



☒ Original

☐ Follow-Up Report

WATER LICENCE INSPECTION FORM

Licensee		Licensee Representative	
City of Iqaluit		M Karveli and P MacMunn	
Licence No. / Expiry		Representative's Title	
3AM-IQA1626		NA	
Land / Other Authorizations		Land / Other Authorizations	
NA			
Date of Inspection		Inspector	
June 4, 2018		Jonathan Mesher	
Activities Inspected			
<input type="checkbox"/> Camp	<input type="checkbox"/> Drilling	<input type="checkbox"/> Mining	<input type="checkbox"/> Construction
<input type="checkbox"/> Roads/Hauling	<input checked="" type="checkbox"/> Other: Municipal		<input type="checkbox"/> Reclamation
			<input type="checkbox"/> Fuel Storage
			<input type="checkbox"/> Other:

Conditions:	A - Acceptable	C - Concern	U - Unacceptable	NA – Not Applicable	NI – Not Inspected			
Water Use	Condition	Comment	Site Conditions	Condition	Comment	Haz/Mat Management	Condition	Comment
Intake/Screen	A		Water Management Structures	U	4	Storage	U	
Flow Measure. Device	A		Culverts / Bridges	C	4	Spills	NI	
Source:	C		Drainage	U	4	Spill Plan	U	
Water Use:	C	3	Erosion / Sediment	U	4,5			
Recirculation ( y /n)	N		Mitigation Measures	A		Administrative		
			Reclamation Activities	A		Records	C	
			Materials Storage	C		Reports	U	
Waste Disposal			Signage	C		Plans	C	
Waste Water	C	7				Notifications	A	
Solid Waste	U	8-12	Monitoring			Other		
Hazardous Waste	U		Sample Collection / Analysis	NI				
*The number in the comments field will correspond with specific comments provided below.								
Samples taken by Inspector:								
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No								

SECTION 1	<input checked="" type="checkbox"/> Comments (s.____)	<input type="checkbox"/> Non-Compliance with Act or Licence (s.____)	<input type="checkbox"/> Action Required (s.____)
<b>Background</b>			
<p>The City of Iqaluit has a Type “A” Water Licence that allows the usage of 1,100,000 CUBIC METRES ANNUALLY from Lake Geraldine and the storage/management of waste at the West 40 Landfill, sewage lagoon and the Waste Water Treatment Plant.</p> <p>On February 22, 2018 the licensee was notified of a number of outstanding documents (see <i>Photo 7</i>). Since the notification the licensee has produced the 2016 annual report, one of the seven documents required.</p> <p>August 13, 2018, the Board received the Minister’s consent to the Board’s processing of the Emergency Amendment Application on an emergency basis.1 As a result, the NWB processed the Emergency Amendment Application as permitted by ss. 52(2)(c) and 55(5), of the <i>Nunavut Waters and Nunavut Surface Rights Tribunal Act</i>, S.C. 2002, c. 10 (NWNSTRA), allowing the Board to waive the normal notice, public hearing and comment requirements typically associated with the Board’s consideration of an application to amend a Type “A” Water Licence. City of Iqaluit was issued the emergency amendment to ensure that the City of Iqaluit has sufficient water to meet the needs of the City during the upcoming winter in 2018 and into early 2019. The amendment included reporting requirements for the annual report and the following terms and conditions:</p> <ul style="list-style-type: none"><li>• 500,000 CUBIC METERS IN 2018 FROM NIAQUNGUK RIVER (APEX RIVER) WATERSHED AND/OR SMALL UNNAMED SOURCE WATER LAKES, AND 500,000 CUBIC METERS IN 2018 FROM THE LARGE UNNAMED SOURCE WATER LAKE.</li><li>• Construction, operation, and removal of temporary facilities for the Temporary Augmentation Project (TAP).</li><li>• The Licensee shall ensure that withdrawals from the Niaqunguk River (Apex River) watershed at Monitoring Stations No.: IQA-10 and IQA-11 be limited to the rate and volume that is considered acceptable by Fisheries and Oceans Canada. If, at any time, Fisheries and Oceans Canada advises the Licensee that withdrawals from the Niaqunguk River (Apex River) are no longer acceptable, the withdrawals must cease until Fisheries and Oceans Canada indicates that withdrawals can resume.</li><li>• The Licensee shall ensure that withdrawal of Water from the large unnamed source water lake at Monitoring Station No.: IQA-13 only as necessary to provide water towards Monitoring Station No. IQA-11.</li><li>• The Licensee shall cease all withdrawals associated with the TAP (Monitoring Station No.: IQA-10, 11, 12 and 13) if sufficient water has been transferred into Lake Geraldine Reservoir to provide enough drinking water for Iqaluit for the winter of 2018 and into early 2019.</li><li>• The Licensee shall submit to the Board for approval in writing, within thirty (30) days of the Effective Date of this Amendment, an addendum to the approved Spill Contingency Plan that addresses facilities and activities associated with the TAP.</li></ul>			



## Inspection

### Water Usage and Water Management:

1. On June, 4 2018 an inspection was conducted of the Water reservoir and Wet Wells. No major concerns were noted at the time of the inspection.
2. Periodic site visits were conducted at the pumping location in apex river watershed, pipe line leading to Lake Geraldine and the inflow into Lake Geraldine. No concerns were noted.
3. In 2016 and 2017 the Licensee has exceeded the maximum allowable water usage of 1,100,000 m<sup>3</sup> and is on track to go over the allowable water usage again in 2018. The inspector is requesting that the City of Iqaluit amend their current water licence to prevent this act of non-compliance from continuing in the future.
4. There are many usages of water throughout the project area that do not appear to be captured in the licence 3AM-IQA1626, the *Nunavut Waters and Nunavut Surface rights tribunal Act (NWNSTRA)* defines a use in relation to water as; any use of water power and geothermal resources, any diversion or obstruction of waters, any alteration of the flow of waters, and any alteration of the bed or banks of a river, stream, lake or other body of water, whether or not the body of water is seasonal. Therefore in the absence of terms and conditions in the licence 3AM-IQA1626 related to and/or authorizing the ditches, swales, culverts, bridges and any other uses of water within the project area it appears that the licensee is in contravention of Section 11., subsection 1., of the NWNSTRA.
  - I. During the inspection the inspector was informed that the Licensee was developing a Surface Water Management Plan, it is recommended that this document be reviewed by the NWB and the appropriate interveners to ensure its adequacy.
  - II. The inspector is requesting that the licensee amend their current water licence (3AM-IQA1626) to capture all usages of water as described in the Nunavut Waters and Nunavut Surface Rights Tribunal Act and the corresponding regulations that are managed and used by the licensee.
  - III. The inspector is requesting that a timeline be provided to CIRNAC and the NWB for the completion of the Surface Water Management Plan and the required amendment.
5. The Licensee appears to be incapable of dealing with surface water during freshet, resulting in the uncontrolled erosion of roads, building pads, ditches/ drainage throughout the city and flooding of school yards, private property, roads, water and waste management structures. This concern was not identified during the inspection; the inspector will sample and take photos of this concern in freshet of 2019 which will be included in the 2019 water licence inspection report. As a result of this erosion there appears to be significant sedimentation entering waters surrounding the City of Iqaluit. The City of Iqaluit appears to be in contravention of the conditions of the licence 3AM-IQA1626 listed below:
  - I. PART D, Item 6 of the licence states that, *"The Licensee shall not cause erosion to the banks of any body of Water and shall provide the necessary controls to prevent such erosion."*
  - II. PART D, Item 7 of the licence states, *"The Licensee shall implement necessary measures to control sediment and erosion prior to and during operations to prevent entry of sediments into Water."*
6. In the 2015 annual report the licensee states that, the engineer had 18 recommendations from the Dam Safety Inspection (DSI).
  - I. Part D, Item 4 of that water licence 3AM-IQA1626 states that; "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.”

- II. The inspector is requesting that the Licensee provide a report outlining what work recommended in the 2015 DSI has been completed.

#### **Deposits of waste and waste management structures**

7. In the 2016 Annual report the licensee states that 1,249,150 m<sup>3</sup> of water was withdrawn for Lake Geraldine and 1,176,506 m<sup>3</sup> of waste water was deposited into the Waste Water Treatment Plant (WWTP). In 2018 the City of Iqaluit admitted that 40% of all water withdrawn is lost to bleeds and leaks in the water distribution lines, with that information it appears that the amount of water deposited in the WWTP should be less than 749,490 m<sup>3</sup>.
  - I. Part B, Item 4, of the licence 3AM-IQA1626 states, “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.”
  - II. I am uncertain of what calculations the licensee uses to determine the amount of Waste Water deposited into the WWTP but, it does not appear to be accurate. The inspector is requesting that the licensee provide reasoning for this discrepancy and to reevaluate the way the licensee records the deposit of waste water.
8. In the document “The City of Iqaluit City of Iqaluit Landfill Operations and Maintenance Manual, Date: January 2014”, Appendix E - 2006 Drainage Improvements. It identifies a containment pond on the east side on the facility and one in the center these structures were not in use or visible at the time of the inspection. See photo 4 for the missing ponds.
  - I. Please provide the approval provided to remove or modify these waste management structures.
9. In the document, “The City of Iqaluit City of Iqaluit Landfill Operations and Maintenance Manual, Date: January 2014”, Appendix E - 2006 Drainage Improvements, it shows that the surface drainage on the north side of the facility is intended to flow East towards ditches and two containment ponds within the facility. The North end of this facility now slopes west towards an area where no containment ditches are present and flows directly in the surrounding environment. See photo 6 for the landfill sloping to the environment and photo 4 for the intended slope of the landfill.
  - I. This facility is not maintained to the satisfaction to the inspector as required in Part E, Item 17 of the licence 3AM-IQA which states, “The Licensee shall maintain the Licensed Facilities to the satisfaction of an Inspector.”
  - II. This observation is in contradiction of Part E, item 13 of the licence 3AM-IQA1626, which states, “The Licensee shall collect and contain all leachate generated by the West 40 Landfill within the Landfill.”
10. During the inspection of the West 40 Landfill it was noted that significant municipal refuse is not contained in the facility, there is significant wind blow littler in the diversion ditches surrounding the facility and wetlands adjacent to the facility. This is likely due to the poor condition of the fence surrounding that landfill.
11. During the inspection at the West 40 Landfill southeast containment ponds, there were signs of tears, rips and signs of a high water mark leading the inspector to believe that this facilities ability to contain leachate is jeopardized. Due to the poor condition of the containment ponds the inspector is requesting that the licensee conduct a study to ensure that the containment ponds are operating as intended, If the containment ponds are found to be jeopardized the licensee is to follow the conditions in PART G: Conditions Applying to Modifications.



12. Due to the poor condition of the landfill the Inspector has requested that monitoring be conducted in three (3) locations surrounding the facility(see photo 8), the ability to request monitoring stems from, PART I, Item 11 of the water licence 3AM-IQA1626. The result showed that the city is above the allowed levels of Total Suspended Solids (TSS), the pH results were almost below the acceptable limit and Zinc is almost above acceptable levels. The sampling results were then analyzed by David Zhong, A Regulatory and Science Advisor with CIRNAC. The following comments were made by David;
- I. TSS values of the two samples collected at location C (i.e., samples 013991-05 and 013991-06) are extremely high (i.e., 822 mg/L and 2,400 mg/L, respectively) and would exceed any applicable water or wastewater standard;
  - II. Zinc concentrations of the two samples collected at location C (i.e., samples 013991-05 and 013991-06) are elevated (i.e., 0.406 mg/L and 0.397 mg/L, respectively). For reference, MMER limit for zinc is 0.500 mg/L and MDMER limit for zinc is 0.400 mg/L;
  - III. Field-measured pH shows that water at sample location A is weakly acidic (i.e., pH at 6.18);
  - IV. There is a systematic discrepancy between lab and field measured pH values: lab results show higher pH values than field measurements (i.e., between 0.3 and 1.2 pH unit difference), indicating chemical reactivity of the samples.
13. After reviewing satellite imagery of the Landfill it appears that its capacity has been increased without the consideration of Part E, Item 13, of the water licence 3AM-IQA1626 states, "The Licensee shall collect and contain all leachate generated by the West 40 Landfill within the Landfill." or PART:G CONDITIONS APPLYING TO MODIFICATIONS.
- I. The licensee is to submit the required documents in Part G, Item 1 of the licence 3AM-IQA1626 for the modifications of the west 40 landfill and complete the required work to ensure that all leachate is contained in the landfill as required in Part E, Item 13.
14. An inspection was conducted of the historical waste disposal area in Apex, see Photo 3, Item 1, for the location of this facility. This facility has no containment for leachate, no structures to divert water away from this waste and is eroding into the Arctic Ocean. The inspector is uncertain of the contents of this dumping area or the risks it poses to the environment. CIRNAC will be conducting samples around this area in the next open water season to better understand the potential risks this deposit of waste poses to the surrounding waters.
- I. This storage of waste is in contravention of section 4, subsection (1), of the Arctic Waters Pollution Prevention Act which states; *"except as authorized by regulations made under this section, no person or ship shall deposit or permit the deposit of waste of any type in the Arctic Waters or in any place on the mainland or islands of the Canadian Arctic under any conditions where the waste or any other waste that results from the deposit of the waste may enter the Arctic Waters."*
15. During the inspection it was noted that the dump at the end of federal road, see photo 3, item 3 for the referred to deposit of waste. This waste is sitting in and surrounded by water, this deposit of waste is not captured in the water licence. This deposit of waste is in contravention of the Nunavut Waters and Nunavut Surface Rights Tribunal Act (NWNSRTA), section 12 which states that, **12.** (1) Subject to subsection (2) and except in accordance with the conditions of a licence, no person shall deposit or permit the deposit of waste (a) in waters in Nunavut; or (b) in any other place in Nunavut under conditions in which the waste, or any other waste that results from the deposit of that waste, may enter waters in Nunavut.
- I. The licensee is to amend the current water licence to include this deposit of waste and implement the appropriate measures to ensure that this waste does not affect the surrounding water ways.



<input type="checkbox"/> Comments	<input type="checkbox"/> Non-Compliance with Act or Licence	<input checked="" type="checkbox"/> Action Required
<p>The following information is a summary of the Actions Required by the licensee to promote and ensure compliance. Please provide a response to the following Actions Required within 30 days of receiving this report proposing timelines to address the concerns noted.</p> <div><div>a) The inspector is requesting that the City of Iqaluit amend their current water licence to appropriately capture the City of Iqaluit’s current water demand, this will help prevent the ongoing failure to comply with the agreed upon water usage limit.</div><div>b) The inspector is requesting that the licensee amend their current water to capture all usages of water as described in the Nunavut Waters and Nunavut Surface Rights Tribunal Act and the corresponding regulations that are managed and used by the licensee.</div><div>c) The inspector is requesting that the Licensee provide a report outlining what work recommended in the 2015 DSI has been completed.</div><div>d) The inspector is requesting that the licensee provide reasoning for this discrepancy in the water usage to waste disposal calculation and reevaluate the way the licensee records the deposit of waste water to better reflect the actual amount of waste entering the WWTP.</div><div>e) Please provide the approval that was given for the removal of the containment ponds/waste management structures at the west 40 Landfill.</div><div>f) The licensee is to submit the required documents as described in Part G, Item 1 of the licence 3AM-IQA1626 for the modifications of the west 40 landfill and complete the required work to ensure that all leachate and waste is contained in the landfill as required in Part E, Item 13.</div><div>g) The licensee is to amend the current water licence to include the deposit of waste at the end of federal road and implement the appropriate measures to ensure that this waste does not affect the surrounding water ways, or provide evidence that this waste is not the licensee’s responsibility.</div></div>		
SECTION 3	<input type="checkbox"/> Comments	<input type="checkbox"/> Non-Compliance with Act or Licence
<input type="checkbox"/> Action Required		
<a href="#">Click here to enter text.</a>		

Licensee or Representative	Inspector’s Name
Matthew Hamp	Jonathan Mesher
Signature	Signature
Date	Date
	November 26, 2018

Office Use Only:	Follow-up report to be issued by Inspector	<input type="checkbox"/> Yes <input type="checkbox"/> No
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CC:

Licensing Department, NWB  
Justin Hack, Manager of Field Operations, INAC





PHOTO LOG

Date	Camera	Inspector	Authorization
	Sony Cyber-shot	J.Mesher	3AM-IQA1626
Photo Log		Location City of Iqaluit	

Photo 1



Description: West 40 Landfill containment pond.

Photo Log #	Location City of Iqaluit
Photo 2	





Description: West 40 Landfill containment pond.

Photo Log #	Location City of Iqaluit
Photo 3	N W

Description: Areas of concern; 1: Apex dump, 2: bridge work at road to nowhere, 3: dump at the end of federal road.

Photo Log #	Location: City of Iqaluit
Photo 4	N W





# Iqaluit Landfill Operating Configuration

Prepared by Ken Johnson, MCIP, P. Eng.  
2011 04 21



Description: Landfill operation configuration.

Photo Log #

Location City of Iqaluit

Photo 5



Description: erosion on the waste rock stockpile sedimentation pond berm wall.

Photo Log #

Location City of Iqaluit

Photo 6





Description: slope of the landfill leading into the environment.

Photo Log #		Location City of Iqaluit		
Photo 7				
Licence Condition	Report Title	Timeline for Submission	Submitted	
B1	Annual Report	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.	2016 not submitted	
D2	OM Manual Water Treatment Facility	August 17, 2016 The Licensee shall submit to the Board for approval, within sixty (60) days of the Effective Date of the Licence, an updated manual for the potable Water Treatment Facility...	Not submitted	
E6	OM Manual Sewage Treatment Facility	October 17, 2016 The Licensee shall submit to the Board for approval in writing, within four (4) months of the Effective Date of the Licence, an Operation and Maintenance Manual for the Sewage Lagoon Facility...	Not submitted	
E12	OM Manual Landfill	August 17, 2016 The Licensee shall submit to the Board for approval, within sixty (60) days of the Effective Date of the Licence, an updated Landfill Operation and Maintenance Manual...	Not submitted	
I2	Updated Monitoring Program	The Licensee shall, submit Board for approval in writing, within sixty (60) days of the Effective Date of this Licence, an updated Monitoring Program	Not Submitted	
I5	QA/QC Plan	August 17, 2016 The Licensee shall, submit to the Board for review, within sixty (60) days of the Effective Date of the Licence, an updated Quality Assurance/Quality Control (QA/QC) Plan	Not submitted	
E14		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	Not Submitted	

Description: List of outstanding documents.

Photo Log #		Location City of Iqaluit		
Photo 8				





Description: Location of samples requested at the west 40 Lanffill.