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October 22, 2026

Mr. Richard Dwyer
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RE: City of Iqaluit Water Licence 3AM-IQA1626 – Response to Final Written Submissions

1.0 INTRODUCTION

Knight Piésold Ltd. (KP) is pleased to respond on behalf of the City of Iqaluit to final written submissions presented by intervenors in early October and ahead of the planned public hearing on November 5-6, 2026.

Tables 1 to 3 (attached) present the City's responses to the final written submissions from Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), the Government of Nunavut, and Fisheries and Oceans Canada (DFO).

In Table 4 (attached), the City provides its feedback on CIRNAC's proposed additions and modifications to conditions in the draft water licence framework.

The City's revised draft water licence framework is also attached. This revised draft version incorporates changes as an outcome of the City's review of final written submissions.

We have provided a more detailed response to DFO-03 below.

2.0 LAKE QIKIQTALIK OPERATING RULES FOR WATER WITHDRAWALS

DFO-TR-03 Water Withdrawal from Lake Qikiqtalik

DFO notes that in Part D, Condition 1 of the Draft Water Licence with regards to withdrawal from Lake Qikiqtalik, that withdrawal rules are "to be discussed with DFO".

DFO has yet to discuss these rules with the Proponent and further information requested in DFO-03 is required in order to inform these conditions.

Once the additional information requested in DFO-03 is provided, DFO will discuss water withdrawal rules specific to Lake Qikiqtalik to be included in Part D of the Water Licence.

The City of Iqaluit met with the DFO on October 8, 2026 to discuss the above technical review comment, and presented its approach without providing a final elevation at which pumping would stop. A stop pumping water level of El. 203.3 m is proposed. This is rationalized below.

Figure 1 presents the catchments and basins that comprise Lake Qikiqtalik. Water withdrawals will occur from the central basin, and the lake outlet is in the outlet basin (Catchment E on Figure 1).



Figure 1 Lake Qikiqtalik Catchments and Basins (from Golder, 2021)

As documented in Golder (2021), pressure transducers were installed in the outlet basin (Transducer #1) and central basin (Transducer #2) from September 2018 to June 2019. The water levels recorded during this period are shown on Figure 2. Figure 2 also illustrates how, at least in the winter of 2018/19, the central and outlet basins become disconnected during the winter, likely when the shallow area between the basins becomes frozen to the bottom. This one winter period of record suggests that the water level in the outlet basin drops steeply and the central basin water level increases slightly once the two basin water levels diverge. This data shows the outlet basin water level dropping to below El. 201.6 m in late winter.

For this reason, Tetra Tech Canada Inc. (2025) utilized two sub-basins to model the behaviour of the lake and used an assumed central basin outlet elevation of 203.0 m, in its water withdrawal assessment (Attachment 34 of the Application). This is a conservative assumption, as the outlet basin invert elevation appears to be closer to El. 201.6 m based on the lowest recorded water level in the outlet basin during the winter of 2018/19 (Figure 2).

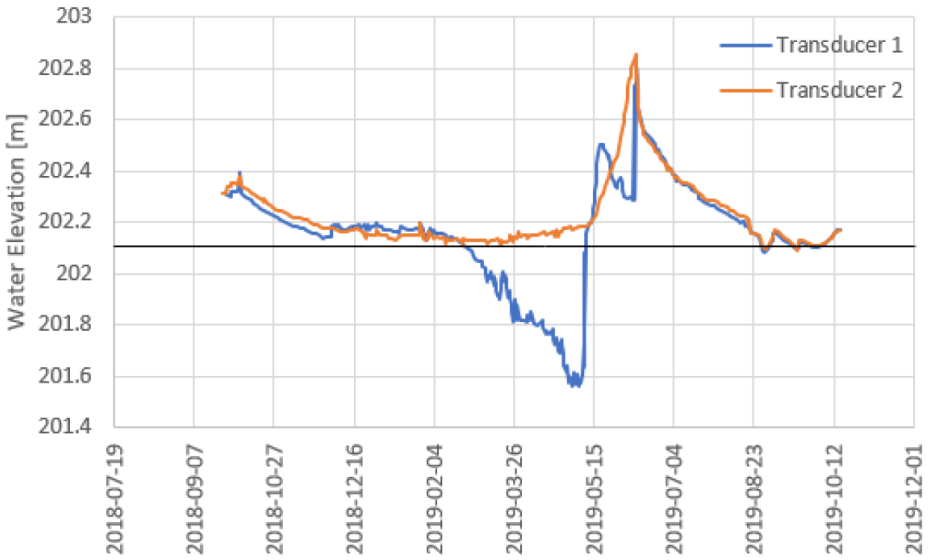


Figure 2 Lake Water Levels in the Central and Outlet Basins (from Golder, 2021)

Figure 3 presents the Lake Qikiqtalik lake elevation hydrograph results from the statistical analysis conducted by Tetra Tech. The area shaded pink represents dead storage in the lake, below the outlet elevation, and the area shaded yellow represents water that enters the lake each spring. The graph presents the mean water level elevation, and extreme wet and dry years are shown with dashed lines above and below the solid line showing the mean water level. Under each modelled scenario, the gradual drop in water elevation due to lake outflows and evaporation has a relatively consistent slope.

Under the assumed elevations in this graph, the City proposes to withdrawal water from the lake during freshet until the lake elevation reaches El. 203.3 m. At this elevation, the lake water level should remain above the central basin outlet elevation under all flow conditions. We view this as a conservative approach, since lake outflows appear to occur down to El. 201.6 m in the outlet basin (Figure 2).

This operating rule of freshwater withdrawals to a minimum water level of El. 203.3 m has been written into Part D, Item #1 of the revised draft water licence framework (attached).

Lake Qikiqtalik Monitoring Plan

The City has also agreed with DFO's recommendation to develop a fish habitat monitoring program as part of DFO's Request for Review process. The Lake Qikiqtalik Monitoring Program will consist of two parts:

- Multi-year water level monitoring to develop a longer term pre-development record of lake water levels
- Fish habitat monitoring to identify and monitor portions of the lake and downstream tributary that are potentially vulnerable to reduced lake levels or reduced flows

To support the development of this monitoring plan, the City will undertake desktop habitat mapping to identify the areas within the lake that are sensitive to water level changes (i.e., where changes to fish habitat could occur with lake drawdown). Field verification of the mapped sensitive areas may be conducted. A baseline of lake water levels will be established using level loggers.

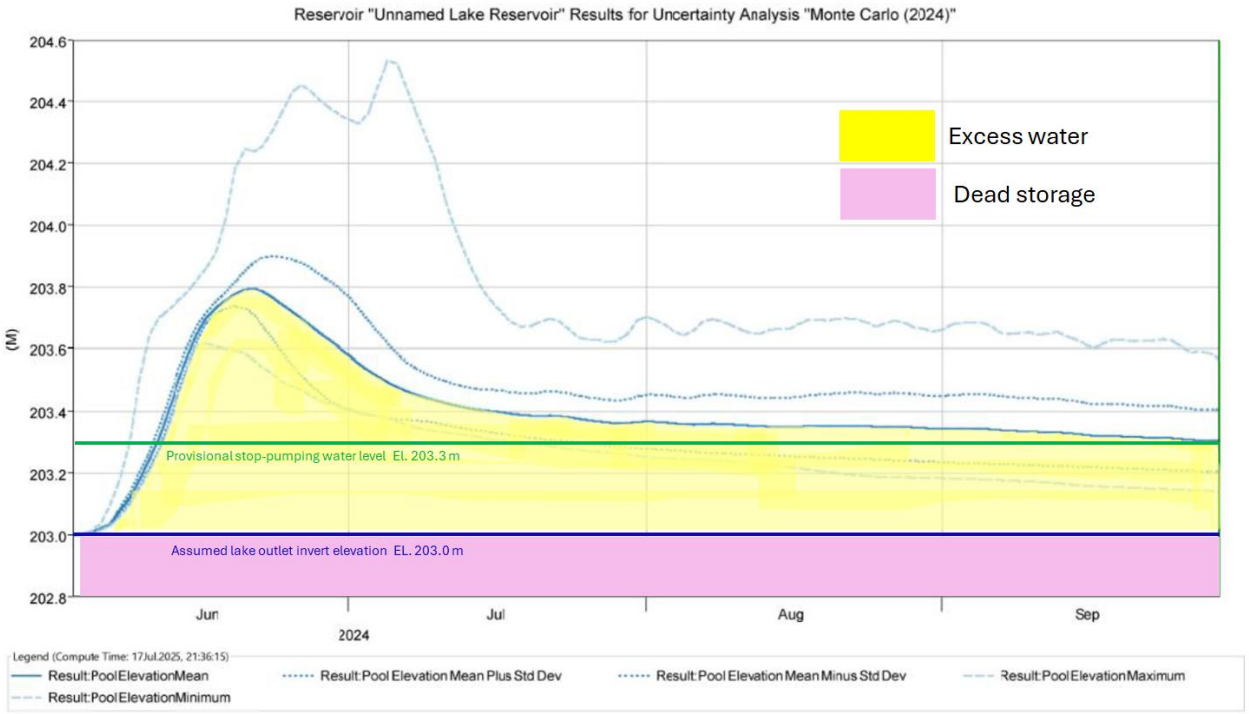


Figure 3 Lake Qikiqtalik Hydrograph (from Tetra Tech, 2025)

During operation, lake water levels will be monitored within the wet well in the pumphouse. The monitoring plan will include monitoring fish habitat conditions at a representative location in the downstream tributary. Contingency measures will be identified in the monitoring plan.

The City proposes to conduct the fish habitat component of the monitoring plan annually for the first three years of water withdrawals and then conduct staggered monitoring every five years thereafter. The City discussed with DFO in a meeting on October 8, 2026 that this monitoring plan can be developed as part of the DFO process and outside of the water licensing process.

3.0 CLOSING

We trust this meets the parties' current requirements. We look forward to ongoing engagement with the Nunavut Water Board and intervenors participating in the relicensing process.

Yours truly,
Knight Piésold Ltd.

Prepared:

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Reviewed:

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Approval that this document adheres to the Knight Piésold Quality System:

Attachments:

Table 1, Rev 0 Response to Final Written Submissions from CIRNAC
Table 2, Rev 0 Response to Final Written Submissions from the Government of Nunavut
Table 3, Rev 0 Response to Final Written Submissions from Fisheries and Oceans Canada
Table 4, Rev 0 Response to Final Written Submissions from Canada-Indigenous Relations and Northern Affairs Canada
Revised Draft Water Licence Framework

References:

Golder Associates Ltd., 2021. *Water Balance Assessment for Unnamed Lake – Modelling Report.* Ref. No. 20146631-Rev0, March.

Tetra Tech Canada Inc., 2025. *Qikiqtalik Lake Water Balance for Withdrawals - Final Report*. Ref. No. 704-ENG.WTRI03087-01, July 24.

Copy To: Kevin Kerr and Oghenerugba (Rugba) Ugboduma, City of Iqaluit

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TABLE 1

CITY OF IQALUIT
CITY OF IQALUIT MUNICIPAL WATER LICENCE

CITY OF IQALUIT WATER LICENCE 3AM-IQA1626 - RESPONSE TO FINAL WRITTEN SUBMISSIONS
RESPONSE TO FINAL WRITTEN SUBMISSIONS FROM CANADA-INDIGENOUS RELATIONS AND NORTHERN AFFAIRS CANADA

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Technical Comment No.	Subject	Reference	Comment	Recommendation	City of Iqaluit Response	Final Written Submission	City of Iqaluit's Response to the Final Written Submission
CIRNAC-TR-01 Part a	Predicted Environmental Effects and Proposed Mitigation Measures - Surface Water Quality and Dewatering	Attachments 29, 36	The application does not provide sufficient information to assess the effects of discharging pond dewatering effluent to the Niaqunngut (Apex) River. The PBSSR-LTWP states that several ponds in the LTWP area (i.e., within the access road alignment and reservoir footprint) will be permanently dewatered. Each of the ponds will be dewatered during construction, with the water discharged such that it will runoff into the Niaqunguk (Apex) River. It is noted that these ponds were sampled in 2024 but "the sampling parameters were those typically used to determine ecological potential and not for contaminants." As a result, the application lacks the water quality characterization necessary to determine whether the proposed discharge could adversely affect the receiving environment, whether treatment would be required, and what discharge criteria and monitoring should apply.	(TR-01) CIRNAC recommends that the City of Iqaluit provide the following: a) Confirmation of whether ponds have any known or suspected contaminant sources in their catchments or footprints	The Phase 1 ESA (Attachment 42) confirmed that there has been no development in the vicinity of the ponds, besides the placement of the temporary water pipeline from Apex River to Lake Geraldine. No Potential Areas of Environmental Concern (e.g., signs of contamination sources from human activities) were identified within the ponds and their catchments in the Phase 1 ESA (which included an on-foot site inspection of the ponds and their catchments). Therefore, it has been confirmed that there are no contaminant sources in the catchments and footprints of the ponds. The ESA did not indicate the need for the testing of contaminants. Note that the ponds already drain to Apex River or Lake Geraldine.	**Surface water quality and pond dewatering: Partially resolved; follow-up through licence condition required.** The draft Construction Water Management and Monitoring Plan identifies five ponds requiring dewatering. Water from Ponds A and B would be directed to existing drainage channels, with Discharge Point 1 identified as the preferred location because it follows the existing drainage direction toward Lake Geraldine. Water from Ponds C, D, and E would discharge to an existing drainage channel that ultimately drains toward the Apex River. The draft plan requires water quality testing before discharge and proposes criteria of: • pH between 6 and 9; • total suspended solids below 30 mg/L; and • ammonia-nitrogen below 4.0 mg/L. The plan also proposes a site-specific turbidity to total suspended solids relationship for operational monitoring. Discharge points would be set back at least 30 m from receiving waters, use a diffuser, and incorporate erosion and sediment controls. Construction contact water would be directed away from Lake Geraldine. CIRNAC considers that the draft plan represents significant progress. However, the final plan should more clearly establish: • monitoring and inspection frequencies; • action levels and stop-discharge thresholds; • corrective actions and response timelines; • downstream verification monitoring, where appropriate; • procedures for suspected contamination; • reporting requirements; • blasting-related contaminant management; • contingencies where treatment or controls are ineffective; and • the responsibilities of the City, contractor, Engineer, and environmental monitor. CIRNAC recommends that the final Construction Water Management and Monitoring Plan be submitted to the NWB at least 60 days before the relevant pond dewatering activities are proposed to begin, and that those activities not proceed until interested parties have reviewed the plan and the plan has received Board approval. CIRNAC considers this comment partially resolved. Follow-up through enforceable water licence terms and conditions is required.	CIRNAC's proposed plan contents have been merged with those requested in the FWS for CIRNAC-TR-02 and have been added to Part F, Item #15 of the revised draft water licence framework. Action thresholds have not been included since discharges to the environment are prohibited if the discharge limits in the licence are exceeded.
CIRNAC-TR-01 Part b			The EPP and PBSSR-LTWP report list as a mitigation measure that a water treatment reservoir will be constructed to collect water from dewatering and construction areas, ensuring the removal of harmful substances, such as nitrogen compounds and sediment, before releasing the treated water into the natural environment. However, confirmatory sampling of surface water prior to discharge of such water to the Niaqunguk (Apex) River is not listed as a mitigation measure. Further, there are no discharge criteria (e.g., TSS, turbidity) or stop/trigger thresholds identified.	b) A monitoring plan for dewatering discharge (pre-discharge, during discharge, and downstream verification as appropriate) including discharge criteria	A construction phase water management and monitoring plan will be prepared by the technical meeting that outlines this information.		
CIRNAC-TR-01 Part c			Surface water monitoring at the proposed water sources (i.e., Niaqunngut (Apex) River and Lake Qikiqtalik) during the construction and operation of the LTWP is not listed as a mitigation measure for water quality although the Application notes that the City will identify new surveillance network program (SNP) stations for the LTWP prior to the start of construction.	c) A plan for surface water monitoring during construction and operation, including for contaminants, with the number of samples and their general locations	This will be presented in the construction phase water management and monitoring plan mentioned above.		
CIRNAC-TR-01 Part d			A mitigation measure listed in the EPP and the PBSSR-LTWP report is that an Erosion and Sediment Control Plan will be developed and implemented to effectively mitigate the environmental impacts of erosion and sediment runoff. It is unknown what this Erosion and Sediment Control Plan will contain.	d) Clarification on the content of the Erosion and Sediment Control Plan, including stockpile management	The Erosion and Sediment Control Plan is presented as Attachment 31 of the Application.		
CIRNAC-TR-01 Part e			The EPP indicates that the environmental aspects for the LTWP were developed based on the Valued Environmental Components (VECs) identified in the Draft Physical, Biological and Socioeconomic Impact Assessment (PBSEIA) report dated November 2023, and in alignment with the Proponent's Guide – NIRB Technical Guide Series (February 2020). However, the November 2023 PBSEIA is now outdated. The most current version of the report is dated September 29, 2025, which includes updates to previously identified "unknown" impacts, as well as revised analyses and reporting.	e) An updated EPP that considers changes made in the PBSSR-LTWP report	The City has not identified any obvious gaps in the EPP (Attachment 29) relative to the impacts identified in the PBSSR (Attachment 36). The selected contractor will be required to prepare its own EPP prior to construction based on the requirements of the new licence as well as the final issued for construction drawings. The City commits to submitting its final EPP (prepared by the contractor) to the Board for review when the IFC drawings are submitted 30 days prior to commencing construction, in accordance with Part F, Item 1 of the licence.		
CIRNAC-TR-02 Part a	Predicted Environmental Effects and Proposed Mitigation Measures - Soil Contamination, Surface Water Quality, and Blasting	Attachments 25, 29, 36	The application does not identify or assess the potential effects of blasting on surface water quality. While the PBSSR-LTWP states that ammonium nitrate fuel oil (ANFO) explosives will not be used, blasting activities will occur within the Project footprint, including in areas that will be dewatered. The EPP does not identify a pathway of effects between blasting residue and soil or surface water quality.	(TR-02) CIRNAC recommends that the City of Iqaluit provide the following: a) Identify the types of explosives to be used and their potential to generate residues that may affect soil or surface water quality	The City has assumed that a nitrogen-based explosive will likely be used, either ANFO or an emulsion-based explosive. Hence, monitoring for ammonia in runoff from construction areas will be required. This will be identified in the forthcoming construction phase water management and monitoring plan.	**Blasting-related effects on water quality (pages 9-10)** The City indicated that nitrogen-based explosives, including ammonium nitrate fuel oil or emulsion-based explosives, may be used. It acknowledged that ammonia monitoring of runoff from blasting areas would be required and stated that the matter would be addressed in the Construction Water Management and Monitoring Plan. CIRNAC recommends that the final plan identify: • explosives anticipated for use; • pathways by which residues could enter runoff, seepage, or dewatering water; • measures to minimize losses of explosives and blasting residues; • ammonia and other appropriate monitoring; • discharge criteria and action thresholds; and • contingency measures for elevated results. CIRNAC recommends that the final Construction Water Management and Monitoring Plan be submitted to the NWB at least 60 days before the relevant blasting-related activities are proposed to begin, and that those activities not proceed until interested parties have reviewed the plan and the plan has received Board approval. CIRNAC considers this comment partially resolved. Follow-up through enforceable water licence terms and conditions is required.	See above.
CIRNAC-TR-02 Part b			The Blasting Assessment focuses on water overpressure but does not consider the potential for blasting-related residues (i.e., energetics) to affect soil and water quality. As a result, the application does not provide sufficient information to assess whether blasting activities could contribute to increases in parameters such as nitrogen compounds in runoff or dewatering effluent, and the potential effects on the receiving environment.	b) Describe the pathways by which blasting-related substances may enter surface water (e.g., runoff, seepage, or dewatering)	This will be presented in the construction phase water management and monitoring plan mentioned above.		
CIRNAC-TR-02 Part c			In the absence of this information, it is not possible to evaluate potential soil or water quality impacts associated with blasting or to determine whether specific mitigation, discharge criteria, or monitoring requirements are necessary.	c) Assess the potential effects of these inputs on the receiving environment	This will be presented in the construction phase water management and monitoring plan mentioned above.		
CIRNAC-TR-02 Part d			Additional information is required to characterize the potential effects of blasting on water quality and to identify appropriate mitigation and monitoring measures.	d) Include mitigation measures to minimize the release of blasting-related contaminants to soil and surface water in the EPP	This will be presented in the construction phase water management and monitoring plan mentioned above.		
CIRNAC-TR-03	Predicted Environmental Effects and Proposed Mitigation Measures - Soil Contamination	Attachment 42	While Arcadis completed an Enhanced Phase I Environmental Site Assessment (ESA) for the LTWP in 2023 and identified several Areas of Potential Environmental Concern (APECs), including the Iqaluit Shooting Range, the assessment did not fully consider the implications of reusing borrow material from these locations at other sites with different future land use designations. Soil sampling at the Shooting Range identified lead concentrations exceeding the Government of Nunavut (GN) Tier 1 Residential/Parkland criterion (70 mg/kg), although below the Industrial criterion (260 mg/kg). The application of Industrial criteria at the source location is understood; however, if this material is excavated and reused during construction, the suitability of the receiving environment must be considered. It is currently unclear whether the landfill would accept this lead-impacted soil as landfill disposal criteria have not been defined.	(TR-03) CIRNAC recommends that the City of Iqaluit provide the following: a) Further investigation be conducted at the Shooting Range to delineate the extent of lead impacts prior to excavation or re-use of such soil b) A reuse assessment be completed that considers the land use and exposure pathways at proposed placement locations, to ensure consistency with applicable GN soil quality criteria c) In the absence of sufficient delineation or reuse analysis, soils from the Shooting Range and surrounding area be conservatively managed as contaminated and not reused in areas accessible to the public d) The Proponent confirm whether the West 40 Landfill would accept this material, recognizing that landfill acceptance criteria have not been defined to date e) Potential pathways for migration of lead-impacted material to nearby water bodies be evaluated and, if warranted, incorporated into mitigation and management measures	The City acknowledges that lead-contaminated soils may exist in the berms and in the immediate area at the shooting range, and that this could preclude their use in construction of the LTWP. The City will consider this matter further. Regardless, the City will not use any soil for construction of the reservoir that exceeds the GN's Tier 1 Residential/Parkland criterion for lead. Soil exceeding the Industrial criterion for lead will not be used for construction of ancillary infrastructure (for example, roads) unrelated to the storage of water.	**Lead-impacted soil at shooting range (page 10)** The City acknowledged that lead-contaminated soil may be present in the shooting-range berms and immediate area. It was committed by the City not to use soil exceeding the Government of Nunavut Tier 1 Residential/Parkland criterion for construction of the reservoir. The City also stated that soil exceeding the Industrial criterion would not be used for ancillary infrastructure. CIRNAC considers this comment resolved, subject to the soil not being reused unless suitable characterization and a receiving-site assessment demonstrate that reuse is appropriate.	Acknowledged

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Technical Comment No.	Subject	Reference	Comment	Recommendation	City of Iqaluit Response	Final Written Submission	City of Iqaluit's Response to the Final Written Submission
CIRNAC-TR-04	4.Studies and Designs: Site Specific Data and Analysis to Support the Design and Management Decisions - Cascading Effects of Upstream Dam Structure Failures	Attachment 8, 9	The 2024 Dam Safety Review indicates that the Lake Geraldine Dam remains an Extreme Consequence dam based on Canadian Dam Association (CDA) Dam Safety Guidelines classification (2013). The review also notes that the inundation maps used to support this classification were developed in 2012 and have not been updated, although the downstream environment was considered generally comparable to conditions at the time those maps were prepared. The Dam Safety Review is focused specifically on Lake Geraldine Dam, including a condition assessment, design adequacy, hydrotechnical review, freeboard, structural stability, instrumentation, and dam safety management. The review does not include an assessment of cascading effects arising from failure of dam structures as proposed upstream of Lake Geraldine.	(TR-04) CIRNAC recommends that the City of Iqaluit provide the following: a) Clarification of whether failure of any proposed upstream dam structures, reservoirs, or other hydraulic controls could result in cascading effects at Lake Geraldine.	Yes, the proposed new reservoir is hydraulically linked to Lake Geraldine and could cause cascading effects. The initial Inundation Study will be preliminary in nature until the project design is finalized (i.e., reservoir volume and dam/dyke sizing and footprint finalized). The initial report will outline what is currently perceived to be the worst case scenario - a total loss of Dam 1 and the LG Dam based on the 50% Design Report. A full dam breach analysis, to follow at a later date, will assess whether the failure of the upper reservoir could lead to failure or unsafe conditions at the Lake Geraldine Reservoir. A full Inundation Study will follow once the design (i.e., reservoir volume and geometry, dam/dyke footprints and sizes) is finalized.	**Cascading effects of upstream dam failure (page 12)** The City provided a preliminary Dam Breach and Inundation Analysis based on the 50 percent design. The analysis evaluates a rainy-day complete breach of Dam 1 and identifies potential flood pathways toward populated areas and critical infrastructure. The report expressly states that it is a draft and partial submission. It does not address cascading failure of the Lake Geraldine Dam. The report states that the future complete analysis is expected to assess additional sunny-day and rainy-day scenarios for Dam 1, Dyke 2, Dyke 6, and Dyke 8 and evaluate potential cascading effects once the design is more advanced. CIRNAC considers the preliminary report useful for identifying potential flow paths but insufficient for final regulatory and emergency-planning purposes. CIRNAC recommends that, before water is transferred into the new reservoir, the City submit a final dam breach and inundation analysis based on the final design. The analysis should evaluate: • appropriate sunny-day and rainy-day scenarios; • failure of the principal dam and relevant dyke structures; • cascading effects on the Lake Geraldine Dam; • downstream flood routing and inundation; • consequences to people, infrastructure, access, water treatment and power supply; • environmental consequences; and • implications for emergency preparedness and response. CIRNAC considers TR-04 and TM-11 partially resolved, subject to the City submitting a final Dam Breach and Inundation Analysis that addresses cascading failure to the NWB for comment by intervenors at least 60 days before proposed filling of the new reservoir, and that the analysis receives Board approval before the new reservoir is filled.	The analyses listed by CIRNAC appears consistent with the requirements of the Canadian Dam Association's Dam Safety Guidelines and relevant technical bulletins. The City has updated the wording in Part D, Item #11 in the revised draft water licence framework to refer to meeting CDA requirements.
			The 2012 Dam Breach Analysis & Inundation Mapping Study evaluated hypothetical breach scenarios for the Lake Geraldine concrete dam/spillway and central berm, including breach hydrographs, mapped inundation extent, and infrastructure at risk. The objectives and methodology of that study are directed toward understanding the consequences of a Lake Geraldine Dam failure. The study does not include any upstream breach scenario, compounding failure scenario, or cascading failure assessment. None of the documentation provided includes an assessment of cascading failure on the Lake Geraldine Dam from a dam break of the proposed structures upstream of Lake Geraldine included in the licence renewal application.	b) If such structures and/or scenarios exist, an assessment of the potential effects on Lake Geraldine Dam performance, reservoir conditions, flood routing, inundation, and consequence assessment.	A dam breach analysis will be conducted prior to construction in accordance with Canadian Dam Association (CDA) Dam Safety Guidelines. The analysis will consider the potential for cascading effects, as mentioned above. Emergency preparedness and response plans will be developed and scaled based on the results of the analysis. The initial Inundation Study will be preliminary in nature until the project design is finalized (i.e., reservoir volume and dam/dyke sizing and footprint finalized). The initial report will outline what is currently perceived to be the worst case scenario.		
CIRNAC-TR-05	Studies and Designs: Site Specific Data and Analysis to Support the Design and Management Decisions - Dam Safety Inspections / Dam Safety Review	Attachments 8, 9	Dam Safety Inspections (DSI), and/or Dam Safety Reviews (DSR) are required to be completed each year for the Lake Geraldine water supply facility. Twelve deficiencies from the 2024 DSI are noted in the 2024 DSR along with their recommended mitigations. CIRNAC acknowledges that the City is monitoring thermistors and recognizes that temperature trends are important for permafrost/embankment thermal regime and seasonal stability considerations. However, monitoring only thermistors does not satisfy the full intent of data collection from installed instrumentation. From a dam safety perspective, pore pressure data that can be collected using a piezometer is typically the most direct early indicator of internal erosion potential, changing seepage gradients, and hydraulic response during reservoir level changes and freeze thaw cycles. CIRNAC acknowledges the City has retained a third party to repair or relocate the Lake Geraldine intake	(TR-05) CIRNAC recommends that the City of Iqaluit provide the following: a) Report on the design progress and anticipated implementation of the Lake Geraldine intake valve	This work was awarded as design-build in 2025, and issued for construction (IFC) drawings will be submitted to the Board in the coming weeks, 30-days before construction in accordance with the terms of the current licence. The work is expected to be completed by the end of August 2026.	**Lake Geraldine dam safety deficiencies (page 13)** The City provided design information for replacement of the Lake Geraldine intake valve and stated that the work was expected to be completed during 2026. The updated compliance assessment states that a Dam Safety Review was completed in 2024 but that a Dam Safety Inspection was not completed in 2025. The City indicated that a Dam Safety Inspection was planned for fall 2026. CIRNAC considers the intake-valve design issue addressed, subject to completion of the work and reporting in accordance with the licence. CIRNAC recommends a term and condition is added to the water licence specifying the Annual Report include the status of all Dam Safety Inspection and Dam Safety Review recommendations, required actions, target dates, completed work, and remaining deficiencies. CIRNAC considers this comment partially resolved. Follow-up through enforceable water licence terms and conditions is required.	The following requirement is in the current licence and carried forward in the revised draft water licence framework: *c. Copy of reports generated from Dam Safety Inspections and Dam Safety Reviews along with the Licensee's proposed actions to address issues identified and/or updates on continuing actions to address issues;*
				b) A detailed plan that describes how the identified deficiencies will be addressed within the timelines provided in the DSR and	The City's detailed plan to address the DSI/DSR deficiencies is presented as Attachment A.		

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CIRNAC-TR-06	Studies and Designs: Site Specific Data and Analysis to Support the Design and Management Decisions - Permafrost	Attachments 08, 16, 38	Section 3.3.7 of the Application indicates that the dam and dykes will be founded on prepared bedrock surfaces, suggesting limited influence of permafrost on foundation conditions. However, the Application does not clearly demonstrate how permafrost dynamics have been considered over the long term. Reservoir impoundment is expected to result in thawing of underlying permafrost and development of a talik, including along reservoir margins, which may create potential seepage pathways beneath containment structures or through adjacent terrain. The Application does not clearly indicate whether potential seepage losses associated with permafrost degradation have been evaluated, or how such risks would be managed. Section 3.3.8.3 of the Application describes a buried, heated service corridor between the reservoir and Lake Geraldine. Available geotechnical information (Attachment 38) does not clearly demonstrate that this alignment has been fully characterized. While portions of the alignment may be founded on bedrock, localized fractured bedrock and/or thicker overburden may be present. The potential for permafrost degradation associated with the heated corridor, and the resulting risk of preferential seepage along or adjacent to the structure, are not clearly addressed. In addition, the *Lake Geraldine Dam Safety Review* (Attachment 8) includes recommendations related to monitoring and potential permafrost impacts, including: • implementation of additional monitoring (pore pressure, temperature, and displacement) at the spillway; and • establishment of a performance monitoring program for existing instrumentation, including data management and reporting (e.g., dashboard development). Section 3.1 of the Application indicates that deficiencies and associated deadlines were identified in the 2025 Dam Safety Review; however, the Application does not clearly describe the status of these recommendations or progress toward their implementation, nor how they have been incorporated into the proposed project design and monitoring framework.	(TR-06) CIRNAC recommends that the City of Iqaluit provide the following: a) Clarification of how permafrost conditions, including potential thaw and talik development associated with reservoir impoundment, have been considered in the design of the dam, dykes, and adjacent terrain	The dam and dykes which form the perimeter of the reservoir will be founded on a competent bedrock surface of which some will be above the permafrost zone while others will be below. All water retention structures will also be founded on a prepared competent bedrock surface, with liners keyed into competent rock. RQDs calculated from bedrock samples recovered to date are relatively high, and the bedrock is expected to be relatively impermeable. Furthermore, the bedrock formation is very ice poor and as such very little groundwater is moving through this zone. Further geotechnical testing has been recommended to obtain more supporting data, at each structure and also at areas adjacent structures. The permeability of the bedrock is not expected to be affected by permafrost thaw and talik development. The permafrost conditions will be monitored post construction via the instrumentation (thermistors and piezometers, among others) which will be installed within all water retention structures as well as adjacent terrain.	**Permafrost, seepage and monitoring (pages 13-14)** The City indicated that water-retaining structures would be founded on prepared competent bedrock and that the liner would be keyed into competent rock. They also stated that instrumentation would be installed to monitor permafrost, seepage, pore pressure, and movement and that an Operations, Maintenance and Surveillance Plan would be prepared. CIRNAC recommends that final design documentation and the Operations, Maintenance and Surveillance Plan include: • design assumptions related to permafrost and talik development; • seepage performance criteria; • instrumentation locations and review requirements; • pore-pressure, thermal, settlement, deformation, erosion, and seepage monitoring; • performance indicators and action thresholds; • response and contingency measures; • inspection and reporting requirements; • data management and responsibilities; and • periodic reassessment of climate-related risks. CIRNAC recommends the Operations, Maintenance and Surveillance Plan be submitted to the NWB at least 60 days before pumping into the new reservoir, and that those water transfer activities not proceed until interested parties have reviewed the plan and the plan has received Board approval. CIRNAC recommends the monitoring as specified in the Operations, Maintenance and Surveillance Plan is reported as a term and condition of the Annual Report. CIRNAC considers this comment partially resolved. Follow-up through enforceable water licence terms and conditions is required.	The City will develop an Operation, Maintenance, and Surveillance (OMS) Plan for the reservoir and water retention structures that is consistent with the Canadian Dam Association's Dam Safety Guidelines and relevant technical bulletins. The majority of the items noted by CIRNAC would be captured in such a plan. Regional climate assessments and associated broad-spectrum risk-analyses are considered beyond the scope of a single facility's OMS, however. Factors that may be influenced by climate effects (e.g., ground stability) as they pertain to the specific structures would be monitored as part of the standard OMS Plan, but an over-arching climate risk assessment framework is not considered appropriate for this type of document. The City questions whether OMS manuals are normally approved by the Board.
				b) Assessment of the potential for seepage losses resulting from permafrost degradation beneath and adjacent to containment structures, and describe how such risks will be monitored, managed, and mitigated	On the basis of the information collected to date, it is expected seepage through the bedrock will be minimal and will not be readily distinguishable from any seepage arising from water passing through the liner material that comprises the water barrier within the upstream slope of the water retention structures. Containment structures will be heavily instrumented to monitor any potential seepage, the active layer, and any progressive permafrost degradation. Potential seepage (including through and around liner) has been modelled in the most recent technical memo, and is an ongoing part of design. Seepage potential through the competent bedrock (primary founding surface) is expected to be low if not non-existent. Further geotechnical testing has been recommended to obtain more supporting data.		
				c) Additional geotechnical characterization along the service corridor alignment, as required, to confirm subsurface conditions relevant to design and permafrost stability	The service corridor will be trenched into competent bedrock under the Dam 1 foundation, itself founded on competent bedrock and prepared with dental concrete. The inlet will be sealed as part of Dam 1 construction. The surrounding bedrock is expected to be relatively impermeable and unaffected by permafrost thaw/talik progression. Additional geotechnical testing in the service corridor area has been recommended to obtain more supporting data.		
				d) Evaluation of the potential for permafrost degradation associated with the heated service corridor and its implications for seepage and structural performance, and description corresponding mitigation	Please see above. Service corridor backfill will be a robust aggregate, constructed in tandem with the Dam 1 foundation, and with the potential to be grouted if deemed necessary. Any seepage through the corridor would ultimately outlet to Lake Geraldine, at the reservoir discharge point.		
				e) Clear description of how investigative findings, design assumptions, and mitigation measures related to permafrost and seepage are integrated into construction and operational plans	The nature of the site conditions in the area of the reservoir are such that any impacts from any changes to the permafrost regime in the area beneath the water retention structures and the reservoir itself will be minimal, as it relates to potential deformation and seepage impacts. As noted earlier the nature of the bedrock on site is such that groundwater migration is expected to be minimal and could not be readily distinguished from seepage that would be arising from water movement through the geocomposite liner system which will be keyed into the competent bedrock. The monitoring of permafrost conditions will be done during construction using instrumentation (thermistors) installed as part of the investigation program while a comprehensive instrumentation program for monitoring of piezometric conditions, vertical and horizonal movement (inclinometers and survey monuments) as well as the thermal conditions will be installed as part of the construction for the purposes of long term monitoring of conditions in the future. An Operation, Monitoring and Surveillance (OMS) plan will be prepared for the water retention structures associated with the reservoir and it will be the responsibility of the City to ensure the conditions of the OMS are adhered to.		
				f) An update on the status of Dam Safety Review recommendations (Attachment 8), including actions taken or planned with respect to the following: a. enhanced monitoring of pore pressure, temperature, and displacement at the spillway; and b.implementation of a performance monitoring program for existing instrumentation, including data management and reporting	The City's detailed plan to address the DSI/DSR deficiencies is presented as Attachment A.		
				g) Confirmation of how these monitoring recommendations have been incorporated into the overall monitoring and adaptive management framework for the Project	The City is not sure the intent of this recommendation, if it is related to the LTWP (as parts a to e) or related to the Lake Geradine dam safety deficiencies referenced in part f?		

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TABLE 1

CITY OF IQALUIT
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CITY OF IQALUIT WATER LICENCE 3AM-IQA1626 - RESPONSE TO FINAL WRITTEN SUBMISSIONS
RESPONSE TO FINAL WRITTEN SUBMISSIONS FROM CANADA-INDIGENOUS RELATIONS AND NORTHERN AFFAIRS CANADA

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Technical Comment No.	Subject	Reference	Comment	Recommendation	City of Iqaluit Response	Final Written Submission	City of Iqaluit's Response to the Final Written Submission
CIRNAC-TR-07	Studies and Designs: Site Specific Data and Analysis to Support the Design and Management Decisions - Water Balance	Attachments 12, 13, Table 1	As part of the Completeness Assessment submitted to the City of Iqaluit on February 6, 2026, CIRNAC recommended that the City provide an updated Lake Geraldine Water Balance Model (Comment 2026-02-06-IR#08). In the City of Iqaluit's Table 1 – City of Iqaluit Water Licence Renewal/Amendment Application Response to Initial Information Requests document, the City indicated that Attachments 12 and 13 as part of the April 24, 2026 (Rev 1) application include the original Lake Geraldine Water Balance Model and associated updates. A review of this material indicates that an updated Lake Geraldine Water Balance Model, incorporating the most current available data, has not been provided. An updated water balance model is required under Part D, item 11, of the current licence at least 30 days prior to the start of water withdrawals from the Niaqunguk River (Apex River) at Monitoring Station No.: IQA-10. No updated water balance model has been submitted since new bathymetric data of Lake Geraldine was captured. The Attachment 13 – Lake Geraldine Water Balance Model Calibration Update – 2024 Refinement and Validation technical memorandum included in the Rev 1 application documents the recalibration and validation of the Lake Geraldine Reservoir Water Balance Model using the 2024 bathymetry data, and does not include forecasting or reporting-year analysis. The technical memorandum does not assess projected 2025 reservoir conditions or forecast potential risk for the 2026 winter period. The Lake Geraldine Water Balance Model Calibration Update report identifies gaps in available data and notes the potential influence of ice pressure, which was not considered in the calibration and validation process. The report notes: "It is recommended to complete the identified data gaps, including daily water consumption and emergency pumping volumes from 2018 and 2019, to allow for an extended calibration period. Also, it is recommended to verify the potential impact of ice pressure on water level measurements during the lake's ice-covered period."	(TR-07) CIRNAC recommends that the City of Iqaluit provide the following in accordance with previous recommendations: a) An updated completion schedule for the Lake Geraldine Water Balance Model and submit the updated Water Balance Model report once it is finalized.	The water balance being referred to is a GoldSim water balance that was developed by WSP for the purposes of predicting long-term water supplementation requirements for Lake Geraldine. This model, while useful for long-term planning (because it considers long-term weather patterns), is not a practical tool for estimating annual water supplementation requirements. The amount of water supplementation needed each open water period is a simple function of the amount of water remaining in the reservoir and the forecasted consumption. For this reason, the City has developed an Excel-based water balance for Lake Geraldine that it has been using as a planning tool to determine supplementation requirements each year (Attachment B). The daily water levels (stage measurements) in the reservoir are entered and the volume of water in the reservoir is calculated using a lookup table that relates stage to storage volume. The "deficit" (the difference between the current volume and the volume of the full reservoir) can be calculated, as well as the number of pumping days to refill the reservoir. A hydrograph is developed based on daily stage measurements and compared with that of previous years dating to 2018.	**Lake Geraldine and integrated water-supply water balance (Pages 5-6)** CIRNAC requested updated water-balance information for Lake Geraldine and the proposed municipal water-supply system. The City explained that it currently uses an Excel-based tool to estimate annual supplementation requirements and that the GoldSim water balance model was developed for longer-term planning. The City's draft licence framework proposes deleting the current requirement to submit an updated Lake Geraldine Water Balance Model before annual withdrawals from the Niaqunguk River. The City's rationale is that the existing model is no longer required as a planning tool and that annual pumping requirements can be assessed using its internal Excel-based water balance. CIRNAC does not support removing the requirement for water-balance modelling. The City currently holds a calibrated GoldSim water balance model. Updates and recalibration completed in 2025 included: • review of the full available period of daily climate, water-level, consumption, and supplementation data; • use of an updated Lake Geraldine stage-storage relationship based on the 2024 bathymetric survey; and • updates to the snowmelt component to improve representation of snow-cover sublimation and melt processes. The existing model therefore provides an established basis for evaluating the proposed integrated water-supply system. To support forecasting under the amended licence, the model should be updated to incorporate: • the additional storage provided by the new reservoir; the proposed pumping systems; • the proposed pumping systems; • the stage-storage relationship for the new reservoir; • supplemental withdrawals from Lake Qikiqtalik; • supplemental withdrawals from the Niaqunguk River; and • the results of further evaluation of potential ice-related effects on water-level measurements during ice-covered periods. The purpose of the updated model would not be to determine the City's day-to-day pumping schedule. Rather, it would provide a long-term planning and regulatory tool to evaluate whether the combined municipal water-supply system remains sustainable under variable meteorological conditions, rates of water consumption, source-water conditions, and infrastructure configurations. Long-term model results should be compared with observed system performance. Monitoring observations should then be used to verify and periodically recalibrate the model so that its assumptions and predictions continue to represent actual operating conditions. CIRNAC recommends that the renewed licence require the City to update the existing calibrated GoldSim water balance model to incorporate the Long-Term Water Project infrastructure and proposed supplemental water sources. The initial update should be completed following confirmation of the final new-reservoir configuration and before regular operation of the integrated water-supply system. CIRNAC further recommends that the model be reviewed against actual operating information on a regular basis and updated or recalibrated when monitoring demonstrates that its assumptions, inputs, or predictions are no longer representative. A fixed five-year update interval may be used as a maximum review interval, but recalibration should occur sooner where monitoring identifies a material change or deviation. CIRNAC considers this comment partially resolved. Follow-up through enforceable water licence terms and conditions is required.	The City maintains that its operationalized Excel-based tool is appropriate to inform needs to transfer water into the new reservoir to meet the City's water supply needs on an annual basis. It is a simple and effective tool that can be easily understood and used by City staff. It is also based empirical measurement of the water level in the reservoir and a stage-storage curve that relates the water level to an estimated volume. CIRNAC states the following in page 16 of its FWS regarding CIRNAC-TR-07: *The City's annual Excel-based water balance and the GoldSim model serve different purposes. The Excel-based tool may be used for short-term operational planning, while the GoldSim model provides a means of evaluating long-term water-supply sustainability under variable meteorological, water-demand, and source-water conditions.* The LTWP provides a long-term solution to Iqaluit's water supply needs. Initially, the additional water supply sources will provide well more water than is required. There is no need to continuously evaluated the availability of water supply under variable meteorological, water demand, and source-water conditions. The previously developed GoldSim water balance was a useful planning tool to predict the City's water supplementation requirements in the coming decades. And decades into the future, when the City has grown further and additional planning is needed, this tool or similar will be useful to undertake a similar planning exercise. In the meantime, annual updates to a GoldSim model are academic and are unrelated to regulatory compliance. The GoldSim model also requires external resources and would represent an unnecessary financial burden the City and its ratepayers. It would be a poor use of the City's financial resources, and the City will continue to make decisions using its Excel-based tool in any case.
				b) An updated and recalibrated Lake Geraldine Water Balance Model to include water consumption data and emergency pumping volumes for 2018 and 2019	An updated and recalibrated Lake Geraldine Water Balance Model to include water consumption data and emergency pumping volumes for 2018 and 2019 was recommended for the next model update. This enhancement would improve the overall accuracy and representation of historical conditions; however, it is not expected to significantly alter the model outcomes or key conclusions. Additionally, the City is currently using an excel-based water balance tool to forecast water pumping requirements from year to year (Attachment B).	**Integrated water balance modelling (Pages 15-16)** The City currently holds a calibrated GoldSim model for Lake Geraldine. The model was updated and recalibrated in 2025 using daily climate, water-level, consumption, and supplementation data; an updated Lake Geraldine stage-storage relationship based on the 2024 bathymetric survey; and refinements to snow-cover sublimation and melt processes. The model has not yet been updated to represent the complete future water-supply system. CIRNAC recommends that it be expanded to include: • the new reservoir and its stage-storage relationship; • the proposed pumping and transfer infrastructure; • withdrawals from Lake Qikiqtalik; • withdrawals from the Niaqunguk River; • transfers to the new reservoir and Lake Geraldine; • climate change projections; and, • updated water-consumption information. CIRNAC recommends the results of long-term modelling be compared to observed system operations as a term and condition of the Annual reporting requirements. The comparison is used to determine whether the model remains representative and whether recalibration is required. The City's annual Excel-based water balance and the GoldSim model serve different purposes. The Excel-based tool may be used for short-term operational planning, while the GoldSim model provides a means of evaluating long-term water-supply sustainability under variable meteorological, water-demand, and source-water conditions. CIRNAC recommends that the renewed licence require the City to update the existing calibrated GoldSim water balance model to represent the integrated municipal water-supply system, including Lake Geraldine Reservoir, the new reservoir, withdrawals from Lake Qikiqtalik and the Niaqunguk River, and the associated pumping and transfer infrastructure. The updated model should incorporate the final stage-storage relationship for the new reservoir and the results of the evaluation of potential ice-related effects on water-level measurements during ice-covered periods. CIRNAC further recommends that the licence require the City to compare modelled results with observed system performance and use the monitoring results to verify and periodically recalibrate the model. The model should be reviewed at intervals not exceeding five years and updated or recalibrated sooner where monitoring indicates that its assumptions, inputs, calibration, or predictions are no longer representative of actual conditions. CIRNAC recommends that the initial model update be submitted to the Board for review 60 days before operation of the integrated Long-Term Water Project water-supply system.	This portion of the CIRNAC FWS appears on pages 15-16. See the response above to the first response to CIRNAC's FWS which appears on pages 5-6 of its submission.
				c) An updated and recalibrated Lake Geraldine Water Balance Model with verification of the potential impact of ice pressure on water level measurements during the lake's ice-covered period	The effects of ice primarily impact the accuracy of water level measurements and are not expected to materially influence the overall water balance or model conclusions. The potential influence of ice conditions during the ice-covered period can be evaluated by comparing observed water levels with model-derived storage trends. Any minor discrepancies identified are likely attributable to measurement bias associated with ice effects. Where warranted, seasonal corrections may be applied, or winter data may be weighted or excluded to enhance calibration robustness. This refinement can be incorporated in a future update of the GoldSim water balance model.		

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CIRNAC-TR-08	Studies and Designs: Site Specific Data and Analysis to Support the Design and Management Decisions - Lake Qikiqtalik Volume and Withdrawal Guidance Values	Attachments 36, 32	The Water Withdrawal Study relies on Water Survey of Canada (WSC) hydrometric stations to estimate runoff and flow conditions; however, limitations in the underlying datasets introduce uncertainty that is not fully addressed. • Station 10UH015 ("Apex River 1 km Above Bridge to Nowhere") is identified as having intermittent data and lacking a sufficient period of record, yet is used to support the development of a synthetic dataset. The basis for this approach and the suitability of this station to represent watershed conditions are not clearly demonstrated. • The dataset for Station 10UH002 was modified to exclude the period from 1973 to 1988 due to transition issues between manual and digital records. The implications of excluding this data on the robustness of the analysis, including model calibration and flow estimation, are not clearly described.	(TR-08) CIRNAC recommends that the City of Iqaluit provide the following: a) A comparative assessment of physiography, watershed storage characteristics, and permafrost conditions among the selected WSC stations to demonstrate their suitability for estimating runoff and flow conditions for the Project	The analysis does not transpose flows from a distant or dissimilar basin. All assessment locations are nested points on the same river within the same Apex (Niaqunguk) River watershed: WSC 10UH015 (Apex River 1 km Above Bridge to Nowhere, coincident with licensed monitoring station IQA-10), the Apex Confluence, and WSC 10UH002 (Apex River at Apex) (Attachment 37: Figure 3-1). The catchment areas are 3,602.07 ha, 4,906.10 ha and 5,371.23 ha respectively, so the two ungauged locations lie entirely within the gauged 10UH002 catchment, with incremental contributing areas of only 669.7 ha and 465.1 ha (Attachment 37: Table 3-3, Figure 3-2). Because the assessment points are internal to the gauged catchment, they share a common physiographic, storage and permafrost setting. The watershed consists of low-relief, glacially scoured igneous and metamorphic terrain. Surficial geology mapped from the Geological Survey of Canada 1:100,000 surficial data model comprises till blanket (58%), till veneer (23%), bedrock, water and lake (Attachment 34: Section 5.3, Table 5-3, after Golder Associates Ltd., 2021 - Attachment C). Relief across the catchment is minor, which is why a single snowpack elevation band was sufficient in the HECHMS model (Attachment 34: Section 6.2.1). Lake and wetland storage, including the 634.37 ha Qikiqtalik Lake subwatershed, was explicitly delineated and represented with elevation-storage curves derived from Tetra Tech's 2019 bathymetric survey and LiDAR (Attachment D and Attachment 34: Sections 5.1 and 5.4, Figures 5-5 to 5-7). The Apex River synthetic data set for the Confluence excludes Qikiqtalik Lake contributions, so lake storage is not double-counted between the two withdrawal configurations (Attachment 37: Section 3.1). The entire study area lies within the continuous permafrost zone of southern Baffin Island (City of Iqaluit, 2022; Mathon-Dufour, 2016; Britannica, Nunavut). Frozen ground and near-surface bedrock conditions were represented in the runoff modelling through an SCS Curve Number of 87, reflecting the low infiltration capacity of the area (Attachment 34: Section 5.3). The transfer between 10UH002 and 10UH015 does not depend on an assumption of physiographic similarity. It uses seasonal scaling factors derived by Nunami Stantec	**Lake Qikiqtalik volume and withdrawal guidance values (pages 6-7)** The City clarified the hydrologic methodology, treatment of Water Survey of Canada data, sensitivity analysis, under-ice lake volume, and distinction between hydrologic yield, planning assumptions, and engineering design capacity. CIRNAC considers those aspects of the comment resolved. The City is requesting an annual licensed withdrawal limit of 1,300,000 m³ from Lake Qikiqtalik. However, the draft licence framework does not contain completed withdrawal rules. CIRNAC recommends that annual withdrawal decisions continue to be supported by lake level monitoring and adaptive management measures to ensure withdrawals remain protective during low-water conditions. CIRNAC recommends that withdrawals from Lake Qikiqtalik not begin until the Board has approved operating rules addressing: • annual and seasonal withdrawal limits; • water-level or flow thresholds; • environmental flow requirements, where applicable; • monitoring and reporting; • low-water contingencies; and • adaptive management. CIRNAC considers this comment partially resolved. Follow-up through enforceable water licence terms and conditions is required.	The City has now proposed operating rules for the water withdrawal from Lake Qikiqtalik, and outlined a proposed monitoring program that will be further developed in consultation with DFO. The operating rules (freshet withdrawals and no pumping below a water level of El. 203.3 m) is presented in Part D, Item #1 of the revised draft water licence framework. The rationale for this water level is provided in the letter submission by Knight Piesold that accompanies these responses. The proposed Lake Qikiqtalik Monitoring Program is outlined in the KP letter and the response to DFO-TR-03 in Table 3.
				b) Description of the methodology used to develop the synthetic dataset for Station 10UH015, including assumptions, limitations, and associated uncertainties	The methodology is documented in Attachment 37: Section 3.1 and illustrated in Attachment 37: Figures 3-2 and 3-3. The steps were as follows: 1. Daily mean flows were obtained from WSC 10UH002 (Apex River at Apex), restricted to the automated digital-era record (1989 to 2021, providing 23 usable years) and to the April to October open-water withdrawal season. Missing days are itemized by year in Attachment 37: Table 3-2. 2. Extreme freshet measurements were removed using the Inter-Quartile Range method, with an upper bound of Q3 + 1.5 IQR = 3.725 m³/s (Attachment 37: Table 3-4). All removals are itemized by year and volume in Attachment 37: Table 3-5. This step prevents rare extreme events from inflating the projected withdrawable capacity of the river and is therefore conservative for supply planning (Attachment 37: Section 3.1.1). 3. Seasonal scaling factors of 0.513 (August and September) and 0.746 (all other months), developed by Nunami Stantec (2023) from concurrent 10UH002 and 10UH015 measurements, were applied to represent 10UH002 flows at 10UH015 (Attachment 37: Section 3.1). 4. For the Apex Confluence, the scaling factors were prorated upward by the approximately 19% increase in catchment area, excluding Qikiqtalik Lake contributions (Attachment 37: Section 3.1, Figure 3-2). The intermittent 10UH015 record was not used as the statistical basis for flow estimation. Its role was limited to establishing concurrent flow ratios against the long-term 10UH002 gauge; all long-term flow statistics derive from the 33-year 10UH002 record. Results must nonetheless be expressed at 10UH015 because it is coincident with monitoring station IQA-10, the control point specified in Type A Water Licence 3AM-IQA1626 (Attachment 37: Sections 2.0 and 3.2). The principal assumptions are that runoff generation is approximately proportional to catchment area within the basin, and that the seasonal scaling relationship is stationary between years. The main limitation is stated in the technical memo (Attachment : the Stantec factors were derived from a single concurrent year (2021),	**Water-balance model verification and adaptive management (pages 16-17)** Ongoing verification and recalibration of the water balance model will require monitoring information representing climate, source-water levels, river flows, supplemental withdrawals, transfers, storage, and municipal water use. This monitoring is intended to support water-supply planning, model verification, and adaptive management of the integrated municipal water-supply system. The technical memorandum identifies the following information: • climate data from the Environment and Climate Change Canada weather station; • Lake Geraldine water levels from Water Survey of Canada gauge 10UH013; • Niaqunguk River flows from Water Survey of Canada gauge 10UH015; • supplemental flow rates from the Niaqunguk River and Lake Qikiqtalik; • municipal water-supply rates recorded by the supervisory control and data acquisition system; • water levels in the new reservoir; and • water levels in Lake Qikiqtalik, where those levels cannot be reliably derived from available extraction-flow and stage-discharge information. Instrumentation will therefore be required to monitor water levels in the new reservoir. Direct instrumentation should also be provided at Lake Qikiqtalik unless the City demonstrates that water levels can be reliably determined using the final extraction infrastructure and an appropriate stage-discharge or stage-storage relationship. CIRNAC recommends that the monitoring program identify: • each required monitoring location; • the parameter to be measured; • the measurement method; • measurement and reporting frequency; • data-quality requirements; • responsibility for data collection and validation; • procedures for addressing missing or unreliable records; and • how the data will be used to verify and recalibrate the water balance model. CIRNAC recommends the monitoring requirements supporting verification of the Water Balance Model be incorporated into the integrated municipal water-supply Operations and Maintenance Manual and submitted to the NWB for intervenor review and Board approval prior to operation of the Long-Term Water Project. CIRNAC recommends the corresponding Board approved monitoring requirements are added to the water licence. CIRNAC recommends the Annual Report compare observed system performance with the applicable model results and describe any resulting model updates, operational changes, or adaptive management measures.	The City's position regarding ongoing updates to the GoldSim water balance model is provided in response to CIRNAC-TR-07. An outline of the Lake Qikiqtalik Monitoring Program is presented in the KP letter and in the response to DFO-TR-03.
			Collectively, the Application does not clearly demonstrate that the selected stations are representative of the study watershed in terms of physiography, storage characteristics, and permafrost conditions, as required to support the hydrologic analysis.	c) Assessment of the implications of excluding the 1973–1988 dataset from Station 10UH002 on the hydrologic analysis	The rationale for the exclusion is given in Attachment 37Sections 3.1 and 3.1.1. Around 1989, WSC station 10UH002 transitioned from manual readings to automated digital measurements of higher quality and frequency, and only from approximately 1989 onward did the station capture transient sub-ice discharge during winter months. The pre-1989 and post-1989 records are therefore not homogeneous, and blending them would not provide an appropriate one-to-one comparison.		
			An inconsistency was noted in the Physical, Biological and Socioeconomic Screening Report, Long Term Water Project – Supply and Storage for Lake Qikiqtalik under ice volume. Volume is stated as 4,737,900 cubic metres on page 2-20 and 4,616,900 cubic metres on page 1 in section 2.2.4.3.	d) Confirmation of whether a sensitivity analysis of the model environmental assessment (MEA) or hydrologic model was completed to evaluate the influence of dataset exclusions and assumptions, and provide the results of such analysis. Reconcile the inconsistency and confirm the volume of Lake Qikiqtalik.	Sensitivity and uncertainty analyses were completed and the results are reported. The principal uncertainty analysis is the Monte Carlo assessment: 6,000 year-long HEC-HMS simulations, generating 2,190,000 daily discharge samples, in which monthly precipitation (log-normal) and initial snow water equivalent (normal) were sampled from fitted distributions, consistent with the HEC-HMS uncertainty-analysis framework (Attachment 34 Sections 1.0 and 6.6; HEC, 2023). Results are reported as a full percentile distribution of annual outflow (Table 8-2, Figures 8-1 to 8-5) rather than as a single value. Sensitivity to specific inputs and assumptions was also evaluated. Calibration testing		
			The LTWP Lake Qikiqtalik Water Withdrawal Study states median annual discharge of approximately 1,681,676 m³ and proposes a withdrawal of approximately 1,284,184 m³ as "best estimate to use for planning". The report also states that "We remain confident that 1,100,000 m³/yr per year previously presented should be used in the design of the proposed conveyance and storage systems" while acknowledging the value "could be closer to 1,300,000 m³."	e) Clarification of the target withdrawal limit for Lake Qikiqtalik	The three values cited serve different purposes. The value of 1,681,676 m³/yr is the median (50th percentile) of the modelled annual outflow distribution (Attachment 34 Table 8-3). It is a hydrologic statistic describing lake yield, not a proposed withdrawal amount. The value of 1,284,184 m³/yr is the mode of the right-skewed lognormal outflow		

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CIRNAC-TR-09	Studies and Designs: Site Specific Data and Analysis to Support the Design and Management Decisions - Climate Projection Horizons	Attachment 32	The project is expected to operate until 2128; however, the climate projections and risk assessment go up to the 2080s (2071–2100). The assessment does not clearly demonstrate that climate impacts have been evaluated over the full design life of the infrastructure.	(TR-09) CIRNAC recommends that the City of Iqaluit extend the temporal scope of the climate projections and Climate Lens Assessment to align with the anticipated operational life of the project (i.e., to 2128), or provide clear justification demonstrating that the current projection horizon (2071–2100) is sufficient to characterize climate-related risks over the full design life of the infrastructure.	The City suggests that given the uncertainty in both climate change and in the models as far out as 2128, that the current work is adequate.	**Water Use and Water Supply - Climate projection horizon (page 7)** The Long-Term Water Project is intended to operate beyond the temporal horizon used in the Climate Lens Assessment. The City indicated that extending climate projections farther into the future would be subject to increasing uncertainty. CIRNAC accepts that a precise projection through the full operating life may not be technically reliable. However, uncertainty does not remove the need to manage long-term climate risk. CIRNAC recommends that the licence require periodic climate-risk reassessment as part of the water balance updates. Reassessment should occur at intervals not exceeding five years or sooner if updated projections or monitoring indicate that existing assumptions are no longer representative. **Water Balance and Climate Change - Long-term climate risk (pages 17-18)** CIRNAC recommends the climate variability and climate change be addressed through periodic reassessment (every five years or sooner) rather than reliance on a single assessment prepared at the design stage. Reassessment should inform water-balance modelling, reservoir operations, dam safety, monitoring, contingency planning, and adaptive management. CIRNAC recommends a summary of the climate variability and climate change updates made, and the corresponding impacts to water-balance modelling, reservoir operations, dam safety, monitoring, contingency planning, and adaptive management be reported as a term and condition of the water licence in the corresponding year's Annual Report.	The City does not agree that continuous climate risk reassessment is appropriate. As described in response to CIRNAC-TR-07, the LTWP will meet the City's water supply requirements for several decades. A constant re-assessment of climate risk is unnecessary to support ongoing operations. Decades from now, the City will need to undertake a similar planning exercise based on available data and projections at that time. The need for this, for example, could be considered at the next licence renewal.
CIRNAC-TR-10	Annual Report Template - Water Quality Monitoring Data	Water Licence 3AM-IQA1626	As part of the Completeness Assessment submitted to the City of Iqaluit on February 6, 2026, CIRNAC recommended that the City provide a revised Annual Report template that includes (i) a comparison of water quality data to predictions/standards for the annual reports and (ii) a section relevant to the NIRB screening within their annual report template (Comment 2026-02-06-IR#09). In the City of Iqaluit's Table 1 – City of Iqaluit Water Licence Renewal/Amendment Application Response to Initial Information Requests document, the City responded to (i) that such a comparison was not possible as no predictions had been provided. However, in the current application, the effects of the Project on water quality are characterized as negative and mitigable. This indicates that an effect prediction has been made, but the basis, magnitude, and parameters of this prediction are not defined. Clearly articulated predictions of impacts to water quality (e.g., expected changes in parameters, magnitude, spatial extent, and duration) should be made to establish a framework for comparing future monitoring results or to evaluate whether mitigation measures are effective.	(TR-10) CIRNAC recommends that the City of Iqaluit provide a revised Annual Report template that includes a comparison of water quality data to predictions/standards for the annual reports and a section relevant to the NIRB screening.	The City will not be submitting a comparison of water quality data to predictions (which don't exist) or standards (which are public health related, and outside the jurisdiction of the Board). Reporting on compliance with NIRB screening terms and conditions is not a requirement of the current licence and as a result the City does not believe the comparison and NIRB compliance reports are required.	**Annual reporting and comparison criteria (pages 22-23)** The City indicated that quantitative water-quality impact predictions were not developed and that public-health drinking-water standards are outside the purpose of environmental effects monitoring. CIRNAC agrees that drinking-water standards should not be used as a substitute for environmental criteria. However, environmental results should be interpreted against relevant licence criteria, environmental quality guidelines, baseline or reference conditions, approved predictions, or other technically appropriate benchmarks. CIRNAC recommends the Annual Report: • compare results with applicable criteria or benchmarks; • identify exceedances and adverse trends; • discuss potential causes; • assess mitigation effectiveness; • identify corrective or adaptive management actions; and• report the status of follow-up work.	The City disagrees that water supply sources should be sampled and evaluated under the water licence. Following the technical meeting in August, the City clarified its sampling and reporting requirements under the Public Health Act, and will focus on this.
						Environmental Monitoring Program and QA/QC Plan (page 23) The updated compliance assessment acknowledges that some parameters required by Schedule I were not analyzed because the City did not have the necessary equipment and staff were not aware of all sampling requirements. The City states that equipment has been procured and that staff are being trained. CIRNAC considers IR-23 and IR-24 resolved, subject to completion of the City's commitments and incorporation of the applicable sampling and QA/QC requirements into the governing monitoring document. TR-10 and TR-19 remain partially resolved because the monitoring framework must also establish consistent comparison criteria, reporting requirements, follow-up procedures, and adaptive management responses. CIRNAC recommends the Environmental Monitoring Program and QA/QC Plan be clearly identified as the governing monitoring document. It should include: • responsible positions and contact information; • sampling methods and frequencies; • field and laboratory procedures; • calibration and maintenance; • field, trip, and equipment blanks, as applicable; • laboratory information and accreditation; • data validation; • comparison criteria; • reporting; • follow-up procedures; and • a current letter of acceptance from an Analyst at the accredited laboratory.	The Environmental Monitoring Program and QA/QC Plan was prepared in accordance with the 1996 INAC guideline that is cited in the licence.
						Compliance assessment and corrective actions (pages 24-25) The City's updated compliance assessment provides a condition-by-condition review. For some non-compliance matters, it identifies corrective actions and schedules. Examples include: • installation of monitoring-station signage; • completion of Dam Safety Inspections; • landfill fencing and windblown-waste management; • containment of hazardous materials; • staff training and acquisition of sampling equipment; and • updating or submission of plans and manuals. The assessment does not demonstrate that every corrective action has been completed. CIRNAC recommends that each Annual Report include a consolidated compliance table identifying: • the applicable licence condition, Board direction, Inspector direction, or dam-safety recommendation; • the deficiency or required action; • the responsible party; • the target date; • current status; • evidence of completion; and • any revised completion date and rationale.	The current licence and the revised draft water licence framework already requires the Licensee to report on compliance: *m. A summary of actions taken to address concerns or deficiencies listed in the inspection reports and/or compliance reports filed by an Inspector;*
CIRNAC-TR-11	Compliance Assessment - Potable Water and Sewage Lagoon	Attachment 7 and Application Main Document	Part E item 1 of the Compliance Assessment states that "the licen*see is authorized to use the Sewage Lagoon Facility and the Wastewater Treatment Plant to treat and dispose of Wastewater Generated by the undertaking authorized under this Licence until such time that the Upgraded Wastewater Treatment Plant authorized by the Licensee is constructed and commissioned, or as otherwise approved by the Board in writing.*" The Application indicates that the upgraded wastewater treatment plant has been constructed and commissioned; however, the sewage lagoon continues to be used for management of certain waste streams, including industrial (brewery) waste and WWTP sludge. Table 2.2, item H of the Application main document indicates that the City is not requesting any changes to the Licence for the sewage lagoon. As presented, the Application does not clearly reconcile current lagoon use with existing licence wording.	(TR-11) CIRNAC recommends that the City of Iqaluit provide the following: a) Confirmation of the current and intended future role of the Sewage Lagoon, including whether it is to remain in operation (e.g., for industrial waste, sludge management, and/or contingency storage for the WWTP) b) Request for amendments to the Water Licence, as required, to ensure that licence conditions accurately reflect current and proposed operations of the Sewage Lagoon	The sewage lagoon will continue to be used to store untreated sewage and sewage sludge during periods of upset conditions or when repairs are required in the WWTP. The following is what is being requested as a new clause in Part E of the new licence to account for this change: *The Licensee is authorized to use the Sewage Lagoon Facility to treat and dispose of Wastewater including sewage sludge when upset conditions occur in the Wastewater Treatment Plant, or when the Wastewater Treatment Plant is offline for repair, or as otherwise approved by the Board in writing.*	**Role of sewage lagoon (page 18)** The City confirmed that the sewage lagoon will remain available for storage of untreated sewage and sewage sludge during wastewater treatment plant upset conditions or when repairs are required. The City's draft licence framework includes corresponding authorization. CIRNAC considers this comment resolved, subject to inclusion of appropriate wording and monitoring requirements in the renewed licence.	Acknowledged
CIRNAC-TR-12	Seasonal Water Quality	Application Main Document, Attachment 36	The reference document includes water quality sampling from a single sampling event (July 2024) for Lake Qikiqtaliik rather than for each season and each source water.	(TR-12) CIRNAC recommends that the City provide sampling results for relevant water quality parameters from each season and source water.	The water quality testing completed to date was adequate for the City to establish its suitability as a water supply source, and the City is not planning to conduct further sampling.	**Seasonal baseline water quality (page 23)** The available material does not provide a complete seasonal water-quality baseline for all proposed source waters. The City stated that existing sampling was adequate to establish suitability as a water-supply source and that it did not intend to conduct additional sampling. CIRNAC's concern is not limited to drinking-water suitability. Seasonal baseline information is needed to characterize natural variability and provide a basis for interpreting future monitoring. CIRNAC recommends that, before regular withdrawal from Lake Qikiqtaliik or operation of other new source-water facilities, the City provide baseline information sufficient to characterize seasonal conditions. Alternatively, the City should provide a technical rationale demonstrating that the existing information adequately characterizes natural variability and supports future effects monitoring.	The City does not agree that there is a need to characterize natural variability and provide a basis for interpreting future monitoring. The water sources will be used for water supply purposes, and water withdrawals are not expected to impact water quality at these sources. Public health requirements will be met.

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TABLE 1

CITY OF IQALUIT
CITY OF IQALUIT MUNICIPAL WATER LICENCE

CITY OF IQALUIT WATER LICENCE 3AM-IQA1626 - RESPONSE TO FINAL WRITTEN SUBMISSIONS
RESPONSE TO FINAL WRITTEN SUBMISSIONS FROM CANADA-INDIGENOUS RELATIONS AND NORTHERN AFFAIRS CANADA

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CIRNAC-TR-13	Construction Monitoring	Attachment 31	The Erosion and Sediment Control Plan identifies that inspections will be carried out by an Environmental Monitor; however, it does not establish quantitative monitoring parameters or define thresholds that would trigger corrective actions or remediation.	(TR-13) CIRNAC recommends that the City of Iqaluit provide the following: a) Identification of specific monitoring parameters (e.g., turbidity, total suspended solids) for construction activities	The following parameters and maximum concentration of any grab samples have been deemed applicable to surface runoff from the construction area and any quarries and borrow pits: pH: between 6 and 9 TSS: 30 mg/L Ammonia (NH3-N): 4.0 mg/L These parameters and thresholds will be incorporated into the construction phase water management and monitoring plan referenced above. Regarding TSS monitoring, since TSS is determined by laboratory gravimetric analysis and is not available in real time, turbidity may be used as a surrogate monitoring parameter for active construction stormwater management. This is typically accomplished by collecting paired turbidity measurements and laboratory TSS samples during representative discharge events, developing a site-specific correlation between turbidity and TSS, and then using the corresponding turbidity value as an operational trigger to demonstrate or maintain compliance with the applicable TSS-based effluent limit. This approach may be utilized during construction of the LTWP. The City proposes to file the TSS-turbidity correlation testing with the Board at the onset of monitoring.	**Construction monitoring (page 10)** The City proposed construction runoff monitoring for pH, total suspended solids, and ammonia where blasting is involved. It also indicated that monitoring would be event-based and occur during periods of flow or discharge and before discharge from sumps or containment structures. CIRNAC considers the proposed parameters and discharge criteria generally acceptable. CIRNAC recommends the final Construction Water Management and Monitoring Plan specify locations, qualifying events, field and laboratory methods, sampling and inspection frequencies, response timelines, corrective actions, documentation, and reporting. The plan should be submitted to the NWB at least 60 days before the relevant construction activities are proposed to begin, and that those activities not proceed until interested parties have reviewed the plan and the plan has received Board approval. CIRNAC considers this comment partially resolved. Follow-up through enforceable water licence terms and conditions is required.	Please see the City's response to CIRNAC-TR-01.
				b) Definition of baseline conditions and established quantitative thresholds and/or duration criteria that would trigger corrective actions or remediation	The City does not envision the need to establish baseline conditions for the parameters proposed for monitoring surface runoff from construction areas. The proposed discharge limits have been adopted by the Board in other Type A water licences.	**Construction Water Management and Monitoring Plan** The City committed to provide an updated Environmental Protection Plan, a site-specific Erosion and Sediment Control Plan, a Construction Water Management and Monitoring Plan, a Construction Spill Contingency Plan, and an updated operational Spill Contingency Plan with associated timelines captured in the post-technical meeting list of commitments.CIRNAC considers the associated comments resolved, subject to inclusion of the plansand their corresponding commitment timelines as terms and conditions of the water licence. The related activity should not begin until the updated applicable plan has been circulated for intervenor comment and approved by the Board.	Acknowledged
				c) Clear description of the scope and frequency of routine monitoring to ensure consistent implementation during construction	Monitoring frequency for construction stormwater discharges is typically structured around qualifying precipitation and discharge events rather than a fixed calendar-based schedule. Monitoring is proposed during periods of flow/discharge. When sampling sumps or other containment, sampling will be undertaken prior to discharge.	**Construction monitoring:** Resolved, subject to commitments and licence conditions.	Acknowledged
CIRNAC-TR-14	Operation and Maintenance Plans for Water Works	Application Main Document Section 8, Table 8.1	Table 8.1 identifies the existing plans and operation and maintenance manuals required under the current licence. It does not include an operation and maintenance plan for the Water Treatment Facility, as required under the current Licence (Part D, item 2), or details for the Lake Geraldine Dam/Intake. The Application did not include an operation and maintenance plan for the existing or proposed water works.	(TR-14) CIRNAC recommends that the City of Iqaluit provide an operation and maintenance plan for the Water Treatment Facility and Lake Geraldine Intake.	An O&M Manual for the existing water treatment plant was presented as Attachment 11 of the Application. The LTWP facilities are currently undergoing detailed engineering design. The City proposes that a condition of the new licence include a requirement for an O&M Manual for the new LTWP components, once constructed. This could be an update to the Water Treatment Plant O&M Manual or a stand-alone manual for the new components of the water supply system.	**Operation and maintenance plans for water works: TR-14 and TM-12 (pages 14-15)** The City provided an operation and maintenance manual for the existing Water Treatment Plant. It committed to submit updated operation and maintenance documentation for new water-supply facilities before pumping into the new reservoir. CIRNAC recommends that the licence require updated documentation for the integrated water-supply system at least 60 days before water is transferred from the Long-Term Water Project facilities. The documentation should include: • Lake Geraldine Reservoir and associated intake; • the Water Treatment Plant; • the new reservoir; • source-water intakes and pumphouses; • pipelines and conveyance works; • operational procedures; • inspection, maintenance, and monitoring; • emergency response and contingency measures; and • roles, responsibilities, and reporting. Water transfer should not begin until the Board has approved the documentation.	The water treatment plant O&M manual ia a very large document. In fact, it is several manuals (general, electrical, mechanical, process) combined in one manual. The existing Lake Geraldine Dam has its own OMS Manual as well. An OMS manual will be prepared for the new reservoir, as discussed elsewhere already. The revised draft water licence framework includes the following proposed condition: *At least 60 days of operating the new pump stations to fill the new reservoir, the Licensee shall submit operation and maintenance manual(s) for the new water supply components associated with the Long Term Water Project, including the new reservoir, pipelines, and pumphouses.*
CIRNAC-TR-15	Temporary Storage of Waste Materials during Construction of the LTWP	City of Iqaluit Type A Water Licence Amendment and Renewal Application	Table 4.1 in the Application lists the types, projected amounts, and methods of disposal during LTWP construction. As an example, wood is to be disposed of at the City's landfill. It is not clear whether there are temporary measures for storing such waste at the construction site prior to final disposal (i.e., waste bins, stockpiles, etc.).	(TR-15) CIRNAC recommends that the City of Iqaluit clarify the temporary measures for storing such waste at the construction site prior to final disposal.	The City does not intend to establish temporary waste disposal sites during construction of the LTWP. The contractors will be required to dispose of waste in the City's landfill as it is generated.	**Temporary storage of construction waste (page 11)** The City stated that temporary waste-disposal sites would not be established for Long-Term Water Project construction and that contractors would be required to dispose of waste at the City's landfill as it is generated. CIRNAC considers this comment resolved.	Acknowledged
CIRNAC-TR-16	Wastewater System Capacity	Application Main Document, Table 1 IR Responses, Attachment 44	The Application refers to the WWTP Redesign Report (2017), which indicates that the facility has been designed to process up to 151 L/s (13,046 m³/d), corresponding to the forecasted peak hour flow for 2041. The same report identifies an average day demand in 2041 as 4,328 m³/d (50.3 L/s) and maximum day demand of 8,696 m³/d (60.4 L/s). Wastewater treatment facilities are generally designed to convey peak hourly flows through hydraulic components without surcharge, treatment processes are generally sized based on average and maximum daily conditions, with peak flows assumed to occur over short durations and managed through storage and process resilience. Sustained operation at peak hourly flow rates may result in reduced treatment performance and effluent quality.	(TR-16) CIRNAC recommends that the City of Iqaluit provide the following: a) Clarification of the basis for the reported WWTP capacity, including whether it reflects peak hourly flow, maximum day flow, or average day flow	Design flows are presented in Table 2 of the 2017 WWTP Redesign Report (Attachment 44). This includes the peak hourly flow (151 L/s), the maximum daily flow (8,696 m3/d), and the average annual flow (or average day flow) of 4,348 m3/d. CIRNAC cited the maximum day demand, but it is the maximum daily flow. The text in Section 4.1.1 of the Application is only a plain language summary, and doesn't fully reflect the technical contents of the redesign report.	**Wastewater treatment plant capacity (page 19)** The City clarified that 151 L/s represents the hydraulic peak-hour flow and not the sustained effective treatment capacity. It identified an average annual design flow of approximately 4,348 m³/day and described the flow bases used for individual treatment processes. The City later stated that the plant could reach capacity by 2036 under the medium-growth scenario or by 2041 under the low-growth scenario. CIRNAC considers the distinction between hydraulic and treatment capacity resolved. However, ongoing reporting and infrastructure planning remain necessary. CIRNAC recommends that annual reports compare observed wastewater flows and treatment performance against the applicable design basis. If updated population and flow projections indicate that the plant may exceed its effective treatment capacity during the licence term, the City should be required to submit a capacity-management and infrastructure implementation plan with the following year's Annual Report.	The City will be monitoring the capacity of the WWTP against growing demands as part of its capital works planning process. The current licence and the revised draft water licence framework provide a means to introduce modifications or construction of a new plant, when necessary.
			As presented, the Application does not clearly distinguish between hydraulic conveyance capacity and effective treatment capacity, nor does it identify the flow rate at which the facility is expected to reliably meet effluent quality objectives under long-term operating conditions.	b) Identification of the flow rate at which the treatment processes are designed to consistently achieve effluent quality requirements over sustained operating conditions	The treatment process sizing basis is lower, with an average annual flow of 4,348 m³/d (50.3 L/s) and a maximum month/day design flow of approximately 5,218 to 8,696 m³/d, with individual process units sized accordingly (e.g., MBBR to maximum month conditions and hydraulic components to peak hour flow).		
			As presented, the Application does not clearly distinguish between hydraulic conveyance capacity and effective treatment capacity, nor does it identify the flow rate at which the facility is expected to reliably meet effluent quality objectives under long-term operating conditions.	c) Update on the reported treatment capacity in the Application, as required, to distinguish between hydraulic conveyance capacity and effective treatment capacity	The hydraulic conveyance capacity is equal to the peak hour flow of 151 L/s. The effective treatment capacity is provided in the response to part (b). Please refer to Attachment 44 for definitive design information on the WWTP.		

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CIRNAC-TR-17	Spill Contingency and Emergency Response Plans	Attachments 18, 30, 47, 51, 56, 57	Emergency response and spill contingency procedures are provided across multiple documents submitted with the City of Iqaluit Type A Water Licence Amendment and Renewal Application. Some documents are specific to investigative work (e.g., Attachment 18), whereas others apply to construction, or current or future site operations (e.g., Attachments 47, 51, 56 and 57). Where multiple documents address similar topics, including spill response, minor discrepancies among these documents introduce uncertainty for personnel, contractors, and other parties responsible for emergency response.	(TR-17) CIRNAC recommends that the City of Iqaluit provide the following: a) Provide a single, consolidated Emergency Response and Spill Contingency Plan applicable to all activities and facilities under the Water Licence, or clearly specify within each document which plan governs in the event of overlap to ensure consistency and avoid conflicting direction.	The City suggests that it is appropriate to have longer-term emergency response and spill contingency plans separate from those focused on construction of the LTWP, as the latter will need to contain site-specific and temporary information such as spill kit contents and locations, emergency contacts, etc.).	**Spill contingency and emergency response plans: TR-17, TM-13, and TM-14 (page 21-22)** The City stated it is appropriate to maintain separate construction and long-term operational spill plans because construction plans require temporary and site-specific information. CIRNAC agrees that separate plans can be appropriate. However, each plan should clearly identify: • the facilities and activities to which it applies; • where it is in effect; • the project phase covered; • which plan governs where requirements overlap; • fuel, chemicals, hazardous materials, and waste streams covered; • chemical-specific handling and response measures; • sewage spill detection and response; • safety data sheets; • notification and reporting; and • review and updating procedures. CIRNAC recommends the updated operational Spill Contingency Plan and Spill Contingency Plan for Construction Phase both clearly identify the listed items above.	Spill contingency plans will be submitted to the Board for approval, as specified in the revised draft water licence framework. The City reiterates an earlier response that it is not a requirement to have chemical-specific response plans for each and every SDS contained in a Spill Contingency Plan, as per CIRNAC's 2007 guidance (Guidelines for Spill Contingency Planning, prepared by Water Resources Division, Indian and Northern Affairs Canada, April 2007).
			Attachment 56 - Spill Contingency Plan, Revision 1, dated April 24, 2026, appears to be the primary plan for spill response. Review of this document identified that the Safety Data Sheets (SDSs) included in Appendix D of this Plan reference additional chemicals (e.g., propylene glycol antifreeze and engine coolant, hydrofluorosilicic acid, sodium hypochlorite, and proprietary water treatment chemicals) that are not addressed within the body of the plan. In addition, while the plan addresses sewage spills associated with facilities such as lift stations and lagoons, it does not address potential spills from the sewage force main, which fully buried and is not actively monitored.	b) Update Attachment 56 - Spill Contingency Plan to include within the body of the plan all chemicals identified in the SDSs, including applicable handling, response, and contingency measures	It is not a requirement to have chemical-specific response plans for each and every SDS contained in a Spill Contingency Plan. The City used CIRNAC's 2007 guidance (Guidelines for Spill Contingency Planning, prepared by Water Resources Division, Indian and Northern Affairs Canada, April 2007). Applicable handling requirements are provided in the SDS.		
				c) Expand the plan to address potential sewage spills from the sewage force main, including appropriate detection, response, and contingency measures given the absence of active monitoring.	The City has provided detailed response procedures for sewage spills from force mains and the lagoon because these are the most likely scenarios based on the City's experiences to date. Establishing detection, response, and contingency measures for a spill from the buried sewage force main is not a requirement.		
CIRNAC-TR-18	Proposed Modification to the Scope of the Current Water Licence - Wastewater Effluent Sampling Requirements	Application Main Document	Table 2.2 of the Application indicates that no changes are requested to monitoring requirements under the current licence. However, the existing wastewater effluent monitoring program requires monthly analysis of a broad suite of parameters, including a full ICP metals scan. While comprehensive, this approach is more consistent with detailed characterization programs than long-term operational monitoring. Under a CCME-based framework, sampling programs are intended to provide data that is directly relevant to ecological risk characterization. Once key constituents of potential concern have been identified, ongoing monitoring programs should be refined to focus on those parameters that are demonstrably linked to treatment performance and environmental risk.	(TR-18) CIRNAC recommends that the City of Iqaluit provide the following: a) A review of wastewater effluent monitoring requirements, including sampling frequency and analytical parameters, to align with a risk-based monitoring approach and practices applied to comparable municipal systems in Nunavut and elsewhere in Canada	Section 2.1 of the 2017 WWTP Redesign Report provides a history of previous discussions between the City, the NWB, and Environment and Climate Change Canada, and proposed design criteria are presented in Table 1 of the design report. The proposed design criteria (20 mg/L BOD and 20 mg/L TSS) are slightly more stringent than the CCME's National Performance Standards (25 mg/L and 25 mg/L, respectively). Unfortunately, the redesigned WWTP, commissioned in 2020, has not consistently met the discharge limits adopted as design criteria. As shown in Table 3 of Appendix A of the 2025 Annual Report, the design criteria for BOD of 20 mg/L was met during only three of 12 monthly sampling events, and the discharge criteria for TSS of 20 mg/L was met in only four of 12 events. The City experiences challenges with equipment breakdowns, high staff turnover, and limited funding. There are no comparable municipal systems in Nunavut. The four most recent Type A Water Licence renewals (Chesterfield Inlet, Arviat, Coral Harbour, and Igloolik) all have low tech lagoon systems that discharge overland through Tunda or wetland to the ocean. This approach is not an option based on the City's population, footprint and geography. Hence, the City operates the only mechanical wastewater treatment plant in the territory. There are few directly comparable northern systems, with examples including Fort Simpson, Inuvik, and Yellowknife in the NWT, but that Iqaluit has a unique combination of scale, marine discharge, tidal receiving environment, remoteness, and operational history. The City suggests that its focus should be on optimizing the current WWTP to meet the designed effluent criteria as much of the time as possible, recognizing the challenges described above. The goal is to consistently meet the design criteria concentrations for BOD and TSS, without assigning discharge criteria in the new licence that the City may find itself out of compliance on.	**Wastewater effluent monitoring: Partially resolved; follow-up through licence condition required (page 19)** CIRNAC reviewed the wastewater effluent monitoring program and considers monthly analysis of a full inductively coupled plasma metals scan (IC-PMS) is more frequent than necessary for routine monitoring of a predominantly domestic municipal wastewater system. CIRNAC recommends reducing the full metals-scan frequency from monthly to quarterly. The Board and Inspector should retain the ability to require increased monitoring if results, influent characteristics, treatment performance, or environmental conditions warrant.	CCME Canada-wide Strategy for the Management of Municipal Wastewater Effluent (2009) recommends an initial one-year characterization period for metals testing, but it is not required as part of ongoing compliance monitoring.
			For the parameters currently required under the Effluent (E), Nutrients (N), and Biological (B) groups, continued routine monitoring at the current frequency is generally appropriate, as these parameters are known to vary over time and are directly relevant to effluent quality and potential effects on the receiving environment. For systems with predominantly domestic inputs, metals concentrations are typically stable, and frequent full-suite metals analysis may not be necessary to support compliance or risk-based environmental protection. As such, the current program does not clearly reflect a risk-based monitoring approach aligned with comparable municipal systems.	b) Where changes are warranted based on the review, request corresponding amendments to the Water Licence			
			Under the current water licence, the wastewater treatment plant and sewage lagoon do not have wastewater effluent discharge requirements. This makes it difficult for the City to evaluate the treatment performance of each facility and to report effluent compliance.	c) Identify effluent discharge quality requirements for monitoring treatment performance and effluent compliance			
CIRNAC-TR-19	Monitoring Plans	Attachment 45, 47, 50, 51, 58, 59	Monitoring requirements are described across multiple documents submitted with the City of Iqaluit Type A Water Licence Amendment and Renewal Application; however, these requirements are not consistently presented. Variations in sampling frequency, analytical parameters, and field methods are noted among documents and, in some cases, within the same document. For example, Attachment 45 - Sewage Lagoon O&M Manual states that sewage lagoon effluent is to be sampled during periods of low flow, while elsewhere in the document it specifies monthly sampling during periods of active flow. This differs from the current Water Licence, which requires sampling once prior to discharge, once during discharge, and once prior to completion of discharge. Attachment 58 - Environmental Monitoring Program and Quality Assurance/Quality Control (QA/QC) Plan, Revision 4 (April 24, 2026) appears to be the primary monitoring plan; however, several updates and considerations are not reflected: • Consideration of low-flow groundwater monitoring methods, which are recommended in the Landfill Facility Monitoring Plan (Attachment 59) but not incorporated into Attachment 58 • Field procedures to minimize sediment disturbance during surface water sampling • Inclusion of equipment blanks, in addition to trip and field blanks. • Explicit alignment of field procedures with recognized industry guidance (e.g., the Guidance Manual for Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment by the CCME, 2016). • Updating references to Canadian Environmental Quality Guidelines, noting that CCME guidelines are no longer maintained as a single consolidated document	(TR-19) CIRNAC recommends that the City of Iqaluit provide the following: a) A single, consolidated Monitoring Plan applicable to all facilities and activities under the Water Licence. Alternatively, clearly identify within each document which plan governs in the event of overlap to ensure consistency and avoid conflicting requirements. If Attachment 58 is intended to serve as the consolidated plan, it should be updated to address the considerations outlined above. b) Confirm that monitoring at the WTS and North 40 Landfill will be initiated in advance of commissioning to further characterize and assess previously identified soil and groundwater impacts. Where exceedances are identified at monitored stations, provide a	Re: Attachment 45 - Sewage Lagoon O&M Manual: The discrepancies between the licence and the manual have been corrected in an updated manual provided as Attachment F. Regarding a single consolidated monitoring plan, the Environmental Monitoring and QA/QC Plan is this plan (Attachment G). The recommendation for low-flow sampling is intended to minimize disturbance and obtain representative groundwater samples. In Iqaluit's shallow active-layer wells, which contain very small standing water volumes, those objectives can be met by controlled low-volume Waterra sampling. Given the limited saturated thickness, small well volume, and operational realities of remote Arctic monitoring, Waterra tubing with foot valve is a simple, practical, and technically defensible method for routine sampling.	**Monitoring at waste facilities: Partially resolved; follow-up through licence condition required (page 19)** The City identified the Environmental Monitoring Program and QA/QC Plan as the primary monitoring document. It also clarified its proposed groundwater sampling method for shallow active-layer wells. CIRNAC recommends the monitoring plan clearly identify the criteria used to assess monitoring results at the Waste Transfer Station and North 40 Landfill. It should also identify triggers for: • increased monitoring; • additional investigation; • operational modification; • corrective action; • containment or treatment; and • remediation. The framework should address groundwater, surface water, leachate, seepage, and soil results and establish how findings will be reported and followed up. CIRNAC recommends the updated monitoring plan for the Waste Transfer Station and North 40 Landfill, addressing the aforementioned list of triggers, is submitted with the 2026 Annual Report for review and comment on by intervenors.	The current monitoring program for the new waste management facilities were approved by the Board in 2021. The proposed monitoring program with triggers for increased monitoring would elevate the standard for what is required in NWB water licences.
						Governing monitoring document: Partially resolved; follow-up through licence condition required (page 23) CIRNAC recommends Part B of the water licence require every plan or manual to identify its geographic, operational, and temporal application and to state which plan governs where requirements overlap.	The City has no comment and defers to the Board.

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TABLE 1

CITY OF IQALUIT
CITY OF IQALUIT MUNICIPAL WATER LICENCE

CITY OF IQALUIT WATER LICENCE 3AM-IQA1626 - RESPONSE TO FINAL WRITTEN SUBMISSIONS
RESPONSE TO FINAL WRITTEN SUBMISSIONS FROM CANADA-INDIGENOUS RELATIONS AND NORTHERN AFFAIRS CANADA

Print Oct-22-26 16:50:52

Technical Comment No.	Subject	Reference	Comment	Recommendation	City of Iqaluit Response	Final Written Submission	City of Iqaluit's Response to the Final Written Submission
CIRNAC-TR-20	Environmental Investigation Requirements	Attachment 18, 29, 38	In addition to developing a monitoring plan, investigative activities undertaken in advance of construction should be presented in a consistent and integrated manner across all project documents. Methodologies, material handling practices, and mitigation measures described in supporting reports should be aligned to ensure a coherent and environmentally protective approach.	(TR-20) CIRNAC recommends that the City of Iqaluit provide the following: a) A single, consolidated plan or framework for investigative work that clearly defines methodologies, material handling procedures, mitigation measures, and applicable comparison criteria.	All environmental monitoring will be conducted in accordance with the methodologies outlined in the Environmental Monitoring Program and QA/QC Plan. This Plan also outlines operational monitoring as required by the water licence. A construction phase water management and monitoring plan for the LTWP is under development that will describe where water is likely to be discharged and the associated monitoring. The EPP will be updated by the Contractor and will be submitted to the Board with the IFC drawings for the LTWP. This will be the centralized environmental protection and mitigation plan.	**Environmental investigation requirements (page 11)** The City stated that the Environmental Monitoring Program and QA/QC Plan would govern environmental monitoring, the updated Environmental Protection Plan would govern construction, and the construction-phase plan would address water management. It also stated that the geotechnical work plan would not govern during construction. CIRNAC recommends that each plan clearly identify: • the activities and project phase to which it applies; • where it is in effect; • which document governs where requirements overlap; and • how analytical results will be evaluated against applicable criteria or benchmarks. Where investigative results identify exceedances, adverse trends, or previously unidentified contamination, CIRNAC recommends the plan(s) action assessing the cause and identify additional investigation, monitoring, mitigation, or remediation steps. CIRNAC recommends the plans be submitted to the NWB at least 60 days before the relevant construction activities are proposed to begin, and that those activities not proceed until interested parties have reviewed the plan and the plan has received Board approval. CIRNAC considers this comment partially resolved. Follow-up through enforceable water licence terms and conditions is required.	The City will endeavour to clearly state the scope and duration of each plan where there is overlap. It is the temporary plans covering construction of the LTWP (i.e., spill contingency, erosion and sediment control) where there is potential overlap. The names of the plans specified in the revised draft water licence framework should make it clear which plans are for construction and which relate to ongoing operations.
			Discrepancies are noted between documents. For example, Attachment 18 - LTWP Detailed Design Report - Appendix C - Geotechnical Workplan indicates that drilling spoils will be used as borehole backfill or discharged locally. In contrast, Attachment 29 - LTWP Detailed Design Report - Appendix M - Environmental Protection Plan requires drill cuttings, fluids, and sludge to be contained, reused, or disposed of off-site to prevent their entry into any water body. These approaches are not consistent and should be reconciled.	b) Alternatively, where multiple documents are maintained, clearly identify which document governs in the event of overlap to ensure consistency and avoid conflicting requirements.	The EPP will be the governing document during construction of the LTWP, and the geotechnical work plan will not be carried forward into construction.		
				c) Demonstrate that all environmental analytical results from investigative programs have been and will be evaluated against applicable regulatory or guideline criteria to support conclusions regarding environmental	Applicable compliance criteria will be outlined in the new water licence.		
			Further, where environmental samples are collected as part of investigative work, analytical results should be evaluated against applicable regulatory or guideline criteria to support conclusions. For example, Attachment 38 - LTWP Geotechnical Report presents groundwater chemistry results and concludes that concentrations are "of no concern"; however, it is not clear whether these results were compared to applicable criteria to support this conclusion.	d) Clearly describe how investigative field activities will transition to construction activities, including identification of applicable mitigation measures (e.g., handling and disposal of drilling spoils, fluids, and potentially contaminated materials) to ensure consistency between investigative and construction-phase environmental	The EPP will the governing document during construction of the LTWP, and the geotechnical work plan will not be carried forward into construction.		
TM-03	Population forecasts and wastewater treatment plant capacity					**Population forecasts and wastewater treatment plant capacity: Partially resolved; follow-up through licence condition required (page** The City explained that the wastewater treatment plant could reach its design capacity in 2041 under a low-growth scenario or in 2036 under a medium-growth scenario. The City stated that the 2026 census results would help recalibrate its planning. CIRNAC recommends annual reporting of wastewater flows and updated population information, when available, with comparison to the wastewater treatment plant design basis. If updated projections indicate that effective treatment capacity may be exceeded during the licence term, the City should be required to submit to the NWB a capacity management and infrastructure implementation plan with the following year's annual report for review by interested parties. CIRNAC considers this comment partially resolved. Follow-up through enforceable water licence terms and conditions is required.	Please see the City's response to CIRNAC-TR-16.
TM-08	Updated Environmental Protection Plan					**Updated Environmental Protection Plan: Partially resolved; follow-up through licence condition required.** The City committed to submit an updated Environmental Protection Plan, a site-specific Erosion and Sediment Control Plan, a Construction Spill Contingency Plan, and an updated operational Spill Contingency Plan to the NWB at least 60 days before the applicable construction activities begin, and that those activities should not proceed until the Board has approved the applicable plans.	The City has addressed this commitment in Part F, Items #13 to #15 of the revised draft water licence framework.
						Post-hearing plans and studies; Resolved, subject to commitments and licence conditions. The City committed to provide an updated Environmental Protection Plan, a site-specific Erosion and Sediment Control Plan, a Construction Water Management and Monitoring Plan, a Construction Spill Contingency Plan, and an updated operational Spill Contingency Plan with associated timelines captured in the post-technical meeting list of commitments.CIRNAC considers the associated comments resolved, subject to inclusion of the plansand their corresponding commitment timelines as terms and conditions of the water licence. The related activity should not begin until the updated applicable plan has been circulated for intervenor comment and approved by the Board.	As above.
TM-09	Site-specific Erosion and Sediment Control Plan					**Site-specific Erosion and Sediment Control Plan: Partially resolved; follow-up through licence condition required.** The City committed to submit an updated Environmental Protection Plan, a site-specific Erosion and Sediment Control Plan, a Construction Spill Contingency Plan, and an updated operational Spill Contingency Plan to the NWB at least 60 days before the applicable construction activities begin, and that those activities should not proceed until the Board has approved the applicable plans.	As above.

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Technical Comment No.	Subject	Reference	Comment	Recommendation	City of Iqaluit Response	Final Written Submission	City of Iqaluit's Response to the Final Written Submission
TM-11	Dam breach analysis considering cascading effects					**Dam breach analysis considering cascading effects: Partially resolved; follow-up through licence condition required.** The City provided a preliminary Dam Breach and Inundation Analysis based on the 50 percent design. The analysis evaluates a rainy-day complete breach of Dam 1 and identifies potential flood pathways toward populated areas and critical infrastructure. The report expressly states that it is a draft and partial submission. It does not address cascading failure of the Lake Geraldine Dam. The report states that the future complete analysis is expected to assess additional sunny-day and rainy-day scenarios for Dam 1, Dyke 2, Dyke 6, and Dyke 8 and evaluate potential cascading effects once the design is more advanced. CIRNAC considers the preliminary report useful for identifying potential flow paths but insufficient for final regulatory and emergency-planning purposes. CIRNAC recommends that, before water is transferred into the new reservoir, the City submit a final dam breach and inundation analysis based on the final design. The analysis should evaluate: • appropriate sunny-day and rainy-day scenarios; • failure of the principal dam and relevant dyke structures; • cascading effects on the Lake Geraldine Dam; • downstream flood routing and inundation; • consequences to people, infrastructure, access, water treatment and power supply; • environmental consequences; and • implications for emergency preparedness and response. CIRNAC considers TR-04 and TM-11 partially resolved, subject to the City submitting a final Dam Breach and Inundation Analysis that addresses cascading failure	Please see the City's response to CIRNAC-TR-04.
TM-12	Water-supply operation and maintenance documentation					**Water-supply operation and maintenance documentation: Partially resolved; follow-up through licence condition required.** The City provided an operation and maintenance manual for the existing Water Treatment Plant. It committed to submit updated operation and maintenance documentation for new water-supply facilities before pumping into the new reservoir. CIRNAC recommends that the licence require updated documentation for the integrated water-supply system at least 60 days before water is transferred from the Long-Term Water Project facilities. The documentation should include: • Lake Geraldine Reservoir and associated intake; • the Water Treatment Plant; • the new reservoir; • source-water intakes and pumphouses; • pipelines and conveyance works; • operational procedures; • inspection, maintenance, and monitoring; • emergency response and contingency measures; and • roles, responsibilities, and reporting. Water transfer should not begin until the Board has approved the documentation.	Please see the City's response to CIRNAC-TR-14.
TM-14	Post-hearing plans and studies					**Post-hearing plans and studies; Resolved, subject to commitments and licence conditions.** The City stated it is appropriate to maintain separate construction and long-term operational spill plans because construction plans require temporary and site-specific information. CIRNAC agrees that separate plans can be appropriate. However, each plan should clearly identify: • the facilities and activities to which it applies; • where it is in effect; • the project phase covered; • which plan governs where requirements overlap; • fuel, chemicals, hazardous materials, and waste streams covered; • chemical-specific handling and response measures; • sewage spill detection and response; • safety data sheets; • notification and reporting; and • review and updating procedures. CIRNAC recommends the updated operational Spill Contingency Plan and Spill Contingency Plan for Construction Phase both clearly identify the listed items above.	The City has addressed this commitment in Part H of the revised draft water licence framework.
IR-21	Solid Waste Management Plan					**Solid Waste Management Plan: Partially resolved; follow-up through licence condition required.** The City proposes removing the existing requirement for a Solid Waste Management Plan on the basis that the North 40 facilities are now constructed and governed by facility-specific plans and manuals. CIRNAC recommends the water licence ensures that all solid-waste activities remain covered by approved and current plans, whether through a consolidated Solid Waste Management Plan or clearly identified facility-specific plans. The licence should avoid a gap in requirements caused by deleting the existing condition before confirming that the approved replacement documents collectively address waste acceptance, diversion, hazardous waste, capacity, tracking, operations, and closure planning, and have been uploaded to the NWB public registry.	The facility-specific plans already exist and are approved under the current licence.

REV	DATE	DESCRIPTION	PREPD	RVWD
0	22OCT'26	ISSUED WITH LETTER NB26-01372	RAC	AMH

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TABLE 2

CITY OF IQALUIT
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CITY OF IQALUIT WATER LICENCE 3AM-IQA1626 - RESPONSE TO FINAL WRITTEN SUBMISSIONS
RESPONSE TO FINAL WRITTEN SUBMISSIONS FROM THE GOVERNMENT OF NUNAVUT

Print Oct-22-26 16:36:53

Technical Comment No.	Subject	Reference	Comment	Recommendation	City of Iqaluit Response	Final Written Submission	City of Iqaluit's Response to the Final Written Submission
GN-TR-01	Water Parameter Monitoring and Testing	• Application • 2025 Annual Water Licence Report • LTWP Preliminary Design Report – Appendix M – Environmental Management Plan	The Government of Nunavut (GN) has concerns and is seeking additional information regarding the City of Iqaluit's (Proponent) proposed water quality parameter monitoring. Water parameter testing is a necessary component of environmental management and is integral to determining project performance, impacts, and mitigation effectiveness. The Proponent's 2025 annual report states "certain required parameters were not analyzed during the reporting period". The report stated that these parameters were not tested as the Proponent lacked the required laboratory equipment and that staff were not fully aware of the required testing parameters. The report states: "The City has procured the necessary laboratory equipment required to support testing of the parameters associated with the monitoring stations, and this testing will be undertaken in 2026. In addition, the City's third-party laboratory has been advised of the parameters that were previously omitted from testing, and these will be included in the monitoring program moving forward. The missing field parameters were primarily the result of current City staff not being fully aware of all required testing parameters at the time of sampling. To address this, ongoing efforts have been undertaken to familiarize operational staff with the applicable monitoring requirements and sampling procedure (including QA/QC)."	The GN recommends the Proponent: • Provide a list of the laboratory equipment that has been acquired for the purposes of conducting water quality testing.	The laboratory equipment includes test kits to analyze for field parameters as specified in Schedule I of the Licence. These are identified in Table 1 of the Environmental Monitoring Program and QA/QC Plan, included as Appendix G of this response.		
			The Proponent has included with their water license proposal an environmental management plan. Section 3.4 of the management plan includes a list of the information that will be collected during analysis. The name of the person(s) who performed the sampling or took the measurements including any relevant accreditations. • The date, time, and place of sampling or measurement, and weather conditions. • The date of analysis. • The name of the person(s) who performed the analysis including any relevant accreditations. • A description of the analytical methods or techniques used, and • A discussion of the results of any analysis. The management plan does not state the steps of the testing, what quality parameters will be analyzed or the equipment that will be utilized in this testing. This information is necessary to assess the efficacy of the management plan and if the issues of testing identified in the Proponent's 2025 annual report have been addressed.	• Provide and include in their management plan, a copy of the training plan for water quality personnel for the sampling, analysis, and reporting that will be used to ensure previously missing parameters will be tested.	The first part of the comment is related to existing facilities, such as the WWTP, Sewage Lagoon, landfills, etc. This monitoring is conducted by City of Iqaluit staff and these staff are identified in Section 4.10 of the Environmental Monitoring and QA/QC Plan (Attachment G). These staff were trained in water sampling as part of their water treatment operator certification. During LTWP construction, the contractor will be responsible for providing trained personnel to conduct monitoring. This will be overseen by the City's engineering consultant in its Owner's Engineer role. The Owner's Engineer will periodically collect additional samples for verification.		
GN-TR-02	Spill Contingency Plan	• Water Licence Part H, Item 1 • Spill Contingency Plan, updated May 2016 • Application materials related to existing facilities, new waste facilities, and LTWP construction	The Government of Nunavut (GN) has concerns regarding the Spill Contingency Plan relied on in the City of Iqaluit's (Proponent) Type A Water Licence renewal/amendment application. The Proponent states that it has been maintaining and using a Spill Contingency Plan approved by the Board in accordance with Part H, Item 1 of the current Water Licence. The referenced Spill Contingency Plan was updated in May 2016 and includes procedures for reporting and responding to spills associated with municipal infrastructure. The application record includes existing municipal facilities, new waste management facilities, and construction activities associated with the City's Long-Term Water Project. The application record does not confirm whether the May 2016 Spill Contingency Plan remains applicable to the full scope of activities and facilities proposed under the renewed/amended licence. This creates uncertainty regarding whether current facilities, contact information, contaminants, existing and proposed contaminant storage, new facilities, and LTWP-related construction activities are fully addressed through current spill prevention, and management procedures. The application record also does not identify how any additional emergency response plans or facility-specific O&M manuals work together with the approved Spill Contingency Plan.	The GN recommends that the Proponent: • Confirm whether the May 2016 Spill Contingency Plan remains applicable to the full scope of the renewed/amended licence, including all existing and new facilities, and construction activities associated with the Proponent's LTWP.	The Spill Contingency Plan presented in the Application as Attachment 56 was updated in April 2026 (not 2016). The intent of this plan is to address operations only. A Spill Contingency Plan specific to LTWP construction will be prepared by the City's contractor. This plan will be submitted to the Board at least 30 days prior to the start of construction.		
				• Confirm that all existing or proposed contaminant storage that meets the applicable requirements under the Spill Contingency Planning and Reporting Regulations is covered by a current spill contingency plan.	The current Spill Contingency Plan includes the relevant SDS for hazardous materials handled by the City.		
				• Confirm that other contaminant storage associated with the undertaking is addressed through appropriate spill prevention, and management.	It is not clear what the GN is asking in this recommendation.		
				• Identify how any additional emergency response plans, facility-specific operations and maintenance manuals, or related plans operate with the approved Spill Contingency	The City has an established response organization. Section 2 of the Spill Contingency Plan (Attachment 56) outlines the roles and responsibilities of the first responder interacting with the City's response organization, including the City's Dispatch, public works staff, and fire department.		
				• Provide for review any updates or addenda required to reflect current facilities, contact information, contaminants, existing and proposed contaminant storage, and activities proposed under the renewed/amended license.	As noted above, the Spill Contingency Plan presented as Attachment 56 of the Application governs the City's current operations. A separate LTWP Spill Contingency Plan will be developed by the City's contractor prior to construction, focusing solely on the LTWP construction activities.		
GN-TR-03	Watercourse Crossings, Culverts, Drainage Crossings, and Watercourse Training	• Nunavut Waters and Nunavut Surface Rights Tribunal Act, Section 11. • Nunavut Waters Regulations, SOR/2013-69, Schedule 1, Item 3, Municipal undertaking. • Nunavut Waters Regulations, SOR/2013-69, section 3(f)(iii), Section 4, section 7, and Schedule 2, Item 2(1) to 2(3), licensing criteria for watercourse crossings, watercourse training, and alteration of flow of waters. • City of Iqaluit Type A Water Licence Renewal/Amendment Application materials related to the Long-Term Water Project (LTWP), municipal roads and access roads, drainage infrastructure, gravel source or reserve areas, access to new waste management facilities, the Waste Transfer Station, and the New North 40	The Government of Nunavut (GN) has concerns regarding the identification, authorization status, and supporting information for watercourse crossings, drainage crossings, culverts, watercourse training works, and alterations of flow associated with the City of Iqaluit's (Proponent) Type A Water Licence renewal/amendment application. Section 11 of the Nunavut Waters and Nunavut Surface Rights Tribunal Act prohibits the use of waters in Nunavut except in accordance with the conditions of a water licence, subject to the exceptions set out in the Act, including unlicensed uses of waters authorized by regulation. The Nunavut Waters Regulations identify a municipal undertaking as including a waste disposal or water system for a municipality. The Regulations also identify water uses related to watercourse crossings, watercourse training, and alteration of flow of waters, with different authorization or licensing thresholds depending on the nature and scale of the activity. The Proponent's application identifies municipal infrastructure and activities that may involve crossings, culverts, drainage features, watercourse training, alteration of drainage, or related works associated with the LTWP, access roads, gravel source or reserve areas, access to new waste management facilities, the Waste Transfer Station, and the New North 40 Landfill. The application record does not include a consolidated inventory identifying all Proponent owned, operated, or proposed watercourse crossings, culverts, fords, watercourse training works, or alterations of flow associated with the project. This creates uncertainty regarding which existing or proposed works are included in the renewed/amended licence application, which works may be authorized without a licence under the Regulations, which works may require a Type A or B licence, and whether appropriate conditions or mitigation measures are required to prevent sediment release, erosion, altered drainage, or contaminant transport to surface water. The application record also does not appear to provide complete design drawings, technical specifications, or equivalent supporting information for all existing or proposed crossings and watercourse training works. Without this information, it is difficult to assess whether the works are designed, maintained, and monitored in a manner protective of water quality and drainage function.	The GN recommends that the Proponent: • Provide a consolidated inventory of all Proponent owned, operated, or proposed watercourse crossings, culverts, fords, watercourse training works, and alterations of flow associated with the project.	The LTWP will involve the replacement of the bridge on the Road to Nowhere's crossing of the Apex River with multiple culverts. The City is engaged with Fisheries and Oceans Canada (DFO) regarding this crossing, including mitigation of impacts to fish and fish habitat. The City expects to file Issued for Construction drawings of the new crossing with the Board ahead of construction, as required by the water licence. The City maintains a number of existing watercourse crossings. No changes are proposed to these crossings, and thus no new authorization is being sought as part of the water licence renewal and amendment process. The City has developed a Master Drainage Plan. This plan is not tied to the water licence.	Concerns: The Government of Nunavut Department of Environment (ENV) has reviewed the City of Iqaluit's (Proponent) July 22, 2026 responses to GN's technical review comments and the referenced supporting documents. The GN would like to present this supplemental comment regarding GN-TR-03.	The City acknowledges that water crossings are captured under the Nunavut Waters Regulations. The City agrees that the level of authorization depends on the nature and scale of the activity. The City suggests that water crossings be added to the scope of the new licence rather than requiring separate approval(s). The City requests that the Board consider drainage culverts that are replaced as part of ongoing maintenance (i.e., replaced with the same or similar culvert size in the same location, without modification of the drainage course, and without engineering design) as being approved under the licence without submissions.
				• For each identified crossing or watercourse training work, identify the location, the feature affected, whether the work is existing or proposed, including whether the work is proposed to be authorized under the renewed/amended Type A licence, authorized without a licence under the Regulations, or addressed through another Nunavut Water Board (NWB) authorization or licensing process.		Recommendations: With regards to GN-TR-03 Watercourse Crossings and Culverts, ENV recommends the Proponent: • Confirm that the Long-Term Water Project will replace the Road to Nowhere bridge crossing of the Apex River with multiple culverts and that issued-for-construction drawings will be filed before construction. • Clarify the relationship between the Master Drainage Plan and the renewed/amended water licence, including how information respecting watercourse crossings, culverts and drainage features associated with the licensed undertaking will be reflected in the licence record. Within a timeframe specified by the Nunavut Water Board, submit a consolidated, licence-specific inventory and map of watercourse crossings, watercourse training works and culverts associated with the licensed undertaking. For each feature, identify its location, affected watercourse or drainage feature, existing or proposed status, applicable authorization basis, including whether it is authorized under the licence, authorized without a licence under the Regulations, or subject to another NWB authorization, and any applicable monitoring, maintenance and mitigation requirements.	For larger crossings that require a site-specific engineering design and/or that involve channel alterations, the City proposes that these would be subject to site-specific approvals under *Part F: Conditions Applying to Construction*. An example is the bridge on the Road to Nowhere, which will be replaced with multiple culverts. There will likely be drainage culverts installed elsewhere on the new water reservoir access road. Under *Part F: Conditions Applying to Construction* , issued for construction designs and drawings of the new culvert crossing and any drainage crossings that form part of the road upgrade will be submitted to the Board for review in accordance with Part F, Item #1 of the licence, and a construction summary report with as-built drawings will be submitted within 90 days of completion of construction in accordance with Part F, Item #6 of the licence. Regarding the Master Drainage Plan, this provides a reasonable inventory of the City's drainage and watercourse crossings. The City does not believe it is necessary to develop and submit a licence-specific inventory and map of water crossings. The City is not aware of another water licence issued by the Board that requires such an inventory. Beyond the City's obligations regarding crossings as part of the water licence, the City understands its obligations under the Fisheries Act with respect to crossings located in fish-bearing waters.
				• Include, where applicable, crossings and drainage works associated with Carney Creek, the Apex River, access to the new waste management and waste transfer/baling facilities, gravel source or reserve areas, LTWP infrastructure, and intermittent streams or drainage features associated with municipal infrastructure.			
				• Provide design drawings and technical specifications for proposed crossings, culverts, drainage crossings, watercourse training works, or alterations of flow.			
				• Where formal design drawings are unavailable for existing works, provide available information sufficient to identify the crossing or training work and support appropriate licence conditions or mitigation measures. This should include, where applicable, crossing type, description of the crossing, engineering parameters, or other events that may affect water			
				• Where appropriate, ensure inspection, maintenance, and drainage management measures are informed by a recognized northern community drainage standard or guideline, such as CSA S503, or an equivalent standard			

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Print Oct-22-26 16:36:53

Technical Comment No.	Subject	Reference	Comment	Recommendation	City of Iqaluit Response	Final Written Submission	City of Iqaluit's Response to the Final Written Submission
GN-TR-04 Part a	Waste Discharges, Effluent Criteria, and Receiving Environments	• Nunavut Waters and Nunavut Surface Rights Tribunal Act, Section 12. • Nunavut Waters Regulations, sections 5 and 8; Schedule 1, Item 3, Municipal undertaking; Schedule 3, Item 3, deposits of waste for a municipal undertaking. • Water Licence No. 3AM-IQA1626, Part E, Waste Disposal; Schedule I, Monitoring	The Government of Nunavut (GN) has concerns regarding the waste-deposit authorizations being sought for the City of Iqaluit's (Proponent) Type A Water Licence renewal/amendment application. Section 12 of the Nunavut Waters and Nunavut Surface Rights Tribunal Act applies to the deposit of waste in waters in Nunavut, or in any other place in Nunavut under conditions where the waste, or waste resulting from that deposit, may enter waters in Nunavut. The Nunavut Waters Regulations classify municipal undertakings and identify authorization thresholds for deposits of waste. The application includes several major municipal facilities that discharge, may discharge, or may require future or contingency discharge of wastewater, leachate, contact water, runoff, or other waste streams. These include the Wastewater Treatment Plant, the Sewage Lagoon Facility, the West 40 Landfill, the New North 40 Landfill, and the Waste Transfer Station. The application materials are spread across multiple plans and manuals. As a result, the application record does not clearly consolidate the waste-deposit authorization being sought for each major facility and waste stream. This creates uncertainty regarding which discharges are proposed to be authorized under the renewed/amended licence, which would be conditional or contingency-based, which would require a future Nunavut Water Board (NWB) approval process, and which waste streams would be managed without discharge to the environment.	The GN recommends that the Proponent: • Provide a facility-by-facility table or equivalent summary for the Wastewater Treatment Plant, Sewage Lagoon Facility, West 40 Landfill, New North 40 Landfill, and Waste Transfer Station. • For each facility, identify each waste stream or effluent source, including all discharge criteria, management, and parameters. State whether discharge authorization is being sought under the renewed/amended licence or through a future NWB process.	The City of Iqaluit is seeking to renew its water licence for existing facilities (Lake Geraldine Reservoir and Water Treatment Plant, wastewater treatment plant, sewage lagoon, West 40 and North 40 landfills, waste transfer station). The City of Iqaluit is assuming by default that the terms and conditions of the current licence for each of these facilities will be carried forward, unless the Board deems changes to be necessary. Part E, Item 4 of the current licence specifies discharge limits for surface drainage or surface water runoff. The current licence does not specify discharge limits for sewage or landfill leachate. The City believes the Application is clear. The various O&M manuals and other plans presented in the Application are those prescribed by the current water licence. Each manual/plan appropriately describes the monitoring programs associated with the respective facility as per Schedule I of the water licence. The stations associated with the Surveillance Network Program are also listed in Table 6.1 of the Application.		
GN-TR-04 Part b		• Attachment 45, Sewage Lagoon O&M Manual	For the Wastewater Treatment Plant and Sewage Lagoon Facility, the application record does not clearly consolidate the authorization basis for discharge, discharge points, discharge pathways to Koojesse Inlet, discharge circumstances, monitoring requirements, notification requirements, discharge volumes, applicable existing licence requirements, and any proposed discharge criteria or objectives for the NWB's consideration.		The management plans appended to the Application appropriately reflect the terms and conditions of the current water licence, including discharge points and pathways, discharge circumstances, monitoring and notification requirements, etc. The City of Iqaluit is not proposing any new discharge criteria or objectives.		
GN-TR-04 Part c		• Attachment 47, West 40 Landfill O&M Manual • Attachment 48, West 40 Landfill Decommissioning Technical Memorandum	For the West 40 Landfill, the application includes decommissioning-related materials, while the West 40 operations and maintenance manual describes continued management of contact water, leachate, runoff, internal pond transfers, and retention pond discharge to Koojesse Inlet. The application record does not describe how these waste streams and discharges will be authorized, and managed.	• For the West 40 Landfill, clarify how the existing leachate and retention pond system will be addressed during closure and post-closure care.	It is not clear what the GN is asking for when it states, "The application record does not describe how these waste streams and discharges will be authorized, and managed." The current licence outlines this, and the contents of the West 40 Landfill O&M Manual are consistent with the terms and conditions of the licence. The future of the leachate collection and retention system will be determined as part of the future Final Closure and Reclamation Plan for the West 40 Landfill that is required under Part J, Item 2 of the current licence. The City has suggested that it will be appropriate to carry forward this condition in the new		
GN-TR-04 Part d		• Attachment 52, North 40 Landfill Leachate Collection and Characterization Plan.	For the New North 40 Landfill, the application materials describe collection, containment, and characterization of leachate, while also discussing possible future or contingency discharge pathways. The application record does not clearly identify whether authorization is being sought at this time for routine, intermittent, emergency, or contingency leachate discharge, or whether future discharge would require a further NWB process. The application also does not clearly distinguish proposed design objectives, treatment targets, or screening values from discharge criteria that may be proposed for the NWB's consideration.		Amendment No. 5 of the Water Licence authorized the North 40 Landfill and Waste Transfer Station. Part E of that amendment outlines the requirements to characterize and manage the leachate. It allows the City to implement its Leachate Characterization and Management Plan (submitted in 2023) in the first two years of operation, and allows the City to submit the leachate characterization results and implement a leachate treatment system, subject to Board approval. If no onsite treatment approach is employed, the leachate will be disposed of at the Wastewater Treatment Plant.		
GN-TR-04 Part e		• Attachment 59, Facility Monitoring Plan - Landfill and Waste Transfer Station	For the Waste Transfer Station, the application record does not clearly identify whether runoff, seepage, wash water, contact water, snowmelt, or other waste streams are proposed to be discharged to the environment, or how those waste streams would otherwise be collected, contained, treated, transported, or managed.	• For the Waste Transfer Station, clarify whether runoff, and waste water are proposed for discharge. Where discharge is not proposed, describe how these waste streams will be collected, and managed.	Leachate management at the Waste Transfer Station is described in Section 12.1 of the North 40 Landfill and Waste Transfer Station O&M Manual (Attachment 51 of the Application). Leachate generated from baling of waste at the WTS will be collected in a holding tank that will be pumped out and brought to the WWTP for disposal.		

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REV	DATE	DESCRIPTION	PREPD	RVWD
0	22OCT26	ISSUED WITH LETTER NB26-01372	RAC	AMH

Knight Piésold CONSULTING

TABLE 3

CITY OF IQALUIT
CITY OF IQALUIT MUNICIPAL WATER LICENCE

CITY OF IQALUIT WATER LICENCE 3AM-IQA1626 - RESPONSE TO FINAL WRITTEN SUBMISSIONS
RESPONSE TO FINAL WRITTEN SUBMISSIONS FROM FISHERIES AND OCEANS CANADA

Print Oct-22-26 16:38:03

Technical Comment No.	Subject	Reference	DFO's Technical Review Comment	Recommendation	City of Iqaluit Response	DFO's Final Written Submission	City of Iqaluit's Response to the Final Written Submission
DFO-TR-01	Use of Explosives (NWB-DFO-02)		As part of their response to DFO's first round of Information Requests, the City of Iqaluit committed to limiting water overpressures to 50 kPa at the location of a live fish, consistent with DFO guidance. DFO recommends modelling to demonstrate blasting thresholds are met as well as proposed mitigation measures (e.g., timing windows, use of blast mats, isolation) and any monitoring plans to verify that impacts are avoided or minimized.	DFO recommends those requests be included in the project's Preliminary Blast Assessment, however, any issues that cannot be fully resolved through the Board's process can continue to be addressed through DFO's regulatory review.	The agreed upon 50 kPa overpressure limit will be integrated into the detailed design. The City will continue to engage the DFO regarding any proposed blasting in close proximity to fish-bearing waters.	Resolved in part. DFO reiterates the Proponent should provide blasting overpressure and vibration modelling to demonstrate expected overpressures and ground vibrations at the nearest waterbodies. If modelling indicates a potential to approach or exceed recommended thresholds, then provide supporting information such as minimum setback distances, charge per delay limits, and proposed mitigation, monitoring and contingency measures to demonstrate how compliance will be achieved. This information can also be provided through the ongoing DFO's regulatory review process.	The City has confirmed that minor blasting will be required for the wet wells at both pumphouses. The wet wells are set back from the waterbody (Lake Qikiqtalik and Apex River). The intakes connecting the wet wells to the waterbody will be mechanically excavated without any blasting. **Commitment:** The City of Iqaluit will conduct an analysis of blasting (charge sizes and distances from waterbodies) at both pumphouses to confirm that the 50 kPa overpressure threshold will be met. This will be provided to DFO as part of DFO's Request for Review / Fisheries Authorization process.
DFO-TR-02	Water Withdrawal from the Apex River		The City of Iqaluit proposes to withdraw from the Apex River less than 10% of instantaneous discharge when flow is between 0.143 m^3/s and 0.156 m^3/s (between 30% and 33% of the Mean Annual Discharge (MAD)), or up to 20% instantaneous discharge when flow exceeds 0.156 m^3/s (>33% MAD). Although DFO's Framework for Assessing the Ecological Flow Requirements to Support Fisheries in Canada indicates that cumulative flow alterations of less than 10% of the instantaneous flow relative to the natural flow regime are generally associated with a low probability of detectable impacts to fisheries-supporting ecosystems, the proposed pumping protocol would exceed this screening threshold during periods when Apex River discharge exceeds 0.156 m^3/s (>33% MAD), allowing withdrawals of up to 20% of the instantaneous discharge. The Apex River provides important spawning, migration, and residence habitat for Arctic Char; therefore, reductions in available flow may affect fish and fish habitat through mechanisms such as habitat loss or reduced fish passage. Stantec's 2023 Analysis of Fisheries and Hydrologic Information of Apex River (Attachment 33) concluded that the proposed pumping protocol is unlikely to result in adverse effects on fish and fish habitat in the Apex River. This assessment was determined through hydraulic and habitat modelling informed by baseline field surveys. DFO notes that uncertainty remains regarding the accuracy of the modelling results, as no field monitoring was conducted during pumping operations to verify model predictions under withdrawal conditions. In addition, the proposal does not include a monitoring program to verify the predicted effects of water withdrawals on fish and fish habitat, nor does it identify contingency measures should monitoring indicate adverse effects.	DFO recommends that the proponent: • Implement field monitoring during withdrawal periods to demonstrate that thresholds are not exceeded, confirm hydraulic conditions are as expected, and identify adverse effects to fish or fish habitat (e.g., fish stranding, barriers to migration, reduction of wetted area).	The City extracted between 18% and 42% (an average of 31%) of flow in the Apex River under an emergency amendment to the water licence and under emergency Fisheries Act Authorization – Emergency Circumstances 22-HCAA-02043 (DFO 2022) over a 7-day period from Sept 13-19, 2022. Baseline fish habitat within the Apex River was studied and reported on (Attachment H), and separately, a monitoring program was undertaken during the pumping operation to detect impacts to fish and fish habitat (Attachment I). Wetted width, water level/depth, habitat conditions, and fish presence were monitored at one upstream location, at the pumping location, and at five downstream stations on the Apex River. Most percent differences measured or these parameters were within 10% of the previous value measured, except for one location downstream of a large pool (which should be insensitive to hydrological changes), where larger differences were attributed to measurement error. The consultant conducting the monitoring concluded that no documented impacts to fish and fish habitat occurred, and that no fish or fish habitat offsetting requirements are needed per the FAA (Nunami Stantec, 2023; Attachment H). Based on the monitoring conducted in 2022 higher extraction rates than are being proposed with the LTWP, field monitoring is not warranted.	Ongoing: DFO is awaiting further discussion of hydraulic modeling and monitoring plans to reach agreement with the Proponent. DFO maintains that a monitoring plan for water withdrawal from the Apex (Niaqunguk) River is necessary for adaptive management of water flows to avoid harm to fish habitat. Water withdrawal over a period of twenty years will involve greater variability in climatic influences and flow levels within the river than could be represented in the results attained over 7 days in 2022. Furthermore, DFO recommendations for a monitoring plan during water withdrawal periods is consistent with requirements to other Proponents water use on similar scales. Additional conversations with the Proponent are needed to develop a plan that is feasible for the Proponent and to the satisfaction of DFO. DFO further notes that any determination of harmful impacts to fish and fish habitat would be addressed DFO's regulatory review process and the potential application for authorization under the Fisheries Act.	**Commitment:** The City proposes to develop a monitoring plan to monitor the impacts of water withdrawals from the Apex River on downstream fish and fish habitat, using the monitoring of the 2022 supplemental pumping program by Nunami Stantec (2023) as a template. This monitoring report was submitted to the NWB as Attachment I of the City's July 21, 2026 response to technical comments. The City proposes to conduct this monitoring annually for three years, and then conduct staggered monitoring every five years thereafter. The City agrees with DFO that this monitoring plan can be developed as part of the DFO process and outside of the water licensing process. The City does not propose to conduct hydraulic modelling. Such modelling is useful to predict potential impacts in the absence of any monitoring data. Monitoring data is available for the 2022 supplemental pumping program when pumping rates were between 18% and 42% of the instantaneous flow in the river. This monitoring did not detect more than a 10% change in key fish habitat metrics (i.e., wetted width and water depths). The City suggests that this field monitoring is a better predictor of impacts of future withdrawals than hydraulic modelling.
				• Update hydraulic modelling to assess the effects of reduced flows on depth, velocity, and wetted area in the Apex River and evaluate whether changes may create barriers to fish migration or result in loss of fish habitat.	Hydraulic modelling was also completed in the report referenced above, and he City suggests that hydraulic modelling is not required.		
				• Establish contingency measures (e.g., reduction or cessation of withdrawal rates) that will be implemented if monitoring detects adverse effects to fish or fish habitat.	Most likely the contingency measures to be implemented if monitoring indicates that non-predicted adverse effects to fish or fish habitat are occurring when pumping will be as follows: 1) Temporarily cease pumping to allow water levels to reestablish to what would normally occur. 2) If fish stranding is observed, capture and liberate the stranded fish. 3) Resume pumping at a lower rate and monitor streambed conditions.		
DFO-TR-03	Water Withdrawal from Lake Qiqitalik		The City of Iqaluit proposes to withdraw, through the open-water season, 1.1 million m^3/year of water from Lake Qiqitalik, which is a fish-bearing lake (i.e., inhabits Arctic Char). This represents 20% of the lake's volume. Water withdrawal may affect fish and fish habitat through reductions in water levels, changes in downstream flow conditions, and loss or alteration of littoral habitat. In addition, water withdrawal activities can cause direct fish mortality through stranding, entrainment, or impingement. Littoral areas provide important spawning, rearing, feeding, and refuge habitat for fish, and reductions in water levels may decrease the availability or suitability of these habitats, resulting in habitat dewatering or fish stranding. Water level reductions may also influence outflow conditions at the lake outlet by reducing discharge and altering channel depth and velocity. These changes could affect fish movement between Lake Qiqitalik and downstream habitats and may reduce the availability of connected aquatic habitat. No information was provided by the City of Iqaluit on potential effects to littoral and downstream habitat or seasonal habitat availability during open water periods.	DFO recommends that the proponent: • Demonstrate that proposed maximum withdrawal rates from Lake Qiqitalik will not adversely affect outlet flow conditions, or in barriers to fish migration.	The fish & fish habitat report (Attachment 40) notes that the outlet of Lake Qikiqtalik is mainly subsurface beneath cobbles and boulders, and that this combined with the steep slope make it unlikely that fish can use the tributary for fish passage. The Lake Qikiqtalik water withdrawal study (Attachment 34) notes that the entire channel between Lake Qikiqtalik and the Apex River is characterized by defined channel sections where the water is visible at the surface and ill-defined channel sections characterized by boulder fields where the water is flowing below the surface. Hence, impacts to fish and fish habitat within this drainage between the lake and the river are negligible.	Ongoing: DFO is still awaiting conversations on flow rates that will not adversely affect outlet flows, on a monitoring program, and contingency measures. Despite barriers to fish passage, maintaining outlet flows will preserve what habitat fish can access from either direction.	The City proposes to withdrawal water from Lake Qikiqtalik during freshet down to a minimum water level of El. 203.3 m. The basis for this water level is described in the KP letter accompanying these responses. The revised draft water licence framework references these operating rules. The City will develop a monitoring plan to monitor the impacts of water withdrawals from Lake Qikiqtalik on fish and fish habitat within the lake and downstream. To support the development of this monitoring plan, the City will undertake desktop habitat mapping to identify the areas within the lake that are sensitive to water level changes (i.e., where changes to fish habitat could occur with lake drawdown). Field verification of the mapped sensitive areas may be conducted. A baseline of lake water levels will be established using level loggers. During operation, lake water levels will be monitored within the wet well in the pumphouse. The monitoring plan will include monitoring fish habitat conditions at a representative location in the downstream tributary. Contingency measures will be identified in the monitoring plan. The City has also agreed with DFO's recommendation to develop a fish habitat monitoring program as part of DFO's Request for Review process. The Lake Qikiqtalik Monitoring Program will consist of two parts: •Multi-year water level monitoring to develop a longer term pre-development record of lake water levels •Fish habitat monitoring to identify and monitor portions of the lake and downstream tributary that are potentially vulnerable to reduced lake levels or reduced flows To support the development of this monitoring plan, the City will undertake desktop habitat mapping to identify the areas within the lake that are sensitive to water level changes (i.e., where changes to fish habitat could occur with lake drawdown). A baseline of lake water levels will be established using level loggers. During operation, lake water levels will be monitored within the wet well in the pumphouse. The monitoring plan will include monitoring fish habitat conditions at a representative location in the downstream tributary. Contingency measures will be identified in the monitoring plan. The City proposes to conduct the fish habitat component of the monitoring plan annually for the first three years of water withdrawals and then conduct staggered monitoring every five years thereafter. The City discussed with DFO in a meeting on October 8, 2026 that this monitoring plan can be developed as part of the DFO process and outside of the water licensing process.
				• Provide details on potential changes in habitat caused by water withdrawal over operational seasons, including loss of nearshore lake areas and changes to depth. This should include a review of annual recharge capacity and whether ongoing withdrawals over multiple years could result in lake levels falling below the threshold used in the assessment.	Modelling assumes that the lake elevation will return to the spill elevation of El. 203 m, which is a reasonable assumption. Targeting water withdrawals during freshet, when lake water levels are high and discharges to the downstream are their highest, will ensure that the lake will not be drawn down to the spill elevation.		
				• Implement monitoring of water withdrawal activities at Lake Qiqitalik shoreline and outlet to confirm that withdrawal does not result in alterations or loss of habitat or outflow conditions. Monitoring should focus on shoreline exposure, fish stranding observations, water levels, annual recharge patterns, and outlet depth/velocity during periods of active withdrawal, and be used to verify that modelled predictions accurately reflect site conditions.	The requirement for a monitoring program will be discussed with the DFO.		
				• Establish contingency measures (e.g., reduction or cessation of withdrawal rates) that will be implemented if monitoring detects adverse effects to fish or fish habitat.	Contingency measures will be developed in consultation with the DFO.		
DFO-TR-04	Draft License: Water level reductions in the Niaqunguk (Apex) River and Lake Qikiqtalik					DFO recommends retaining Condition 10 in Part D of the Draft Water License, and broadening it to include Lake Qikiqtalik. Specifically, DFO recommends retaining the statement "If, at any time, Fisheries and Oceans Canada advises the Licensee that due to potential effects on fish or fish habitat the withdrawals from the Niaqunguk River [and/or Lake Qikiqtalik] are no longer acceptable, the withdrawals must cease until Fisheries and Oceans Canada indicated that withdrawals can resume". A comment on Condition 10 indicates it has been incorporated into Condition 1. While parts of it has been incorporated (i.e., conditions surrounding 30% MAD), the statement above was not. DFO recommends either the retention of Condition 10 entirely, or incorporating the above statement into Condition 1.	The requested statement has been reinstated as Part D, Item #10 of the revised draft water licence framework, expanding it to include Lake Qikiqtalik.
DFO-TR-05	Draft License - Part D: Withdrawal Rules					DFO notes that in Part D, Condition 1 of the Draft Water License with regards to withdrawal from Lake Qikiqtalik, that withdrawal rules are "to be discussed with DFO". DFO has yet to discuss these rules with the Proponent and further information requested in DFO-03 is required in order to inform these conditions. Once the additional information requested in DFO-03 is provided, DFO will discuss water withdrawal rules specific to Lake Qikiqtalik to be included in Part D of the Water License.	The City confirms that it proposes to stop water withdrawals at El. 203.3 m. Part D, Item #1 of the revised draft water licence framework has been amended to outline this requirement.
DFO-TR-06	Draft License - Part I: Monitoring Conditions					The current Draft License does not include robust monitoring for impacts to fish and fish habitat and only requires reporting of cubic metres withdrawn annually. DFO recommends the following monitoring requirements be included in Part I of the License: A description of monitoring during periods of water withdrawal to verify model prediction and detect potential effects on fish and fish habitat including:	As noted in response to FWS DFO-02 and DFO-03, the City understood that the monitoring plans for Apex River and Lake Qikiqtalik could be developed outside of the water licensing process and in the DFO Request for Review / Authorization process.

REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	22OCT26	ISSUED WITH LETTER NB26-01372	RAC	AMH

Knight Piésold CONSULTING

TABLE 4

CITY OF IQALUIT
CITY OF IQALUIT MUNICIPAL WATER LICENCE

CITY OF IQALUIT WATER LICENCE 3AM-IQA1626 - RESPONSE TO FINAL WRITTEN SUBMISSIONS
RESPONSE TO FINAL WRITTEN SUBMISSIONS FROM CANADA-INDIGENOUS RELATIONS AND NORTHERN AFFAIRS CANADA

Print Oct-22-26 16:41:05

Draft Water Licence Framework	CIRNAC's Recommended New/Modified Licence Conditions	City's Response to CIRNAC's Recommendation
Licence term	CIRNAC recommends that the licence term reflect the anticipated activities, the status of Long-Term Water Project design and construction, the City's compliance history, the need to reassess wastewater capacity, and the timing of major closure and infrastructure decisions. CIRNAC therefore recommends a water licence term of 10 years.	The current water licence as well as the revised draft water licence framework, and the conditions applying to construction and modifications, along with the ability to update the monitoring program in Schedule I throughout the duration of the licence all make it possible to accommodate changes in municipal infrastructure over the proposed 20 year term. A longer term would allow the City to focus on compliance rather than applying for a renewal in 10 years' time.
PART B: GENERAL CONDITIONS		
Revise Part B, Item 10	The Licensee shall review the Plans referred to in this Licence annually and as required by changes in operation and/or technology, infrastructure, monitoring requirements, legislation, guidance, or environmental conditions, and modify the Plans accordingly. Each Plan shall identify where it applies and which Plan takes precedence where requirements overlap. Revisions to any Plan shall be submitted in the form of an addendum to be included within the Annual Report required under Part B, Item 1, complete with the lists of revisions detailing where significant content changes are	The City agrees with the proposed revisions and has incorporated the changes into the revised draft water licence framework.
PART D: CONDITIONS APPLYING TO THE USE OF WATERS AND WATER MANAGEMENT PLANS		
Revise the Long Term Water Project operation and maintenance condition	The Licensee shall submit to the Board for approval, at least sixty days prior to initiating water transfer from the Long-Term Water Project facilities, updated operation and maintenance manual(s) for the integrated municipal Water supply system, including the Lake Geraldine Reservoir, Water Treatment Plant, New Reservoir, source-Water intakes and pumphouses, pipelines, dams, dykes, Water-retaining structures, and related infrastructure. The documentation shall address operation, inspection, maintenance, monitoring, emergency response, contingency measures, reporting, and roles and responsibilities. The Licensee shall review the Plan at intervals not exceeding five years and revise it sooner where monitoring, inspections, updated climate information, or changes in operation indicate that an update is required. Water transfer from the Long-Term Water Project facilities shall not commence until the Board has approved the	The City agrees with the proposed revisions and has incorporated the changes into the revised draft water licence framework.
Add the following new item respecting the Water Balance Model	The Licensee shall update the existing calibrated Water Balance Model to incorporate the New Reservoir, withdrawals from the Niaqunguk River and Lake Qikiqtalik, associated pumping and transfer infrastructure, current municipal Water demand, and the most current climate, hydrologic, Water-level, and Water-use information. The updated Water Balance Model shall evaluate Water supply conditions under normal, dry, and extreme low-Water scenarios and identify assumptions, limitations, operational thresholds, and contingency measures. The Licensee shall submit the initial updated Water Balance Model to the Board for review at least sixty days prior to regular operation of the integrated Long Term Water Project Water supply system. The Licensee shall compare model predictions with observed system performance and review the model at intervals not exceeding five years. The model shall be updated or recalibrated sooner where monitoring indicates that its assumptions, inputs, or predictions are no longer representative of actual conditions. The review shall consider whether updated climate information or observed hydrologic conditions require changes to the model, operating procedures, monitoring, or	The City does not agree with this new condition. The GoldSim water balance model is not the correct tool for operating the integrated water system, and will require unnecessary resources to keep up to date.
Add the following new item respecting Water supply monitoring	The Licensee shall monitor Water levels, flows, withdrawals, transfers, storage, and municipal Water use for the integrated municipal Water supply system in accordance with the Monitoring Program approved under Part I. Monitoring results shall be compared annually with the most current Water Balance Model. Where monitoring identifies a material deviation from model predictions, the Licensee shall assess the cause and identify any required model update, additional monitoring, operational change, contingency measure, or adaptive management action.	The first half of this proposed condition is unnecessary, as it is general and is covered by the rest of the licence. The water balance model is not appropriate for inclusion in the licence. This proposed condition has been omitted from the revised draft water licence framework.
Revise the proposed dam breach condition	The Licensee shall submit to the Board for approval, prior to filling the New Reservoir, a final Dam Breach and Inundation Analysis based on the final design. The analysis shall evaluate appropriate sunny-day and rainy-day breach scenarios, failure of the principal dam and relevant dyke structures, cascading effects on the Lake Geraldine Dam, downstream inundation, consequences to people, infrastructure and the environment, and implications for emergency preparedness and response. The New Reservoir shall not be filled until the Board has approved the final Dam Breach and Inundation Analysis.	The analyses listed by CIRNAC appears consistent with the requirements of the Canadian Dam Association's Dam Safety Guidelines and relevant technical bulletins. The City has updated the wording in Part D, Item #11 in the revised draft water licence framework to refer to meeting CDA requirements.
Revise and consolidate the Long-Term Water Project plan conditions	The Licensee shall submit to the Board for approval, at least sixty days prior to commencement of the applicable construction activities associated with the Long-Term Water Project: • an updated Environmental Protection Plan; • a Site-Specific Erosion and Sediment Control Plan; • a final Construction Water Management and Monitoring Plan; • a Construction Spill Contingency Plan; and • a Hazardous Materials Management Plan. The Plans shall identify the activities, areas, and project phases to which they apply and which Plan governs where requirements overlap. The Plans shall address, as applicable, erosion and sediment control, drainage, dewatering, construction contact Water, blasting, fuel and hazardous materials, contaminated soil and Water, monitoring, inspection, action levels, corrective actions, response timelines, contingency measures, and reporting. The applicable construction activity shall not commence until the Board has approved the Plan governing that activity. Where an approved Plan or Manual does not address a required activity, the Licensee shall submit an updated document to the Board for approval within a timeframe established by the Board.	These plans have already been incorporated into other conditions. The conditions requiring the spill contingency plans for operations and LTWP construction are in Part H. The City doesn't believe a Hazardous Materials Management Plan is required, since it is covered by the spill contingency plan (LTWP construction) or the landfill O&M manuals.
Add the following new item respecting Lake Qikiqtalik operating rules	The Licensee shall submit to the Board for approval, prior to commencing withdrawals from Lake Qikiqtalik, operating rules addressing seasonal withdrawal limits, Water-level or flow thresholds, monitoring, low-Water contingencies, adaptive management, and applicable Fisheries and Oceans Canada requirements.	The City has presented its proposed operating rules in Part D Item #1 of the revised draft water licence framework, and a letter from Knight Piesold accompanying this response provides the basis for its selection. A monitoring plan will be developed in consultation with DFO that will include monitoring requirements and contingency measures.
PART E: CONDITIONS APPLYING TO THE DEPOSIT OF WASTE		
Add the following new item respecting solid-waste management planning	Within one year of the Effective Date of the Licence, the Licensee shall submit to the Board a summary identifying the approved Plans and Manuals governing waste acceptance, diversion, hazardous waste, waste tracking, facility operations, leachate and runoff, landfill capacity, monitoring, and closure planning for the Solid Waste Disposal Facilities.	This proposed condition is duplicative of the approved O&M manuals for the operating West 40 Landfill and the North 40 Landfill. The requirement for a Final Closure and Reclamation Plan for the West 40 Landfill is covered under Part J of the current licence, and this condition has been carried forward into the revised draft water licence framework.
Add the following new item respecting wastewater treatment capacity	Where updated population, flow, or operational projections indicate that the effective treatment capacity of the Wastewater Treatment Plant may be exceeded during the term of this Licence, the Licensee shall submit to the Board, for review and approval, a Wastewater Treatment Capacity Management and Infrastructure Implementation Plan within a timeframe established by the Board.	The conditions around waste disposal (Part E), construction (Part F) and modifications (Part G) already provide a sufficient mechanism for the submission of future plans to upgrade or replace the current facilities. The City disagrees that the proposed condition is appropriate. The City's capital planning in an ongoing process that is the responsibility of the City.
PART I: CONDITIONS APPLYING TO MONITORING		
Add the following new item respecting seasonal baseline Water quality	Prior to regular withdrawal from Lake Qikiqtalik, the Licensee shall submit to the Board baseline Water-quality information sufficient to characterize relevant seasonal conditions, or a technical rationale demonstrating that the available information adequately characterizes seasonal variability. Regular withdrawal shall not commence until the Board has accepted the submitted information.	As noted in the City's response to CIRNAC-TR-12, it is not necessary to establish seasonal variability of the proposed water sources.
Add the following new item respecting Water quality monitoring	The Licensee shall evaluate environmental monitoring results against applicable licence criteria, environmental quality guidelines, baseline conditions, approved predictions, or other Board-approved benchmarks. Exceedances, adverse trends, or unexpected results shall be investigated and appropriate follow-up actions identified.	The City maintains that sampling the water sources on an ongoing basis (beyond public health requirements) is unnecessary and beyond the scope of what is normally included in a water licence.
SCHEDULE B: ANNUAL REPORTING REQUIREMENTS		
Add the following items	The Annual Report referred to in Part B, Item 1 shall also include: • a comparison of observed Water supply conditions with the predictions of the most current Water Balance Model; • identification of material deviations from model predictions; • the status of any required model update or recalibration; • the status of all Dam Safety Inspection and Dam Safety Review recommendations; • status of all plans and manuals required under the licence including review dates and revisions completed; • the status of outstanding Board and Inspector directions and non-compliance matters.	The reporting requirements related to the water balance are not necessary if annual water balance updates are not required by the licence, as the City asserts. The dam safety aspects are already captured in part c of Schedule B, and matters of compliance are captured under part m.

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REV	DATE	DESCRIPTION	PREP'D	RVW'D
0	22OCT'26	ISSUED WITH LETTER NB26-01372	RAC	AMH

NUNAVUT WATER BOARD

TYPE "A" WATER LICENCE NO. 3AM-IQA27XX

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Licence No. 3AM-IQA27XX

Pursuant to the Nunavut Waters and Nunavut Surface Rights Tribunal Act and the Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada, the Nunavut Water Board, hereinafter referred to as the Board, hereby grants to the

CITY OF IQALUIT

(Licensee)

P.O. BOX 460 IQALUIT, NU X0A OHO

(Mailing Address)

hereinafter called the Licensee, the right to alter, divert or otherwise use Water or deposit Waste for a period subject to restrictions and conditions contained within this Licence:

Licence Number / Type:	**3AM-IQA27XX / TYPE "A"**
Water Management Area:	**FROBISHER BAY WATERSHED (53)**
Location:	**WITHIN CITY OF IQALUIT'S MUNICIPAL BOUNDARIES, QIKIQTANI REGION, NUNAVUT**
Classification:	**MUNICIPAL UNDERTAKING**
Purpose:	**USE OF WATERS AND DEPOSIT OF WASTE**
Quantity of Water not to be Exceeded:	**~~2,000,000~~ 3,500,000 CUBIC METRES ANNUALLY FROM LAKE GERALDINE RESERVOIR, ~~500,000~~ 1,600,000 CUBIC METERS ANNUALLY FROM NIAQUNGUK RIVER (APEX RIVER) FOR TRANSFER TO LAKE GERALDINE AND/OR THE NEW RESERVOIR, 1,300,000 CUBIC METERS ANNUALLY FROM LAKE QIKIQTALIK FOR TRANSFER TO LAKE GERALDINE AND/OR THE NEW RESERVOIR, AND 2,500 CUBIC METRES ANNUALLY FROM IMIQTARVIVINIQ (DEAD DOG LAKE).**
Date Licence Issuance:	**FEBRUARY XX, 2027**
Expiry of Licence:	**~~JUNE 16, 2026~~XXXXXXX**

This Licence issued **(Motion Number: ~~2016-02-P6-14~~XXXXXXX)** and recorded at Goji Haven, Nunavut, includes and is subject to the annexed conditions.

~~Norman Mike~~
XXXXXX
Nunavut Water Board,
Hearing Chair

APPROVED BY: Minister of Crown-Indigenous Relations and Northern Affairs Canada

APPROVAL DATE:

Commented [RC1]: Change to the territorial Minister of Environment

PART A: SCOPE, DEFINITIONS, AND ENFORCEMENT

1. SCOPE

a. This Type "A" Water Licence No. 3AM-IQA27XX ("Replacement and Amended Licence" or "Licence") authorizes the City of Iqaluit ("Licensee" or the "City") to use Water and deposit Waste in support of a Municipal undertaking, as classified under Schedule 1 of the *Regulations*, within the City's municipal boundaries at the following approximate geographic coordinates:

Undertaking	Latitude	Longitude
Overall Extents	63° 50' 56.31" N	68° 39' 49.87" W
	63° 50' 57.30" N	68° 33' 41.94" W
	63° 43' 48.91" N	68° 18' 12.53" W
	63° 41' 06.60" N	68° 18' 18.82" W
	63° 41' 04.08" N	68° 32' 44.20" W
	63° 44' 46.02" N	68° 39' 43.1 0" W
West 40 Landfill	63° 43' 58.15" N	68° 32' 08.54" W
Water Treatment Plant	63° 45' 12.24" N	68° 30' 22.79" W
Wastewater Treatment Plant	63° 44' 45.15" N	68° 32' 19.80" W
Waste Transfer Station	63° 45' 52.06" N	68° 32' 38.86" W
North 40 Landfill	63° 48' 46.71" N	68° 34' 32.95" W
New Water Reservoir	63° 45' 38.48" N	68° 29' 22.65" W
Niaqunngut (Apex) River Pumphouse and Intake	63° 45' 38.47" N	68° 28' 36.52" W
Lake Qikiqtalik Pumphouse and Intake	63° 46' 58.04" N	68° 27' 11.86" W
Imiqtariviviniq (Dead Dog Lake) Dust Suppression Site	63° 44' 48.87" N	68° 29' 19.58" W

The scope of activities, works, and undertakings authorized in accordance with the terms and conditions of this Replacement and Amended Licence is as follows:

a. Use, management, and protection of the Lake Geraldine drainage basin and operation of the Water Treatment Plant;
b. Management and protection of Waters surrounding the West 40 Landfill site;
c. Management, collection, and monitoring of leachate from the West 40 Landfill site and adjacent Sludge Management Facility;
d. Management of improved drainage works at the West 40 Landfill site;
e. Management, operation, and eventual closure and reclamation of the current West 40 Landfill site and associated solid waste disposal facilities;
f. Upgrades, operation, maintenance, monitoring, and eventual closure and reclamation

Commented [RC2]: Add water crossings to the scope of the licence?

of a Wastewater Treatment Plant (WWTP);

g. Operation, maintenance, monitoring, and eventual closure and reclamation of a Sludge Management Facility;
h. Operation, maintenance, monitoring and eventual closure and reclamation of a Sewage Lagoon Facility;
i. Implementation of contingency measures for the Wastewater and Landfill management facilities; and
j. Implementation of changes to the monitoring requirements including frequency, parameters, and stations being monitored.
k. Construction, operation, and removal of temporary facilities for the Supplementary Pumping Program (SPP).
l. Construction and operation of the new solid waste management facilities, including the Waste Transfer Station, the New North Landfill, and associated infrastructure.
m. Construction and operation of permanent facilities associated with the Long-Term Water Supply Project, including a new reservoir located east of the Lake Geraldine Reservoir, water intakes and pumphouses at the Niaqunguk (Apex) River and Lake Qikiqtalik, pipelines, and related infrastructure.
n. Installation, operation and removal of temporary facilities to provide pumping water from Niaqunngut (Apex) River to the Lake Geraldine Reservoir and/or the New Reservoir, until permanent facilities have been constructed, or as a contingency measure if the permanent facilities are inoperable.
o. Construction, operation and removal of temporary facilities to provide for pumping water from Lake Qikiqtalik to the Lake Geraldine Reservoir and/or the New Reservoir, until permanent facilities have been constructed, or as a contingency measure if the permanent facilities are inoperable.
p. Withdrawal from Imiqtarivivinig (Dead Dog Lake) for dust suppression purposes.
~~m.~~q. Water crossings within the municipal undertaking.

Commented [RC3]: Added water crossings to the scope of the licence as per the City's response to GN-TR-03.

b. This Licence is issued subject to conditions contained herein with respect to the taking of Waters and the depositing of Waste of any type in any Waters or in any place under any conditions where such Waste or any other Waste that results from the deposits of such Waste may enter any Waters. Whenever new Regulations are made or existing Regulations are amended by the Governor in Council under the Act, or other statutes imposing more stringent conditions relating to the quantity, type or manner under which any such Waste may be so deposited, this Licence shall be deemed to be subject to such requirements; and

c. Compliance with the terms and conditions of this Licence does not absolve the Licensee from the responsibility for compliance with all applicable legislation, guidelines, and directives.

2. DEFINITIONS

a. The Licensee shall refer to Schedule A for definitions of terms used in this Licence.

3. ENFORCEMENT

a. Failure to comply with this Licence shall be a violation of the Act, subjecting the Licensee to the enforcement measures and the penalties provided for in the Act.

b. All inspection and enforcement services regarding this Licence will be provided by Inspectors appointed under the Act.

c. For the purpose of enforcing the terms and conditions of this Licence with respect to the use of Water and deposit or Discharge of Waste in Waters, Inspectors appointed under the Act, hold all powers, privileges, and protections that are conferred upon them by the Act or by other applicable laws.

PART B: GENERAL CONDITIONS

1. The Licensee shall file, with the Board for review, no later than the 31st of March of the year following the calendar year being reported, an Annual Report formulated in accordance with the requirements under Schedule B of this Licence.

2. The Licensee shall maintain a copy of this Licence at the Municipal Office, potable Water Treatment Facility, and the Waste Treatment Facilities at all times.

3. The Licensee shall file an application for renewal of this Licence at least one (1) year prior to the Licence expiry.

4. The Licensee shall, to the satisfaction of an Inspector, install, operate, and maintain metres, devices or other appropriate methods for measuring the volumes of Water used and Waste Discharged or deposited.

5. The Licensee shall post the necessary signs to identify the stations of the Monitoring Program included under Schedule I of this Licence. All signage shall be in the Official Languages of Nunavut.

6. The Licensee shall, for all Plans submitted under this Licence, include a proposed timetable for implementation. Plans submitted cannot be undertaken without subsequent written approval and/or directions from the Board. The Board may alter or modify a Plan if necessary to achieve legislative objectives and will notify the Licensee in writing of acceptance, rejection, or alteration of the Plan.

7. The Licensee shall, for all Plans submitted under this Licence, implement the Plan as approved by the Board in writing.

8. The Licensee shall, within thirty (30) days of notification or within the timeframe specified by the Board, submit for review and/or Board's approval revisions for any plan found to be unacceptable to the Board.

9. Every Plan to be carried out pursuant to the terms and conditions of this Licence shall become a part of the Licence, and any additional terms and conditions imposed upon approval of a Plan by the Board shall also become part of the Licence. All relevant terms and conditions of the Licence should be contemplated in the development of a Plan where appropriate.

10. The Licensee shall review the Plans referred to in this Licence as required by changes in

operation and/or technology, infrastructure, monitoring requirements, legislation, guidance, or environmental conditions, and modify the Plans accordingly. Each Plan shall identify where it applies and which Plan takes precedence where requirements overlap. Revisions to any Plan shall be submitted in the form of an addendum to be included within the Annual Report required under Part B, Item 1, complete with the lists of revisions detailing where significant content changes are made.

11. The Licensee shall immediately report to the NWT/NU 24-Hour Spill Report Line (867-920-8130) any spills of Waste associated with the Undertakings under this Licence including the potable Water Treatment Facility and Waste Treatment Facilities, which are reported to or observed by the Licensee.

12. Any communication with respect to this Licence shall be made in writing to the attention of:

Manager of Licensing
Nunavut Water Board
P. O. Box 119
Goji Haven, NU X0B 1J0
Telephone: (867) 360-6338
Fax: (867) 360-6369
Email: licensing@nwb-oen.ca

13. Any notice made to an Inspector shall be made in writing to the attention of:

Water Resources Officer
Nunavut District, Nunavut Region
P.O. Box 100
Iqaluit, NU X0A 0H0
Telephone: (867) 975-4295
Fax: (867) 979-6445

14. The Licensee shall submit, to the Board for information or as otherwise directed, one (1) paper copy and one (1) electronic copy of all reports, studies, and Plans generated for the works, activities, and undertakings under this Licence. All Reports, studies or Plans submitted to the Board by the Licensee shall include an executive summary in English, Inuktitut, and French.

15. The Licensee shall ensure that any document(s) or correspondence submitted by the Licensee to the Board is received by the Board and maintain on file a copy of the acknowledgment of receipt issued by the Manager of Licensing or his/her designate.

16. This Licence is assignable as provided for in section 44 of the Act.

17. The expiry or cancellation of this Licence does not relieve the Licensee from any obligation imposed by the Licence, or any other regulatory requirement.

PART C: CONDITIONS APPLYING TO SECURITY

Commented [RC4]: Additions as per CIRNAC's recommendation

Field Code Changed

Commented [RC5]: To be updated with contact information for the Government of Nunavut inspector

Commented [RC6]: Are paper copies still required by the Board?

1. The Licensee is not required to post reclamation security for the activities, works, and undertakings authorized under this Licence.

PART D: CONDITIONS APPLYING TO THE USE OF WATERS AND WATER MANAGEMENT PLANS

1. The Licensee is authorized to withdraw from the Lake Geraldine Reservoir at Monitoring Station No. IQA-01, up to ~~23~~,~~50~~00,000 cubic metres of Water annually for the relevant activities, works, and undertakings authorized under the scope of this Licence.

   The Licensee is authorized to withdraw from the Niaqunguk River (Apex River) at Monitoring Station No. IQA-10, up to a total of ~~500,000~~1,600,000 cubic metres of Water annually ~~for the supplementation of Water levels in~~ to transfer into the Lake Geraldine Reservoir and/or the New Reservoir. The Licensee shall ensure that withdrawals from the Niaqunguk River (Apex River) only occur when the natural flow in the Niaqunguk River (Apex River) is above 30% of the mean annual discharge (MAD). The following pumping rates are permitted:
   - Pumping rate of 10% of instantaneous discharge when flow of the Apex River is between 0.143 m^3/s and 0.156 m^3/s
   - Pumping rate of 20% of instantaneous discharge when flow of the Apex River is >0.156 m^3/s (33% of MAD)

   The Licensee is authorized to withdraw from Lake Qikiqtalik at Monitoring Station No. IQA-11 up to 1,300,000 cubic metres of Water annually to transfer into the Lake Geraldine Reservoir and/or the New Reservoir. The withdrawal must occur during the freshet period, and pumping should cease once the lake water level reaches El. 203.3 m.

   The Licensee is authorized to withdraw from Imiqtarviviniq (Dead Dog Lake) at Monitoring Station No. IQA-14, a total of 2,500 cubic metres of Water annually for dust suppression and general municipal purposes.

2. The Board has approved with this Licence 3AM-IQA27XX ~~The Licensee shall submit to the Board for approval,~~ the operation and maintenance manual ~~within sixty (60) days of the Effective Date of the Licence, an updated manual~~ for the potable Water Treatment Facility dated April 2026. ~~The Manual shall be prepared in accordance with relevant aspects of the format outlined in the *Guidelines for the Preparation of an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories* (GNWT, 1996). The manual shall, address among other items, the following:~~

   ~~a. Purpose of facility;~~
   ~~b. Site setting;~~
   ~~c. Operational procedures for storage, treatment and distribution of potable water; waste generated and hazardous substances associated with the facility; site inspections; and personnel training~~
   ~~d. Maintenance procedures including equipment servicing;~~
   ~~e. Sampling and monitoring requirements; and~~
   ~~f. Emergency response measures.~~

3. The Licensee shall equip all freshwater intake structures with screens of appropriate mesh

Commented [RC7]: Adapted from wording in Part D, Item 10 of Amendment No. 5 to reflect what is presented in DFO's letter of advice dated March 25, 2024 (included as Attachment 04 of the Application).

Commented [RC8]: Not sure this is required if the Board approves the current version of the O&M manual as part of the new licence.

size that meet the requirements of Fisheries and Oceans (DFO) Canada's *Freshwater Intake End-of-Pipe Fish Screen Guidelines* (1995 or the most current) so as to prevent the entrainment of fish and control Water withdrawal rates such that fish do not become impinged within the screens.

4. The Licensee shall undertake Dam Safety Inspections (DSI) and/or Dam Safety Reviews (DSR) of the Lake Geraldine water supply facility in accordance with requirements of the Canadian Dam Association (CDA), *Dam Safety Guidelines* (2007, or the most current version). The Licensee shall submit for the Board's review, within the Annual Report required under Part B, Item 1, the report generated for the DSIs or DSRs along with the Licensee's recommended actions to address any deficiencies identified in the inspections and/or reviews.

5. The Licensee shall not remove any material from below the ordinary High Water Mark of any Water body unless otherwise approved by the Board in writing.

6. The Licensee shall not cause erosion to the banks of any body of Water and shall provide the necessary controls to prevent such erosion.

7. The Licensee shall implement necessary measures to control sediment and erosion prior to and during operations to prevent entry of sediments into Water.

8. The Licensee shall maintain the potable Water Treatment Facilities~~y~~ in accordance with applicable guidelines, procedures, and regulations and to the satisfaction of an Inspector.

9. ~~The Licensee shall, as part of any proposal to supplement the Lake Geraldine Reservoir, evaluate the potential impact on freshwater resources, including fish and fish habitat. The results of the evaluation must be included as part of any application to augment the Lake Geraldine Reservoir with Water from proximal water bodies.~~

10. ~~Unless approved or otherwise authorized by Fisheries and Oceans Canada, the Licensee shall ensure that withdrawals from the Niaqunguk River (Apex River) at Monitoring Station No.: IQA-10 only occur when the natural flow in the Niaqunguk River (Apex River) is above 30% of the mean annual discharge (MAD) and the withdrawals will not exceed 10% of the instantaneous flow of the Niaqunguk River (Apex River).~~ If, at any time, Fisheries and Oceans Canada advises the Licensee that due to potential effects on fish or fish habitat the withdrawals from the Niaqunguk River (Apex River) or Lake Qikiqtalik are no longer acceptable, the withdrawals must cease until Fisheries and Oceans Canada indicates that the withdrawals can resume.

~~11. The Licensee shall, at least thirty (30) days prior to the intended annual start of water withdrawals referred to in Part D, Item 10, submit to the Board, for review, an updated Lake Geraldine Water Balance Model completed with the most up to date data available.~~

~~12. The Licensee shall, prior to the expiry of this Licence in 2026, submit to the Board a contingency plan in either a standalone document or as an addendum to a current plan that includes the options for action if the Niaqunguk River (Apex River) is found to have insufficient water volumes to fully supplement the Lake Geraldine Reservoir.~~ The Licensee

Commented [RC9]: Completed as part of the NIRB screening, water licensing, and DFO authorization processes for the LTWP

Commented [RC10]: A revised version of this item has been incorporated into Item 1 of this part.

Commented [RC10R2]: In response to FWS DFO-04, the second sentence has been reinstated and expanded to include Lake Qikiqtalik.

Commented [RC11]: The Lake Geraldine Water Balance Model was a planning tool that was used to determine flow supplementation needs and the new water reservoir capacity requirements. It is no longer required as a planning tool. The City will operate its excel-based water balance to internally assess the need for pumping from the two new water sources an an annual basis, and to withdraw water annually within the annual withdrawal volume limits and other restrictions specified in this licence.

Commented [RC12]: The Long Term Water Plan represents the permanent solution to this plan

shall submit to the Board for approval, at least 60 days prior to initiating water transfer from the Long Term Water Project facilities, updated operation and maintenance manual(s) for the integrated municipal Water supply system, including the Lake Geraldine Reservoir, Water Treatment Plant, New Reservoir, source-Water intakes and pumphouses, pipelines, dams, dykes, Water-retaining structures, and related infrastructure. The documentation shall address operation, inspection, maintenance, monitoring, emergency response, contingency measures, reporting, and roles and responsibilities. The Licensee shall review the Plan at intervals not exceeding five years and revise it sooner where monitoring, inspections, updated climate information, or changes in operation indicate that an update is required. Water transfer from the Long-Term Water Project facilities shall not commence until the Board has approved the documentation.

~~a.~~11. The Licensee shall submit a dam breach and inundation analysis of the new reservoir based on the final design that meets the requirements of the Canadian Dam Association's Dam Safety Guidelines and relevant technical bulletins at least 60 days prior to pumping into the new reservoir.

PART E: CONDITIONS APPLYING TO THE DEPOSIT OF WASTE AND WASTE MANAGEMENT PLANS

1. The Licensee is authorized to use the ~~Sewage Lagoon Facility and the~~ Wastewater Treatment Plant to treat and dispose of Wastewater generated by the Undertaking authorized under this Licence ~~until such time that the Upgraded Wastewater Treatment Plant authorized by the Licensee is constructed and commissioned~~, or as otherwise approved by the Board in writing.

2. The Licensee is authorized to use the Sewage Lagoon Facility for the storage of untreated sewage and sewage sludge during period of upset conditions in the Wastewater Treatment Plant, or as otherwise approved by the Board in writing.

~~2.~~3. The Licensee shall provide written notice to an Inspector and the Board at least ten (10) days prior to any planned Effluent Discharges from the Solid Waste Facilit~~ies~~iesy, Sewage Lagoon Facility, and Wastewater Treatment Plant~~, and the Upgraded Wastewater Treatment Plant once commissioned~~.

~~3.~~4. The Licensee shall establish the relevant monitoring stations for the facilities authorized under this Licence in accordance with Schedule I.

5. The Licensee shall ensure that Surface Drainage or surface Water runoff associated with site activities or generated during the construction of any facility designed to withhold, divert, or retain Water or Waste, does not exceed the ~~following Effluent criteria~~Discharge Limits below.~~:~~

Parameter	Maximum Average Concentration	Maximum concentration of Any Grab Sample
Total Suspended Solids (TSS)	50.0 mg/L	100.0 mg/L
pH	Between 6 and 9~~.~~	
Ammonia-nitrogen (when blasting	4.0 mg/L	

Commented [RC13]: Commitment TM-12
The City will submit an updated Operations and Maintenance Manual for the Water Supply Facilities to be submitted to the Board for review 60 days prior to initiating pumping into the new reservoir.

Commented [RC13R2]: Wording re-worked to align with CIRNAC's recommendations.

Commented [RC14]: Commitment TM-11
A dam breach analysis that considers cascading effects (new reservoir to Lake Geraldine) will be submitted with the Issued for Construction (IFC) drawings to the Board for review 60 days prior to initiating pumping into the new reservoir.

Commented [RC14R2]: Wording modified to refer to the analyses outlined in CDA guidelines and technical bulletins, consistent with the City's response to CIRNAC's FWS for TR-04 and TM-11.

Commented [RC15]: Note that the current WWTP will likely need to be expanded or a new WWTP will need to be constructed (to replace the current WWTP or to operate in parallel to it) within the term of this new licence. Such plans and engineering drawings will be submitted to the Board in accordance with Part G regarding Modifications.

is involved)	

4.6. ~~Upon commissioning of the Upgraded Wastewater Treatment Plant, t~~Once no longer utilized, the Sewage Lagoon Facility shall be ~~used as a back-up facility or closed and~~ reclaimed in accordance ~~with~~in Part J, Item 34.

5.7. The Board has approved with this Licence 3AM-IQA27XX ~~The Licensee shall submit to the Board for approval in writing, within four (4) months of the Effective Date of the Licence, an~~ the Operation and Maintenance Manual for the Sewage Lagoon Facility dated July 21, 2026 that addresses requirements for both the Sewage Lagoon and Sludge Management Facilities. The manual and any updates shall be prepared in accordance with the *Guidelines for the Preparation of an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories* (GNWT, 1996).

6.8. The Board has approved with this Licence 3AM-IQA27XX ~~The Licence shall submit to the Board for approval in writing, by December 21, 2018 or as otherwise directed by the Board in writing, an~~ the Operations and Maintenance Manual for the ~~Upgraded~~ Wastewater Treatment Plant ~~that incorporates the requirements of Part E, Item 6~~dated April 24, 2020. The manual shall be prepared in accordance with the *Guidelines for the Preparation of an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories* (GNWT, 1996).

~~7. The manual referred to in Part E, Item 7 shall supersede the manual referenced in Part E, Item 6, following approval by the Board in writing.~~

~~8. The Licensee shall submit to the Board for approval in writing, by December 31, 2018, an updated version of the plan entitled *City of Iqaluit Solid Waste Management Plan*, dated January 2014 that addresses relevant intervener's comments and recommendations made during the licensing process, such as inclusion of details related to future uses of the landfill, timeframe for closure, and ongoing activities within the scope of this Licence.~~

9. The Licensee shall undertake Dam Safety Inspections (DSI) and/or Dam Safety Reviews (DSR) of the Wastewater Treatment Facilities (as applicable) in accordance with requirements of the Canadian Dam Association (CDA), *Dam Safety Guidelines* (2007, or most current version). The Licensee shall submit for the Board's review, within the Annual Report required under Part B, Item 1, the report generated for the DSIs or DSRs along with the Licensee's recommended actions to address any deficiencies identified in the inspections and/or reviews.

10. The Licensee shall dispose of and contain all municipal solid waste generated by the City at the West 40 Landfill or the Solid Waste Disposal Facilities and associated site(s) authorized under this licence or as otherwise approved by the Board in writing.

~~11.~~ The Licensee shall ~~submit to the Board for approval, within sixty (60) days of the Effective Date of the Licence, an updated~~ operate the West 40 Landfill according to the Landfill Operation and Maintenance Manual dated January 8, 2024. Any proposed changes to landfill operations shall be documented in an updated manual submitted to the Board for approval more

Commented [RC16]: The City of Iqaluit now has its long-term waste management facilities in place. This was a planning document that is no longer applicable.

Commented [RC17]: The sewage lagoon has been classified in the last as a low consequence dam. CDA guidelines state that DSIs for low consequence dams are required every 1-2 years, and DSRs are not required (as long as the classification of a low consequence dam does not change).

Commented [RC18]: Modified text to reflect that there is an approved O&M manual in place for the West 40 Landfill, and that the manual will require updating and approval of the Board before any operational changes are implemented

than 60 days before implementing the proposed change(s).~~that addresses concerns raised by intervening parties during the licensing process including the following:~~

~~a. Management of Leachate from the facility;~~
~~b. Updated sampling and monitoring requirements; and~~
~~c. Open burning practices.~~
~~d. Ongoing activities within~~

~~12.~~11. The Licensee shall collect and contain all leachate generated by the West 40 Landfill within the Landfill.

~~13. The Licensee shall submit to the Board for review, by December 31, 2017, an updated version of the document entitled *West 40 Landfill Drainage Management Review*, dated September 16, 2011, that addresses the concerns raised by intervening parties including information on the absence of permafrost related data.~~

~~14.~~12. The Inspector may authorize an emergency Discharge, following the Licensee's written submission to the Inspector and to the Board, at least fifteen (15) days prior to discharge or as instructed by the Inspector, that includes the following information:

a. Proposed quantity of discharge;
b. Reason for discharge;
c. Identification of the Final Discharge Location;
d. Proposed sampling and analysis to be conducted; and
e. Proposed mitigation measures to implemented.

~~15.~~13. The Licensee shall submit to the Board and the Inspector for review, within sixty (60) days following any emergency Discharge authorized by the Inspector, a report that includes, among other items, an analysis of results for the emergency Discharge.

~~16.~~14. The Licensee shall maintain the Licensed Facilities to the satisfaction of an Inspector.

~~17.~~15. The Licensee shall remove from the site associated with the undertaking, all Hazardous Wastes, waste oil and non-combustible waste generated through the course of the operation, for disposal at a licensed waste disposal facility.

~~18.~~16. The Licensee shall maintain records of all Waste removed from site and records of confirmation of proper disposal of removed Waste. These records shall be made available to an Inspector or the Board upon request.

~~19.~~17. ~~The Board has approved under this Licence No: 3AM-IQA1626, Amendment No.5, the Plan entitled "City of Iqaluit Operations and Maintenance Manual Landfill and Waste Transfer Station," dated October, 2020. The Licensee shall submit to the Board for review, within sixty (60) days of approval of Amendment No. 5, an updated Manual, as referred to above, that addresses interveners' comments and recommendations provided during the review of the Application dated April 9, 2020.~~ The Licensee shall submit to the Board for approval, at least sixty (60) days prior to commencement of operations of the North 40 Landfill and Waste Transfer Station, an updated Operation and Maintenance Manual for that reflects how the City or its designate will operate the facility. The updated manual will

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Commented [RC19]: This was completed. A closure plan will be filed for the West 40 Landfill in the near future.

Commented [RC20]: The current version of this manual is dated August 2022. It was submitted to the NWB on Sept 7, 2022, though there is no indication on the pubic registry that the Board approved it. The 2022 version was also presented as Attachment 51 of the Application.

incorporate the Leachate Collection and Characterization Plan previously approved by the Board (dated February 2, 2023). An updated implementation schedule from the Leachate Collection and Characterization Plan will be incorporated into the updated manual.

~~20.~~18. The Licensee shall collect and contain all leachate and runoff generated by the ~~New~~ North 40 Landfill and Waste Transfer Station within the facility collection ponds/sumps.

~~21.~~19. The Licensee shall characterize leachate chemistry from the ~~New~~ North 40 Landfill and Waste Transfer Station, prior to discharge to the Wastewater Treatment Facilities.

~~22.~~20. ~~The Licensee shall submit to the Board for approval, at least six (6) months prior to commissioning of the New North Landfill or within one (1) year of approval of the Amendment No. 5, whichever comes first, a Leachate Characterization and Management Plan that includes methods for characterization of leachate and contingency measures for discharge that incorporate appropriate mitigations, including, if necessary, leachate treatment, to avoid adverse effects in the receiving environment.~~ The Licensee shall implement the *Leachate Characterization and Management Plan* dated February 2, 2023 that includes methods for characterization of leachate and contingency measures for discharge that incorporate appropriate mitigations, including, if necessary, leachate treatment, to avoid adverse effects in the receiving environment.

~~23.~~21. The Licensee shall monitor and report on the leachate before the leachate collection ponds become full and implement any treatment methodologies within one year of making a decision that treatment of the leachate in the ponds is as per the Leachate Characterization and Management Plan ~~required under Part E, Item 23~~.

~~24.~~22. The Licensee shall inspect the leachate collection system on a daily basis during periods of flow as per the ~~"City of Iqaluit~~ Operations and Maintenance Manual for the North 40 Landfill and Waste Transfer Station~~," dated October, 2020~~.

~~25.~~23. The Licensee shall add additional ground cover at the landfill, if disturbance occurs due to nuisances' wildlife or other causes.

PART F: CONDITIONS APPLYING TO CONSTRUCTION

1. The Licensee shall, submit to the Board for review, within thirty (30) days prior to commencing construction of any facilities or infrastructure authorized under this Licence, for-construction designs and drawings, signed and stamped by an Engineer.

2. The Licensee shall ensure that all relevant approved facilities are designed and constructed to engineering standards such that, at a minimum, they comply with the most current version of the *Canadian Dam Safety Guidelines*.

3. The Licensee shall use fill material for Construction only from approved sources that have been demonstrated, by appropriate geochemical analyses, to not produce Acid Rock Drainage and to be Non-Metal Leaching, and free of contaminants.

4. The Licensee shall maintain shoreline stability during construction.

5. The Licensee shall ensure that all final designs and drawings are qualified by an Engineer confirming that:

   a. Works are designed under sound engineering principles;
   b. Design limitations are understood and communicated within the report; and
   c. Measures are implemented to minimize impact to Water.

6. The Licensee shall, submit to the Board for review, within ninety (90) days of completion of any structure authorized under this licence, to contain, withhold, divert or retain Water or Wastes; a construction summary report prepared by an Engineer that includes, among other relevant information, as-built drawings, documentation of field decisions that deviated from original plans, and any data used to support these decisions.

7. The Licensee shall, if contamination of surface and/or ground water is encountered during construction and excavation, notify the Inspector immediately and implement the Spill Contingency Plan.

8. The Licensee shall develop and implement measures necessary to prevent and mitigate erosion and/or the release of sediment into Water during the construction of the Upgraded Wastewater Treatment Plant or during any construction activities associated with the Undertaking.

9. The Board ~~has~~ approved under this Licence 3AM-IQA27XX~~1626 Amendment No. 4~~, the Plan entitled "Apex River Water Withdrawal: Erosion and Sediment Control Plan," dated December 21, 2018.

   The Board has approved under this Licence No: ~~3AM-IQA1626~~3AM-IQA27XX, ~~Amendment No.5,~~ the Plan entitled "City of Iqaluit Environmental Protection Plan Construction Phase, Landfill and Waste Transfer Station," dated ~~December 2020~~August 2022. ~~The Licensee shall submit to the Board for review, within sixty (60) days of approval of Amendment No. 5, an updated Plan, as referred to above, that addresses interveners' comments and recommendations provided during the review of the Application dated April 9, 2020~~.

10. The Board has approved under this Licence No: ~~3AM-IQA1626~~3AM-IQA27XX, ~~Amendment No.5,~~ the Plan entitled "City of Iqaluit Environmental Protection Plan - Operations, Closure and Post-Closure Phases, Landfill and Waste Transfer Station," dated ~~October, 2020~~August 2022. ~~The Licensee shall submit to the Board for review, within sixty (60) days of approval of Amendment No. 5, an updated Plan, as referred to above, that addresses interveners' comments and recommendations provided during the review of the Application dated April 9, 2020.~~

11. The Board has approved with this Licence 3AM-IQA27XX ~~The Board has approved under this Licence No: 3AM-IQA1626, Amendment No.5,~~ the Plan entitled "City of Iqaluit

Commented [RC21]: Item #9 was duplicated in Amendment No. 4 and No. 5. This is Item #9 from Amendment No. 4.

Commented [RC22]: This is Item #9 from Amendment No. 5.

Erosion and Sediment Control Plan, Landfill and Waste Transfer Station," dated ~~October, 2020~~August 2022. ~~The Licensee shall submit to the Board for review, within sixty (60) days of approval of Amendment No. 5, an updated Plan, as referred to above, that addresses interveners' comments and recommendations provided during the review of the Application dated April 9, 2020.~~

~~11.~~12. ~~The Licensee shall, submit to the Board for review, at least six (6) months prior to commencing construction of the New North Landfill facility, a Heat Generation and Permafrost Mitigation Plan that addresses comments and recommendations provided during the review of the Application dated April 9, 2020.~~

Commented [RC23]: The updated O&M manual for the North 40 Landfill and Waste Transfer Station with thermal mitigation dated August 2022 was submitted on September 7, 2022. This item is no longer required.

~~12. The Licensee shall, submit to the Board for review, at least sixty (60) days prior to commencing construction of the New North Landfill facility, the proposed cut methodology for mitigating permafrost degradation.~~

Commented [RC24]: Provided with IFC drawings 60 days prior to construction. No longer required.

13. The Licensee shall submit an updated Environmental Protection Plan to the Board for review at least 60 days prior to the start of construction of the Long Term Water Project.

Commented [RC25]: Commitment TM-08
The City will submit an updated Environmental Protection Plan to the Board for review and approval 60 days prior to the start of construction of the Long Term Water Project.

14. The Licensee shall submit a Site-Specific Erosion and Sediment Control Plan to the Board for review at least 60 days prior to the start of construction of the Long Term Water Project. The Site-Specific Erosion and Sediment Control Plan shall present the following information:
    a. Potential sources of erosion and sedimentation
    b. Location-specific mitigation measures
    c. Stockpile management procedures
    d. Setbacks from waterbodies
    e. Drainage controls
    f. Inspection and maintenance requirements
    g. Corrective action and stabilization measures.

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Commented [RC26]: Commitment TM-09
The City will submit a site-specific Erosion and Sediment Control Plan to the Board for review and approval 60 days prior to the start of construction of the Long Term Water Project.

Commented [RC27]: Commitment TM-10
As per CIRNAC's Aug 17, 2026 response to Commitment TM-10.

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15. The Licensee shall submit a final Construction Water Management and Monitoring Plan to the Board, incorporating intervenor comments received during the technical review, for review at least 60 days prior to the start of construction of the Long Term Water Project. The final plan will address the following:
    a. Explosive type(s) to be used
    b. Parthways by which blasting residues could enter local watercourses
    c. Measures to minimize losses of explosives and blasting residues
    d. Monitoring and inspection frequencies
    e. Discharge limits
    f. Corrective actions and response timelines
    g. Downstream verification monitoring, where appropriate
    h. Contingencies where treatment or controls are ineffective
    i. Responsibilities of the City, contractor, Engineer, and environmental monitor
    j. Reporting requirements

Commented [RC28]: Added as per CIRNAC's FWS for CIRANC-TR-01 and TR-13

PART G: CONDITIONS APPLYING TO MODIFICATIONS

1. The Licensee may, without written consent from the Board, carry out Modifications to the potable Water Treatment Facilitiesy and Waste Treatment Facilities provided that such Modifications are consistent with the terms of this Licence and the following requirements are met:

   a. the Licensee has notified the Board in writing of such proposed Modifications at least sixty (60) days prior to beginning the Modifications;
   b. Such Modifications are consistent with the NPC Land Use Planning (NPC) Conformity Determination and the NIRB Screening Decision;
   c. such Modifications do not place the Licensee in contravention of the Licence or the *Act*;
   d. the Board has not, during the sixty (60) days following notification of the proposed Modifications, informed the Licensee that review of the proposal will require more than sixty (60) days; and
   e. The Board has not rejected the proposed Modifications.

2. Modifications for which all of the conditions referred to in Part G, Item 1 have not been met can be carried out only with written approval from the Board.

3. The Licensee shall provide as-built plans and drawings of the Modifications referred to in this Licence within ninety (90) days of completion of the Modifications. These plans and drawings shall be stamped by an Engineer.

PART H: CONDITIONS APPLYING TO SPILL CONTINGENCY PLANNING

1. The Board has approved under this Licence 3AM-IQA27XX3AM-IQA1626 Amendment No. 4, the Plan entitled "*Apex River Water Withdrawal: Site Specific Spill Contingency Plan*," dated December 21, 2018.

2. The Board has approved with this Licence 3AM-IQA27XX Spill Contingency Plan Rev. 4 dated April 24, 2026 covering current municipal operations.

3. The Licensee shall submit to the Board for review an updated Spill Contingency Plan for municipal operations that incorporates the elements of the Long Term Water Project at least 60 days prior to initiating pumping into the New Reservoir.

4. The Licensee shall submit a construction-focused Spill Contingency Plan to the Board for review at least 60 days prior to the start of construction of the Long Term Water Project that identifies the planned locations of temporary storage of fuel and other hazardous materials.

2.5. The Licensee shall, subject to section 16 of the Regulations, report any unauthorized deposits

Commented [RC29]: Commitment TM-14
The City will submit an updated Spill Contingency Plan to include the Long Term Water Project to the Board for review and approval 60 days prior to initiating pumping into the new reservoir.

Commented [RC30]: Commitment TM-13
The City will submit a Spill Contingency Plan for the construction phase of the Long Term Water Project (LTWP) to the Board for review and approval 60 days prior to the start of construction of the LTWP that identifies the location of planned temporary storage of fuel and other hazardous materials.

of Waste or foreseeable unauthorized deposits of waste and/or Discharges of Effluent, and:

a Employ, as required, the approved Spill Contingency Plan;
b Report the incident immediately via the NWT/NU 24-Hour Spill Reporting Line (867) 920-8130 and to the Inspector at (867) 975-4295; and
c For each spill occurrence, submit a detailed report to the Inspector, no later than thirty (30) days after initially reporting the event. The report shall include the amount and type of spilled product, the GPS location of the spill, and the measures taken to contain, clean up and restore the spill site.

~~3.~~6. The Licensee shall, in addition to Part H, Item 2, regardless of the quantity of release of a harmful substance, report to the NWT/NU Spill Line if the release is near or into a Water body.

PART I: CONDITIONS APPLYING TO MONITORING

1. The Licensee shall monitor the relevant potable Water Treatment Facilities~~y~~ and Waste Treatment Facilities authorized under this Licence in accordance with requirements included under Schedule I.

2. The Licensee shall, submit Board for approval in writing, within sixty (60) days of the Effective Date of this Licence, an updated Monitoring Program that addresses monitoring requirements for the Water Treatment Facilities~~y~~ and Waste Treatment Facilities. The Monitoring Program shall address, among other items, the requirements outlined in Schedule I.

3. All analyses required under Schedule I shall be conducted using methods as described in the most recent edition of "*Standard Methods for the Examination of Water and Wastewater*", or by such other methods as approved by the Board in writing.

4. All laboratory analyses shall be performed at a laboratory accredited according to ISO/IEC Standard 17025. The accreditation shall be current and in good standing.

5. The Board has approved with this Licence 3AM-IQA27XX ~~The Licensee shall, submit to the Board for review, within sixty (60) days of the Effective Date of the Licence, an updated~~ a Quality Assurance/Quality Control (QA/QC) Plan prepared in accordance with *Quality Assurance (QA) and Quality Control (QC) Guidelines for Use by Class "A" Licensees in Meeting SNP Requirements and for Submission of a QA/QC Plan* (INAC, 1996 or most current version). The updated plan shall be accompanied by a letter from an Analyst of an accredited laboratory confirming acceptability of the Plan.

6. The Licensee shall measure by instrument and record in cubic metres, the monthly quantities of freshwater extracted for use for all purposes under this Licence from the following water sources:

a. Lake Geraldine Reservoir, at Monitoring Program Station No. IQA-01~~, used for all purposes under this Licence.~~
b. Niaqunngut (Apex) River at Monitoring Program Station No. IQA-10

Commented [RC31]: **Note to the NWB:** For the City, this is the Environmental Monitoring and QA/QC Plan. The licence currently refers to a Monitoring Plan under this item, and a QA/QC Plan under Item #5. Perhaps the Board wants to keep these as-is or merge the two items to refer to the City's Environmental Monitoring and QA/QC Plan?

Commented [RC32]: INSERT REV AND DATE

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c. Lake Qikiqtalik at Monitoring Program Station No. IQA-11
d. New Reservoir discharging to the Lake Geraldine Reservoir at Monitoring Station No. IQA-12
e. Withdrawal from Imiqtarivivinig (Dead Dog Lake) at Monitoring Program Station No. IQA-13

6.7. The Licensee shall measure, by instrument and record in cubic metres, the quantities of Effluent released from the Sewage Lagoon Facility at Monitoring Station No. IQA-02, Wastewater Treatment Plant ~~and/or Upgraded Wastewater Treatment Plant~~ at Monitoring Station No. IQA-04, ~~and~~ the West 40 Landfill at Monitoring Station No. IQA-08, the leachate tank at the Waste Transfer Station at Monitoring Station No. IQA-15, and the leachate collection ponds at the North 40 Landfill at Monitoring Station No. IQA-16.

7.8. The Licensee shall measure and record in cubic metres, the monthly and annual volumes of sludge removed from the Wastewater Treatment Facilities.

8.9. The Licensee shall provide the GPS co-ordinates (in degrees, minutes and seconds of latitude and longitude) of all locations of sources of Water utilized and Waste deposited under this Licence.

9.10. The Licensee shall include all of the data and information required by the Monitoring Program under Schedule I within the Annual Report required under Part B, Item 1 of the Licence or as otherwise requested by an Inspector and/or the Board.

10.11. Additional Monitoring may be requested by the Board and/or the Inspector.

12. The Monitoring Program and compliance dates specified in the Licence may be modified at the discretion of the Board in writing and do not constitute an application for Amendment as defined in the *Act.*

11.13. The Licensee shall monitor the Supplementary Pumping Program (SPP) in accordance with requirements included under Schedule I.

12.14. The Licensee shall monitor water uptake from Imiqtarviviniq (Dead Dog Lake) in accordance with requirements included under Schedule I.

13.15. The Licensee shall implement the Plan entitled "*Facility Monitoring Plan, Landfill and Waste Transfer Station*," dated December 2020 that was ~~submitted within the Application and~~ approved by the Board with the issuance of Licence No: 3AM-IQA1626, Amendment No. 5.

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PART J: CONDITIONS APPLYING TO CLOSURE AND RECLAMATION

~~1. The Board has accepted the document entitled *Iqaluit Solid Waste Management Plan West 40 Landfill Decommissioning Technical Memorandum*, dated January 2014, submitted as additional information with the Application.~~

~~2.~~1. The Licensee shall submit to the Board for approval in writing, at least one (1) year prior to commencing the decommissioning of the West 40 Landfill, a Final Closure and Reclamation Plan prepared by an Engineer in accordance with industry's best practices and relevant guidelines.

~~3.~~2. The Licensee shall, for the Plan required under Part J, Item 12~~,~~, include a presentation of data and a discussion of ~~environmental conditions existing before the use of the site by the Licensee as a municipal landfill, as well as~~ remediation objectives.

~~4.~~3. The Licensee shall notify the Board in writing, at least one year prior to the implementation of final closure, of its intentions to proceed with final closure of any Water use or Waste disposal facilities included within the scope of this Licence, excluding the Facility under Part J, Item 12.

4. The Licensee shall provide to the Board for review, the final closure design report, including details pertaining to site drainage, within one year of closure of the West 40 Landfill and one year prior to undertaking West 40 Landfill reclamation work.

Commented [RC33]: The environmental conditions before using the area for the West 40 Landfill are not known. Additionally, it is unclear the objective of trying to surmise pre-development conditions.

Commented [RC34]: From Amendment No. 5 of the current licence. This overlaps somewhat with the Final Closure and Reclamation Plan identified in Item #1 (previously, Item #2) above. Perhaps these could be consolidated into a single item? The one above is asking for a PLAN prepared by an Engineer and this item is asking for a DESIGN REPORT. Both sounds like an engineering deliverable that includes design drawings, which is presumably what will be required.

SCHEDULES

Schedule A: Scope, Definitions, and Enforcement
Schedule B: General Conditions
Schedule C: No Schedule for Security
Schedule D: No Schedule for Use of Water and Water Management Plans
Schedule E: No Schedule Waste Disposal and Waste Management Plans
Schedule F: No Schedule for Construction
Schedule G: No Schedule for Modifications
Schedule H: No Schedule for Spill Contingency Planning
Schedule I: Monitoring
Schedule J: No Schedule for Closure and Reclamation

Schedule A: Definitions

In this Licence, 3AM-IQA1626:

"**Act**" means the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*;

"**Addendum**" means the supplemental text that is added to a full plan, manual, or report, usually included at the end of the document and is not intended to require a full resubmission of the revised report. It may also be considered as an appendix or supplement;

"**Amendment**" means a change to any terms and conditions of this Licence through application to the NWB, requiring a change, addition, or deletion of specific terms and conditions of the Licence not considered as a modification;

"**Analyst**" means an Analyst designated by the Minister under section 85 (1) of the *Act*;

"**Annually**" means, in the context of monitoring frequency, one sampling event occurring every 365 days with a minimum of 200 days between sampling events;

"**Application**" means, for the purposes of this License, the totality of the NWB Public Register opened as a result of the filing of the application to replace and amend expired Water Licence 3AM-IQA0611(3AM-IQA0612);

"**Biannually**" means, in the context of the monitoring frequency, two sampling events occurring per calendar year, with a minimum of 150 days and a maximum of 210 days between sampling events;

"**Board**" means the Nunavut Water Board established under Article 13 of the *Nunavut Land Claims Agreement* and under section 14 of the Act;

"**Discharge**" means the release of any Water or Waste to the receiving environment;

"**Effective Date**" means the date on which the Minister of Indigenous and Northern Affairs Canada approves the Licence;

"**Effluent**" means treated or untreated liquid Waste material that is Discharged into the environment from the site water management facilities such as a settling pond or a treatment plant;

"**Engineer**" means a professional engineer registered to practice in Nunavut in accordance with the *Consolidation of Engineers and Geoscientists Act S. Nu 2008, c.2* and the *Engineering and Geoscience Professions Act S.N.W.T. 2006, c.16 Amended by S.N.W.T. 2009, c.12*;

"**Engineered Structure**" means any facility, designed and approved by a Professional Engineer who is registered with the Association of Professional Engineers, Geologists and Geophysicists of Nunavut;

"**Grab Sample**" means an undiluted quantity of material collected at a particular time and place that may be representative of the total substance being sampled at the time and place it was collected;

"**Greywater**" means the component of Effluent produced from domestic use (i.e. washing, bathing, food preparation and laundering), excluding Sewage;

"**Hazardous Waste**" means materials or contaminants categorized as dangerous goods under the *Transportation of Dangerous Good Act* (1992), no longer used for their original purpose and intended for recycling, treatment, disposal or storage at appropriate facilities;

"**High Water Mark**" means the usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land (ref. *Department of Fisheries and Oceans Canada, Operational Statement: Mineral Exploration Activities*);

"Imiqtarviviniq (Dead Dog Lake)" means the water body located within the City's boundaries and identified in the Application ~~dated April 9, 2020~~ for use as a water source for dust suppression and general municipal activities, as described in that Application.

Commented [RC35]: Added with Amendment No. 5.

"**Inspector**" means an Inspector designated by the Minister under section 85 (1) of the Act;

"**Licence**" means this Type "A" Water Licence No. 3AM-IQA1626, issued by the Nunavut Water Board to the City of Iqaluit in accordance with the Act;

"**Licensee**" means the entity to whom Licence No. 3AM-IQA1626 is issued or assigned;

"**Minister**" means the Minister of Indigenous and Northern Affairs Canada (INAC);

"**Modification**" means an alteration to a physical work that may introduce a new structure or eliminates an existing structure and does not alter the purpose or function of the work;

"**Monitoring Program**" means the program to collect data on surface water and groundwater quality to assess impacts to the environment of an appurtenant undertaking;

"**Monthly**" means, in the context of monitoring frequency, one sampling event occurring within calendar month with a minimum of twenty-one (21) days between sampling events;

"~~New~~ North 40 Landfill" means the solid waste management facility located approximately 6 km north of the City, functioning as a landfill to receive waste from the Waste Transfer Station, and other sources, as described in the Application ~~dated April 9, 2020~~.

"**Nunavut Land Claims Agreement**" **(**NLCA) means the "*Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada*," including its preamble and schedules, and any Amendments to that agreement made pursuant to it;

"**Quality Assurance / Quality Control (QA/QC)**" Quality Assurance means the system of activities designed to better ensure that quality control is done effectively; Quality Control means the use of established procedures to achieve standards of measurement for the three principle components of quality: precision, accuracy and reliability;

"**Quarterly**" means divisions of the calendar year, comprised of three month intervals from January to December, inclusive (January – March, April – June, July – September and October – December);

"**Regulations**" means the *Nunavut Waters Regulations* (SOR/2013/669 18th April, 2013);

"**Sewage**" means all toilet wastes and greywater;

"**Sewage Lagoon Facility**" refers to the waste disposal facility and associated structures designed and constructed to treat Sewage in the City of Iqaluit since 1978, which has also been upgraded in subsequent years;

"**Sludge Management Facility**" means the facility located within the West 40 Landfill that is used for the disposal and treatment of sludge generated by the Wastewater Treatment Plant;

"Solid Waste Disposal Facilities" means the New North Landfill, Waste Transfer Station, West 40 Landfill, Sludge Management Facility and all other facilities identified in the Application dated April 9, 2020 that are designed and constructed to manage solid waste generated by the City of Iqaluit;

"Supplementary Pumping Program (SPP)" means the pumps, pipe/hose, intakes, coffer dams, and related temporary facilities to use fresh Water from the Niaqunguk River (Apex River)), to augment Water levels in the Lake Geraldine Reservoir. The active pumping under the SPP is authorized to proceed in accordance with the terms and conditions of the Licence from June to October annually to address a potential Water shortage in the following winter.

"Surface Drainage" means all surface waters resulting from the flow over, through or out of an operations area and is collected by means of Engineered structures;

"**Undertaking or Undertakings**" means an undertaking or undertakings in respect of which Water is to be used or Waste is to be deposited, as classified in Schedule 1 of the *Regulations*;

~~"**Upgraded Wastewater Treatment Plant (UWWTP)**" means the current Wastewater Treatment Plant, which was designed, constructed, and commissioned under Phase 1, for the preliminary treatment of Wastewater, in addition to the infrastructure scheduled for construction and commissioning by December 2018, under Phase 2, for the secondary treatment of Wastewater as described in the Application;~~

"**Use**" means use as defined in section 4 of the Act;

"**Waste**" means Water as defined in section 4 of the Act;

Commented [RC36]: From Amendment No. 5, replaced the above definition for Solid Waste Facility.

Commented [RC37]: From Amendment No. 4.

"**Waste Transfer Station (WTS)"** means the solid waste management/transfer facility located within the City's industrial area, functioning to receive, compact, and bale municipal waste prior to transferring to the ~~New~~ North 40 Landfill, as described in the Application ~~dated April 9, 2020~~.

"**Waste Treatment Facilities**" refers to all facilities constructed and operated by the City of Iqaluit to manage solid and liquid Waste associated with this licence.

"**Wastewater**" means the water generated by site activities or originates on-site that requires treatment or any other water management activity;

"**Wastewater Treatment Facilities**" means the Sewage Lagoon and~~,~~ Wastewater Treatment Plant~~, Upgraded Wastewater Treatment Plant~~ and associated facilities authorized under this Licence;

"**Wastewater Treatment Plant**" means the engineered system, located adjacent to the Sewage Lagoon Facility that is designed for the containment and ~~preliminary~~ treatment of Sewage generated by the City of Iqaluit as described in the Application;

"**Water or Waters**" means water as defined in section 4 of the *Act*;

"**Water Treatment Facilities~~y~~**" means the engineered facilities and appurtenances designed and constructed for the withdrawal, storage, treatment, and distribution of fresh water for domestic purposes, described in the Application; and

"**West 40 Landfill**" means the Solid Waste Facility or original landfill facility along with its Northern Expansion and Sludge Management Facility that is designed to manage solid waste generated by the City of Iqaluit.

Commented [RC38]: From Amendment No. 5.

Schedule B: Annual Reporting Requirements

The Annual Report referred to in Part B, Item 1, shall include the following:

a. The monthly and annual quantities in cubic metres of fresh Water withdrawn from the Lake Geraldine Reservoir at Monitoring Station No. IQA-01, the Niaqunguk River (Apex River) at Monitoring Station No.: IQA-10, Lake Qikiqtalik at Monitoring Station No. IQA-11; the discharge of the New Reservoir to Lake Geraldine Reservoir at Monitoring Station No. IQA-12; the volumes of water removed from the ponds within the LTWP footprint that are discharged to the Niaqunguk (Apex) River at Monitoring Station No. IQA-13; and the volume of water removed for dust suppression purposes from Imiqtarviviniq (Dead Dog Lake) at Monitoring Station No. IQA-14.
b. The monthly and annual quantities in cubic metres of any Discharges from the Wastewater Treatment Facilities at Monitoring Stations IQA-02, IQA-04, ~~and~~ IQA-08, IQA-15 and IQA-16;
c. Copy of reports generated from Dam Safety Inspections and Dam Safety Reviews along with the Licensee's proposed actions to address issues identified and/or updates on continuing actions to address issues;
d. The monthly and annual quantities in cubic metres of sludge removed from the Wastewater Treatment Facilities;
e. The monthly and annual quantities of Wastes disposed of at the West 40 landfill and North 40 Landfill;
f. A summary report which includes all data and information generated under the Monitoring Program, including the QA/QC program, in electronic and printed formats acceptable to the Board;
g. A summary of all construction activities carried out for facilities under the Licence;
h. A summary of modifications and/or major maintenance work carried out on the potable Water Treatment and Waste Treatment Facilities, including all associated structures;
i. A progress report and revisions (if applicable) to any studies requested by the Board that relate to Waste management, Water use or reclamation and a brief description of any future studies planned by the Licensee including, a non-technical executive summary for the general public, translated into Inuktitut;
j. Any revisions required, in the form of addenda, to Plans, Manuals and Reports approved under the Licence;
k. A list and description, including volumes and Spill Report Line Identification Number, of all ~~un-authorized~~unauthorized Discharges, spills and summaries of follow-up action taken;
l. A summary of any closure and reclamation work undertaken and an outline of any work anticipated for the next year, including any changes to implementation and scheduling;
m. A summary of actions taken to address concerns or deficiencies listed in the inspection reports and/or compliance reports filed by an Inspector;
n. A brief update on the implementation plan of all facilities within the scope of this Licence including changes projected implementation and status of the Upgraded Wastewater Treatment Plant;
o. A summary of any studies, reports and plans requested by the Board that relate to Waste disposal, Water use or reclamation and a brief description of any future studies planned; and

Commented [RC39]: Leachate from WTS and North 40 Landfill, respectively (confirm these numbers haven't changed)

p. Any other details on the use of Water or Waste disposal requested by the Board by November 1st of the year being reported.

~~q. The 2019 Annual Report referred to in Part B, Item 1, shall provide the following information about the SPP including:~~
~~1. A summary of the SPP program, including lessons learned, based on monitoring and mitigation efforts.~~
~~2. GPS co-ordinates (in degrees, minutes and seconds of latitude and longitude) and datum for the locations of all water withdrawals.~~
~~3. The daily and monthly quantities in cubic metres of fresh Water withdrawn from the Niaqunguk River (Apex River) watershed at Monitoring Station No. IQA-10.~~
~~4. The daily water levels and/or flow rates in the Niaqunguk River when withdrawals are occurring at Monitoring Station No. IQA-10.~~
~~5. All other monitoring conducted to meet the Fisheries and Oceans Canada requirements.~~
~~6. Discussion of any observed trends, exceedances, or unanticipated impacts.~~

~~r. The monthly and annual quantities in cubic metres of fresh Water withdrawn from Imiqtarviviniq (Dead Dog Lake) at Monitoring Station No. IQA-14.~~

~~s.~~q. The monthly and annual quantities, and general types of Wastes brought to the Waste Transfer Station and disposed of at the ~~New~~ North 40 Landfill.

~~t.~~r. A review of procedures for packaging, storage, and shipment of harmful hazardous waste.

~~u.~~s. An update on the capacity of the landfill cell currently in use, including the installation timing calculation (inputs and result), including discussion on the required actions/schedule for the design and installation of the next lined disposal area in the sequence.

Commented [RC40]: IQA-14 captured under Item #1 above, with the other water withdrawal sources.

Schedule I: Condition Applying to Monitoring

Table 1: Water Quality Parameters

Test Groups	Analytical Parameters	Units
Flow (F)	Volume	m^3
Field	pH	pH units
	temperature	°C
	conductivity	µS/cm
	Dissolved Oxygen (DO)	mg/L
	Turbidity	NTU
Construction runoff (CR)	pH	pH units
	Total suspended solids (TSS)[1]	mg/L
	Ammonia-nitrogen[2]	mg/L
Laboratory (L)	PHCs Fractions F1 to F4, including BTEX	
	Total metals	
	Dissolved metals	
	PFAS (WTS only)	
	PAHs	
	Dissolved major ions (including alkalinity), hardness, total dissolved solids and total suspended solids	
Effluent (E)	pH (field and lab)	N/A
	Conductivity (field and lab)	µS/cm
	Temperature (field)	°C
	Total suspended solids (TSS)	mg/L
	Biological oxygen demand (BOD_5)	mg/L
	Fecal coliforms	CFU / 100 mL
	Nitrate	mg/L
	Nitrite	mg/L
	Ammonia-nitrogen	mg/L
	Sulphate	mg/L
	Chloride	mg/L
	Total hardness	mg/L
	Total alkalinity	mg/L
	Total phenols	mg/L

Commented [RC41]: Incorporate into LS

Commented [RC42]: This is a standardized list that appears in other recent municipal Type A water licences.

	Total organic carbon (TOC)	mg/L
Initial Leachate Characterization (ILC)	Chemical Oxygen Demand (COD)	mg/L
	Total phosphorus	mg/L
	Orthophosphate	mg/L
	Total Kjeldahl nitrogen (TKN)	mg/L
	ICP metals scan (Al, As, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Na, Ni, Pb, Zn)	mg/L
	Polychlorinated biphenyls (PCBs)	mg/L
	Benzene, toluene, ethylbenzene, xylenes (BTEX)	mg/L
Landfill Specific (LS)	Polychlorinated biphenyls (PCBs)	mg/L
	Benzene, toluene, ethylbenzene, xylenes (BTEX)	mg/L
	Polychlorinated biphenyls (PCBs)	mg/L

NOTE:

1. Turbidity can be used as a surrogate for TSS provided adequate testing of turbidity and TSS has been conducted on the same samples, and the resultant relationship established between turbidity and TSS has been filed with the Board.
2. Runoff from areas subject to blasting must be tested for ammonia-nitrogen.

Commented [RC43]: These are in additional to the "Effluent" parameters above, and these are taken from Dillon's 2023 Leachate Collection and Characterization Plan". It does not appear in other municipal Type A water licences. These parameters are important to know how oxygen consuming and nutrient-rich the leachate is, to determine potential treatment options.

Once the initial characterization period is completed, these parameters will no longer be tested for. Instead, it will be Effluent and Landfill Specific as per other municipal Type A water licences.

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~~Table 1 – Water Quality Parameters~~		
~~Test Groups~~	~~Analytical Parameters~~	~~Units~~
~~Field~~	~~pH~~ ~~temperature~~ ~~conductivity~~ ~~Dissolved Oxygen (DO)~~ ~~Turbidity~~	~~pH units~~ ~~°C~~ ~~µS/cm~~ ~~mg/L~~ ~~NTU~~
~~Laboratory~~	~~PHCs Fractions F1 to F4, including BTEX~~ ~~Total metals~~ ~~Dissolved metals~~ ~~PFAS (WTS only)~~ ~~PAHs~~ ~~Dissolved major ions (including alkalinity), hardness, total dissolved solids and total suspended solids~~	~~mg/L~~
~~Routine (R)~~	~~Alkalinity, Acidity, Chloride, Carbonate, Bicarbonate,~~ ~~Total Hardness, Hydroxide, Sulphate, Total Suspended Solids (TSS), Total Dissolved Solids (TDS), Total Organic Carbon (TOC), Total Inorganic Carbon (TIC)~~	~~mg/L~~
	~~pH (field and lab)~~	~~pH units~~
	~~Oxidation-Reduction Potential (ORP) (field)~~	~~mV~~
	~~Conductivity (field and lab)~~	~~uS/cm~~

	~~Temperature (field)~~	~~°C~~
	~~Turbidity~~	~~NTU~~
~~Effluent (E)~~	~~Total Suspended Solids (TSS)~~	~~mg/L~~
	~~Temperature (field)~~	~~°C~~
	~~Conductivity (field and lab)~~	~~uS/cm~~
	~~pH (field and lab)~~	~~pH units~~
~~Acute Lethality (AL)~~	~~Based on Environment Canada's *Procedure for pH Stabilization During the Testing of Acute Lethality of Wastewater Effluent to Rainbow Trout* (EPS 1/RM/50, March 2008), if single concentration test fails and un-ionized ammonia concentration is less than or equal to 1.25 mg/l~~	~~"Pass" / "Fail"~~
~~ICP- Metals Scan (Total)~~	~~Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Li, Mn, Mo, Ni, Se, Sn, Ag, Sr, Tl, Ti, U, V, Zn, Hg~~	~~mg/L~~
~~Nutrients (N)~~	~~Ammonia-N, Nitrate-N, Nitrite-N~~	~~mg N/L~~
	~~Total Phosphorus, Orthophosphate~~	~~mg/L~~
~~Biological (B)~~	~~Biochemical Oxygen Demand~~	~~mg/L~~
	~~Total and Fecal Coliform~~	~~CFU/100 mL~~
~~Potable Water (PW)~~	~~Fecal Coliform~~	~~CFU/100 mL~~
	~~ICP Metals (Total and dissolved)~~	~~mg/L~~
	~~Total Suspended Solids - TSS~~	~~mg/L~~
~~Flow (F)~~	~~Volume~~	~~m^3~~
~~Landfill Specific (LS)~~	~~Polychlorinated Biphenyls (PCBs) Benzene, Toluene, Ethylbenzene and Xylene (BTEX)~~	~~mg/L~~

Table 2: Water Quality Monitoring Criteria

Station ID	Description	Status	Parameter	Testing / Measurement Frequency	Reporting Frequency
IQA-01	Water withdrawal from the Lake Geraldine Reservoir ~~– Raw Water~~	Active	F	Monthly	~~Biannually~~ Annually
			~~R, PW~~	~~Monthly~~	
~~IQA-01(#)~~	~~Based on Part I, Item 4 of Expired Licence~~	~~Inactive~~	~~N/A~~	~~N/A~~	~~N/A~~
IQA-02	Sewage Lagoon – Effluent Discharge Point	Active	~~B, N,~~ E~~, ICP~~	Once prior to discharge; once during discharge; and once prior to the completion of discharge	Annually
			F	During decant	
IQA-03	Sewage Lagoon – Influent	Inactive	N/A	N/A	N/A
IQA-04	Wastewater Treatment Plant - Effluent	Active	~~B, N, E, ICP~~	~~Quarterly – Prior to commissioning of the WWTP~~	Annually
			~~B, N,~~ E~~, ICP~~	Monthly~~– Following commissioning of the WWTP~~	
			~~AL~~	~~Annually – following commissioning of the WWTP~~	
			F	During Discharge	
IQA-05	Wastewater Treatment Plant - Influent	~~A~~Inactive	~~B,~~ E~~, N, ICP~~	Biannually – Prior to commissioning of the WWTP	Annually
				No testing requirements following commissioning of the WWTP	N/A
IQA-06	Sludge – From WWTP	Active	~~B,~~ E, ~~N, ICP~~	Quarterly	Annually
IQA-07	Surface Water entering West 40 Landfill – Based on Part E, Item 4 of the Expired Licence	Inactive	N/A	N/A	N/A

Station ID	Description	Status	Parameter	Testing / Measurement Frequency	Reporting Frequency
IQA-08	West 40 Landfill – Effluent Discharge Point~~, Based on Part E, Item 4 of the Expired Licence~~	Active	~~B,~~ E, ~~N, ICP, F,~~ LS	Once prior to discharge; once during discharge; and once prior to the completion of discharge	Annually
			F	During Discharge	
~~IQA-08(#)~~	~~Based on E, Item 17, Part F, Item 10 & Part I, Item 4 of the Expired Licence~~	~~Inactive~~	~~N/A[2]~~	~~N/A~~	~~N/A~~
IQA-08A	Station situated up-gradient of West 40 Landfill	Active	~~B,~~ E, ~~N, ICP, F,~~ LS	Annually	Annually
IQA-08B	Station situated down-gradient of West 40 Landfill	Active			
IQA-09	Contaminated soil accepted at the West 40 Landfill	Inactive	NA	N/A	N/A
IQA-10	W~~ater w~~ithdrawal from ~~Upper~~ Niaqunngut (Apex) River ~~for transfer directly into the Reservoir~~	Active	F	Daily when withdrawals occur~~ring~~ at this station~~.~~	~~Annual Report~~Annually
~~IQA-11~~	~~Withdrawal from Middle Niaqunngut River watershed for transfer directly into the Reservoir. Withdrawal point to be located on an ephemeral tributary near where it enters the Niaqunngut River or on the river itself just downstream of the confluence with the tributary.~~	~~Inactive~~	~~F~~	~~Dailing when withdrawals occurring at this station.~~	~~N/A~~
~~IQA-12~~	~~Withdrawal from small unnamed source water lakes adjacent to Lake Geraldine Reservoir for transfer directly to the reservoir~~	~~Inactive~~	~~F~~	~~Dailing when withdrawals occurring at this station.~~	~~N/A~~
~~IQA-13~~	~~Withdrawal from large unnamed source water lake for transfer into~~	~~Inactive~~	~~F~~	~~Dailing when withdrawals occurring at~~	~~N/A~~

	~~ephemeral tributary to Niaqunngut River. Intent of withdrawal is to provide water to withdrawal point at Monitoring Station IQA-10.~~			~~this station.~~	
IQA-11	Water withdrawals from Lake Qikiqtalik	Active	F	Daily when withdrawals occur at this station	Annually
IQA-12	Water transfers from the new reservoir to the Lake Geraldine Reservoir	Active	F	Daily when withdrawals occur at this station	Annually
IQA-13-Pond-A IQA-13-Pond-B	Dewatering of ponds within the LTWP footprint during construction, discharged to local drainages	Active	F, Field, CR	Flow: Continuous during discharge Water quality: two grab samples >150 m apart at least 5 days prior to discharge; two grab samples twice during discharge (at least 1 day apart)	Monthly and annually
IQA-13-Pond-C IQA-13-Pond-D IQA-13-Pond-E		Active	F, Field, CR	Flow: Continuous during discharge Water quality: one grab sample at least 5 days prior to discharge; one grab sample during discharge	Monthly and annually
IQA-14	Water withdrawal from Imiqtariviviniq (Dead Dog Lake) for dust suppression~~.~~	Active	F	Daily when withdrawals occur~~ring~~ at this station	Annually
IQA-15	Waste Transfer Station Runoff/Leachate Discharge Point	Active	~~B, E, N, ICP,~~ E, F, LS ILC instead of LS (first two years only)	~~Daily flow~~Flow: volume removed from leachate collection tank for disposal Water quality: ~~once prior to discharge;~~ once during discharge~~, and once prior to the completion of discharge~~	Annually
IQA-16 ~~(WS-103)~~	Landfill Runoff/Leachate Discharge Point	Active	~~B,~~ E, ~~N, ICP,~~ F, LS ILC instead of LS (first two years only)	Flow: during discharge from the leachate collection pond ~~Daily flow measurements,~~ Effluent quality: once prior to discharge; once during discharge; and once prior	Annually

Commented [RC44]: The leachate will be collected in a 4,500 L tank, thus the volume is not significant and one sample should be adequate.

				to the completion of discharge	
SW1 to SW3	Waste Transfer Station surface water monitoring	Active	Field, Laboratory	Twice per year~~Monthly~~ Twice per year, one month apart	Annually
WS-100 to WS-102	New North Landfill surface water monitoring	Active	Field, Laboratory	Twice per year~~Monthly~~ Twice per year, one month apart	Annually
Monitoring wells 19MW-01 to 19MW-045	Waste Transfer Station ground-water monitoring	Active	Field, Laboratory	Twice per year~~Monthly~~ Twice per year, one month apart	Annually
W-107 to W-111	New North Landfill ground water monitoring	Active	Field, Laboratory	Twice per year~~Monthly~~ Twice per year, one month apart	Annually
SW4	Apex River shoreline upstream of and adjacent to pumphouse	Active	Field, CR	Monthly during open water	Monthly and annually
SW5	Apex River shoreline downstream of and adjacent to pumphouse	Active	Field, CR	Monthly during open water	Monthly and annually
SW6	Lake Qikiqtalik downstream of pumphouse	Active	Field, CR	Monthly during open water	Monthly and annually

[1] Table 2 may be modified by the Board and re-issued where necessary. Re-issuance is not considered an Amendment to the application or Licence as defined in the *Act.*
[2] Means not applicable