



P.O. Box 1500  
Yellowknife, NT X1A 2R3

Your file    Votre référence

Our file    Notre référence

N3L3-0570

June 25, 1999

Mr. Gordon Wray  
Chairman  
NWT Water Board  
P.O. Box 1500  
YELLOWKNIFE, NT X1A 2R3



Dear Mr. Wray:

**RE: HAMLET OF AKLAVIK - MUNICIPAL LICENCE RENEWAL WASTE FACILITIES  
LEVEL 1 ENVIRONMENTAL SCREENING (TYPE "B" LICENCE)**

The Department of Indian Affairs and Northern Development (DIAND) has screened the application for licence N3L3-0570, to dispose of waste for the Hamlet of Aklavik, pursuant to section 5 of the Canadian Environmental Assessment Act (CEAA). This application was received by the NWT Water Board on June 01 1999. The application covers waste disposal only, as the sewage and solid waste facilities are located within the Inuvialuit Settlement Region. The water source and intake are located within the Gwichin claim area, and come under the jurisdiction of the Gwichin Land and Water Board (GLWB). The GLWB are licensing and screening the water intake and water use components separately.

The Inuvialuit Environmental Screening Committee (EISC) was consulted during our review, as this committee has responsibility for conducting screening within the Inuvialuit Settlement Region. The EISC indicated that they would neither screen the application or provide comments until the application was referred by a committee member at the July 12, 1999 meeting. However, DIAND has determined that this project as proposed is not likely to cause significant adverse environmental effects and recommends that the application proceed through the regulatory process, as the licence has already been extended 60 days by the Board.

There are known local concerns regarding the effects of sewage disposal on residents living downstream, including drinking water, quality and contamination of fish and wildlife. According to the DIAND Inspector's compliance report, the Hamlet has not violated its effluent quality requirements in the past ten years. The 1997 Inuvik Research Centre study also conducted a study on environmental effects of sewage discharge on drinking water, quality, fish, and wildlife and concluded that the Clearing Lake Sewage Lagoon system was providing good sewage treatment.

Incorporation of the recommended mitigative measures into the terms and conditions of the licence is suggested. If necessary, provision should be made for additional sampling, or study into the causes and effects of waste contamination on the health of the receiving environment and its resources. Otherwise, the licence could be opened up for minor amendments at a later date, as a 60 day extension has already been granted by the Board.

If the Board concurs with our findings, please sign the attached screening forms, advise the applicant of the CEAA recommendations in writing, and return the original forms to Water Resources Division for archiving.

If you require further information, contact me at (867) 669-2650.

Sincerely,



David Milburn  
Regional Manager  
Water Resources Division

encl.

cc: D. Livingstone, Director, RR & E  
North Mackenzie/Inuvik District  
Environment and Conservation Division  
Gwichin Land and Water Board

**CEAA SCREENING FORM - LEVEL I**  
**Department of Indian Affairs and Northern Development**

**1. Public Registry Required Information**

FEAI I.D. Reference Number: \*

A number assigned by the Agency; to be inserted here upon receipt of number from Agency

Subject Descriptors: inland waters

See Appendix A

Alias Project Title: Aklavik municipal licence renewal (type B) -waste disposal (sewage and solid wastes) only

DIAND project name

Lead RA and Screening Division: Water Resources (for the NWT Water Board)

Division of DIAND (e.g. Water Resources, Land Administration etc.)

Lead RA Contact: Greg Cook,(screener) Water Resources Division, 867-669-2656

Name and telephone # of Regional Manager or Screener

Lead RA Trigger Types: law list

(e.g., proponent, funding, land disposition, law list approvals)

Other RA Trigger Types:

-Possible screening by Inuvialuit EISC under land claim provisions, IFA);

-Water use facilities: screening and licence by Gwichin Land and Water Board (GLWB)

(e.g., proponent, funding, land disposition, law list approvals)

EA Start Date:1999/06/01

Date application received and accepted (YYYYMMDD)

EA Type: screening

Screening, Class Screening or Comprehensive Study

Physical Activity as identified from Inclusion List: waste disposal

(e.g., provide the Physical Activity Code from section 10.2 of the manual)

Physical Work Being Assessed: waste disposal facilities

Phase of Project / Primary Undertaking: operation/maintenance

(e.g., construction, modification, operation, abandonment, decommissioning, repair, maintenance, installation, or expansion)

Multiple Activities:      Yes    No   Indicate One: sewage disposal

Project Category Code:        Point    Linear    Areal        (Circle one)

Geographic Place Name: Aklavik (LAATD)

(e.g., nearest place name or geographic feature, see Appendix C)

EA Determination: 20-1-a

(Final screening determination from subsection 20(1) -- see #12 of Screening Form and insert number here )

EA Determination Date: 1999/06/28

(Date of screening decision)

Estimated Follow-up program termination date: n/a

(Date Follow-up program to end YYYYMMDD)

EA Terminated :no

(Explain reason for terminating EA )

## 2. General File Information

File Number: N3L3-0570

(DIAND file identifier. May be permit or licence number.)

Type of Application: water licence renewal

(waste disposal component only; Gwichin LWB is screening and licensing water use separately, as this component is physically located in the Gwichin Settlement Area)

(e.g., water license, land use permit, quarry permit, lease, reserve, OIC, new, renewal, amendment, cancellation)

Present licence number: N3L4-0570

Proposed Date of Activity: re waste disposal: 1999/06/30

Date (YYYYMMDD) project expected to start

Other RAs or Screening Divisions: yes/yes

If yes, is there an Integrated Screening underway?

Other RA Types of Approval: Gwichin Land and Water Board screening and licence re water use under MVRMA

Project File Location: NWT Water Board, Yellowknife and Gwichin Land and Water Board, Inuvik)

Office where project file is located

District: North Mackenzie/ Inuvik

### 3. Proponent

Hamlet of Aklavik

P.O. Box 88 Aklavik, NT X0E 0A0 tel. 867-978-2351

Company/Applicant - name, address and phone numbers.

Type of proponent: municipal government

(e.g., Industry, Government, Other private)

### 4. Project Location

Topographic Map Sheet Number: 107 B/4

1:50,000 map sheet number

Latitude / Longitude: 68 13' N. - 134 59' W.

(e.g., degrees, minutes, seconds)

Watershed: Mackenzie River (Peel Channel)

(nearest creek, river, or lake system)

Street Name: P.O. Box 88, Aklavik, NT, X0E 0A0

(complete address of project if it occurs in a municipality)

Surrounding Land Status: Commissioners and settlement land (IFA and Gwichin)

(e.g., private, Commissioner's, crown land, settlement land)

Special Designation: no

(Yes / No -- e.g., heritage river system)

## 5. Project Description

This is a renewal of the existing municipal water licence, with no significant changes planned. Although not covered by this screening and licence, Aklavik pumps its water directly from the Peel Channel of the Mackenzie River year-round. There are dual water intakes, with 4 pumps in the truck fill station. Water is chlorinated and delivered by trucks to community businesses and residences. There is a water treatment plant here, which includes a settler/flocculator, a rapid mix chamber, an effluent pump, and a backwash pump. A backwash drainage pit was constructed adjacent to it, from which an insulated backwash pipe extends some 27 m. from the water treatment plant to the river embankment. Water quality is considered good for domestic use, although high sediment loads seasonally can challenge the system. Water is stored in 3 tanks. / =under GLWB licence.

Most residential structures are equipped with sewage pump out tanks, with wastewater disposed of into holding tanks. The present sewage lagoon (chosen by the hamlet in 1984 after a study of alternative replacement sites) is Clearing Lake, located about 2 km. north, or downstream of the community. It has a surface area of 16 hectares, with an estimated retention time of 3 years. It became operational in 1987. Clearing Lake discharges seasonally into a wetland treatment area consisting of a string of ponds and lakes, which eventually discharge into the Peel Channel. Sewage discharged into this system goes through a natural process of sedimentation, precipitation and uptake by organisms, and eventually reaching Peel Channel in a relatively "pure" form. A few homes may still use honey bags, and these are deposited into a cell adjacent to the garbage dump. Trucks collect and pump sewage and waste water from buildings and dump it into the lake/lagoon. Solid wastes are collected using 2 trucks. The community uses spent fuel drums to store domestic waste prior to collection, with groups of barrels serving different small groups of homes. The solid waste site is located between the lagoon, Clearing Lake, and Pump Lake. It operates using the cell disposal method, with new cells excavated in the soil as required, and wastes dumped in and compacted until full. The present site has been designed to accommodate up to 20 such cells. The hamlet has a range of heavy equipment from trucks to back hoes, for the different tasks at hand.

There has been ongoing concern from some residents living downstream that their drinking water quality as well as local fish and wildlife are being adversely affected by sewage or other wastes migrating out from the waste disposal facilities. Several investigations, inspections and studies have been undertaken, with no conclusive evidence of this occurring. The hamlet, as noted in the recent 10 year compliance report, has had no effluent violations under the water licence.

What sources of information did you use?

other government data

historical maps

scientific reports

personal information

CEAA public registry system

contour maps

other, specify: CEDS Data base, NWT Data Book; Inuvik Research Centre study, 1977; files

Describe any accidents or malfunctions that may occur in connection with the project:

Risk of spills (fuel, sewage etc) and malfunction of equipment and facilities is always there

## 6. Description of Environment

The community is located on the west shore of the Peel channel, in the floodway of the Mackenzie River in the Mackenzie Delta. The terrain is characterized by alluvial deposits of fine sand and silt, in stratified layers extending 11 m. below the ground surface, all in an area of continuous permafrost. Silty soils freeze in winter and thaw in summer, causing soil heaving. It is on the edge of the tree line, about 10 m above sea level, within the Boreal Forest Zone. White spruce, balsam, and poplar, are found on higher ground, while willows and alder are found in low lying areas. An average of 10.5 cm of rain and 110.9 cm of snow falls annually. Mean annual precipitation measures 20.7 cm., while high and low mean temperatures for July average 18.3 C and 9.7 C respectively, with corresponding temperatures in January of -25.5 C and -33.2 C respectively. Winds are generally from the west, and average 10.7 km/hr annually. Fish species found in the area include Arctic char, whitefish and pike, and important game includes beluga whale, caribou, fox, muskrat, wolf and black bear.

The harsh climatic conditions here make construction as well as sewage and solid waste disposal difficult to manage. Permafrost conditions and spring flooding hinder proper drainage, and cold temperatures retard decomposition of organic materials and slows growth and movement of soil organisms that aid soil formation and decomposition.

## Description of socio-economic and cultural environment

Historically, this is a place where Inuit and Loucheux Dene met (or clashed), and the name means "place of the barren land grizzly" in Inuktitut. A HBCo. Post was established here in 1912, and the permanent settlement began in 1918, based largely on trapping and trading in muskrat pelts. Due to flooding, the federal government moved many residents and major activities over to Inuvik in the 1950's. The population is about 725 (down from historical high of nearly 1600). Today, major activities include trapping, hunting and fishing, tourism, transportation, handicrafts, and oil and gas exploration. Some coal is found nearby. A slim majority of residents are Inuit, with approx. 30% Dene, and 12% Metis, the rest non-native. There is a hamlet office as well as Metis Local and Dene First Nation here. Spoken aboriginal languages include Inuvialuktun and Gwichin. The hamlet is located partly within the Gwichin, and partly within the Inuvialuit settlement regions, such that this licence is being split into two, one for each "side" covering different components.

There are churches, school, medical facilities, RCMP, and other services here, including hotels, trucking, oil and gas support services, community hall, air services, barging etc.

What sources of information did you use?

- Historical Maps (expired permits and licences)
- Running Maps (current permits and licences)
- Interference Maps (other land dispositions)
- Public Registry System(Water Board)

- GIS
- Indian Land Registry
- Land Transition Management Style
- Other, eg NWT Data Book, CEDS, application, Inuvik Research Study

## 7. Consultation on Project

Federal Government Contact Person:

Date Comments received:

- DIAND  \_\_\_\_\_
- Water  S. Bohnet/G. Cook \_\_\_\_\_
- Geology  \_\_\_\_\_
- Lands  S. Traynor \_\_\_\_\_
- Minerals  \_\_\_\_\_
- Ec. Dev.  \_\_\_\_\_
- Env'nt  M. Tapsell \_\_\_\_\_
- I&I  \_\_\_\_\_
- D.M.  R. Cockney \_\_\_\_\_
- R.M.O.  \_\_\_\_\_
- DFO  J. Dahl \_\_\_\_\_
- DOE  S. Harbicht \_\_\_\_\_
- Health Canada  \_\_\_\_\_
- DOT  \_\_\_\_\_
- Coast Guard  \_\_\_\_\_

- \_\_\_\_\_
- verbal \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
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- \_\_\_\_\_
- 21/06/99 \_\_\_\_\_
- \_\_\_\_\_
- 24/06/99 \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

N.W.T. Government

- Ren. Res.  K.Robertson/J. Prystupa \_\_\_\_\_
- Health.  B. Colpitts \_\_\_\_\_
- Transport.  \_\_\_\_\_
- Tourism  \_\_\_\_\_
- MACA  \_\_\_\_\_
- EM&PR  \_\_\_\_\_
- PWNHC  \_\_\_\_\_
- Other  \_\_\_\_\_

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Aboriginal Groups

- Inuvialuit EISC\* \_\_\_\_\_  June 24 1999 \_\_\_\_\_
- Gwichin L &WB \_\_\_\_\_  June 25 1999 \_\_\_\_\_
- Aklavik HTC \_\_\_\_\_  verbally-28/06/99 \_\_\_\_\_
- \_\_\_\_\_  \_\_\_\_\_



**Public/Interested Parties/Other**

<input type="checkbox"/> _____	<input type="checkbox"/> _____
<input type="checkbox"/> _____	<input type="checkbox"/> _____
<input type="checkbox"/> _____	<input type="checkbox"/> _____
<input type="checkbox"/> _____	<input type="checkbox"/> _____
<input type="checkbox"/> _____	<input type="checkbox"/> _____

\*NOTE: the application was sent to the EISC in Inuvik, for additional screening if needed pursuant to the Inuvialuit Final Agreement, 1984, as well as to the Gwichin Land and Water Board, which is screening and licensing the water intake, use component. The EISC advised that no formal screening would be undertaken, but that the application would be tabled at the July meeting.

**8. Detailed description of environmental and cumulative effects identified in Boxes A and B.**

Environmental or cumulative environmental effect	Description
<ul style="list-style-type: none"> <li>-potential water quality impairment (Peel Channel in particular) from spills, sewage discharge, flooding, leaching from waste sites etc</li> <li>-ongoing concern that fish and wildlife (eg muskrat) health, numbers are being affected by sewage.</li> <li>-poor drinking water downstream in Peel Channel</li> <li>-natural spring flooding in the delta here causes waste migration downstream</li> <li>-potential for scavenging by animals, smells, windblown debris at garbage dump, dead animals not disposed of properly</li> <li>-potential erosion of stream banks, resulting in lost soil and increased sedimentation</li> </ul>	<ul style="list-style-type: none"> <li>-ongoing concern re water quality impairment due primarily to hamlet's low lying location and waste disposal practices etc by some residents living downstream; eg. placement of wastes, carcasses etc on river ice by some camp residents, to be washed downstream in breakup; potential spills; lack of monitoring ie sampling and analysis being carried out and reported, as required by the licence.</li> <li>-reports of fish contaminated by sewage, lesions, impaired livers etc., and decreases in populations.</li> <li>-concern that sewage is affecting muskrat population, ie being reduced through contamination, which in turn affects traditional activities like trapping.</li> <li>-spring flooding here annually is considered to be a cause of the spread, or migration of sewage contamination downstream and/or into adjacent water bodies.</li> <li>-potential for such to happen unless sites are properly maintained and operated, eg updated O &amp; M plan, site is fenced, and a dead animal pit is built.</li> <li>-given the nature of the area, the river and stream banks etc are prone to erosion either naturally or from man made activity.</li> </ul>

## 9. Summary of mitigation measures (re waste disposal issues only)

NOTE: most of what follows has been taken from the licence, application, compliance reports, and the 1997 Inuvik Research study, and as such, may have already been considered over the years. Few comments were received during this review. The Aklavik Hunters and Trappers Committee verbally responded on June 28 saying they have lots of concerns, but these were not elaborated upon, nor were any mitigation measures suggested. They were not going to reply until June 30.

\*existing licence terms and conditions regarding waste disposal: in particular, adherence to the requirements for regular sampling and analysis of sewage effluent (often missed), and water source; ensure segregation of any honey bags, bulky metal wastes etc from respective sewage and solid waste disposal sites; conduct activities so as to minimize erosion; stress the importance of licence compliance.

-regular inspections by the DIAND Inspector to monitor compliance and note any problem areas needing attention in the waste disposal areas, including addressing local concerns reported re downstream contamination.

-downstream residents should boil or treat water when concerned about quality, particularly if any water is taken from the Clearing Lake system of creeks and lakes.

-The DIAND Inspector suggested that a health risk assessment study could be carried out (similar to Inuvik's) involving GNWT Health, DFO, and area residents, to better determine the problems and allay local concerns.

-report all spills within the community, or at waste facilities to ensure proper cleanup and implementation of other measures if needed.

-maintain an up to date operations and maintenance plan for the waste sites, to ensure that wastes are disposed of as approved, that windblown debris is minimized, garbage is covered to avoid access by wildlife, reduce odours etc., and a dead animal pit is dug.

-DFO's Letter of Advice to the GLWB noted concerns regarding the waste migration during high water levels, and recommended that the Hamlet submit a plan addressing this issue with appropriate research and designs for mitigation.

-encourage downstream camp residents not to place honey bags, garbage and animal carcasses on river ice in winter (as this material gets washed downstream in spring breakup, ref. 1997 study. In some cases, it may be advisable to move existing camp sites altogether.

-continue to impose a ban on fish and shellfish harvesting around the sewage discharge into Peel Channel (ref. Application).

-as fish may gain access to the sewage lagoon area during high water periods, some type of screen or barrier at the outflow may be useful in keeping fish out.

-conduct additional water quality monitoring (sampling and lab analysis) as required to ascertain water quality (ie for drinking, cooking etc) in response to concerns expressed by certain residents living along the river downstream from the outfall. This could be undertaken by the Inspector as required, or as an SNP change for specific sites if this additional confirmation was felt needed.

-solid waste pits should be dug into well drained soils, or gravel areas only, to avoid bottom ponding of water that

may become contaminated by remaining in contact with wastes. MACA (1997 study) suggested that the solid waste site may be the source of the problem, and suggested that this site be relocated to prevent its runoff from contaminating Clearing and Pump Lakes.

-continue to impose the Hamlet's policy on development within municipal boundaries, eg creation of buffer zones, and implementation of erosion control measures (also in licence) along shorelines to enhance environmental protection from both naturally occurring and man made events.

-maintain segregation of wastes, and encourage recycling, separate waste areas and/or collection of such things as bulky metal wastes, hazardous materials like old batteries, paints, construction of a dead animal pit etc

-DIAND, in the 1997 study, suggested trying certain improvements, like installing a sewage macerator at the lagoon, installing watertight and lined berms around the disposal site, fencing honey bag areas, and working towards replacing their use, with sewage pumpout, experiment with new technologies like "Snowfluent" to improve sewage quality, eg creates snow from sewage, killing bacteria.

-The 1997 study itself did not make any conclusive recommendations (ie mitigation measures), but listed several options to be considered: maintain current wetland treatment system; change location of the lagoon; dam the outlet from Clearing Lake; construct a cell at the effluent chute; and consider snowmaking from the effluent (snowfluent process).

-Gwichin Land and Water Board: due to community concern with water quality downstream from the sewage discharge site, recommended additional items be included in the licence:

more frequent water quality sampling at SNP site #570-3; add another sampling station in Six Mile Creek; and disburse water quality sampling results and guidelines to community members in order to raise awareness re local water quality.

## 10. Significance

After taking into account the above mitigation measures, are any of the adverse environmental effects significant?

Yes       No\*

If yes, identify which one(s) and proceed to 11; if no, proceed to #12

\*the problem lies in implementing suitable remedial measures to deal with the sewage issues, given the physical and environmental problems and expense of dealing with improvements other than what is being done now.

## 11. Likelihood of Occurrence

Of the identified adverse significant environmental effects in #10 are any likely to occur?

Yes    No      If yes, which one(s)?

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## 12. CEAA Determination /Recommendation

- Section 20 (1)(a) - Project may proceed as it is not likely to cause significant adverse environmental effects./applies to waste disposal facilities and practices only.
- Section 20 (1)(b) - Project may not proceed as it is likely to cause significant adverse environmental effects that cannot be justified.
- Section 20 (1)(c)(i) - Project must be referred to the Minister of Environment as it is uncertain whether the project is likely to cause significant adverse environmental effects.
- Section 20 (1)(c)(ii) - Project must be referred to the Minister of Environment as it is likely to cause significant adverse environmental effects.
- Section 20 (1)(c)(iii) - Project must be referred to the Minister of Environment as public concerns warrant the reference.

## 13. Consultation on Screening Report

Public consultation on screening report deemed necessary ?  Yes  No

Deadline for comments on screening report: n/a ( provided to Gwichin LWB for information and comment).

Public Comments Received on Screening Report?  Yes  No

(Attach Comments to screening file.)

## 14. Follow-up Program

None required under CEAA.

However, DIAND Water Resource officers/inspectors will conduct regular inspections, which should suffice to identify any environmental or other problems with the facilities. Although a separate screening/licence will be issued by the Gwichin Land and Water Board, DIAND Inspectors will be responsible for inspecting the water sources, and withdrawal practices of the licensee there as well. Health officials monitor drinking water quality for the community. As noted, a separate study has been conducted recently (1997) by the Inuvik Research Centre into complaints from area residents about environmental effects of sewage discharge on drinking water quality, fish and wildlife (eg muskrats). It may be necessary to continue periodic sampling or other study methods to allay concerns of downstream residents, or to further understand the causes of the "pollution concerns". The Aklavik Hunters and Trappers Committee for example, still have lots of concerns which may require additional follow up.

15. Authorization

Prepared By (screener):

Date

Approved By:

Date

Decision Maker (e.g., Regional Manager, engineer, etc.)

16. Water Board Authorization

Prepared By (screener):

Date

Approved By:

Date

*Greg Cook*

*June 28 1999*

*[Signature]*

*99-06-29*

## **Appendix A: Subject Descriptors**

Choose from this list and insert as a "Subject Descriptor"

agriculture  
buildings  
communications  
defence  
energy  
forestry  
industry  
inland waters  
mining  
oceans  
oil and gas  
parks  
transportation

## **Appendix B: Geographic Place Name**

see list provided

## **APPENDIX C: Screening Checklist and Cumulative Effects Checklist**

**Table A. Identification of Project Components and Environmental Effects**

Identify all components of the project under screening and their potential adverse environmental effects

**Project Components**

(✓ check all the items appropriate to this project)

- access road
  - construction
  - abandonment/removal
  - modification e.g., widening, straightening
- automobile, aircraft or vessel movement
- blasting
- building
- burning
- burying
- channelling
- cut and fill (garbage pits)
- cutting of trees or removal of vegetation
- dams and impoundments (lagoon)
  - construction
  - abandonment/removal
  - modification
- ditch construction
- drainage alteration
- drilling other than geoscientific
- ecological surveys
- excavation (waste cells)
- explosive storage
- fuel storage
- garbage
  - disposal of hazardous waste
  - disposal of sewage
  - waste generation
- geoscientific sampling
  - trenching
  - diamond drill
  - borehole core sampling
  - bulk soil sampling
- gravel
- hydrological testing
- site restoration
  - fertilization
  - grubbing
  - planting/seeding
  - reforestation
  - scarify
  - spraying
  - recontouring
- slash and burn
- soil testing
- topsoil, overburden or soil
  - fill
  - disposal
  - removal
  - storage
- stream crossing/bridging
- tunnelling/underground

other, explain \_\_\_\_\_

accidents or malfunctions (Check if there is a possibility for malfunctions and accidents with this project). Describe: risk of spills, eg fuel, sewage

effects of environment on project (e.g., beaver dams). Describe.  
-harsh climatic conditions, spring flooding, freeze/thaw cycles, permafrost etc make construction and operation of facilities difficult.

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**Project Effects (potential and/or likely)**

(✓ check all the items appropriate to this project)

**Biophysical Environment**

1.  deposit into surface water
2.  deposit into ground water
3.  change in surface water flow
4.  change in ground water flow
5.  change in water temperature
6.  change in drainage pattern
  
7.  change in air quality
8.  change in air flow
9.  micro-climate change
10.  ice fog
  
11.  change in ambient noise levels
12.  change in slope stability
13.  change in soil structure
14.  alteration of permafrost regime
15.  destabilization/erosion
16.  soil compaction
  
17.  loss of access to non-renewable resource
18.  depletion of non-renewable resource
  
19.  removal of rare/endangered plant species
20.  introduction of species
21.  toxin/heavy metal accumulation
  
22.  removal of rare/endangered wildlife species
23.  change in wildlife health
24.  impact to large mammals
25.  impact to small mammals
26.  impact to fish
27.  impact to birds
28.  impact to other wildlife
29.  impact in a calving, nesting or spawning area
30.  removal of wildlife buffer zone
31.  change in wildlife habitat/ecosystem
32.  other, explain : potential water quality impairment

**Directly-related Socio-economic and Cultural Environment**

33.  impact to trappers
34.  impact to hunting
35.  impact to outfitters
36.  recreational or back country use
37.  impact to fishing
38.  impact to First Nation traditional use
39.  impact to community
40.  impact to industry
41.  impact to community health
42.  change in work force economics
43.  change in housing or infrastructure
44.  change in regional transportation
45.  other, explain \_\_\_\_\_
  
46.  impact to traditional use area
47.  impact to historical site or cultural landmark
48.  impact to local aesthetics
49.  impact to archaeological or historical site
50.  other, explain \_\_\_\_\_



**Table B. Identification of Other Resources Uses And Their Environmental Effects**

Identify relevant past, current and future (pending applications) physical works and activities and their potential adverse environmental effects.

**Other Resource Uses**

(✓ check all the items appropriate to this project)

- agriculture
- forestry
  - commercial
  - domestic
- fishing
- hunting/subsistence
- urbanization
  - commercial / residential
  - built structures
  - infrastructure
- mining
  - exploration
  - open pits
  - underground
- quarries
- transportation/communications
  - roads / trails
  - channels / canal
  - telephone lines, satellite dishes, cables
  - beacons
- solid waste disposal
- energy project
  - hydro
  - pipeline
  - transmission line
- other water licenses, permits, leases
- land claims
  - selected
  - withdrawn
  - special management
    - heritage sites
    - cultural sites
- other private lands held under tenure
- recreational
- trapping
- mineral processing
- airport
- recreation
- other heritage sites
- other, explain \_\_\_\_\_

**Effects from other Resource Uses**

(✓ check all the items appropriate to the scope of this project)

- Biophysical Environment**
1.  deposit into surface water
  2.  deposit into ground water
  3.  change in surface water flow
  4.  change in ground water flow
  5.  change in water temperature
  6.  change in drainage pattern
  7.  change in air quality
  8.  change in air flow
  9.  micro-climate change
  10.  ice fog
  11.  change in ambient noise levels
  12.  change in slope stability
  13.  change in soil structure
  14.  alteration of permafrost regime
  15.  destabilization/erosion
  16.  soil compaction
  17.  loss of access to non-renewable resource
  18.  depletion of non-renewable resource
  19.  removal of rare/endangered plant species
  20.  introduction of species
  21.  toxin/heavy metal accumulation
  22.  removal of rare/endangered wildlife species
  23.  change in wildlife health
  24.  impact to large mammals
  25.  impact to small mammals
  26.  impact to fish
  27.  impact to birds
  28.  impact to other wildlife
  29.  impact in a calving, nesting or spawning area
  30.  removal of wildlife buffer zone
  31.  change in wildlife habitat/ecosystem
  32.  other, explain \_\_\_\_\_
- Directly-related Socio-economic and Cultural Environment**
33.  impact to trappers
  34.  impact to hunting
  35.  impact to outfitters
  36.  recreational or back country use
  37.  impact to fishing
  38.  impact to First Nation traditional use
  39.  impact to community
  40.  impact to industry
  41.  impact to community health
  42.  change in work force or community economics
  43.  change in housing or infrastructure
  44.  change in regional transportation
  45.  other, explain \_\_\_\_\_
  46.  impact to traditional use area
  47.  impact to historical site or cultural landmark
  48.  impact to local aesthetics
  49.  impact to archaeological or historical site
  50.  other, explain \_\_\_\_\_

# Cumulative Environmental Effects

Based on a comparison of effects identified in Box A and Box B

Matching  
Number(s)

Description of cumulative environmental effects

None were identified. Given the hamlet's location at the downstream end of the Mackenzie River system, there is always the potential for impacts from other projects or communities upstream to affect the receiving environment in particular, the aquatic environment. There are concerns from downstream residents, but the problem seems to be centred on Aklavik, and not other upstream projects. \_\_\_\_\_

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