



Water Resources Division
Resource Management Directorate
Nunavut Regional Office
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Your file - Votre référence
8AC-EUR2331
Our file - Notre référence
GCDOCS# 128835598

September 6, 2024

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 Review of the
Licence Amendment Application of the Remedial Action Plan and Risk
Assessment for Eureka High Arctic Weather Station, Type A Water Licence No.
8AC-EUR2331**

Dear Robert,

Thank you for the July 10, 2024 invitation to review the referenced licence amendment application, submitted by Environment and Climate Change Canada (ECCC), for Type A Water Licence No. 8AC-EUR2331.

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 in the attached Technical Memorandum. Please note that CIRNAC recommends NWB reject the application.

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, *Andrew Keim* for,

Joyce Demers, B.Sc.,
Industrial Coordinator

Canada 



Technical Review Memorandum

Date: September 6, 2024

To: Robert Hunter – Licensing Administrator, Nunavut Water Board

From: Joyce Demers – Industrial Coordinator, CIRNAC

Subject: Crown-Indigenous Relations and Northern Affairs Canada's Review of the Licence Amendment Application of the Remedial Action Plan and Risk Assessment for Eureka High Arctic Weather Station, Type A Water Licence No. 8AC-EUR2331

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 A water licence 8AC-EUR2331 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 for their Remedial Action Plan (RAP) to the 2023 version which would replace to current 2021 version. This plan is seeking to allow for four main objectives:

1. The first is to approve new site specific target levels (SSTL) over the existing SSTLs.
2. The second is to allow for soils that are above generic Tier I criteria of the CCME but under the new SSTL to be stored at Johnny's Hole (this area is close to the new landfarm, has flat terrain, in a pre-disturbed location and is not within 31 meters from any water body).
3. The third is to allow landfarms to treat contaminated soils to the new SSTLs and then allow those soils, which are now above CCME but at the new SSTLs, to be stored either in the landfarm, Johnny's Hole or relocated to another location to be determined which is not environmentally sensitive and where SSTLs would still be met.



4. The fourth would be to stop remediation of the soils at the new SSTL levels and allow them to be left there. ie these soils would no longer be considered contaminated even though they are above CCME guidelines.

This application included an amendment to the updated Remedial Action Plan (RAP) and a Human Health and Ecological Risk Assessment (HHERA).

CIRNAC provides the following comments and recommendations pertaining to the application package. 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
R1	New Proposed Values Justifications
R2	Background Study and Differences to CCME and Current SSTL
R3	Variations Between Sediment, Soil and Surface Water Values Between the Years Possible Explanation
R4	Volume of Contaminated Soil to be Stored
R5	Confirmation of Effluent Discharge Criteria

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
240709 8AC-EUR2331 Remedial Action Plan and Risk Assessment (RAPRA) Final-IMLE	June 26, 2024, ECCC
231219 8AC-EUR2331 Licence-OKKE	December 19, 2023, Nunavut Water Board



C. RESULTS OF REVIEW

1. New Proposed Values Justifications

Comment:

There is, at this time, insufficient rationale to create site-specific targets exist for this site. The proposed activities are required to follow remediation standards to prevent potential long-term site contamination. Irrespective of the proposed use criteria of pregnant and at-risk individuals, the site criteria are set to aid in prevention of long-term site contamination and reduce the possibility of Migration of contaminants into the environment.

If transport off site does occur, the contaminants can flow through nearby water bodies and impact the fauna and flora, and potentially have negative effects on Indigenous rights in the area long-term.

Recommendation:

(R-01) CIRNAC recommends that the NWB reject the site-specific criteria provided by ECCC, on the grounds that the proposed criteria would likely result in the site being classified as a contaminated-site, requiring long-term remediation.

2. Background Study and Differences to CCME and Current SSTL

Comment:

There was no clear way of differentiating the values of the background study compared to the current values, CCME values, or current which would help the reader fully understand what is being asked. This is a concern as it is unclear how the values changes from the current legislation and from the background making it difficult to give an informed decision.

Recommendation:

(R-02) CIRNAC recommends that ECCC provide a table which summarizes the CCME values, background values, current SSTL values and proposed SSTL values. An example of a table desired is seen below.



COPC	Background Soil Avg + STD* (mg/kg)	CCME (TYPE/ mg/kg)	OLD SSTL (mg/kg)	Proposed SSTL (mg/kg)	Rationale for New Proposed SSTL
Metals					
Arsenic	8.7 +/- 4.4			40	Based on human health risk-based value. Due to the disturbed nature of the site, the plant benchmark is not appropriate
Boron, hot water soluble				6	Based on site-specific considerations. Represents maximum measured plus 20% for sample variability, which is higher than the benchmark
Boron	9.5 +/- 5.5			30	Based on site-specific considerations. Maximum measured concentration plus 20% for sample variability
Copper	18.9 +/- 5.6			1100	Human Health component of copper guideline. Due to the disturbed nature of the site, the plant benchmark is not appropriate
Lead	7.8 +/- 2.9			360	Based on ecological risk-based value. Due to the disturbed nature of the site, the plant benchmark is not appropriate
Nickel	19.7 +/- 5.8			78	Based on site-specific considerations. Maximum measured concentration plus 20% for sample variability
Zinc	45.8 +/- 10.9			10,000	Based on protection of human health
BTEX					
Benzene				2	Based on human health component of the guideline
Ethylbenzene				110	Based on ecological component of the guideline
Toluene				120	Based on ecological component of the guideline
Xylenes				65	Based on ecological component of the guideline
Petroleum Hydrocarbons (PHC)					
PHC F1 (C ₆ -C ₁₀)				7800	Based on human health risk-based value. Due to the disturbed nature of the site, the plant benchmark is not appropriate
PHC F2 (C ₁₀ -C ₁₆)				4100	Based on human health risk-based value. Due to the disturbed nature of the site, the plant benchmark is not appropriate
PHC F3 (C ₁₆ -C ₃₄)				15000	Human Health component of PHC F3 guideline. Due to the disturbed soils, the plant benchmark is not appropriate
Polycyclic Aromatic Hydrocarbons (PAH)					
1-Methylnaphthalene				70	Based on human health risk-based value. Due to the disturbed nature of the site, the plant benchmark is not appropriate
2-Methylnaphthalene				110	Based on human health risk-based value. Due to the disturbed nature of the site, the plant benchmark is not appropriate
Acenaphthylene				8	Based on human health risk-based value. Due to the disturbed nature of the site, the plant benchmark is not appropriate
Acridine				3	Based on CCME guideline for similar structure- anthracene
Naphthalene				60	Human health component of the guideline
Perylene				10	Based on CCME guideline for similar structure- pyrene

STD* = Standard deviation

Avg = Average



3. Variations Between Sediment, Soil and Surface Water Values Between the Years Possible Explanation

Comment:

The sediment, soil and surface water values vary greatly in some instances between the years. Can ECCC provide an explanation as to why that is? The concern is that the actual values and averages presented may not be an accurate representation of the overall condition in the area.

Recommendation:

(R-03) CIRNAC recommends that ECCC provide a rational as to why some of the sediment, soil and surface water values vary greatly between the years.

4. Volume of Contaminated Soil to be Stored

Comment:

It is unclear what volume of contaminated soil will be held at Johnny's hole and other locations at Eureka. The concern is that a large volume of contaminated soil is expected to be kept at this site making it a permanently contaminated site in the high arctic which may find its way into water bodies.

Recommendation:

(R-04) CIRNAC recommends that ECCC provide an estimate of the volume of contaminated soils they plan to permanently store at Eureka.

5. Confirmation of Effluent Discharge Criteria

Comment:

It is unclear if the new SSTL soil sites will keep to the same effluent discharge requirements as required by the water licence Part E item 12. If so, then all new and existing SSTL soil sites need to be monitored.

Recommendation:

(R-05) CIRNAC recommends that ECCC confirm the if effluent discharge criteria will be subject to further revision in a later application and what monitoring will be instituted on site to ensure compliance with any limit set.