

**2017 FIRST QUARTER REPORT  
FOR GN-CGS RANKIN INLET**

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**Appendix E: Fisheries Act Direction, April 6, 2017**



Environment  
Canada

Environnement  
Canada

**ENFORCEMENT  
BRANCH**  
Environmental Enforcement



**DIRECTION GÉNÉRALE DE  
L'APPLICATION DE LA LOI**  
Application de la loi en environnement

**DIRECTION**

***FISHERIES ACT***  
**Subsection 38(7.1)**

Nemesis File: 4408-2016-06-28-001  
Gavia File: 8000-2017-01-22-391553

**PROTECTED B  
ENFORCEMENT**

**April 6, 2017**

**Registered with acknowledgement of receipt**

Her Majesty the Queen in right of Canada as represented by the Commissioner of Nunavut

c/o Lori Kimball  
**Deputy Minister**  
Community & Government Services  
PO Box 1000 STN 700  
4th Floor, W.G. Brown Building  
Iqaluit, NU, X0A 0H0

Megan Lusty  
**Municipal Planning Engineer**  
Community and Government Services  
Kivalliq Region, Government of Nunavut  
P.O. Box 490  
Rankin Inlet, NU, X0C 0G0

**RE: *FISHERIES ACT* DIRECTION**

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This document constitutes a direction to the persons named above, pursuant to subsection 38(7.1) of the *Fisheries Act* as amended, hereinafter referred to as the *Fisheries Act*.

**REASONABLE GROUNDS FOR BELIEF**

I, Curtis Didham, an Inspector designated by the Minister of Fisheries and Oceans under subsection 38(1) of the *Fisheries Act*, have reasonable grounds to believe:

**Canada**

1. That there occurs a deposit of a deleterious substance in water frequented by fish that is not authorized under the *Fisheries Act*.
2. That detriment to fish habitat or fish or to the use by humans of fish results or may reasonably be expected to result from the occurrence and that immediate action is necessary in order to take all reasonable measures consistent with public safety and with the conservation and protection of fish and fish habitat to prevent the occurrence or to counteract, mitigate or remedy any adverse effects that result from the occurrence or might reasonably be expected to result from it.
3. That all reasonable measures consistent with public safety and with the conservation and protection of fish and fish habitat have not been taken as required by subsection 38(6) of the *Fisheries Act*.
4. That the Government of Nunavut, Department of Community and Government Services (GN-CGS) Rankin Inlet Sewage Treatment Facility (STF) operates 24 hours a day, 7 days a week and discharges an average 1800 cubic meters per day of sewage and wastewater effluent from the STF on a continual basis into Prairie Bay, Hudson Bay, Arctic Ocean.
5. That the GN-CGS Rankin Inlet STF is a primary treatment plant of sewage and wastewater. The STF receives sewage and wastewater from the underground pipe collection system that is connected via underground piping to the buildings in the Hamlet of Rankin Inlet and also receives sewage and wastewater that is pumped via vacuum truck from buildings in the Hamlet of Rankin Inlet and input into the piped system through the Johnson Cove Lift Station.
6. That sewage and wastewater comes into the STF building through two pipes, and goes into a surge tank which allows for equalization of flows. From there it goes to the macerators. A vertical grinder crushes the solids, then a screw-and-screen auger system separates the solids from liquids, with the wastewater being pumped to the discharge diffuser located in Prairie Bay, Hudson Bay, Arctic Ocean. The solids/sludge have very low water content, and are collected in plastic bags for disposal. About one cubic meter goes to a dedicated section at the Rankin Inlet landfill every 3 days.
7. That during the colder winter months bleeders are used to prevent freezing of the pipe lines and this also dilutes the sewage and wastewater effluent.
8. That on June 22, 2016 Environment and Climate Change Canada (ECCC) Fishery Inspectors DIDHAM and MACDONALD conducted an on-site inspection at the Rankin Inlet STF to verify compliance under the *Fisheries Act*.
9. That Megan Lusty (GN-CGS Municipal Planning Engineer) assisted EO DIDHAM and EO MACDONALD during the Inspection.
10. That during the inspection ECCC Fishery Inspectors DIDHAM and MACDONALD collected four 20 liter white plastic pails of samples for a LC50 multi-concentration bioassay analysis and three containers of chemistry samples for total suspended solids analysis, total metals analysis, and ammonia analysis. The pH analysis was calculated using a field pH meter. All samples were collected at the sampling discharge monitoring point GRA-3 valve inside the STF building and further sent to the Environment and Climate Change Canada Prairie and Northern Region Laboratory (ECCC PNR) in Edmonton for analysis.
11. That during the inspection Megan Lusty also collected chemistry samples.
12. That on July 19, 2016 ECCC Fishery Inspector DIDHAM received final bioassay sampling results from the ECCC PNR Laboratory. The results showed that 90% of the fish had died in the 100% effluent within 24 hours. Therefore the effluent sampled was acutely lethal and thus, deleterious to fish.
13. That on September 23, 2016 ECCC Fishery Inspector DIDHAM received final chemistry sampling results from the ECCC PNR Laboratory.

14. That on January 27, 2017 Anne Wilson (ECCC Water Quality Specialist) reviewed the chemistry results for the Rankin Inlet samples taken June 22, 2016 and provided the following comments:

- a. Total suspended solids (TSS) were moderate and would not be expected to contribute to toxicity at 32 mg/L.
- b. The ammonia concentration in the lab sample was 10.6 mg/L. At the pH of 6.9 – 7.5 measured in the bioassay test solution (100%) and test temperature of 15 C this would contain 0.859% unionized (NH<sub>3</sub>) ammonia, or 0.091 mg/L NH<sub>3</sub>-N. This is well below the mean literature LC50 for rainbow trout of 0.396 mg/L NH<sub>3</sub>-N although above the chronic effects guideline of 0.016 mg/L NH<sub>3</sub>-N.
- c. Metals which would have contributed to the toxicity of the sample were aluminum (0.398 mg/L), copper (0.193 mg/L) and zinc (0.107 mg/L). The sample had low to moderate hardness, and the 100% concentration started at pH 6.9 and finished at pH 7.5. Organic matter was not tested, but can be inferred as present from the sample color and source.
  - Aluminum toxicity is affected by pH, hardness and organic material; there would be minor sublethal contributions to toxicity.
  - Copper and zinc concentrations are both at levels which are reported in the literature as causing acute toxicity to rainbow trout. Given the toxicity modifying factors and the difficulty teasing out the effects of mixtures, it is only safe to say that these metals would have contributed to or caused acute toxicity.

15. That information received from Fisheries and Oceans Canada Fisheries Protection Program Emily Morton on January 27, 2017 stated that the Hudson Bay and Arctic Ocean waters near Rankin Inlet are fish bearing. Sea-run Arctic Char are commercially harvested from these waters. Additionally, a number of marine mammal species are present in these waters and are subsistence harvested by Inuit, including Beluga, Ringed Seal, Bearded Seal and Walrus.

16. That on January 27, 2017 ECCC Fishery Inspector DIDHAM received information from Anne Wilson who stated:

- a. She attended the GN-CGS renewal Type “A” Nunavut Water Board Water Licence No. 3AM-GRA1624 GN-CGS hearings in Rankin Inlet, Nunavut on March 16 – 17, 2016.
- b. That during the Rankin Inlet STF tour on February 11, 2016, it was stated that the GN-CGS had no plans to upgrade the Rankin Inlet primary treatment STF to secondary treatment.
- c. That in the course of the Nunavut Water Board water licence renewal public hearings, the GN-CGS stated it did not want the system upgrade to be a condition of the Water Licence.
- c. That the GN-CGS would commit to discussions of the path forward for the upgrade outside the Water licence process, and to conduct effluent characterization by December, 2017.

17. That a ECCC February 26, 2016 document titled “ECCC’s Intervention to the Nunavut Water Board on the Hamlet of Rankin Inlet’s water licence renewal 3AM-GRA1015” stated in 4.2 future infrastructure upgrades that:

- a. The installation of secondary treatment is not being considered by the GN; the primary treatment system was installed approximately four years ago and is functioning.
- b. It is acknowledged that the water licence does not regulate effluent quality for marine discharges, as was identified by the GN. ECCC and the GN have agreed to continue discussing the matter outside the water licence renewal process. However, the necessary improvement of effluent quality will require upgrading of facilities which are regulated under water licence 3AM-GRA1015. ECCC seeks a commitment from the GN to identify options for secondary treatment, and to develop a plan to implement secondary treatment within a specific time frame, to ensure compliance with the *Fisheries Act*.

18. That on January 31, 2017 Fishery Inspector DIDHAM was informed by Megan Lusty that:

- a. The GN-CGS for several years has been conducting general effluent characterization for many locations across Nunavut.



- b. The GN-CGS is still committed to conducting the general effluent characterization for Rankin Inlet however it has not been started yet and therefore will not be completed by the original committed date of December, 2017.
- c. That during the June 22, 2016 inspection sampling the bleeders were not on.
- d. That after the June 22, 2016 meeting with ECCC the GN-CGS was waiting to receive the FAD sooner than expected and wanted to make sure that any further actions taken by the GN-CGS would be in line with ECCC requirements on upgrading the Rankin Inlet STF from primary treatment to secondary treatment.

## MEASURES TO BE TAKEN

Under the authority given to me pursuant to subsection 38(7.1) of the Fisheries Act, I hereby direct the persons named above to immediately take all reasonable measures consistent with public safety and with the conservation and protection of fish and fish habitat to prevent the above mentioned occurrence or to counteract, mitigate, or remedy, any adverse effects that result from the above mentioned occurrence or might reasonably be expected to result from it, including:

1. Design a sewage and wastewater effluent characterization study from the Rankin Inlet STF and submit it to ECCC for discussion prior to **July 31, 2017**. Components of the sewage and wastewater effluent characterization study must include:
  - Collection of monthly composite samples in such a fashion that samples are representative of overall effluent quality;
  - Parameters should include those listed in Table 1;
  - Provide estimated daily flow volumes of effluent discharges, along with estimates of quantity of bleeder water and auger wash water used.
  - Proposed outline of the study report format.
2. From **November 1, 2017 to November 1, 2018** conduct the sewage and wastewater effluent characterization study on effluent from the Rankin Inlet STF in accordance with the study design.
3. By **March 31, 2019** provide a copy of the sewage and wastewater effluent characterization study to ECCC.
4. By **March 31, 2020** present a discussion document outlining treatment options to ECCC for upgrading the Rankin Inlet STF. The document must include estimated costs and performance for each of the options, as well as time frames needed for construction and commissioning.
5. Inform ECCC in writing 30 days after the end of the second quarter of 2017 and each calendar quarter thereafter of the actions which were taken in the previous calendar quarter until **March 31, 2020**, and provide a summary of results.

Table 1 Sampling Parameters (Monthly unless otherwise noted)

**Physical/Chemical:**

TSS mg/L  
BOD5 mg/L  
CBOD mg/L  
Hardness mg/L  
Alkalinity mg/L  
Conductivity uS/cm  
pH (pH units)

**Bacteriological:**

Fecal Coliform #CFU/100ml  
Total Coliform #MPN/100ml  
E. Coli #MPN/100ml

**Nutrients:**

Ammonia-N mg/L  
Nitrate-N [NO<sub>3</sub>-N] mg/L  
Nitrite-N [NO<sub>2</sub>-N] mg/L  
Total Nitrogen mg/L  
Tot. Org. Carbon (TOC) mg/L  
Total Phosphorous mg/L

**Major Ions:**

Calcium (Ca) mg/L  
Chloride (Cl) ug/L  
Fluoride (F) mg/L  
Magnesium (Mg) mg/L  
Potassium (K) mg/L  
Sodium mg/L  
Sulphate (SO<sub>4</sub>) mg/L

**Metals (Total):\***

Aluminium (Al) ug/L  
Antimony (Sb) ug/L  
Arsenic (As) ug/L  
Barium (Ba) ug/L  
Beryllium (Be) ug/L  
Cadmium (Cd) ug/L  
Cesium (Cs) ug/L  
Chromium (Cr) ug/L  
Cobalt (Co) ug/L  
Copper (Cu) ug/L  
Iron (Fe) ug/L  
Lead (Pb) ug/L  
Lithium (Li) ug/L  
Manganese (Mn) ug/L  
Molybdenum (Mo) ug/L  
Nickel (Ni) ug/L  
Rubidium (Rb) ug/L  
Selenium (Se) ug/L  
Silver (Ag) ug/L  
Strontium (Sr) ug/L  
Thallium (Tl) ug/L  
Titanium (Ti) ug/L  
Uranium (U) ug/L  
Vanadium (V) ug/L  
Zinc (Zn) ug/L

**Other:**

Total Phenols mg/L  
Oil and Grease mg/L  
Total Petroleum Hydrocarbons mg/L

**Bioassay:\*\***

Rainbow Trout bioassay test (as per Environment Canada's Environmental Protection Series Biological Test Method EPS/1/RM/13 July 1990, published by the Department of the Environment, as amended in December 2000)

If toxicity is observed, there is the option to do additional bioassay testing using the Procedure for pH Stabilization EPS 1/RM/50.

\* Quarterly and no less than 60 days between samples.

\*\* Annually, unless requested by ECCC to increase frequency to quarterly due to significant variability in effluent quality.

## **THE LAW**

### ***Fisheries Act***

#### **Deposit of deleterious substance prohibited**

- 36(3) Subject to subsection (4), no person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish or in any place under any conditions where the deleterious substance or any other deleterious substance that results from the deposit of the deleterious substance may enter any such water.

#### **Duty to notify – deleterious substance**

- 38(5) If there occurs a deposit of a deleterious substance in water frequented by fish that is not authorized under this Act, or if there is a serious and imminent danger of such an occurrence, and detriment to fish habitat or fish or to the use by humans of fish results or may reasonably be expected to result from the occurrence, then every person shall without delay notify an inspector, a fishery officer or an authority prescribed by the regulations if the person at any material time
- (a) owns or has the charge, management or control of
    - (i) the deleterious substance, or
    - (ii) the work, undertaking or activity that resulted in the deposit or the danger of the deposit; or
  - (b) causes or contributes to the occurrence or the danger of the occurrence.

#### **Duty to take corrective measures**

- 38(6) Any person described in paragraph (4)(a) or (b) or 5(a) or (b) shall, as soon as feasible, take all reasonable measures consistent with public safety and with the conservation and protection of fish and fish habitat to prevent the occurrence or to counteract, mitigate or remedy any adverse effects that result from the occurrence or might reasonably be expected to result from it.

#### **Report**

- 38(7) As soon as feasible after the occurrence or after learning of the danger of the occurrence, the person shall provide an inspector, fishery officer or an authority prescribed by the regulations with a written report on the occurrence or danger of the occurrence.

#### **Corrective measures**

- 38(7.1) If an inspector or fishery officer, whether or not they have been notified under subsection (4) or (5) or provided with a report under subsection (7), is satisfied on reasonable grounds that immediate action is necessary in order to take any measures referred to in subsection (6), the inspector or officer may, subject to subsection (7.2), take any of those measures at the expense of any person described in paragraph (4)(a) or (b) or (5)(a) or (b) or direct such person to take them at that person's expense.

#### **Offence and punishment**

40(2) Every person who contravenes subsection 36(1) or (3) is guilty of an offence and liable

(a) on conviction on indictment,

- (i) in the case of an individual,
  - (A) for a first offence, to a fine of not less than \$15,000 and not more than \$1,000,000, and
  - (B) for a second or subsequent offence, to a fine of not less than \$30,000 and not more than \$2,000,000, or to imprisonment for a term not exceeding three years, or to both,
- (ii) in the case of a person, other than an individual or a corporation referred to in subparagraph (iii),
  - (A) for a first offence, to a fine of not less than \$500,000 and not more than \$6,000,000, and
  - (B) for a second or subsequent offence, to a fine of not less than \$1,000,000 and not more than \$12,000,000, and
- (iii) in the case of a corporation that the court has determined to be a small revenue corporation,
  - (A) for a first offence, to a fine of not less than \$75,000 and not more than \$4,000,000, and
  - (B) for a second or subsequent offence, to a fine of not less than \$150,000 and not more than \$8,000,000; or

(b) on summary conviction,

- (i) in the case of an individual,
  - (A) for a first offence, to a fine of not less than \$5,000 and not more than \$300,000, and
  - (B) for a second or subsequent offence, to a fine of not less than \$10,000 and not more than \$600,000, or to imprisonment for a term not exceeding six months, or to both,
- (ii) in the case of a person, other than an individual or a corporation referred to in subparagraph (iii),
  - (A) for a first offence, to a fine of not less than \$100,000 and not more than \$4,000,000, and
  - (B) for a second or subsequent offence, to a fine of not less than \$200,000 and not more than \$8,000,000, and
- (iii) in the case of a corporation that the court has determined to be a small revenue corporation,
  - (A) for a first offence, to a fine of not less than \$25,000 and not more than \$2,000,000, and
  - (B) for a second or subsequent offence, to a fine of not less than \$50,000 and not more than \$4,000,000.

#### **Other offences**

40(3) Every person who

(g) fails to comply with the whole or any part of a direction of an inspector or a fishery officer under subsection 38(7.1).

is guilty of an offence punishable on summary conviction and liable, for a first offence, to a fine not exceeding two hundred thousand dollars and, for any subsequent offence, to a fine not exceeding two hundred thousand dollars or to imprisonment for a term not exceeding six months, or to both.

#### **Power to recover costs**

42(2) All the costs and expenses referred to in subsection (1) are recoverable by Her Majesty in right of Canada or a province with costs in proceedings brought or taken therefor in the name of Her Majesty in any such right in any court of competent jurisdiction.



## Continuing offences

- 78.1 Where any contravention of this Act or the regulations is committed or continued on more than one day, it constitutes a separate offence for each day on which the contravention is committed or continued.

## CONCLUSION

This direction is without prejudice to any further course of action that Environment and Climate Change Canada may take with respect to any violation of the *Fisheries Act*, including an amended Direction, prosecution, or the seeking of an injunction from the court under the *Fisheries Act*, or any other Act.

This direction and the circumstances to which it refers will form part of Environment and Climate Change Canada's records of the Government of Nunavut, Community and Government Services, and will be taken into account in future responses to alleged violations and for internal purposes such as setting the frequency of inspections. Environment and Climate Change Canada will consider taking further action if you do not take all necessary corrective steps to comply.

This direction is issued in accordance with the Compliance and Enforcement Policy for the Habitat Protection and Pollution Prevention Provisions of the *Fisheries Act*. The complete text of this policy is available on Environment and Climate Change Canada's website : <http://www.ec.gc.ca/alef-ewe/default.asp?lang=En&n=D6B74D58-1>

The complete text of the *Fisheries Act* is available on the Department of Justice website : <http://laws-lois.justice.gc.ca/Search/>

For more information or to respond to the alleged facts contained in this direction, please call or write the undersigned. Your comments will be considered, and where appropriate, a response provided. Any comments you make, as well as Environment and Climate Change Canada's response, will be maintained on file with this direction in Environment and Climate Change Canada's records.

Curtis Didham



Inspector  
Environmental Enforcement Directorate  
Enforcement Branch  
Environment and Climate Change Canada  
Iqaluit, Nunavut  
Suite 301, 3rd Floor, Qilaut Building  
933 Mivvik Street  
P.O. Box 1870 X0A 0H0  
Telephone: 867-975-4644  
Email: [Curtis.didham@canada.ca](mailto:Curtis.didham@canada.ca)