BURNSIDE

Appendix I
CEAA Environmental Screening Report

BURNSIDE

Appendix I-1
Sewage Treatment Facility

Indian and Northern Affairs Canada

Environmental Screening Report

CANADIAN ENVIRONMENTAL ASSESSMENT ACT

This form, when completed in full, constitutes an environmental screening report intended to meet the requirements of s. 16 of the *Canadian Environmental Assessment Act* (CEAA). It contains the following sections:

1) PROJECT IDENTIFICATION
2) LOCATION OF PROJECT
3) PROJECT JUSTIFICATION
4) PROJECT DESCRIPTION
5) CONSULTATION
6) EXISTING ENVIRONMENT
7) ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES
8) CUMULATIVE EFFECTS ASSESSMENT
9) SUMMARY OR ENVIRONEMNTAL EFFECTS
10) CEAA SCREENING DECISION
11) KEY REFERENCES & SOURCES
12) LIST OF ATTACHMENTS

The table on Page 2 will be completed by INAC staff. The proponent should complete the sections that follow, starting with "1. PROJECT IDENTIFICATION" on page 3.

Project Reference	
Section 5 Triggers	Please identify the reason(s) for INAC involvement: • *CEAA* s. 5.1(a) proponent • *CEAA* s. 5.1(b) funding • *CEAA* s. 5.1(c) granting an interest in land • *CEAA* s. 5.1(d)** regulatory function --- **If a 5.1 (d) trigger, please specify the trigger, as per *Law List Regulations*: • *Indian Act* subsection 18(2) • *Indian Act* subsection 28(2) • *Indian Act* paragraph 58(4)(b) • *Indian Act* subsection 35(1) • *Indian Act* subsection 39(1) • *Indian Mining Regulations* subsection 5(2) • *Indian Mining Regulations* subsection 6(1) • *Indian Reserve Waste Disposal Regulations* section 5 • *Indian Timber Regulations* subsection 5(1) • *Indian Timber Regulations* section 9 • *Indian Timber Regulations* subsection 22(1)
FEAC[1] ("LEAD RA")	
Other RAs	
Expert FAs	
Project also subject to a provincial EA: YES/NO - (if YES, provide details)	
CEAR[2] Reference #	
Env. Officer	
Reviewing Officer	
RCM & Directorate	

[1] FEAC - Federal Environmental Assessment Coordinator
[2] CEAR - Canadian Environmental Assessment Registry

1) PROJECT IDENTIFICATION

Location:	Hamlet of Kugluktuk, Nunavut
Project Title:	Improvements to Wastewater Lagoon
Project proponent(s):	Government of Nunavut, Community and Government Services

2) LOCATION

Detailed Location:

If project is not on reserve, specify latitude and longitude coordinates, and nearest town, highway, lake, etc.

The Hamlet of Kugluktuk (formerly Coppermine) is located on Coronation Gulf at the mouth of the Coppermine river. The Hamlet is situated on a rocky area on the west side of the Coppermine River at Latitude 67°49'N, longitude 115°06'W. The sewage lagoon will located approximately 4 kilometres southwest of the main community. (It will remain at its current location.)

YES **All or part of the project is OFF Reserve Land (YES/NO)**

Definition of Project Area

The geographical extent of the project, and those areas affected during construction and operation. For example:
- key transportation routes for equipment and materials
- staging & refueling areas
- main activity/construction site, traffic routes, etc.

Most of the work will take place in the immediate vicinity of the existing wastewater treatment facility. The current wastewater treatment facility will be upgraded with updated operational and maintenance procedures. The access route will remain the same as it is currently. It is assumed that refueling will take place at the existing fuel depot, in the main community.

Adjacent Land:

Land use and description to the North, East, South, and West of project

N: The areas to the north include vacant and undeveloped tundra. Coronation Gulf is 1.5 kilometres to the north. There is a sand quarry near the Coronation Gulf shoreline. The main community is located more than 4 kilometres to the northeast.

E: The existing landfill site is 200 m to the east, the bulky metals disposal area is 400 m east and there is a rock quarry 500 m to the east. The access road servicing all of these facilities runs southwest northeast 200 m to the east. Vacant undisturbed tundra is located further east.

S: The access road continues southwest towards Heart Lake 800 metres to the southwest. Vacant, undisturbed tundra occupies the remaining areas to the south.

W: Vacant undisturbed tundra.

3) PROJECT JUSTIFICATION

Need for the Project: *Rationale: e.g. what problem is the project going to solve or what opportunity is the project going to provide?*	The community now operates a single wastewater lagoon with effluent discharge to an intermittent stream along a natural meandering course over 1.5 km to Coronation Gulf. The stream traverses through a naturally occurring wetland, which is currently providing a significant degree of treatment for the effluent discharges from the lagoon. There are deficiencies in the existing wastewater treatment system that services the Hamlet of Kugluktuk. - There is insufficient storage in the lagoon to provide adequate retention of sewage volume, - Sewage generated by the community exceeds the capacity of the sewage lagoon, - The berms breach in the spring and overflow. - The berms are too porous and do not properly retain flow, - Discharge is haphazard, the lagoon does not meet current Nunavut Regulations and is not operating in compliance with the Water Board license. The discharge route crosses a major snowmobile/ATV route that is used year round.
Purpose of the Project: *What is going to be achieved by carrying out the project?*	To provide a wastewater system for the community that can meet the regulatory requirements as well as the needs of the community over the next 20 years.
Alternatives Considered: *Different ways to meet the project need and achieve the project purpose*	Several options were considered: - Null option, not a viable solution due to existing system deficiencies (insufficient capacity and environmental concerns and non-compliance with regulations) - Upgrade the current wastewater treatment facility with updated operational and maintenance procedures. Most cost effective option as long as existing location can accommodate the required treatment facilities. - Wastewater treatment facility relocation. Decommissioning the existing site and relocating the lagoon and wetland treatment area should only be considered if existing site is found unsuitable.

4) PROJECT DESCRIPTION

Proposed Start Date: *(year-month-day, if known)*	July 2006	**Estimated Completion Date:** October 2007
Estimated Total Cost:	Approximately $1,426,000	
Description of Project: *(attach/reference supporting material as required)*	The existing lagoon will be rehabilitated and a new lagoon constructed. A new wetland treatment area will also be constructed. The project will involve the following: - Minor roadwork to reach the discharge point of the new lagoon - Construct an HDPE Arctic liner on interior side slopes to be draped over berm - Existing lagoon to remain in place until new lagoon is constructed. - Ditches to be constructed around new lagoon to divert surface water - Excavate 1 m from interior footprint to provide materials for berm construction. - 900 metres of berm will be constructed - blast rock will hold liner in place.	
Project Management Team Members & Affiliation	Mr. Navjit Sidhu, B.Sc. E.I.T., Project Officer, Community and Government Services – Kitikmeot Region Nuna Burnside Engineering and Environmental Ltd., Mike O'Hara, P.Eng. Tom Livingston, Regional Municipal Planning Engineer, Government of Nunavut	

5) CONSULTATION

(a) Government Departments, Agencies, Non-Governmental Organizations, Community Councils, etc.

Department, Agency, or Organization:	Contact Person & Telephone Number:	Nature of Consultation & Response Received:
Community and Government Services – Kitikmeot Region	Mr. Navjit Sidhu, B.Sc. E.I.T., Project Officer (867) 983-4142	Was consulted before, during and after the field inspection stage of the study to ensure that the community needs were being met. Was provided a copy of the Schematic Design Report identifying options available to meet the community's needs. Discussed and identified preferred alternative. Teleconference held on February 16, 2006 to discuss comments and questions.
Regional Municipal Planning Engineer, Government of Nunavut	Tom Livingston	As above.

(b) Public Consultation, including Community Members

Public Consulted:	Method Used:	Date:	Details/Issues Raised:
Residents	Meetings with Hamlet council and Hamlet public works staff	Between Oct 3 & 6 2005.	The Hamlet residents concerns and comments were expressed through council and the public works department (landfill site operator, managers). Concerns were raised regarding the lagoon capacity and design and the ability to meet future demands. Obtained information from residents regarding trails, stream crossings, areas of future development or sensitive areas.

6) EXISTING ENVIRONMENT

<table>
<tr><th>COMPONENT</th><th>DESCRIPTION (describe features; indicate sensitivity to disturbance)</th></tr>
<tr><td colspan="2">6.1 PHYSICAL FEATURES - VALUED ECOSYSTEM COMPONENTS</td></tr>
<tr><td>Topography/Terrain:
(hilly, flat)</td><td>Costal lowlands of sand and clay plains dotted with shallow lakes. The area is generally flat to undulating. Most of the ground surface is covered with turf consisting of various grasses. Sedges and moss underlain by a thin (10 to 30 cm) layer of topsoil and/or peat.</td></tr>
<tr><td>Soil and Geology:
(soil type, quality and use; bedrock geology)</td><td>The ground surface consists of bedrock and glacial deposits. Boulders and cobbles cover some areas. The bedrock geology is described as shaly sandstone, siltstone and shale of the Proterozoic Hadrynian Rae Group. The area around the sewage lagoon is comprised of well sorted medium sand from raised beaches. Test pitting in the area revealed groundwater perched on top of the permafrost. Groundwater was encountered between 0.4m and 0.9 m below surface. Permafrost was at approximately 0.9 m below surface.</td></tr>
<tr><td>Surface Water:
(presence & quality)</td><td>A total four surface water samples were collected in 2005 along the intermittent stream that drains the lagoon with WS-1 being closest to the discharge point and WS-4 being the furthest downstream.

<table>
<tr><th>Parameter</th><th>Guidelines[1]</th><th>WS-1 (Raw sewage)</th><th>WS-4 (wetland treatment area)</th></tr>
<tr><td>BOD (mg.L)</td><td>45</td><td>276</td><td>8</td></tr>
<tr><td>TSS (mg/L)</td><td>45</td><td>95</td><td>7</td></tr>
<tr><td>T-PO_4 (mg/L)</td><td>1.0</td><td>0.24[2]</td><td>na</td></tr>
<tr><td>TKN (mg/L)</td><td>10</td><td>94</td><td>12.4</td></tr>
<tr><td>Faecal coliform</td><td>2,000</td><td>13,000,000</td><td>4,000</td></tr>
</table>
1. Anticipated Nunavut Water Board Guidelines
2. Sample collected July 2004 by FSC

The water quality improve significantly as it progresses downstream of the sewage lagoon. There are however some parameters that current do not meet the anticipated Nunavut guidelines even at the furthest downstream point. The system is currently not operating within the guidelines.</td></tr>
<tr><td>Distance to Water:</td><td>(from project area/activity, in metres): Surface water generally flows toward the north to northeast toward Coronation Gulf. There is an intermittent stream adjacent to the lagoon that drains the sewage outflow toward a wetland area that ultimately drains to Coronation Gulf (1.5 kilometres north). The Coppermine River is located approximately 3 kilometres east of the Site. There is no surface water connection the River and the sewage lagoon.</td></tr>
<tr><td>Aquatic Sediment/Substrate:
(type & quality)</td><td>Not known</td></tr>
</table>

COMPONENT	DESCRIPTION *(describe features; indicate sensitivity to disturbance)*
Groundwater: *(local use & quality)*	Groundwater is not used. The entire area is permafrost below approximately 2.0 m. Groundwater quality was tested in the vicinity of the landfill site not the sewage lagoon.
Air Quality: *(local air quality)*	Good

COMPONENT	DESCRIPTION *(describe features; indicate sensitivity to disturbance)*
6.2 BIOLOGICAL FEATURES - VALUED ECOSYSTEM COMPONENTS	
Vegetation: *(e.g. forest, ground cover, aquatic plants)*	The existing facilities are located within areas of disturbed tundra covered with turf consisting of various grasses, sedges and moss underlain by a thin (10 to 30 cm) layer of topsoil or peat. The proposed facilities will be immediately adjacent to the existing ones thus minimizing environmental impacts on the area.
Wetlands: *(e.g. fens, swamp)*	The intermittent stream flows through a wetland north of the proposed facility. The existing sewage lagoon discharges to this wetland and eventually discharges into Coronation Gulf. The conditions in the wetland are expected to improve with a better-designed sewage system. The wetland will continue to provide seasonal habitat for species of birds and other wildlife in the area.
Fish & Fish Habitat: *(types of habitat and common species found)*	The intermittent stream is not considered to be a significant habitat. Coronation Gulf (1.5 kilometres north) and Coppermine River (more than 3 kilometres east) are significant habitat for many species. Fishing is a significant part of traditional life in Kugluktuk. Improvements to the existing system will significantly reduce the potential of impacting the fish habitat. Fishing for char is an important part of daily life. Arctic Char (*Salvelinus alpinus),* Arctic Grayling (*Thymallus arcticus*) and Lake Trout (*Salvelinus namaycush*) are likely the primary fish species being harvested in the area.
Migratory Birds: *(e.g. waterfowl, songbirds)*	Several species of shorebirds and waterfowl are likely to be found in the general area, although it is unlikely that birds use the lagoon area for nesting or staging. There is a limited amount of suitable habitat on the site and there are more suitable habitats in the general area including: the wetland area to the north of the site, the shores of Heart Lake, Coppermine River and Coronation Gulf.
Other Fauna: *(mammals/amphibians reptiles/insects; game & protected species)*	Kugluktuk is located on west end of Coronation Gulf. Hunting and fishing are still important parts of daily life in this area. Locals often hunt Ringed Seal and to a lesser degree Narwhal and Walrus. These hunts are not expected to take place in the vicinity of the site. Local residents have been reported to consume a variety of terrestrial species including Barren Ground Caribou (*Rangifer tarandus groenlandicus*), Musk Ox (*Ovibos moschatus*) and Polar Bear *(Ursus maritimus).* Carnivores such as Arctic Wolves (*Canis lupus arcticos*) and Arctic Fox (*Alopex lagopus*) also have historical ranges that include this area and are likely hunted by local residents. None of these species have status under the Species At Risk Act (SARA).
Special Habitat Areas *(specially designated or protected habitats)*	No special habitat areas were identified in the Study Area during the preliminary review. No Important Bird Areas (IBAs) were identified in the vicinity of Kugluktuk. The Kugluk/Blood Falls Territorial Park is located 13 kilometres from Kugluktuk.

COMPONENT	DESCRIPTION *(describe features; indicate sensitivity to disturbance)*
6.2 BIOLOGICAL FEATURES - VALUED ECOSYSTEM COMPONENTS	
Species at Risk	The Site is within the historical range of the Eskimo Curlew (*Numenius borealis*) a bird listed as endangered under the federal Species at Risk Act. The bird's current distribution is unknown and no nests have been reported since 1978 when it was estimated that fewer than 20 Eskimo Curlews remained. It is highly unlikely that the species is present at or near the site.

COMPONENT	DESCRIPTION *(describe features; indicate sensitivity to disturbance)*
6.3 SOCIO-CULTURAL FEATURES – VALUED ECOSYSTEM COMPONENTS	
Sensitive Areas: *(e.g. residential zones, parkland, hospitals, schools)*	The wastewater treatment facility is more than 4 kilometres from the main community. There are no known sensitive areas near the site.
Human Health and Safety: *(any persons whose health and safety may be affected by the construction and operation of the project)*	The wastewater treatment facility is more than 4 kilometres from the main community therefore it is not likely to affect human health and safety. Improving the wastewater treatment system for the community will result in improved human health reduced impact to the natural environment.
Traditional Land Use Activities: *(e.g. trapping, fishing, medicinal plant collection, ceremonial grounds)*	The area is already occupied by the existing lagoon. The wetland area will continue to be used as part of the natural treatment process. Expansion is not expected to cause an impact to traditional land use activities. Hamlet staff indicate the area has no traditional land uses.
Aesthetics: *(general character of the surrounding area; and if the project is compatible)*	There is already a lagoon in this area and the project is removed from the main community therefore aesthetics are not an issue. The area has been designated by the community for use such as the landfill, bulky metals disposal, and wastewater lagoon.
Archaeological Resources: *(recorded, or potential)*	The area is removed from the main community and the site has already been developed. Hamlet staff indicate there are no known archaeological resources in this area.
Special Designations: *(parks, protected areas)*	There are no known areas with special designations in the vicinity of the proposed wastewater treatment facility expansion.

7) ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES – SUMMARY

The next table summarizes the following:

(A) List of Project Activities

Key project activities associated with **construction, operation, maintenance and decommissioning**, if applicable. Includes locations, scheduling details, and estimates of magnitude and scale.

(B) Potential Environmental Effect(s) associated with each project activity.

An *Environmental Effect* is defined as:

i) any change that the project may cause in the environment,
Including any effect of any such change on health and socio-economic conditions, on physical and cultural heritage, on the current use of lands and resources for traditional purposes, or on any structure, site, or thing that is of historical, archaeological, paleontological or architectural significance; and

ii) any change to the project that may be caused *by* the environment.
(Example: ice break-up damaging a bridge or dock; freezing and bursting of unprotected water lines.)

(C) Mitigation Measures

A *Mitigation Measure* is:

i) an action or provision made that will eliminate, reduce or control the adverse environmental effects of the project, and may include restoration, compensation or replacement of any damages or impacts.

(D) Determination of Significance

A determination of the significance of the environmental effects, taking into account appropriate mitigation measures if applicable. Mitigation measures are intended to prevent or reduce any potentially negative effects. The abbreviations used are:

N/S - effect not significant, or rendered insignificant with mitigation
SP - significant positive effect
SN - significant negative effect
U - outcome unknown or cannot be predicted, even with mitigation.

ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES - SUMMARY				
	(A) Key Project Activities	(B) Potential Environmental Effect(s)	(C) Mitigation Measures	(D)
1	Clearing and grubbing of new lagoon area and areas to be disturbed	a) Very minor loss of vegetation b) Potential for soil erosion c) Dust	a) Smallest possible area will be cleared b) Can prevent by limiting maximum area to be exposed, limiting delays, providing temporary drainage and buffers between project area and water bodies. Limiting work during spring thaw period c) Limit exposed area. Use water to control dust	N/S
2	Construction of a new lagoon adjacent to the existing one and improve ditching.	a) Potential for soil erosion b) Noise c) Minimal odours d) Dust	a) Can prevent by limiting maximum area to be exposed, limiting delays, providing temporary drainage and buffers between project area and water bodies. Limit work during spring thaw period b) Activities to be scheduled to avoid sensitive times for people and animals c) Activities to be scheduled to avoid sensitive times for people and animals d) Limit exposed area and use water to control dust	N/P
3	Construction of access road a turn around	a) Very minor loss of vegetation b) Noise c) Dust	a) Smallest possible area will be cleared b) Activities to be scheduled to avoid sensitive times for people and animals c) Limit exposed area and use water to control dust	

ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES - SUMMARY				
	(A) Key Project Activities	(B) Potential Environmental Effect(s)	(C) Mitigation Measures	(D)
4	Installation of necessary ditches to improve drainage	a) Very minor loss of vegetation b) Minor potential for soil erosion	a) Area cleared is small. b) Can prevent by limiting maximum area to be exposed, limiting delays, providing temporary drainage and buffers between project area and water bodies	N/P
5	Construction of discharge outlet piping and culvert	a) Potential for soil erosion b) Noise	a) Can prevent by limiting maximum area to be exposed, limiting delays, providing temporary drainage and buffers between project area and water bodies. Limit work during spring thaw period. b) Activities to be scheduled to avoid sensitive times for people and animals.	N/P
6	Installation of snowmobile bridge crossing over intermittent stream.	a) Noise b) Minor potential for soil erosion	a) Activities to be scheduled to avoid sensitive times for people and animals b) Can prevent by limiting maximum area to be exposed, limiting delays, providing temporary drainage and buffers between project area and water bodies	N/P

8) CUMULATIVE EFFECTS ASSESSMENT

The natural environment is interconnected, and does not recognize project boundaries or lines on maps. The impacts caused by one project, which may be considered minor and insignificant on their own, combined with other environmental impacts from other projects or developments planned or already underway in the area. Together, these impacts may combine to become significant, and adverse. The consideration and assessment of these "cumulative" effects is therefore an important part of the environmental assessment process.

The following table should be completed to help identify the potential for cumulative effects, and to assess their significance (e.g. N/S - not significant; SP - significant positive effect; SN - significant negative effect; U - unknown, unable to assess).

(A) **Other projects or developments planned, or underway in the area**	(B) **Potential Cumulative Effects:** *The potentially adverse impacts of this Project; which could combine with those from the other projects identified in (A)*	(C) **Mitigation Measures** *needed to effectively manage or prevent any cumulative, adverse effects;* and **Significance of residual impacts after mitigation (N/S, SP, SN, U)**
Landfill site expansion is proposed approximately 200 m east of the site.	Both the wastewater treatment lagoon and the landfill site already exist at these locations. Upgrades to the existing landfill will involve similar activities of earth moving and construction. Cumulative impacts are expected to be minimal	This project will improve existing conditions as well as reduce existing cumulative impacts. No mitigation required. NP.
No other projects anticipated within 1 kilometre of the site.	Not applicable	Not Applicable.

9) SUMMARY OF ENVIRONMENTAL EFFECTS

Assuming that all mitigation measures are implemented as proposed in Sections 7 and 8, the following effects are predicted for the Valued Ecosystem Components identified in Section 6:

(N/S not significant; SP significant positive effect; SN significant negative effect; U unknown; N/A not applicable)

VALUED ECOSYSTEM COMPONENT	Summary of Effects *(check box)*					comments
	N/S	SP	SN	U	N/A	
Topography/terrain	√					
Soil/geology	√					
Aquatic sediment/substrate		√				
Surface water		√				Significant drainage improvements
Groundwater	√					
Air quality	√					
Vegetation	√					
Wetlands		√				
Fish & fish habitat	√					
Migratory birds	√					
Other fauna	√					
Special habitat					√	
Sensitive areas					√	
Human health and safety		√				
Traditional land use activities		√				Snowmobile bridge to be constructed over creek.
Aesthetics	√					
Archaeological resources					√	
Specially-designated areas					√	

Screening Report Completed by:		
Jim Walls		March 10, 2006
Name and signature		Date

10) CEAA SCREENING DECISION

	[00]	DECISION PENDING. Assessment not final.
√	**[01]**	PROJECT MAY PROCEED. All potentially adverse effects are mitigable with known technology, and therefore will be rendered insignificant *(CEAA s. 20(1)(a))*.
	[02]	PROJECT MAY NOT PROCEED. The project is likely to cause significant adverse environmental effects that cannot be justified in the circumstances *(CEAA s.20(1)(b))*.
	[03]	ENVIRONMENTAL ASSESSMENT IS TO BE REFERRED TO THE MINISTER FOR MEDIATION OR A REVIEW PANEL, since it is uncertain whether the project is likely to cause significant adverse environmental effects *(CEAA s. 20(1)(c)(I))*; significant public concern has been raised, warranting a referral to a mediator or a review panel *(CEAA s. 20(1)(c)(ii))*; and/or public concerns warrant a reference to a mediator or a review panel *(CEAA s. 20(1)(c)(iii))*.

Reviewed and Recommended by:		
Representative of Council, or designate *(name & signature)*		Date
INAC Environmental Officer *(name & signature)*		Date
Other Federal RA(s) *(specify details)*		Date

INAC USE ONLY

SCREENING DECISION by LEAD RESPONSIBLE AUTHORITY (enter code):		
Approved by:		

INAC Responsibility Centre Manager *(name + signature)*		Date

11) KEY REFERENCES & SOURCES

Nuna Burnside Engineering and Environmental Ltd., "*Schematic Design for the Improvements to the Wastewater Lagoon and Solid Waste Disposal Facility, The Hamlet of Kugluktuk, Nunavut*", December 2005. (file: N-O 09755/FOE 09754)

Additional references are included in the above noted report.

12) LIST OF ATTACHMENTS

Detailed Design Report listed above.

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