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NUNAVUT WATER BOARD  
NUNAVUT IMALIRIYIN KATIMAYINGI

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File No: N5L4-1447 T 9810

April 27, 1998

Tanja Smith  
Capital Programs Officer  
Municipal and Community Affairs  
Iqaluit, NT X0A 0H0

**RE: Pangnirtung Sewage Treatment Facility Planning Study**

Dear Tanja:

The NWB has reviewed the "*Pangnirtung Sewage Treatment Facility Planning Study*" prepared by Oliver, Mangione, McCalla & Associates for the Department of Municipal and Community Affairs. I would like to offer the following comments:

- i. There seems to be an apparent lack of consultation with main community groups (e.g. HTA, CLARC, etc.) regarding the proposed sewage treatment system and its location in the tidal flats.
- ii. The design did not take into account the increase in population due to the decentralization of Nunavut. The "Government of the Northwest Territories Response to Footprints 2: A Second Comprehensive Report of the Nunavut Implementation Commission" report dated December 1996 clearly proposes (Item 13, page 22) that auxiliary offices be located in Pangnirtung. Therefore, as recommended in Section 12 of the study, population projections in relation to sewage generation, lagoon geometry and cost estimates should be revised to reflect the additional sewage storage required.
- iii. The selection criteria and weighting was done from a narrow perspective without taking into account the concerns of existing and future land users in and around the community (e.g., tourism development).
- iv. Environmental considerations seem to be absent from the decision-making process. The

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decision matrix used to evaluate sewage treatment options for Pangnirtung should consider the protection of the environment in a broad sense.

- v. Part C, Item 4 of the Hamlet's water licence N5L4-1447 lists the effluent quality standards which need to be met for any upgraded sewage treatment system. The upgraded sewage disposal system is required to meet a MAC for Fecal Coliform of  $1 \times 10^6$  CFU/dL. Table 6.4 of the study does not take into account the effluent quality requirements for Fecal Coliforms. There are concerns regarding the contamination of clam beds caused by the project.
- vi. A lagoon situated partially on the tidal flats appears to be a short-term solution to the issue of sewage treatment given the limited space available in Pangnirtung. Pangnirtung has required a functioning sewage treatment facilities for many years and while it is a priority to implement proper sewage treatment facilities, it is important to consider long term solution to sewage treatment. The design was based on 20 years. Given the long term need, site restrictions that are a concern and will definitely be a concern in 2018, the NWB needs to think beyond 20 years. A design life of 40 years should be used when evaluating technical and financial viability of any sewage treatment system for Pangnirtung.
- vii. The location and design were selected prior to analyzing the effects of ice scouring and wave action on the north berm of Cell 1. Failure of the berm would result in the release of raw sewage into the marine environment. This leads to concerns from a cost perspective in terms of maintenance and repairs of the structure but also in regards to impacts on fisheries under Section 36 of the *Fisheries Act*.
- viii. The feasibility of deepening the sewage lagoon should be investigated. In the conceptual design for the lagoon a maximum depth of 2.25 meters was noted. If the lagoon's capacity was met through greater depth and less area, there would be less need to encroach upon the tidal flats. This would lower the risk of dike failure and lessen associated concerns regarding maintenance and repair cost and impacts on fisheries.
- ix. The Water Board supports the statement made in Section 5, page 6 of the report that "A geotechnical investigation would be required for the detailed design of a sewage lagoon at the Hamlet's granular source. This investigation should include a review of the tidal flats and their suitability for a location for the construction of a lagoon" to evaluate long term stability due to ice scour and wave action. Section 12 of the study reiterates the recommendations. When will the study(s) be performed and who will pay for it?
- x. The study does not indicate how the proposed sewage lagoon will be abandoned. The berm on the tidal flats would have to be designed to indefinitely stand up to ice scouring and wave action to ensure that after closure there would be not be a release of sewage to the environment due to berm failure.
- xi. The planning study identifies a number of legitimate challenges to operating and maintaining mechanical treatment systems, but the opportunities to address those

challenges are not identified. In order for the community to make a fully informed decision, they should be aware of both restraints and opportunities. In this regard, there are several points which require further consideration:

- xii. The planning study identifies a shortage of skilled residents as a challenge to the efficient and reliable operation of a mechanical treatment system. While this may be currently true, there are well-funded programs available to train Nunavut residents. Therefore, the lack of skilled residents could be remedied but success is dependent on whether there is sufficient interest and commitment by local residents and/or trades people to pursue the opportunity. This possibility should be brought to the attention of the community.
- xiii. The study identifies the high energy demand of the mechanical treatment facility as a challenge to the efficient and reliable operation of a mechanical treatment system. While this is true, there could be an opportunity to utilize residual heat from the local diesel power plant to heat the facility at a lower cost. The feasibility of such an initiative for the community would depend on local conditions such as the current location of the NTPC plant, type and proximity of nearby infrastructure, etc. Environment Canada has informed the NWB that further advice as to the technical feasibility of such an initiative can be obtained for little or no cost from a number of sources including the Arctic Energy Alliance, the NWT Power Corporation, and the Energy Program of Natural Resources Canada. Financial assistance may also be available from each of those organizations for such an initiative.
- xiv. Tables 9.1 to 9.6 provide the capital cost estimates for the RBC and sewage lagoon systems. The NWB has concerns regarding the availability of funds to implement Phase 2 of the lagoon option. The GNWT is in the process of transferring responsibility for some municipal services to the Hamlets. What is the implementation schedule for the transfer for the community of Pangnirtung, and are there financial considerations regarding future capital needs?
- xv. The reliability of a mechanical system in relation to power outages was also brought into question in the study. The installation of a simple back-up generator would increase the reliability of the system.
- xvi. The NWB recommends that further consultation with the Department of Fisheries and Oceans take place, to ensure compliance with the Fisheries Act.

Finally we note that MACA and Public Works are joint proponents of this project despite the fact that the licence is issued to the Hamlet of Pangnirtung. Who will own the facility, and who will operate it? We would like some clarification regarding the jurisdictional and financial responsibilities (see Item xiv above) of all parties, and whether the licence should in fact be issued to the GNWT until the facilities are actually transferred to the Hamlet.

The NWB would appreciate a prompt response to the above concerns so that the Board may proceed with the approval of this project in a timely manner.

Sincerely,



Dionne Filiatrault  
Technical Advisor

Cc: Hamlet of Pangnirtung Mayor - Joanasie Maniapik  
INAC Water Resources Inspector - P. Smith  
DFO - K. Chang-Kue