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ECCC File: 5100 000 012/028
WLWB File: W2020L2-0004



October 28, 2021

via online review system

Ryan Fequet
Executive Director
Wek'èezhìi Land and Water Board
1-4905 48th Street
Yellowknife, NT X1A 3S3

Dear Ryan Fequet:

RE: W2020L2-0004 – Arctic Canadian Diamond Company Ltd. – Ekati – Point Lake Project – Type A Licence Amendment and Type A Permit Applications - Final Intervention

Environment and Climate Change Canada (ECCC) has reviewed the information submitted to the Wek'èezhìi Land and Water Board (MVLWB) regarding the above mentioned Point Lake Project - Type A Licence Amendment and Type A Permit Applications. You will find our intervention attached.

ECCC's specialist advice is based on our mandate, in the context of the *Canadian Environmental Protection Act*, the pollution prevention provisions of the *Fisheries Act*, the *Migratory Birds Convention Act*, and the *Species at Risk Act*.

If you need more information, please contact Jennifer Sabourin at Jennifer.Sabourin@ec.gc.ca.

Sincerely,

Margaret Fairbairn, Acting Regional Director
Environmental Protection Operations Directorate, Prairie Northern Region

Attachment(s): 20211028_W2012-0001-Ekati-Point Lake-ECCC Final Intervention

cc: Jody Small, Acting Head, Environmental Assessment North (NT and NU)





ENVIRONMENT AND CLIMATE CHANGE CANADA'S INTERVENTION TO THE WEK'ÈEZHÌ LAND AND WATER BOARD

RESPECTING THE ARCTIC CANADIAN DIAMOND
COMPANY LTD. TYPE A WATER LICENSE APPLICATION
FOR EKATI – POINT LAKE MINE SITE

OCTOBER 28, 2021



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1.0 List of Acronyms

AEMP – Aquatic Effects Monitoring Program

AQMP – Air Quality Monitoring Plan

CAAQS – Canadian Ambient Air Quality Standards

CEPA – Canadian Environmental Protection Act

CCME – Canadian Council of Ministers of the Environment

EC – Environment Canada (now Environment and Climate Change Canada)

ECCC – Environment and Climate Change Canada

EQC – Effluent Quality Criteria

FA – Fisheries Act

HCT – Humidity Cell Tests

NAG – Net Acid Generation

NPR – Net Potential Ratio

PoPC – Parameters of Potential Concern

SFE – Shake Flask Extraction

SNP – Surveillance Network Program

TSS – Total Suspended Solids

WL – Water License

WLWB – Wek'eezhi Land and Water Board

WRSa – Waste Rock Storage Area

2.0 Executive Summary

Arctic Canadian Diamond Company (ACDC; Arctic; the Proponent) is requesting an amendment to their Type A Water Licence (WL; W2020L2-0004) and two new Type A Land Use Permits (LUP; W2021X0004, W2021D0005) for a satellite open pit mining operation at Point Lake within the Ekati Diamond Mine. The Point Lake Project (the Project) would operate for a period of four to five years and would extend the general operating life of the Ekati Diamond Mine. Arctic will be incorporating the existing infrastructure from the Misery Camp and Ekati Main Camp to support the Project. The application will permit Arctic to construct a 0.5 km long access road to site, permit fish removal and dewatering of Point Lake, excavation of the open pit, construction of a Waste Rock Storage Area (WRSA) and overburden stockpile, and facilitate the transfer of minewater to the King Pond Settling Facility.

ECCC is submitting this intervention to the Wek'èezhii Land and Water Board (WLWB; the Board) for consideration as per the requirements of the *Mackenzie Valley Resource Management Act*. Environment and Climate Change Canada (ECCC) has participated in all phases of the Water Licence/Land Use Permit process for the Project thus far, including submitting initial comments on the application on July 8, 2021 and attending the Technical Session held virtually in Yellowknife on September 7-9, 2021. ECCC is continuing its participation by way of this Final Intervention to the WLWB.

This intervention summarizes ECCC's technical review of the information provided in the WL review process. ECCC is providing technical, science-based information and knowledge to inform the Board of this project's potential effects in the receiving environment and on valued ecosystem components, based on our mandate pursuant to the *Canadian Environmental Protection Act*, the pollution prevention provisions of the *Fisheries Act*, the *Migratory Birds Convention Act*, and the *Species at Risk Act*. ECCC is submitting recommendations for the WLWB's and Proponent's consideration to help address outstanding concerns related to:

- TSS and Turbidity monitoring within Lac du Sauvage;
- Post-mining monitoring of Alexia, Connor, and Thinner Lakes;
- Seepage monitoring, predictions and closure criteria;
- SFE and NAG Leachate results;
- Reductions in NO₂ emissions;
- Development of a mitigation strategy to minimize diving bird by-catch during fish-out;

3.0 ECCC's Mandate

Environment and Climate Change Canada's (ECCC) review of the Project is based on the Department's mandate which is conferred by the federal statutes and regulations administered under the authority of the Minister of Environment and Climate Change. ECCC's legislative framework for protecting and managing the environment is founded on various statutes, guidelines, codes of practice, and inter-jurisdictional and international agreements.

ECCC's specialist advice for this review has been provided pursuant to the *Canadian Environmental Protection Act (CEPA)*, and the pollution prevention provisions of the *Fisheries Act*, the *Migratory Birds Convention Act (MCBA)*, and the *Species at Risk Act (SARA)*. ECCC regulates the use of toxic chemicals, and develops and implements environmental quality guidelines pursuant to *CEPA*. ECCC also administers the pollution provisions of the *Fisheries Act*, which prohibit the deposit of a deleterious substance into fish-bearing waters.

ECCC is responsible for protecting and conserving migratory bird populations and individuals under the *MBCA*. ECCC also administers *SARA* in cooperation with Fisheries and Oceans Canada and the Parks Canada Agency to prevent wildlife species from being extirpated or extinct; to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity; and to manage species of special concern to prevent them from becoming threatened, endangered or extirpated.

Additional information on ECCC's mandate can be found at <https://www.canada.ca/en/environment-climate-change/corporate/mandate.html>.

4.0 ECCC's Technical Review Comments and Recommendations

RESOLVED RECOMMENDATIONS:

Following the technical review of Arctic's initial submission, ECCC recommended that the Proponent:

- Provide a discussion related to baseline data collected for Thinner Lake, including whether sufficient baseline data has been collected to date for use in evaluation of impacts.
- Provide additional information on the monitoring of runoff/seepage from the overburden stockpile prior to discharge into Thinner Lake.

In their response, the Proponent clarified existing baseline data and planned baseline data collection for Thinner Lake, and acknowledged the monitoring of runoff/seepage and MDMER requirements. ECCC is satisfied with Arctic's response and has no further comments on these topics.

4.1 ECCC #1–Point Lake Dewatering–Monitoring in Lac du Sauvage

Reference(s):

- ECCC-2
- Technical Session Discussions
- Technical Session Presentation – Slide 68 & 70
- Technical Sessions Response – IR #16 – Point Lake Dewatering Plan

Comment:

ECCC has previously identified that during dewatering of Point Lake to Lac du Sauvage, Arctic was not proposing to monitor water quality within Lac du Sauvage. In response, Arctic stated that water quality was similar between Point Lake and Lac du Sauvage, and the potential for erosion was low, and therefore monitoring in Lac du Sauvage was unnecessary. However, in response to questioning during the technical meeting, Arctic responded that turbidity and total suspended solids (TSS) monitoring would be completed in Lac du Sauvage.

Subsequent to the technical meeting, an updated Dewatering Plan was provided in response to Technical Meeting IR#16. This updated plan outlines that there will be daily monitoring of the Stage 1 outflow location at Lac du Sauvage and visual inspection of the lake, but in-lake monitoring is not mentioned. Additional clarification is required on whether the Proponent is intending to complete confirmatory in-lake monitoring for TSS and turbidity, as recommended by ECCC.

ECCC Recommendation(s):

During the dewatering of Point Lake to Lac du Sauvage, ECCC recommends the Proponent conduct field turbidity monitoring along with periodic laboratory TSS analysis within Lac du Sauvage.

4.2 ECCC #2 – Monitoring of Alexia, Connor, and Thinner Lake

Reference(s):

- ECCC-3
- Technical Session – Slide 75
- Arctic Response - IR #51 – Arctic Proposed Draft Licence

Comment:

As part of the monitoring program associated with the Point Lake Development, the Proponent proposed to conduct monitoring of Alexia, Connor and Thinner Lakes to monitor for impacts to these lakes primarily from dust and blasting. This monitoring is proposed to be included as part of the Surveillance Network Program (SNP) monitoring, rather than as part of the Aquatic Effects Monitoring Program (AEMP) based on the Proponent's rationale that the monitoring of these lakes is short term in nature since the overall mining of the Point Lake Project is short term.

Based on the response and discussions at the technical meeting, ECCC does not object to the monitoring of these lakes being located within the SNP, rather than the AEMP. The proposed monitoring under the SNP should be sufficient such that any potential impacts to these lakes during mining operations are identified. However, the SNP stations, as proposed by Arctic, do not adequately capture the long term monitoring aspects of impacts to these lakes once mining is completed, and drainage is restored. As worded, the proposed SNP stations (1616-53, -54, -55) include monitoring "twice per year during the ice-free season during active open pit mining at the Point Lake Pit." SNP monitoring is therefore strictly limited to the monitoring during operations, and does not encompass any monitoring once mining has completed, the pit has been flooded, and connections to surface water have been re-established. Additional details are required, outlining how these lakes will be monitored during the post-mining period.

ECCC Recommendation(s):

ECCC recommends that Arctic provide additional information on the post-mining monitoring of Alexia, Connor and Thinner Lakes, including how data will inform closure and any required mitigation. Arctic should include specific details on which monitoring program the surveillance of Alexia, Connor and Thinner Lakes will be completed under, given that it is excluded from the SNP as currently proposed.

4.3 ECCC #3–Seepage/Runoff Uncertainty & Adaptive Management

Reference(s):

- Technical Session – Slide 55
- GNWT IR #8, WLWB IR #6, WLWB IR #7

Comment:

Throughout the review process there has been discussion regarding the preliminary approach used by Arctic for water quality predictions, and the absence of detailed modelling for water quality of runoff from the waste rock storage area (WRSA). The Proponent has stated that the Misery pit data and Jay Pit detailed modelling serve as proxies to predict the potential water quality associated with the Point

Lake Project; Arctic asserts it is appropriate to do so as their approach will capture a broad range of conditions, and given that Point Lake is a smaller project.

In response to several IR's related to this topic following the technical meeting, Arctic has stated that they intend to submit closure seepage water quality predictions as part of the Point Lake WRSA design report. Arctic has stated that all seepage/runoff from the piles will be collected and transferred to King Pond and will continue to be collected until seepage water quality has been demonstrate to be safe for deposit into the receiving environment. ECCC is supportive of development of closure seepage water quality predictions and associated closure criteria. Development of site-specific predictions will contribute to the overall adaptive management approach for long-term seepage/runoff quality from the WRSA such that any potential issues may be identified early and managed/mitigated with sufficient time to prevent impacts to the environment.

ECCC Recommendation(s):

ECCC recommends that Arctic model seepage water quality at closure, and conduct periodic updates of predictions based on seepage monitoring data during operations. Closure criteria should be identified in conjunction with thresholds for management action in the case of poor seepage quality or unexpected observations.

4.4 ECCC #4 – Point Lake Project SFE and NAG Leachate

Reference(s):

- Memo - Point Lake Project SFE Leachate and NAG Leachate test results (October 19, 2020)
- Technical Sessions – Arctic IR #13

Comment:

During the Technical Sessions and in response to IR #13, Arctic had committed to providing Shake Flask Extraction (SFE) and Net Acid Generation (NAG) extraction test results for review by the Board and interveners. In the last paragraph, the Proponent states:

*“ERM established triggers to determine if additional testing should be conducted or the Point Lake material was adequately represented by the Jay Project testing data. The triggers resulted in the initiation of kinetic tests if NAG leachate PoPC concentrations were 30% greater than the concentrations measured in the Jay Project NAG leachate. Table 5-1 presents a comparison of the maximum Point Lake leachate concentrations compared to maximum concentrations measured in the respective Jay Project dataset and metasediment HCT datasets. The maximum sulphate, arsenic, cadmium, nickel, uranium, and vanadium concentrations in the Point Lake NAG leachate were 30% higher than the Jay Project NAG leachate but of these parameters, only arsenic, uranium, and vanadium exceeded the HCT leachate concentrations. **The Point Lake sample selection included samples with the lowest calculated NPR and measured NAG pH value and thus this assessment should not be interpreted as the Point Lake samples being of higher risk for metal leaching but simply as benefiting from additional kinetic information.**”*

It is unclear how the 30% threshold was determined. ECCC is of the view that the Point Lake samples may have a higher risk of metal leaching as the results of NAG leachate PoPC concentrations of six

parameters were 30% greater than the concentrations measured in the Jay Project NAG leachate for samples which had low calculated NPR.

ECCC Recommendation(s):

ECCC recommends the risk management of seepage to ensure there will be no outmigration of contaminants from the Waste Rock Storage Facility.

4.5 ECCC #5 – Short Term NO₂ concentrations

Reference(s):

- Ekati Diamond Mine Proposed Development of the Point Lake Project: Project Description
- Ekati Diamond Mine 2017 Air Quality Monitoring Program
- Ekati Diamond Mine 2019 Air Quality Monitoring Program

Comment:

The Proponent has undertaken ambient air quality monitoring of contaminants including PM_{2.5}, NO₂, and SO₂. The 2017 AQMP report contains tables of daily 1-hour maximum NO₂ concentrations for 2015 and 2016. The 2019 AQMP report contains tables of daily 1-hour maximum NO₂ concentrations for July through December 2019. All measurements were taken at the Continuous Air Monitoring Building at the Polar Explosives site, and were in conformity with the Government of Northwest Territories objectives for 1-hour NO₂ concentrations. However, the Canadian Council of Ministers of the Environment (CCME) have since developed health-based Canadian Ambient Air Quality Standards (CAAQS) whereby the 3-year average of the annual 98th percentile of the daily maximum 1-hour average concentrations should not exceed 60 ppb for 2020 and 42 ppb for 2025. For the 2015-2016 period, there were 51 days where the daily maximum one-hour average NO₂ concentration exceeded 42 ppb (nearly 7% of the total days). There is some indication that NO₂ concentrations may have decreased in more recent years, but there is uncertainty as to whether the 2025 CAAQS will be achieved going forward. NO₂ concentrations within the open pit would likely be higher due to reduced ventilation. NO₂ concentrations peak in the winter months due to the overlapping factors of a) additional heating demands for worker's accommodations and other critical services, and b) the spike in heavy truck traffic bringing supplies for one year within the approximately two-month window when the winter road is open.

ECCC Recommendation(s):

ECCC recommends the Proponent consider methods for reducing NO₂ emissions going forward. ECCC recognizes the requirement for fuel consumption to maintain critical services including heating during the very cold winter months. ECCC recommends the Proponent expedite replacement or upgrading of older equipment with engines that meet Tier 4 standards. With Arctic winters expected to continue gradually warming in the future, the period of time when the winter road is open is anticipated to shrink, resulting in an even larger spike in emissions from supply trucks. ECCC recommends, where feasible, for the Proponent to provide incentives for supply trucks that are equipped with cleaner engines.

4.6 ECCC #6 – Fish-Out Plan and Diving Bird By-Catch

Reference(s):

- Arctic Canadian Diamond Company Ltd. May 2021. Ekati Diamond Mine Proposed Development of the Point Lake Project. Project Description.
- Arctic Canadian Diamond Company Ltd. September 2021. Point Lake Dewatering Plan Version 2.0.
- Dominion Diamond. March 2017. Wildlife Effects Monitoring Plan for the Ekati Diamond Mine.

Comment:

Previous fish-outs at the Ekati site, and other northern mines, have resulted in by-catch of diving birds and has led to commitments by the previous proponent (Dominion Diamond Mines), to engage ECCC in the development of strategies to mitigate these effects. ECCC notes that within the Project Description and Dewatering Plan for the proposed Point Lake Project that there is no mention of engaging ECCC in the development of a mitigation strategy for diving bird by-catch within the fish-out plan for Point Lake. ECCC notes that the plan is currently under development. During the Technical Session, ECCC asked Arctic to clarify if they planned to engage with ECCC in the development of the mitigation strategy for diving bird by-catch for Point Lake. Arctic confirmed the omission as an error and stated they planned to engage ECCC in the development of the strategy.

ECCC Recommendation(s):

ECCC looks forward to working with Arctic in the development of the mitigation strategy to minimize diving bird by-catch for the Project.

5.0 Closing Remarks

ECCC acknowledges and appreciates the effort that the Proponent has taken to provide information and address concerns brought forward by parties through the WL renewal process. ECCC would like to thank the WLWB for this opportunity to provide input to the Ekati Point Lake WL amendment review process and looks forward to continuing its participation.

ECCC's technical review comments and recommendations are not to be interpreted as any type of acknowledgement, compliance, permission, approval, authorization, or release of liability related to any requirements for the Proponent to comply with federal or territorial statutes and regulations.