Indigenous and Northern Affairs Canada | Affaires autochtones et du Nord Canada

Your file – Votre référence
3BC-EUR1116

June 27, 2016

Our file – Notre référence
IQALUIT-# 1071820

Licensing Department
Nunavut Water Board
P.O. Box 119
GJOA HAVEN, NU, X0B 1J0

Re: 3BC-EUR1116 – Amendment/Renewal Application – High Arctic Weather Station Eureka – Environment and Climate Change Canada

To Whom It May Concern,

Thank you for the Nunavut Water Board's June 7, 2016 notice of the above mentioned water licence application. A memorandum is provided for the Nunavut Water Board's consideration. Comments and recommendations have been provided pursuant to Indigenous and Northern Affairs Canada's mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Indian Affairs and Northern Development Act*.

Please do not hesitate to contact me by telephone at 867-975-3877 or email at Amanda.Winegardner@aandc-aadnc.gc.ca for further information.

Sincerely,

Amanda Winegardner
Water Management Specialist
Water Resources Division
Resource Management Directorate
Indigenous and Northern Affairs Canada
P.O. Box 100
IQALUIT, NU, X0A 0H0

Encl.

Cc. Scott Burgess, A/Manager, Water Resources – INAC, Nunavut Regional Office (NRO)
Sarah Forté, Water Management Coordinator – INAC, NRO
Erik Allain, Manager, Field Operations – INAC, NRO

Canada

Memorandum

To: Licensing Department, Nunavut Water Board

From: Amanda Winegardner, Water Management Specialist, Water Resources Division, INAC

Date: June 27, 2016

Re: Technical Review of Type B Water Licence Amendment and Renewal 3BC-1116

Applicant: Environment and Climate Change Canada
Project: High Arctic Weather Station Eureka
Region: Qikiqtani

A. BACKGROUND

The High Arctic Weather Station (HAWS – Eureka, Nunavut) is located on the Fosheim Peninsula, Ellesmere Island and has been in continuous operation by Environment and Climate Change Canada (ECCC; the Licensee) since 1947. Staff and instrumentation at the Eureka station collect weather data for the production of weather forecasts. The station also supports local scientific activities and exploration projects. Infrastructure at the Eureka station includes living accommodations, power generation, a runway, and water and sewage services. The station generally supports a base population of 8-10 inhabitants, with additional visitors and scientists possible at various times during the year.

ECCC received a renewal of their current Type B licence for the Eureka station in 2011 and are currently seeking a combined amendment and renewal of this licence. The requested amendment is needed in order to complete repairs to the runway surface (3 year project) and to construct a new multi-purpose building. The runway surface repairs will involve resurfacing of one of the runway strips and access road as well as construction of a new airside apron. The renewal is necessary as this licence expired on June 7, 2016. The completion of these projects will involve setting-up a temporary camp for ~50 people as well as quarrying activities.

B. RESULTS OF REVIEW

On behalf of Indigenous and Northern Affairs Canada (INAC)'s Water Resources Division, the following comments and recommendations are provided for the Nunavut Water Board's (NWB) consideration:

1. Capacity of sewage lagoon

Source:

1) Eureka Quarry Operation Plan, Section 2.7: 'Buildings or Other Facilities'
2) 2013 OM Procedures FINAL, Section 3: 'Management of Wastewater'
3) 3BC-EUR1116 Questions and Answers for Amendment Application

Comment: INAC notes that recent correspondence between the NWB and the Licensee indicates that there is no confirmation that the current lagoon has the capacity to receive the additional waste that would be produced during the construction proposed in the Licensee's amendment/renewal application. The current sewage lagoon has a capacity for wastes from 21 people annually. Based on approximate calculations, this suggests to INAC that the sewage lagoon has an approximate capacity of 767 m^3 (21 people * 365 days * 100 L/day usage). The Licensee has indicated that generally eight staff reside at the site throughout the year, with the potential for additional visiting scientists and support staff, mainly in the summer. The Licensee's plan for quarrying and construction will involve the installation of a modular camp to house up to 50 workers for one month, whose waste will also be hauled to the existing current lagoon. Assuming that the site may also have up to ten other residents during the summer season (3 months), and that waste from the temporary construction washcar will produce no greater than 150 L/day of greywater per day for the one month construction period, then it is expected that the current sewage lagoon will have enough capacity to hold this additional waste output:

8 permanent residents (8 people * 365 days * 100 L/day) = 292 m^3
50 construction staff for 1 month (50 people * 30 days * 100 L/day) = 150 m^3
10 additional residents (visiting scientists etc.) (10 people * 90 days * 100 L/day) = 90 m^3
Greywater from washcar (150 L/day * 30 days) = 4.5 m^3

Total = 537 m^3

These calculations cannot be verified from any of the existing documentation on the public registry.

Recommendation 1: INAC recommends that the Licensee confirm the capacity of the sewage lagoon as these calculations should be available in documentation submitted to the NWB.

2. Outstanding questions regarding quarrying activities

Source:

1) Amendment required for quarrying-OCEE.pdf (correspondence)
2) Eureka Quarry Operation Plan
3) 3BC-EUR1116 Questions and Answers for Amendment

Comment: The Licensee has provided confirmation that runoff collected in collector ditches will be assessed to verify whether that water quality meets criteria included in the Canadian Environmental Water Quality Guidelines for Protection of Aquatic Life; and that they will pay special attention to Total Suspended Sediment (TSS) levels during construction. The Licensee has also provided additional information regarding waste generated at the Blacktop creek washcar; and has confirmed that there will be no hydrocarbon contaminants in the wastewater generated from the washcar. The Licensee has also clarified the predicted volume of wastewater produced from the washcar and has provided additional information regarding measures that will be taken to ensure that dust from quarrying operations do not enter nearby water bodies.

Finally, the Licensee has provided additional information regarding permafrost stabilization. This was to address INAC's concern that the Quarry Operational Plan prepared by Nuna East Ltd. contained inconsistencies regarding the mitigation of impacts on permafrost (Recommendation 2 from INAC's submission on the original amendment application, February 22, 2016), where INAC was concerned that the plan stated that permafrost was not a relevant factor, but then went onto describe mitigation measures meant to prevent permafrost melt and ponding.

INAC also notes that erosion and high silt loading to source waters are an issue at Eureka. Therefore any loss of permafrost or sedimentation that is not contained to the quarry area could have additional negative impacts to water quality at the site.

Recommendation 2: INAC recommends that the Licensee employ best practices to ensure that wastewater generated from the washcar is captured effectively so as to avoid contamination of surrounding water bodies with PHC-impacted water, grease, lubricants, coolants and other contaminants.

Recommendation 3: INAC recommends that the Licensee include the information they have provided regarding the monitoring of runoff water from quarrying in their Quarry Operation Plan and that the amended licence include a Total Suspended Sediment (TSS) criterion for runoff water. INAC also recommends that the Licensee test for blast residue in runoff water from the existing quarry material, even if no additional blasting is planned. INAC also advises the Licensee to be very prudent in terms of erosion control measures during construction.

Recommendation 4: INAC recommends that the dust mitigation measures explained in 'Questions and Answers for Amendment' be incorporated into the Quarry Operations Plan. Additionally, INAC recommends that the Licensee remove the

inconsistency noted in the Quarry Operation Plan (as per comment above and Recommendation 2 from INAC's original submission on the amendment application).

3. Ash disposal from temporary camp

Source:

1) Eureka Quarry Operation Plan, Section 2.7: 'Buildings or Other Facilities'
2) 2013 OM Procedures FINAL, Section 4.3.1: 'East Landfill'
3) 3BC-EUR1116 Questions and Answers for Amendment

Comment: The ash produced from the incinerator at the permanent station is landfilled at the East Landfill as described in the Operations and Maintenance Procedures in order to prevent aerial deposition of ash to surrounding waters. However, the hyperlink provided in the Operations and Maintenance Procedures for 'Appendix 4: Incinerator Operations Procedures' does not function and therefore cannot be reviewed further. There is no indication in the Operations and Maintenance Procedures that ash landfilled in the East Landfill is subjected to non-hazardous waste confirmatory analyses.

The Quarry Operation Plan states that the temporary construction camp will also have an onsite incinerator; however ash disposal from the construction incinerator is only elaborated on in correspondence between the Licensee and the NWB. This correspondence indicates that ash from this construction incinerator will be packaged and removed from site for disposal at a registered facility.

Recommendation 5: INAC recommends that the Licensee update the Operations and Maintenance Procedures to include a functioning hyperlink or a standalone appendix for incinerator operations so that future technical review can verify ensure the incinerator (routine operations as opposed to what has been already explained regarding the construction incinerator) is operating properly, and staff are trained in the use of the incinerator on site to ensure clean burning of approved wastes.

Recommendation 6: INAC recommends that the Licensee provide specific information as to their procedures to ensure that ash that is considered hazardous waste is removed from site.

4. Plans for construction of new sewage lagoon

Source:

1) 2014 Annual Report, 'Progressive Reclamation Work Undertaken'
2) 2014 Annual Report, 'Analysis of Eureka Sewage Parameters'
3) Lagoon Troubleshooting Background Information-IACE.pdf
4) Troubleshooting Lagoon Systems-IACE.pdf
5) Eureka HAWS Supplemental Investigation- FINAL- IACE

6) Eureka Feasibility Study – FINAL - IACE

Comment: The Licensee reports in their 2014 Annual Report that the design of a new sewage treatment plant and lagoon was to be awarded to a consultant and plans made for proceeding with this project (Request for proposal (RFP) out for tender). It is also clear from the troubleshooting documentation submitted that the Licensee is considering various options for design of the new lagoon and for dealing with exceedances from lagoon discharge.

Sampling of the lagoon effluent occurred from 2008-2014 and INAC notes that Biochemical Oxygen Demand exceeded the limit specified in the current licence. The Eureka station has had ongoing difficulty managing exceedances and the previous licence renewal issued for this site indicated that the five year renewal term was deemed as sufficient for ECCC to address the ongoing problems and concerns regarding wastewater quality and discharge. INAC understands that Environment and Climate Change Canada has been active in seeking solutions relating to these exceedances and their 2014 annual report provides explanations for these exceedances and notes that the construction of the new sewage treatment plant and water lagoon should remediate these exceedance issues. INAC also notes that the construction of the new sewage treatment plant will mean that the current sewage lagoon will become storage for treated water prior to discharge to the marine environment.

Recommendation 7: INAC recommends that the Licensee be required to submit to the NWB (for review), an updated timetable and design plans for the new sewage treatment facility and conversion of sewage lagoon to treated water lagoon, within 90 days of the issuance of an amended/renewed licence. The submitted timetable should include a schedule for completion of the new facility.

Recommendation 8: INAC recommends that the Licensee be required to explain how they will work towards meeting the discharge criteria required under the current licence. INAC understands that the current sewage lagoon likely has the capacity to contain the extra waste produced by the proposed construction, but it is unclear how the Licensee plans to meet their licence-defined discharge criteria with this additional activity considering that they have not yet been able to meet required criteria in years when the facility population has been at a minimum.

5. Agreements with Department of National Defense regarding reclamation

Source:

1) 3BC-EUR1116 Licence, Section III, Part J: ‘Monitoring program’

Comment: ECCC’s current licence for Eureka requires that the Licensee “communicate to the Nunavut Water Board and INAC any agreements in place with the Department of National Defense (DND) or other parties, for reclamation

initiatives along with their respective implementation schedules". Agreements of this nature are not available in the Public Registry of the Nunavut Water Board ftp site.

Recommendation 9: INAC suggests that the Licensee be asked to communicate these agreements to the NWB and INAC.

6. Term of licence

Source:

1) 3BC-EUR1116 Licence
2) 3BC-EUR1116 Revised Amendment Renewal Application

Comment: The expired licence for Eureka HAWS was for a five year term and the Licensee has requested a five year term for a renewed and amendment licence.

Recommendation 10: INAC recommends that a renewed licence include a licence term of 5-10 years. INAC recommends that INAC inspectors conduct inspections during the construction period as well as during a follow-up monitoring period, with particular attention paid to issues of erosion and permafrost melt. INAC also encourages the Licensee to be aware of the timelines associated with NWB water licence renewal and amendment processes to ensure that future applications can be processed prior to licence expiry.