



Hamlet of Aklavik
Box 88, Aklavik, NT X0E 0A0

Ph: 867-978-2351
Fax: 867-978-2434

May 15, 2019

Bijaya Adhikari
Science and Regulatory Coordinator
Inuvialuit Water Board
Box 2531
Inuvik, NT
X0E 0T0

Re: N3L3 – 0570 Hamlet of Aklavik – 2018 Annual Report

Please consider this as the response to your letter dated May 14, 2019.

1. Part B, Item 1c – the monthly and annual quantities of hazardous, will not accept Hazardous material after Sept. 1, 2017 except house hold materials as no real control over.
2. Part B, Item 1e) tabular summaries of all data generated under the “Surveillance Network Program” at station number 570-3. No samples were taken for the 2018 season will remind staff to get samples, once after breakup and once before freeze up.
3. Part B, Item 1j) updates and revisions to the approved Spill Contingency Plan, approved Solid Waste Disposal Facility Operation and Maintenance Plan, and Closure and Reclamation Plan. Attached: is a copy of the proposal we have submitted to the Invest in Canada Infrastructure Program. This program is a cost share program of 75% Federal dollars 25% community dollars. We have ear marked the solid waste site as one project under this fund. We will hear some time in June if approved. If approved this will provide enough area for continued use projected for another 20 years. There has not been any real change to the Spill Contingency Plan, except with the updates as provided in our 2014 renewal submission.
4. Part B. Item 1n) any other details on waste disposal requested by the Board by November 1st of the year being reported. Do not have any information.

In closing I hope I have been able to answer your concerns, however please feel free to contact me if you need any further information.

Yours Truly

A handwritten signature in blue ink, appearing to read "Fred Behrens". The signature is fluid and cursive, with a long horizontal stroke at the end.

Fred Behrens

SAO Aklavik



May 14, 2019

Mayor Andrew Charlie
Hamlet of Aklavik
P.O. Box 88
Aklavik, NT X0E 0A0

Dear Mayor Charlie:

Re: N3L3-0570 Hamlet of Aklavik - Municipal Water Licence – 2018 Annual Report

The Inuvialuit Water Board (IWB) acknowledges receipt of the 2018 Annual Report. Upon review, the following information gaps were noted as required by the N3L3-0570 Hamlet of Aklavik - General Conditions Part B, Item 1:

1. Part B, Item 1c) the monthly and annual quantities of hazardous waste stored on site and transported off site;
2. Part B, Item 1e): tabular summaries of all data generated under the "Surveillance Network Program" at station number 570-3;
3. Part B, Item 1j) updates and/or revisions to the approved Spill Contingency Plan, approved Solid Waste Disposal Facility Operation and Maintenance Plan, and Closure and Reclamation Plan;
4. Part B, Item 1n) any other details on waste disposal requested by the Board by November 1st of the year being reported.

Please submit the additional information requested for the water licence to be in compliance. All submitted documentation, including all related IWB correspondence, will be placed on the IWB Public Register.

Should you have any questions or concerns regarding these matters, please do not hesitate to contact me at 867-678-8610 or adhikarib@inuvwb.ca.

Sincerely,

Bijaya Adhikari, PhD
Science and Regulatory Coordinator

cc: Fred Behrens, Senior Administrative Officer, Hamlet of Aklavik
Lloyd Gruben, Water Resource Officer – ENR, Inuvik

Aklavik Solid Waste Site Improvements

Assumptions

Aklavik needs to build capacity to dispose of solid waste.

There is a planning study for a new disposal site but it is not considered feasible at this time due to financial constraints to constructing a road.

The current solid waste site (on the southern side of the road) can be utilized with careful management and following the mounding method (i.e. build a cell on top of an existing disposal cell).

Removing vehicles, appliances, and heating oil tanks from the North side of the road is a work in progress.

Estimated Volume of Waste Generated in a 20 Year Period

Solid waste volume calculations for the Hamlet of Aklavik are made with the following assumptions.

- An average per capita volume of solid waste is 0.017 m³/person/day.
- A compaction ratio of 3:1.
- A slow population growth rate.
- A daily/intermediate cover ratio of 5:1 (solid waste : cover material).

Estimated Volume of Airspace Required for Solid Waste Over 20 Years	
Elapsed Years	Volume (m ³)
0-5	7,500
0-10	16,000
0-15	26,500
0-20	36,000



Area of Land Suitable for Mounding Solid Waste at the Current Site

The current site appears to have nearly extended laterally as much as possible. It is constrained by water on three sides and a road to the North. It may be possible to clear some tree's to the South and

Northeast in order to develop a footprint of approximately 16,000 square meters. The dimensions of this footprint are approximately 175 m x 95 m. This is outlined in Figure 1.

Three advantages to continuing to use the current site are as follows:

- I. The area is already disturbed and contains solid waste, thereby preventing the disturbance of another site.
- II. The preexisting solid waste has raised the elevation of the site in relation to its immediate surroundings. A new site would likely require considerable amount of fill as a base layer as the surrounding area is quite low.
- III. It is more cost effective to use the current disposal site then to construct a road and a new disposal site.

Figure 1: GNWT ATLAS image with a proposed landfill footprint of Est. 95 m x 175m



Available Airspace and Volume of Berms

One important objective of managing a solid waste site is to maximize the use of available airspace to dispose of solid waste.

Volume of Airspace = Asset = Place to dispose solid waste

The available airspace can be maximized by placing solid waste in a sequential pattern that minimizes roads, and berms. A simple fill sequencing plan using the mounding method is outlined in **Figure 2** and **Appendix 1** where solid waste is placed in rectangular strips in sequence from the back (South) towards the front (North) over an estimated 20 year period.

Based on the outside dimensions of 175m x 90m the volume of berms required to enclose the perimeter and place solid waste is calculated with the following assumptions.

- Lift One: Berm Height = 2 m
- Lift Two: Berm Height = 1.5m
- 3:1 slopes on the inside and outside of berms

These berms would contain airspace of approximately **38,000 cubic meters**.

The volume of granular required to construct the berms is approximately **10,800 cubic metres**.

Final cover of the solid waste site is estimated to require approximately **7,700 cubic metres**.

The berms for a 20 year lifespan for the solid waste site could be constructed in phases as described in the table below.

Phase	North & South	East	West	Length of Berm	Volume of Granular
Year 0-5	95	40	40	175	3500
Years 5-10		45	45	90	1800
Years 10-15		50	50	100	2000
Years 15-20	95	40	40	175	3500
Sub Total: Amount for Length of berms				540	10800
Amount of Granular Required for Intermediate Cover					6,000
Amount of Granular Require for Closure					7,700
Total Estimated Amount of Granular for 20 Year Life					24,500

Draft Budget for Phase I Years 0-5

It may not be feasible to complete the construction of a 20 year solid waste site in one project however the berms can be built in phases as the edge of the active face of the solid waste site continues to advance from South → North.

This draft budget outlines what would be required to clear the space and develop the plans for a 20 year site and include enough budget to construct the Southern segment of the solid waste site.

Description	cubic metres	Cost
Design Drawings		\$ 50,000
Project Management		\$ 25,000
Site Elevation Survey and Engineered drawings		\$ 35,000
Site Grading (2 pieces, \$250/hr., 10 days)		\$ 40,000
Mobile Litter Fence x 4 ¹		\$ 40,000
Granular at \$110 per cubic meter	3700	\$ 410,000
Total		\$ 600,000

Figure 2: Illustration of the Mounding Method outlined in the MACA Solid Waste Guide

3.8 MOUNDING TO PROVIDE ADDITIONAL LIFE

With any of the recommended methods, additional life can be added to a site by mounding as shown in Figure 3-4. Slopes should be maintained for safe operation of equipment, prevent erosion, and minimize costs for cover material. Geotextile fabrics will promote slope stability.

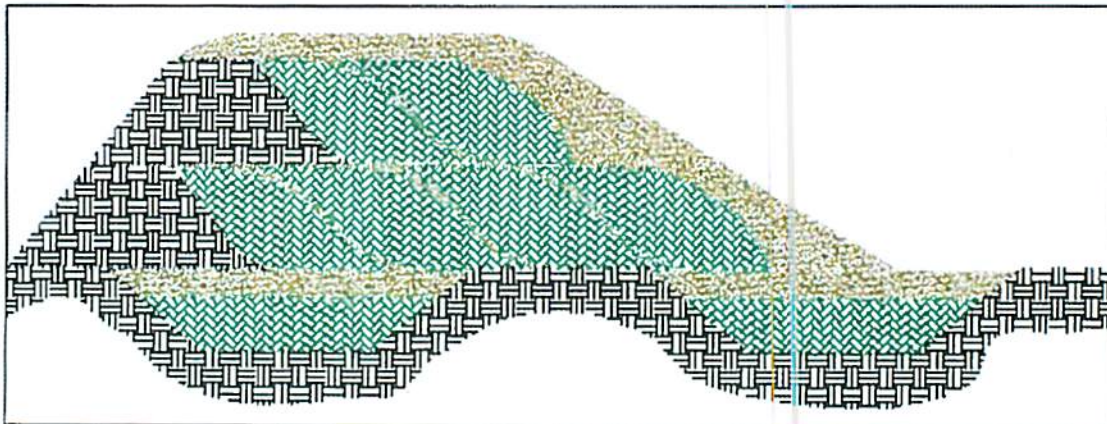


Figure 3-4 Mounding Concept

¹ Examples displayed in the Appendix

Appendix 1 : Simplified Fill Sequencing plan for the Solid Waste Site.

Aklavik Solid Waste Site

Projection of a 20 year waste foot print.
Each 5 year segment represents approximately 4,000 square meters for a combined 16,000 square meter footprint.
The purple line estimates the current disturbance that is not shown on this image



Appendix 1 : Simplified Fill Sequencing plan for the Solid Waste Site.



THE BULL LITTER FENCE WITH CANOPY



Supplier	website	fence			price	Number	Cost	Transportation	Total
		length feet	height feet	weight lb.					
Metta Technologies	http://www.mettatechnologies.com/	24	15		\$5,180	4	\$20,720	\$19,548	\$ 40,268
Wind & Sun Protection Inc.	http://www.windandsunprotection.com/	30	9	2800	\$5,300	4	\$21,200	\$15,000	\$ 36,200