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

Water Resources Division
Resource Management Directorate
Nunavut Regional Office
918 Nunavut Drive
Iqaluit, NU, X0A 3H0

Your file - Votre référence
1BR-BAK--
Our file - Notre référence
GCDocs#144827689

March 31, 2026

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 Application for the Baker Lake Landfarm Project, Type B Water Licence No. 1BR-BAK--

Dear Robert,

Thank you for the March 11 invitation to review the referenced licence, submitted by Nunatta Environmental Services Inc. on behalf of the Petroleum Products Division of Transportation and Infrastructure Nunavut, for Type B Water Licence No. 1BR-BAK--.

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*. CIRNAC provides the following Technical Review Memorandum for the Board's consideration.

The applicant shall provide confirmation from the Nunavut Water Board that all outstanding water license fees have been paid in full prior to approval of this application.

If there are any questions or concerns, please contact me at (873) 800-5240 or Pauline.Firmin@rcaanc-cirnac.gc.ca or Andrew Keim at (867) 975-4550 or Andrew.Keim@rcaanc-cirnac.gc.ca.

Sincerely,

Pauline Firmin

Pauline Firmin, M. Sc,
Regional Coordinator

Canada

Technical Review Memorandum

Date: March 31, 2026

To: Robert Hunter- Licensing Administrator, Nunavut Water Board

From: Pauline Firmin-Regional coordinator, CIRNAC

Subject: Crown-Indigenous Relations and Northern Affairs Canada's Review of the Licence Application for the Baker Lake Landfarm Project, Type B Water Licence No. 1BR-BAK--

Region: ☐ Kitikmeot ☒ Kivalliq ☐ Qikiqtani

A. BACKGROUND

The proposed Baker Lake Landfarm Project is located northwest of the Hamlet of Baker Lake in the Kivalliq Region of Nunavut, on Lot 454, Plan 4945. The site lies north of the Baker Lake airport and is accessible by existing roads from the community. The undertaking is proposed on municipal land held by the Hamlet of Baker Lake, with plans for an equity lease to the Commissioner of Nunavut, administered by the Government of Nunavut's Petroleum Products Division (PPD).

The project involves the construction and operation of a lined land treatment unit (LTU) for the management and remediation of soils contaminated with petroleum hydrocarbons. The landfarm is designed to contain, treat, and monitor impacted soils through bioremediation processes, including soil aeration and nutrient amendments. Water subject to this application consists primarily of meltwater and precipitation that may accumulate within the landfarm footprint and require controlled management, treatment, and potential discharge in accordance with licence conditions.

The proposed landfarm represents a change from the current temporary storage of contaminated soils and formalizes a long-term, engineered remediation approach. The need for this project originates from a 2021 gasoline spill at the Baker Lake Bulk Fuel Storage Facility, where approximately 10,000 litres of fuel were released due to a pipeline failure. Following emergency response and initial remediation efforts, impacted soils were excavated and stored pending long-term treatment.

The proponent for the project is the Petroleum Products Division of the Government of Nunavut, with Nunatta Environmental Services Inc. providing environmental advisory and technical support. The proposed water licence would authorize water and waste management activities associated with the construction, operation, closure, and post-closure phases of the Baker Lake Landfarm Project.

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
R-01	Clarification On The Proposed Maximum Landfarm Capacity
R-02	Proximity Of The Landfarm Site To Waterbodies
R-03	Clarification Of The Impact Of Construction On Local Runoff Patterns
R-04	Missing Site Characterization Information
R-05	Clarification On The Landfarm Water Monitoring Plan
R-06	Clarification On The Status Of The Access Road
R-07	Determination Of Freeboard Height
R-08	Location Of Spill Kit
R-09	Clarification On Spill Response On Muskeg
R-10	Clarification On Post-Restoration Monitoring
R-11	Missing Consultation Records
R-12	Adequacy Of Proposed Term Of Licence
R-13	Missing Attachments

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
Application for a new Water Licence	Nunatta Environmental Services Inc., March 02, 2026
Baker Lake Spill Response 2021 – Remedial Action Plan	AECOM Canada Limited, August 06, 2021

Document Title	Author, File No., Rev., Date
Survey, Sampling, and Regulatory Update, Baker Lake Landfarm	Nunatta Environmental Services Inc., July 02, 2025
Supplemental Information Guide (SIG)	Unknown, V1, Unknow date
Monitoring Plan PPD Baker Lake Landfarm	Nunatta Environmental Services Project, February 27, 2026
Construction Drawing Baker Lake Landfarm	Community and Government Services Petroleum Products Division, June 27, 2025
Topographic Map Baker Lake	Natural Resources Canada, August 17, 2011
Spill Contingency Plan PPD Baker Lake Landfarm	Nunatta Environmental Services, V1, February 15, 2026
Closure And Reclamation Plan PPD Baker Lake Landfarm	Nunatta Environmental Services Project, V1, October 15, 2025
Operation And Management Plan PPD Baker Lake Landfarm	Nunatta Environmental Services Project, V1, January 08, 2026

C. RESULTS OF REVIEW

1. Clarification On The Proposed Maximum Landfarm Capacity

Comment:

CIRNAC notes that the application states that the proposed landfarm has a maximum treatment capacity of approximately 2,500 m³ of soil. However, the Spill Response Remedial Action Plan (RAP) estimates that the volume of petroleum-impacted soil requiring remediation ranges from approximately 1,975 m³ to 2,775 m³ (Spill Response RAP, Table 1). As the upper bound of the estimated contaminated soil volume exceeds the stated landfarm capacity, it is unclear why this landfarm capacity was selected during the design of the landfarm or how potential exceedances would be managed.

Recommendation:

(R-01) CIRNAC recommends that the proponent justifies selecting a landfarm capacity of 2,500 m³, considering the higher maximum soil volume estimated in the RAP. CIRNAC also requests information on contingency planning should the volume of contaminated soil exceed the landfarm's capacity, including how excess material would be managed.

2. Proximity Of The Landfarm Site To Waterbodies

Comment:

CIRNAC notes that the application does not clearly identify the proximity of the proposed landfarm to the high water mark of any adjacent waterbodies. Photographs from the site visit show surface water pooling and runoff adjacent to the site, and the proponent notes that water was observed running along the eastern property boundary during the June 7, 2025 site visit (Survey and Sampling, Section "Site Visit", p. 4). It is unclear whether this observed flow represents a defined watercourse, or surface runoff, and whether the proposed landfarm location respects the minimum 31 m distance from the high water mark of waterbodies.

In addition, the application does not clearly describe how surface water that appears to be present on site will be diverted away from the landfarm to maintain the integrity of the infrastructure. This makes it difficult to determine if the chosen landfarm site is compliant with regulatory requirements.

Recommendation:

(R-02) CIRNAC recommends that the presence of nearby waterbodies or drainage features on or near the landfarm site be clearly identified, including indicating if the distance from the proposed landfarm to the high water mark of nearby waterbodies is at minimum 31 m. CIRNAC also recommends that additional information be provided on

surface water management measures, including how runoff will be directed or diverted to prevent water from entering or pooling around the landfarm cell.

3. Clarification On The Impact Of Construction On Local Runoff Patterns

Comment:

CIRNAC notes that the application indicates "*Changes in the existing topography from construction are also expected to change local water runoff patterns.*" However, the basis used to determine those changes and the anticipated extent of such changes are not described (Application, Block 17). While the proponent indicates that impacts will be mitigated through "standard measures" and by designing the landfarm to limit changes to topography, the application does not provide details on the runoff assessment undertaken or on the specific design elements intended to address drainage. Observations from the June 7, 2025 site visit indicate surface water pooling and flowing throughout the site, suggesting that runoff management is a relevant consideration for the proposed works (Survey and Sampling, Site Visit, p. 4).

Recommendation:

(R-03) CIRNAC recommends that the proponent clarify on how changes to local runoff patterns were assessed and the anticipated extent of those changes. CIRNAC also recommends that additional information be provided on surface drainage and water management features (e.g., ditches, grading, or other controls), and on how the landfarm infrastructure is designed to limit topographic alteration and associated hydrological effects.

4. Missing Site Characterization Information

Comment:

CIRNAC notes that according to section 4.0 (Site Characterization) of the Landfarm Supplemental Information Guidelines (SIG), information related to groundwater flow and direction, groundwater regime, surface water quality, groundwater quality, and potential seepage is proposed to be described in the annual report following construction of the landfarm. Deferring this information until post-construction limits the ability to establish baseline site conditions against which potential construction and operational effects on water and groundwater can be assessed and limits CIRNAC's ability to properly review the application.

Section 4.0 of SIG also identifies permafrost regime characteristics (including active layer depth and frost-related hazards) and the likelihood of flood events as baseline information

requirements; however, for this project the SIG indicates that “no further investigation is planned” for these components (SIG, s. 4.0, items 4 and 5). The application documentation does not describe permafrost conditions, flood risk, or how these factors were considered in site selection or design. In the absence of such information, it is unclear whether permafrost and potential flooding have been evaluated as part of understanding the suitability of the site and the design of the proposed infrastructure.

Recommendation:

(R-04) CIRNAC recommends that baseline groundwater and surface water conditions be characterized prior to construction, including groundwater flow and direction, surface water quality, groundwater quality and potential seepage pathways.

CIRNAC also recommends that the proponent indicate whether permafrost conditions and flood risk were assessed during site selection, and if so, where this information is documented. If permafrost condition and flood risks were not assessed as part of site selection, CIRNAC recommends that an assessment is made prior to construction. This information is needed to support the evaluation of potential impacts and mitigation measures associated with landfarm construction and operation.

5. Clarification On The Landfarm Water Monitoring Plan

Comment:

CIRNAC notes that the Monitoring Plan provides general descriptions of landfarm water sampling methods and that samples will be collected either “directly from the landfarm” or from temporary storage containers (e.g., totes or tanks) prior to disposal, however it does not specify the sampling frequency, number of samples, or fixed sampling locations for landfarm water (Monitoring Plan, section 5.2; and section 6.2). In the absence of defined locations, timing, and sampling frequency, it is unclear how landfarm water quality will be consistently characterized over time or compared to applicable criteria.

Recommendation:

(R-05) CIRNAC recommends that the proponent clarify the proposed landfarm water sampling program, including where samples will be collected (e.g., sump, storage containers), how often sampling will occur, the number of samples per event, and the parameters to be analyzed. This information would allow CIRNAC to determine whether the proposed monitoring framework is adequate to characterize landfarm water prior to treatment or disposal.

6. Clarification On The Status Of The Access Road

Comment:

CIRNAC notes that the application states that the proposed landfarm site is “accessible by road from the hamlet” (Application, Block 4); however, it is unclear whether any new access road construction is proposed as part of the project. The construction drawings depict an access road connecting the landfarm entrance to the main road (Construction Drawings, C-03, C-04 and C-06), however this feature does not appear on all submitted mapping (Construction Drawings, C-01 and topographic map). The application does not describe the construction of an access road as a project component.

As a result, it is unclear whether the access road is already existing infrastructure or will need to be built. If the access road is part of the infrastructure to be built, it is unclear if factors such as changes to surface drainage and runoff have been considered. This limits CIRNAC’s ability to fully evaluate what building work is needed in this application and if proposed mitigation measures are adequate.

Recommendation:

(R-06) CIRNAC recommends that the proponent clarify whether the access road shown in the construction drawings has already been built or if a new construction is needed. If a new or modified access road is required, CIRNAC recommends additional information be provided on how road construction and associated drainage features (e.g., grading, ditches, culverts) will be considered in the assessment of potential effects on surface water runoff and drainage patterns.

7. Determination Of Freeboard Height

Comment:

CIRNAC notes that the Monitoring Plan states that a minimum of 0.5 m of freeboard will be maintained at the downgradient end of the landfarm to prevent overtopping of berms (Monitoring Plan, section. 5.2). The application does not describe the basis for this freeboard height, including whether it accounts for extreme precipitation events or snowmelt. In addition, the documentation does not identify the modelling, assumptions, or design criteria used to determine berm height and freeboard requirements.

This information would support the CIRNAC’s assessment of the landfarm’s capacity to manage water under anticipated and extreme conditions.

Recommendation:

(R-07) CIRNAC recommends that the proponent clarify how the proposed freeboard height was determined and that the height of the freeboard be adjusted to a minimum of 1 m and have the ability to contain a 1 in 100 year rain event, to ensure proper preventative measures to manage water in case of extreme conditions.

8. Location Of Spill Kit

Comment:

CIRNAC notes that Section 2.3 of the Spill Contingency Plan indicates that a spill kit will be transported to the landfarm site in vehicles when personnel is present. The documentation does not appear to identify a spill kit stored on-site, nor specify a designated location for the spill kit at the landfarm. In the absence of a permanent on-site spill kit, it is unclear how immediate spill response would be managed if a spill were to occur outside of periods when staff is present.

Recommendation:

(R-08) CIRNAC recommends that a spill kit be permanently located at the landfarm site and that the location where it would be stored be identified.

9. Clarification On Spill Response On Muskeg

Comment:

CIRNAC notes that the Spill Contingency Plan indicates that, in the event of a spill on muskeg, low-pressure water would be used to flush diesel toward a collection point (Spill Contingency Plan, section 5). The application does not explain the rationale for this response technique, or how the potential spread of contaminated runoff would be contained in a muskeg environment, which is typically characterized by high permeability and hydrological connectivity. It is also unclear why a spill response approach specific to muskeg is required for this site and how this scenario differs from other spill response measures described in the plan. This makes it difficult to evaluate if the proposed spill plan is appropriate to the project.

Recommendation:

(R-09) CIRNAC recommends that the proponent clarify the technical basis for using low-pressure water flushing for spill response in muskeg areas. CIRNAC also recommends that the proponent clarify why a muskeg-specific spill response scenario is included and how it is applicable to the landfarm site.

10. Clarification On Post-Restoration Monitoring

Comment:

CIRNAC notes that the Closure and Reclamation Plan indicates that following a post-restoration period, no additional active measures are anticipated, and that the site is expected to be physically and chemically stable and ready for future use after one year

(Section 2.1). The documentation does not describe how this one-year timeframe was determined for the landfarm site, or how longer-term effect of the landfarm closure and potential off-site migration of contaminants would be properly assessed in a single monitoring visit the summer following restoration (Closure and Reclamation Plan, section 4). There is also no groundwater or surface water sampling plan included in the post-restoration monitoring section of the Closure and reclamation Plan, making it unclear how water quality would be assessed post-closure.
Given the nature of landfarm operations, it is unclear how long-term restoration and stability are expected to be demonstrated within the proposed timeframe.

Recommendation:
(R-10) CIRNAC recommends that the proponent clarify the technical justification for the proposed one-year post-restoration period, including how this timeframe is considered sufficient to demonstrate long-term stability of the site and that no off site migration of contaminants as occurred. CIRNAC also requests additional information on how monitoring results would inform decisions to continue, extend, or conclude post-closure monitoring and on how monitoring would be conducted to assess surface and groundwater quality, including sampling frequency, location and the number of samples collected .

11. Missing Consultation Records

Comment:
CIRNAC notes that the application states that “PPD has consulted extensively with the Hamlet” and that the Hamlet supports the project and has made land available for the landfarm (Application, Block 20). However, the application package does not include consultation records. In the absence of these records, it is unclear how the consultation process was carried out and what issues were raised and how they were addressed.

Recommendation:
(R-11) CIRNAC recommends that the proponent provide the consultation records with the Hamlet, including the meeting summaries, correspondence, dates of engagement, the concerns identified, and any measures proposed or implemented in response.

12. Adequacy Of Proposed Term Of Licence

Comment:
CIRNAC notes that the application requests a water licence term from June 2026 to June 2031 (Application, Blocks 24 and 25). While this period covers the proposed

construction and operational phases, the project schedule indicates that closure and post-closure activities are planned to occur beyond the requested licence expiry date, from June 2031 to September 2032 (Application, Block 24). Without the terms of the licence covering this period, it is unclear how water use, waste, and monitoring activities associated with closure and post-closure would be regulated once the licence expires.

Recommendation:

(R-12) CIRNAC recommends that the proponent ensure the requested licence term covers the full life of the project, including construction, operation, closure and the long term post-closure monitoring period.

13. Missing Attachments

Comment:

CIRNAC notes that the Spill Response RAP references Attachment 1 – Figures (Figures 1 to 4) as key supporting material for site conditions, contaminated soil locations, assessment areas, and the proposed landfarm location. However, Attachment 1 does not appear to be included in the submitted RAP (Spill Response RAP, Attachments).

In addition, the Operations and Management Plan references Figure C-01, but this figure is not included in the document (Operations and Management Plan, Figure list). The absence of these referenced figures limits the ability to fully review the documents.

Recommendation:

(R-13) CIRNAC recommends that the proponent provide Attachment 1 of the Spill Response RAP and Figure C-01 of the Operations and Management Plan, as part of the Water Licence Application process for review.