

Annual Reports: 2005-2008

Water Licences: NWB3-KUG 0308

Hamlet of Kugluktuk, Nunavut

Submitted to the Nunavut Water Board

March 19, 2014

By:

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Hamlet of Kugluktuk, NUNAVUT

Annual Reports 2005-2008

Water intake & distribution, Sewage & Solid waste disposal and contaminated soil treatment

TABLE OF CONTENTS

Letter to NWB.....	2 pages
Annual Report 2008	3 pages
Annual Report 2007	3 pages
Annual Report 2006	3 pages
Annual Report 2005	3 pages



Taloyoak Water Licence: NWB3-KUG 0308

Annual Reports 2005- 2008

Nunavut Water Board

P.O. Box 119

Gjoa Haven, NU X0B 1L0

Attention: Phyllis Beaulieu, Manager of Licensing

RE: Annual Reports 2005- 2008: Hamlet of Kugluktuk Water Licence: NWB3-KUG0308

Dear Ms. Phyllis,

The Hamlet of Kugluktuk is pleased to submit to Nunavut Water Board this attached file containing Annual Reports 2005-2008 of water uses and waste disposal as requested and directed under the compliance of uses in Water Licence NWB3-KUG 0308.

We realize that these reports are submitting currently in a later date from original obligation, however, these are in compliance with outstanding items as notified by the Board and INAC/AANDC reports. We summarize those conditions and requirements outlined in Part B through Part H in Water Licence as below:

Part B: General Conditions:

- ✓ Tabular form of water consumption and sewage disposal are filled up from Hamlet Fluid Manager recorded from daily water distribution and sewage disposal.
- ✓ No device Meter available for volume measurement, however, truck-fill measurement shows precise and close to accurate in measuring quantities.

Part C: Conditions applying to water use:

- ✓ All water obtained from Coppermine River as the approved source at that time and annual quantities within the allowable limit of 64,000 cubic metres annually.

Part D: Conditions applying to waste disposal:

- ✓ All sewage and solid waste disposal carried into the community Sewage Lagoon and Solid Waste facilities. Landfarm facility uses for contaminated soil storage and treatment before using as cover materials for landfill.



Department of Community and Government Services
Nunalingni Kavamatkunnilu Pivikhaqautikkut
Ministère des Services Communautaires et gouvernementaux

- ✓ Improvement for Solid waste facility carried including waste segregation, hazardous isolation, storage of contaminated soil with hydrocarbons. With the monitoring of sewage waste and solid waste facility, effluent sample results shows expected improvement in contamination parameters within allowable limits.
- ✓ Hamlet kept maintaining the water intake, treatment and distribution to the facility including the reservoir for summer turbidity issue and cleanup of sediments.

Sincerely,

*Shah Alam, P. Eng.
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Hamlet of Kugluktuk, Nunavut

Annual Report 2008

Water Licence NWB3-KUG0308

ANNUAL REPORT

YEAR BEING REPORTED: 2008

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water Licence **NWB-3KUG0308** issued to **Kugluktuk**.

- i) - iii) tabular summaries of all data generated under the “Monitoring Program”; monthly and annual quantities in cubic metres of freshwater obtained from all sources; monthly and annual quantities in cubic metres of each and all wastes discharged;

Attached are quantities of water used as reported in our Fluid Manager Water Delivery System and the estimated discharge of sewage waste based on quantities used.

Month Reported	Quantity of Water Obtained from all sources (Litres)	Quantity of Sewage Waste Discharged (Litres)
January	3,937,192.70	Same
February	3,785,010.20	Same
March	4,085,973.10	Same
April	3,978,457.10	Same
May	3,864,152.40	Same
June	3,720,144.00	Same
July	4,001,592.80	Same
August	4,169,433.90	Same
September	4,187,395.80	Same
October	4,255,175.30	Same
November	3,833,264.00	Same
December	4,130,744.90	Same
ANNUAL TOTAL	47,948,536.20	Same

ANNUAL REPORT

- iv. a summary of modifications and/or major maintenance work carried out on the Water Supply and Waste Disposal Facilities, including all associated structures and facilities;

-
- *No maintenance work to water intake pump house or treatment plant carried.*
 - *No new modifications, but only regular maintenance to solid waste carried*
 - *A new full liner engineered sewage lagoon construction in progress.*

- v. **a list of unauthorized discharges and summary of follow-up action taken;**

-
- *No unauthorized water intake or sewage and waste discharge during this period.*
 - *Leachate generates from solid waste facility into monitoring station sump, then a natural discharge to wetland. DOE raised a concern and request confirmation of effluent test results in compliance to Waste Management schedule 1.*

- vi. a summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;

-
- *Sludge soil sample tested from current sewage facility and plan for decommission in 2009 once the new sewage lagoon starts operation.*

- vii. **a summary of any studies requested by the Board that relate to waste disposal, water use or reclamation, and a brief description of any future studies planned;**

-
- *As indicated in the design details, a new sewage lagoon with full liner on sides and base constructing on a level above permafrost, the DOE (Department of Environment) has a concern of global warming, and warming might effect of sewage integrity and depth of permafrost. Clarification with further information as thermal modeling result requested.*
 - *The design drawing of proposed sewage lagoon be signed by a professional engineer; remains outstanding*
 - *A predictive model developed by Alberta Department of Environment to describe assimilative capacity of wetland and a 5⁰ C temperature correction applied to the model, the Board is interested to know the evidence of such studies in north where sewage treatment shown to meet effluent discharge criteria.*
 - *De-sludging in every 5-10 years for the new sewage lagoon, but no details on how the sludge removal operation will occur and where will be deposited. A sludge Management Plan requires to be submitted.*
 - *Current land farm is not efficient because of contaminated soil is permanently*

ANNUAL REPORT

frozen and compacted; a new landfarm may be constructed if needed. The Board indicated, in the O&M manual of solid waste noted for a visual inspection near the solid waste facility, no indication about hydrocarbon testing near the landfarm; this need to be addressed to prevent hydrocarbon contamination of local soil and water sources.

- *Hazardous waste storage near the new sewage lagoon area which will be treated and removed. No mentioning of testing of potential soil and water contamination of the area. Also DOE is concern of contaminated water ponding near the hazardous waste area as no consideration for drainage facility.*

viii. any other details on water use or waste disposal requested by the Board by November 1st of the year being reported; and

- *Annual Reports for missing years requested for submission, with water sampling results.*

ix.

updates or revisions to the approved Operation and Maintenance Plans

- *O&M manuals for sewage and solid waste facilities in place. A new sewage waste operational manual will be submitted once the new lagoon starts operation including updating of solid waste facility operational plan, hazardous waste segregation and landfarm facility operation.*

• ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

- *DOE does not encourage open burning of solid waste, but will accept this technique as it is only viable option for the community on a regular basis when condition is suitable.*
- *New Sewage Lagoon will satisfy the community annual sewage quantity deposition and retention for sufficient time before decanting onto wetland.*
- *Hamlet is considering to upgrade and expansion of municipal solid waste site.*

FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

- *Hamlet uses truck fill volume with number of trucks per day for water and sewage quantity and sum up for monthly amount as reported in item1. Exact volume of sewage discharge not shown separately, but actual quantity is not exceeding the water uses. About 90%-95% of sewage quantities are water.*

Hamlet of Kugluktuk, Nunavut

Annual Report 2007

Water Licence NWB3-KUG0308

ANNUAL REPORT

YEAR BEING REPORTED: 2007

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water Licence **NWB-3KUG0308** issued to **Kugluktuk**.

- i) - iii) tabular summaries of all data generated under the “Monitoring Program”; monthly and annual quantities in cubic metres of freshwater obtained from all sources; monthly and annual quantities in cubic metres of each and all wastes discharged;

Attached are quantities of water used as reported in our Fluid Manager Water Delivery System and the estimated discharge of sewage waste based on quantities used.

Month Reported	Quantity of Water Obtained from all sources (Litres)	Quantity of Sewage Waste Discharged (Litres)
January	3,959,445.60	Same
February	3,493,767.80	Same
March	3,996,175.30	Same
April	3,555,062.10	Same
May	3,682,476.20	Same
June	3,628,628.80	Same
July	3,862,898.40	Same
August	4,079,632.80	Same
September	3,598,213.50	Same
October	3,998,154.80	Same
November	3,8142,83.80	Same
December	3,776,961.10	Same
ANNUAL TOTAL	45,445,700.20	Same

ANNUAL REPORT

- iv. a summary of modifications and/or major maintenance work carried out on the Water Supply and Waste Disposal Facilities, including all associated structures and facilities;

-
- *No maintenance work to water intake pump house or treatment plant carried. Hamlet uses a reservoir for water storage temporarily for couple of days where sediment occurs at the bottom when drawn water shows high turbidity and evidence of solid substances in raw water. Water delivers to treatment from reservoir using a secondary pump. Settled sediment pump out annually when noticeable sediment stores on reservoir bottom.*
 - *Nuna Burnside retained for plan and design for improvement and modification of sewage and solid waste facilities, site investigation and plan carried for these facilities improvement.*

- v. **a list of unauthorized discharges and summary of follow-up action taken;**

-
- *No unauthorized water intake or sewage and waste discharge during this period.*
 - *Since facilities are at their capacity and end of life, overflow and seepage noted from containment, but further remediation carries on long wetland before final discharge to Coronation Gulf.*

- vi. a summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;

-
- *A plan for decommissioning of current open sewage lagoon and hazardous waste area adjacent to sewage lagoon once new facility takes over the operation. For solid waste disposal, an area on the other side of the road determined which is secured with fence and isolation by types of wastes.*

- vii. **a summary of any studies requested by the Board that relate to waste disposal, water use or reclamation, and a brief description of any future studies planned;**

-
- *The Board requested for submission of drawings and plan for proposed new facilities for sewage and solid waste improvement signed by a professional engineer for their review and approval.*

- viii. **any other details on water use or waste disposal requested by the Board by November 1st of the year being reported; and**

-
- *NWB requested to submit Annual Reports and water sampling results of outstanding periods.*

ANNUAL REPORT

ix.

updates or revisions to the approved Operation and Maintenance Plans

- *O&M manuals for sewage and solid waste facilities in place. A new sewage waste operational manual needs to be submitted once the new lagoon starts operation. Also, updating of solid waste facility operational plan including hazardous waste and landfarm facility operation.*

ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

- *The proposed new sewage lagoon will satisfy community annual sewage quantity deposition and retention for sufficient time before decanting onto wetland.*
- *Hamlet is considering for expansion of municipal solid waste site.*

FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

- *Hamlet has no other mechanical device for exact quantity assurance of sewage disposal and solid waste dump, but truck fill volume with number of trucks per day for sum up for monthly amount as charge to the customer.*

Hamlet of Kugluktuk, Nunavut

Annual Report 2006

Water Licence NWB3-KUG0308

ANNUAL REPORT

YEAR BEING REPORTED: 2006

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water Licence **NWB-3KUG0308** issued to **Kugluktuk**.

- i) - iii) tabular summaries of all data generated under the “Monitoring Program”; monthly and annual quantities in cubic metres of freshwater obtained from all sources; monthly and annual quantities in cubic metres of each and all wastes discharged;

Attached are quantities of water used as reported in our Fluid Manager Water Delivery System and the estimated discharge of sewage waste based on quantities used.

Month Reported	Quantity of Water Obtained from all sources (Litres)	Quantity of Sewage Waste Discharged (Litres)
January	4,186,630.60	Same
February	3,788,505.60	Same
March	4,096,117.80	Same
April	3,850,044.5	Same
May	4,082,002.10	Same
June	3,771,659.20	Same
July	3,773,798.90	Same
August	3,939,237.90	Same
September	4,053,385.10	Same
October	3,905,161.40	Same
November	3,874,300.20	Same
December	3,728,674.30	Same
ANNUAL TOTAL	47,049,517.60	Same

ANNUAL REPORT

- iv. a summary of modifications and/or major maintenance work carried out on the Water Supply and Waste Disposal Facilities, including all associated structures and facilities;

-
- *No maintenance work to water intake pump house or treatment plant carried.*
 - *No new modifications, but only regular maintenance to solid waste carried*
 - *A new full liner engineered sewage lagoon under study and design.*

- v. **a list of unauthorized discharges and summary of follow-up action taken;**

-
- *No unauthorized water intake or sewage and waste discharge during this period.*
 - *Leachate generates from solid waste facility into monitoring station sump, then a natural discharge to wetland, which was raised as a concern by DOE. Effluent test results confirm such remediation in compliance to Waste Management schedule 1.*

- vi. a summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;

-
- *No A&R plan during this period, but expecting sometime in 2008 for current sewage facility abandonment.*

- vii. **a summary of any studies requested by the Board that relate to waste disposal, water use or reclamation, and a brief description of any future studies planned;**

-
- *Projected sewage volume 126,113 m³ in 2026 will exceed the current water quantity 64,000 m³. NWB requests the measure for increased water supply.*
 - *Justification of projected decrease in contamination parameter BOD₅ from 2006 to 2026 – how this assumption made?*
 - *Discharge pattern for proposed lagoon and treatment rate by sharing lagoon and wetland differs in short term and long term 20 years. Explanation requires for this prediction and role of lagoon and wetland.*
 - *Different number of days (60 days and 120 days) of decanting and discharge pattern in wetland – NWB wants clarification of conflicted statement.*
 - *Detail Design Report did not address the wetland treatment and analysis which shows in the Schematic design. NWB wants explanation about wetland treatment.*

ANNUAL REPORT

- *The honey bag pit located near the lagoon. NWB wants the A&R plan for this honey bag pit if not using. Also number of honey bags covering an area 17000 m² as indicated in application of 2003.*
- *Details and drawings for proposed landfarm and hazardous waste storage requested.*

viii. any other details on water use or waste disposal requested by the Board by November 1st of the year being reported; and

- *Annual Reports from 1995 to 2002 not submitted for Licence N7L4-1526. Also Annual Report for 2005 (NWB3KUG0308) not submitted. NWB requested to submit Annual Reports and water sampling results of outstanding periods.*

ix.

updates or revisions to the approved Operation and Maintenance Plans

- *O&M manuals for sewage and solid waste for current facilities operation, new facility will include or revise the current O&M depending on actual design and construction.*

ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

- *Nuna Burnside has been retained for study of sewage facility, wetland treatment, hazardous storage and landfill facility including design development of a new sewage lagoon. The scope of the consultant also includes existing lagoon remediation plan and O&M manuals updating for those facilities. The consultant will find out best solution for community sewage, solid waste, soil treatment and hazardous materials management for next 20 years in compliance with Guidelines and Regulatory Acts.*

FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

Hamlet is aware of those inspection reports and issues, some of them are due to calculation error or lack of explanation, but hamlet will give due consideration in updating those issues before planning for an amendment application submission. Note that, exact sewage volume is within and not exceeding the water uses. About 90%-95% of sewage quantities are water which eventually remediates on wetland before final run onto ocean.

Hamlet of Kugluktuk, Nunavut

Annual Report 2005

Water Licence NWB3-KUG0308

ANNUAL REPORT

YEAR BEING REPORTED: 2005

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water Licence **NWB-3KUG0308** issued to **Kugluktuk**.

- i) - iii) tabular summaries of all data generated under the “Monitoring Program”; monthly and annual quantities in cubic metres of freshwater obtained from all sources; monthly and annual quantities in cubic metres of each and all wastes discharged;

Attached are quantities of water used as reported in our Fluid Manager Water Delivery System and the estimated discharge of sewage waste based on quantities used.

Month Reported	Quantity of Water Obtained from all sources (Litres)	Quantity of Sewage Waste Discharged (Litres)
January	3,182,259.60	Same
February	3,656,163.63	Same
March	4,100,457.67	Same
April	4,056,432.00	Same
May	4,144,493.80	Same
June	4,103,702.10	Same
July	3,818,085.70	Same
August	4,241,754.50	Same
September	3,924,788.00	Same
October	3,893,757.90	Same
November	3,919,708.20	Same
December	4,054,414.70	Same
ANNUAL TOTAL	47,049,017.80	Same

ANNUAL REPORT

- iv. a summary of modifications and/or major maintenance work carried out on the Water Supply and Waste Disposal Facilities, including all associated structures and facilities;

-
- *No maintenance work to water intake pump house or treatment plant carried.*
 - *No new modifications, but only regular maintenance to solid waste carried*

- v. **a list of unauthorized discharges and summary of follow-up action taken;**

-
- *No unauthorized water intake or sewage and waste discharge during this period.*
 - *Leachate generates from solid waste and sewage facilities into monitoring station sumps, then a natural discharge to wetland. Effluent test samples taken on a monthly basis when possible and flow of effluent during the summer period, and test samples at Taiga Laboratory, Yellowknife. Test results confirm remediation in compliance to Waste Management schedule 1.*

- vi. a summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;

-
- *A&R plan by the consultant of the new lagoon as requested by INAC inspector for a possible A&R plan for honey bag pit which currently using for house flushing. Submission requires within 6 months from last uses of honey bag pit.*

- vii. **a summary of any studies requested by the Board that relate to waste disposal, water use or reclamation, and a brief description of any future studies planned;**

-
- *Copies of all drawings and maps of solid waste disposal area and sewage treatment system requested by INAC, but not updated.*
 - *Design and plan for the new landfill or expansion of current landfill requested by INAC and submitted before the expiry of current water licence.*

-
- viii. **any other details on water use or waste disposal requested by the Board by November 1st of the year being reported; and**

-
- *Warning signs along Coppermine River at the point of pumping and several hundred meters upstream to be installed—requested by INAC*
 - *SNP-3 station marked as ‘run off below the sewage disposal area prior to discharge into the ocean’ should be sampled monthly during periods of flow for parameters and limitation of contamination. Also requested to install warning*

ANNUAL REPORT

sign along the flow path of sewage effluent.

- *INAC requested to install fence around the perimeter of solid waste area where even the burn pit used for annual waste burning. Water ponding noted within the area during inspection in 2003.*
- *SNP-4 station marked as 'run off' below the solid waste disposal area prior to discharge into the ocean' should be sampled monthly during periods of flow for parameters and limitation of contamination.*

ix.

updates or revisions to the approved Operation and Maintenance Plans

- *O&M manuals in plan and possible updating by 2007 for sewage and solid waste for facilities operation including provisions for segregation and storage of hazardous waste.*

ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

- *Hamlet is aware of those inspection reports and issues, GN-CGS in plan for consultant hiring to address those issues professionally.*