NORTHERN VILLAGE OF _____

By-law No. 2008 - __

Concerning the use of the municipal solid waste disposal site and the dumping of waste

WHEREAS the Municipal Council has the power to secure the peace, order, good government, health, general welfare and improvement of the municipality by virtue of section 166 of *An Act respecting Northern villages and the Kativik Regional Government* (R.S.Q., c. V-6.1; hereinafter the Kativik Act);

WHEREAS the Council has the power to construct, equip and operate plants for the elimination or recycling of waste and to regulate or prohibit the use of places as dumps by virtue of subsection 174 (12) of the Kativik Act;

WHEREAS the Council has the power to prohibit the dumping of waste or garbage by virtue of subsection 174 (11) a) of the Kativik Act;

WHEREAS pursuant to subsection 174 (14) of the Kativik Act, the Council may make by-laws to define what shall constitute a nuisance and to regulate or prohibit the same, including noise;

WHEREAS this by-law must be adopted and interpreted in light of the laws and regulations in effect in the Province of Québec;

WHEREAS a notice of motion for this by-law was duly given during the preceding sitting of the Council held on _____, 2008.

THEREFORE, the Council of the Northern Village of _____, by this by-law, enacts and decrees as follow:

1. DEFINITIONS

1.1 **"At cost"** shall mean the equipment rental and manpower municipal rates, as adjusted from time to time, and any administrative overhead costs plus 15%.

1.2 **"Authorized officer"** shall mean any officer or municipal by-laws enforcement officer of the municipality whose duty is notably to be in charge of the enforcement of the present by-law within the territory under the jurisdiction of the municipality.

1.3 **"Construction debris and waste"** shall mean any unwanted, useless, abandoned, discarded or rejected goods or materials of any kind that are normally generated on a construction site other than hazardous materials.

1.4 **"Hazardous material"** shall mean a material which, by reason of its properties, is a hazard to health or to the environment and which is explosive, gaseous, flammable, poisonous, radioactive, corrosive, oxidizing or leachable or is designated as a hazardous material, and any object classed by any law or regulation as a hazardous material.

1.5 **"Household waste"** shall be used in its usual meaning and includes, without in any way limiting the generality of the foregoing, any solid residue from a house, store or building generated in or from residential domiciles other than hazardous materials.

1.6 **"Industrial waste"** shall mean any garbage other than household waste and hazardous material and includes, without in any way limiting the generality of the foregoing, general construction debris and waste as well as industrial, commercial and institutional waste.

1.7 **"Person"** shall mean any physical person aged 18 years or older, whether a municipal citizen or not, a company, partnership, firm, corporation, association or politic body.

1.8 **"Waste container"** shall mean a garbage box, garbage room or dumpster.

2. MUNICIPAL SOLID WASTE DISPOSAL SITE

2.1 A municipal solid waste disposal site is hereby officially created.

3. HOURS OF OPERATION

3.1 The hours of operation of the municipal solid waste disposal site shall be as follows:

Summer hours (from May to November)

Monday to Friday: from 9:00 a.m. to 6:00 p.m.
Saturday: from 10:00 a.m. to 4:00 p.m.

Winter hours (from December to April)

Monday to Friday: from 9:00 a.m. to 4:00 p.m.
Saturday: from 10:00 a.m. to 4:00 p.m.

3.2 The municipal solid waste disposal site shall be closed on Sunday and any statutory holiday.

3.3 Service outside regular hours shall be referred to as a recall, and each recall shall be subject to an extra charge of one hundred fifty dollars ($150).

4. OPERATION OF THE MUNICIPAL SOLID WASTE DISPOSAL SITE

4.1 The municipality is in charge of the operation of the municipal solid waste disposal site and, without in any way limiting the generality of the foregoing, the only person allowed to monitor the burning of garbage.

4.2 Public removable containers shall be accessible only for household waste at the entrance of the municipal solid waste disposal site and shall be used solely for the purposes intended for.

4.3 No person shall be allowed to dump industrial waste in the public containers as mentioned in section 4.2.

4.4 Whoever wants to personally dump household waste into the municipal solid waste disposal site must obtain the prior approval of the authorized officer.

4.5 Whoever wants to personally dump industrial waste at the municipal solid waste disposal site must obtain the prior approval of the authorized officer and must pay the rate set forth in Appendix I, which forms an integral part of this by-law.

4.6 All recoverable or salvageable materials must be stored by type of material in the identified areas within the municipal solid waste disposal site.

4.7 Whoever damages the roads, signage, fencing or the infrastructures found within the municipal solid waste disposal site will be held responsible and will be charged "at cost" for work performed by or on behalf of the municipality in order to repair the damages.

5. OBLIGATIONS

5.1 Every owner of a construction, house or building shall maintain, in good condition, sufficient covered or enclosed waste containers.

5.2 All waste containers shall be kept within municipal boundaries and be located and be positioned adjacent to the public roadway.

5.3 All waste generated by any person and placed in a waste container must first be placed in a garbage bag.

5.4 Every person generating waste shall maintain, at his own expense, unimpeded access to their waste containers, including the removal of ice, snow, mud, vehicles, pets and yard materials.

5.5 The owner, lessee or occupant of each building must keep the yards and dependencies attached to the building properly clean and free of all waste water, garbage and putrid substances.

6. CONSTRUCTION DEBRIS AND WASTE

6.1 Any construction or building material being used or stored on private property must be stored on the said property, in a neat and orderly fashion or it may be defined as construction debris and waste under the terms of this by-law.

6.2 Subject to subsection 6.3, all debris and waste on a construction or work site must be segregated and placed in covered containers, on a daily basis, then hauled in a covered conveyance to the municipal solid waste disposal site within reasonable delay.

6.3 Where a waste container is not available, all debris and waste on a construction or demolition site shall be segregated, hauled in a covered conveyance and disposed of at the municipal solid waste disposal site on a daily basis.

6.4 The municipality may dispose of construction debris and waste if it has not been properly disposed of within twenty (24) hours of notification to do so, and the waste generator charged "at cost" for work performed by or on behalf of the municipality.

7. HAZARDOUS MATERIAL

7.1 No one shall indiscriminately dispose of hazardous material.

7.2 No one is allowed to dump hazardous material into the municipal solid waste disposal site.

7.3 No person shall dispose of hazardous material in any waste container or any other place without the express authority of the authorized officer who shall designate the manner and place it shall be disposed of.

7.4 Household hazardous material shall be stored by the residential waste generator until the municipality holds a "household hazardous material round-up" when these wastes shall be brought to an area prescribed by the authorized officer for the disposal.

7.5 Collection, transportation, handling, storage and disposal of industrial hazardous material is the sole responsibility of the person generating waste and must be done in accordance with the laws and regulations in effect in the Province of Québec.

7.6 Whoever wants to store any hazardous material at the municipal solid waste disposal site must obtain the prior approval of the authorized officer who will ensure that this material is, at the user's expense, shipped to the proper place and treated in accordance with the laws and regulations in effect in the Province of Québec.

The municipality shall however not charge the generator of household hazardous material for its shipment and treatment.

7.7 The municipality may dispose of hazardous material if it has not been properly disposed of within twenty (24) hours of notification to do so, and the waste generator charged "at cost" for work performed by or on behalf of the municipality.

8. MOTORIZED VEHICLES

8.1 Constitute a nuisance any person who leaves, puts or tolerates outside of a closed building the presence of one or several motorized vehicles fabricated more than seven (7) years ago, not registered for the current year and out of state of functioning.

8.2 Constitute a nuisance any person who keeps tires outside of a closed building, or tolerates such act.

9. NUISANCE CAUSED ON PUBLIC PROPERTY

9.1 Constitute a nuisance any person who soils public property, notably, but no limited to, on roads or in streets, lane ways, alleys, or public buildings, by leaving there or throwing waste, paper, empty bottles, foul substances, scrap metal, dirty waters, oil, contaminants, construction materials or any other object, material or substance.

9.2 Any person who soils public property must clean the said premises.

9.3 Cleaning must be immediately performed or, depending on circumstances, in a prescribed deadline by the authorized officer.

9.3 The municipality may clean up the soiled premises if it has not been done or properly done within twenty (24) hours of notification to do so, and the waste generator charged "at cost" for work performed by or on behalf of the municipality.

10. INSPECTION OF PROPERTY

10.1 An authorized officer has the right, if he believes on reasonable grounds that an offence against this by-law has been committed, to visit and examine all moveable and immovable property, as also the interior or exterior of any house, building or edifice, in order to ascertain if this by-law has been contravened.

10.2 The owners, lessees or occupants of the property shall allow the authorized officer to make such a visit or examination.

11. PENALTIES

11.1 Every person who contravenes any of sections 4.2, 5.1 to 5.5 and 9.1 of this by-law commits an offence and is liable, upon penal proceedings, to a fine of fifty dollars ($50), with costs. Each day of infringement constitutes a separate offence.

11.2 Every person who contravenes any of sections 4.1, 4.3 to 4.6, 6.1 to 6.3, 7.1 to 7.4, 7.6, 8.1 and 8.2 of this by-law commits an offence and is liable, upon penal proceedings, to a fine of three hundred dollars ($300), with costs. Each day of infringement constitutes a separate offence.

11.3 The Court convicting a person for the breach of any section of this by-law may, in addition to any fine it may impose, issue an order to enjoin that person to refrain from committing any further such offence and/or cease to carry on any activity specified in the order and/or, if such person is the holder of a permit, license or certificate granted under this by-law, suspend such permit, license or certificate for the period that it deems appropriate, or revoke the same, or prohibit the renewal thereof during the period that it deems appropriate.

11.4 An authorized officer may issue a statement of offence pursuant to this by-law.

11.5 Delays for the payment of penalties and costs imposed by virtue of the present section and consequences of failure to pay aforementioned penalties and costs are established in accordance with the *Code of penal procedure of Québec* (R.S.Q., c. C-25.1).

12. APPLICATION

12.1 The provisions of this by-law apply to the whole territory under the jurisdiction of the municipality.

13. REPEAL OF PREVIOUS BY-LAW

13.1 This by-law supersedes and replaces any previous by-law enacted by the Council, wholly or partially for the same purposes, and any such by-law is hereby repealed to the extent of any inconsistencies with this by-law.

14. COMING INTO EFFECT

14.1 Should any section of this by-law be totally or partially voided by a Court, its other provisions shall remain valid and still be in force.

14.2 The present by-law shall come into effect the date of its publication in accordance with section 138 of the Kativik Act.

15. COPY

15.1 Once published, the Secretary-Treasurer shall transmit a copy of the present by-law without delay to the Kativik Regional Government as per section 160 of the Kativik Act.

IN FAVOUR:

OPPOSED:

ABSTENTIONS:

ABSENTEES:

DATE OF ADOPTION:

MAYOR'S SIGNATURE: (S)

SECRETARY-TREASURER'S SIGNATURE: (S)

DATE OF PUBLICATION:

APPENDIX I

RATES PER LOAD

1.	Pick-up truck (4 X 8 X 2 feet)	$20
2.	Pick-up truck with extension (trailer or equivalent)	$40
3.	Six-wheel truck ($6m^3$)	$80
4.	Ten-wheel truck ($12m^3$)	$160
5.	Articulated truck ($24m^3$)	$320
6.	Loader (Bucket)	$20
7.	Appliance (each)	$10

OTHER RATE PER LOAD

1. The rate is of fourteen dollars ($14) per cubic meter.

N.B.: The above does not include rates for equipment rental and manpower.

Contract prices available upon request.

Fact sheet concerning the disposal site regulation

This guidance document will give to the Nunavik Village's (NV) some suggestions for the regulation interpretation and application. The main point of the regulation will be explained.

The goal beside the regulation is a better management of the disposal site by monitoring and survey the incoming waste. This bylaw will put the frame for a better and safer control of the disposal site.

- Hours of operations will restrict the accessibility to the site to the only open hours. Public Containers will be placed at the entrance of the site to allow residents to dispose of their waste during the closing hours. Public Containers will be use by types of material (Wood, Metal, Domestic, and Hazardous). It will assure a segregation of the waste. Open hours suggested on the bylaw have to be approved (or modified) by the NV. We strongly recommend that this hour of operation correspond to the landfill operator's hours of labors. It will allow the survey and the collection of the fee for the disposal of waste issued by the industrial / construction sector. The operator will also assure that waste be dumped in the right section.

- Fees for the disposal of waste in the site are taken into consideration by the bylaw. Rates have been elaborated in regards to the ones used in the south of the province. It will concern principally the construction / industrial sector who will not be allowed to dump materials and wastes into the public containers at the entrance of the site. The landfill operator will be responsible of the registration of each load and quantities of waste dumped by this sector of activity. A precise report to the NV will allow it to charge the contractor in a monthly frequency for example (an example of template for registration is annexed with this document). Money collected by these fees should be reinvested into the operating cost of the Dumpsite (salary, equipment, shipping of hazardous waste..)

- Construction debris and waste are targeted by this bylaw. The objectives are to limit the impact of their activities in the dumpsite. Contractor will have to well manage their wastes and debris on worksites. They will have to segregate them and dispose them in boxes or containers by type, in order to keep them sorted when brought at the dumpsite. The material that could be reused (ex: old functional windows or door) should be put at the disposition of the public instead of directly being disposed at the dumpsite. Contractors should inform the NV for a public announcement. We strongly recommend that the NV make a survey of each worksite to control the well management of waste and announce the availability of reusable material to public on worksite. Special attention has to be given to the hazardous waste. The present bylaw specifies that this kind of waste will be the entire responsibility of the contractor. Storage, shipping to the

south and treatment will be taken in charge by the contractor. None of this kind of waste issued from the construction/industrial sector will be accepted on the municipal disposal site (see the fact sheet concerning "*waste issued from the building demolition, renovation and construction projects*" for more details).

- Household hazardous waste (oil, gas, batteries, chemicals issued from the resident activities) should have a special attention. None of them have to be mixed with the other waste. Special area and container will be fit out for them in the disposal site. We strongly recommend NV to inform and sensitize public about the importance of segregated this waste.

Note: It is important to note that this bylaw is only a tool that gives a legal asset to the management of the disposal site. The good application of this by-law will be one of the key-element for a better management but not the only one. In fact the key factor for all the projects (including the application of the bylaw) remains the hiring and the training of a Landfill-operator responsible of the monitoring, survey, operation and maintenance of the site.

Summarization for the regulation application

1. Hiring and training of a Landfill-operator
2. Establish daily working tasks for the Landfill-Operator
3. Inform the municipal employee (from the Garbage-truck principally)
4. Set a schedule for dumpsite open hours who will correspond with hours of operation
5. Fit out the Public Dumping Area at the entrance of the Dumpsite (container, signalization)
6. Close the access to the dump (fences and gates)
7. Inform public, promoters and contractors about the new regulations and fees
8. Assure heavy equipment's availability for the dumpsite operating (regular schedule)
9. Invest the money earned with the garbage's fees into the dumpsite maintenance (ex: salaries)
10. Assure a good follow up with all sectors and all operations

Wastes disposal's registration template sheet

Date	Nv's Employee name	Company name	Project name	Company Employee Name	Type of Vehicle	Waste description			Price charged ($)	Company Employee Signature
						Quantities (m^3)	Type	Comments		

How to Dispose Of Wastes from Building Demolition, Renovation and Construction Projects

This guidance document will give building owners, inspectors and contractors an idea on how to best handle the materials and wastes involved in building demolition, renovation and construction. Contractors can save money and time, and provide a safer environment for workers and the public, by giving proper attention to the wastes generated by a project **before** demolition or renovation begins.

The Building Survey - The First Step

Identifying all the wastes that will be generated is the first step. This can most easily be done by conducting a building survey. You will also save money by disposing of different types of waste in the most appropriate manner. It doesn't need to be complicated. It's simply an identification of the type of waste and the amount you expect your project to generate (volume by type).

- Special attention has to be give for the removal of hazardous wastes **before** demolition and during the construction.

- Once you have surveyed your project and know all the types and amounts of material that will be generated, you can determine what can be reuse, recycled, or disposed of at the dumpsite.

- After you have identified the types of wastes the project will generate, you must contact the municipalities. We require you to contact them before demolition or construction begins, regardless of the type of waste involved.

- For the following and the well monitoring of the construction site waste generation and management we suggest you to nominate a responsible from the worker's crew who will give attentions to this each day in addition to his work. His principal responsibility will be to produce appropriate reports (quantities, materials, compatibilities) and increasing awareness of the workers concerning the waste segregation.

Collection and segregation - The Second step

In regard to this survey contractor and sub-contractor should be able to equip working site for the well collection and storage of the generated waste. An area will be selected on the site to this attention. Well identified container or box will be use for each kind of materials. Excepted for the hazardous materials kind of container are not really important and obligatory. It is only important to well segregate materials and dispose them safely on the site in order to keep them sorted when disposed at the disposal site.

- Segregation should be look like this:

Basic segregation

- Wood
- Non-ferrous metal (copper, aluminum, electrical cable..)
- Ferrous metal
- Hazardous waste*
- Mixed (non-recyclable other materials)

* See note below

Additional segregation when necessary**

- Reusable material (when existing)*
- Aggregate, concrete, gypsum**
- Cardboard and paper**
- Plastic**

* See note below; ** When large volume are generated;

- Reusable materials:

- To limit the wastefulness, construction, renovation and demolition work plan should include and optimize the reuse of material.

- All the material that could be reuse (ex: old functional windows or door) should be put at the disposition of the public instead of directly being dispose at the dump. Contractors should inform the municipality for a public announcement.

- Hazardous materials:

- Special attention must be given to the storage of hazardous materials. As mentioned in the regulation, they are under the entire responsibility of the contractor.

- They must be store in secure container by kind. We suggest storing oily waste separate from the other hazardous waste (flammables; paint; solvent; epoxy; resin....).

Always keep in mind that mixing hazardous material could be dangerous because of chemical reaction. Furthermore costs for the treatment of hazardous waste are more expensive if mixed. They could be however mixed by kind of component (all paint together, all solvent together ect...).

Refer to the Quebec provincial regulation for storage and transportation standard.

Note that in anytime *Northern Village* and member of *Ministère du Développement durable, de l'Environnement et des Parcs* will be allowed to inspect the building site for evaluate the well management of waste and the respect of the regulation.

Taking off the waste - The Third step

- When necessary contractors will have to bring waste to the disposal site. Note that they will have a schedule for the accessibility to the site which will not be free anymore.

- Material should have to be disposed in the right section. A municipal employee will assist and supervise the incoming waste. Contractor will have to follow the directives of this employee.

- Fee will be charged to the contractor for each load of material brought to the disposal site. The cost will depend of the volume and nature as mentioned in the regulation.

Subject: Several point about the dump site project
Date: Wednesday, May 30, 2007 11:44 AM
From: Romain Rosant <rrosant@krg.ca>
To: Nancy Dea <ndea@krg.ca>

Hi Nancy,

First I just want to provide you a better idea of who we are and what are our role in the dump site project. I apologize if I don't make myself good understanding during our meeting (my English need to be practice a little more) .

For resume the municipalities had asked MPW's department to help then with the dump site problematic. The MPW mandate (public work) just allowed us to work on the infrastructure of the dump. However we believe that the first step on which the MPW and the municipality need to concentrate their work is the reorganisation and the management of the dump site. Few months ago the MPW has mandated a consultant firm for a preliminary study concerning the management of the Nunavik municipal solid waste disposal site with the objective to orient his future works. This study could be considered as a short term management plan for us, a starting point in a way for keep the control of the anarchical expansion of the dump. We believe that it is a critical point to work on before trying to implement a "reduce, reuse and recycling" plan who is not realistic for the moment.

For this summer and the beginning of this project we choose to work with 3 communities, Kuujjuaq, Kangirsuk and Quaqtaq who manifest an big interest in the project.

The MPW engage me to coordinate the work in Kuujjuaq, and supervise 2 internships (Papa and Simon) who are actually in the 2 other communities. Our objectives are simple for the moment; try to help these 3 communities in response to their needs on the dump site. Try to experiment things for a better management of these site. We try to base our work on the guidelines " Management of Nunavik municipal solid waste disposal site " provide by Pesca Environment few month ago (in attachment with this mail) and in regard to respect the environmental norms.

We keep in mind that is a long term project and we are here to try and maybe oriented the future planning.

I'll send you the work projected for each community during this week and i'll probably travel in the 2 communities next week for discuss with the concerning people of the municipalities.

As I said we try to experiment thing so maybe we will have to reorient our work during the summer.

So, I hope that give you more idea of our role that we try to define each day for this complex problematic.

Again, sorry if my English is not perfect.

Sincerely .

Romain Rosant

Project manager

Municipal Public Works Departement

Kativik Regional Government

rrosant@krg.ca

(819) 964-2961 ext: 2354

Subject: After our meeting
Date: Friday, June 15, 2007 2:26 PM
From: Romain Rosant <rrosant@krg.ca>
To: Martin Tremblay <mtremblay@krg.ca>, Nancy Dea <ndea@krg.ca>

Hi Martin and Nancy

Good to know that i'm not alone concerning the disposal site ..and all the problematic around.
Martin thanks for the documentation.
Nancy, here come the contacts that I have at the James bay

For each you can say that I refer you to them.

First Speak to Marc Jetten the executive secretary of the James Bay advisory committee
TÉL. : (514) 286-4400
FAX. : (514) 284-0039
Courriel : marc.jetten@ccebj-jbace.ca <mailto:marc.jetten@ccebj-jbace.ca>

Then you I suggest you to contact
Ginette Lajoie environmental coordinator from the Grand Council of the Crees (cree regional authority) or Cameroon Mclean environmental management advisor who is the link between the local environmental administrator (LEA)
TÉL.: (514) 861-5837
FAX.: (514) 861-0760
Courriel : glajoie@gcc.ca
And cmclean@gcc.ca

I'll be a pleasure for me to help you next week and meet the people from the ministry. It could be a good opportunity for us to clean up the village form his several hazardous waste spot. So don't hesitate to contact me when they'll arrive and for anything else concerning this week.

Also if you can send me a schedule of the ministry tourney it could be useful for me.

I would like to participate to your meeting for the nunavik waste management to.

Well thanks a lot again.

Romain Rosant
Project manager,
Municipal Public Works Departement
Kativik Regional Government
rrosant@krg.ca
(819) 964-2961 ext: 2354

Kativik Regional Government

Guidelines for the management of Nunavik municipal solid waste disposal sites

PESCA ENVIRONNEMENT

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Preliminary report

May 07, 2007

Guidelines for the management of Nunavik municipal solid waste disposal sites

(Ref.: # 07019)

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Environmental analyst: Francis Caron, B.A.A., M. Env.

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Quality Control: Marjolaine Castonguay, Biologist, M. Sc.

Reference:

PESCA Environnement. 2007. *Guidelines for the management of Nunavik municipal solid waste disposal sites.* Final report presented to the Kativik Regional Government (KRG). 44 pages.

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1. Introduction

Waste disposal sites are an important part of an integrated waste management system. The Kativik Regional Government (KRG) wishes to develop general operation guidelines that set out the methods, procedures, installations and equipment required to deal with municipal solid waste. The particular situation, geology, location and climate of Nunavik as well as its technical and financial capabilities must be taken into account when preparing the guidelines.

1.1 *Guideline objective*

The primary objective of the guidelines is to provide information and recommendations to improve waste disposal site operation and maintenance activities. Proper operation and appropriate technology and procedures to dispose of waste will minimise potential site-related public health and environmental hazards.

1.2 *Laws and regulations applicable to municipal solid waste management in Nunavik*

The main provincial regulation that applies to Nunavik in terms of waste management is the *Regulation respecting solid waste* (R.S.Q. c. Q-2, r.3.2). This regulation sets out the operational requirements for waste disposal sites in the North. According to the regulation, these types of waste disposal sites can only be authorised above the 55th parallel (Nunavik) and in some communities located on the Lower North Shore of the St. Lawrence. The regulation contains provisions governing the location and installation of sites, the type of waste that can be accepted at a site and waste incineration. The regulation also provides information on the process that needs to be put in place when closing a site and its final burial.

There are presently very few other laws or regulations applicable to Nunavik apart from the *Act respecting northern villages and the Kativik Regional Government* (R.S.Q. c. V-6.1) which stipulates that each northern village has jurisdiction over residual material management and the local waste disposal site. Although each community can create its own regulation, there is a need to address residual material management at a regional level in order to allow for a more integrated approach to the management of waste disposal sites.

1.3 *Quebec residual materials management policy (1998-2008)*

In September 2000, the Province of Quebec adopted the *Quebec residual materials management policy (1998-2008)* which requires each of Québec's regional county municipalities (MRCs) to establish and implement a "*Residual materials management plan*" (RMMP).

The situation in northern communities is discussed briefly in Section 5.7.6 of the Policy. The Policy recommends building a small-scale pilot incinerator which could burn residual material more effectively and reduce toxic emissions from municipal dumps. If the findings are convincing, the use of incinerators could be authorised and encouraged.

In 2002, a sum of $120,000 was made available to most MRCs in order to help them prepare an RMMP as required under the Policy. Since the Policy does not apply to villages north of the 55th parallel, KRG is not required to prepare an RMMP and was excluded from the financial aid program. KRG representatives made several attempts to obtain the funding needed to develop a residual material management plan adapted to northern conditions, with their own objectives.

In 2005, the National Assembly Committee on Transportation and the Environment studied the impact of climate change in the Nord-du-Québec administrative region. The committee studied waste management in Nunavik and recognised that efforts had been made to reduce the volume of waste in disposal sites. They observed that there was no plan to coordinate and integrate various initiatives into a global residual material management plan. The Committee made the following recommendation:

> *"The committee recommends that the Kativik Regional Government be made eligible for the government financial assistance program for the development of residual material management plans."*

While trying to get funding to draw up a residual material management plan adapted to the Northern reality, KRG continues to encourage efforts on a smaller scale. In the meantime the KRG administration wishes to gain a better understanding of the ongoing activities at waste disposal sites located in Nunavik territory and on what can be done to improve their operation and management.

1.4 *KRG priorities for municipal waste management*

Very little attention has been paid to Nunavik waste disposal sites in the last few years. KRG wishes to improve the operation of waste disposal sites in its territory by developing guidelines for the management of municipal solid waste disposal sites. KRG priorities regarding management of waste disposal sites are the following:

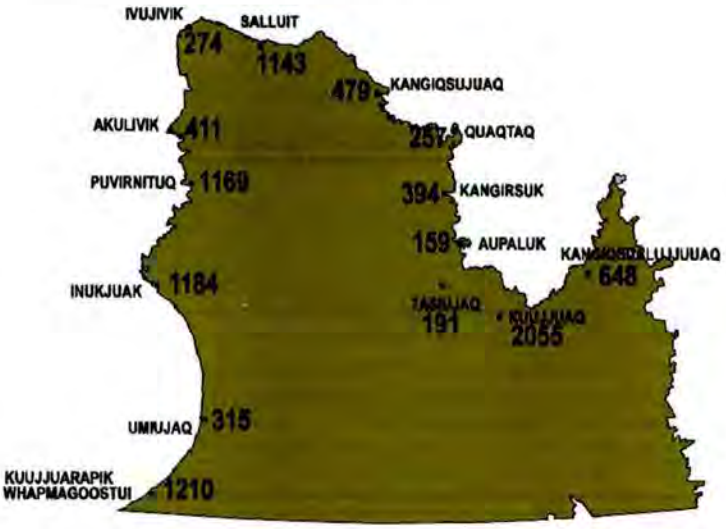
- Increase the efficiency of site configuration;
- Improve the control of access to municipal waste disposal sites;
- Integrate the 3 Rs waste management approach;
- Increase the efficiency of the elimination (burning) process;
- Establish a bulky waste disposal procedure; and
- Establish a hazardous waste disposal procedure.

The guidelines are written specifically for Nunavik waste disposal sites. They provide broad advice and should not be considered to constitute a technical manual. Each community's characteristics and needs are unique and site-specific design, operation and management plans will be required in each case to achieve the best results.

2. Nunavik municipal waste disposal site description

The Inuit Territory of Nunavik covers approximately 505,000 km^2, accounting for almost one third of the province of Quebec. Although Nunavik is a vast region, it is sparsely populated; its14 villages have a total population of roughly 10,442 permanent residents (figure 1). Nearly 90% of the population of Nunavik are Inuit.

Figure 1. Nunavik municipalities and population



Source: RRSSS, 2007

2.1 *Territory particularities*

There are no road links to Nunavik from the South and no roads connecting the 14 communities. Air service provides the only year-round link between the communities, and elsewhere. Maritime service is seasonal in the summer and fall. The lack of proper port facilities increases the cost and difficulty of shipping to the region.

Within the territory of Nunavik, vegetation zones go from taiga to the harshest tundra. The southernmost settlements - Kuujjuaraapik, Umiujaq, Tasiujaq, Kuujjuaq and Kangiqsualujjuaq are located at the tree line. Black spruce, larch and various species of shrubs are found there. A little farther north lies the tundra, where vegetation is limited almost exclusively to lichens (RRSSS, 2007).

Municipal waste disposal site regulations and management of other northern jurisdictions were analysed. The review helped to determine best management practices for waste disposal sites that could be exported to Nunavik. Some of the findings are included in this report but due to the exceptional geographic conditions, very few of the solutions can be fully adapted to Nunavik.

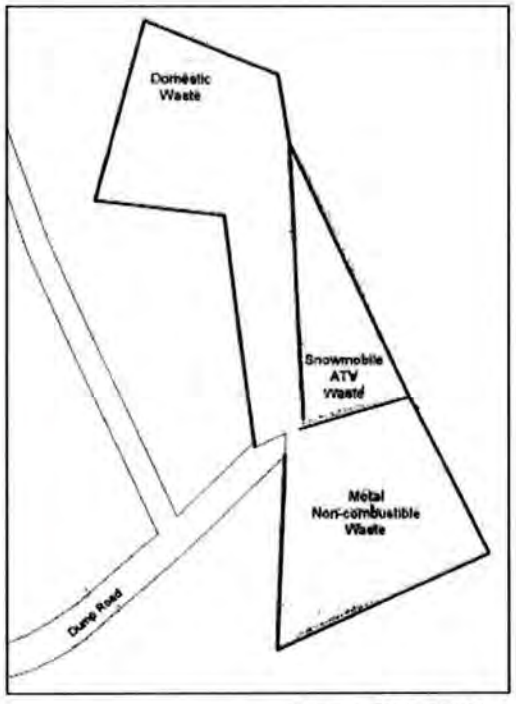
2.2 *Waste disposal infrastructure*

Every Nunavik village has a waste disposal site in operation in its territory. Several village waste disposal sites opened in the 1980s are now almost full. In 1996, the Kativik Environmental Advisory Board recommended creating six new dumps by 2005. To date, only one new site has been opened (Committee on Transportation and the Environment, 2006)

2.2.1 Sites

Generally, municipal waste disposal sites are located just a few kilometres from the municipalities. Roads leading to the municipal waste disposal sites were usually built to access other infrastructure (airport, port, power station). A site's dimensions also greatly depend on the size of the community served.

Most waste disposal sites are divided in two sections, the combustible waste disposal area and another one for non-combustible waste. Figure 2 shows the layout of the Kuujjuaq waste disposal site. The site is divided in three sections: domestic waste, snowmobile and ATV waste and non-combustible metal waste.



Source: KRG 2007

Figure 2. Kuujjuaq waste disposal site plan and setting

2.2.2 Equipment

The equipment available in each community for waste management generally depends on the size of the community. It is assumed that every community does have one of each of the following heavy equipment:

- Bulldozer
- Loader
- Truck
- Excavator

KRG owns other equipment, like an asphalt plant, which can be shipped to a municipality when needed.

2.3 *Waste disposal site management*

There is currently no residual material management plan in Nunavik; each village does its best with the resources available. The open burning of domestic garbage is authorised. There are few recovery and recycling systems in Nunavik. A lot of bulky items, such as household appliances and heavy equipment still containing hazardous materials (waste oil, antifreeze, batteries, etc.), accumulates in waste disposal sites.

2.3.1 Role and responsibilities

Within Nunavik territory, waste disposal sites are owned and operated by their respective villages. Municipalities are also responsible for providing municipal solid waste collection and transportation services.

There are presently 14 municipal solid waste disposal sites in operation in Nunavik, one in each village.

2.3.2 Cost and revenues

Communities are having a difficult time assuming the costs associated with solid waste disposal sites. Main costs include transportation, equipment and site operation. Municipalities deal with the lack of funding in a variety of ways. Communities do not charge for dumping and most of them fund their operation and maintenance costs through a municipal tax charged specifically to cover costs associated with waste collection and the operation of their disposal sites. Businesses and industries are not charged a special commercial rate.

Many communities are not meeting the operation and maintenance costs of their solid waste disposal sites. Simply increasing fees for dumping is not necessarily the answer to covering solid waste management and disposal costs. For example, increasing or charging special waste disposal fees can result in more illegal dumping that might ultimately increase health and environmental risks to the population.

3. Guidelines for the management of Nunavik municipal solid waste disposal sites

When drawing up the guidelines for the management of Nunavik municipal solid waste disposal sites, care was taken to minimise the adverse impact of such sites on the environment and on public health and safety. The general layout for the solid waste disposal sites should make use of the natural topography whenever possible.

3.1 *Planning municipal solid waste disposal sites*

A community's population, the characteristics and volume of its solid waste, and solid waste collection all play a decisive role in the selection of the best method and equipment for community waste management. Initially, any site to be developed should be able to accommodate the solid waste generated by the community for at least some twenty years. Given the particular situation of Nunavik communities, waste management solutions need to effectively balance simplicity and effectiveness.

3.1.1 Waste audit

Current and future demands for waste disposal services and the economics of waste management services depend mostly on the size of the population to be served, now and in the future. Because waste disposal site development planning is done for the long term, it is important to first understand the composition of a community's waste stream. Solid waste in most small communities is primarily domestic in nature.

Knowledge of waste generation rates and quantities is needed to determine the required capacity of any solid waste disposal option. If historical data on the solid waste generated by a community is unavailable, waste volumes can be estimated assuming an average rate of daily waste generation. It is generally assumed that an average Canadian produces approximately 1.5 kg of waste per day, with the average First Nations community member producing slightly less (Table 1) (PW 2002).

Table 1. Waste generation by community size

Population	Waste generation	
	Waste per day (kg)	Waste per year (kg)
200	300	109,500
500	750	273,750
1,000	1,500	547,500
1,500	2,250	821,250

Source: PW 2002

The composition of municipal solid waste also has its importance when planning solid waste disposal sites. When drafting their RMMPs, most Québec MRCs used data from

the Chamard-CRIQ-Roche study (2000) to project the composition of waste generated by their populations. The study provides a portrait of the production and composition of waste in Québec. Given the particular situation of Nunavik, these statistics can hardly be used to project waste composition there. A recent study done in the Northwest Territories may produce a better portrait of waste composition in Nunavik (Table 2).

Table 2. Waste composition for a typical NWT community

Waste composition	% by weight
Food waste	20.3
Cardboard	9.8
Newsprint	2.4
Other paper products	14.8
Cans	4.4
Other metal products	6.2
Plastic, rubber, leather	14.0
Glass, ceramics	5.7
Textiles	3.8
Wood	9.9
Diapers	3.8
Dirt	4.9
Total	100.0

Source: FSC 2003a

The volume of solid waste that enters a waste disposal site also depends on the compaction rate. Usually, solid waste in small communities is insufficiently compacted. Solid waste densities (or specific weights) vary greatly and depend on compaction rates and the type of waste collected. The density of waste without any compaction could range from 50 to 150 kg/m3. The annual volume of solid waste and an evaluation of the compaction rate would allow an estimate to be made for the capacity of an existing or future waste disposal option (PW 2002). Because the soil cover is added on a semi-annual or annual basis at waste disposal sites in most Nunavik communities, it is not an important factor to consider when calculating the capacity of a site. The operation and management of a solid waste disposal site must be incorporated into the overall waste management plan.

3.2 *Site location*

Siting a waste disposal facility is very important in order to protect the safety and welfare of the residents of a community. As required by law (*Regulation respecting solid waste*, c. Q-2, r.3.2, s. 100.2), Nunavik municipal solid waste disposal sites must be located at a distance of a least:

- 100 metres from a lake, river or any kind of surface water body;
- 300 metres from a dwelling, school, place of worship, cemetery or hospital; and
- 500 metres from a well or spring supplying water for human consumption.

Provincial regulations must be respected but there are also some other factors that need to be taken into account when locating or relocating waste disposal sites.

3.2.1 Site capacity

The waste disposal site should have a service life of several decades in order to help minimise costs for site establishment and closure, keep operations running efficiently and provide time to plan the next site.

3.2.2 Site hydrology

The contamination of surface and groundwater water by leachate is a principal concern in terms of waste disposal site location. Sites that are located on or near water supply catchments or groundwater recharge areas, coastal or estuarine zones prone to flooding or erosion, water bodies, watercourses and places with a high water table are usually unsuitable for use as a waste disposal site.

3.2.3 Site topography and soils

Topography of the disposal site may influence the type of disposal method that can be used, the slope of the site, surface water drainage and access to the site. The slope of the site should not be greater than 5%. If possible, sufficient soil should be available to provide adequate waste coverage. Soil structure should be suitable for construction and drainage works as well as for excavation of trenches, where possible.

3.2.4 Uses of adjacent land

The establishment of a waste disposal site should not have a negative impact on existing or future uses of adjacent land. Long-term planning projections will be of help in assessing the consequences. The *Regulation* (Q-2, r.3.2, s. 100.2) already sets some restrictions as to where sites can be established. Sites are to be built at adequate distances from industrial zones, commercial areas, airports and other infrastructure. Dust, odours and windblown litter are nuisances that may affect the use of adjacent land.

3.2.5 Endangered species

Sites harbouring protected or endangered fauna and/or flora or sensitive ecosystems are unsuitable for waste disposal sites.

3.2.6 Site access

The waste disposal site must have all-weather access. Access roads to the site should be designed and constructed to minimise costs and yet provide reasonably easy access under the various conditions affecting the site.

3.3 *Site layout*

The configuration of the waste disposal site will have great impact on the overall waste management efficiency. It is difficult to outline a typical site configuration and expect all given project to follow the specified configuration. Each site presents a unique combination of characteristics and restrictions along with regulatory factors that impose each municipality to adapt as the project develops.

Nevertheless, certain aspects must be covered in the waste disposal site configuration process, and it is helpful to have an initial configuration plan that can serve as a guide. A typical municipal solid waste disposal site configuration is presented at figure 3. The site configuration should include all of the following aspect:

Perimeter fence: As required by law, the site must be enclosed with a perimeter fence and.

Entrance gate: As required by law, the site must be equipped with a locking mechanism at the entrance gate

Drainage system: A system of ditch collecting surface water and leaches should be set up around the site in order to better control surface water. The drainage system could lead to a water and sedimentation control basins that will collect potentially contaminated water.

Bulky waste area: A bulky waste disposal area should be set up near the entrance of the site. This area would be separated in four sections; vehicle disposal, white metal (appliances) disposal, metal disposal and dry material disposal.

Waste disposal area: The design of the waste disposal area will vary for one community to another. This area occupies a big majority of the site. The waste disposal area should be filled starting from the back of the site, allowing a better organisation of the site.

Elimination system: A burn cage or burn box system could be use to reduce the volume of waste. These two systems are easy to operate and increase the efficiency of the burning process.

Winter storage area: A winter storage area could be set up near the entrance of the site to optimize waste management during winter time. During winter waste could be pilled up near the entrance and at summer time, waste would than be moved to the proper waste disposal area where it would be burned and buried.

3.3.1 Design of waste disposal area

The design of a waste disposal area plays an important role in site layout and the efficiency of the method chosen will greatly affect overall waste management operation.

As required by law (Q-2, r.3.2, s. 100.4), before depositing any waste at a waste disposal area, the soil covering the selected waste disposal area must be removed. Unconsolidated materials must be removed to a depth of one metre, to the permafrost line or to 30 centimetres above the groundwater level, whichever is encountered first. The material removed must be deposited on the periphery of the site and will be used later to cover the waste.

Depending on the findings of preliminary work, three methods can be used to manage the waste disposal area: the trench method, the area method and the depression method. The sections below outline the characteristics of each method.

3.3.1.1 Trench method

The trench method is most commonly used in waste disposal site design. One of the biggest advantages of using this method is that it generates cover material and allows waste to be covered more frequently.

Figure 4. Waste disposal area at Umiujaq waste disposal site

Source: KRG 2007

The trench method should be used in areas with relatively impermeable soils and where the water table is well below the ground surface, allowing excavation. Where excavation is limited, this method can be used in combination with the area method.

Essentially, the method involves excavating a trench and depositing waste directly into the trench. The waste is worked with heavy equipment such as a bulldozer, and packed to ensure a more efficient use of trench volume. Periodically, the waste is covered with a thin layer of soil. When the trench is filled, it should be sealed with a layer of low-permeability soil. The trench should be excavated large and long enough to contain the amount of waste generated by the community over the course of a year.

Figure 3. Typical municipal solid waste disposal site layout

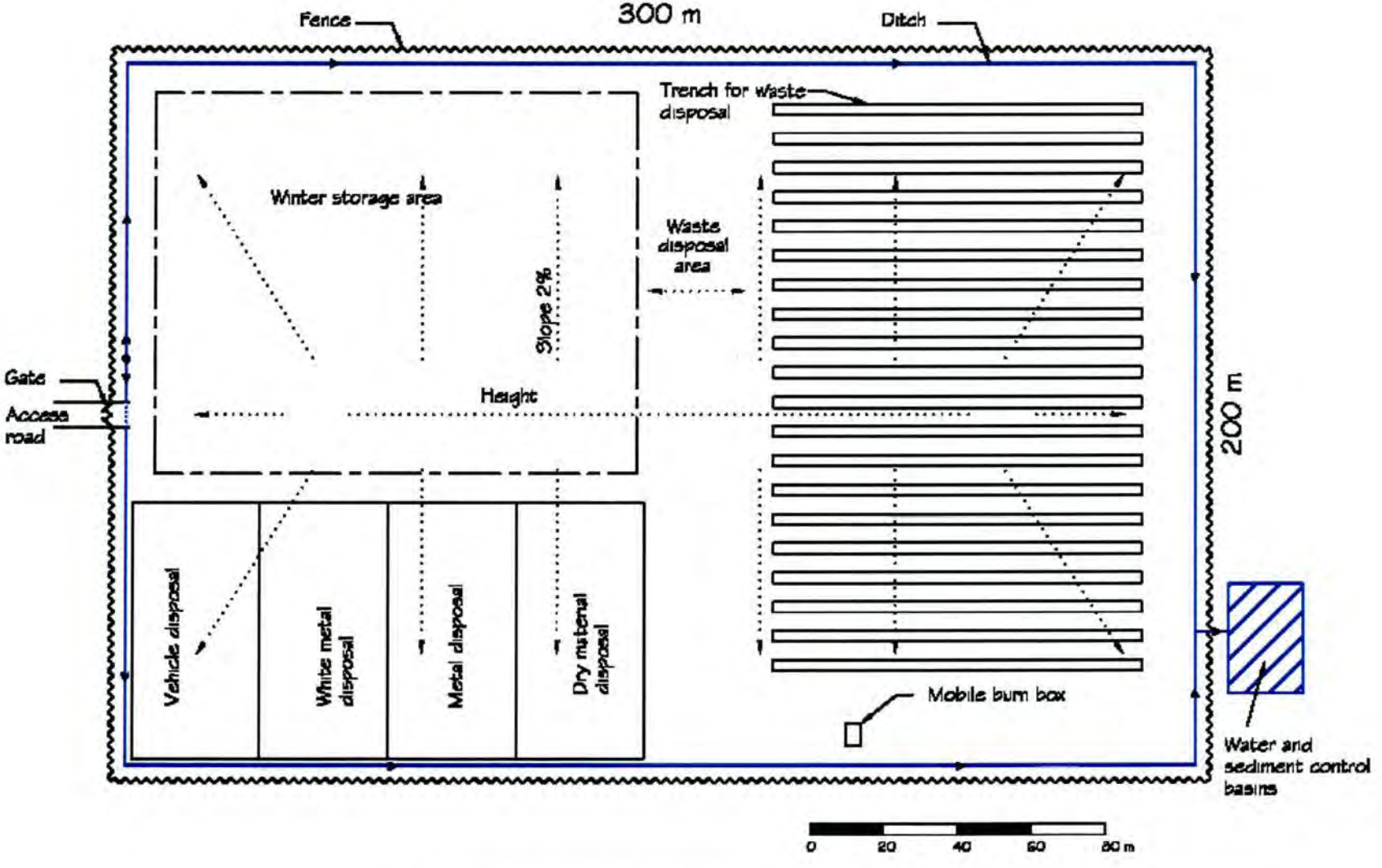
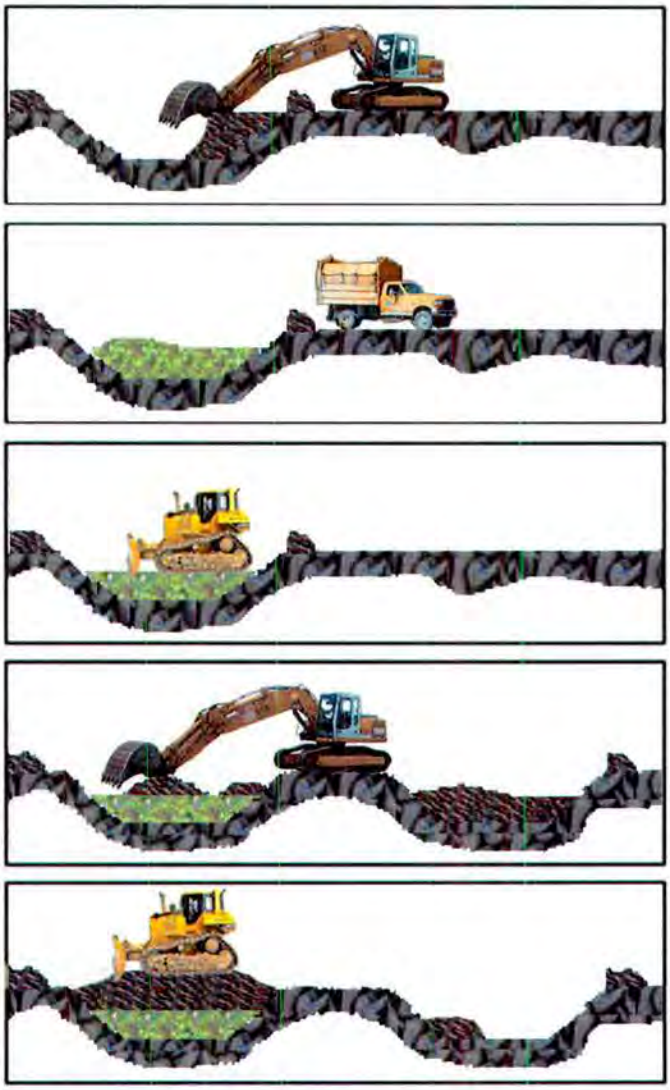


Figure 5. The trench method



1. Dig trench. Slope sides to prevent cave-ins. Build wheel stop berm on dumping side.

2. Dump garbage into trench.

3. Use bulldozer to pack the waste.

4. Cover garbage with granular material from new trench Make sure to build wheel stop berm for next trench. Add and pack granular material with bulldozer

5. Close out trench. Pack granular material with bulldozer until hard so that water runs off. Add more granular material to make mound in the middle.

The length of the trench should be run perpendicular to the direction of the prevailing wind in order to keep blowing litter to a minimum.

In cases where the waste is deposited directly at the bottom of the trench, the bottom of the trench should be gently sloping and waste should be sequentially deposited from the high end to the low end of the trench. As for the area where vehicles back up for dumping, it should slope away from the trench to prevent water runoff from getting into the trench (PW, 2002).

3.3.1.2 Area method

The area method should be used at sites where the presence of rock, permafrost or a high water table prevents the excavation of trenches. In the area method, waste is deposited directly on the ground, worked with heavy equipment such as a bulldozer, and packed against a constructed berm.

The berm is constructed to provide some control over the size of the mound. Waste is pushed up against the berm until the upper surface of the mound of waste is slightly below the top of the berm. Temporary fencing should be erected around the dumping area of the mound in order to help littering to a minimum and control waste boundaries.

Waste must be emptied out of collection vehicles at the bottom of a short berm. The height of the berm depends on the volume of waste that needs to be buried.

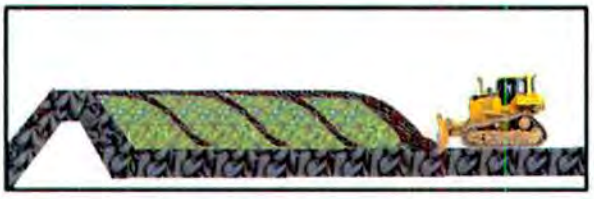
Periodically, a thin layer of soil should be added as required and available to provide suitable cover for the mound of waste. When the mound has reached a certain size and height, it should be sealed with a layer of low-permeability soil.

If a natural hillside exists above the area where waste is to be dumped, a trench should be excavated in the hillside to keep surface water from flowing towards the berm. Since this method for municipal solid waste disposal requires more soil for cover and the construction of a berm, it is typically more expensive than the trench landfill method (PW 2002).

Figure 6. The area method

1. Build a berm and then dump waste near the berm.

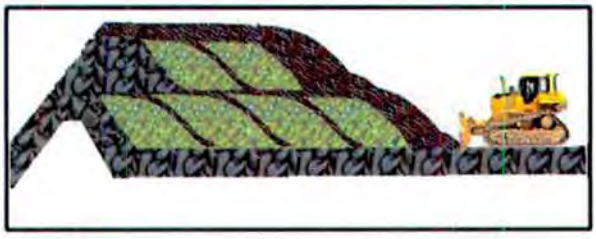
2. Work the garbage up the berm a little at a time to pack it. Cover garbage with granular material to make a cell.



3. Alternate between dumping and packing garbage. Repeat steps 1 to 3 until site is full.

4. Build a new 2-m berm on top of cells.

5. Alternate between dumping and packing garbage. Cover all garbage with granular material to make a cell.



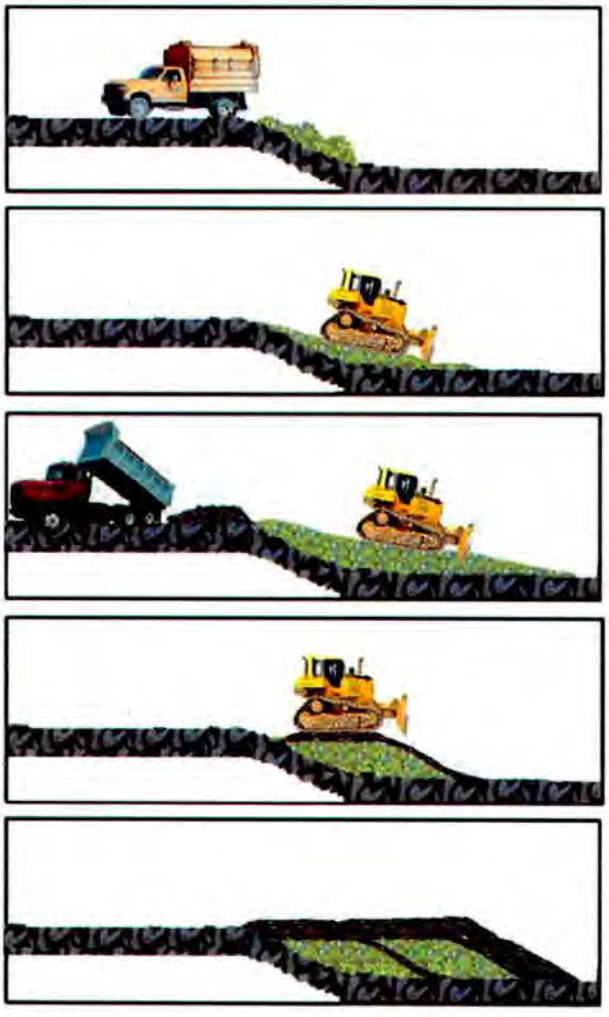
6. Close the site. Put granular material on cells then pack with bulldozer so that water runs off.

3.3.1.3 Depression method

The depression method is a combination of the trench method and the area method. The depression method uses a natural slope and it should be used where soils are unsuitable for excavation or where a high groundwater table exists.

Essentially, the method involves dumping the garbage against a natural hillside or slope. The waste is then worked with heavy equipment such as a bulldozer, packed against the slope and regularly compacted. Periodically, the waste is covered with a thin layer of soil. To minimise surface water flowing down the natural hillside into the waste, a trench should be excavated in the hillside above the landfill area in order to better control surface water (PW, 2002).

Figure 7. The depression method



1. Dump garbage near slope.

2. Spread the garbage down the slope.

3. Work garbage back upslope a little at a time. Pack the garbage

4. Alternate between dumping and packing. Cover garbage with granular material and make a cell. Repeat steps 1 to 4 until landfill is full.

5. Close the site. Cover with granular material and pack so that water runs off.

3.4 *Integrating the 3Rs into the waste management approach*

The environmental and economic costs of waste disposal can be significantly reduced by applying the "3 Rs" system – Reduce, Reuse, Recycle. Communities must consider the 3 Rs when attempting to improve solid waste management. The less waste being produced, the less waste there is to dispose of, increasing the service life of the site and lowering waste management costs. The specific difficulty for small and isolated communities is not the recovery of the residual material but rather what is to be done with it once it has been recovered.

3.4.1 Waste reduction

The best and cheapest way of managing wastes is not to produce them in the first place. The term "reduce" means to reduce the total volume of waste produced by purchasing products which feature minimal packaging, purchasing more durable products, or maintaining things properly and repairing them instead of simply replacing them. Waste reduction requires a new awareness by all community members and especially on the part of those in charge of municipalities and businesses. In order to achieve waste reduction, the municipalities and businesses in charge could:

- Adopt a "green" provisioning policy;
- Promote and purchase more durable or reusable products;
- Promote and purchase products with less packaging; and
- Promote and purchase products containing as much recycled material as possible.

3.4.2 Waste re-use

The term "re-use" means to use the discarded material again in more or less the same form as the original product. An example is the re-use of wooden palettes. In order to promote the re-use of waste material, the municipality should establish an on-going program to provide information and raise awareness. The program would encourage the return to use of furniture and household appliances, and promote the re-use of such items as grocery bags, containers, cardboard boxes, etc.

All municipal and institutional establishments should have a program to promote the re-use of paper. Municipalities should also get involved by organising garage sales once or twice per year as a community activity. Although most people know each other and trade things, other contacts could be established. By encouraging re-use, this initiative would show the municipality's commitment to environmental protection.

At present, bulky items are not collected in Nunavik municipalities. The collection of these items could be organised at the same time as the municipal garage sale. The idea is to pick up and make available to other users as many items as possible. As for textiles and fabrics, the municipality could promote ways to re-use such items, by helping people to organise family outlets, charity events, etc. and social economy cooperatives (MRC de Caniapiscau 2004).

3.4.3 Waste recycling

Recycling refers to a process that results in a change in the form and use of the material, compared to the original product. In 2004, KRG evaluated the possibility of building a plant to recycle metal and valuable materials. This solution did show a potential for success, but had to be carried out as part of a hazardous materials management plan. Carrying out this type of project entails spending for training, the purchase of equipment and the shipping of materials (Committee on Transportation and the Environment, 2006).

Many small communities in Canada have implemented various waste recycling programs, contributing to an overall waste reduction effort. The particular situation of Nunavik makes the implementation of a recycling program difficult. Shipping the material is the biggest constraint to recycling.

The KRG initiative to establish a metal recycling program should be given another try. Large metal items, such as cars, white metal (appliances) and other ferrous items hold great potential for recycling.

The first step is to neatly group each type of metal residue in a single section of the waste disposal site in order facilitate their recycling and to better organise space. After a certain period the pile could be worked, cars and appliances shredded and shipped south. A lot of isolated northern communities already have a metal recycling program in place. The recycling of metal products holds true advantages for Nunavik communities. The community gets rid of potential hazardous waste and greatly reduces the amount of waste in their disposal site.

Figure 8. Barge transporting recycled metal in Alaska

Source: ADEC 2006

The collection and recycling of consigned containers should also be evaluated. The program could work simply by establishing a system of "consigned container drop-off facilities". The consigned material could be shipped south at the same time as other ferrous material.

3.4.4 Compost

Composting is considered as a form of recycling. It is estimated that about one third of the total waste stream could be composted. The development of a composting program holds enormous advantages for Northern communities.

Composting not only helps to reduce the amount of waste going to disposal sites, it produces a valuable soil amendment which can improve the texture and fertility of the soil. The decomposition of putrescible materials in a waste disposal site in the absence of oxygen produces malodorous, explosive gases that contribute to the greenhouse effect. The organic compounds released by the decomposition migrate with leachates and can contaminate surface and groundwaters.

Removing putrescible waste from the waste stream increases the efficiency and facilitates the incineration process because putrescible materials are largely composed of water. Furthermore, the compost produced can be used to cover trash at the waste disposal site.

Recently, a pilot composting project was implemented in the town of Iqualuit by the Iqualuit Recycling Society. The pilot project has shown that waste can be composted in the Arctic. Furthermore, there are distinct advantages to composting in the Arctic, collection materials remain frozen solid for eight months of the year making the process considerably less offensive and expensive. The cold also delays the composting process until it can be monitored and controlled over a short time period. Another advantage to composting in the north is local demand for the end product.

Implementation of a composting program, even in southern municipalities calls for a considerable change in the habits of residents. Before putting into operation a large-scale composting program, people will have to be informed and made aware of the related requirements and benefits. It is important to keep in mind that a successful composting project could play a major role in Nunavik waste management.

3.5 *Operating municipal solid waste disposal sites*

In order to increase in the efficiency of operations at Nunavik municipal solid waste disposal sites, better planning and organisation of the sites are needed. Daily operation of the municipal disposal sites should be reviewed and the possibility of establishing standard operating procedures (SOPs) should be assessed.

As required by regulation (Q-2, r.3.2, s. 100.3), every operational Nunavik waste disposal site must be fenced and have a gate to control access to the site. Fences must be at least 2.5 meters high and be bent inward at the top. The regulation also stipulates that the gate must be kept closed at all times except to allow the passage of authorised persons and vehicles.

3.5.1 Access control

Access to the municipal solid waste disposal site is not controlled in most Nunavik villages. The entrance gate remains open during the day. Keeping the municipal solid waste disposal site open at any time during the day can generate some problems like the dumping of prohibited material, unapproved burning and scavenging by animals. Uncontrolled access increases the risk of public exposure to hazardous materials.

Figure 9. Access control in Akulivik waste disposal site

Source: KRG 2007

In order to improve the management of the sites, surveillance will have to be stepped up. Waste disposal site should be equipped with a locking mechanism. The entrance gate should be kept closed outside normal business hours. Movement in and out of the site should be controlled. Designated business hours should be set. The times when the site is open should coincide with the municipality's solid waste collection activities. The site manager should always be present when the site is open. The possibility of charging fees to individuals or companies bringing waste directly to the waste disposal site during business hours should be evaluated by the local authority.

Figure 10. Ivujivik waste disposal site entrance gate

Source: KRG 2007

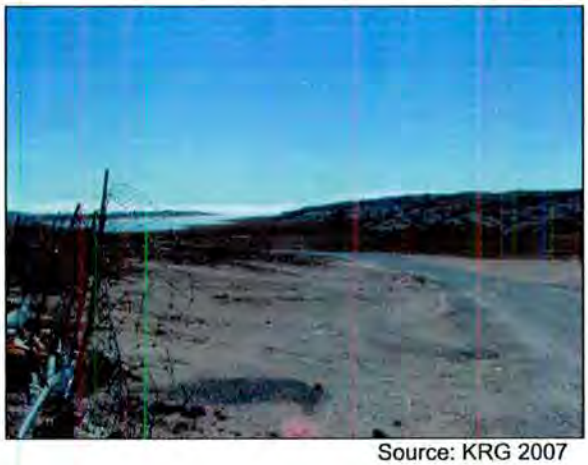
3.5.2 Fences and signs

All Nunavik waste disposal sites are surrounded by fences as required by regulation. The site manager must ensure that the fence is still up and secure and if not, one of the first priorities must be to repair it.

The site manager should examine the fencing, on a regular basis, for holes and check fence posts for frost heave. Wind blown material should be removed from the fence to reduce wind loading and to improve the appearance of the site.

Signs should be placed at the entrance of the waste disposal area to let the users know when the site is open. The signs should also indicate how to contact the site manager, what items are prohibited in the waste disposal area and other instructional and directional information. Signs at the solid waste disposal site should be regularly inspected by the site manager. Site fences, gate and signs should be inspected on a regular basis and any necessary repairs reported to the site manager.

Figure 11. Waste disposal site perimeter fence in Akulivik



Source: KRG 2007

3.5.3 Solid waste collection

Solid waste collection is also part of the management of a municipal solid waste disposal site. All Nunavik communities have a solid waste collection service.

A weekly collection is generally sufficient to maintain acceptable sanitary and aesthetic conditions within a community. In some communities, waste may be collected twice a week or once every other week. The type of collection vehicle depends mainly on the size of the community. In most communities, waste is put in garbage bags which have been tied closed and then put out for collection in a closed container or lidded garbage can. Garbage which is awaiting collection should not be easily accessible to scavenging animals (PW, 2002).

Figure 12. Solid waste collection in Akulivik

Source: KRG 2007

3.6 *Municipal solid waste elimination procedure*

Burning household waste is a widespread practice across all northern communities and currently plays an important role in Nunavik waste management. Nunavik communities are authorised under the Regulation to burn residual materials periodically. According to the Regulation (Q-2, r.3.2, s. 100.5), municipal solid waste must be incinerated at least once a month and before final covering. Incinerating waste prior to its disposal reduces the volume of waste that needs to be buried and extends the service life of the waste disposal site. It also reduces animal attraction, odour, and the potential to create leachate (PW, 2002).

In Nunavik municipal solid waste is generally incinerated at a temperature that does not allow complete combustion or the control of toxic by-products. Generally, the higher the temperature of the combustion system, the less pollution is produced. However, these high temperature combustion systems tend to be more expensive to purchase, operate and maintain.

Incineration must comply with standard burning conditions: material is burned on days when winds are light and blowing away from the community, in manageable volumes so that fires do not get out of control. Combustible materials should be segregated, and the site must hold the applicable permits and be managed by an authorised, qualified person from the community (Emswiler, B., and Crimp, P. 2004).

Eliminating burning of municipal solid waste in the Nunavik would require significant increases in spending. Without completely eliminating or prohibiting open burning of waste in Nunavik, there are some methods that can be adopted to make the process more efficient.

3.6.1 Open burning

Open burning means the burning of a material that results in the products of combustion being emitted directly into the ambient air. Open burning is the least expensive way to burn municipal solid waste, which is why it has been commonly used in northern communities (Emswiler, B., and Crimp, P. 2004).

Open burning on the ground

Many small northern communities actually practice open burning on the ground. This method, using wet garbage as a fuel source does not produce good results. If a community wishes to keep burning municipal waste in the open on the ground, a burning procedure should be established to improve the safety of the process and the efficiency of burning. The burning conditions should be clearly specified (wind, volume, material) and the waste would have to be more clearly segregated.

Figure 13. Open burning on the ground in Alaska

Source: Emswiler, B., and Crimp, P. 2004

Figure 14. Open burning of municipal waste on the ground in Ivujivik

Source: KRG 2007

Open burning on the ground is certainly the least effective and most hazardous form of burning. Unless closely managed, an open burn on the ground cannot achieve the temperatures needed to completely burn many components of municipal garbage. This allows the formation of potentially hazardous materials and produces ash that is more attractive to animals and more likely to cause surface and groundwater pollution at landfills

Burn cages

The use of a burn cage is a simple and inexpensive way to make an open burn more effective. The burn cage exposes the waste to air on all surfaces, including the bottom, for a more efficient combustion. It also limits the size of the waste pile thereby reducing potential creation of smouldering waste. The use of a burn cage also contains the fire, decreasing the likelihood of the fire spreading to other waste disposal areas or to the surroundings.

For better results, the burn cage should be loaded to about half of its capacity before igniting. Overfilling the cage can result in lower combustion efficiency and then cause smouldering. This method is an effective way to burn dry waste, dry wood, paper and other wastes that ignite and burn cleanly without smoke.

Although this form of burning is an improvement over open burning on the ground, there is still a chance that low burning temperatures will create smoke and incomplete combustion products.

Another advantage to the use of the burn cage is that it can be built locally using existing resources. The burn cage can be pre-cut and shipped to be assembled on site. The bottom of the burn cage is designed to fit the forks of a forklift or a loader allowing the unit to be lifted so that ash is removed. Using this system the unit can be easily re-positioned.

Figure 15. Open burning method - Burn cage

Source: Emswiler, B., and Crimp, P. 2004

3.6.2 Incineration

Incineration is certainly cleaner and more efficient than open burning. On the other hand, it requires a large capital investment, high operation costs, a large amount of garbage, and constant supervision by skilled operators to be worth it (Emswiler, B., and Crimp, P. 2004).

Burn boxes

Burn boxes are used by many northern communities to manage their waste. This system is generally considered to be a modification to open burning because air is usually supplied passively and the waste is burned without supplied fuel or turbulent mixing. However, because these devices are usually fitted with a smokestack they are regulated as incinerators.

Burn boxes are the least expensive incinerators in use. If operated properly, burn boxes can reduce waste streams by about 60%. Ash falls through the grates during and after burning. The lower section of the burn boxes is cleaned when a sufficient amount of ash has accumulated.

Burn boxes usually rely on natural draft to provide combustion air and generally do not require power or a motor to operate. Burn boxes are the least effective type of incinerator. Like burn cages, burn boxes can be made and assembled on site. They are usually constructed from recycled material available on-site like used fuel storage tanks, old septic tanks or old truck beds

Hinges installed at the rear of the burn box allow it to be tipped by a jack and ash is manually pushed out from the front through a hinged opening in the back.

Figure 16. Incineration method - Burn box

Source: Emswiler, B., and Crimp, P. 2004

Incinerators

Incinerators are specialised units that provide a more advanced form of combustion and that include air quality control features. Most incinerators operate by projecting a thin curtain of air at high velocity across an open chamber or pit in which burning occurs. Almost all incinerators require externally supplied electrical power to drive the air curtain. This is provided through a generator or electrical power to the site.

If operated properly, emissions are relatively clean and safe. The operation of an incinerator requires special technical skills. The use of an incinerator reduces the volume of burnable waste by about 90% and the weight of waste streams by about 80% (ADEC, 2006).

If not operated and maintained properly, toxic smoke can still be emitted. Although location is not as critical as burn box placement, incinerators should still be located outside villages.

Incinerators need regular maintenance. The cost of an incinerator is relatively high at first, since the equipment must be purchased and the building erected. Operating costs are also considerable and include fuel, maintenance, electricity and labour.

Figure 17. Incinerator and incinerator building

Source: ADEC 2006

3.7 *Bulky waste disposal procedure*

Bulky items include materials such as "white metals" (old refrigerators, stoves, freezers, etc.), dry material such as construction debris, old vehicles and scrap metal. No formal source separation of the residual material is made prior to disposal apart from large items (e.g. scrap metal, wood, appliances, motor vehicle wrecks), which are usually all placed in a given section of the dump.

To increase the efficiency of bulky waste management and recycling, a separate area near the entrance of the waste disposal site should be created. This area would be divided into four sections, one for each type of bulky wastes. Depending on their type, bulky wastes should be separated upon arrival at the waste disposal site. The storage of bulky items in a separate and designated area of the site facilitates recycling, allows a better control of the material admitted to the site and permits a more efficient use of the space.

3.7.1 White metal disposal

White metal bulky waste refers to items such as refrigerators, stoves, washers, dryers, freezers, etc. These items should be deposited in a separate area of the waste disposal site.

In order to ensure the collection of these items, each municipality should offer a collection service for bulky waste, including white metal items. This collection should be carried out once or twice per year, with assorted articles being picked up. The community radio station could broadcast a regular "flea market" service, so that some of these items, the ones that are still functional, could be re-used. Any appliances not re-used by residents could then be hauled away and stored in a pile in a separate area of the waste disposal site.

Refrigeration equipment

The disposal procedure for cooling equipment is different. A number of these items, such as refrigerators, air conditioners, dehumidifiers, freezers, and water coolers contain Freon. Because of it harmful effect on the ozone layer, it is illegal to release Freon gas into the atmosphere.

Source: http://www.westmorlandalbert.com/

If a municipality needs to recycle or dispose of Freon-containing appliances, it must first remove the Freon. In order to do that, the municipality could hire a certified Freon removal technician to come to the community to remove Freon from the appliances and have the site operator trained and certified by them on-site, so municipality's site operator can remove Freon in the future.

Another option is to accumulate these appliances, and when the time comes for the municipality to dispose of them, hire a contractor to remove any CFC's before the appliances are sent for recycling.

3.7.2 Dry material disposal

Dry material mainly refers to construction debris. It usually includes wood, bricks, dry wall, roofing materials, tiles, insulation, and concrete. Dry materials are regarded as low polluting since they include primarily residues that ferment only little or not at all, and are therefore not very likely to contaminate surface or underground water or to release contaminants into the environment. These residual materials are primarily composed of combustible materials. In the dry material area of the disposal site, wood products should be separated from other dry material debris.

This type of waste takes up large amounts of space in a waste disposal site. Landfills are not required to accept this material – to increase the service life of their landfill sites, rural villages should consider requiring alternative disposal options. One of the options is that the contractor, construction company or agency that generates the waste should be held responsible for ensuring that the waste is properly disposed of and in this case, there are many possible scenarios.

- The municipality may agree to accept the waste, and charge the waste generator for disposal.
- The municipality could accept the waste in exchange for assistance at the landfill, equipment use, or other in-kind services to the community.
- The municipality could ask the contractor to have the material backhauled by barge or airplane to a larger community with disposal facilities.

Source: http://www.westmorlandalbert.com/

3.7.3 Vehicle disposal

The disposal of used vehicles (snowmobiles, four-wheelers, trucks and cars) is a big issue in many Nunavik municipalities. If a vehicle can not be repaired or reused, it will have to be sent to the municipal waste disposal site.

A standardised procedure should be put in place to get rid of decommissioned vehicles. Applying the following procedure is one way to ensure that all vehicles that end up in the municipal waste disposal site are safe:

- The batteries, oil filters and all fluids (motor oil, gas, antifreeze, brake fluid, and power steering fluid) are removed from the vehicle and disposed of in a safe place with other hazardous waste.
- The removal of batteries, oil filters and fluids takes place at the municipal garage where all the equipment and material is available.
- The operations are executed by a trained technician who knows how to safely handle hazardous waste.
- The vehicle is hauled from the municipal garage to the waste disposal site and placed in a designated area of the site.
- A certificate produced by the municipal garage certifying the absence of any contaminant in the vehicle must be given to the municipal waste disposal manager before the discarded vehicle can be accepted.

Figure 18. Vehicle disposal area at Ivujivik waste disposal site

Source: KRG 2007

In some northern communities, decommissioned vehicles are shipped south every three or four years, for reasons of distance and volume. A scrap metal buyer goes to these villages with a press and shredder, and recovers all the accumulated vehicles. A similar procedure could be established in Nunavik villages for vehicles, appliances and other scrap metal. If a municipality wishes to export used cars and trucks they should find out ahead of time what the preparation requirements for vehicles are. Companies have different requirements for the recycling and shipping used vehicles.

3.7.4 Metal disposal

The fourth section on the disposal area for bulky items should be reserved for all other scrap metal. For practical reasons, the section should be separated into two piles. The first one would be for all ferrous metal products like drums, barrels, etc. The non-ferrous section would be reserved for such things as aluminium, siding and frames, brass fixtures, plumbing, copper wire and piping.

3.8 *Hazardous waste disposal procedure*

In Nunavik, storing hazardous waste safely is a simple way to help protect a community's health. Hazardous wastes should be stored up off the ground, in containers, and under cover. This will prevent any leakage to the ground. And it will protect the containers from weather degradation.

3.8.1 Used oil

Used oil is any petroleum-based or synthetic oil product that has been used. Used oil is a hazardous waste and must be managed and stored properly. If it is dumped on the ground, or if it leaks from containers, it can contaminate land, rivers or groundwater. The easiest way to recycle used oil is to convert it into energy to heat buildings by means of a used oil burner.

The Inukjuak municipal garage should be cited as an example for other communities in Nunavik with respect to used oil recycling. Since 2000, Inukjuak's oil-burning furnace has consumed 600 barrels of used oil to heat the garage. This special furnace has saved about 20,000 litres of fuel oil every year, cut costs, and eliminated hazardous waste from the community's waste disposal site.

The most important operating rule for used oil burner is to make sure the used oil put in the burner is clean and free of debris, water, glycol, solvents or gasoline. When the origin of the used oil is doubtful, the used oil should be put in a settling tank before it goes into the used oil burner tank. The purpose of a settling tank is to separate any antifreeze, water or other products that may be mixed in the oil.

The size of a used oil burner a community could use will depend on the size of the building you want to heat, the amount of time you plan to use the burner for heating the building and the amount of used oil that is generated by your community.

Figure 19: Different type of used oil burner

Source : SWAN 2007

The Inukjuak furnace has now gone through all the old oil in the community of Inukjuak. As a result, Inukjuak signed a deal with Hydro-Québec to take its used oil from other communities along the Hudson Bay coast. The used oil is now transported to Inukjuak instead of being sent south. The garage also accepts used oil from residents and other businesses (George, 2006).

What is now being done in Inukjuak could be done in other municipalities in Nunavik. In 2005, 26 Alaskan communities, with population ranging from 390 to more than a thousand people, we're using a used oil burner in order to recycle their used oil. If a village is too small to set up a used oil recycling program, it could sign a deal with a neighbouring village that has a used oil burner and ship its used oil there. To facilitate shipment of used oil between communities, used oil would have to be kept free of other hazardous waste.

3.8.2 Household hazardous waste (HHW)

Typical household hazardous waste includes paint, solvents, non-specific flammable liquids, corrosive cleaners, batteries, pool chemicals, used oil, oil filters, and other toxic materials of unknown origin (Earth Tech, 2005). Municipalities are responsible for the management of household hazardous waste but they are not responsible for the management of commercial or industrial hazardous waste.

At the moment, most domestic waste collected from residences, commercial and institutional establishments is burned without any consideration of content (PESCA 2004). The residual material may contain various types of hazardous products which are in turn burned or released directly into the natural environment.

In order to avoid burying and burning HHW, Nunavik communities can choose to have drop-off centers that are open and accessible every day or choose to have a monthly or annual collection program where an event is planned during which everyone can bring in their hazardous waste.

Figure 20. Household hazardous waste drop-off point

Source : SWAN 2007

As for the designated drop-off point, it has to be made available all year long. Business hours would have to be advertised and a trained technician would have to be available to receive and store the products people drop off.

The collection program would consist of a periodic collection during which residents would bring their HHW to designated areas. The drop-off event would have to be advertised several days in advance, with the location of the drop-off site, the date and time of the event clearly indicated so people will know when and where to bring their HHW. The drop-off event should be held in an area easy to reach by car.

After a period of 2 to 4 years, the accumulated household hazardous waste would ultimately need to be disposed of. Waste would have to be shipped south to be treated properly. In the meantime, the site operator responsible for handling and storing HHW would have to be trained for hazardous waste handling.

There are several factors to consider when storing hazardous wastes:

- The compatibility of different types of hazardous waste stored together;
- The compatibility of waste and the containers in which it is kept;
- The final destination of hazardous waste;
- Storage area ventilation (particularly for highly volatile organics);
- The hazardous waste containers should be stored under a roof or tarpaulin;
- The base should be impermeable and curbed to contain spills or leaks;
- The hazardous material information sheets should be available;
- Hazardous material should be handle by a certified technician;
- Safety precautions should be taken to avoid theft or accidental discharge;
- The hazardous waste containers must be properly labelled; and
- Records must be kept to ensure the safe storage of hazardous waste.

The storage area would have to be secured, but as for its location, it would be more efficient if it were located near the municipal garage but it could also be located inside the waste disposal site. The storage area can take various forms depending on the community needs. In some community, household hazardous wastes are stored in a shed that is located at the waste disposal site. Some other community with bigger needs, decided to use a container for the storage of their household hazardous wastes.

Figure 21: Different kind of household hazardous waste storage facility

Source : SWAN 2007

3.9 *Surface water control procedure*

Municipal waste disposal site operators must ensure – as far as practical depending on the site – that surface water does not flow through the waste. Water infiltration in the waste would contribute to the formation of leachate which can lead to groundwater contamination. Surface water drainage must be included in the waste cell design so that water will not drain into the disposal ditch or pool up within the fenced landfill area.

The best way to keep surface water from creating problems at the waste disposal site is to create a system using proper grading, drainage ditches, culverts, and berms to channel water to water and sediment control basins (Dankmeyer C., 2006).

When designing a site's drainage system, consideration must be given to spring snow melt. Snow that collects in the disposal area over the winter should be disposed so that as it melts in the spring, water drains away from the waste disposal area into the water and sediment control basins.

3.10 *Disease vector control and nuisance avoidance*

Northern community waste disposal site pose a variety of health risks. Waste disposal sites can attract undesirable and disease-carrying wildlife and insects. Precipitation, if allowed to wash through a dump, creates leachate that carries toxins washed from the waste into soils, surface and underground water bodies. The burning of waste can be sources of potentially toxic air pollutants. The people managing waste deposal sites must take into account the following factors.

3.10.1 Litter control

Litter will inevitably occur when operating a waste disposal site so the priority should be directed towards minimising the amount generated. To this end, trucks entering or moving on the site should be covered and a moveable barrier should be placed near the active waste disposal cells to catch wind blown litter.

3.10.2 Snow accumulation

Snow accumulation within the site may require some planning to avoid conflicts between snow disposal areas and active waste disposal areas. Portable snow fencing could be used in addition to the regular fencing to prevent drifting snow from interfering with operations. If trenches are used, the trenches needed for the upcoming winter should be dug in summer.

Also, a designated area could be set up for winter operation and waste could be piled in this area. Then, the accumulated pile could be moved to designated area in the following summer.

3.10.3 Pest control

The presence of pests will be kept to a minimum if waste is adequately compacted and the sufficiently covered. Material attracts pests if it is uncovered and if there are pockets in the pile where pests can survive, so the goal is to compact material and cover it as quickly as possible.

3.10.4 Odours

Odours will be kept to a minimum by making sure delivered waste is dumped immediately, compacted and covered adequately as quickly as possible. Odours associated with burning activities can be managed by setting fires only when the wind is blowing in the right direction.

3.11 *Monitoring*

All waste disposal sites should have a monitoring program for detecting situations that are, or could be, adverse to public health or the environment. Waste disposal sites should be inspected once a month. The operator will check for:

- Evidence of open burning on the ground;
- Disposal of prohibited wastes (household hazardous waste);
- Surface water;
- Water in the waste;
- Waste placed in the wrong area (bulky waste); and
- Any other violations of regulations.

The operator of a waste disposal site should make a note of the condition of the fence and any damaged areas that need to be repaired. Keeping complete inspection records and other records is a good practice for all waste disposal sites (ADEC, 2006). The operator also needs to keep an "operating record" of all documents related to the operation of the waste disposal site. Operating records should be kept in the municipal office. The types of records that need to be kept include:

- Authorisation certificate;
- Inspection records;
- Training procedures;
- Insurance documentation;
- Site management plan; and
- Plans of the waste disposal site.

In order to achieve efficient and cost effective management of the waste disposal site, the site manager or the municipality should keep track of the costs associated with acquisition, operation and decommissioning of a waste disposal site. The lack of information on the operational cost of the site makes the financial planning for future operations difficult. For example, the cost associated to shipping hazardous waste for being treated should be evaluated and planned ahead of time.

3.12 *Municipal solid waste disposal site closure and post-closure procedure*

The closure and post-closure operations must be completed in a way that ensures the long-term protection of the community and the environment.

Closure procedure

The first step when closing a waste disposal site is to pick up all scattered litter. Also, all uncovered waste in the site should be consolidated in one place, compacted and covered.

As required by law (Q-2, r.3.2, s. 100.6) in the event of final closure, every part of the waste disposal site must be covered with at least 30 centimetres of soil or gravel.

The site cover should than be arranged to facilitate drainage off the waste disposal site and away from the site. A 1 to 3 percent grade is needed for adequate water run-off.

Post signs at the closed waste disposal site to indicate that the site is closed and give the location of the new disposal site to prevent future dumping of waste at the closed site.

The location of the waste disposal area should be marked on the ground with permanent markers or monuments to show the boundaries of the site.

The operator/manager should keep track of the location of the trenches or cells on a site map. The locations are entered into land records as a way of informing future users of the land. Waste location records also help keep the community aware of how much space they have left in the landfill and prevent the excavation of old trenches.

Post-closure procedure

Once the waste disposal site is permanently closed, the person in charge should inspect the area annually and keep the inspection records up to date.

During these site surveys, the person in charge will have to note everything related to erosion, surface water drainage or exposed waste. If any problems are discovered during annual inspections, these problems should be reported to the municipal administration and corrected as soon as possible. Photographs and post-closure monitoring records should be kept at the municipal office.

Following the closure and post-closure procedure is extremely important for the community in order to prevent future public health, safety, and environmental problems that may occur due to an improperly maintained waste disposal site.

4. Recommendations

In order to improve waste disposal site operation, Nunavik municipalities should re-evaluate the management and the configuration of their waste disposal site. The following are proposed recommendation to improve the management of Nunavik municipal solid waste disposal site:

1. Municipalities should adopt long-term municipal waste management plans that would coordinate action and describe municipal orientations concerning municipal solid waste management.

2. Municipalities should increase waste disposal site surveillance. Perimeter fences should be in good repair. Locking mechanism should be installed at the entrances to waste disposal sites.

3. Municipalities should restrict access to waste disposal sites. Access should be controlled and business hours established. Site operators should be available during normal business hours.

4. Municipalities should establish programs for the collection and storage of household hazardous waste. When economically feasible, household hazardous waste should be shipped south to be disposed of properly.

5. Municipalities should adopt metal recycling programs. When economically feasible, all types of metal (vehicles, appliances, other ferrous items) should be shipped south to be recycled.

6. Municipalities should develop used oil collection programs. The objective would be to recycle and use as much used oil as possible to produce heat. Such programs would have to be developed by the communities.

7. Municipalities should adopt processes that would make the burning elimination process more efficient, the goal being to reduce the open burning of waste on the ground.

8. Municipalities should adopt designs for waste disposal areas that would make the burial of waste more efficient.

5. Conclusion

The primary objective of the guidelines is to provide information and make recommendations that would improve Nunavik waste disposal site operation and maintenance activities.

These guidelines cover every aspect of the management of a municipal solid waste disposal site from the preliminary stage to closure of the site. The guidelines also provide information on the methods and techniques most appropriate for waste disposal sites that would minimise the potential public health and environmental hazards of such sites.

There is no single 'best' method of community solid waste management. There are many factors governing the selection process. The most appropriate option for solid waste disposal will be determined by factors such as community needs, financial resources, and the most cost-effective implementation process.

In selecting solid waste management options, municipalities should carefully review the environmental and economic advantages and disadvantages of every waste management alternative. Long-term planning is also essential to develop appropriate solid waste management. When making decisions on municipal solid waste management, Nunavik municipalities should always consider not only the community's current waste needs but also its future needs.

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KRG (Translation-IS-17-01/89)

Kativik Environmental Advisory Committee
P.O. Box 9
Kuujjuaq (Quebec)
J0M 1C0

December 2, 1988

Mr. Lucien Tremblay
Direction de la récupération et du recyclage
3900, rue Marly
Ste-Foy (Quebec)
G1X 4E4

Dear Sir:

Upon the request of your directorate, the Kativik Environmental Advisory Committee studied the *Regulation on solid wastes* (Q-2, r. 14) during its forty-second sitting held on October 19, 1988. The Committee particularly examined section 100.1 which determines the southern limit for the use of northern disposal sites.

Given the difficulties experienced in Kuujjuaraapik (the only Inuit community where a disposal site in a northern environment is not authorized) in locating a suitable site for the disposal of its solid wastes, we believe that this section should be modified according to the proposal of the Direction régionale de l'Abitibi-Témiscamingue et du Nord québécois.

We thank you for having consulted the Kativik Environmental Advisory Committee.

Yours truly,

(signature)

Philippe Di Pizzo, M.Sc.
Secretary

Q-2, r.6.02
Reg respecting the landfilling & incineration of residual materials
(Supersedes)
• replaced Q-2, r.14 in January 2006
(Now Q-2, r. 3.2
applied in sections 156-168 of r.6.02

68th meeting : October 26+27, 1995

Biosphere reserve at Guillaume-Delisle Lake: As concerns the creation of a biosphere reserve in the Guillaume-Delisle Lake region (Umiujaq), the absence of funds is preventing stakeholders, namely the Union pour le développement durable (sustainable development union) and the Fondation pour la sauvegarde des espèces menacées (threatened species protection foundation), from carrying out preparatory work and submitting such a request to UNESCO. The Committee believes the project has little chance of success unless some initiative is taken by the community of Umiujaq itself. Obviously, the project will not see the light of day unless the local population supports it and becomes involved. It would perhaps be realistic to rely on the participation of the Fisheries and Oceans, Parks Canada, or the KRG.

National park in Labrador: Mr. di Pizzo informed the Committee that the federal government intends to create a national park in Labrador (Torngatt Mountains) and it has begun public consultations on this subject. Among the concerns related to this project are the absence of a land claim agreement with the Innus in Labrador and the necessity of consulting the community of Kangiqsualujjuaq which uses the region, at least the piedmont of the Torngatt Mountains and the Labrador coast. The KRG intends to send a representative to one of the consultation sessions to ensure that the rights of the Inuit of Northern Quebec are respected.

Budget 1996–97

The secretary presented the budgetary proposal which he prepared for the 1996–97 fiscal year. The federally appointed members were opposed to the travel expenses of the members appointed by the KRG being included in the same proposal. These expenses should be paid for by the KRG and not the provincial and federal governments. Following a few minor adjustments, the proposal was adopted by the majority of the members present (Resolution CC-95-03, attachment). It was agreed that this proposal would be given to the Deputy Minister when he joined the present meeting.

4. Incinerator pilot project

This project, which the Committee has wished to see implemented for many years, was added to the agenda for the meeting with the Deputy Minister of the Environment and Wildlife. The members agreed to state that it is the KRG's responsibility to promote the project. If necessary, the Committee decided it would give its support to the process. The Committee also decided to advise the Deputy Minister to grant a variance from the *Regulation respecting the quality of the atmosphere* which would allow the KRG to use single chamber incinerators.

7/st meeting: June 26+27, 1996

the comments and suggestions made by the communities. The Committee's recommendations should follow.

After discussion, the members decided that the following aspects should be given priority.

- Incineration: Emphasizing the possible advantages of incineration, the Committee will propose the implementation of incinerator pilot projects. As well, it would be appropriate to propose means to optimize the productivity of incinerators and, in general, to improve waste management.

- Revision or modification of regulations respecting waste management: Obviously, the Committee must back a revision of the *Regulation respecting solid waste*, as proposed by the MEF. The position paper should stress the necessity of involving the regional officials and Northern environmental organizations concerned. Furthermore, the Committee will once again propose that the *Regulation respecting the quality of the atmosphere* be revised and modified to allow the use of single chamber incinerators.

- Tightening management of hazardous waste: The Committee will emphasize the need to introduce a safe collection and disposal system for hazardous domestic waste in the communities of Nunavik.

The position paper will be presented at the September 5 workshop in Kuujjuaq.

6. Meeting with the Mayor of Kangiqsujuaq

Despite contacting the Corporation of the Northern Village of Kangiqsujuaq on numerous occasions, the meeting with the mayor had to be cancelled due to his absence. Nonetheless, the Committee members took advantage of their presence in Kangiqsujuaq to visit Nunavik Arctic Foods' meat processing centre and the community's waste disposal site.

The Committee spoke with the manager of the processing centre who explained the difficulties surrounding the supply of caribou, in particular because the animals are scarce near the community and, when compared with the Hunter Support Program, the little money to be made by hunters. There was also the issue of solid waste management. Simply by observation members were able to appraise the imperfection of the storage, collection and disposal system for waste produced by the centre's operations.

As concerns this second issue, the members noted the unsatisfactory state of the disposal site, due to its closeness to the village, to runoff water which was observed flowing

72nd meeting: Oct. 28/1996

5. Revision of the environmental laws and regulations applied in the Kativik region

The members learnt that due to a lack of time Mr. Berrouard, member of the KEQC, will no longer be able to participate in the revision of the environmental laws and regulations. The Committee is nonetheless convinced that this work must be continued on a case by case basis and by becoming involved with revisions begun by the various ministries.

Mr. Désilets asked the secretary to send him the principal documents of the *Drinking Water Regulation* file.

6. Waste management: meeting with representatives of the BAPE

Ms. Journault and Mr. Goriatchkine, respectively interim president and analyst for the Bureau d'audiences publiques sur l'environnement (BAPE), joined the meeting. Ms. Journault outlined recent developments in the drafting of Chapter 12 of the BAPE report which focuses on Nunavik. Earlier, she had met with the Committee's secretary to prepare the factual section of this chapter and the KEAC—BAPE joint statement. The document being presented at this meeting had already been submitted to members of the BAPE.

The objective of the present revision is to succeed in developing a text which will receive the Committee's unanimous approval. A draft of the joint statement will be forwarded to Committee members as soon as possible.

With respect to the factual section, the members proposed several modifications which were made immediately to the text. As concerns the preliminary joint statement, the following recommendations were put before the members for discussion:

1. develop and implement, under the responsibility of the Kativik Regional Government (KRG), a regional waste management plan;
2. make the creation of a safe hazardous waste collection and disposal system in all Nunavik communities a priority;
3. put into effect selective collection permitting the sorting at source of recoverable and non-recoverable as well as combustible and non-combustible waste;
4. carry out a composting pilot project;
5. implement an incineration pilot project, develop a protocol for this management method and, if necessary, modify regulations linked to incineration and waste management;
6. develop mechanisms for public involvement in the monitoring of dumping;
7. require mining companies to rehabilitate their exploration and mining sites;
8. require outfitters to return to their point of shipment drums having contained hydrocarbons and gas cylinders;
9. implement a plan to clean up and rehabilitate Mid-Canada Line sites by the year 2003;
10. require regional health authorities to prepare biannual assessments on biomedical waste management;
11. as part of the regional waste management plan, develop public information and education programs.

11.3 LE NUNAVIK (au nord du 55e parallèle)

11.3.1 Le contexte de la consultation

Un état sommaire de la gestion des matières résiduelles dans le Nunavik a été présenté lors d'ateliers publics tenus à Kuujuuaq les 5 et 6 septembre 1996 par la Commission d'enquête sur la gestion des matières résiduelles au Québec, en collaboration avec le Comité consultatif de l'environnement Kativik (CCEK). Ce comité est l'organisme qui agit comme interlocuteur privilégié et officiel des gouvernements du Québec et du Canada ainsi que des municipalités nordiques. Il fait également le lien avec l'Administration régionale Kativik (ARK) en ce qui a trait au Régime de protection de l'environnement et du milieu social au nord du 55e parallèle. Il étudie les lois et règlements existants ou en voie d'élaboration en matière d'environnement et de milieu social, et peut éventuellement proposer des modifications aux gouvernements responsables.

11.3.2 L'état de situation

11.3.2.1 *Le milieu naturel et humain*

Le Nunavik compte environ 8 000 habitants répartis en 14 communautés distribuées le long des côtes de la baie d'Ungava, du détroit d'Hudson et de la baie d'Hudson. Cette population est surtout constituée d'Inuit, dans une proportion se rapprochant de 90 %. Aucun lien routier n'existe entre les communautés qui ne sont accessibles que par voie aérienne ou maritime en période d'eaux libres.

Le Nunavik comprend deux grandes zones écologiques, soit le Subarctique et l'Arctique. Les conditions rigoureuses qui y sévissent se reflètent dans la présence du pergélisol de même que dans la discontinuité du couvert forestier qui, vers le nord, fait place à la toundra.

L'économie de la région repose sur un secteur tertiaire fortement prédominant, le secteur secondaire étant quasi inexistant. Malgré l'éloignement des centres industriels, l'exploitation des ressources naturelles connaît un certain essor. On peut citer en exemple le projet d'exploitation minière Raglan et les projets d'exploitation commerciale de ressources fauniques, terrestres et marines, cette activité économique présentant d'ailleurs de bonnes possibilités d'expansion. Le tourisme constitue aussi un élément important de l'économie régionale dont principalement les pourvoiries et, en particulier, l'écotourisme qui représente un secteur appelé à se développer.

En seulement quelques décennies, le mode de vie des Inuit s'est transformé de façon radicale. De plus en plus sédentaires, ces communautés utilisent davantage de biens qui proviennent du Sud. La croissance démographique y est également forte. Ces aspects de l'économie et de la démographie régionales font que la société nordique génère un plus grand volume de matières résiduelles.

11.3.2.2 *La production et la gestion des matières résiduelles*

Les rares études disponibles sur le sujet montrent que les quantités absolues et les types de résidus retrouvés dans les communautés nordiques sont semblables à ceux du Sud. On observe toutefois des différences selon la saison et l'importance des activités de construction. En milieu nordique, la majorité des biens consommés venant du Sud, la quantité de matériaux d'emballage est nettement supérieure (pellicules plastiques, contenants de mousse polystyrène, cartons). L'accumulation de matériaux ferreux et d'objets volumineux (réfrigérateurs, véhicules, barils ayant contenu des hydrocarbures) y est également supérieure compte tenu qu'il n'y a aucune infrastructure permettant de les récupérer et de les recycler. De plus, une grande quantité de carcasses animales sont dirigées vers les dépôts de déchets. Ceux des communautés de Kangirsuk, Salluit, Akulivik, Umiujaq et Kuujjuarapik reçoivent en outre les déchets sanitaires humains provenant des habitations et des institutions, ce qui constitue un risque accru de pollution pathogène.

Mis à part quelques initiatives de récupération des contenants en aluminium telles les cannettes de bière et de boissons gazeuses – initiatives d'ailleurs limitées à quelques communautés – et les

rares programmes de récupération des déchets dangereux qui émanent d'initiatives privées, surtout d'Hydro-Québec, et mises à part également les habitudes de réutiliser certains matériaux comme le bois, les modes de gestion complémentaires ou de rechange sont à peu près inexistants.

11.3.2.3 *Les contraintes environnementales et techniques*

Plusieurs contraintes rendent particulièrement complexes l'implantation et la gestion des lieux d'élimination en milieu nordique. Ces contraintes découlent principalement de la rigueur du climat. Les températures froides freinent, de façon significative, la décomposition de la matière organique et l'inhibent durant une bonne partie de l'année. De plus, les vents violents favorisent l'éparpillement des résidus. Le pergélisol rend l'enfouissement impossible et empêche l'infiltration en profondeur de l'eau, ce qui augmente d'autant les risques de ruissellement et de contamination des eaux de surface. De plus, il faut considérer la faible accumulation nivale, tout comme il importe d'éviter les endroits présentant un potentiel archéologique. En outre, les matériaux de recouvrement n'abondent pas et y accéder demande souvent la construction de voies d'accès.

L'aménagement de dépôts de déchets nécessite par ailleurs la construction de routes ou de ponts qu'il faut entretenir et qui sont d'autant plus coûteux que le site est éloigné de la communauté. De plus, afin de minimiser le péril aviaire, les diverses agences de transport aérien (Organisation de l'aviation civile internationale, Transports Canada et Transports Québec) exigent qu'un dépôt de déchets soit situé à une distance minimale d'une piste d'atterrissage. Ces normes, dont la plus contraignante est celle de Transports Canada fixée à treize kilomètres, réduisent considérablement les options d'aménagement de nouveaux dépôts. Dans les faits, la norme de Transports Canada n'est respectée que dans la communauté de Kuujjuaq. Dans certains cas, la route d'accès aux sites aéroportuaires est utilisée pour atteindre un dépôt de déchets.

L'ensemble de ces contraintes limitent beaucoup les options d'aménagement qui s'offrent aux municipalités nordiques. À titre d'exemple, mentionnons Kuujjuarapik, une communauté qui connaît de sérieuses contraintes à l'implantation d'un dépôt, étant située sur une bande de terrain très étroite bordée à l'ouest par la baie d'Hudson et à l'est par le territoire cri de Whapmagoostui.

De plus, la rivière Grande-Baleine coule au sud de l'agglomération. En tenant compte des normes prescrites pour les aéroports, l'alternative qui s'offre à la communauté est soit la construction d'un pont, aux coûts de quelque dix millions de dollars, soit la localisation d'un dépôt en territoire cri. Les pourparlers avec la communauté crie n'ont pas permis d'en arriver à une entente. Il semble qu'il n'y ait pas eu de discussions entre les deux communautés à l'intérieur d'un mécanisme de médiation formelle.

11.3.2.4 *Le contexte législatif et réglementaire*

La Loi sur la qualité de l'environnement

Conformément à l'alinéa 23.2.3 de la *Convention de la Baie James et du Nord québécois* (CBJNQ), les dispositions générales de la *Loi sur la qualité de l'environnement* s'appliquent au territoire situé au nord du 55e parallèle, lequel y est défini à la section III du chapitre II. Cette section définit en outre un processus distinct d'évaluation et d'examen des impacts sur l'environnement et le milieu social dans ce territoire suivant les termes du chapitre 23 de la Convention. La Commission de la qualité de l'environnement Kativik (CQEK) est l'organisme qui gère et administre ce processus systématiquement appliqué pour des types de projets bien définis, dont «la collecte et l'élimination des déchets solides, y compris l'enfouissement sanitaire et l'incinération» (CBJNQ, ch. 23, annexe 1). Dans l'aménagement des dépôts de déchets, le processus d'évaluation environnementale en vigueur dans le Nord permet de tenir compte de divers éléments tels que les besoins actuels et futurs, les exigences d'aménagement et d'exploitation des sites, les impacts sur le milieu naturel et l'acceptabilité sociale. La CQEK juge de l'approche de consultation à retenir lors de l'examen d'un projet.

Depuis 1980, année de mise en vigueur du processus d'évaluation et d'examen, la CQEK a examiné et recommandé pas moins de vingt projets d'aménagement de dépôts de déchets en milieu nordique ou d'agrandissement de dépôts existants. Dans la majorité des cas, les recommandations de la CQEK sont assorties de conditions de réalisation qui sont reprises par le certificat d'autorisation émis par le MEF. Ces conditions ont trait notamment à la localisation

du dépôt, à l'accès, à l'aménagement, aux travaux de réhabilitation et à l'exploitation proprement dite du site.

Notons également que la CQEK a décidé en 1988, après une analyse sommaire, de ne pas évaluer un projet d'incinérateur pour la communauté de Kuujjuarapik puisque ce projet contrevenait au *Règlement relatif à la qualité de l'atmosphère.*

Le Règlement sur les déchets solides actuellement en vigueur

Le règlement actuel comporte une section spécifique pour le territoire situé au-delà du 55e parallèle (section X.1 - Dépôt de déchets en milieu nordique), qui permet l'élimination des déchets selon une méthode différente de celles permises dans le Québec méridional. En théorie, le règlement donne le choix aux municipalités nordiques entre l'enfouissement sanitaire, l'incinération (seulement avec des incinérateurs d'une capacité supérieure à une tonne métrique par heure), la récupération, le compostage, la pyrolyse, le dépôt de matériaux secs, le dépôt en tranchée et le dépôt de déchets en milieu nordique. Dans les faits, seul le dépôt de déchets en milieu nordique est utilisé. Pour ce dernier, le règlement impose le brûlage à ciel ouvert des déchets au moins une fois par mois. Le recouvrement doit être effectué à la fin de la vie du dépôt. Y sont également précisés les types de déchets qui peuvent être acceptés par l'exploitant d'un tel dépôt.

Le Projet de règlement sur la mise en décharge et l'incinération des déchets

Le *Projet de règlement sur la mise en décharge et l'incinération des déchets* imposerait pour les décharges en milieu nordique l'aménagement d'un système de captage des eaux de surface.

Actuellement, les dépôts de déchets se présentent simplement comme des périmètres clôturés, cette pratique n'est toutefois pas généralisée (ex. : Kangiqsujuaq). Les déchets qui s'y accumulent sont périodiquement brûlés à ciel ouvert. La surface du site doit être préalablement décapée des matériaux meubles qui pourront servir au recouvrement final. Dans la majorité des cas, les résidus de combustion sont recouverts à la fin de la vie du dépôt. Généralement, le dépôt

est divisé en deux sections principales. L'une reçoit les déchets domestiques qui peuvent être brûlés, y compris les sacs verts et les déchets volumineux incompressibles ou non combustibles qui font l'objet d'une certaine récupération. Dans la majorité des cas, sinon tous, aucun contrôle n'est effectué sur les allées et venues au dépôt et sur les types de déchets que l'on y dépose. En pratique, ces dépôts reçoivent tous les types de déchets, même les déchets dangereux de provenance résidentielle, commerciale et institutionnelle.

Chaque communauté du Nunavik possède son dépôt de déchets en milieu nordique et il est prévu qu'au cours des dix prochaines années, près de la moitié des municipalités du Nunavik seront appelées à aménager de nouvelles décharges en milieu nordique.

Le Règlement relatif à la qualité de l'atmosphère

L'article 68 du *Règlement sur la qualité de l'atmosphère* interdit l'utilisation de tout incinérateur à chambre à combustion unique de capacité inférieure ou égale à une tonne par heure. Ce même article édicte également que : «La présence dans l'environnement de fumée provenant d'un incinérateur visé au présent article est prohibée au sens du deuxième alinéa de l'article 20 de la *Loi sur la qualité de l'environnement* (L.R.Q., c.Q-2)».

11.3.3 Les commentaires des participants

11.3.3.1 *Les lacunes du mode de gestion des dépôts*

À la lumière des commentaires reçus des responsables municipaux et d'observations directes sur le terrain, les lacunes suivantes ont été soulevées lors des ateliers publics.

- La combustion incomplète des déchets entraîne un plus grand volume de résidus à recouvrir, un besoin accru en matériau de recouvrement et une durée de vie réduite des dépôts. Même si, pour certains dépôts, un tri des déchets encombrants et des résidus métalliques est pratiqué

sur le site même du dépôt, cette pratique n'atteint que des résultats partiels puisqu'elle n'est pas réalisée à la source.

- La combustion incomplète des déchets de nature organique et l'apport de carcasses animales aux dépôts attirent la faune terrestre et aviaire. De plus, certaines communautés déplorent l'épandage des eaux usées aux dépôts de déchets, ce qui constitue un attrait pour les animaux qui viennent s'y nourrir. Elles s'inquiètent du fait que ces animaux peuvent devenir les vecteurs de maladies transmissibles aux humains ou à d'autres espèces animales.

- L'accumulation de déchets volumineux incompressibles ou non combustibles (appareils ménagers, véhicules, matériaux de démolition, etc.) est importante et engorge les dépôts, raccourcissant ainsi de façon notable leur durée de vie. De plus, il faut signaler l'abandon pur et simple de ces déchets à l'intérieur même des communautés ou en périphérie.

- Il n'existe aucun système de récupération et d'élimination des déchets domestiques dangereux (solvants, huiles usées, peintures, batteries, etc.). Ils sont ainsi rejetés d'une multitude de façons dans l'environnement. Cette situation, susceptible d'entraîner des impacts environnementaux irréversibles dans ces écosystèmes particulièrement fragiles, a été dénoncée par les participants. La gestion des déchets biomédicaux qui, en règle générale, sont réexpédiés par avion à Montréal constitue un autre sujet d'inquiétude. Toutefois, au dire des participants, on en aurait toutefois retrouvés au dépôt de Kuujjuaq.

- Les dépôts manquent d'un contrôle approprié. Ils sont accessibles à toute heure et à n'importe qui. Les usagers déposent des matières résiduelles en vrac, sans égard à leur nature et à leur toxicité, ce qui peut limiter l'efficacité de la combustion et, dans certains cas, la rendre dangereuse.

- D'autres lacunes dans le mode de gestion ont également été soulevées lors des ateliers publics. On peut signaler le mauvais état des clôtures ceinturant les dépôts et leur maillage trop grand, l'accumulation nivale qui restreint l'accès aux dépôts et l'éparpillement de déchets autour des dépôts et sur les routes d'accès. De plus, le décapage de la partie superficielle des

sols entraîne l'exposition des couches pergélisolées sous-jacentes et peut, dans certains cas, perturber leur structure. Dans des situations particulières, le fluage des sols peut en résulter.

11.3.3.2 *D'autres lacunes*

Les camps de prospection minière

Depuis la fin des années quarante, plusieurs sites de camp de prospection ont été pollués et abandonnés par les sociétés minières. On y a laissé sur place de l'équipement lourd, des produits dangereux de même que des barils vides qui renferment des quantités plus ou moins appréciables de mazout.

Les stations de radar de la ligne Mid-Canada

Les communautés trouvent inacceptable que 35 ans après l'abandon des 42 stations de radar, tout l'équipement lourd, comme les tracteurs, ainsi que les barils ayant contenu des hydrocarbures ont été laissés sur place et que ces sites ne sont toujours pas restaurés. Cette ligne avait été construite à des fins de défense nationale à la hauteur du 55e parallèle, de la baie James à Schefferville.

Les pourvoiries

Les déchets abandonnés dans quelque 250 camps de pourvoiries dans la région sont une source de préoccupation. Cette situation a été largement dénoncée car, en plus d'avoir des impacts environnementaux, elle soulève des problèmes d'ordre esthétique majeurs et réduit ainsi l'attrait touristique de la région.

En fait, il y a lieu de souligner qu'on n'a pas affaire ici à un problème de vide juridique : il existe bel et bien des normes environnementales applicables à ces installations. Le problème vient du fait qu'une fois autorisées par le ministère de l'Environnement et de la Faune, les activités des pourvoyeurs ne font pas l'objet d'un suivi rigoureux en raison du manque de

ressources affectées à l'inspection, surtout dans le cas des camps dits mobiles. Il appert donc qu'on n'a pas les moyens de s'assurer du respect des conditions imposées aux promoteurs de ces projets.

11.3.4 Les propositions des participants

11.3.4.1 *Procéder à des projets pilotes d'incinération*

Bon nombre d'interlocuteurs du Nunavik considèrent que l'incinération représente un mode de gestion qui offre plusieurs avantages compte tenu de la situation particulière du Nord : réduction du volume de résidus à recouvrir, prolongement de la durée de vie des décharges en milieu nordique, diminution significative du péril aviaire autour des aéroports, de l'attraction d'animaux et du risque de contagion, et meilleure salubrité des lieux. Ils estiment nécessaire de procéder à des projets pilotes pour mettre à l'épreuve certaines technologies d'incinération. Plusieurs communautés sont d'ailleurs intéressées à participer à de tels essais.

11.3.4.2 *Modifier la réglementation relative aux incinérateurs*

Une incohérence a été soulevée dans la réglementation. Ainsi, l'article 68 du *Règlement relatif à la qualité de l'atmosphère* proscrit l'utilisation d'incinérateurs à chambre à combustion unique de capacité inférieure à une tonne par heure, alors que l'article 84 du *Projet de règlement sur les décharges en milieu nordique* édicterait que le brûlage à ciel ouvert doit être fait au moins une fois par mois. Afin de permettre l'incinération des résidus dans les communautés nordiques, les participants réclament depuis 1988 une modification au *Règlement relatif à la qualité de l'atmosphère,* qui autoriserait l'implantation de petits incinérateurs.

11.3.4.3 *Assurer une gestion serrée des déchets dangereux*

Le laisser-aller dans la gestion des déchets dangereux d'origine domestique, commerciale et institutionnelle constitue, selon eux, une situation qu'il faut corriger de façon prioritaire. Ils

proposent la mise en place, à court terme, d'un système de collecte et d'entreposage accompagné d'une campagne d'information et de sensibilisation. Dans la mesure du possible, ils souhaitent un retour vers le Sud des résidus domestiques dangereux. Ils sont également d'avis qu'une révision du *Règlement sur les déchets dangereux* s'impose afin de l'adapter au contexte nordique.

11.3.4.4 *Mieux gérer les décharges en milieu nordique*

Plusieurs estiment qu'aussi longtemps que les décharges seront laissées sans contrôle, il faudra s'attendre à une certaine anarchie dans l'élimination des déchets. Ils sont d'avis que l'accès, les types de déchets acceptables et les méthodes d'élimination doivent être réglementés par les municipalités qui, en outre, devraient pouvoir imposer des amendes aux contrevenants. Quant au mode de gestion des décharges et à l'élimination des matières résiduelles, il conviendrait de procéder à un brûlage plus systématique et mieux contrôlé des déchets, à un recouvrement final progressif du dépôt par secteurs et à l'entretien rigoureux des clôtures.

11.3.4.5 *Responsabiliser les communautés*

Les participants ont préconisé une gestion saine et efficace des matières résiduelles qui passe nécessairement par une plus grande prise en charge de la part des individus et des institutions. Pour ce faire, il faudrait implanter des programmes de sensibilisation sur les pratiques et les habitudes menant à la réduction, à la réutilisation et à l'élimination sécuritaire des déchets. Il faudrait également offrir le soutien nécessaire à la création de petits programmes communautaires de récupération.

11.3.5 Avis conjoint de la commission et du CCEK

Considérant les particularités sociales, géographiques, environnementales et administratives de ce territoire, le Comité consultatif de l'environnement Kativik et la Commission d'enquête sur la gestion des matières résiduelles sont d'avis que la problématique de la gestion des matières résiduelles au Nunavik doit être abordée avec une approche distincte de celle du territoire de la

baie James et des régions méridionales du Québec. Il faut tenir compte de l'isolement du territoire, de la rigueur du climat et de la présence du pergélisol qui empêchent la mise en place de sites d'enfouissement techniques, tel que définit au *Projet de règlement sur la mise en décharge et l'incinération des déchets*. En ce sens, la gestion proposée fait l'objet de recommandations particulières.

Le Comité consultatif et la Commission d'enquête du BAPE estiment possible une approche de gestion responsable qui permettrait le développement durable au Nunavik.

Recommandations

1° Qu'un plan de gestion des matières résiduelles au Nunavik couvrant tout le territoire géré par l'Administration régionale Kativik soit préparé par l'ARK d'ici deux ans et mis à jour au moins tous les cinq ans. Ce plan de gestion devra faire l'objet d'une consultation publique.

2° Que le plan de gestion définisse entre autres les mécanismes permettant la participation des municipalités et du public à la surveillance et au contrôle des décharges, ainsi que l'approche à retenir en matière d'information et d'éducation du public.

3° Que les déchets dangereux d'origine domestique, institutionnelle et commerciale fassent partie intégrante du plan de gestion et constituent la première cible d'intervention. Il faudra, dans un premier temps, instaurer des collectes spécifiques pour les résidus dangereux et aménager des dépôts de déchets dangereux de façon à desservir toutes les localités. Le plan de gestion devra être flexible, adapté à chacune des communautés du Nunavik, et définir l'approche la plus appropriée afin qu'il y ait traitement sur place ou retour vers le Sud pour un traitement spécifique.

4° Que des collectes permettant le tri des matières résiduelles telles que le verre, le métal, le plastique et les encombrants soient instaurées. Les matières récupérables (réutilisables ou

7° Que les décharges en milieu nordique soient situées, tel que le prévoit le projet de règlement, à une distance minimale de :

- 150 m de tout cours ou plan d'eau ;

- 500 m de toute prise d'eau superficielle ou souterraine servant à l'alimentation humaine.

Cette exigence pourrait ne pas être appliquée s'il est démontré que la décharge n'est pas susceptible d'altérer la qualité de l'eau. La démonstration devra en être faite devant la CQEK.

8° Que tout site où se sont déroulées des activités industrielles importantes où furent mises en place des infrastructures industrielles majeures soit débarrassé de matières résiduelles au terme de ses activités. Que les entrepreneurs privés et publics produisent un bilan relatif à la gestion des matières résiduelles, aux deux ans et à la fin de leurs activités.

9° Que les sociétés minières soient tenues de laisser les lieux libres de matières résiduelles à la fin de leurs activités conformément à la *Loi sur les mines* et qu'un suivi approprié soit effectué.

10° Que tout site exploité par les pourvoyeurs soit débarrassé de barils vides d'hydrocarbure, de bonbonnes de propane et de substances non-biodégradables.

11° Qu'un plan d'action soit mis en œuvre par l'ARK en vue du démantèlement et du nettoyage de l'ensemble des 42 sites de la ligne de radar Mid-Canada, d'ici l'an 2003.

12° Que les autorités de santé publique produisent un bilan aux deux ans relativement à la gestion des déchets biomédicaux dans le Nunavik.

1996-12-06 /dg

ensure that his office at Laval University would be hooked up to MENV's Intranet service, giving him access to the government directory and MENV Web site.

3.3 Review of Regulation respecting solid waste

Yves Désilets received a letter, dated May 2, 2000, from Jean Maurice Latullipe, attorney for the MENV's municipal policy branch, submitting a copy (in French) of the draft regulation respecting solid waste for the KEAC's consultation and comments. The KEAC called Mr. Latullipe's office on May 4 to request additional copies, including three in English, and to find out the deadline for submitting its comments. In the May 8 cover letter sent with the 10 extra copies in French, Johanne Laberge of Mr. Latullipe's office informed the Committee that the draft regulation was not yet available in English. During a phone call on May 10, Ms. Laberge informed the Committee that the draft regulation was being reviewed by the Conseil exécutif and that the deadline for submitting comments was May 31. She added that the KEAC could always submit its comments after that date, but no later than June 15. The draft regulation is currently being translated into English. Ms. Laberge pointed out that it will also be possible to submit comments during the next stage of the process, namely, advance publication.

Michael Barrett mentioned that a recycling center is planned in Nunavik. Muncy Novalinga agreed: he supports this project. Claude Abel raised the matter of two projects planned for Nunavik that will affect the draft regulation: the installation of containers in the northern communities to collect recyclables, which will be transported to southern Québec every two years, and an experimental incinerator in Kuujjuarapik that will be used to burn non-recyclable waste (i.e. materials that cannot be shipped south). According to Yves Désilets, there is no way the KEAC can submit its comments before May 31 without the necessary funding. Paule Halley offered to study the draft regulation, but said that she is not familiar with the waste issue in Nunavik. Michael Barrett felt that burning waste on site was not an ideal solution and that, currently, all materials are burned, even recyclable plastic containers and aluminum. Claude Abel felt that the regulation should include a chapter dealing specifically with Nunavik. Paule Halley added that the KEAC could study the new sections affecting mobile camps in the territory of Nunavik. The Secretary was asked to gather questions to be put to Jean Maurice Latulippe and then schedule a conference call with him no later than June 13 to obtain the answers.

3.4 Miscellaneous

On March 31, the KEAC received an essay from Makivik Corporation penned by the vice-president, Johnny Peters, and entitled "Environmental and Social

south—vessels would not be allowed to return empty. The containers could be transported every two or three years, depending on the community, thereby initiating a veritable recycling program.

A member told about the village of Inukjuak, whose municipal disposal site has a special area with shelves containing construction waste, mechanical parts, wood, sorted metal, etc. People can help themselves to whatever they want.

Yves Héroux said that several villages in Nunavik have developed the same type of recycling program on their disposal sites, with varying degrees of success. Car parts are the most popular item.

A member proposed creating an award or a mention in the KEAC's name to reward environmental initiatives at the local level. The first laureate could be a village that has developed an exceptional project, such as the recycling initiative in Inukjuak, if it is still successful. Recycling will one day be carried out on a larger scale, but until then we need to do everything we can to sensitize local communities to ecologically sound waste disposal. He proposed mandating the Secretary to develop the concept of an KEAC award for adoption by resolution.

A member asked Mr. Héroux for his opinion on the different sections contained in the revised regulation tabled by MENV. His reply: section 99, silty soil should be exempted; section 101, once a week is already the average in villages, but the words "weather permitting" should be added given the climate in Nunavik. Moreover, Mr. Héroux said that MENV inspectors refuse to inspect disposal sites in the territory of the KRG, apparently because of the high transportation costs.

Given his assessment of the new regulation's impacts, a member asked Mr. Héroux what he thought would be an acceptable implementation period for the KRG.

Mr. Héroux said three years.

It was agreed to mandate Paule Halley to draft the KEAC's final comments following the new regulation's advance publication. They must be submitted no later than December 25, 2000.

7.2 Review of Drinking Water Regulation

According to Yves Héroux, the problem with this file is that MENV refuses to send employees to Nunavik to witness drinking water treatment and distribution conditions first hand. The Department

the event of his resignation. He asked that this clause be nullified in favour of a more flexible arrangement, to be agreed upon, that would allow him to accept other short-term contacts or employment.

A member said that since it was agreed at the last meeting that Kuujjuaq is the preferred site for the establishment of the Committee's secretariat, the Committee should be willing to accept any reasonable notification time, even if it's very short, for the Interim Executive Secretary's resignation. The members agreed to amend the contract accordingly.

3.2 Review of the Regulation respecting the elimination of residual materials

The Committee went over the recommendations submitted by the KEAC to the Direction des politiques du secteur municipal (municipal policies branch) of MENV. Most of the recommendations were retained. More recently, the KEAC received a request from a branch official and one of the people responsible for the draft regulation, Claude Trudel. They wanted to submit a new proposal regarding one of the draft regulatory provisions pertaining to the North. Submitted by the Côte-Nord region, the proposal differs from the KEAC recommendations. The representatives would be available to answer the KEAC members' questions.

A Committee member said that this would be a good opportunity to raise the matter of hauling recyclables to the south. Hazardous material has become a priority: the containers provided to municipalities for this material are already full of hazardous materials.

Another member supported the idea, pointing out that various options exist for used oil: in Kuujjuaq, this material is shipped south; in Kuujjuarapik, Hydro-Québec burns it, etc.

The Executive Secretary said that the proposed legislation on residual materials was drafted assuming that recycling is a well-established economic industry in Québec: the authors took it for granted that this was the case. In the end, the draft regulation covers only non-recyclable material. The provision challenged by the Côte-Nord region could be interpreted as reflecting the presence of a growing recycling economy in that region, if not comparable to that existing in the south. In short, the situation in the Côte-Nord region is apparently the exact opposite of that in the territory north of the 55th parallel. We need to ask the MENV representatives how the two regions differ in regards to recycling.

Utilization Manual

for

solid waste disposal sites

in

Northern Québec

Solid waste disposal site of Povungnituk

Revised by

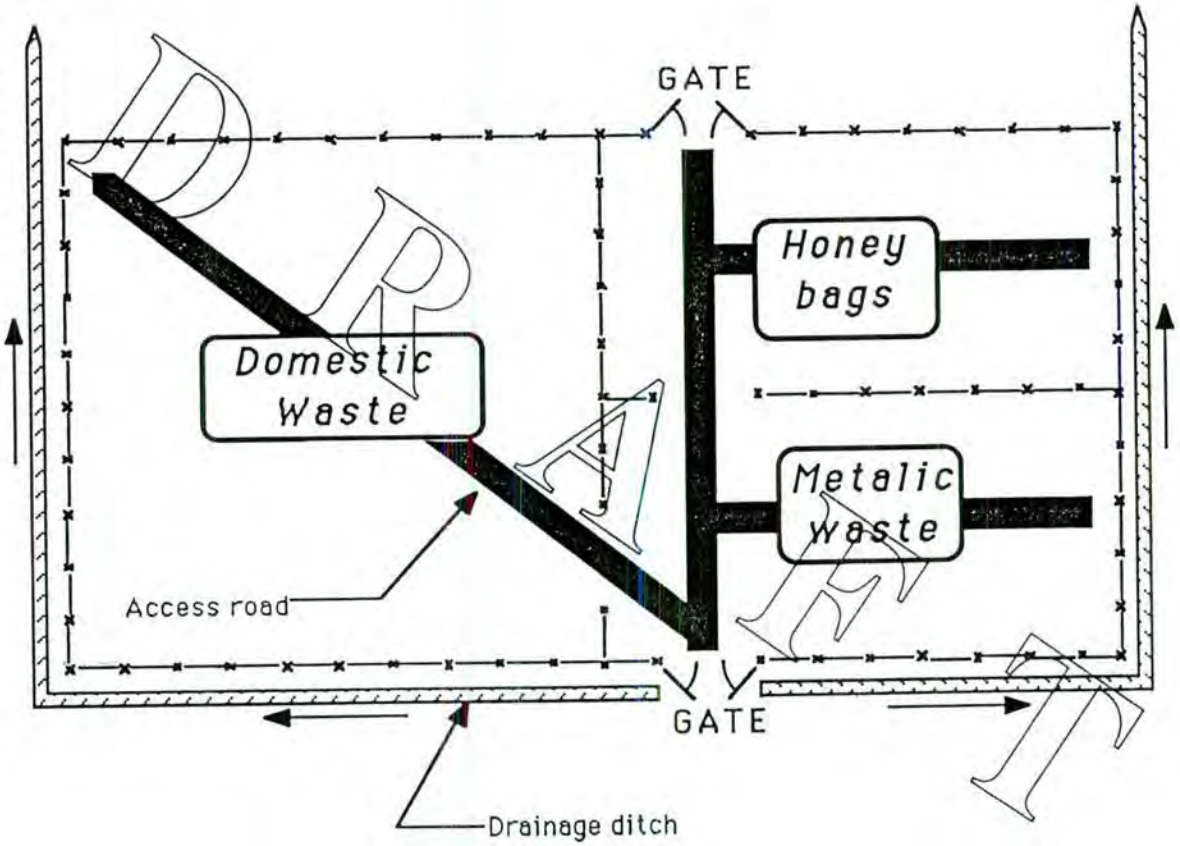
Pierre Vilaire Clervil
Project Engineer
Kativik Regional Government

February 1990

Dump site utilization manual

Introduction

The dump site built in your village has an area of forty-five thousand (45 000.00) square meter (m^2) (see figure 1.1.).



fugure 1.1.

The purpose of the new allocated site is to store domestic waste (household garbages), honey bags and the metallic wastes (old vehicles, refrigerators etc.). If well operated, the community could use the dump site for at least ten (10) years or more, this is the only site authorized by Environment Québec and the Kativik Quality Commission.

The following suggestions and remarks reported in this manual will give the Municipal Council guidance steps on how to operate the new disposal site. Take the time to read it carefully.

Dump site utilization manual

General informations

1. Environment Québec has voted new regulations on domestic wastes disposal site. They must be enforced. You will find a copy of these regulations attached in Appendix "A" of this manual. However, good operation and maintenance of the dump site is the only responsibility of the Municipal Council.

2. The dump site must be the only one in use for at least ten (10) years. In managing and maintaining the site properly, it will prevent the community from spreading the wastes at different locations in the village. You are invited to close down, any in use site and cover it with the surrounding materials to do so, you provide a sane environment.

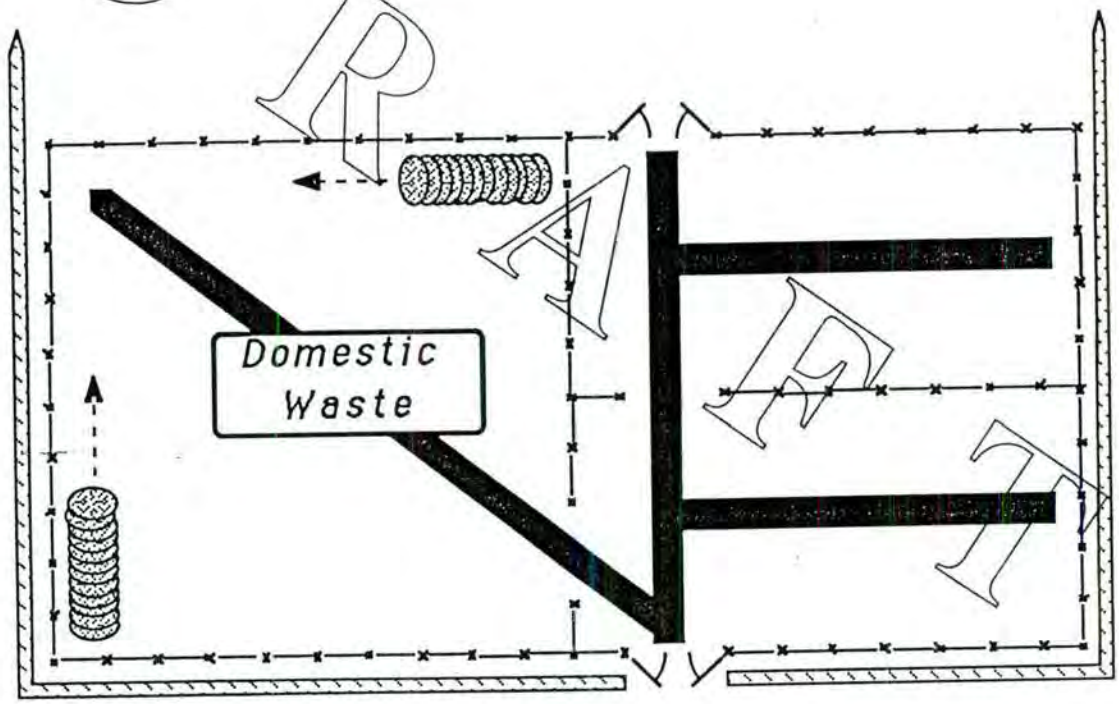
3. The fence surrounding the site will prevent garbage from being blown by the wind all over the land and prevent animals (especially dogs) from entering the site and then bring back disease to people in the village. For these reasons, the doors of the gate should be closed at all times except to let the garbage truck to go in. If the gate is damaged or the fence wholly the Municipal 's Council will make them repaired. Any waste outside the dump site must be removed and put in.

4. The ditch surrounding the dump site serves to catch the rainwater or melting snow that could penetrate inside the side being mixed with the wastes and then flow to your back yard. You have to clean

the ditch, when necessary, particularly in spring and fall and let it free of any obstacles.

Domestic wastes management

1. Household garbage and honey bags have to be picked up separately by the garbage truck and place at different locations in the site. The disposition of the waste shown in figure 1-2, 1-3 and 1-4 is suggested. Notice that the honey bags are placed down the slope and the entrance is always kept free.



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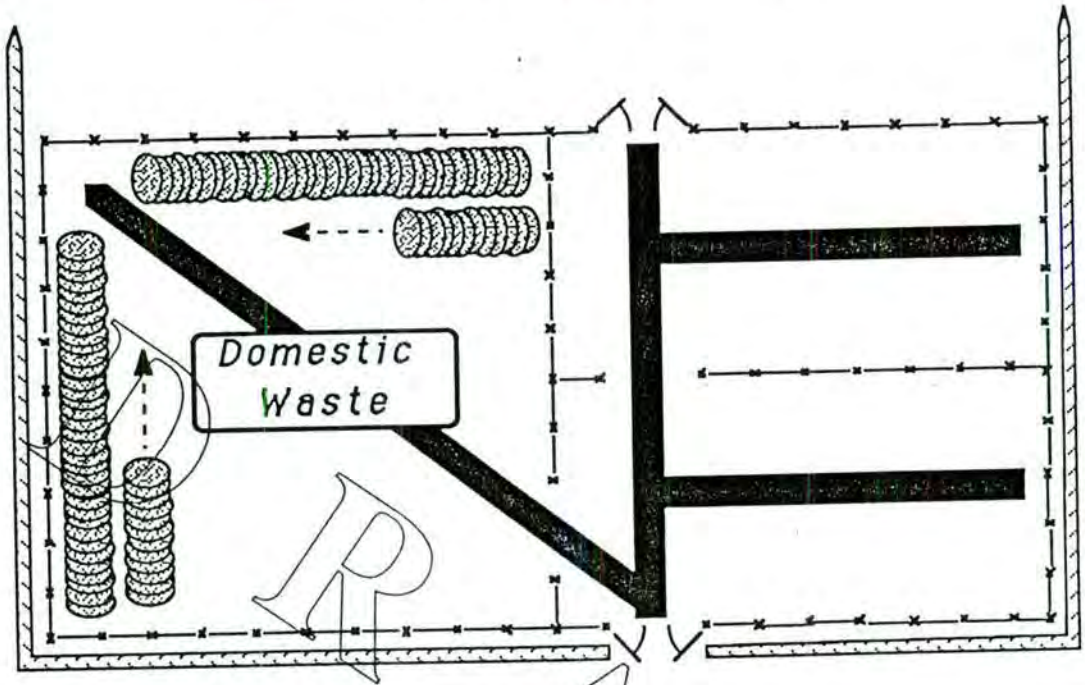
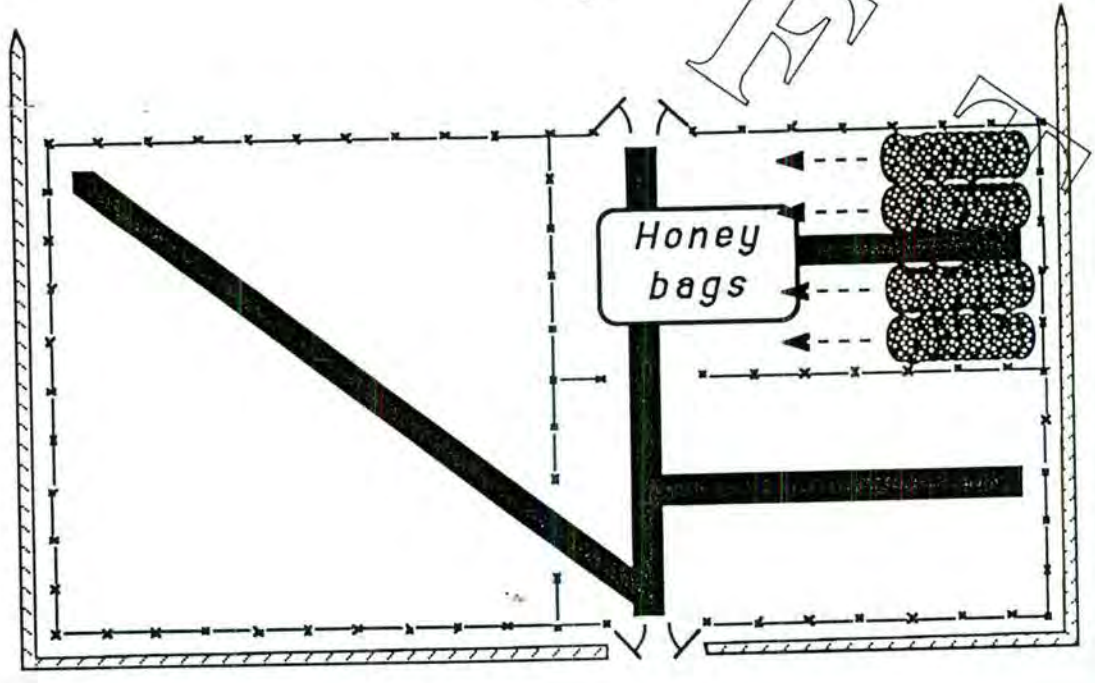


fugure 1-3



fugure 1-4

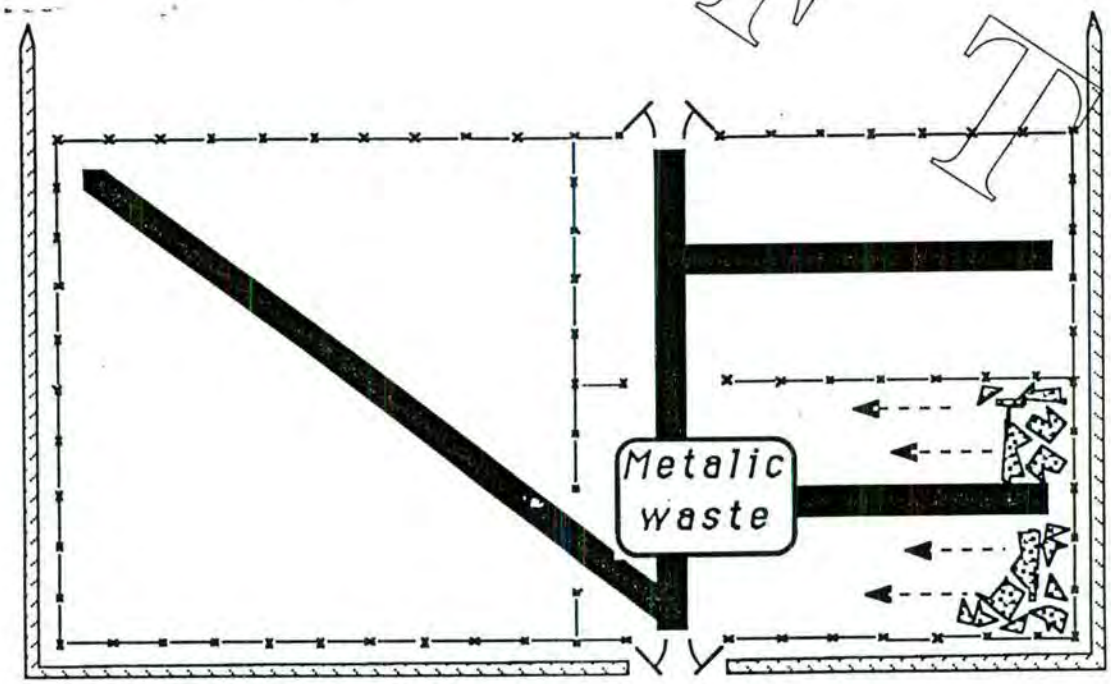
2. The regulations recommend to burn the household garbages at least once a month. This will reduce the bulk quantity of the garbages and the site will last longer.

3. Honey bags could be covered up with sand to control odours in spring after thawing and in fall just before the first snow to control the odours.

Metallic wastes management

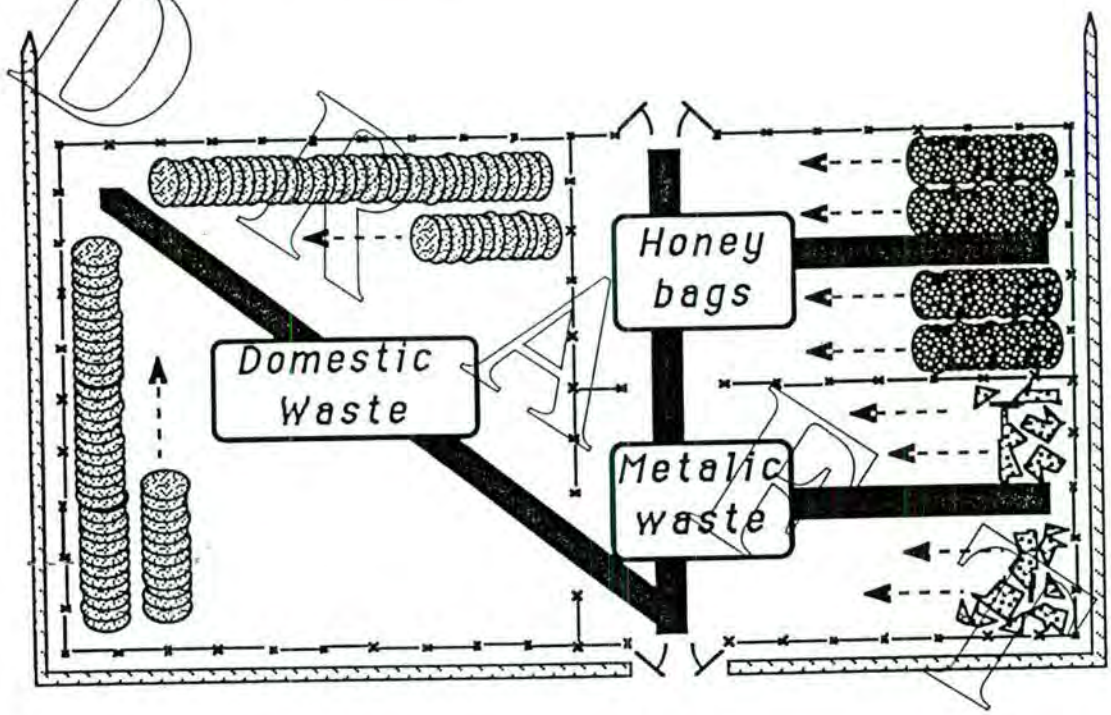
1. The metallic wastes (old vehicles, refrigerators, etc.) could be disposed in the dump site at a specified location, they will be piled up to a high of two (2) meters, starting in the far corner along the back fence. An access will be provided to allow people to reuse needed parts as long as the recuperation does not interfere with the normal operation of the site.

2. Reusable wood pieces will also be piled neatly in the metallic wastes site beside the entrance. Any piece of wood that is not used for a period of one (1) year should be removed and burned with household garbages, the disposition of the metallic wastes in the dump is shown in figure 1-5.



fugure 1-5

The life duration of your dump site will depend on how you manage and dispose your wastes. Good maintenance of the dump site and good management of the municipal wastes will provide a better environment and quality life.



fugure 1-5

Assistance from KRG's environment section is available to answer your questions and help you solving any problems you might face in operating the dump site. Good Luck.