



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

Your file - Votre référence
3AM-IQA1626
Our file - Notre référence
GCDOCS#131205360

November 29, 2024

Richard Dwyer
Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU, X0B 1J0
E-mail: licensing@nwb-oen.ca

Re: Crown-Indigenous Relations and Northern Affairs Canada's reply to the City of Iqaluit's response on the review comments of the City of Iqaluit 2023 Annual Report for Type A Water Licence No. 3AM-IQA1626

Dear Mr. Dwyer,

Thank you for your invitation on November 4, 2024, to review the responses provided to the review comments on the City of Iqaluit's 2023 Annual Report for Type A Water Licence No. 3AM-IQA1626. The 2023 Annual Report was also required to address the intervener's outstanding comments from the City of Iqaluit's 2021 and 2022 Annual Reports.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) has reviewed the 2023 Annual Report in accordance with its mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Crown-Indigenous Relations and Northern Affairs Act*. **CIRNAC has 1 outstanding comment from the 2021 Report and 6 from the 2022 Report that remain unaddressed. Additionally, 10 out of 16 comments on the 2023 Annual Report remain unaddressed.** Please find CIRNAC's reply to the City of Iqaluit's response to the annual report review comments in the attached Technical Memorandum. The annual report and its corresponding reporting requirements are a term and conditions of the water license. Opting not to fulfill all the terms and conditions of the water licence places the City of Iqaluit in non-compliance.

If there are any questions, please contact Michelle Blade at michelle.blade@rcaanc-cirnac.gc.ca or Andrew Keim at andrew.keim@rcaanc-cirnac.gc.ca.

Sincerely,

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Aminul Haque,
A/Manager, Water Resources, CIRNAC



Technical Review Memorandum

Date: November 29, 2024

To: Richard Dwyer, Manager of Licensing, Nunavut Water Board

From: Aminul Haque, A/Manager, Water Resources, CIRNAC

Subject: Crown-Indigenous Relations and Northern Affairs Canada's reply to the City of Iqaluit's response on the review comments of the City of Iqaluit 2023 Annual Report for Type A Water Licence No. 3AM-IQA1626

Region: ☐ Kitikmeot ☐ Kivalliq ☒ Qikiqtani

Table 1: Summary of CIRNAC Comments and Recommendations

2021 Annual Report

Recommendation Number	Subject	Status
R-01	Quantify and report the volume of spills or unauthorized discharges in the future	Unresolved
R-02	Address the additional reporting requirements as described in Water Licence Amendments #5 and #6 (i.e., Items r, s, t, u and v of Schedule B).	Resolved
R-03	Clarify if and how the term and condition stipulated in Item 11 of Amendment #4 was implemented with respect to water withdrawal from Apex River in 2021.	Resolved

2022 Annual Report

Recommendation Number	Subject	Status
R-01	Sludge removed from Wastewater Treatment Facility	Resolved
R-02	Quantities of wastes disposed of at the West 40 landfill	Resolved
R-03a to R-03e	Sampling for the monitoring and QA/QC program	R-03a – Resolved R-03b – Unresolved R-03c – Resolved R-03d – Resolved



		R-03e – Unresolved
R-04	Construction activities and maintenance work	Resolved
R-05	Updated plans, manuals, and reports in 2022	Unresolved
R-06a and R-06b	Un-authorized discharges and spills	R-06a – Resolved R-06b – Unresolved
R-07	Procedures for hazardous waste	Resolved
R-08a to R-08c	Withdrawals from Niaqunguk (Apex) River	R-08a – Unresolved R-08b – Resolved R-08c – Resolved
R-09a and R-09b	Supplementary Lake Geraldine Water Balance Modelling for 2022	R-09a – Resolved R-09b – Unresolved
R-10a and R-10b	Water Treatment Plant 2021 Spill	R-10a – Resolved R-10b – Resolved

2023 Annual Report

Recommendation Number	Subject	Status
R-01	Sewage volumes discharged from IQA-02	Resolved
R-02a to R-02b	Sampling for the monitoring and QA/QC program	Unresolved
R-03	ATCO Loop decommissioning and Federal Road Utilidor Extension	Unresolved
R-04	Water Treatment and Waste Treatment Facilities modifications and/or major maintenance work	Resolved
R-05	Changes projected implementation and status of the Upgraded Wastewater Treatment Plant	Resolved
R-06	Future Wastewater Treatment Plant studies planned	Unresolved
R-07a to R-07d	Un-authorized discharges and spills	Unresolved
R-08a to R-08b	Updated plans, manuals and reports	Resolved
R-09a and R-09b	Dam Safety Inspection Reports – Construction Works	Unresolved
R-10	Dam Safety Inspection Reports – Engineering Studies/Investigations and Design Works	Unresolved
R-11a and R-11b	2023 Sample Results	Unresolved
R-12	Water Treatment Plant Report	Unresolved
R-13	2023 Apex Pumping Final Report	Resolved



R-14	Chlorine and Bacteria Results from the WTP (2023)	Unresolved
R-15	2024 Lake Geraldine Water Balance Assessment	Unresolved
R-16	Concerns Raised in Inspection Reports	Resolved

A. LICENSEE RESPONSE TO CIRNAC RECOMMENDATIONS/CONCERNS ON 2021 ANNUAL REPORT

1. Quantify and report the volume of spills or unauthorized discharges in the future

Comment on the City of Iqaluit's Response:

The City continues to not provide information on the volume of spills. The City's response provided in the 2023 Annual Report that spill volumes typically do not exceed 100 litres raises concerns. If precise quantification is challenging, it is unclear how the city can guarantee that spill volumes are less than 100 litres. Additionally, while the Spill Line has a limit of 100 L as their reporting threshold, that is not the same for the water license where all uncontrolled releases of waste that may affect water are required to be reported. This is a requirement of the water license and failure to comply brings the proponent into non-compliance. The City is strongly encouraged to address this issue.

Status: Unresolved.

2. Address the additional reporting requirements as described in Water Licence Amendments #5 and #6 (i.e., Items r, s, t, u and v of Schedule B).

Comment on the City of Iqaluit's Response:

The City provided information in response to Schedule B, item "r" monthly and annual volumes of withdrawals from Imiqtarviviniq (Dead Dog Lake) in the 2022 Annual Report Update and reported no withdrawals in 2023. The City stated in the 2023 Annual Report that the Waste Transfer Station is not yet operational; this is in response to Schedule B, item "s". The City provided information in response to Schedule B, item "t" procedures for packaging, storage and shipment of hazardous waste in the 2023 Annual Report. The City stated in the 2023 Annual Report that the North 40 Landfill cell is not yet operational; this is in response to Schedule B, item "u". CIRNAC acknowledges that Schedule B, item "v.1", reporting on the petroleum hydrocarbon investigation has been resolved.

Status: Resolved.



3. Clarify if and how the term and condition stipulated in Item 11 of Amendment #4 was implemented with respect to water withdrawal from Apex River in 2021.

Comment on the City of Iqaluit's Response:

The City provided Supplementary Lake Geraldine Water Balance Modelling for 2022; CIRNAC's comments on this report were addressed in the 2024 Lake Geraldine Water Balance Assessment Report.

Status: Resolved.

B. LICENSEE RESPONSE TO CIRNAC RECOMMENDATIONS/CONCERNS ON 2022 ANNUAL REPORT

1. Sludge removed from Wastewater Treatment Facility

Recommendation:

(R-01) CIRNAC recommended the City of Iqaluit confirm the annual volume of sludge removed from the Wastewater Treatment Facility and update the monthly volumes of sludge removed with the measured quantities in the 2022 Annual Report.

Comment on the City of Iqaluit's Response:

Annual volume of sludge removed from the Wastewater Treatment Facility and monthly volumes of sludge removed with the measured quantities was provided in the City's response to the 2022 Annual Report and presented in the 2023 Annual Report.

Status: Resolved.

2. Quantities of wastes disposed of at the West 40 landfill

Recommendation:

(R-02) CIRNAC recommended the City of Iqaluit update the 2022 Annual Report with the measured monthly quantities of wastes disposed of at the West 40 landfill.

Comment on the City of Iqaluit's Response:

Monthly and annual quantities of waste disposed of at the West 40 Landfill are included in Table 2 (page 12) of the 2023 Annual Report.

Status: Resolved



3. Sampling for the monitoring and QA/QC program

Recommendation:

(R-03a) CIRNAC recommended the City of Iqaluit update the 2022 Annual Report with the monitoring and sampling analytical results in accordance with Schedule I of the Water Licence.

(R-03b) CIRNAC recommended the City of Iqaluit update the 2022 Annual Report with the sample results from S::CAN monitoring device located at the water treatment plant in the 2022 Annual Report.

(R-03c) CIRNAC recommended the City of Iqaluit update the 2022 Annual Report with the chlorine and bacteria sample results from the distribution system sampling in the 2022 Annual Report.

(R-03d) CIRNAC recommended the City of Iqaluit clarify the commissioning date of the Wastewater Treatment Plant in the 2022 Annual Report.

(R-03e) CIRNAC recommended the City of Iqaluit review and update operating procedures for pH control in the treated water entering the treated water reservoir to meet CDWQG.

Comment on the City of Iqaluit's Response:

(R-03a) The requested information was provided in the response to the 2022 comments.

(R-03b) The requested information was not provided in the updated 2022 Annual Report or 2023 Annual Report. Comment makes reference that data from S::CAN is similar to grab samples collected by plant operators, but readings for hydrocarbons do not appear to be included in the daily log sheets for the WTP. The City of Iqaluit made comment about limited storage capacity for S::CAN system, but there is reference in the Water Treatment Plant Report (Appendix C of 2023 Annual Report) that the data is stored and they have capability to review present and historical data. A plot of the S::CAN data should be provided annually in the Annual Reports if there are issues with data storage.

(R-03c) The requested information was provided in the response to the 2022 comments and provided in the 2023 Annual Report.

(R-03d) The requested information was provided in the response to the 2022 comments.

(R-03e) In 2015 the Canadian Drinking Water Quality Guideline (CDWQG) for pH was updated to be 7-10.5 for treated water. Monthly third-party laboratory results included in the 2022 and 2023 Annual Reports along with the 2023 WTP log sheets included in appendix F



of the 2023 Annual Report regularly have pH readings on finished water below the CDWQG guideline. Review of the WTP O&M manuals indicated that a caustic soda system is included at the WTP for treated water pH control, however an updated operating procedures for pH control in the treated water entering the treated water reservoir to meet CDWQG is not included.

Status:

R-03a – Resolved.

R-03b – Unresolved.

R-03c – Resolved.

R-03d – Resolved.

R-03e – Unresolved.

4. Construction activities and maintenance work

Recommendation:

(R-04) CIRNAC recommended the City of Iqaluit update the 2022 Annual Report with the information to address Schedule B items “g” and “h” of the Water Licence.

Comment on the City of Iqaluit’s Response:

Details of the construction works carried out on the Water Treatment Plant bypass and efforts relating to the Return to Service Plan were provided in the “City of Iqaluit Return to Service Plan – Commissioning Report” provided in Appendix C of the 2023 Annual Report.

Status: Resolved

5. Updated plans, manuals, and reports in 2022

Recommendation:

(R-05) CIRNAC recommended the City of Iqaluit update the 2022 Annual Report and corresponding documents to address Schedule B item “j” of the Water Licence. The plans, manuals, and reports to be addressed include, but are not limited to, the following:

- March, May, and June 2022 revisions to the General Site Information and Guide for the Iqaluit Water Treatment Plant,
- March 2022 Iqaluit Water Treatment Plant Operation and Maintenance Manual,
- City of Iqaluit Operations and Maintenance Manual Landfill and Waste Transfer Station (Aug 2022 Version 6.0),
- Updates to WWTP Operations and Maintenance Manual following substantial completion/commissioning, and
- Updates to the Iqaluit Water Treatment Plant Operation and Maintenance Manual to reflect the modifications of the filters to GAC media.



Comment on the City of Iqaluit's Response:

The updated 2022 Annual report, section J makes reference to updates that were completed to the respected O&M manuals. The text in the report does not include references to the wastewater treatment plant that had final completion in 2022 nor modifications to the process of the water treatment plant so it is unclear what was updated in these manuals.

The versions of the Iqaluit Water Treatment Plant Operation and Maintenance Manuals provided for review do not reflect the modifications of the filters to GAC media (it is listed as pending and has details on the old filter media throughout).

Status: Unresolved.

6. Un-authorized discharges and spills

Recommendation:

(R-06a) CIRNAC recommended that the City of Iqaluit update the 2022 Annual Report with the information to address Schedule B item "k" of the Water Licence including:

- the year the spills took place,
- all spills and unauthorized discharges in addition to wastewater and
- estimates of each volume spilled included in Table 6.

(R-06b) CIRNAC recommended the City of Iqaluit specify the most common causes of spills and unauthorized discharges in the 2022 Annual Report, and submit an updated Spill Contingency Plan that addresses these causes.

Comment on the City of Iqaluit's Response:

The city's response adequately specifies the most common causes of spills, as requested. However, it does not address the submission of an updated Spill Contingency Plan that incorporates these causes, leaving this aspect of the recommendation unmet. Additionally, the city's assurance that spill volumes typically do not exceed 100 litres raises concerns. If precise quantification is challenging, it is unclear how the city can guarantee that spill volumes are less than 100 litres. Therefore, the response is partially adequate but lacks comprehensive action and assurance regarding spill volumes.

Status:

R-06a – Resolved.

R-06b – Unresolved.



7. Procedures for hazardous waste

Recommendation:

(R-07) CIRNAC recommended the City of Iqaluit update the 2022 Annual Report with:

- the review information to address Schedule B item “t” of the Water Licence including details on current procedures for packaging, storage, and shipment of harmful hazardous waste, and
- the anticipated date when the City of Iqaluit Landfill and Waste Transfer Station Operations and Maintenance Manual updated for the new solid waste landfill site and transfer station will be submitted for review, including procedures for packaging and shipping hazardous waste.

Comment on the City of Iqaluit’s Response:

Procedures for packaging, storage and shipment of hazardous waste are presented in Section T, page 24 of the 2023 Annual Report.

Status: Resolved.

8. Withdrawals from Niaqunguk (Apex) River

Recommendation:

(R-08a) CIRNAC recommended the City of Iqaluit update the 2022 Annual Report with the daily water levels and/or flow rates in the Niaqunguk River when withdrawals occurred at Monitoring Station IQA-10 for Period 1 (between June 12 and September 12, 2022).

(R-08b) CIRNAC recommended the City of Iqaluit update the 2022 Annual Report with discussion of observed trends, exceedances, and unanticipated impacts – especially when the natural flow in the Niaqunguk River (Apex River) is below 30% of the mean annual discharge and withdrawals exceeded 10% of the instantaneous flow of the Niaqunguk River (Apex River).

(R-08c) CIRNAC recommended the City of Iqaluit update the 2022 Annual Report with a discussion of observed trends comparing the 2021 and 2022 volume pumped from the Niaqunguk River (Apex River) and the corresponding water levels in Lake Geraldine. This could provide an insight to potential trends of both usage and natural conditions that could change over time.

Comment on the City of Iqaluit’s Response:

Response R-08a: Daily Water Levels and Flow Rates

The City of Iqaluit did not provide the updated report that includes the daily water levels and flow rates from June 1 to September 12, 2022.

Response (R-08b): Discussion of Trends and Exceedances



In Appendix C of the 2022 Apex Pumping Final Report, Figure 4.2 visualizes instances where the daily average pumping rate exceeded 10% of the instantaneous flow. There were 15 occurrences of such exceedances during the specified Second Pumping Period (SPP). Section 4.3.2 of the Apex Pumping Report provides a comprehensive summary of these exceedances, emphasizing that no observable impacts were noted.

Response (R-08c): Comparative Analysis

The response provides an adequate level of information concerning observed trends.

Status:

R-08a – Unresolved.

R-08b – Resolved.

R-08c – Resolved.

9. Supplementary Lake Geraldine Water Balance Modelling for 2022

Recommendation:

(R-09a) CIRNAC recommended the City of Iqaluit update the 2022 Annual Report with the model calibrated for the entire period of record, a comparison of updated modelled results with the daily water level measurements, and any model discrepancies discussed.

(R-09b) CIRNAC recommended the City of Iqaluit conduct a bathymetric survey in 2023, and include a comparison of it to the bathymetry used for the Lake Geraldine Water Balance modelling in the 2023 Annual Report.

Comment on the City of Iqaluit's Response:

(R-09a) Model Calibration has been addressed in the 2024 Lake Geraldine Water Balance Assessment (WSP) dated June 3, 2024.

(R-09b) Bathymetric Survey

It is understood that weather delays prevented completion of this item before submission of the 2023 Annual Report. CIRNAC recommends an updated schedule and plan be provided to complete this work.

Status:

R-09a – Resolved.

R-09b – Unresolved.



10. Water Treatment Plant 2021 Spill

Recommendation:

(R-10a) CIRNAC recommended the City of Iqaluit update the 2022 Annual Report with the results of the fall 2022 remediation activities and include:

- the AST and UST tank details (i.e. container type, contents, condition, etc.) in the report,
- the location of both the AST and UST on figures, and
- the depth metres below ground surface (bgs) of the void space lower limit beneath the North and South clear wells of the Water Treatment Plant.

(R-10b) CIRNAC recommended the City of Iqaluit conduct a Phase III ESA that:

- assesses potentially impacted soils downstream (southwest) of the water treatment plant. Depth of the downstream assessment should be to bedrock and/or deeper than the void space depth bgs;
- defines the extent of impacts (delineation) in soil both vertically and horizontally in the vicinity of BH3,
- clarifies if the impacts in the vicinity of BH3 are attributed to the AST, UST, or both, and
- determines the potential for off-site migration.

It is recommended the Phase III ESA is included in the 2023 Annual Report.

Comment on the City of Iqaluit's Response:

The City of Iqaluit has satisfied the information request for both R-10a and R-10b.

Status:

R-10a – Resolved.

R-10b – Resolved.

C. CIRNAC COMMENTS ON THE 2023 ANNUAL REPORT

1. Sewage volumes discharged from IQA-02

Recommendation:

(R-01) CIRNAC recommends the City of Iqaluit record and report the annual treated sewage volumes discharged from the Sewage Lagoon (IQA-02) for 2023.

City of Iqaluit's Response:

In 2023, there was no flow meter installed, so we do not have records or reports of the annual treated sewage volumes. Unfortunately, it is not possible to give an approximate of the annual treated sewage volumes. However, a flow meter was recently installed, and we expect to have the readings available next year.



CIRNAC's Reply to the City of Iqaluit's Response:

CIRNAC is satisfied with the response and the information provided.

Status: Resolved.

2. Sampling for the monitoring and QA/QC program

Recommendation:

(R-02a) CIRNAC recommended the City of Iqaluit update the 2023 Annual Report with the monitoring and sampling analytical results in accordance with Schedule I of the Water Licence.

(R-02b) CIRNAC recommended the City of Iqaluit provide an update if they are on track for meeting the Schedule I of the Water Licence commitments for 2024. In particular, it is requested that the City follows the monitoring and sampling requirements in 2024 for the following monitoring stations:

- that had missing samples in 2023 (i.e. IQA-01, IQA-02, IQA-04, IAQ-05, and IAQ-06), and
- related to the Waste Transfer Station and North 40 Landfill (i.e. IQA-15, IQA-16, SW-1 to SW-3, WS-100, WS-101, WS-102, 19MW-01 to 19MW-05, W-107 to W-111).

City of Iqaluit's Response:

The City of Iqaluit did not respond.

CIRNAC's Reply to the City of Iqaluit's Response: N/A

Status: Unresolved.

3. ATCO Loop decommissioning and Federal Road Utilidor Extension

Recommendation:

(R-03) CIRNAC recommends the City of Iqaluit clarify whether construction activities on the ATCO Loop sanitary sewer and watermain decommissioning and Federal Road Utilidor/ Watermain Extension were undertaken under Water Licence 3AM-IQA1626 and, if not, whether approval from the Nunavut Water Board has been obtained for these construction activities.

City of Iqaluit's Response:

No, it was our understanding the City did not need approval for infrastructure replacement projects. Approval was required for new infrastructure only.



CIRNAC's Reply to the City of Iqaluit's Response:

The City has not clarified whether or not these works were carried out under Water Licence 3AM-IQA1626. The City's response indicates that they carried out the works with the understanding that no approval was required. It should be clarified with the City that, if undertaken under the existing Licence, reporting is still needed.

Status: Unresolved.

4. Water Treatment and Waste Treatment Facilities modifications and/or major maintenance work

Recommendation:

(R-04) CIRNAC recommends the City of Iqaluit provide a summary of the following:

- any modifications or major maintenance work carried out at the Wastewater Treatment Plant in 2023 to address the DAF clarifier and HVAC system deficiencies noted in the 2022 Annual Report (R-04).
- any modifications and/or major maintenance work carried out in 2023 for the UV disinfection system at the Water Treatment Plant.

City of Iqaluit's Response:

There were no major renovations at the Wastewater Treatment Plant in 2023 to address the DAF clarifier and HVAC system deficiencies. There are plans to address these deficiencies pending the approval of the 2025 budget. Additionally, there were no modifications to the UV disinfection system at the Water Treatment plant. However, The UV reactors were replaced in 2024.

CIRNAC's Reply to the City of Iqaluit's Response:

Response addressing this provided by the City of Iqaluit. It is noted there are discrepancies between 2022 Annual Report responses provided by the City, the 2023 Annual Report, and the 2023 Annual Report Review Responses.

Status: Resolved.

5. Changes projected implementation and status of the Upgraded Wastewater Treatment Plant

Recommendation:

(R-05) CIRNAC recommends the City of Iqaluit provide an update on the implementation plan for the Wastewater Treatment Plant, Landfill and Pumping Project, including changes projected implementation and status of their implementation.



City of Iqaluit's Response:

There was no update to the implementation plan for the Wastewater Treatment Plant, Landfill and Pumping Project in 2023

CIRNAC's Reply to the City of Iqaluit's Response:

CIRNAC is satisfied with the response and the information provided.

Status: Resolved.

6. Future Wastewater Treatment Plant studies planned

Recommendation:

(R-06) CIRNAC recommends the City of Iqaluit provide an update on future Wastewater Treatment Plant studies planned as per Schedule B item o.

City of Iqaluit's Response:

The City of Iqaluit did not respond.

CIRNAC's Reply to the City of Iqaluit's Response: N/A

Status: Unresolved.

7. Un-authorized discharges and spills

Recommendation:

(R-07a) CIRNAC recommends the City of Iqaluit provide the estimates or ranges for spill volumes when precise measurements are not available. If estimating is not possible, explain why.

(R-07b) CIRNAC recommends the City of Iqaluit provide clarification on how it was determined that the average volume spilled was less than 100 litres.

(R-07c) CIRNAC recommends the City of Iqaluit provide more details on the follow-up actions, especially if they differ between incidents. Provide details on how spills were collected and disposed of and specify if additional monitoring or corrective actions were taken.

(R-07d) CIRNAC recommends the City of Iqaluit provide information on spills in addition to the reported wastewater spills.



City of Iqaluit's Response:

(R-07a) Due to the nature of spills there are no known estimates on their volumes and there is no process to estimate these values.

(R-07b) This value provide was a broad estimation as all spills vary is size and duration.

(R-07c) Most spills that occur are due to a back up in the system. These back ups are cleared out by the operations team and disposed off after testing. Depending on the results of the test, if results show contamination waste is handed over to Qikiqtaaluk Environmental (QE) but if the results are clear the waste is disposed of in the lagoon.

(R-07d) There are no other spills that have were not reported is 2023.

CIRNAC's Reply to the City of Iqaluit's Response:

It is recommended that the City of Iqaluit develop a clear spill reporting process to capture (estimate) volumes and a reporting mechanism.

Status: Unresolved.

8. Updated plans, manuals and reports

Recommendation:

(R-08a) CIRNAC recommends the City of Iqaluit provide any new or updated Plans, Manuals and Reports that differ from those approved under the Licence to the Nunavut Water Board for review.

(R-08b) CIRNAC recommends the City of Iqaluit provide a summary on updates or revisions that were made to the WWTP and WTP O&M manuals, and in the summary provide confirmation of the most recent upgrades at both facilities.

City of Iqaluit's Response:

(R-08a) The Waste Transfer Station and New Landfill are still under construction and these sites will not be operational until 2025/2026. So we have no new or updated Plans, Manuals and Reports.

(R-08b) There are no new updates or revisions that were made to the WWTP and WTP O&M manuals.

CIRNAC's Reply to the City of Iqaluit's Response:

CIRNAC is satisfied with the response and the information provided.

Status: Resolved.



9. Dam Safety Inspection Reports – Construction Works

Recommendation:

(R-09a) CIRNAC recommends the City of Iqaluit provide a table in the 2023 Annual Report that lists the outstanding recommendations from the DSI reports. The table should list the DSI recommendations, list the proposed actions to address the recommendations and/or updates on continuing actions to address the recommendations, provide a column showing the recommended timeline for completion of the recommendations (as stated in the DSI reports), and a column showing the date when the City intends to resolve the recommendations.

(R-09b) CIRNAC recommends the City of Iqaluit clarify the required timeline for completion of the following:

- a) Removal of the contaminated soil around the base of the hydro pole adjacent to the south berm.
- b) Removal and replacement of the contaminated soil atop the center and north berms.
- c) Installation of new rip-rap material within the upstream face of the north and center berms before the reservoir is re-filled.
- d) Minor work required to repair erosion damage within the north access road and new steel culverts.
- e) Outstanding deficiencies remaining to be corrected by Nunavut Excavation.
- f) Repair of the depressions at the base of the upstream face of the center and north berms.
- g) Repair of cracks within the concrete dam.

City of Iqaluit's Response:

The City of Iqaluit did not respond.

CIRNAC's Reply to the City of Iqaluit's Response: N/A

Status: Unresolved.

10. Dam Safety Inspection Reports – Engineering Studies/Investigations and Design Works

Recommendation:

(R-10) CIRNAC recommends the City of Iqaluit provide a table in the Annual Reports that lists the outstanding recommendations from the DSI reports. In the table list the DSI recommendations, list the proposed actions to address the recommendations and/or



updates on continuing actions to address the recommendations, provide a column showing the recommended timeline for completion of the recommendations (as stated in the DSI reports), and provide a column showing the date when the City intends to resolve the recommendations.

City of Iqaluit's Response:

The City of Iqaluit did not respond.

CIRNAC's Reply to the City of Iqaluit's Response: N/A

Status: Unresolved.

11. 2023 Sample Results

Recommendation:

(R-11a) CIRNAC recommends the City of Iqaluit advise if consideration has been given for exhaustion of GAC media and its ability to continue to remove hydrocarbons.

(R-11b) CIRNAC recommends the City of Iqaluit compile the lab results in an Appendix table with comparison to the applicable guidelines.

City of Iqaluit's Response:

The GAC media was installed in 2022. It has a life span of approximately 10 years. As the GAC media has been functioning as expected, the City does not expect it to be exhausted in the near future.

CIRNAC's Reply to the City of Iqaluit's Response:

The City of Iqaluit provided a response addressing R- 11a. The comment indicates that GAC media has been functioning as expected. However, third-party analytical results from the 2023 Annual Report show that the GAC media is not providing TOC reduction, which would be expected for GAC media of this age. This could indicate that the media is becoming exhausted for the adsorption of organics in the water. This could impact the capacity for hydrocarbon removal if hydrocarbons were detected in the raw water. The City of Iqaluit did not respond to R-11b.

Status: Unresolved.



12. Water Treatment Plant Report

Recommendation:

(R-12) CIRNAC recommends the City of Iqaluit provide information on how GAC capacity is being tracked and steps that are in place in the event that the GAC media has reached capacity and requires replacement.

City of Iqaluit's Response:

GAC capacity is monitored using post-filter turbidity. There are set points for turbidity that trigger a backwash when exceeded. If turbidity levels remain below the set points for a certain period, the filter will still initiate a backwash based on a timed schedule to ensure the media stays fresh. If the media were exhausted, turbidity levels would not decrease after a backwash, or the frequency of backwashing would increase, indicating the media isn't being cleaned effectively. We do not anticipate frequent media replacements.

CIRNAC's Reply to the City of Iqaluit's Response:

The GAC filter media can remove contaminants through two different mechanisms: filtration and adsorption. The response describes the process of monitoring filter performance for particle removal based on filtered water turbidity. This applies to both the current GAC media and the previously used anthracite media. While necessary for filter performance and particle removal, monitoring turbidity does not monitor the GAC media adsorption capacity, which is the mechanism that would be used for removing hydrocarbons.

The GAC media has a porous structure, allowing target contaminants to be adsorbed onto the media. The adsorbed contaminants are not removed from the media through backwashing, resulting in a finite number of adsorption sites. Over time, these sites will become exhausted, and the media will no longer be able to remove contaminants through adsorption (and will rely on filtration only). Other adsorbable contaminants in the water can further reduce the GAC capacity to remove a target contaminant. This results in the media having a site-specific expected useful life and timeline for replacement. Monitoring for additional parameters beyond turbidity should be considered for evaluating the GAC adsorption capacity over time (UV254 could be used as a surrogate parameter for organics, for example).

Status: Unresolved.



13. 2023 Apex Pumping Final Report

Recommendation:

(R-13) CIRNAC recommends the City of Iqaluit provide a detailed analysis of the monitoring data that supports the conclusion of no harmful impacts, and provide information on the methods used to assess potential impacts and any specific observations or findings related to ecological effects.

City of Iqaluit's Response:

In spring 2023, the City, in collaboration with Nunami Stantec Limited, developed a 2D hydraulic model that demonstrated no harm to fish and fish habitat when withdrawals of 20% of instantaneous flows occur. This approach was authorized by DFO. A copy of the authorization letter from the DFO and the Nunavut Water Board is available in the Appendix A. Therefore, it is assumed that no harm was caused to fish or fish habitat when pumping slightly exceeded 10% of instantaneous flow for three days last year, as shown in the table below detailing the percent of flow taken during the 2023 pumping season. Consequently, no monitoring or analysis data was completed. Further details are discussed in our 2023 pumping report, which is included in the Appendix.

CIRNAC's Reply to the City of Iqaluit's Response:

CIRNAC is satisfied with the response and the information provided.

Status: Resolved.

14. Chlorine and Bacteria Results from the WTP (2023)

Recommendation:

(R-14) CIRNAC recommends the City of Iqaluit complete the following:

- review the UVT analyzer performance to confirm the system is working as intended and provide an update, and
- provide sample results from S::CAN monitoring device located at the water treatment plant.

City of Iqaluit's Response:

The City of Iqaluit did not respond.

CIRNAC's Reply to the City of Iqaluit's Response: N/A

Status: Unresolved.



15. 2024 Lake Geraldine Water Balance Assessment

Recommendation:

(R-15) CIRNAC recommends the City of Iqaluit provide the following:

- A full hydraulic lake balance model or more information on the watershed runoff approach,
- Update the bathymetric survey and development of new stage-storage curve, and
- Check the values in Table 2 for accuracy.

City of Iqaluit's Response:

The City of Iqaluit did not respond.

CIRNAC's Reply to the City of Iqaluit's Response: N/A

Status: Unresolved.

16. Concerns Raised in Inspection Reports

Recommendation:

(R-16) CIRNAC recommends the City of Iqaluit provide a response on how and when these concerns and non-compliances were rectified and required actions were completed. If any have not been addressed, provide a timeline for when they will be addressed.

City of Iqaluit's Response:

The following are the action items flagged in the inspection report from June 23rd, 2023 that have been addressed:

1. Majority hazardous waste was shipped out of Iqaluit in 2024. Moving forward there will be proper hazardous waste containers available in 2024 (secondary containment, vented), also we will have spill containment pallets for any liquid waste.
2. The lack of fencing in the West 40 landfill is being addressed. A letter was sent stating that fencing would be installed from the tipping shack area to the tipping face (rock outcrop) this year, with the rest of the fencing to be completed at later as adjustments to the landfill footprint may be necessary. Pending budget approval, about 100 meters of fence is to be installed at the landfill in 2024.

CIRNAC's Reply to the City of Iqaluit's Response:

CIRNAC is satisfied with the response and the information provided.

Status: Resolved.