April 17, 2020

Kassandra DeFrancis
Regulatory Manager
Wek’èezhìi Land and Water Board
#1-4905 48th Street
Yellowknife, NT
X1A 3S3

Dear Ms. DeFrancis,

Re: Diavik Diamond Mines (2012) Inc. (DDMI)
Water Licence Amendment Application – W2015L2-0001
A21 Underground Amendment - Request for Intervention

On November 8, 2019, Diavik Diamond Mines (2012) Inc. (DDMI) submitted an amendment application to the Wek’èezhìi Land and Water Board (WLWB). This application proposes the Board amend Water Licence W2015L2-0001 to allow for underground mining of the A21 kimberlite pipe. The Government of the Northwest Territories – Department of Environment and Natural Resources (ENR) provided initial comments on this application on December 19, 2019 and responses were provided by DDMI on January 9, 2020. ENR also participated in a Technical Session on March 3, 2020, with its technical consultant Zajdlik and Associates Inc. (Zajdlik), where no Information Requests were recorded by the Board.

The general rationalization for the Water Licence amendment by DDMI is that there will be no change in the total mine footprint; the process plant design capacity will not be exceeded; the additional amount of waste rock deposited to the south waste rock pile is within design capacity; the additional amount of processed kimberlite was considered in the recent Processed Kimberlite to Mine Working proposal; and the increased wastewater discharge is within the capacity of the water management system. ENR has reviewed the information submitted by DDMI and other parties and has summarized our issues and concerns below.

Groundwater Quality

In previous ENR comments on the application, ENR noted that there appeared to be limited information regarding the groundwater data provided by DDMI that underpin the water quality modeling conclusions reached by the company. ENR had requested that additional data during review of 2019 application and subsequent engagement with the company in 2020. ENR's concern was that the limited data
used for inputs to the model presented unreliable conclusions based on non-conservative assumptions. DDMI provided the data and responses to ENR’s information requests; ENR received the last piece of information on April 9, 2020. As part of ENR’s review, there is one outstanding concern and subsequent recommendation by ENR regarding the water quality predictions presented by DDMI.

The DDMI proposal to move to underground mining in the A21 pit was reviewed from the perspective of potential impacts on water quality in Lac de Gras. Two lines of evidence for the lack of water quality effects in Lac de Gras have been provided by DDMI. The first relates to the input of additional phosphorous to Lac de Gras. Additional evidence provided to ENR following a teleconference (April 7, 2020) uses the 75th percentile of 232 phosphorous measurements from 1645-75B (A154/A418 dewatering) to make predictions. The predictions show that total loads of phosphorus are within historical ranges and well below the annual total phosphorus loading water licence limit. The conclusion assumes that the groundwater data from 1645-75B (A154/A418 dewatering) represents groundwater below the A21 pit.

Predictions for other water quality measurements are based on total dissolved solids (TDS) because of the assumption that other dissolved ion concentrations are correlated or co-vary with TDS. That assumption has not been tested for groundwater quality measurements. The assumption is almost certainly correct for major constituents of TDS but may not be correct for all constituents. The conclusion that TDS loadings will only increase by 2-8% is based on a concentration estimated from five measurements of water quality collected from Well 19 (close to the bottom of the A21 pit) in 2019. Three of these samples were collected in July, one was collected in May and another in early August. These measurements, collected in a short-time period within a year, do not consider observed seasonal changes in groundwater TDS at the Diavik site. The TDS measurements used also do not consider that TDS concentrations have been increasing over time in the other deep groundwater well (1645-75B) at the Diavik site.

It is ENR’s opinion that the conclusions reached by DDMI regarding a lack of water quality impacts on Lac de Gras would be strengthened if:

1) additional data were collected from below the A21 pit;
2) the seasonality in groundwater quality was considered;
3) the similarity of groundwater quality below the A21 pit and between the A419 and A154 pits was demonstrated; and,
4) consideration was given to the changes observed in TDS groundwater concentrations in recent years in the other deep groundwater well (1645-75B) at the Diavik site.
ENR's uncertainty of the conclusions would be resolved if DDMI continues to collect samples below the A21 pit and provide the aforementioned information to reviewers to ensure water quality predictions are valid or within the capacity of the site’s water treatment capabilities.

Recommendation:

ENR recommends DDMI commit to collecting more groundwater quality samples below the A21 pit. These samples should be analyzed to confirm current water quality predictions that ultimately report to Lac de Gras. If predictions or trends of water quality by DDMI start exceeding the current worst-case scenario presented, DDMI should provide further evidence demonstrating that there will be no additional impacts to the receiving environment (i.e., Lac de Gras) or propose mitigation measures.

Public Hearing

Due to the current COVID-19 situation, ENR is of the understanding that the WLWB is seeking comments from interveners on whether they believe the matter can be resolved without the need for a hearing, or if they intend to make a presentation to the Board. Due to DDMI’s engagement with ENR, ENR does not have any further technical comments or concerns at this time other than those expressed herein. ENR does not feel the need to present to the Board at this time if DDMI can resolve or accept ENR’s sole recommendation. ENR is of the opinion that the process can continue as a written proceeding; however, if other Parties request a public hearing, ENR is prepared to participate in the proceedings, either as a written proceeding or virtual meeting, at the Board’s request.

Should you have any questions or concerns, please do not hesitate to contact Patrick Clancy, Environmental Regulatory Analyst at (867) 767-9233 Ext: 53096 or email patrick_clancy@gov.nt.ca.

Sincerely,

Patrick Clancy
Environmental Regulatory Analyst
Environmental Assessment and Monitoring Section
Environmental Stewardship and Climate Change Division
Department of Environment and Natural Resources
Government of the Northwest Territories