Équipe de rétablissement du caribou forestier du Québec, 2013a[32]). They are also known to avoid newly disturbed environments (Moreau et al., 2012[33]). During summer, woodland caribou mainly inhabit coniferous forests that are more than 50 years old (Courbin et al., 2009; Hins et al., 2009[34]; Lantin, 2003[35]), peatlands and dry barrens (lichen tundra).

As part of the study cited above[36], maps have been drawn on a seasonal and annual basis to identify areas with characteristics sought after by caribou. According to the authors, the synthesis map created by combining habitat selection information covering different seasons is the closest representation of potential areas of occurrence for woodland caribou because it considers the most suitable sites that meet woodland caribou habitat needs on an annual basis. Based on the results of this study, a map of the relative probability of woodland caribou occurrence, according to the habitat selection model developed by Leblond et al. (2015), was created. This map helps to identify areas where the caribou habitat is of adequate quality. This map was included in the EIA (see Map 6-15 of the EIA) and it indicates that the project area, overall, has a moderate to low relative probability of woodland caribou occurrence.

Analysis of cumulative effects

As demonstrated in the EIA and in response to question CEAA-91, fires alone have disturbed 44% of

32 ÉQUIPE DE RÉTABLISSEMENT DU CARIBOU FORESTIER DU QUÉBEC (2013a). Plan de rétablissement du caribou forestier (Rangifer tarandus caribou) au Québec — 2013-2023, prepared on behalf of the ministère du Développement durable, de l'Environnement, de la Faune et des Parcs du Québec, Faune Québec, 110 p.

33 MOREAU, G., D. FORTIN, S. COUTURIER and T. DUCHESNE. 2012. "Multi-level functional responses for wildlife conservation: the case of threatened caribou in managed boreal forests". Journal of Applied Ecology, vol. 49. p. 611-620.

34 HINS, C., J.-P. OUELLET, C. DUSSAULT and M.-H. ST-LAURENT. 2009. "Habitat selection by forest-dwelling caribou in a managed boreal forest of eastern Canada: Evidence of a landscape configuration effect". Forest Ecology and Management, vol. 257. p. 636-643.

35 LANTIN, E. 2003. Évaluation de la qualité des habitats d'alimentation pour le caribou forestier en forêt boréale du nord-ouest du Québec. Master's thesis. Université du Québec à Montréal. 112 p

36 BASTILLE-ROUSSEAU, G., C. DUSSAULT, S. COUTURIER, D. FORTIN, M.-H. STLAURENT, P. DRAPEAU, C. DUSSAULT and V. BRODEUR, 2012

caribou habitat within the 50 km radius, 11% of which was within human disturbance areas. Using circa database, we created a map of the vegetation to perceive the present availability of caribou habitat in the study area within a 50-km radius around the proposed mine (Appendix CCE-50).

The area currently undisturbed by either natural or anthropogenic disturbance is approximately 3,179 km^2. In general, we can consider that the whole of this undisturbed area could be used by woodland caribou as habitat or during their movement, provided that it remains accessible, i.e. connectivity is not interrupted, mainly by the presence of linear human-made structures (primarily due to the presence of roads and energy transmission lines). By studying the environments generally selected by the caribou, we estimated that of this area, approximately 79% (2,513 km^2) is more suited to the habitat characteristics selected by the woodland caribou during its annual cycle. These are composed of bryophyte and lichen heath, coniferous woodlands (open, sparse or dense), shrubby areas and wetlands. Approximately 21% (666 km^2) of the area is less suitable as caribou habitat. However, 18.7% of this proportion represents water surfaces that are also used during winter. In terms of spatial distribution, undisturbed areas are mostly concentrated in large areas with good heterogeneity to adequately meet the needs of boreal (woodland) caribou over an annual cycle. These large areas are mainly found in the western and northeastern portions of the study area.

Table CCE-50B: Attributes of the environment undisturbed by anthropogenic or natural elements in the study area within a 50-km radius around the proposed mine site

ATTRIBUTES	SURFACE AREA (ha)	PROPORTION (%)	PERIOD
Habitat selected by the caribou			
Bryophytes and Lichens	27,250.4	8.6	All periods
Coniferous – sparse	54,296.2	17.1	All periods
Coniferous – dense	5,762.7	1.8	All periods
Coniferous – open	96,997.7	30.5	All periods
Large shrubs	5,630.9	1.8	Summer, Post-calving
Small shrubs	13,472.6	4.2	Summer, Post-calving
Open ground (dry barren)	11,343.8	3.6	All periods
Wetland - shrub	13,156.2	4.1	Winter, Calving, Rutting
Wetland - wooded area	8,152.6	2.6	Winter, Calving, Rutting
Wetland - herbaceous	15,249.3	4.8	Winter, Calving, Rutting
Sub-total	**251,312.4**	**79.1**	
Other environments			
Deciduous - dense	750.9	0.2	
Mixed - dense	899.3	0.3	
Mixed - open	5,391.9	1.7	
Water	59,447.8	18.7	
Cloud	35.8	0.0	
Shadow	38.9	0.0	
Rock/Rubble	37.1	0.0	
Sub-total	**66,601.9**	**20.9**	
TOTAL	**317,914.3**	**100.0**	

As mentioned in response to question CEAA-91, considering the entire area of influence (proposed infrastructure and buffer zone) and excluding human disturbances, only 3.5% of the habitat meets habitat criteria for boreal (woodland) caribou, representing 33.0 ha undisturbed by human factors. Assuming that undisturbed areas within a 50-km radius study area (317,914.3 ha) correspond to woodland caribou habitat, we can estimate that the project will reduce the available habitat area by 0.01% of the current habitat. Even using a more conservative approach, i. e. considering only 251,312.4 ha corresponding to habitat attributes for woodland caribou, the project will reduce the area by a comparable 0.01%. This proportion is considered insignificant in terms of habitat loss for boreal (woodland) caribou mainly due to the fact that the mine's footprint and area of influence are enclosed by linear infrastructure (northern road, power transmission lines) that discourage the use of this area by woodland caribou. This proportion is even less significant if we consider the 36,400 km2 area corresponding to the range of the Nottaway woodland caribou population likely to frequent the study area (EIA, section 7.6.4.1) and would be on the order of 0.0009% of this range.

B) *Based on the 50 km study area, describe the impacts of cumulative effects on the population and distribution objectives identified in the Woodland Caribou Recovery Strategy as follows:*

- *Maintain the local population.*
- *Maintain the status of habitats in terms of area and undisturbed habitats to ensure the local woodland caribou population is self-sustaining. The goal is to maintain a minimum of 65% undisturbed habitat and the availability of the biophysical attributes necessary for woodland caribou.*

ANSWER

Maintaining the size of the local population

As mentioned in the answer to question CEAA-92, the project is not likely to have an impact on the woodland caribou population. Historically, woodland caribou do not frequent the area where the proposed infrastructure is located, which is greatly disturbed and enclaved by linear human-made structures that prevent connectivity with contiguous habitats.

Maintaining the status of habitats in terms of area and undisturbed habitats to ensure the local woodland caribou population is self-sustaining

As stated in the EIA and in response to question CEAA-92, the project will have no perceivable impact on sustaining a minimum of 65% undisturbed habitat, as well as on the availability of biophysical attributes necessary for woodland caribou to ensure that the local population is self-sustaining.

In terms of the rate of habitat disturbance, as mentioned in the EIA, the location of the mining project represents one of the areas in the study area that is most disturbed by human-made elements. In response to question CEA-92, it was demonstrated that the area of the mine footprint and its 500-m zone of influence is already impacted in proportions of 100% and 97% respectively, as presented in the EIA. The undisturbed areas that will be affected by the project have been evaluated to be at 42 ha and are located exclusively in the mine's zone of influence. Considering this new area impacted by the project and that of the study area within the 50-km radius, in the order of 779,132 ha, the rate of disturbance of woodland caribou habitat in the latter will increase by 0.0054%. As a result, the total disruption rate will remain in the order of 60%.

There are no industrial forestry activities in the study area, which protects the study area from significant human disturbance caused by the harvesting of timber and presence of forest road networks. The disturbance of the habitat due to human activity is mainly associated with industrial areas (existing mines) and hydroelectric production, linear structures (Nemiscau-Eastmain-1 road, power transmission line) and certain land uses.

Within the study area corresponding to a 50-km radius from the center of the proposed mine, there are, to our knowledge, very few large-scale projects that are likely to materialize during the operational period of the mine. Foreseeable human activities, including the mining project, are therefore not likely to have a significant impact on the population and distribution objectives identified in the Woodland Caribou Recovery Strategy.

The ban on migratory caribou hunting in 2018 may also reduce accidental boreal (woodland) caribou sampling in the overlapping area of the ranges of the two ecotypes and significantly contribute to maintaining the size of the populations likely to frequent the study area. Finally, the consequences of the potential effects of Rose Lithium-Tantalum Mining Project, which could be combined with past, current and future effects within the 50-km area, have no significant impact on maintaining the size of local woodland caribou populations nor on preserving the current surface area of the habitat.

CCE 51 Woodland Caribou - Blasting Impacts

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 10.1.2 (Environmental Changes).

WSP (February 2019a). Rose Lithium - Tantalum Mining Project. Updated environmental impact

statement. Report produced for Critical Elements Lithium Corporation. Section 7.6 (Woodland and Migratory Caribou).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-94.

BACKGROUND

All direct and indirect adverse effects of the project on woodland caribou during all project phases (construction, operation, closure) should be identified. Mitigation measures as well as monitoring and follow- up programs should be proposed and the measures selected should be consistent with the recovery strategy.

That said, the proponent did not provide a description of the project's direct and indirect effects on woodland caribou associated with blasting, as requested in question CEAA-94.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Assess the direct and indirect effects of the project on woodland caribou (i.e., individuals) associated with blasting and the mitigation measures that will be implemented to reduce these effects.

ANSWER

As mentioned in the technical note on ambient noises (WSP, 2018)[37],the operation plan calls for one blast every five days. These blasts have been designed based on two types of patterns: one pattern for ore extraction and another for waste rock extraction. Note that the waste rock extraction pattern uses the most kilograms of explosives per hole and has been selected for assessing the sound effects. The technical note on ambient noises demonstrates that the increase in noise level during construction and operation activities will be noticeable in the receiving environment compared to the current situation, but will remain below the permissible limits as set out in the noise level guidelines issued by the MELCC for industrial construction sites, the MELCC N 98-01 criterion and change in the percentage of the population highly disturbed (%HA).

There are few studies that deal with the impact of noise on caribou. Harrington and Veitch (1991)[38] studied the impact of noise generated by passing of low-level hunting aircrafts on caribou behaviour in Labrador. The reaction often observed was the startle reflex and that the caribou does not get used to this type of noise. These reactions can represent a threat to the caribou during calving period (injuries, separations, etc.). In these tests, the average sound level was less than 90 dBA, with peaks of more than 120 dBA.

For example, the threshold of disturbance has been set at 42 to 52 dB for birds, at which point the density of birds declines. Another study[39] showed that for woodland caribou, increased movement in response to noise disturbance can significantly increase the exposure of their calves to predators, making them more vulnerable to the negative effects of noise during calving.

Considering the frequency of blasting at the mine site (every five days) and low probability of caribou frequenting the proximity of the site, particularly a female during calving and post-calving

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37 Technical Note – Soundscape – Updated Environmental Impact Assessment February 2018

38 Harrington, Fred and Alasandair Vetch. 1991. "Short-term Impacts of Low Level Jet Fighter Training on Caribou in Labrador." Arctic. 44(4):318-327.

39 Caribou, military jets and noise: The interplay of behavioural ecology and evolutionary psychology. Fred H. Harrington http://septentrio.uit.no/index.php/rangifer/article/view/1683

period, we believe that blasting will have no significant effect on woodland caribou. Its reaction can only be a functional response motivating it to avoid the area, which already seems to be the case for this species considering the poor habitat conditions it offers and the current presence of permanent human disturbances.

However, as a precautionary approach if a significant presence of caribou is declared in the area, blasting would be delayed for allowing the caribou to move away from the project's zone of influence.

Finally, standard mitigation measures will be implemented in order to reduce the effect of the project on ambient noise, such as:

- Machinery and truck traffic will be restricted to the right-of-way of access roads and work areas. Plastic fencing will clearly identify work area boundaries;
- The worksite supervisor will ensure that noisy equipment is properly maintained, and that machinery mufflers and catalysts are in good condition;
- Comply with the noise standards outlined in MELCC Instruction Note 98-01 on noise;
- Take all necessary measures to limit noise at source;
- Ensure regular maintenance of equipment and mufflers and any other equipment that may be a source of noise pollution;
- Fitting mobile equipment with a wideband audio beeper to signal reverse movements;
- Develop an awareness program for machinery users so that they avoid bucket slamming, dropping objects from a great height, and optimize work methods.

To further minimize noise at the mine site, the following specific mitigation measures will also be implemented:

- All equipment found on job sites, excluding transient equipment (e.g., ten-wheel craft trucks) or equipment used for short periods of time, will be equipped with white noise back-up alarms;
- All unused electrical or mechanical equipment must be turned off, including trucks waiting for more than five minutes for loading;
- The use of engine brakes shall be prohibited within the work area.

HEALTH AND WELL-BEING OF INDIGENOUS COMMUNITIES

CCE 52 Traditional Food - Sources of Contaminants

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, sections (Methodology - Risk Assessment Framework).

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Expected Effects on Valued Components - Indigenous Peoples) and 9.1.1 (Existing Environment - Methodology).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Answers to questions CEAA-135, CEAA-136 and Appendix CEAA-136.

BACKGROUND

In its response to question CEAA-136, the proponent provided an assessment of the contamination risk for traditional foods based on three main sources of contaminants, but it did not provide explanations to support the selection of these sources (Appendix CEAA-136). All decisions made in a human health Toxicological Risk Assessment (TRA) must be clearly documented for transparency and communication of the risk to stakeholders.

***Note to the proponent:** Environmental standards, such as the Metal and Diamond Mining Effluent Regulations and Mining Industry Directive 019, were not established to ensure the protection of human health (for example, linked to exposure through the consumption of aquatic foods). As a result, compliance with environmental standards does not necessarily ensure the protection of human health.*

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Detail each of the contaminant sources potentially emitted by the project and justify the exclusion of any contaminant source from the TRA.*

ANSWER

The selection of the sources of contaminants potentially emitted by the project was based on the information gathered in the preliminary studies. The sources retained in the risk assessment therefore correspond to the various anticipated sources of contaminants, the emissions of which can be estimated.

As detailed in the following answer, the process for evaluating the final effluent should not aim to establish the risk that the final effluent could entail, the characteristics of which are currently not known and for which a high degree of uncertainty would surround the conclusions. Conversely, it is the boundary conditions in the environment that must be used to define the performance of the treatment system so that the characteristics of the effluent are compatible with its discharge into the receiving environment. A recommendation to this effect, as formulated in the following answer, is therefore added explicitly to those formulated in the evaluation report.

Moreover, if other unanticipated sources of contaminants were to arise during the implementation of the project, that is one of the objectives of the monitoring program to allow them to be identified. A recommendation to this effect is therefore also added explicitly to those made in the evaluation report. “The development of the monitoring program should identify whether unanticipated sources of contamination occur during the construction and operation of the mine site. "

B) *Include the final effluent from the mine site water treatment unit in the TRA as another primary source of substances in the environment. Identify additional concentrations of substances in the receiving surface waters associated with the final mine site effluent and explain how these concentrations compare to other expected inputs of substances in the receiving water bodies. The TRA should consider concentrations that are representative of human exposure, taking into account the ability of the receiving water bodies to dilute the various contaminant sources.*

ANSWER

As mentioned previously, the final effluent was not taken into account in the risk assessment since the goal is not to know what the hypothetical characteristics of the final effluent could have as an impact on the environment but rather define the characteristics that the final effluent must meet in order to ensure that it does not impact the consumption of aquatic organisms used as traditional food.

The performance of the treatment unit must therefore ensure that the quality of the final effluent makes it possible to meet environmental discharge objectives (EDO) aimed at protecting the consumption of aquatic organisms.

A recommendation to this effect is therefore added explicitly to those formulated in the evaluation report. "Environmental discharge objectives must be developed in order to define the level of performance of the final effluent treatment system so that it does not lead to concentrations of contaminants in the waterways in excess of surface water quality criteria to protect the consumption of aquatic organisms. "

C) *Identify whether other substances (other than metals considered in the TRA) are likely to enter the environment as a result of the project (e.g., methylmercury, organics, tantalum and lithium). If so, explain whether they have the potential to bioaccumulate, and add these substances to the TRA.*

ANSWER

None of the data available in the preliminary studies indicates a potential for contamination by elements other than those which were taken into account in the assessment. It was therefore not possible to carry out an assessment of the risk of contamination of traditional food by substances other than those considered.

However, this will not prevent substances other than those considered in the assessment from being included in the monitoring program so as to verify, at least during the initial stages, whether the presence of other contaminants could occur during the construction and operation of the mining site. Methylmercury, a highly bioaccumulative compound, is an example of a compound that may be the subject of a monitoring program.

The recommendation formulated in the response to question CCE-52A addresses this uncertainty. “The development of the monitoring program should identify whether unanticipated sources of contamination occur during the construction and operation of the mine site. "

In addition, lithium and tantalum were taken into consideration in the assessment. However, no risk estimate has been quantified for tantalum since available information indicates that it is an element that is biologically inert in humans (see section 4.2.2.2 of the report).

CCE 53 Traditional Food - Toxicological Risk Assessment of Aquatic Food Consumption and Contaminants in Sediment

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, sections 10.1.1 (Methodology - Risk Assessment Framework).

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Expected Effects on Valued Components - Indigenous Peoples) and 9.1.1 (Existing Environment - Methodology).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-136 and Appendix CEAA-136.

BACKGROUND

In its response to question CEAA-136, in Appendix CEAA-136, the proponent presents an assessment of the risk of contamination of traditional food based on the quality criteria for surface water in Quebec to prevent the contamination of aquatic organisms for human consumption, developed to protect individuals who would consume aquatic organisms throughout their life in which contaminants from surface water have bioaccumulated. However, the proponent does not mention contaminants also found in sediments[40], which could be a shortcoming that underestimates the risks to human health associated with traditional foods.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Indicate whether the exclusive use of surface water quality criteria could underestimate the risks associated with the consumption of aquatic foods that may also be affected by the presence of substances in sediments. If so, revise the toxicological risk assessment to take into account contaminants in sediment.

ANSWER

Unlike the modeling of dust fallout on soil, plants and surface water or the resurgence of water (leachate or pumped water) in bodies of water and rivers, the potential for the accumulation of contaminants in sediments in relation to atmospheric fallout and the resurgence of contaminants in surface water is characterized by too great an uncertainty to be quantified in order to draw conclusions.

However, a parallel can be drawn between the estimate of the transfer of contaminants in the food chain from surface soils subjected to atmospheric fallout and that which would be associated with sediments. Thus, the increase in the concentrations of contaminants in plants and game exposed to contaminated soils would have an impact comparable to the increase in the concentrations of contaminants in the aquatic organisms consumed.

It is therefore primarily on a monitoring program that the estimate of the impact of contamination of the sediments should be based. On the one hand, the risk estimate could be based on contamination data actually measured in the sediments. On the other hand, monitoring the concentrations of contaminants in the aquatic organisms consumed constitutes an integrating parameter that makes it possible to identify a potential risk without it being necessary to distinguish what may come from the contamination from what would come from the sediments.

It was recommended in the risk assessment report to include the measurement of the concentrations of contaminants in the aquatic environment in the environmental monitoring program. It may be specified that these measurements should be taken both in surface water and in sediment, where suspended matter in the water has the greatest potential for

[40] Sediments can be affected by aerial deposition and by mining water inflows as well. Sediments can act as both a reservoir and a source of contaminants in the environment. Sediment is considered a reservoir when contaminants are deposited from the overlying water column and accumulate at the bottom of water bodies. Contaminated sediment can also be a source of contamination for overlying waters (e.g., through dissolution or resuspension). Potential sediment contamination can have an impact on traditional foods (for example, on the quality of fish and other aquatic foods, on geese and moose that may accidentally ingest sediment while feeding, and there may be potential for bioaccumulation and biomagnification in the food chain).

sedimentation.

CCE 54 Traditional Food - Toxicological Risk Assessment for Consumption of Aquatic Food and Use of Affected Lakes

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, sections 10.1.1 (Methodology - Risk Assessment Framework).

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Expected Effects on Valued Components - Indigenous Peoples) and 9.1.1 (Existing Environment - Methodology).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-136 and Appendix CEAA-136.

BACKGROUND

In its response to question CEAA-136, the proponent presents a contamination risk assessment of traditional foods (Appendix CEAA-136). In section 4.2.2.1 of Appendix CEAA-136, the proponent states that the consumption of aquatic organisms is not expected to exceed the value of 17.5 grams per day used by MELCC in developing a criterion for surface water. In particular, the proponent considers that the lakes that may be affected by the release of contaminants from the mine site are relatively remote and represent only a fraction of the lakes frequented by land users.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Clarify whether the hypothesis that lakes that may be affected by the release of contaminants from the mine site are rarely frequented by land users has been confirmed by the communities concerned. Specify whether this hypothesis considers future land uses. Following these clarifications, review the contamination risk assessment of traditional foods, as required.

ANSWER

CEC confirms that, according to consultations with concerned tallymen, the lakes which could be impacted by the discharge of contaminants from the mining site are not frequently visited by territory users. Furthermore, the tallyman from trapline RE1 confirms that he does not have the intention to frequent the mine area once operations begin.

CCE 55 Traditional Food - Description and Justification of Consumption Rates

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, sections 10.1.1 (Methodology - Risk Assessment Framework).

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Expected Effects on Valued Components - Indigenous Peoples) and 9.1.1 (Existing Environment - Methodology).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to

question CEAA-136 and Appendix CEAA-136.

BACKGROUND

In its response to question CEAA-136, the proponent presents a contamination risk assessment of traditional foods (Appendix CEAA-136). This assessment does not present a description or analysis of the food consumption rates used, such as those cited in section 4.2.3.4, p. 22 from Chan L. (2011).

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Describe and justify the consumption rates selected and determine whether they are representative of the consumption rates of members in the area's hunting or harvesting communities, both today and in the future. Following these clarifications, review the contamination risk assessment of traditional foods, as required. To do this, the proponent may conduct a sensitivity analysis and an uncertainty analysis of the consumption rates used to better understand the results of the contamination risk assessment of traditional foods.

ANSWER

A conservative value of the daily rate of traditional food consumption (290 g/adult/day) was retained for the evaluation so as not to underestimate this important parameter of the evaluation. For this, the value of the 95th percentile of the daily consumption rate obtained from 1,103 households in Aboriginal communities in British Columbia was used (Chan et al., 2011). The methodology and workforce used to establish this value are considered sufficiently robust that the associated uncertainty is low. Furthermore, this value is approximately three times higher than the average value obtained in this same survey.

CCE 56 Traditional Food - Using Average Soil Contaminant Levels

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, sections 10.1.1 (Methodology - Risk Assessment Framework).

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Expected Effects on Valued Components - Indigenous Peoples) and 9.1.1 (Existing Environment - Methodology).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-136 and Appendix CEAA-136.

BACKGROUND

In its response to question CEAA-136, the proponent presents a contamination risk assessment of traditional foods (Appendix CEAA-136). Predicted contaminant levels in traditional foods are based on average soil concentrations. No justification was provided for the use of these average concentrations.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Justify the use of average soil concentrations for the analysis of predicted contaminant levels in

traditional foods. This can be done by conducting a sensitivity analysis to better understand the sensitivity of the risk estimates if the concentrations are different from those assumed in the assessment. Review the contamination risk assessment of traditional foods, as required, based on these clarifications.

ANSWER

On the one hand, to maintain a certain realism in the evaluation, it is preferable not to systematically retain the extreme values for each parameter in order to avoid an excess of conservatism in the results. For example, it was relevant to previously retain the 95th percentile of the rate of food consumption in order to ensure that the results of the assessment are valid for a large majority of consumers. Conversely, retaining the maximum values of concentrations measured in soils for the assessment of exposure to contaminants via the food chain amounts to extrapolating to all the foods harvested over a large area the potential for exposure to an occasionally high concentration. A certain conservatism is already present in the evaluation to have retained the rate of dust deposition corresponding to the high value expected near the site in the direction of the prevailing winds.

On the other hand, the interpretation of the risk potential lies in large part in the comparison of the initial state with the state predicted at the end of the operation of the mine site. In this sense, there is a marginal increase in the estimated risk potential between these two states. In this context, taking into account the average or maximum concentrations has little influence on the resulting interpretation other than the fact that the variation appears all the more marginal when compared to the risk potential based on the maximum values.

CCE 57 Traditional Food - Effects of Contaminants on Organs

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, sections 10.1.1 (Methodology - Risk Assessment Framework).

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Expected Effects on Valued Components - Indigenous Peoples) and 9.1.1 (Existing Environment - Methodology).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-136 and Appendix CEAA-136.

BACKGROUND

In its response to question CEAA-136, the proponent presents a contamination risk assessment of traditional food (Appendix CEAA-136). A minimum of information was provided on the human toxicological reference values used in Appendix CEAA-136. In fact, the assessment does not identify target organs and target effects on them for each contaminant of concern. This information is important since the risk assessment must take into account the presence of effects on the same target organ by different contaminants.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Identify the organs and target effects on them for each contaminant of concern. Based on this

information, revise the contamination risk assessment of traditional foods, if applicable.

ANSWER

The target organs and effects of each of the contaminants taken into account in the assessment are listed below. No cumulative effect on the same organ is expected on the basis of this information.

	Effects and target organs	Source
Antimony	Blood	USEPA, 1987
Silver	Derme	USEPA, 1991
Arsenic	Cardiovascular	USEPA, 1991
Baryum	Kidney damage	Santé Canada, 2010
Beryllium	Small intestine	USEPA, 1998
Boron	Spermatogenesis	Santé Canada, 2010
Cadmium	Renal tubular cell	Santé Canada, 2010
Chrome	Not reported	USEPA, 1998
Cobalt	Polycythemia	ATSDR, 2004
Copper	Liver, hepatotoxic effect	Santé Canada, 2010
Tin	Haematological effect	ATSDR, 2005
Lithium	Kidneys, alteration of the capacity for renal concentration	USEPA, 2008 (provisoire)
Manganese	Neurotoxicity of parkinsonian type	Santé Canada, 2010
Mercury	Nephrotoxicity	Santé Canada, 2010
Molybdenum	Effects on reproduction	Santé Canada, 2010
Nickel	Perinatal fatality	Santé Canada, 2010
Lead	Developmental neurotoxicity in children; Hypertension in adults	OMS, 2010 / Santé Canada, 2009
Selenium	Nervous system,	USEPA, 1991
Zinc	Increased growth in infants	Santé Canada, 2010

CCE 58 Traditional Food - Toxicological Reference Values

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, sections (Methodology - Risk Assessment Framework).

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Expected Effects on Valued Components - Indigenous Peoples) and 9.1.1 (Existing Environment - Methodology).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's

questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-136 and Appendix CEAA-136.

BACKGROUND

In its response to question CEAA-136, the proponent presents a contamination risk assessment of traditional foods (Appendix CEAA-136). The assessment states that a hierarchy was followed for the selection of toxicological reference values (TRV) (i.e., Health Canada > US EPA > ATSDR). However, it does not appear that the hierarchy has always been followed. For example, Health Canada has TRVs for chromium and selenium, but US EPA values were selected.

In Table 7, the "source" of the TRVs does not include the year of publication. Also in Table 7, the selected TRVs (ATSDR Minimal Risk Levels) for cobalt and tin are for an "intermediate duration" of exposure. This was not noted in the table, however. The TRV for molybdenum is incorrect. As per the erratum in the Health Canada document entitled: Federal Contaminated Site Risk Assessment in Canada - Part II: Health Canada Toxicological Reference Values (TRVs) and Chemical-Specific Factors, Version 2.0, 2010, TRVs are expressed in µg/kg/day and should be divided by 1000 to be converted to mg/kg/day.

Table 7 states that the TRVs for lead are from the World Health Organization/Health Canada. Health Canada does not, however, recommend a specific TRV for lead. In fact, the TRV for lead is currently being revised, as outlined in the Federal Contaminated Site Risk Assessment in Canada - Part II: Health Canada Toxicological Reference Values (TRVs) and Chemical-Specific Factors, Version 2.0, 2010.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Provide justification for the Toxicological Reference Values (TRVs) selected when the screening hierarchy proposed by the sponsor was not followed. Revise the contamination risk assessment of traditional foods, if applicable.*

ANSWER

For the non-carcinogenic effects associated with the ingestion of total chromium, Health Canada recommends a tolerable daily intake of 0.001 mg/kg/d (Health Canada, 2010). This value comes from a calculation according to a limit concentration in drinking water which is not considered to be suitable since it is based solely on the toxicity of hexavalent chromium, the most toxic form, whereas it is trivalent chromium which is the dominant form in soils and rocks[41], potential sources of contaminants in this case. The US EPA value of **1.5 mg/kg/d** for trivalent chromium based on the absence of effects observed in rats and an uncertainty factor of 1000 was considered more appropriate and was used for the present risk assessment (IRIS US EPA, 1998).

B) *In Table 7 of Appendix CEAA-136, indicate the year the TRV was published. Note if a TRV is temporary, such as in the case of lithium.*

ANSWER

	Daily tolerable dose (mg/kg/j)					
	0 - 6 months	7 months	5 - 11 years	12 - 19 years	>20 years	Source

[41] Chromium and its compounds - Canadian Environmental Protection Act - Priority Substances List - Assessment Report, 1994

		- 4 years				
Antimony	0.0004	0.0004	0.0004	0.0004	0.0004	USEPA, 1987
Silver	0.005	0.005	0.005	0.005	0.005	USEPA, 1991
Arsenic	0.0003	0.0003	0.0003	0.0003	0.0003	USEPA, 1991
Baryum	0.2	0.2	0.2	0.2	0.2	Santé Canada, 2010 Tirée de USEPA, 2005
Beryllium	0.002	0.002	0.002	0.002	0.002	USEPA, 1998
Boron	0.0175	0.0175	0.0175	0.0175	0.0175	Santé Canada, 2010 Tirée de Santé Canada, 1991
Cadmium	0.001	0.001	0.001	0.001	0.001	Santé Canada, 2010 (basée sur OMS, 1972)
Total chrome	1.5	1.5	1.5	1.5	1.5	USEPA, 1998
Cobalt	0.01	0.01	0.01	0.01	0.01	ATSDR, 2004
Copper	0.091	0.091	0.11	0.126	0.141	Santé Canada, 2010 (tirée de IOM, 2001)
Tin	0.3	0.3	0.3	0.3	0.3	ATSDR, 2005
Lithium	0.002	0.002	0.002	0.002	0.002	USEPA, 2008 (provisoire)
Manganese	0.136	0.136	0.122	0.142	0.156	Santé Canada, 2010 (tirée de IOM, 2001)
Mercury	0.0003	0.0003	0.0003	0.0003	0.0003	Santé Canada, 2010 (tirée de USEPA, 1995)
Molybdenum	0.023	0.023	0.023	0.027	0.028	Santé Canada, 2010 (tirée de Institute of Medecine, 2001)
Nickel	0.011	0.011	0.011	0.011	0.011	Santé Canada, 2010 (tirée de OMS, 2005)
Lead	0.0006	0.0006	0.0006	0.0006	0.001	OMS, 2010 ; Santé Canada, 2009
Selenium	0.005	0.005	0.005	0.005	0.005	USEPA, 1991
Zinc	0.49	0.48	0.48	0.54	0.57	Santé Canada, 2010 (tirée de IOM, 2001)

C) Include the exposure times (e.g., intermediate duration) in Table 7 of Appendix CEAA-136. Provide a rationale for how TRVs identified as "intermediate duration" of exposure are considered appropriate for the assessment of chronic effects. Revise the contamination risk assessment of traditional foods, if applicable.

ANSWER

Tin and cobalt have TRVs developed for intermediate times. Due to the low values of the estimated exposure doses for these elements compared to the TRVs, it is not expected that the taking into account of such TRVs leads to not considering a risk potential which could have been identified if the TRVs for chronic effects existed. A TRV of a lower magnitude of order (additional

safety factor of 10) would not lead to different conclusions for these 2 elements.

D) *Recalculate risk estimates for molybdenum in cases where the unit error was made in the risk characterization step of the contamination risk assessment of traditional foods. Based on this information, revise the contamination risk assessment of traditional foods, if applicable.*

ANSWER

The recalculated results for molybdenum after correcting the units are shown below.

		Percentage of TDI of daily consumption traditional foods for an adult									
		Plants-Fruit		Plants-Foliage		Ptarmigan		Hare		Moose	
	TDI (mg/kg/d)	Initial	Predicted	Initial	Predicted	Initial	Predicted	Initial	Predicted	Initial	Predicted
Mo	0.023	0.339%	0.349%	0.339%	0.349%	0.072%	0.074%	0.00195%	0.00283%	0.13%	0.13%

		Percentage of TDI of daily consumption traditional foods for a child aged 7 months to 4 years									
		Plants-Fruit		Plants-Foliage		Ptarmigan		Hare		Moose	
	DJT (mg/kg/d)	Initial	Predicted	Initial	Predicted	Initial	Initial	Predicted	Initial	Predicted	Initial
Mo	0.023	0.456%	0.469%	0.456%	0.469%	0.0226%	0.0232%	0.0026%	0.0038%	0.176%	0.176%

E) *Identify an appropriate TRV for lead by identifying the source. Include the rationale behind the selection of the TRV in the contamination risk assessment. Following these clarifications, revise, as needed, the contamination risk assessment of traditional foods.*

ANSWER

The proposed value for children is based on a study carried out by the World Health Organization in 2010 (JECFA, 2010). TRV is based on the neurotoxic effects of lead in the development of the child. In this study, a chronic dose of 0.3 µg Pb/kg/day was associated with a decrease of 0.5 IQ points in the population and a dose of 1.9 µg/kg/day was associated with a decrease in 3 IQ points. As the relationship is almost linear, a decrease of 1 IQ point (acceptable threshold considered by Cal EPA and Health Canada) would correspond to a dose of 0.6 µg Pb/kg/d.

Adults are less sensitive to the effects of lead than children, primarily because developmental neurotoxicity is not the primary health concern in adults. The proposed value for adults is based on a study commissioned by Health Canada in 2009 (Azimuth, 2009). In this study, increased blood pressure (hypertension) was considered to be the most sensitive effect in adults. A blood Pb concentration of 1.7 µg / dl has been proposed as a reference level for adults that would not result in an increase of more than 1% in blood pressure. This level of lead in the blood corresponds to a daily dose of 1 µg Pb/kg/day.

CCE 59 Traditional Food - Risk Indices for Non-Carcinogenic Effects

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, sections (Methodology - Risk Assessment Framework).

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Expected Effects on Valued Components - Indigenous Peoples) and 9.1.1 (Existing Environment - Methodology).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-136 and Appendix CEAA-136.

BACKGROUND

In its response to question CEAA-136, the proponent presents a contamination risk assessment of traditional foods (Appendix CEAA-136). Risk indices for non-carcinogenic effects are not presented in this assessment. Instead, results are provided as a percentage of the tolerable daily intake (Tables 11 and 12) for each of the terrestrial foods considered (fruiting plant, leafy plant, ptarmigan, hare and moose).

No risk index was calculated in relation to the consumption of aquatic foods, i.e., only a comparison between estimated concentrations in surface water and the Ministry of the Environment and Climate Change Control surface water quality criteria was conducted. Similarly, the incremental lifetime cancer risk for arsenic was estimated separately for each type of traditional food considered in the study: plants, ptarmigan, hare and moose (p. 23 of Appendix CEAA-136).

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) Provide risk indices for non-carcinogenic effects based on the guidelines in the Health Canada document entitled: Federal Contaminated Site Risk Assessment in Canada - Part I: Guidance on Human Health Preliminary Quantitative Risk Assessment, Version 2.0 (2012) or Part V: Guidance on Human Health Detailed Quantitative Risk Assessment for Chemicals (2010).

ANSWER

The risk indices presented follow the guidelines of Health Canada. As the context of the assessment is that of the risk of contamination of traditional food, the only route of exposure by ingestion of food was retained. This assumption of daily consumption, and over the year, of food collected near the site under the prevailing winds in the area most exposed to atmospheric fallout is already considered sufficiently conservative.

The expression of the risk indices as a percentage of the acceptable daily intake (TDI) is equivalent to the presentation of a ratio (= risk index) relating the estimated daily dose to the TDI.

B) Where appropriate, calculate a total risk index related to the consumption of multiple foods (terrestrial and aquatic), or multiple contaminants if they present toxic effects on the same target organ, for each receptor (child, adult).

ANSWER

The consumption rate corresponding to all traditional foods consumed was assigned to each food separately as part of the assessment. Thus, the evaluation concerned the consumption of 290 g/day of fruit, leaves, ptarmigan, hare or moose. This allowed a better understanding of which food could contribute the most to the exposure potential.

However, taking multiple food consumption into account would simply mean averaging the results previously obtained for each food. Indeed, the rate of 290 g/day would simply be distributed among the different foods. The study by Chan et al. in 2011, for example, estimated the consumption of

moose meat corresponded to 105 g/day among the 290/day of traditional foods consumed.

No additive effect was identified between the various contaminants considered.

C) *Where appropriate, calculate an additional total lifetime cancer risk for arsenic from multiple foods (terrestrial and aquatic).*

ANSWER

As with the previous answer, taking into account the consumption of multiple foods would simply mean averaging the results obtained previously for each food since the consumption rate corresponding to all the traditional foods had been assigned to each food.

D) *Following the clarifications requested in A, B and C, revise the contamination risk assessment of traditional food, as needed.*

ANSWER

The presentation of the results as they appear in the risk assessment report is maintained as is since they correspond to the objective of the assessment and they allow a better understanding of the contribution of each type of food in the potential for exposure to contaminants by ingestion of food.

CCE 60 Traditional Food - Uncertainty and Sensitivity Analyses

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, sections 10.1.1 (Methodology - Risk Assessment Framework).

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Expected Effects on Valued Components - Indigenous Peoples) and 9.1.1 (Existing Environment - Methodology).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-136 and Appendix CEAA-136 (Contamination Risk Assessment of Traditional Foods).

BACKGROUND

In its response to question CEAA-136, the proponent presents a contamination risk assessment of traditional foods (Appendix CEAA-136). The risks associated with ingesting organs from hunted animals, which may contain higher concentrations than in muscle tissue, have not been assessed, which is a source of uncertainty.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Include a detailed uncertainty and sensitivity analysis in Appendix CEAA-136 to help clarify the level of confidence in the results obtained. Based on these clarifications, review the risk assessment of contamination of traditional food as required.

ANSWER

A toxicological risk assessment carried out at the prospective stage of a mining project is naturally subject to greater uncertainty compared to an assessment which would relate a posteriori to the state of a mining site at the end of its life.

In this sense, the future quality of each environmental matrix (water, soil, sediment, plants, aquatic organisms and game) represents a major source of uncertainty. The models used to estimate the quality of each matrix are an important simplification of reality. To remedy this, the estimates are generally carried out in a conservative manner, from scenarios.

Since the assessment focuses exclusively on the risk associated with the consumption of traditional foods, the main uncertainty lies in the levels of contaminants in the different foods.

An analysis of the sensitivity of the estimate of the risk related to the consumption of moose meat is presented below for some compounds and by varying (by a factor of 2) in turn the parameters of the equation to estimate the expected exposure dose related to the TDI.

It appears that this estimate is sensitive in a comparable manner to the variability of the concentrations of contaminants in the soil, in plants consumed by moose or in moose meat. Likewise, a consumer who ingests a double quantity of moose meat would see his exposure dose vary in the same proportions. The variability of concentrations in surface water, on the other hand, has little effect on the exposure potential and therefore the risk of a consumer of moose meat, moose which would have consumed this water.

	Base case	Concentration in soil doubled	Concentration in water consumed by moose doubled	Concentration in vegetation consumed by moose doubled	Concentration in moose meat doubled	Food intake rate doubled
Cadmium	0.63%	1.27%	0.64%	1.16%	1.16%	1.28%
Copper	3.17%	6.35%	3.18%	6.31%	6.31%	6.36%
Lithium	6.82%	13.55%	6.92%	13.63%	13.63%	13.85%
Zinc	2.74%	5.45%	2.76%	5.18%	5.18%	5.53%

CCE 61 Traditional Food - Measures to Protect Surface Water Quality

REFERENCE

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Expected Effects on Valued Components - Indigenous Peoples).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-136 and Appendix CEAA-136 (Contamination Risk Assessment of Traditional Foods).

BACKGROUND

In section 4.1.1.4 of Appendix CEAA-136 (response to question CEAA-136), it is stated that all process water will be recirculated or treated and that, apart from accidental leaks, it should not be a source of contaminants to surface water.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Describe the measures that will be taken to detect leaks and spills from the waste rock and tailings pile or mine water basins (including exfiltration from piles, ponds and ditches) to protect surface water quality.

ANSWER

The final effluents must meet criteria provided by the MELCC (pH, turbidity, etc). This data is taken continuously in an automated fashion and as soon as there is an elevated result, an alert will sound and the water will be re-circulated until the situation is rectified. No discharge into the effluent is permitted until the situation is rectified.

CCE 62 Traditional Food - Implementation of Contaminant Mitigation

REFERENCE

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Expected Effects on Valued Components - Indigenous Peoples).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-136 and Appendix CEAA-136 (Contamination Risk Assessment of Traditional Foods).

BACKGROUND

In Appendix CEAA-136 (response to question CEAA-136), the proponent provides recommendations for mitigation measures for environmental contamination emissions in section 5.2, but does not specify whether they will be implemented.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Specify whether the recommendations in section 5.2 of Appendix CEAA-136 for the mitigation of environmental contamination emissions will be implemented.

ANSWER

CEC commits to put implement the recommendations suggested in section 5.2 of Appendix CEAA-136 concerning the mitigation measures for the emission of contaminants in the environment.

CCE 63 Traditional Food - Information Sources

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, sections 10.1.1 (Methodology - Risk Assessment Framework).

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Expected Effects on Valued Components - Indigenous Peoples) and 9.1.1 (Existing Environment - Methodology).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's

questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-136 and Appendix CEAA-136 (Contamination Risk Assessment of Traditional Foods).

BACKGROUND

Sections 2.3.1 to 2.3.4 of Appendix CEAA-136 (Contamination Risk Assessment of Traditional Food) describe traplines RE1, R19, R16 and R10 respectively, including water bodies, facilities, infrastructures, roads, hunting camps and other information on activities in the territory. However, the proponent does not indicate which sources were consulted for this information.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Refer to the information sources consulted on land use, especially with regard to hunting, fishing and gathering activities. If interviews were conducted with the local population on their traditional food consumption habits, present the details and results or refer to the relevant reports.

ANSWER

Consultations took place with the community members concerning their usage of the territory and their concerns. The summaries of these can be found in Appendix CCE-63. Furthermore, in answer CEAA-137 of the request for additional information (Answers to the non-compliance of the first request of information from the IAAC, February 2020), CEC shared confidentially with the IAAC maps of traplines RE1, R16, and R19 on which the tallymen identified valued areas for hunting, fishing, and trapping.

CCE 64 Traditional Food - Baseline Status

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, sections 10.1.1 (Methodology - Risk Assessment Framework).

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Expected Effects on Valued Components - Indigenous Peoples) and 9.1.1 (Existing Environment - Methodology).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-136 and Appendix CEAA-136.

BACKGROUND

In its response to question CEAA-136, the proponent did not describe the characterization of the baseline status for traditional food (soil, water, plants, etc.) in the initial situation.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Describe the studies carried out, and their available results, to perform the baseline characterization of traditional foods or refer to the relevant reports.

ANSWER

The documents consulted to perform the baseline characterization can be found in Appendix CCE-64, while the consultations with the communities can be found in Appendix CCE-63.

Comment 3 References and Background Information

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, sections (Methodology - Risk Assessment Framework).

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Expected Effects on Valued Components - Indigenous Peoples) and 9.1.1 (Existing Environment - Methodology).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-136 and Appendix CEAA-136.

COMMENTS AND ADVICE

No specific source is provided for some of the models presented in Appendix CEAA-136, namely those for estimating additional concentrations in surface water, soil and game. In addition, some basic information about these models is not presented, for example: their limitations and uncertainties, their sensitivity (level of influence of the input parameters on results, sensitive parameters), their relevance to the project under study, their peer validation or general recognition, the values and justifications of all input parameters including default values, etc.

Although the modelling results were not reviewed by Health Canada, it is recommended that, for a more complete and transparent study, the following information be provided for each of the models selected:

1) *Specific references; and,*
2) *Basic information (limitations, uncertainties, sensitivity, relevance, validation, etc.).*

Note that some inconsistencies were noted in the description of variables in the equation for estimating the concentration in game.

ENVIRONMENTAL MONITORING AND SURVEILLANCE

CCE 65 Improved Monitoring and Surveillance Programs and Collaboration with Territorial Users

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Assessment. Part II, section 11.4 (Monitoring Program).

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Expected Effects on Valued Components - Indigenous Peoples).

Chan L., Batal B., Receveur O., Sadik T., Schwartz H., Ing A., Fediuk K., Tikhonov C. and Lindhorst K. (2016). First Nations Food, Nutrition & Environment Study: Results from Quebec 2016. Ottawa: University of Ottawa. Available at: http://www.fnfnes.ca/docs/QC_French_Aug6.pdf, consulted on

January 22, 2020.

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-136 and Appendix CEAA-136.

BACKGROUND

Many gaps were identified by Health Canada in the risk assessment of contamination of traditional foods (response to question CEAA-136, Appendix CEAA-136).

Health Canada reiterates the importance of determining the initial level of contaminants of potential concern in traditional foods in the vicinity of the project site (in close collaboration with land users with respect to the choice of resources analyzed). Currently, traditional food quality is monitored based on the monitoring in place for certain environmental media (air, water, etc.). When the environment committee in charge of monitoring receives these data, it will not be able to assess them from a human health point of view without established "health" thresholds (target levels based on the protection of human health). Furthermore, it is not possible to specify which contaminants or environmental media should be monitored since the toxicological risk assessment is incomplete.

The intake of many nutrients is enhanced when Indigenous people consume traditional food, even in small amounts. Given the high level of food insecurity in First Nations communities (Chan et al., 2016), especially in areas where the price of food in stores is high, access to traditional food should be valued and protected.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

To demonstrate that levels of contaminants in the environment are not increased or remain acceptable (i.e., below target levels based on the protection of human health):

A) Enhance environmental monitoring and follow-up programs for waste water, air, surface water (water body A, lakes 3, 4 and 6) and traditional foods. Present and justify target levels based on the protection of human health.

ANSWER

The acceptable daily intakes listed in the report in conjunction with the rate of traditional food consumption should be used as a benchmark for the assessment of concentrations taken directly from food. The water quality criteria aimed at protecting the consumption of aquatic organisms should be used as a reference for the evaluation of the concentrations measured in bodies and rivers.

The admissible daily intakes in conjunction with the rate of traditional food consumption and bioaccumulation factors specific to each food category should serve as a reference for the evaluation of the concentrations measured in soils and sediments, in addition to evaluation carried out directly on the organisms consumed.

B) Specify how the proponent plans to respond to potential exceedances.

ANSWER

CEC will put in place the mitigation measures and follow-up program as recommended. Through the follow-up program and consultations with the Cree communities, CEC will be promptly informed of any exceedance. Depending on the nature of these, corrective measures will be implemented.

C) *Specify whether the traditional food monitoring and follow-up program will be developed in cooperation with Cree communities.*

ANSWER

CEC is committed to consulting the Cree communities about the traditional food monitoring and follow-up program in order to properly integrate concerns as well as traditional knowledge.

D) *In addition to the relevant contaminants, indicate whether nutritional and organoleptic quality monitoring parameters[42] will be developed in cooperation with Cree communities to prevent any avoidance of the resource.*

ANSWER

A search for the parameters explaining an alteration of aesthetic, organoleptic or nutritional factors will be carried out if such alterations occur during the monitoring program. This analysis will be carried out in consultation with the Cree communities so as to clearly identify both the nature of the alterations and what may be the cause.

ACCIDENTS AND MALFUNCTIONS

CCE 66 Final Effluent

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 7.1.2 (Effects of Possible Accidents or Malfunctions).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-108.

BACKGROUND

In its response to question CEAA-108, the proponent explains that there will be no non-compliant discharge of final mine effluent. In its answers to questions CEAA-20 and CEAA-21, the proponent also presents the management of water from the mine site at different stages of the project. The maps presented in response to these questions show part of the route where the final effluent water will be directed.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Although no non-compliant discharges are expected, provide a map showing the path of water from the final effluent, from the discharge point to its entry onto Waskaganish community lands.

ANSWER

The map found in Appendix CCE-66 presents the path followed by the principal final effluent to the first stream within the lands of Waskaganish.

[42] That which is likely to stimulate a sensory receptor (such as appearance, smell, taste, texture or consistency) (definition adapted from https://www.btb.termiumplus.gc.ca/).

CCE 67 Emergency Response Plan (information from Indigenous communities)

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section (Effects of Possible Accidents or Malfunctions).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-112.

BACKGROUND

In its response to question CEAA-112, the proponent states that all incidents will be reported to the communities, without specifying which ones. It added that, depending on the severity of the incident, communication methods such as the proponent's newsletter, "band council bulletin boards" and radio could be used to disseminate information.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

A) *Specify which community(ies) will be informed of incidents, if any.*

ANSWER

CEC will determine with the communities of Eastmain, Nemaska, and Waskaganish which elements they would like to see reported and in which format they would like the information to be presented. It is very likely that the information requests will vary and evolve over time.

B) Specify what type of incident would be communicated through the proponent's newsletter and bulletin boards, specifying from which band council(s), and via radio, specifying from which community(ies).

ANSWER

See A)

CUMULATIVE EFFECTS

CCE 68 Justification for Using Criteria to Assess the Significance of Cumulative Effects

REFERENCE

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Statement. Part II, section 12.1.2 (Cumulative Environmental Effects).

WSP (December 2019). Rose Lithium - Tantalum Mining Project. Responses to the CEAA's questions and comments. Report produced for Critical Elements Lithium Corporation. Response to question CEAA-97.

BACKGROUND

In its response to question CEAA-97, the proponent presents its analysis of cumulative effects for several valued components. It justifies the values assigned to each sub-criterion of intensity

(magnitude) in its assessment, namely: ecosystem value, socio-economic value and degree of disturbance. However, the same justification is not presented for the spatial extent, duration and probability of occurrence criteria.

THE JOINT ASSESSMENT COMMITTEE REQUESTS CRITICAL ELEMENTS LITHIUM CORPORATION (THE PROPONENT) TO:

Justify the values assigned in the assessment of spatial extent, duration and probability of occurrence criteria for each valued component studied to evaluate the project's residual effects.

ANSWER

See the table in Appendix CCE-68.

PURPOSE OF THE PROJECT

CCE 69 Purpose of the project in the James Bay area and economic context for lithium

REFERENCES

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Assessment. Part II, section 5.5 (Purpose of the project).

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Section 9.2 (Potential or established Aboriginal and Treaty rights and related interests).

WSP (February 2019). Rose Lithium-Tantalum Project. Update of the Environmental Impact Statement. Report prepared for Critical Elements Lithium Corporation. Section 2.2 (Context and justification of the project), pages 2-2 and 2-3.

BACKGROUND

In its Environmental Impact Statement (EIS), the Proponent describes the project's purpose in section 2.2, noting the following in particular: [Translation] "First, the growing demand for lithium is being driven particularly by manufacturers of batteries, primarily for the booming hybrid and electric car market, but also for other types of applications, such as the storage of renewable energy. The electronics market segment experienced significant growth between 2000 and 2010 or even 2015, but now seems to have reached a saturation point. On the other hand, the electric vehicle sector is flourishing; its annual growth rate is about 40% for lithium carbonate equivalent in lithium battery applications [...]. Annual growth in this market segment could even go as high as 45% to 50% by 2020. [...] This market segment is expected to see annual growth of about 25% over the next few years. In the medium term, the rate will probably be even higher."

During the JAC's consultations, the communities of Eastmain, Waskaganish and Nemaska expressed concern about the proposal for additional lithium mining projects in the James Bay area, since the only other lithium mining project currently under way is experiencing serious economic difficulties, as reported in the media.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT) :

Update the information provided concerning the rationale for another lithium mining project in the region. The Proponent is encouraged to include information regarding the economic context for lithium that explains the project's current economic feasibility in the projected time frames.

ANSWER

The main driver of the Lithium market up to 2040, covering the time frame of the life of mine for the Rose project, is the global electrification of transportation in general and the global change to renewable energy concepts worldwide.

All experts are predicting a demand growth of about four times that of the current market to 1,000,000 mt of Lithium carbonate equivalents in 2025. Between 2025 and 2040, the market will continue to grow to more than 3,000,000 mt of Lithium carbonate equivalents.

As the existing suppliers can only support further the current and recent growth in a very limited way, new high quality Lithium resources such as Critical Elements and Nemaska are now urgently needed, especially considering the leadtime of minimum 5 to 6 years to build a spodumene concentrator and a conversion plant.

Recent market data confirm the growth in the EV sector, eg in the first six months of 2020, LG grew their Lithium Ion Battery business by 83% and the market penetration of PlugInHybrids and EV cars achieved in Germany was 16.7% in July 2020. Also large scale stationary batteries are increasingly required to stabilize the grid system as, with the introduction of renewable energy systems, short-term fluctuations are potentially appearing and destabilizing the grid system. Per KWh battery capacity, about 0.6 to 0.8 kg of Lithium carbonate equivalents are required, this is independent from any battery technology whether it is Lithium Ion or high Nickel containing cathode materials - Lithium Metal Technologies will require substantially more Lithium.

More and more new EV cars are introduced in the market, in total the automotive industry invested already about 100 billion USD in new EV cars and new manufacturing plants. Market leaders are Tesla, Renault Nissan, Hyundai and Volkswagen.

The current producers, Livent, SQM, Albemarle and Orocobre cannot support the market above 300,000 mt LCE as their main source are Salars in Chile and Argentina, which all have water restrictions and therefore have strongly limited growth potentials. SQM is again put to court as their mitigation plans for the Salar de Atacama are not suitable. Albemarle and SQM had to reduce their pumping rates in 2019 already. The Chinese converters, eg Ganfeng, Tianqi also Livent and Albemarle are solely using Spodumene from Australia, which mostly is only suitable for making Lithium carbonate and not Lithium hydroxide. Tianqi could not qualify it‘s plant in Australia as they were not able to meet battery grade specifications due to issues with the spodumene being used as raw material. Only Altura and Tavana, which are smaller deposits, can be used by Ganfeng to make battery grade Lithium hydroxide.

In 2019 and 2020, new high Nickel containing cathode material technologies entered into the market. Tesla / Panasonic introduced new batteries with increased power into the market followed by LG. These batteries require as starting material Lithium hydroxide BG instead of Lithium carbonate BG. Product specifications for Lithium hydroxide are very strict and rigorous. A Lithium hydroxide battery specification is only economically achieved with raw materials having a limited impurity profile such as Lithium carbonate or Spodumene from Critical Elements. However, production costs are lower for the Spodumene route than the Lithium carbonate route. Spodumene from Australia is mostly not suitable as it contains larger quantities of mica and iron oxide.

STUDY AREA

CCE 70 Human environment study area

REFERENCES

CEAA (February 2018). Guidelines for the Preparation of an Environmental Impact Statement. Part

2, sections 5 (Consultation with Indigenous Nations and Concerns Raised) and 9.1.3 (Human environment – Indigenous peoples).

WSP (December 2019). Rose Lithium-Tantalum Project. Answers to the Questions and Comments Received from the CEAA. Report prepared for Critical Elements Lithium Corporation. Answers to Question CEAA-122.

BACKGROUND

The Cree community of Nemaska expressed concern about the delimitation of the human environment study area in every phase of the environmental assessment.

In the answer to Question CEAA-122, the Proponent states that six camps used by the Cree community of Nemaska (trapline R19) along the Nemiscau-Eastmain-1 road will be included in the human environment study area because of potential effects on current land use for traditional purposes due to increased road traffic. The Proponent does not provide a map of the proposed new human environment study area.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT)

Provide a map of the new human environment study area that includes the six Nemaska trapline R19 camps along the Nemiscau-Eastmain-1 road, and update the assessment of the project's effects on the valued components of the human environment if required.

ANSWER

The map showing the new human environment study area can be found in Appendix CCE-70.

LAND AND RESOURCE USE

CCE 71 Lakes affected by the project and Cree community participation in fishing

REFERENCES

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Section 9.2 (Potential or established Aboriginal and Treaty rights and related interests).

WSP (February 2019). Rose Lithium-Tantalum Project. Update of the Environmental Impact Statement. Report prepared for Critical Elements Lithium Corporation. Section 7.2.5.1 (Likely environmental effects), pages 7-43, 7-42 and 8-52 (and map 7-1).

WSP (December 2019). Rose Lithium-Tantalum Project. Answers to the Questions and Comments Received from the CEAA. Report prepared for Critical Elements Lithium Corporation. Answer to Question CEAA-4.

BACKGROUND

During the JAC's consultations, questions about the fish populations in the lakes that will be affected and/or dewatered by the project were asked on a number of occasions. In addition, the tallyman of trapline RE1 indicated that he fishes in Lake 3 and noted that he would stop using the lakes around the mine when the mine is operating, because of concerns about contamination.

Lake 1

On page 7- 43 of the EIS, the Proponent states the following: [Translation] "To reduce fish mortality,

fishing operations will be carried out in Lake 1 to catch some of the fish and provide them to the Indigenous communities. It will not be possible to catch all of the fish, since at some point the probability of capture becomes too low. In addition, gradually lowering the water level to increase the probability of capture creates problems with access to the lake. The fishing operations will run for a maximum of 10 days or less, depending on yield." The JAC understands that the Proponent itself intends to undertake these fishing operations in Lake 1, and that there are no plans for Cree users of the land to participate in this process.

Lake 2

Also on page 7-43 of the EIS, the Proponent states that [Translation] "There are no plans to fish Lake 2 because it has very few fish, as demonstrated by the fishing operations conducted in 2011 and 2016." Yet, on page 8-52 of the EIS, the Proponent states that Lake 2 is valued for its fishing: [Translation] "Not much fishing is done in the study area. On trapline RE1, a few users have indicated that they frequent only one lake, which is about two kilometres west of the camp at km 42 of the Nemiscau-Eastmain-1 road (Lake 2 shown in Figure 7-1). It is considered, particularly by Elders, a good lake for fishing." The JAC notes that there is a contradiction between these two sections of the EIS.

Lake 3

On page 7-42 of the EIS, the Proponent describes the project's predicted effects on Lake 3: [Translation] "Lake 2 will be pumped into Lake 3, and because of its small volume, the pumping process is not expected to take very long. [...] Depending on nature of the bed of Lake 3, sediment control measures may be required, especially during the dewatering of the bottom of the lake, such as installation of a turbidity curtain or a sediment bag." The Proponent also indicates in its answer to Question CEAA-4 that the water from the nine peripheral pumping wells used to dewater the pit will be discharged into Lakes 3, 4 and 6. Since there may be impacts on Lake 3, and since the users have stated that they would stop using the lakes near the pit, the users may be interested in fishing Lake 3 one last time before construction begins.

On page 8-52 of the EIS, the Proponent indicates that Cree users of the land in the study area only fish in Lakes 2 and 3.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT) :

A) *Specify how it plans to encourage Cree land users to participate in the intensive fishing to be performed before Lake 1 is dewatered, and submit a description of the participation arrangements, if applicable.*

ANSWER

The fishing methods used will be validated by biologists in order to ensure that the best practices are implemented. Depending on the method selected, the Cree territory users will be invited to participate.

B) Confirm whether Lake 2 is valued by users and whether intensive fishing is also planned before the lake is dewatered.

ANSWER

Lake 2 is not valued/favored by the territory users. During a call on July 8th 2020, the tallyman confirmed that the lake was only used for hunting beavers but that he no longer visits this area of his trapline. Intensive fishing is not planned for Lake 2 before it is dewatered on account of the low abundance of fish as shown by the fishing conducted in 2011 and 2016. (EIA)

C) Assess the possibility of offering the trapline RE1 tallyman the opportunity to fish in Lake 3 before work begins.

ANSWER

During a call on July 8th 2020, the tallyman confirmed that he no longer fishes in this area and is not interested in fishing in this area before works begin.

CCE 72 Intensive beaver trapping before the project's construction phase

REFERENCES

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Section 9.2 (Potential or established Aboriginal and Treaty rights and related interests).

WSP (February 2019). Rose Lithium-Tantalum Project. Update of the Environmental Impact Statement. Report prepared for Critical Elements Lithium Corporation. Section 8.3.6.2 (Mitigation of effects and improvement measures – Description and effects on components affecting Indigenous communities), page 8-61.

BACKGROUND

On page 8-61 of the EIS, the Proponent suggests the following mitigation measure in the project's construction phase: [Translation] "Award some site preparation contracts to the trapline RE1 tallyman (deforestation, intensive beaver trapping, etc.)."

During the JAC's consultations, the trapline RE1 tallyman expressed concern about this measure and pointed out that intensive beaver trapping has to be done at least two years in advance and not just a few months before construction of the mine.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT)

Specify and justify the amount of time it will allow the trapline RE1 tallyman for intensive beaver trapping before the construction phase.

ANSWER

During a call on July 8th 2020, the tallyman confirmed that he would like to be able to trap beaver before construction works begin.

CCE 73 Beaver and muskrat surveys

REFERENCES

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Section 9.2 (Potential or established Aboriginal and Treaty rights and related interests).

WSP (February 2019). Rose Lithium-Tantalum Project. Update of the Environmental Impact Statement. Report prepared for Critical Elements Lithium Corporation. Section 7.5.4.3 (Fur-bearing animals and small mammals), pages 7-131 and 7-133.

BACKGROUND

During the JAC's consultations, the Nemaska community expressed concern about the beaver and muskrat surveys conducted by the Proponent as part of the environmental impact assessment. The

community said that recent surveys should be carried out before the work begins to ensure the effectiveness of the follow- up for these species in the operation phase.

In Section 7.5.4.3 of the EIS, the Proponent states the following: [Translation] "A number of species of fur- bearing animals and small mammals are likely to frequent the natural environment study area, depending on their distribution. During the field work carried out in 2012 and 2016, the presence of six mammal species [...] was confirmed: beaver, red squirrel, river otter, grey wolf, muskrat and red fox." On page 7-133 of the EIS, the Proponent states that surveys confirmed the presence of six mammal species. It is the JAC's understanding that the Proponent observed the presence of beaver and muskrat in these preliminary surveys, but that it did not conduct comprehensive surveys of these species in the study area for its EIS.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT):

Assess, in conjunction with the tallyman or tallymen affected by the project, the need for a beaver and muskrat survey in the study area before work begins. If there is no need, provide an explanation.

ANSWER

During a call on July 8th 2020, the tallyman confirmed that he would like an inventory of beavers to be carried out prior to construction and after the completion of the construction works. He deems that a muskrat inventory is not required.

CCE 74 Assessment of the effects of road traffic on current use by the Cree communities

REFERENCES

CEAA (February 2018). Guidelines for the Preparation of an Environmental Impact Statement. Part 2, sections 5 (Consultation with Indigenous Nations and Concerns Raised) and 10.1.3 (Predicted effects on valued components – Indigenous peoples).

WSP (December 2019). Rose Lithium-Tantalum Project. Answers to the Questions and Comments Received from the CEAA. Report prepared for Critical Elements Lithium Corporation. Answers to questions CEAA-122 and CEAA-134.

BACKGROUND

During the JAC's consultations, the communities of Eastmain, Waskaganish and Nemaska expressed concern about the effects of increased road traffic related to the project.

In its answers to Questions CEAA-122 D and CEAA-134 E, the Proponent describes the effects of increased road traffic on current use by the three Cree communities without assessing its residual effects or their significance. The Proponent indicates what could be affected without providing an assessment of the anticipated impact after mitigation measures are taken into account.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT):

Complete the assessment of the effects of increased road traffic (all types of road transport associated with the project, including the transport of ore, supplies, waste and workers) on access to the resource and access to the camps based on criteria (such as extent, duration and magnitude), and determine the significance of the residual effects after the implementation of mitigation measures is taken into account.

ANSWER

Access to the camps:

The **socio-economic value** of the access to the camps is **medium** as it is valued by the First Nations and intimately tied to their cultural identity. Furthermore, the current use of lands and resources for traditional purposes figures amongst the environmental impacts to consider in the LCEE. Several mitigation measures will be implemented during the construction and exploitation phases in order to allow land users to continue their traditional activities in the same area, or if not possible, elsewhere on the territory. The **degree of disturbance** of the component is thus considered **weak**. As such, the **amplitude** of the impact is considered weak during construction and exploitation.

The **extent** of the residual impacts anticipated is **punctual** since the impacts are likely to be felt over a small area, namely along the Nemiscau-Eastmain-1 road, CEC will raise awareness amongst workers and transporters to the necessity of respecting security regulations and, if necessary, take measures with the appropriate authorities to ensure the security of the Nemiscau-Eastmain-1 road users.

The **construction** phase will be **short term** whereas the **exploitation** phase will be **long term.**

During the construction phase as well as the exploitation phase, the **probability of occurrence** of the residual impacts of the project on this component are deemed as being **high**.

As such, during the construction and exploitations phases, the **residual impact** related to access to the camps is deemed as being **weak** and **unimportant**.

Access the resources:

The **socio-economic value** of the access to resources is **medium** as it is valued by the First Nations and intimately tied to their cultural identity. Furthermore, the current use of lands and resources for traditional purposes figures amongst the environmental impacts to consider in the LCEE. Several mitigation measures will be implemented during the construction and exploitation phases in order to allow land users to continue their traditional activities in the same area, or if not possible, elsewhere on the territory. The **degree of disturbance** of the component is thus considered **weak**. As such, the **amplitude** of the impact is considered weak during construction and exploitation.

The **extent** of the residual impacts anticipated is **punctual** since the impacts are likely to be felt over a small area, namely the environment immediately surrounding the construction site during the construction phase and around the various mining infrastructures during the exploitation phase. The two camps of the camping site found on the mining site will be relocated to an area convenient to the users.

The **construction** phase will be **short term** whereas the **exploitation** phase will be **long term.**

During the construction phase as well as the exploitation phase, the **probability of occurrence** of the residual impacts of the project on this component are deemed as being **high**.

As such, during the construction and exploitations phases, the **residual impact** related to access to resources is deemed as being **weak** and **unimportant**.

CCE 75 Road transportation and compliance with speed limits

REFERENCES

CEAA (February 2018). Guidelines for the Preparation of an Environmental Impact Statement. Part 2, section 5 (Consultation with Indigenous Nations and Concerns Raised).

WSP (December 2019). Rose Lithium-Tantalum Project. Answers to the Questions and Comments Received from the CEAA. Report prepared for Critical Elements Lithium Corporation. Answers to questions CEAA-122 and CEAA-134.

BACKGROUND

During the JAC's consultations, the Cree community of Nemaska said that it was concerned about the safety of children and pedestrians along the Nemiscau-Eastmain-1 road and recommended that the Proponent take steps to encourage its truck drivers to obey the speed limits. Apprehensions about the safety of moose and partridge hunters who hunt regularly along the road were expressed. The Cree community of Waskaganish expressed concern about the effects of increased road traffic on the beaver trapping that regularly takes place along the James Bay Highway, not only for traditional purposes but also to prevent flooding on the highway.

In its answer to Question CEAA 122 D, the Proponent indicates that it plans to educate its workers regarding Cree traditional activities on the land, stressing the importance of reducing their speed when they see users. The Proponent does not indicate how frequently it plans to educate its employees. In its answer to Question 134 C, the Proponent does not say whether the vehicles will be equipped with speed governors.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT):

A) *Specify how it plans to ensure compliance with speed limits off its property. The Proponent must also indicate whether its vehicles will be equipped with speed governors, and if not, why not.*

B) *Provide information about the means by which its drivers will be educated on road safety and Cree traditional activities, including how often that education will be delivered. The Proponent must also specify whether that education will include information about the Cree engaging in beaver trapping and opportunistic hunting (moose and partridge, for example) on a regular basis in varying locations along roads.*

ANSWER

It will potentially be possible to use vehicles equipped with speed controllers for the trucks but it will not be possible for smaller vehicles (personal vehicles, bus, etc.). However, the Health and Safety department of the company will address the importance of respecting speed limits and the impact speeding has on the Cree territory users on a regular basis (every three months). CEC will also consider collaborating with the Sureté du Québec (SQ) or other relevant authorities in order to conduct speed check campaigns if needed. CEC will include information on trapping and hunting practices in order to increase awareness amongst employees.

CCE 76 Road transportation and signage

REFERENCES

CEAA (February 2018). Guidelines for the Preparation of an Environmental Impact Statement. Part 2, section 5 (Consultation with Indigenous Nations and Concerns Raised).

WSP (December 2019). Rose Lithium-Tantalum Project. Answers to the Questions and Comments Received from the CEAA. Report prepared for Critical Elements Lithium Corporation. Answers to Question CEAA-134.

BACKGROUND

During the JAC's consultations, the Cree community of Nemaska recommended that signs indicating the proximity of hunting camps be installed to encourage drivers to obey the speed limits at those critical locations.

In its answer to Question CEAA-134 C, the Proponent notes that its company vehicles and suppliers' vehicles will be required to obey the speed limit of 70 km/h on the Eastmain-1 road and the Route du Nord between Albanel substation and the James Bay Highway or be dismissed from the project. The Proponent also states that road signs will be installed to remind drivers of the speed limit at appropriate intervals.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT):

Specify whether there are any plans to engage in discussions with the Nemaska tallymen affected by the project's road transportation regarding their interest in having signs indicating the presence of their camps and access roads or in having a reduced-speed zone near the camps on the Route du Nord and the Nemiscau-Eastmain-1 road, or to let them know that that has been done, as applicable.

ANSWER

CEC commits to undertake discussion with the tallymen from Nemaska who will be affected by the project's road transport concerning the identification by means of signposts of the location of camps and access roads.

CCE 77 Traditional activity exclusion zone(s)

REFERENCES

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Section 9.2 (Potential or established Aboriginal and Treaty rights and related interests).

WSP (December 2019). Rose Lithium-Tantalum Project. Answers to the Questions and Comments Received from the CEAA. Report prepared for Critical Elements Lithium Corporation. Answers to Question CEAA-125.

WSP (February 2020). Rose Lithium-Tantalum Project. Answers to the Non-compliance of the First Request of Information from the IAAC. Report prepared for Critical Elements Lithium Corporation. Answers to Questions CEAA-98, CEAA-120 and CEAA-125.

BACKGROUND

During the JAC's consultations, the RE1 trapline tallyman said he was worried about the area around the mine that will be inaccessible for beaver trapping. The Cree community of Nemaska expressed concern about the possibility of a zone around the mine in which the use of firearms would be prohibited, and about the size of such a zone.

In the answer to Question CEAA-125, the Proponent stated that there would be controlled entry to the mining site through the access road and that "the industrial zone would be clearly marked." In its answer to Question CEAA-120, the Proponent indicated that the "[m]embers of the Eastmain RE1

family will have the right to trap on the mine site, with the exception of large mammal traps for safety reasons." In its clarification on Question CEAA-120, the Proponent indicated that "there is no traditional food collection on the site," but that the "tallyman of trapline RE1 and family members will continue to be able to trap on the mining site." In its answer to Question CEAA-98, the Proponent proposed the following measure to limit potential contamination of traditional food: "A no-hunting zone on the mining/industrial site, particularly for safety reasons, which also coincides with the greatest risk of contamination of the environment."

The JAC notes that with the current data, it is impossible to provide Cree land users with clear information about the anticipated limitations on their future access to the land around the mine.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT):

A) Specify which species it is referring to with the planned exclusion of "large mammal traps" around the mine site.

ANSWER

The exclusions mentioned with regards to « large mammal traps » refer to bears, caribou, and moose.

B) Specify and justify the safety zone in which the use of firearms will be prohibited and the safety zone for trapping and hunting. The Proponent must indicate how users will be informed of those zones. The various zones (for hunting and trapping or for each species) must be shown on a map displaying the project's future facilities.

ANSWER

A security perimeter of 1 km will be established around the entire mine site (pit, stockpiles, infrastructures, etc.). A map showing this perimeter can be found in Appendix CCE-77.

CCE 78 Effects of increased road traffic and mining operations during Nemaska's goose and moose hunting season

REFERENCES

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Predicted effects on valued components – Indigenous peoples), 9.2 (Potential or established Aboriginal and Treaty rights and related interests) and 12.1.1 (Cumulative environmental effects).

WSP (February 2019). Rose Lithium-Tantalum Project. Update of the Environmental Impact Statement. Report prepared for Critical Elements Lithium Corporation. Section 10.7.2.1 (Projects, actions or events – Modification and loss of habitat and disturbance), page 10-30.

WSP (December 2019). Rose Lithium-Tantalum Project. Answers to the Questions and Comments Received from the CEAA. Report prepared for Critical Elements Lithium Corporation. Answers to Questions CEAA-120, CEAA-129 and CEAA-134.

WSP (February 2020). Rose Lithium-Tantalum Project. Answers to the Non-compliance of the First Request of Information from the IAAC. Report prepared for Critical Elements Lithium Corporation. Answer to Question CEAA-129.

BACKGROUND

During the JAC's consultations, the Cree communities shared their concerns about the project's adverse effects during the annual goose and moose hunt, harvesting activities that are valued in the Cree culture. The Cree communities recommended the suspension of blasting and transportation activities during those annual hunting seasons. The Cree community of Nemaska is particularly apprehensive about the project's proximity to the community (38 km), especially since another mining project is under development near Nemaska along the Route du Nord, 40 km southeast of the Rose mining project.

The Cree knowledge of the users consulted indicates that blasting would affect goose migration routes and keep the geese away from the area. According to the Cree land users, road traffic and the associated nuisances would also make the goose and moose harvest less successful and impede travel in the area and between the Cree communities.

According to Environment and Climate Change Canada (ECCC), bird scaring with a cannon is effective in the short term, and the mine's blasting operations are likely to have an effect similar to that of a propane- powered bird control cannon. After several days, the geese become accustomed to this type of scaring device. ECCC's view is that in general, mitigation measures to eliminate or restrict sources of disturbance during the goose hunting season are worthwhile, including measures to reduce heavy truck traffic. In ECCC's opinion, such measures may have an impact on the success of Indigenous people's goose hunt, especially in the first few days of the hunting season.

The Cree community of Nemaska also recommended that the number of charter flights transporting the Proponent's employees be reduced during the goose and moose hunting seasons to limit the effects on wildlife. On page 10-30 of the EIS, the Proponent states that [Translation] "infrastructure – airports and their runways – may cause disturbance and even mortality among migrating geese." The Proponent told the JAC that, at the moment, the preferred airport for transporting its employees was the Nemiscau airport, which is located near but outside the community of Nemaska.

In its answer to Question CEAA-129 B, the Proponent states that it plans to "[l]imit the amount of blasting" and "[l]imit traffic on the road" as measures to mitigate the project's effects during the two hunting seasons. The JAC notes that the Proponent does not specify the extent to which it will limit its activities, and it is consequently difficult for the JAC to draw any conclusions about the significance of the project's residual effects on the "Land and Resource Use for Traditional Purposes" valued component. In the clarification of its answer to Question CEAA-129, the Proponent indicates that, for economic and logistical reasons, it does not plan to suspend blasting or road transportation during the two hunting seasons.

On the basis of its preliminary analysis, the JAC believes that, even after the implementation of blasting and transportation restrictions proposed by the Proponent to date (about which very few details have been provided so far), the project may have significant residual cumulative effects[43] on current land and resource use for traditional purposes by the Cree community of Nemaska. The project will cause nuisances that, when combined with the nuisances created by another, nearby mining project, may be substantial with respect to access to and experience of the land and its

[43] Under subsection 52(1) of CEAA 2012, the Minister of the Environment (the Minister) must decide if, taking into account the implementation of any mitigation measures that the Minister considers appropriate, the project is likely to cause significant adverse environmental effects referred to in section 5. If the Minister decides that the project is likely to cause significant adverse environmental effects, subsection 52(2) requires that the project be referred to the Governor in Council, who will determine whether those effects are justified in the circumstances. The Agency's Operational Policy Statement entitled "Determining Whether a Designated Project is Likely to Cause Significant Adverse Environmental Effects under CEAA 2012" (available at *https://www.canada.ca/en/impact-assessment- agency/services/policy-guidance/determining-whether-designated-project-is-likely-cause-significant-adverse- environmental-effects-under-ceaa-2012.html*) provides a framework to help the Proponent and the Agency determine the significance.

resources during the two valued hunting seasons. Additional measures, or clarifications regarding the measures previously proposed by the Proponent, could help to mitigate the residual effects on this valued component.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT):

A) *Quantify the blasting and road transportation restrictions it plans to implement during the goose and moose hunting seasons. The Proponent must state in numerical terms how blasting and truck trips (or transportation and supply-related transportation) will differ between the two hunting seasons and periods of regular operations. The Proponent is encouraged to present the information in a comparative table.*

ANSWER

Frequency of blasting and road transportation during the hunting period as compared to during regular operations are shown in the Table below. An effort will be made to limit the frequency of blasting and road transportation during the hunting period, especially during the fist few days.

Tableau 78: Frequency of blasting and road transportation

	Regular operations quantity/week	Hunting period quantity/week
Blasting	7	3
Trucks	308	100

B) Specify how it intends to address the Cree's concern about the potential effects of its charter flights on the volume of moose and geese on the Nemaska community's traplines.

ANSWER

During the exploitation phase, it is anticipated that there will be on average 5 chartered flights per week. These flights will be for employees arriving from outside the region. The number of flights will be difficult to reduce during the hunting season. Flights will usually be spread over 3 days.

CCE 79 Changes in the behaviour of species valued by the Cree

REFERENCES

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Predicted effects on valued components – Indigenous peoples) and 9.2 (Potential or established Aboriginal and Treaty rights and related interests).

WSP (December 2019). Rose Lithium-Tantalum Project. Answers to the Questions and Comments Received from the CEAA. Report prepared for Critical Elements Lithium Corporation. Answers to Question CEAA-130.

BACKGROUND

During the JAC's consultations, the Cree communities expressed concern about the effects that the project may have on the behaviour of species valued by the Cree. The Waskaganish and Eastmain communities said they were worried about the effects that increased road traffic would have on the behaviour of the beavers that are often seen along the roads. The Nemaska community indicated

that it would like to know what effects increased road traffic would have on the behaviour of caribou, muskrat, hare and partridge, including the potential avoidance response by those species.

In its answer to Question CEAA-130, the Proponent provides information about the behavioural changes observed in a number of mammal species valued by the Cree in connection with other mining projects. The Proponent does not mention the behavioural changes observed in caribou, muskrat, hare and partridge. The table also contains no information about the effects of road traffic on the behaviour of those species.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT):

Include in the table provided in the answer to Question CEAA-130 the behavioural changes observed in connection with a mining project and the associated increase in road traffic, for woodland and migratory caribou, beaver, muskrat, hare and partridge.

ANSWER

Species	Observed behaviors
Moose	The presence of a mining project has no impact on moose behavior, which are rather rare in the project study area.
Bear	Bears are attracted to the mine site by the presence of residual materials. It is therefore necessary that the waste containers are fenced in and have bear-proof covers. There will also cages for capturing. On other mining projects, the bears were captured and relocated using cages installed on the site. Several bears were also killed on and near the territory by Cree hunters.
Woodland and Migratory Caribou	Caribou (forest and migrant) are rare in the study area of the project. It should be noted that on another mining project, an injured caribou was shot by a Cree hunter. The increase in road trafic could cause avoidance of the area in proximity to roads.
Beaver	No changes in beaver behavior were observed.
Wolf	The wolf is attracted to the mine site by the presence of residual materials on the site and other prey that are also attracted. It is therefore necessary that the waste containers are fenced in. There will also cages for capturing. On other mining projects, a wolf was captured and relocated using a cage installed on the site. A wolf was shot for safety reasons. A cage had been installed to capture him in vain.
Fox	The fox is attracted to the mine site by the presence of residual materials on the site. It is therefore necessary that the waste containers are fenced in. There will also cages for capturing. On other mining projects, a red fox was found dead, drowned in the pool of clarified waters of the waste rock pile.
Muskrat	No changes in muskrat behavior were observed.
Hare	The hare is attracted to the mine site due to the presence of young sprouts and new vegetation.
Partridge	No changes in partridge behavior were observed.

CCE 80 Cumulative effects on the Nemaska community's use of caribou for traditional purposes

REFERENCES

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Predicted effects on valued components – Indigenous peoples) and 9.2 (Potential or established Aboriginal and Treaty rights and related interests).

WSP (December 2019). Rose Lithium-Tantalum Project. Answers to the Questions and Comments Received from the CEAA. Report prepared for Critical Elements Lithium Corporation. Answers to Question CEAA-132.

WSP (February 2020). Rose Lithium-Tantalum Project. Answers to the Non-compliance of the First Request of Information from the IAAC. Report prepared for Critical Elements Lithium Corporation. Answer to Question CEAA-132.

BACKGROUND

During the JAC's consultations, the Cree community of Waskaganish noted that caribou were very sensitive to changes in the environment, especially noise. The Cree community of Eastmain expressed concern about the caribou and the project's impact on their food. The Cree community of Nemaska said it was worried about the effects that the project could have on caribou and their already reduced use of the study area, about the quality of the remaining habitats, about the effects of blasting, and about the effects of mine transportation activities on this valued species.

In its answer to Question CEAA-132, the Proponent concludes that there is no need to follow up with Cree users on the caribou harvest, since the mitigation measures and "mechanisms put in place in the context of the Impacts and Benefits Agreement" (IBA) will limit the effects on caribou. The Proponent does not explain exactly what it is referring to.

To determine the significance of the project's residual cumulative effects on land and resource use for traditional purposes, the JAC believes that it needs to know about all of the mitigation, compensation and accommodation measures that will be implemented to reduce the cumulative effects on the traditional use of the land, even if those measures or agreements are included in the "Impacts and Benefits Agreement."

In the same answer, the Proponent reiterates its commitment to implement an action plan if a caribou is observed near the mine. The JAC notes that that action plan does not include participation by the Cree tallymen. It is unclear whether the Proponent plans to keep a record of caribou sightings near the mine site and what authorities or persons would be notified, if any.

The JAC notes that no concrete measures have been proposed, at this point in the planning process, to mitigate the effects on the use of this species, which is highly valued by the Cree. No measures concerning monitoring or depredation programs administered by a Cree party have been proposed.

The JAC is of the opinion that, even after additional mitigation measures are implemented, the project may have residual cumulative effects on the current use of caribou for traditional purposes that will be felt more intensely by the Cree community of Nemaska.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT):

A) *Describe the measures and mechanisms, including those specified in the Impacts and Benefits Agreement, that relate to mitigation of the project's effects on woodland and migratory caribou.*

ANSWER

No mitigation measure regarding the mitigation of the project's effects on forest and migratory caribou is mentioned in the Impact and Benefit Agreement, however all the mitigation measures for forest and migratory caribou can be found in Table 13-3, the updated version of which can be found in Appendix CCE-80.

B) Specify whether there are plans to keep a record of caribou sightings made by workers and land users near the mine site and the roads used, and if applicable, describe how it would work. If there are no plans to do so, provide an explanation for that decision.

ANSWER

The company's environment department et monitoring committee will be responsible for regular follow-ups at the mine site. During these follow-ups, they will note caribou observations. Furthermore, if an employee or territory user observes a caribou, they will be able to warn the environmental department.

The environmental committee (established by the IBA) will be involved in the process. The woodland and migratory caribou will always be a topic of discussion during meetings between the monitoring committee and the environmental committee. Since the environmental committee represents the interests of community members and the territory users, they will be able to collect all information concerning observations of caribou or any other concerns on this subject from the members they represent. In order to integrate Cree knowledge to the caribou follow-up programs, the monitoring committee and the environmental committee will have the opportunity to discuss the possibility of adding mitigation measures if needed.

CCE 81 Use of the land by non-Indigenous people, and pressure on wildlife resources

REFERENCES

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 10.1.3 (Predicted effects on valued components – Indigenous peoples) and 9.2 (Potential or established Aboriginal and Treaty rights and related interests).

WSP (February 2019). Rose Lithium-Tantalum Project. Update of the Environmental Impact Statement. Report prepared for Critical Elements Lithium Corporation. Sections 3.5.9 (Guardhouse and administrative buildings) and 8.3.5 (Likely environmental effects), pages 3-27 and 8-57.

WSP (December 2019). Rose Lithium-Tantalum Project. Answers to the Questions and Comments Received from the CEAA. Report prepared for Critical Elements Lithium Corporation. Answer to Question CEAA-133.

BACKGROUND

The JAC held consultations on the EIS with the Cree communities of Waskaganish, Eastmain and Nemaska in October and December 2019 and January 2020. During the JAC's consultations, the Cree communities stated a variety of concerns about the influx of non-Indigenous workers and asked what concrete measures would be taken to restrict, control or inform the use of wildlife and fish resources by employees.

In its answer to Question CEAA-133, the Proponent states the following: "Employees will be required to sign an agreement on these [hunting and fishing] prohibitions as a clause in their

contract. When this directive is not followed, the employee may be subject to disciplinary action." The Proponent also points out the following: "Hunting and trapping are prohibited for employees, this will be ensured by the prohibition of [...] firearms and other weapons [IBA, section 5.4.6]. [...] Similarly, other fishing and hunting equipment will be prohibited at the mine site and the worker camp." The Proponent does not specify whether it will check for firearms being transported on its charter flights. In section 3.5.9 of the EIS, the Proponent states that there will be a guard post on the mine's access road to control entry to the site. The Proponent provides no information about how it plans to prevent employees travelling to the mine site by road from bringing firearms with them.

On page 8-57 of the EIS, the Proponent states that non-Indigenous workers will be educated on the traditional activities of Cree users of the land and on the role of the tallymen as managers of the land and resources. The JAC notes that the Proponent does not appear to include the possibility of informing its employees about the various permits required if they want to hunt or fish on Category III land during their two weeks off, during annual vacation, or when they are no longer employed by the Proponent, for example. This might provide them with information on what constitutes poaching in this area.

The Joint Assessment Committee requests that CEC (the Proponent) :

A) *Indicate how it plans to check for firearms and trapping and fishing equipment aboard its chartered aircraft, at the guard post at the entrance to the mine site, and at the workers' camp during the construction and operation phases.*

ANSWER

CEC commits to conduct random searches when employees arrive on the workers' camp site in order to ensure that no employee has in their possession firearms and/or trapping equipment and/or fishing equipment.

B) *Indicate whether there are plans to inform its employees about the permits required to hunt or fish on Category III land, the Category III land regulations (such as the Cree's exclusive rights to certain species) and existing hunting and fishing outfitters in the James Bay area when they no longer have an employment relationship with the Proponent, for example during break periods.*

ANSWER

CEC will include information concerning permits required for practicing all hunting and fishing activities on Category III lands, of regulations (for example exclusivity rights concerning certain species for Cree hunters in Category III lands, and existing outfitters providing these services on the James Bay territory during the new employee sessions and again during awareness sessions.

Comment 1 Educating employees on the Cree way of using the land

REFERENCES

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Section 9.2 (Potential or established Aboriginal and Treaty rights and related interests).

WSP (February 2019). Rose Lithium-Tantalum Project. Update of the Environmental Impact Statement. Report prepared for Critical Elements Lithium Corporation. Section 4.2.6 (Concerns and expectations of Indigenous communities), page 4-12.

COMMENTS AND ADVICE

On page 4-12 of its EIS, the Proponent states that measures will be taken to educate the mine's non-Cree workers on Cree culture and the land users' practices with a view to helping the two cultural realities coexist more harmoniously.

During the JAC's consultations, the communities consulted proposed a number of activities or measures that could be implemented to promote better relations between the mine workers and the Cree communities. The JAC would like to emphasize the importance of implementing an education program designed by Cree leaders. The members of the neighbouring communities are in the best position to develop a holistic program to help workers understand the Cree culture.

Comment 2 Waste management and capture of bears to minimize the risk of caribou predation

REFERENCES

WSP (February 2019). Rose Lithium-Tantalum Project. Update of the Environmental Impact Statement. Report prepared for Critical Elements Lithium Corporation. Section 3.8.1 (Domestic solid waste).

WSP (December 2019). Rose Lithium-Tantalum Project. Answers to the Questions and Comments Received from the CEAA. Report prepared for Critical Elements Lithium Corporation. Answers to Question CEAA-130.

COMMENTS AND ADVICE

In section 3.8.1 (Domestic solid waste) of the EIS, the Proponent indicates that domestic solid waste will be sorted at the source to separate recyclable materials from compostable materials. Non-recyclable domestic waste will be stored in animal-proof containers and will be transported to Chibougamau's landfill for disposal.

In its answer to Question 130 A of Information Request No. 1, the Proponent indicates that it plans to install a safety fence and bear-proof containers. In its answer to Question 130 B, the Proponent states that cages will be put in place to capture and relocate bears and wolves that approach the site.

The JAC would like to point out that this type of wildlife capture and relocation operation must comply with existing regulations and that all necessary permits must be obtained before such operations are carried out.

NATURAL AND CULTURAL HERITAGE

CCE 82 Natural and cultural heritage and Cree culture

REFERENCES

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Section 9.2 (Potential or established Aboriginal and Treaty rights and related interests).

BACKGROUND

During the JAC's consultations, representatives of the Eastmain Band Council recommended that the Proponent organize, in conjunction with the Cree community of Eastmain, a ceremony on the future mine site, attended by community members, to honour and recognize Mother Nature and its

components that will be adversely affected by the project. The community stressed that this event should be held before construction begins.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT):

Indicate whether any actions are planned to organize a ceremony recognizing Mother Nature in conjunction with the Eastmain community. If not, explain.

ANSWER

CEC commits to organizing a ceremony recognizing Mother Nature in collaboration with the community of Eastmain if they would like.

CUMULATIVE EFFECTS

CCE 83 Cumulative effects on the Nemaska community's well-being – Utilization of Nemaska's health care services

REFERENCES

CEAA (August 2016). *Supplementary information to the final guidelines for the Rose Mining Project.* Section (Potential or established Aboriginal and Treaty rights and related interests).

WSP (February 2019). Rose Lithium-Tantalum Project. *Update of the Environmental Impact Statement.* Report prepared for Critical Elements Lithium Corporation. Sections 3 (Project Description), 4.2.3 (Meetings with socio-economic stakeholders), 10.5 (Spatial and temporal boundaries) and 11.2.5.1 (Open pit), pages *3-2, 4-3, 4-4, and 11-18.*

WSP (December 2019). Rose Lithium-Tantalum Project. Answers to the Questions and Comments Received from the CEAA. Report prepared for Critical Elements Lithium Corporation. Answers to Question CEAA-139.

BACKGROUND

During the JAC's consultations, the Cree community of Nemaska stated a concern about the pressure that another camp of 400 workers might exert on the community's health system, as Nemaska is the closest community to the proposed mine site and already provides services to other mining companies and Hydro- Québec. Some of the people consulted who work in the community's health and social services area decried the fact that there had been no recent meetings between the Proponent and the Nemaska community's health authorities to assess the project's potential effects on current service delivery in the community or prepare a work plan. The community indicated that it had no idea of the Proponent's future needs, whereas other proponents were working actively with the community to set up their own health care units.

The community also pointed out that its medical and nursing staff had no information about the role they might have to play in the event of a major accident or disaster on the mine site. The community indicated that it was expecting the Proponent to provide information about its medical needs in the event of a major accident and that emergency preparedness exercises would have to be held with the community before the project begins.

The community also mentioned that the physical examinations required by mining proponents for prospective employees were often an employment barrier because most Cree communities do not have a permanent physician and already have long waiting lists of priority cases.

On page 4-4 of the EIS, the Proponent indicated that it had met with representatives of the

Nemaska Wellness Centre and the Cree Board of Health and Social Services of James Bay (CBHSSJB) in April 2012 and with representatives of the Community Miyupimaatsiiun Centre in December 2018 to discuss the project. On page 3-2 of the EIS, the Proponent states that the mine's facilities include an infirmary. On page 11-18 of the EIS, the Proponent states that there will be a nurse in the infirmary at all times.

In section 10.5 of the EIS, the Proponent concludes that the Rose Mining Project may generate an additional workload, mainly in the community of Nemaska, but the resulting adverse effects are not expected to have a significant impact on the "Community Well-being and Human Health" VC compared with all of the actions on that VC.

The JAC notes that the Nemaska community's health services feel that, from the beginning of the project's planning phase, they have not been kept properly informed of future needs and the type of cooperation that might be developed with the Proponent in order to limit the project's cumulative effects on the well-being of the Nemaska community, which has already been approached by other proponents and has limited resources in a remote area.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT):

A) *Specify what steps it plans to take with representatives of the Nemaska community's health and social services area to address their concerns and inform them of its medical needs in the project's planning phase. The Proponent is encouraged to hold discussions to clarify its medical needs and agree on future cooperation arrangements to reduce the project's effects on health care delivery in the Cree community of Nemaska.*

ANSWER

During a meeting with the Nemaska clinic (December 2018), no formal agreements were made. CEC and the clinic discussed an eventual partnership by which CEC would have a medical team (onsite nurse at the mine and a doctor on call). As such, the clinic would offer their services in the more urgent cases only, for example, if an employee's condition needed to be stabilised before being transferred to a hospital.

Following several attempts, CEC was unable to contact the Nemaska clinic in order to update this information.

B) *Explain how it intends to minimize the project's effects on health care delivery in the Cree community of Nemaska.*

ANSWER

Given that there will be a nurse on site and a doctor on call available to employees, the large majority of medical needs will be handled by CEC's internal medical team. Assistance from the clinic will be required in the case of serious injuries or medical conditions, and simply to stabilize the patient until they can be transferred to a hospital equipped for treatment (Chibougamau hospital).

C) *Indicate how it intends to ensure that the backlog in medical tests does not prevent Cree applicants from getting jobs at the mine.*

ANSWER

The medical testing will not be completed at Nemaska clinic, however, travel and accommodation expenses for Cree candidates who will have to travel will be reimbursed/paid by CEC.

D) Specify whether there are plans to involve Nemaska's health services in its major accident or disaster emergency response plan, and indicate whether emergency preparedness exercises will be held to ensure that the community's health services are properly prepared.

ANSWER

Nemaska's health services will be involved in CEC's emergency response plan and will be invited to participate in the emergency preparedness exercises.

CCE 84 Land and resource use – Cumulative effects on current land and resource use for traditional purposes by the Cree community of Nemaska

REFERENCES

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 9.2 (Potential or established Aboriginal and Treaty rights and related interests) and 12.1.1 (Cumulative environmental effects).

WSP (December 2019). Rose Lithium-Tantalum Project. Answers to the Questions and Comments Received from the CEAA. Report prepared for Critical Elements Lithium Corporation. Answers to Questions CEAA-98 and CEAA-124.

BACKGROUND

During the JAC's consultations, the RE1 trapline tallyman pointed out that the project would have a further impact on the land beyond the impacts caused by hydroelectric development in the area.

The Cree community of Nemaska also expressed concern about the cumulative effects that the project might have on land and resource use for traditional purposes because of the recent development of the Nemaska area and the project's location in relation that of the Whabouchi mine. The community noted that recent projects have limited the number of hunting grounds currently available to young hunters. They were adjusting to the situation by hunting mostly along roads and under hydroelectric transmission lines with hunting corridors.

In its answer to Question CEAA-98, the Proponent describes the Cree communities' views: "In fact, the communities consulted do not see this as a constraint to the exercise of their cultural or traditional activities. The arrival of the project is not incompatible with current or future use in planning and land use. Although the territory was modified with the creation of Hydro-Québec's Eastmain 1 reservoir, the Rose project is not perceived by the Cree as a cumulative impact." The JAC notes that these views are different from the ones expressed by the various groups it consulted.

In its answer to Question CEAA-124, the Proponent maintains that the project will alter but not compromise use of the land. It supports this conclusion with the following statement: "[C]onsidering the mitigation measures, and offset projects and agreements with the Crees, the intensity of the effects on current use of lands and resources is considered moderate [...]. The impacts and benefits agreement, signed in July 2019, included mitigation measures and programs that have been negotiated by the Eastmain community and the Cree Nation Government to ensure that these measures address the concerns."

To determine the significance of the project's residual cumulative effects on land and resource use for traditional purposes, the JAC believes that it needs to know about all of the mitigation, compensation and accommodation measures that will be implemented to reduce the cumulative effects on the traditional use of the land, even if those measures or agreements are included in the Impacts and Benefits Agreement.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT):

A) Describe all mitigation, environmental monitoring, compensation and accommodation measures included in the Impacts and Benefits Agreement or any other relevant agreements that concern mitigation of the project's cumulative effects on land and resource use for traditional purposes by the Cree communities consulted.

ANSWER

All the planned mitigation, environmental monitoring, compensation and accommodation measures that concern the mitigation of the cumulative effects of the project on the use of the territory and resources for traditional purposes can be found in Table 13-4, the updated version of which can be found in Appendix CCE-80.

B) Assess any other mitigation or accommodation measures that could be taken to ensure that the cumulative effects on land and resource use for traditional purposes by the Nemaska community's land users are not significant within the meaning of CEAA 2012.

ANSWER

All the mitigation or accommodation measures deemed necessary based on the present information are already suggested and will be implemented. CEC commits to adjusting and implementing additional mitigation or accommodation measures as needed and at the request of the communities. This will be accomplished via the environmental committee as stipulated by the IBA

Given that the environmental committee represents the interests of community members and of the territory users, it will be able to collect traditional knowledge or preoccupations concerning current land and resource use for traditional purposes from the members it represents. In order to integrate Cree knowledge to the follow-up program on current uses, the follow-up committee and the environmental committee will be able to discuss the possibility of adding additional mitigation measures as required.

CCE 85 Worker housing – Cumulative effects on current land and resource use for traditional purposes by the Cree community of Nemaska

REFERENCES

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 9.2 (Potential or established Aboriginal and Treaty rights and related interests) and 12.1.1 (Cumulative environmental effects).

WSP (December 2019). Rose Lithium-Tantalum Project. Answers to the Questions and Comments Received from the CEAA. Report prepared for Critical Elements Lithium Corporation. Answers to Question CEAA-3.

WSP (February 2020). Rose Lithium-Tantalum Project. Answers to the Non-compliance of the First Request of Information from the IAAC. Report prepared for Critical Elements Lithium Corporation. Answer to Question CEAA-1.

BACKGROUND

During the JAC's consultations, the Cree community of Nemaska recommended that an existing camp be used in order to limit the project's footprint on the land. The community expressed concern about the proximity of the project, which is 38 km away, especially since the Whabouchi mining

project is 40 km southeast of the proposed project. The community noted that recent development projects have limited the number of hunting grounds available to young hunters. The community also indicated that if all of the mining projects currently proposed went ahead, they could bring a large number of non-Indigenous people into the area, which would also contribute to the cumulative effects on land use and the well-being of Nemaska.

In the JAC's opinion, housing the workers in the existing camp 25 km away would have lower potential for cumulative effects on current land and resource use for traditional purposes and would put greater physical distance between the camp for the Proponent's workers and the community of Nemaska, which is feeling the effects of another, nearby worker camp. In its answer to Question CEAA-3, the Proponent does not appear to completely rule out the option of the worker camp 4 km from the mine site.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT):

For each of the two options for the location of the worker camp – the existing camp 25 km from the mine site, and the proposed camp 4 km away – assess the residual effects and the residual cumulative effects based on criteria (e.g., intensity and extent) and the likelihood that they will have significant adverse effects on current land and resource use for traditional purposes. The Proponent is encouraged to focus on the effects on the community of Nemaska.

ANSWER

As specified in answer CEAA-1 of the first information request (Answers to the questions and comments received from CEAA, December 2019), the preferred choice of camp is that of the Eastmain camp. The potential impacts of this camp are discussed in answer CEAA-1c of the request for additional information (Answers to the non-compliance of the first request of information from the IAAC, February 2020).

As this camp already exists and will not be managed by CEC, it will be the camp promoter's responsibility to present a detailed analysis of the impacts of the camp.

CCE 86 Land and resource use – Cumulative effects on current land and resource use for traditional purposes on Nemaska trapline R16

REFERENCES

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Sections 9.2 (Potential or established Aboriginal and Treaty rights and related interests) and 12.1.1 (Cumulative environmental effects).

WSP (February 2019). Rose Lithium-Tantalum Project. Update of the Environmental Impact Statement. Report prepared for Critical Elements Lithium Corporation. Section 10.8 (Conclusion of the cumulative effects assessment), page 10-55.

WSP (February 2020). Rose Lithium-Tantalum Project. Answers to the Non-compliance of the First Request of Information from the IAAC. Report prepared for Critical Elements Lithium Corporation. Answer to Question CEAA-122.

BACKGROUND

During the JAC's consultations, the tallyman of trapline R16 (Nemaska) indicated that his family was already feeling the effects of multiple sources of disturbance interfering with his traditional activities. He pointed out that the village of the community of Nemaska is on this trapline, as are Hydro-Québec's Nemiscau airport and two Hydro-Québec electrical substations, in addition to

some traditional activity exclusion zones. He also noted that the Route du Nord and the Nemiscau-Eastmain-1 road go through the southern part of the trapline.

In section 10.8 of the EIS, the Proponent concludes that its analysis does not indicate the need for additional mitigation measures to limit the effects on current use, since [Translation] "the project will have only non- significant cumulative effects on the Cree communities of Eastmain and Nemaska." On page 10-55 of the EIS, the Proponent states that, for now, the cumulative effect on land and resource use is limited to the families that use traplines RE1 and R19 and have various camps along the Nemiscau-Eastmain road.

The map of trapline R16, which the Proponent provided to the JAC in confidence in the clarification of its response to Question CEAA-122, shows the baseline conditions for practising traditional activities. The JAC notes that the tallyman of trapline R16 may feel some residual cumulative effects of the project on his current land and resource use for traditional purposes, and that there are no plans for him to participate in the follow-up program on traditional use of the land.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT):

Assess the possibility of inviting the R16 trapline tallyman to participate in the follow-up program on traditional land use.

ANSWER

CEC commits to inviting the tallyman of trapline R16 of Nemaska to participate in the follow-up program on traditional land use.

ACCIDENTS AND MALFUNCTIONS

CCE 87 Nemaska's first responders and accident and malfunction response time in the James Bay area

REFERENCES

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Assessment. Part II, section 7.1.2. (Effects of possible accidents or malfunctions).

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Section 9.2 (Potential or established Aboriginal and Treaty rights and related interests).

WSP (February 2019). Rose Lithium-Tantalum Project. Update of the Environmental Impact Statement. Report prepared for Critical Elements Lithium Corporation. Section 4.2.3 (Meetings with socio-economic stakeholders), page 4-4.

WSP (December 2019). Rose Lithium-Tantalum Project. Answers to the Questions and Comments Received from the CEAA. Report prepared for Critical Elements Lithium Corporation. Answer to Question CEAA-148.

BACKGROUND

During the JAC's consultations in the Cree community of Nemaska, the community recommended that the Proponent keep Nemaska's first responders properly informed and hold fire simulation exercises with the responders before the project begins, to reassure the community. In its answer to Question CEAA-148, the Proponent indicates that Nemaska's police and fire services may be asked to play a role in a number of accidents or emergency situations, but that "it is too early in the process and an agreement is not yet reached with these two organizations." On page 4-4 of the

EIS, the Proponent states that it met with the Nemaska Police Service once in June 2012. It appears that the Proponent did not meet with or provide information to any representatives of the Fire Service.

In its answer to Question CEAA-148, the Proponent states that it is committed to presenting the emergency plan to community band councils. The JAC notes, however, that Nemaska's first responders do not appear to have been informed of the details of their involvement in the mine's emergency plan.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT):

A) *Describe the steps that it plans to take to inform the Nemaska community's first responders (Police Service and Fire Service) of their possible involvement in the emergency plan.*

ANSWER

CEC commits to consulting the first responders of the community of Nemaska concerning the emergency plan and to evaluate the possibility of their participation.

B) *Assess the possibility of holding emergency simulation exercises with Nemaska's first responders to reassure the residents.*

ANSWER

CEC commits to invite the first responders of Nemaska to participate in emergency simulation exercises.

CCE 88 Major accident and malfunction response time in the James Bay area

REFERENCES

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Section 9.2 (Potential or established Aboriginal and Treaty rights and related interests).

WSP (December 2019). Rose Lithium-Tantalum Project. Answers to the Questions and Comments Received from the CEAA. Report prepared for Critical Elements Lithium Corporation. Answers to Question CEAA-148.

BACKGROUND

In the winter of 2019, the Cree community of Waskaganish expressed its doubts and concerns regarding the Proponent's technical capability to contain a major accident or malfunction at the water treatment plant and in its effluent in Stream A within 12 hours, in view of the distances and the resources available in the James Bay area.

In its answer to Question CEAA-148, the Proponent estimated that it would take one to two hours to contain an accident or malfunction. The Proponent does not specify what type of accident or malfunction or how serious an accident or malfunction it is referring to. The Proponent does not explain how it would be able to respond in less than two hours in the James Bay area.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT):

Explain the factors (e.g., the procedure(s)) that support a response time of no more than two hours in the event of a major accident or malfunction in the James Bay area to address the Cree communities' concerns. The Proponent is encouraged to provide examples or references from

other proponents active in the same region, if applicable.

ANSWER

The final effluents must meet criteria provided by the MELCC (pH, turbidity, etc). The data will be taken continually in an automated fashion and as soon as there is a value exceeding its limit, an alert will ring and the water will be recirculated until the situation is rectified. No water is discharged into the effluent until the situation is rectified.

In the case of a spill from a truck outside the basin and in rainy conditions, the spill could run off towards a stream. The truck driver will be responsible for using the spill kit provided in all trucks. Furthermore, the environmental team will be immediately informed and will go to the spill site within minutes. It will be possible for the team to be at the spill site quickly as they will already be on the mine site. Communication will be quick and efficient as all employees will be in possession of radios. This type of spill will be dealt with within a delay of an hour or two maximum.

CCE 89 Compensation in the event of accidental spills

REFERENCES

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Section 9.2 (Potential or established Aboriginal and Treaty rights and related interests).

BACKGROUND

During the JAC's consultations, some members of the Cree community of Waskaganish raised an issue with respect to compensation in the event of a spill. The mine's main environmental effect for this community would be on the watercourses and bodies of water on the traplines connected to the mining site. Accidental contamination of or a spill into one of those watercourses or bodies of water could have a significant effect on their ecosystems. There is no indication in the EIS whether there are plans for compensation in the event of a spill or contamination of the water on the Waskaganish community's traplines.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT):

Specify whether there are plans for compensation in the event of a spill or accidental contamination of the watercourses or bodies of water.

ANSWER

CEC does not plan on providing compensation in the event of a spill or accidental contamination but rather focuses on prevention and quick intervention as well as restauration of the site in the case of a spill.

INEQUITY OF IMPACTS

CCE 90 Socio-economic effects on the Cree

REFERENCES

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Section 9.2 (Potential or established Aboriginal and Treaty rights and related interests).

WSP (February 2020). Rose Lithium-Tantalum Project. Answers to the Non-compliance of the First Request of Information from the IAAC. Report prepared for Critical Elements Lithium Corporation.

Answers to Question CEAA-140.

BACKGROUND

During the JAC's consultation with the representative of the women of the Cree community of Eastmain, the latter recommended the establishment of informal support groups to break the isolation and promote retention of Cree employees (sewing, traditional cooking, etc.).

In the clarification of its response to Question CEAA-140, the Proponent states that it will support "the efforts of the Eastmain community to put in place support programs for women." There is no indication of what support program(s) the Proponent is referring to for mitigating the project's potential effects on women.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT):

Specify what support programs for women it is referring to in its mitigation measures to minimize the project's effects on women, and what types of support are planned, and indicate whether those programs are for Cree women who would be employed by the company and/or women from the community in general.

ANSWER

CEC will put in place program sin collaboration with the community of Eastmain and, as mentioned in comment 1 concerning raising awareness amongst employees, the most holistic approach is to put in place programs conceived by Cree leaders. These programs will be offered to women in the communities and Cree women hired by the company. It should be noted that employees will also benefit form and employee assistance program.

CCE 91 Training of Cree workers

REFERENCES

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Section 9.2. (Potential or established Aboriginal and Treaty rights and related interests).

WSP (December 2019). Rose Lithium-Tantalum Project. Answers to the Questions and Comments Received from the CEAA. Report prepared for Critical Elements Lithium Corporation. Answers to Questions CEAA-140 and CEAA-146.

BACKGROUND

During the JAC's consultations, the issue of training to facilitate Cree access to employment was raised multiple times. The communities said that they did not know what types of training are required and expressed concern that the training would not be available in time for Cree workers to take advantage of the jobs created by the project and that the training would not be accessible in the communities that may feel the project's effects.

In its answer to Question CEAA-146, the Proponent indicates that it is in communication with Apatisiiwin Skills Development (ASD) (formerly Cree Human Resource Development) and the James Bay training centres to ensure that the necessary training will be available. There is no indication of what steps are being taken for which types of training, or when and where the training will be available to address the Cree communities' concerns.

In its answer to Question CEAA-140, the Proponent makes the following commitment to minimize the project's effects on Cree women: "CEC is committed to implement support programs in communities that could contribute to the work-family balance, such as training programs for social workers and childcare workers." In its answer to Question CEAA-146, the Proponent states the following: "To ensure that communities have the necessary resources, training programs, such as social workers and childcare services, will be offered in communities. This will make available new jobs in communities."

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT):

A) Specify what training was discussed in the talks with the James Bay training centres. The Proponent is encouraged to state when the arrangements for training will be completed and where the training is expected to be delivered, as applicable.

ANSWER

During discussions with the James Bay training center and the Cree Human Resources Development (CHRD), the training was discussed in general, including health and safety training, training with virtual reality simulation for mining machines, training on mining. ore, ore processing training, etc. The possibility of creating tailor-made training courses was also discussed. The training will begin when the permits are obtained and the construction begins.

B) Provide clarification on the proposed measure for mitigating the project's effects on women through training in social work and childcare services, indicating in particular whether those jobs will be at the mine and/or in the Eastmain community. The Proponent must indicate whether the creation of a childcare service is planned as part of the project.

ANSWER

Training for social workers and daycare workers will be offered in collaboration with the community of Eastmain and upon request. These jobs would be jobs in the community. Given the isolation of the mine site, it would not be advisable to have a guard service near the mine site or even near the workers' camp. Fly-in / fly-out travel and lack of access to a school are just a few reasons why this option is not recommended.

CCE 92 Dissemination and accessibility of environmental follow-up reports to the non- Indigenous public

REFERENCES

CEAA (December 2012). Guidelines for Preparing an Environmental Impact Assessment. Part II, section 16 (Follow-up Program and Environmental Management Plan).

WSP (December 2019). Rose Lithium-Tantalum Project. Answers to the Questions and Comments Received from the CEAA. Report prepared for Critical Elements Lithium Corporation. Answers to Question CEAA-147.

BACKGROUND

In its answer to Question CEAA 147 B, the Proponent does not specify whether it plans to post environmental follow-up reports on its website so that they will be available to the non-Indigenous public in every phase of the project. The JAC notes that this would address a concern raised by the non-Indigenous public.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT):

Indicate how it intends to make its environmental follow-up reports available to the non-Indigenous public, assessing in particular the possibility of posting all environmental follow-up reports on the company's website.

ANSWER

The reports will be available upon request given the considerable volume of reports generated.

CCE 93 Translation into Cree

REFERENCES

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Section 9.2 (Potential or established Aboriginal and Treaty rights and related interests).

WSP (December 2019). Rose Lithium-Tantalum Project. Answers to the Questions and Comments Received from the CEAA. Report prepared for Critical Elements Lithium Corporation. Answers to Questions CEAA-130 and CEAA-146.

BACKGROUND

During the JAC's consultations in the Cree communities of Waskaganish and Nemaska, the issue of the importance of having a summary of the predicted environmental impacts in each phase of the project and the Proponent's promotional materials translated into Cree was raised.

In its answer to Question CEAA-146, the Proponent states that it is committed to translating a promotional video and a presentation on the project into Cree so that they can be posted on the Cree Nation's Facebook page.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT):

Indicate what documents it plans to translate into Cree in the future, and specify whether it plans to provide a summary of the project's environmental effects in Cree. The Proponent is encouraged to translate the final table of observed effects on the behavior of species valued by the Cree, as requested in Question CEAA-79.

ANSWER

CEC commits to translating the presentation and the video which are shown in the communities, the summary of the environmental impacts, and the final table of impacts observed on the behavior of valued species.

CCE 94 Control of marijuana use on the mine site

REFERENCES

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Section 9.2 (Potential or established Aboriginal and Treaty rights and related interests).

WSP (December 2019). Rose Lithium-Tantalum Project. Answers to the Questions and Comments Received from the CEAA. Report prepared for Critical Elements Lithium Corporation. Answers to Question CEAA-146.

BACKGROUND

During the JAC's consultations in the Cree community of Eastmain, a concern was expressed about what the Proponent would do to control workers' use of marijuana. During the public information session, the Proponent indicated that an answer might be provided later to address the Cree's concern.

In its answer to Question CEAA-146, the Proponent indicates that drinking alcohol will be prohibited at the mining camp. The Proponent does not specify whether the use of marijuana will be permitted on the mine site. Under the federal Cannabis Act, an employer may, by managerial right, restrict the use of cannabis or even prohibit it entirely.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT):

Specify how it plans to control marijuana use by employees on the mine site and at the worker camp.

ANSWER

Given that it will be a dry camp, the consumption of marijuana on the mining site and at the workers' camp will be forbidden.

CCE 95 Sexual harassment

REFERENCES

CEAA (August 2016). Supplementary information to the final guidelines for the Rose Mining Project. Section 9.2 (Potential or established Aboriginal and Treaty rights and related interests).

WSP (February 2020). Rose Lithium-Tantalum Project. Answers to the Non-compliance of the First Request of Information from the IAAC. Report prepared for Critical Elements Lithium Corporation. Answer to Question CEAA-140.

BACKGROUND

During the JAC's consultation with the representative of the women of the Eastmain community, the latter expressed concern regarding the presence of a large group of males in a remote area and the potential effects on sexual harassment that women frequenting the area might experience. The representative also indicated that women from the community could assist in developing and delivering sexual harassment workshops for mine employees if that option is accepted by the Proponent.

In the clarification of its response to Question CEAA-140, the Proponent states the following: "On the negative side, the project will cause a larger male population to be in proximity of the communities and one of the main preoccupations discussed during consultations, is the risk that this could pose for women in the communities. Likewise, preoccupations concerning increased use of alcohol and drugs exacerbate the situation. In order to address these preoccupations, CEC will [create] a safe environment for women employees whereby sexual harassment is not tolerated." The Proponent does not explain what measures will be taken to achieve that goal.

THE JOINT ASSESSMENT COMMITTEE REQUESTS THAT CEC (THE PROPONENT):

A) *Specify whether the work contracts of the Proponent's employees and contractors/subcontractors will contain provisions regarding zero tolerance for any form of harassment, especially of women. If there are no plans for such provisions, provide an*

explanation for that decision.

B) *Indicate whether any other measures will be implemented to educate workers with regard to sexual harassment and whether that education will be mandatory.*

C) *Indicate whether there will be any follow-up if sexual harassment occurs, and specify whether any of the project's follow-up programs will address the issue.*

ANSWER

CEC commits to implementing a clause in employee contracts concerning all forms of harassment, to provide mandatory awareness sessions to all employees concerning sexual harassment, and to follow up on all cases of harassment reported to the human resources department according to best practices.

COMMENTS AND ADVICE

The JAC encourages the Proponent to hold discussions with women from the Eastmain community and with the Cree Women of Eeyou Istchee Association to find out if they are interested in participating in the Proponent's initiatives to minimize the project's potential effects on women.

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