Crown-Indigenous Relations and Northern Affairs Canada
Relations Couronne-Autochtones et Affaires du Nord Canada

Water Resources Division
Resource Management Directorate
Nunavut Regional Office
P.O. Box 100
Iqaluit, NU, X0A 0H0

Your file - Votre référence
8AC-EUR----
Our file - Notre référence
GCDocs# 117262893

September 29, 2023

Robert Hunter
Licensing Administrator
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU, X0B 1J0
E-mail: licensing@nwb-oen.ca

Re: Crown-Indigenous Relations and Northern Affairs Canada's Final Written Submission for Environment and Climate Change Canada's Amendment Application for Eureka High Arctic Weather Station Public Hearing, Type A Water Licence No. 8AC-EUR----

Dear Robert,

Thank you for the September 25, 2023 invitation for the final written submission for the public hearing for the panels consideration for the referenced licence amendment application, submitted by Environment and Climate Change Canada (ECCC), for Type A Water Licence No. 8AC-EUR----.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) examined the application pursuant to its mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Crown-Indigenous Relations and Northern Affairs Act*. Please find CIRNAC comments and recommendations during the process of the amendment application from a Type B to Type A water licence in the attached Technical Memorandum.

If there are any questions or concerns, please contact me at (867) 975-3877 or Joyce.Demers@rcaanc-cirnac.gc.ca or Andrew Keim at (867) 975-4550 or Andrew.Keim@rcaanc-cirnac.gc.ca.

Sincerely,

Joyce Demers, B.Sc.,
Industrial Coordinator

Canada

Technical Review Memorandum

Date: September 29, 2023

To: Robert Hunter – Licensing Administrator, Nunavut Water Board

From: Joyce Demers – Industrial Coordinator, CIRNAC

Subject: Crown-Indigenous Relations and Northern Affairs Canada's Final Written Submission for Environment and Climate Change Canada's Amendment Application for Eureka High Arctic Weather Station Public Hearing, Type A Water Licence No. 8AC-EUR----

Region: ☐Kitikmeot ☐ Kivalliq ☒ Qikiqtani

A. BACKGROUND

Eureka High Arctic Weather Station (HAWS) is located on the north side of Slidre Fjord, at the north-western tip of Fosheim Peninsula on Ellesmere Island at 80° 0' N and 85° 56' W, approximately 400 km north of the closest community of Grise Fiord. Environment and Climate Change Canada (ECCC) currently holds a Type B water licence 8BC-EUR2131 at this location. The water licence allows for withdrawal of water in three locations, Station Creek, West Remus and Black Top Creeks. West Remus and Black Top Creeks water withdrawal is for dust suppression purposes only, while Station Creek water withdrawal is for domestic and industrial purposes.

HAWS has been in operation since 1947. It is a Government of Canada facility operated by ECCC. Their primary mission is to collect weather information in order to produce public weather forecasts. It also provides support to the Arctic aviation community and serves as a staging location for science-based activities, exploration projects, tourism, etc.

ECCC is applying for an amendment to upgrade their Type B water licence (8BC-EUR2131) to a Type A water licence (8AC-EUR----) for a period of 25 years. ECCC initially thought that filling of the reservoir could be completed using 299 m^3/day, however it was later determined that filling the reservoir from Station Creek will require 2000 m^3/day for a period of ten days. It is for that reason that ECCC is requesting an amendment. ECCC states that after the ten day period required to fill the reservoir they will return to withdrawing less than 299 m^3/day from Station Creek. There is currently no alternative source or methods for filling the reservoir due to the frozen conditions for more than eight months of the year and the ephemeral nature of the stream.

Station Creek flows from June to September with a flow rate of 0.9 m^3/s to 5.1 m^3/s during spring freshet, with an estimate volume of 2.4 million to 13.3 million m^3 over a period of 30 days. It is calculated by ECCC that the use of 2000 m^3/day for ten days will only amount to 0.45% to 2.57% of the creek volume for that period of 30 days.

A technical hearing meeting and a pre-hearing conference took place via zoom on September 06, 2023. During the technical hearing meeting the comments and recommendations below in the technical memorandum were discussed amongst other topics brought up by the Nunavut Water Board. During the technical meeting ECCC committed to further discuss comment R-01 made by CIRNAC amongst other commitments to the Nunavut Water Board. All other comments made by CIRNAC (R-02 and R-03) were considered to be resolved prior to the technical meeting and pre-hearing conference via correspondence (document called "230718 8AC-EUR---- New Type A Technical Review ECCC Response To Comments-IMLE") to the Nunavut Water Board on July 18, 2023. Only CIRNAC's comments and recommendations and ECCC's replies are seen below as well as the final status of each comment made by CIRNAC.

CIRNAC provides the following comments and recommendations pertaining to the application package for the final written submission for the public hearing. A summary of the subjects of recommendations can be found in Table 1. Documents reviewed as part of this submission can be found in Table 2 of Section B. Detailed technical review comments can be found in Section C.

Table 1: Summary of Recommendations

Recommendation Number	Subject	Final Status of Recommendation
R-01	Procedure for Water Withdrawal	Resolved
R-02	QAQC Program - Testing Within 24 Hours	Resolved
R-03	Licence Term	Resolved

B. DOCUMENTS REVIEWED AND REFERENCED

The following table (Table 2) provides a list of the documents reviewed under the submission and reference during the review.

Table 2: Documents Reviewed and Referenced

Document Title	Author, File No., Rev., Date
230331 8AC-EUR---- Type A Water Licence Application Form_March 30, 2023-IMLE	ECCC, March 30, 2023
230414 8AC-EUR---- ECCC Response to NWB Review-IMLE	Nunavut Water Board, April 14, 2023
230502 8AC-EUR---- Re_ Eureka HAWS - Applications for Type B Amend and Type A WL-ILAE	Nunavut Water Board, May 2, 2023
230605 8AC-EUR---- New Type A Water Licence Amendment Application Notice-OMLE	Nunavut Water Board, June 5, 2023
230606 8AC-EUR---- Amendment Application Technical Review-OAKE	Nunavut Water Board, June 6, 2023
230608 8AC-EUR---- 20230428 QAQC Program (EN) ver3-ILAE	ECCC, Septembre 2021

Document Title	Author, File No., Rev., Date
230608 8AC-EUR---- Aproval Letter-ILAE	Government of Northwest Territories, May 24, 2023
230608 8AC-EUR---- Eureka Water and Sewage Sampling Procedure April 2023-ILAE	ECCC, N.D.
230608 8AC-EUR---- Eureka Water Licence Annual Pump Data 2023-ILAE	N.A., N.D.
230608 8AC-EUR---- Taiga Certificate-ILAE	Canadian Association for Laboratory Accreditation Inc., September 27, 2021
230612 8AC-EUR---- MEM_June_5-23_Part D Item 16 Amendment request_60638794-ILAE	ECCC, June 6, 2023
230331 8BC-EUR2131 Attachment F Remedial Action Plan-IMLE	Dillion Consulting Limited & Outcome Consultants Inc., March, 2023
230718 8AC-EUR---- New Type A Technical Review ECCC Response To Comments-IMLE	ECCC, July 18, 2023
230925 8AC-EUR---- Water Licence Amendment Public Hearing Notice-OLAE	
230925 8AC-EUR---- PHC Decision Report-OAKE	
230920 8AC-EUR---- MEM_Sept_20_23_8BC-EUR2131-_Response to Issues list_Type A TM-ILAE	ECCC, September 20

C. RESULTS OF REVIEW

1. Procedure for Water Withdrawal

CIRNAC's Comment to Initial Review:

No information is provided in the application package as to how this increased amount of water will be withdrawn and placed into the reservoir. Additionally, there was no mention of how the stream bed or the stream banks will be protected from erosion.

CIRNAC's Recommendation to Initial Review:

(R-01) CIRNAC recommends that the applicant provide more information about the method of withdrawal and the mitigation measures in place to protect the stream bed and banks.

ECCC Response Prior to the Technical Meeting:

As described in the March 2023 NWB application, the increased amount of water will be withdrawn to fill the reservoir over a period of ten days from Station Creek during peak freshet flow to mitigate potential effects to the aquatic environment.

Station Creek is an ephemeral watercourse (flowing June to September) and is not considered fish bearing and despite the lack of reported fish species, mitigation measures for construction activity are to be implemented as a precaution to prevent physical disturbance to the stream beds or banks including adherence to DFO Fish and Fish Habitat Policy Statement (August 2019).

ECCC will comply with the DFO Interim Code of Practice for End-of-pipe fish screens (https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html) and the Measures to Protect Fish and Fish Habitat (http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html) during Station Creek water withdrawal to fill the reservoir.

The Project has end-of-pipe fish screen that it uses which meets the DFO Interim Code of Practice. All water intake hoses will be equipped with a screen of an appropriate mesh size to ensure fish are not entrained. Water will be withdrawn at a rate such that fish will not become impinged on the screen.

The intake will consist of a temporary pipe with the noted screening. It will extend into the water way by approximately 3 m. The intake will be anchored to the stream bed with a temporary weight which will be removed once the transfer is finished. Water will be drawn from the flowing water and will prevent scouring of the stream bed or banks. ECCC will issue a notice to DFO prior to commencing the Project.

Sediment and erosion control measures will be implemented prior to and maintained during water intake operations to prevent entry of sediment into the water. Suitable erosion and sediment suppression measures will be implemented to prevent sediment from entering Station Creek or other water bodies. Erosion control structures (temporary matting, geotextile silt control filter (curtains) fabric, etc.) are to be used where necessary.

As per NIRB condition, ECCC shall ensure that all disturbed areas are restored to a stable or pre-disturbed state using Best Available Technology Economically Achievable (BATEA) upon completion of work and/or abandonment.

Vehicles/machinery are to be checked for leakage of lubricants or fuel and are maintained in good working order. Re-fueling should occur in designated areas only. Basic petroleum spill clean-up equipment will be kept on-site.

CIRNAC's Reply at the Technical Meeting:

CIRNAC does not consider this comment resolved.

Creation of Commitment During Technical Review Meeting to Further Address the Comment

ECCC's Response to the Commitment Made During the Technical Review Meeting:

A flexible hose running overland extending from the proposed temporary centrifugal suction pump and then approximately 2 to 4 m out into Station Creek will be used. The intake will be a floating screen structure that will not be resting on the bottom (see Figure 1). It will float and be tethered in place by an anchor and aircraft cable from shore. It will draw from approximately 0.1 or 0.2 m below the surface. Neither the pipe nor the intake will cause additional erosion. The elevation of the intake will vary with the water level in the Creek. See Figure 2 for a cross section of the undertaking. It is anticipated that the intake pipe will be a minimum of 0.3 m off the stream bed at all times. Elevations of the Creek and temporary pump station are provided in the attached sketches.

The temporary pump will be a diesel powered suction pump that will draw from the Creek and discharge to fill the new reservoir (See Figure 3 for an example of the pump). A silt fence will be placed between the pump and the Creek, in case there is some release of water while starting up the pump. There are a number of liners and some rip rap/geocell protecting the reservoir interior surface from erosion. Furthermore, a temporary layer of geocomposite material will be placed over top of the geocell to disperse the water's energy. See Figure 4 for a layout of the facility.

Once the water is a few meters deep, the inlet pipe will be changed to a floating discharge pipe so that the incoming water is pumped into the surrounding water for energy dissipation. The attached figures show the reservoir liner structure and the intent with installing the geocomposite strip. The geocomposite is composed of a solid plastic grid, with a layer of geotextile on the top and bottom. This will allow for water penetration and dispersion.

CIRANC's Response to the Commitment:

CIRNAC considers this comment resolved.

2. QAQC Program - Testing Within 24 Hours

CIRANC's Comment to Initial Review:

The document labeled QAQC Program, under section 6.1.2, 6.1.4, 6.1.5, 6.1.6, states that

"*It is not always possible to collect the samples and transport them to the lab within 24 hours.*"

Those sections relate to monitoring station: EUR-2 Runoff from the Solid Waste Disposal Facilities, EUR-4 Effluent discharge from the Landfarm, EUR-5 Runoff from quarry operations, and EUR-6 Effluent discharge from Contaminated Soil Storage.

It is CIRNAC's understanding, from the same document, that samples must be tested within that time frame. This is a concern as it is unclear how not testing those samples within the 24 hours after collection may affect the results of the analysis and what potential outcomes may arise from this situation.

CIRNAC's Recommendation to Initial Review:

(R-02) CIRNAC recommends that the applicant amend the document titled QAQC Program to clarify how the results may differ or become invalid if the samples are not tested within the 24 hour period after collection, as well as the location of where samples must be taken within 24 hours time frame in order to be valid.

ECCC Response Prior to the Technical Meeting:

Only BOD and Microbiological tests require the 24 hour time frame. All the other tests are ok if they exceed the 24 hr window. Lab analysis for BOD and Microbiology is required at the following locations:

- EUR-3 Effluent discharge from the Sewage Treatment Facility
- EUR-2 Runoff from the Solid Waste Disposal Facilities
- EUR 4 Effluent discharge from the Landfarm
- EUR 6 Effluent discharge from Contaminated Soil Storage

Sampling results for BOD and microbiological testing would be considered invalid if the samples are not tested within the 24 hour period after collection.

ECCC strives to get the samples to Taiga labs within 24 hours. This is challenging due to logistics constraints (e.g., charter departure and arrival to Yellowknife, dependent on the type of aircraft, and charters required to overnight for pilots duty day to mitigate fatigue/inattentiveness).

Resampling for BOD and Microbiological testing is conducted when the 24 hr time frame is not achievable due to the charter challenges noted above.

CIRNAC's Reply at the Technical Meeting:

CIRNAC considers this comment resolved.

3. Licence Term

CIRNAC's Comment to Initial Review:

Section 9 of the Type A water licence application states

"Originally, filling of the reservoir was estimated to require 299m3/day, however it has now been determined that 2000 m3/day will be required over 10 days from Station Creek at peak freshet flow. … Filling of the reservoir will be a one-time event in 2024 during freshet and highwater and will not be needed in future years."

It is unclear if the application term of 25 years is solely for the Type A application, meaning that the Type A will be held by ECCC for 25 years or if the Type A will be held for one year and then the remaining 24 years will be held has a Type B water licence.

CIRNAC's Recommendation to Initial Review:

(R-03) CIRNAC recommends that the applicant clarify the term requested of the Type A licence as the Type B licence currently held would ultimately be replaced with the Type A if approved.

ECCC Response Prior to the Technical Meeting:

The NWB has confirmed that the Type A Licence will replace the Type B Licence currently held. The licence term is currently 10 years. ECCC is requesting a 25 year term to expire in 2048. Refer to background section above for more information.

CIRNAC's Reply at the Technical Meeting:

CIRNAC considers this comment resolved.