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Municipality of Sanikiluaq  
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8 July 2003

*Emailed &*  
**FAXED**  
08 July 03

Mr. Jean Crépault  
Panel Manager  
Canadian Environmental Assessment Agency  
200 Sacré-Coeur Boulevard  
Fontaine Building, 13th floor  
Hull, Quebec K1A 0H3

Dear Mr. Crépault:

Please find enclosed written comments from the Environment Committee of the Municipality of Sanikiluaq, on the Draft Directives for the Environmental Impact Statement of the proposed Eastmain 1-A Rupert Diversion Project.

The attached comments and recommendations are in addition to our recent presentation to the Evaluating Committee in Montreal. They have been prepared in consultation with representatives from three departments in the Nunavut Government, and with representatives from our land claim organizations, Nunavut Tungavik Incorporated and the Qikiqtani Inuit Association.

We are forwarding the comments to your office by both fax and email, and will forward the original by mail. If your office, or members of the Evaluating Committee, have any questions about our comments they may be directed to our Review Coordinator, Miriam Fleming, at the Municipal Office.

Yours truly,

Mary Inuktaluk Sr.  
Deputy Mayor

Zacharias Novalinga  
Chair, Environment Committee

Attach.

**Written Comments on the Draft Directives for Phase I of the  
Eastmain-1-A-Rupert Diversion Environmental Review Assessment**

**Submitted to:**

**Mr. Jean Crépault  
Panel Manager  
Canadian Environmental Assessment Agency**

**Submitted by:**

**Environment Committee  
Municipality of Sanikiluaq  
Sanikiluaq, Nunavut**

**July 8, 2003**

Further to the oral presentation and brief submitted from the Environment Committee at the Montreal Public Consultation Session, the Municipality of Sanikiluaq is providing written comments on the draft directives for development of an Environmental Impact Statement (EIS) of the proposed Eastmain 1-A Rupert Diversion Project (the Project) by the Proponent.

In general, our recommendations reflect the needs and aspirations of a predominantly Inuit, off-shore and marine-based community situated on the Belcher Islands in the Nunavut Territory of the James Bay Marine Region.

More specifically, the intent in submitting written comments is to appeal to the Evaluating Committee that in the Final Directives to the Proponent:

1. The significance of a healthy marine ecosystem to the cultural, social, spiritual, nutritional and economic well-being of the community of Sanikiluaq is taken into account.
2. Transboundary issues and impacts from the Project on the coastal and off-shore marine environment are identified and addressed in the EIS.
3. Specific environmental downstream effects and marine impacts are identified, assessed and integrated into the EIS.
4. The cumulative effects of the Project on the marine environment are fully considered and incorporated into the EIS.

#### General Concern

Hudson and James bays constitute a large marine ecosystem. It is a significant feature of the Canadian landscape whose health, functioning and ecological integrity ultimately depend on the knowledge of decision-makers in many jurisdictions.

In this regard, the principal concern is that the additive and cumulative effects of any further hydroelectric development on the rivers in the Hudson Bay watershed may very well impair the capacity of the Hudson and James Bay marine system to maintain itself on a sustainable basis.

A more comprehensive approach to inclusion of the marine ecosystem in the final directives is therefore advocated so that the maintenance of ecosystem functioning and marine environmental quality are considered integral components of the environmental review planning process to ensure the concerns of the Belcher Island Inuit, and other indigenous inhabitants and Nunavut agencies, are adequately addressed.

## Affected Communities

The community of Sanikiluaq is situated off shore and downstream from the James Bay hydroelectric developments and is dependent on marine currents, for valued sources of natural foods. Further changes in the James and Hudson Bay waters, from an additional hydroelectric project in the Eastmain and Rupert watersheds, may produce marine cumulative effects that :

1. Alter the distribution of marine organisms, fish and mammals as well as migratory birds.
2. Disperse and move contaminants in the marine current system, with subsequent bioaccumulation in the marine food web.

Such potentially significant impacts, actual or perceived, threaten and can affect the ability of the community of Sanikiluaq to feed itself on country food, and its ability to fulfill cultural and economic objectives including development of an eiderdown industry, a commercial shellfishery, and culturally-relevant tourism.

It is pertinent, therefore, that Sanikiluaq is identified as an affected community in the Final Directives and the Proponent is directed to “demonstrate an understanding of [our] rights, interests, values and concerns, and to start recognizing and respecting them in planning and carrying out their proposed activities”.

## Geographical Setting and General Description of the Environment

A rigorous description of the James Bay marine environment is required by the Proponent to establish the basis upon which direct and cumulative project impacts on the Hudson Bay marine ecosystem, of which James Bay is a part, may be predicted.

As such, the Proponent must be directed to provide a description of the James Bay inshore and offshore environment in relation to southeast Hudson Bay, including:

- The oceanography of the region
- The physical and chemical characteristics of water and sediments
- A classification of marine biological diversity including indicator and keystone species
- Marine trophic levels and interrelationships among the trophic levels
- Marine productivity

At present, it is assumed there is insufficient information for predicting the nature, direction and magnitude of change from the Project in the Hudson Bay marine ecosystem. It is critical, therefore, that the Proponent is directed to address this information deficiency in a rigorous fashion. This would include, for example, the:

- Status and ecology of marine species including but not limited to beluga whale, ringed seal, walrus, polar bear and whitefish
- Duration of estuarine occupation by individual species
- Movement of species between estuaries
- Distribution and activities of marine species offshore, including movement between James Bay and southeastern Hudson Bay
- Stock relations, diet and seasonal fat cycles of marine species
- Salinity and temperature sensitivities of the various life stages of Inuit valued marine fish and mammals
- Survival rates of fish larvae
- Mercury burdens in marine biota

### Definition of a Marine Study Area

In light of the potential significance of impact from additional and cumulative effects of the Project, the Evaluating Committee is encouraged to direct the Proponent to consider the James Bay Marine Region, as defined by Parks Canada, as the study area and zone of influence for the marine environment.

Given the migration of certain marine organisms and species in current systems, the range of biological concern extends beyond the limits of the bays, estuaries and marine environment of James Bay. It is imperative, therefore, that baseline conditions for this particular marine area are properly identified so the significance of any changes can be assessed and monitored over time.

Accordingly, the entire process of baseline gathering, impact assessment and mitigation planning for the James Bay Marine Region needs to be addressed comprehensively by the Proponent in the EIS.

This latter point is particularly important, as there are important gaps in the available information on the marine waters in the James Bay and southeastern region of Hudson Bay. Most notably is the required data showing variation in conditions over time that take on special importance now, because of the virtual impossibility of distinguishing between development-induced and so-called natural impacts in the absence of adequate scientific knowledge of natural variations. Other required information that needs to be included and addressed concerns bathymetry, water movements (currents) and the dynamics of sea ice in the region. An adequate description of the nutrient regime in the marine region is also required. Any effects on marine plants of such environmental variants as currents, ice cover, salinity and nutrients must be considered. Similarly, related factors bearing on animal plankton, and the fundamentally important energy transfer links to fish, sea mammals and marine birds need to be adequately identified and assessed.

### Marine Study Area Components

The quality and production of marine species in James and Hudson bays must also be taken into consideration. To this effect, the Proponent needs to be directed to:

- Determine the movement of waterfowl, marine fish, ducks and mammals into and out of the marine study area
- Determine how expansion of the Eastmain reservoir system will modify the physical and chemical characteristics of freshwater flowing into James Bay
- Determine how re-routing of freshwater flow will affect:
  - Water-mass characteristics, circulation and mixing rates
  - Sediment loads and carbon and nutrient fluxes
  - Estuarine productivity
  - Oceanographic processes
  - Physical and biological processes contributing to sea ice dynamics
- Study sea ice conditions to determine the dynamics of ice break up before and after construction of the Project, and its effects on near and far-ranging marine species
- Assess the importance of ice micro-algae and predict how the Project will affect limiting factors including nutrient levels and light
- Provide a detailed assessment of the impact of changes in the sea ice regime on beluga whale, ringed seals, walrus and polar bears with respect to population dynamics, reproductive cycle, productivity, sensitivity to disturbance, water temperature and water flows.
- Determine whether the Project will result in increased summer stratification of James Bay water, which would decrease phytoplankton production by reducing nutrient flow upward to surface waters
- Assess the effect of change in salinity patterns on the use of coastal areas by fish and marine mammals

### Cumulative Effects

The effects of hydroelectric developments in the Hudson Bay watershed on the marine ecosystem need to be assessed and evaluated with respect to the cumulative changes occurring in the influx of sediments, nutrients, heat and contaminants into the marine environment, as well as characteristics, seasonal supplies and mixing of freshwater, and the subsequent effects on currents, sea ice dynamics and marine productivity.

In particular, the Proponent needs to evaluate the long-term changes and extent to which the Project will alter the marine ecosystem in order to predict the nature and degree of its adverse effects - over and above the projects preceding it under its purview, other

existing projects in Ontario and Manitoba, and any future projects for consideration in the next 30 years on:

- Marine productivity in James Bay, Hudson Bay and Hudson Strait or, alternately, the James Bay Marine Region
- Physical and chemical properties of the marine ecosystem, including sea ice characteristics and the various trophic levels
- Regional and global climate including effects from contributions to the net production of greenhouse gases from existing and additional reservoir capacity

The Proponent should also be directed to:

- Determine and analyze all potential effects of the Project on the marine, estuarine and coastal environments in concert with those from forestry operations in the Eastmain and Rupert watersheds
- Provide detailed data on methyl-mercury levels and bioaccumulation rates for various species of fish and marine mammals in the offshore marine ecosystem, including the principal marine mammals such as beluga whale, walrus, ringed seal and polar bear
- Evaluate changes taking place with respect to each contaminant and sources thereof (airborne and others) in the James Bay Marine Region so as to understand and predict any cumulative or synergetic impacts

The Proponent must be instructed to use available ecosystem-based models for the cumulative impact assessment in the marine environment. Sound ecological baseline data is essential for the examination of environmental changes and, in turn, to the assessment of cumulative impacts. Accordingly, the Proponent needs to provide the baseline data and analyses for the foregoing and the significance of an absence of data must be assessed.

#### Contaminants and Cumulative Impact Assessment

Contaminants and heavy metals resulting from the Project in combination with other external sources must be factored into the cumulative impact assessment. To this effect:

- Specific direction should be given to the Proponent to determine existing contamination levels and bioaccumulation rates for valued species of fish, waterfowl, ducks and marine mammals of each drainage basin affected by the Project, including marine and estuarine ecosystems.
- The Proponent should be further directed to determine the degree of bioaccumulation of methyl-mercury in the principal marine mammals of the

James Bay Marine Region including beluga whale, ringed seal, bearded seal, walrus and polar bear

- The cumulative effects from the addition of reservoir methyl-mercury to airborne sources of methyl-mercury in the marine ecosystem must be assessed and the interaction of methyl-mercury with other contaminants in the bays must also be evaluated.

The extent of methyl-mercury released through the Project and its bioaccumulation in marine species, i.e. shellfish, fish, birds, ducks and mammals of the James Bay Marine Region, needs to be assessed to determine whether Inuit who eat these marine species are at risk.

### Transboundary Impacts

The movement of marine mammals and fish with increased methyl-mercury and other contaminant levels from the eastern James Bay inshore areas and through the marine current system into the hunting and fishing areas of Belcher Island Inuit is of paramount concern. Moreover, depending on the extent of the migration routes and areas of the marine species in question other Nunavut communities may also be affected.

Of utmost importance to the Inuit hunters of Sanikiluaq is the potential for changes in the distribution of food species offshore which may result from changes to inshore conditions. Changes to productivity in enlarged plumes may also impact such distributions and baseline data is critical in terms of impact assessment, mitigation and monitoring.

The proponent must be instructed to present detailed data on marine mammals including the beluga whale, walrus and ringed seal. Information on the distribution and movement of marine mammals and fish between the area directly affected by the Project and adjacent areas is required. The level of contamination in marine mammals must be evaluated and detailed information on marine invertebrates is also required. To this effect, the Proponent must be directed to design and implement a comprehensive marine baseline inventory study to clearly define the pre-project state of the marine and coastal environments in the study area.

Also, in order to conduct an adequate assessment of the effect of change in plume conditions on the transboundary distribution of biota, the Proponent needs to provide historical and up-to-date information on the characteristics of estuaries and marine environments when altered by dam construction and river diversions including net and cumulative effects on sediment and nutrient supplies, oxygen supplies, temperature and salient gradients, tidal and surface currents and plume characteristics with and without ice cover.

As migratory birds upon which Belcher Island residents depend may be further impacted by the Project, the Proponent should be directed to evaluate the abundance, distribution, seasonal habits and impact of habitat losses for waterfowl and marine ducks in particular.

#### Marine Environmental Quality

The Proponent should be directed to evaluate the current and future states of ecosystem health, including any changes to this state of health that might occur as a result of the Project. The possible impact on phyto- and zooplankton and the resultant food chain built upon them should be assessed including, for example, changes in the sea ice cover and plume characteristics, and methyl-mercury bioaccumulation.

The Proponent must be instructed to provide detailed information on long-term changes to the marine environment that would result from the development, including the effect on marine currents, the properties of water, the formation of ice and the effect on fish, birds, seals, beluga, polar bear and other forms of marine life. In this regard, the productivity and diversity of downstream ecosystems is determined by the amount and timing of annual freshwater input. Therefore, the Proponent must be specifically directed to identify species in the marine food web that depend on freshwater inputs and assess the associated effects of withholding or releasing large amounts of fresh water at times when they would not occur naturally, particularly in terms of effects from altering suspended sediment and nutrient loads, water temperatures and marine currents.

As Inuit consider themselves part of the marine environment, the Proponent should be directed to assess the impact of dietary changes on Inuit health resulting from the difficulty in accessing traditional sources of country foods and from methyl-mercury contamination. The dietary needs of the Inuit should be assessed and the cultural aspects of diet examined. The possible impact of reduced consumption of country food based on fear of contamination should be studied.

#### Traditional Knowledge

Inuit and Cree traditional knowledge of the behaviour patterns, movement, population trends and health of beluga whales, walrus, ringed seals, marine ducks, and waterfowl needs to be incorporated into all relevant sections of the EIS, as will traditional knowledge of local climate, sea ice, currents, salinity and river changes.

In this regard, Voices from the Bay: Traditional Ecological Knowledge of Inuit and Cree in the Hudson Bay may provide useful baseline information for identifying, assessing and mitigating incremental and cumulative impacts over a 50-year period into the past and future. For example, the volume of sediment and debris entering Hudson and James bays has increased significantly since rivers in the Hudson Bay watershed have been dammed for hydroelectric generation. The Inuit of eastern Hudson Bay and Ivujivik find it undesirable for further increases to occur in the volume of dirty, brownish pack ice that travels from James bay after spring break up because seals tend to leave an area when there is a lot of dirty, brownish pack ice around.

Some traditional ecological knowledge provided in Voices from the Bay may require updating in response to changing conditions since 1993.

#### Monitoring and Follow Up Programs

Monitoring must commence on methyl-mercury levels in marine mammals, including beluga, ringed seal, bearded seal, walrus and polar bears, in relation to movement of nutrients, organisms and species within the marine food web and from reservoirs to the marine environment.

Mercury measurements taken at the mouth of La Grande and Rupert rivers must include marine mammals in addition to water, ice, snow and fish.

A primary objective of a marine monitoring program is to measure changes in marine biodiversity so that decision-makers have the prerequisite knowledge for making sound decisions. As such, the Proponent should be directed specifically to design a long-term marine monitoring and follow up program for purposes of generating quality data to enable the requisite marine management boards and agencies to (i) monitor and interpret changes in the patterns of dynamic processes and interactions and (ii) choose among options to affect the changes occurring.