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**Directives for the  
Preparation of the Impact Statement  
for the Eastmain-1-A and Rupert Diversion  
Project**

**Ministère de l'Environnement  
July 2003**

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## **PART 1: BACKGROUND**

### **1 INTRODUCTION**

#### **1.1 Environmental Assessment Process**

Hydro-Québec, by way of its subsidiary the Société d'énergie de la Baie James (the "Proponents"), tabled at the end of November 2002 the document entitled "Preliminary Information – Eastmain-1-A Powerhouse and Rupert Diversion, October 2002" with the ministère de l'Environnement du Québec, the federal Department of Fisheries and Oceans and the Canadian Environmental Assessment Agency.

It has been established that the Eastmain-1-A and Rupert diversion project (the "Project") is obligatorily subject to the provincial environmental and social impact assessment and review procedures set forth in Section 22 of the James Bay and Northern Québec Agreement (JBNQA) and Chapter II of the *Environment Quality Act*. The Project is also subject to the *Canadian Environmental Assessment Act* ("CEAA"). At the request of the federal Minister of Fisheries and Oceans, the federal Minister of the Environment referred the environmental assessment of the Project to a review panel.

#### **1.2 Coordination Agreement**

An administrative agreement on the coordination of the environmental assessment process entitled "Agreement concerning the environmental assessments of the Eastmain-1-A and Rupert diversion project" was signed between the Government of Québec, by way of the ministère de l'Environnement du Québec, the secrétariat aux Affaires autochtones and the secrétariat aux Affaires intergouvernementales canadiennes, the Canadian Environmental Assessment Agency and the Cree Regional Authority. This agreement provides for the production, insofar as possible, of a single set of directives by the Evaluating Committee, in cooperation with the Canadian Environmental Assessment Agency, for the preparation of the Project's Impact Statement.

#### **1.3 Objective and Preparation of the Directives**

The present directives (the "Directives") stipulate the nature, scope and extent of the Impact Statement to be submitted by the Proponents. These Directives comprise two main parts, namely a background and the content of the Impact Statement to be produced by the Proponents. These Directives also include two appendices:

- 1) the table of contents of the Impact Statement summary document;
- 2) specific references and methodologies.

These Directives must not be considered exhaustive and the Proponents are required to add to their Impact Statement any other element that they deem relevant for the environmental and social assessment of the Project.

## **1.4 Public Consultation on the Directives**

The draft Directives were the object of a 60-day public consultation period. Consultation sessions were held in Montréal, Mistissini, Waskaganish, Chibougamau, Nemaska and Chisasibi.

## **1.5 Approval of the Directives**

After having taken into consideration the public's comments received during the consultation period, the Directives are approved by the Provincial Administrator of Section 22 of the JBNQA and the federal Minister of the Environment, then sent to the Proponents and made public.

## **2 SCOPE OF THE PROJECT**

The scope of the Project established for environmental assessment purposes comprises the various components of the Project as described by the Proponents in the document entitled "Preliminary Information – Eastmain-1-A Powerhouse and Rupert Diversion, October 2002" as well as the activities and works described in these Directives.

Generally, the Project includes the diversion of a portion of the flow of Rupert River from a location known as km 314 (314 km upstream from the mouth of the Rupert in Rupert Bay), towards the Eastmain 1 reservoir. More precisely, the water diverted by means of a series of dikes would by-pass to the east Cramoisy Lake to flow into Arques Lake, then into Nemiscau River, to then pass through Caché Nord stream before reaching the Eastmain 1 reservoir at about km 270 of the Eastmain River. There are also plans to build a powerhouse, Eastmain-1-A on the Eastmain River near the Eastmain-1 powerhouse currently under construction, upstream from the Opinaca reservoir of the La Grande Complex, on the James Bay Territory (the "Territory"). After passing through the turbines at the Eastmain-1-A and Eastmain-1 powerhouses, the waters diverted from the Rupert would flow north toward the Robert-Bourassa and La Grande 1 reservoirs by the existing Eastmain-Opinaca-La Grande diversion route.

The scope of the Project includes, without being limited thereto, the construction, operation, maintenance, the foreseeable modifications and, where relevant, the closure, decommissioning and restoration of the following works and activities:

- the Eastmain-1-A powerhouse with a maximum capacity of about 770 MW, including the water intake and tail race canal, located between the Eastmain-1 powerhouse and the Eastmain-1 spillway. The Eastmain-1-A powerhouse would be integrated to the 315 kV transmission line by way of the Eastmain-1 site;
- modification to the Sarcelle facility to take into account the increased flow, through the addition, either of a gate to the 3 existing ones or a powerhouse of a capacity of about 130 MW. In this latter case, a 315 kV transmission line would link the Sarcelle powerhouse to the Eastmain substation via the Muskeg substation;
- the partial diversion of watercourses, mainly the Rupert, Lemare and Nemiscau Rivers including:
  - the required dams and dikes;



- the works permitting the restitution of a minimum flow;
- the control structures and spillways;
- the set of diversion canals or tunnel;
- the corrective and mitigation works, such as sills on Rupert River;
- all of the flooded areas, including the expansion of the Eastmain 1 reservoir associated with the Project:
- the modifications to certain works, including the work to move certain existing power transmission lines;
- the modifications to the management of existing works and reservoirs;
- a temporary 69 kV line from the Albanel substation up to the construction zone, and a permanent line up to the spillway on Rupert River and the control structure;
- all of the related works and activities including, when relevant, the decommissioning and restoration of the sites of all temporary facilities required for the construction of the previously mentioned facilities, in particular:
  - the permanent and temporary work camps;
  - the permanent and temporary access roads;
  - bridges and watercourse crossings;
  - the construction or the modification of all transport infrastructures;
  - the treatment of wastewaters and waste management;
  - drinking water supply;
  - borrow pits, quarries;
  - management of excavation material;
  - construction worksites and storage areas;
  - the handling and storage of petroleum products and hazardous materials.
- any other modification to the mentioned works that would result from the pre-project studies currently underway.

Finally, it is understood that several elements of the Project must still be clarified and that it will be necessary to include in the scope of the Project, among other things, the environmental and

social mitigation measures that would require the construction of works that may cause impacts (e.g.: sills, spurs, etc.).

### **3 GUIDING PRINCIPLES**

The basic principles of the environmental and social assessment requirements that must be met are set out below.

#### **3.1 Environmental Assessment: A Planning Tool**

Environmental assessment is an instrument of choice in planning land and resource use and development. It reflects environmental and social concerns at all stages of a project, from design to decommissioning. It helps to design a project that is more respectful of the receiving environment, without compromising its technical and economic feasibility.

#### **3.2 Public Participation**

Public involvement is a central objective of an environmental and social assessment process and a means to ensure that a proponent addresses public concerns. In preparing an Impact Statement, a proponent shall first consult with residents and organizations in affected communities, other interested regional and national organizations, resource users and relevant government agencies. In particular, these Directives require the Proponents to demonstrate an understanding of Cree rights, interests, values and concerns and to recognize and respect them in planning and carrying out their proposed activities. Therefore, Crees and other local people who have traditionally used the area must be consulted.

Meaningful public involvement and the special participation of the Crees can only take place in the course of the environmental and social assessment processes if the public, including the Crees, have a clear understanding of the Project as early as possible in the processes. Therefore, the Proponents shall:

- continue to provide up-to-date information describing the Project to the public and especially to the communities likely to be most affected by the Project;
- involve the main interested parties in determining how best to deliver that information, i.e., the type of information required, format and presentation methods, translation needs, as well as the need for community meetings;
- explain the results of the Impact Statement in a clear and direct manner to make the issues comprehensible to as wide an audience as possible.

#### **3.3 Traditional Knowledge**

The Crees have substantial and distinct knowledge, which is essential to the understanding and assessment of the impacts of the Project, and the mitigation of these impacts. For much of the information requested by the Directives, traditional knowledge will have as important a contribution to make as scientific and engineering knowledge. The Proponents shall fully consider traditional knowledge and expertise in preparing the Impact Statement.

For the purposes of this environmental assessment, traditional knowledge may be regarded as the knowledge, understanding, and values that Crees have that bear on the impacts of the Project and proposed mitigation measures. This knowledge is based on personal observation, collective experience, and oral transmission over generations. Traditional knowledge and expertise is evolving with new experience and understanding, and therefore it would be inappropriate to limit Cree contributions to this assessment to what is commonly known as "Traditional Ecological Knowledge", although this will be a very important component.

Traditional knowledge relating to factual information on such matters as ecosystem function, resource abundance, distribution and quality, social and economic well-being, and to explanations of these facts and causal relations among them, will be required for the development of adequate baseline information, identification of the key issues, prediction of the impacts, and assessment of their significance, all of which are essential to the Impact Statement and its review.

This information may be obtained with the co-operation of other parties to incorporate into the Impact Statement traditional knowledge to which they have access or which they may reasonably be expected to acquire through appropriate diligence, in keeping with appropriate ethical standards and without breaching obligations of confidentiality. The Proponents shall facilitate the presentation of such knowledge by aboriginal persons and parties themselves to the review bodies during the course of the review.

The way to obtain this information should be decided by mutual agreement between the Proponents and the concerned Cree and local parties. Unfounded administrative and ethical constraints must not serve as a justification to minimize the use of such knowledge.

If the Proponents are unable to use traditional knowledge for a given relevant subject, they will have to stipulate the reasons why such knowledge is not available and present the steps that they took to obtain such knowledge.

Traditional knowledge of a confidential nature or that is the intellectual property of a Band Council, a group or an individual may be conveyed in private to the Proponents and review bodies for their exclusive use, without such knowledge being made available to the public.

### **3.4 Sustainable Development**

Sustainable development is development that meets the needs of present generations without compromising the ability of future generations to meet their own needs. It is based on principles of equity towards both future and present generations.

Promotion of sustainable development is a fundamental purpose of environmental assessment, and the Proponents shall take into consideration two factors that are directly pertinent to the task of assuring sustainability and ensuring that the full environmental and social costs of development are identified, avoided, mitigated, compensated or offset. These factors are:

- the extent to which biological diversity is affected by the Project;
- the capacity of renewable resources that are likely to be significantly affected by the Project to meet the needs of present and future generations.

Progress towards sustainable development will require the following:

- the preservation of ecosystem integrity, including the capability of natural systems to maintain their structures and functions and to support biological diversity;
- the respect for the right of future generations to the sustainable use of renewable resources;
- the attainment of durable and equitable social and economic benefits.

Therefore, in reviewing the Impact Statement, the following aspects will be considered:

- the extent to which the Project makes a positive overall contribution towards the attainment of ecological and community sustainability, both at the local and regional levels;
- how the planning and design of the Project have addressed the three objectives of sustainable development stated above;
- how monitoring and follow-up programs will contribute to ensure continuous progress towards sustainability;
- the appropriate indicators to determine whether this progress is being maintained.

### **3.5 JBNQA Principles**

The assessment and review of the Project will include and fully take into account, as a minimum, all the elements provided by Section 22 of the JBNQA including the following guiding principles:

- “the protection of the hunting, fishing and trapping rights of Native people in the Territory, and their other rights in Category I lands, with respect to developmental activity affecting the Territory;
- the environmental and social protection regime with respect to minimizing the impacts on Native people by developmental activity affecting the Territory;
- the protection of Native people, societies, communities, economies, with respect to developmental activity affecting the Territory;
- the protection of wildlife resources, physical and biotic environment, and ecological systems in the Territory with respect to developmental activity affecting the Territory;
- the rights and guarantees of the Native people within Category II lands established by and in accordance with Section 24 of the JBNQA until such land is developed;
- the involvement of the Cree people in the application of this regime;
- the rights and interests of non-Native people, whatever they may be;
- the right to develop by persons acting lawfully in the Territory;

- the minimizing of negative environmental and social impacts of development on Native people and on Native communities by reasonable means with special reference to those measures proposed or recommended by the impact assessment and review processes”.

## **4 PREPARATION AND PRESENTATION OF THE IMPACT STATEMENT**

### **4.1 Study Strategy and Methodology**

The Proponents are expected to observe the intent of the Directives and to identify and describe all environmental and social impacts caused by the Project, including situations not explicitly identified in these Directives. It is possible that these Directives include matters that, in the judgment of the Proponents, are not relevant to the review of the Project. If such matters are omitted from the Impact Statement, they shall be clearly justified so the review bodies, the public and other interested parties have an opportunity to consider and comment on this judgment.

The Proponents shall explain and justify methods used to predict potential environmental impacts of the Project on the valued components of the environment, on the interactions among these components and on the relations of these components within the environment. The information presented must be substantiated. In particular, the Proponents shall describe how valued components of the environment were identified and what methods were used to predict and assess the environmental impacts of the Project on these components. The value of a component not only relates to its role in the ecosystem, but also to the value placed on it by humans. The culture and way of life of the people using the area affected by the Project may also be considered valued components. The Proponents shall indicate how the significance of impacts was assessed and justify the selected criteria.

Wherever the Proponents make use of qualitative criteria to compare various design and development options, to describe the environment, or to assess impacts, each of these criteria shall be defined, their relative importance stated, and the differences between the categories indicated. The Proponents shall justify the classification of each criterion.

In describing methodology, the Proponents shall explain how it used scientific, engineering, traditional and other knowledge. Any hypotheses made must be clearly identified and justified. All data, models and studies must be documented so that the analyses are transparent and reproducible. All data collection methods must be specified. The level of uncertainty, degree of reliability and sensitivity of models used to reach conclusions must be indicated. The sections describing the existing environment and the environmental impacts predictions and assessment must be prepared to the highest standards in the relevant subject area. All conclusions shall be substantiated.

The Proponents shall support all analyses, interpretation of results and conclusions with a review of the appropriate literature, providing all references required and indicating the public availability of all works consulted, when appropriate. Any contribution based on traditional knowledge used shall be specified and sources identified.

The Impact Statement shall identify all significant gaps in knowledge and explain their relevance to key conclusions drawn. The steps to be taken by the Proponents to address these gaps shall also be identified. Where the conclusions drawn from scientific and technical knowledge are inconsistent with the conclusions drawn from traditional knowledge, the Impact Statement shall contain a balanced presentation of the issues and the Proponents' statement of their conclusion.

The Proponents shall consider the application of the precautionary approach which requires:

- that the onus of proof lies with the Proponents to show that a proposed action will not lead to serious or irreversible environmental damage, especially with respect to overall environmental function and integrity, considering system tolerance and resilience;
- scientific research and high-quality information;
- access to information, public participation, and an open and transparent decision-making process.

#### **4.2 Presentation of the Impact Statement**

Whenever possible, the Proponents shall avoid repetitions when describing the components of the receiving environment, the anticipated impacts on this component, the proposed mitigation measures, the importance of the residual impacts and, when relevant, the proposed compensation.

The Impact Statement shall include a guide that cross-references the Directives with the Impact Statement so that points required by the Directives are easily located in the Impact Statement.

In the interest of brevity, the Impact Statement shall make reference to, rather than repeat, information that has already been presented in other sections of the document. A key subject index would also be useful and should reference locations in the text by volume, section and sub-section. As well, the names of the Proponents' key personnel and/or contractors/sub-contractors responsible for preparing the Impact Statement shall be listed. Supporting documentation shall be provided in separate volumes, and shall be referenced by volume, section and page in the text of the main Impact Statement.

The Proponents shall present the Impact Statement in the clearest language possible. However, where the complexity of the issues addressed requires the use of technical language, a glossary defining technical words and acronyms shall be included. The Proponents shall provide charts, diagrams, tables and maps wherever useful to clarify the text, including perspective drawings that clearly convey what the developed Project site would look like. Maps shall be presented in common scales to allow for comparison and overlay of mapped features.

To facilitate the identification of the documents submitted and their coding in the electronic database, the title page of the Impact Statement and of its related documents must contain the following information:

- Project name and site;
- title of the document, including the term "Impact Statement";
- subtitle of the document;
- Proponents name;
- consultants name, where applicable;
- date.

### **4.3 Synthesis Report**

Given that the Impact Statement must be made available to the public, the Proponents must also provide a Synthesis of the Impact Statement and any other documents needed to complete the file. This Synthesis Report must be organized on the one hand to facilitate its understanding, particularly for the Cree public, and on the other hand to allow emphasis to be placed on the key elements (or issues) around which the Project's analysis and decision-making must be based. In this Synthesis Report, the Proponents must refer readers to the relevant sections of the Impact Statement.

In the Synthesis Report, the Project and its components must be presented according to each of the community territories affected (namely the reference village and all of the ancestral territory associated to it) and thereafter, according to each family hunting ground. The Project can be considered as a whole like a continuum (regional scale) but it must also be examined according to its main components. The table of contents of the Synthesis Report is enclosed in Appendix 1. It is important to note that the latter is a draft that can be improved with any element that the Proponents deem relevant.

### **4.4 Translation of the Required Documents**

The Impact Statement and the Synthesis Report, including the appendices and addenda, shall be available in French and in English. In addition, a summary of the Synthesis Report will also be translated into Cree (both coastal and inland Cree dialects) in an appropriate format. The Proponents will consider providing the summary of the Synthesis Report in various audiovisual formats following consultation with the Cree Regional Authority.

It is essential that at the public hearing stage of the environmental assessment that residents of those communities likely to be most affected by the Project have an adequate understanding of the Project and its impacts. The Proponents shall therefore explain in the Impact Statement how this information will be communicated effectively.

### **4.5 Number of Copies of the Impact Statement and of the Synthesis Report**

The Proponents are required to provide at least 200 paper copies each, including an electronic version in an appropriate format, of the complete Impact Statement, of which 100 in French and 100 in English.

The Proponents are also required to provide at least 300 paper copies each, including an electronic version in an appropriate format, of the Synthesis Report, of which 150 in French and 150 in English. In addition, the Proponents are required to provide an appropriate number of copies of the Synthesis Report Summary in Cree.

The Proponents shall make the Impact Statement and the Synthesis Report text available on an Internet website.

If addenda are produced as a result of questions and comments from review bodies, they must also be provided in the same number of copies and same format as mentioned above. Following consultation with the Crees, the Proponents could also be requested to provide the addenda in Cree dialects. Alternatively, the Proponents may consider providing the addenda in various audiovisual formats.

## **PART II: CONTENT OF THE IMPACT STATEMENT**

Part II of the Directives provides specific instructions to the Proponents for the content of each section of the Impact Statement.

### **1 INTRODUCTION**

This section shall orient the reader of the Impact Statement by briefly introducing the Proponents, the Project and both the geographical and legal settings.

#### **1.1 The Proponents**

The Impact Statement must present the Proponents of the Project. The presentation includes general information on the Proponents' background in connection to the Project and the major principles of their environmental and sustainable development policies. The Proponents must provide information on:

- ownership of rights and interests in the Project;
- corporate and management structures;
- the linkage of these factors between the Proponents.

The Proponents must describe the institutional context within which the Project is to take place. This description must start with an explanation of how the concept of functional separation has been implemented within Hydro-Québec. It must identify each of the company's divisions and the roles and responsibilities of each. In particular, the Proponents must clearly distinguish between the obligations and responsibilities of Hydro-Québec Distribution, TransÉnergie, Hydro-Québec Production and Hydro-Québec Ingénierie, Approvisionnement et Construction and shall describe the decision-making and approval processes for each. They must clearly explain the relationships between these divisions and the mechanisms that have been put in place to ensure that they remain functionally separate. They shall also explain the relationship between Hydro-Québec and its subsidiary the Société d'énergie de la Baie James.

Finally, they shall explain which of their divisions they have mandated to represent the corporation as interlocutor responsible for the Project.

#### **1.2 Overview of the Project**

The intent of this overview is to provide a context rather than a description since a more detailed description of the Project will follow in section 3.

The Proponents shall briefly summarize the Project, including: location, Project components, associated activities, scheduling details, timing considerations, phases and costs of each major component and of other key features. If the Project is being assessed as part of a larger sequence of projects, the larger context must be outlined and relevant references listed, if available. The Proponents shall describe how the Project will be connected to the Proponents' grid and specify the equipment that will be needed to do so (transmission lines, transformer stations, switch yards, etc.).



### **1.3 The Geographical Setting of the Project**

The Proponents shall provide a concise description of the geographical setting in which the Project is proposed to take place. This description shall integrate the natural and human elements of the environment, in order to explain the interrelationships between the physical and biological aspects and the people and their communities. This description may include the following information:

- principal ecological constraints of the environment;
- land use;
- communities;
- interests and main concerns of the various interested parties, in particular the Crees.

### **1.4 The Legal Setting of the Project**

To enable the public to gain a good understanding of the context of the Project's environmental and social assessment, this section should clearly identify, for each jurisdiction, the government bodies that are involved in the respective environmental assessment process.

This section must also describe the environmental assessment processes in the context of the coordination agreement and the main elements of the review processes. The role of the Impact Statement in the environmental assessment processes must be explained.

The Project's legal framework must also be described by stipulating how the agreements, the other provincial, federal or international laws, regulations and policies, as well as the sector-related authorizations to be obtained govern the Project.

This framework must also make reference to the elements of the agreements entered into or to be entered into between the Proponents, the aboriginal communities and/or the governments as well as the interests and key concerns of the parties involved.

In this respect, the Proponents shall consider the agreement for a new relationship between the Government of Québec and the Crees of Québec of February 7, 2002, the Boumhounan and Nadoshtin Agreements, as well as relevant past agreements such as that of Lake Sakami which became Complementary Agreement # 5 of the James Bay and Northern Québec Agreement. The Impact Statement will have to explain how and what elements of these agreements influenced the Project (design, mitigation and compensation measures, etc.) and to what extent the rights guaranteed in these agreements will be assured.

## **2 PROJECT JUSTIFICATION**

In this section of the Impact Statement, the Proponents will have to present the purpose of and the need for the Project as well as the alternatives to the Project considered, before analyzing the proposed alternative means of carrying out the Project.

Given the commercial nature of some of the information requested in this section, the review bodies are open to discussing with the Proponents, a mechanism for presenting the data requested taking into account their confidential nature for the Proponents.

## **2.1 Purpose of the Project**

The purpose of the Project must be established from the Proponents' perspective and offer a context for the analysis of the alternatives to the Project. To the extent that the Project has more than one purpose, the Proponents shall present alternatives for each purpose mentioned.

The Proponents shall first demonstrate that they need new or additional electrical generating capacity and energy resources, and that the best scenario for meeting that need includes the proposed Project. The documentation provided shall include all information and material necessary to assure a high standard of analysis and review, including data, hypotheses, sources, models and methodologies used, which shall be transparent and reproducible. Financial information shall be presented in constant dollars of a single reference year, as well as in current dollars, when appropriate.

The statement of the Project's justification must be presented in both energy and economic terms.

For the following sections, the names of the Proponents' known subsidiaries are used to facilitate presentation of Project's justification. Therefore, the Proponents shall describe the extent to which this justification is based on:

- fulfilling its obligation to provide Hydro-Québec Distribution with heritage pool electricity;
- meeting the additional (post-heritage) energy and capacity needs of Hydro-Québec Distribution;
- supplying additional export sales;
- ensuring the sufficiency of energy reserves to meet heritage and other obligations.

### **2.1.1 Heritage Pool Electricity**

Insofar as the Project's justification involves the obligations of the Proponents to provide heritage pool electricity to Hydro-Québec Distribution, the Proponents shall explain:

- Hydro-Québec Production's statutory obligations to provide heritage pool electricity to Hydro-Québec Distribution;
- Hydro-Québec Production's annual generating capability (assuming average water conditions), broken down by generating station;
- Hydro-Québec Production's actual generation for the period 1995-2002, broken down by generating station;
- additional generating capability expected to be added over the next 10 years (projects under construction or under study);

- the resources currently used by Hydro-Québec Production to meet its responsibility to provide heritage pool electricity and those it intends to use for the next 10 years.

### **2.1.2 Additional Needs of Hydro-Québec Distribution**

Insofar as the Project's justification includes supplying Hydro-Québec Distribution to meet domestic needs beyond those served by heritage pool electricity, the Proponents shall present the information called for below.

First, making reference to the most recent supply plan and updates submitted by Hydro-Québec Distribution to the Régie de l'énergie du Québec ("the Régie"), as well as its most current energy efficiency plan and any other relevant documents filed with the Régie, and taking into account all relevant decisions by the latter, the Proponents shall set forth the following information concerning supply and demand in Quebec for each year in Hydro-Québec Distribution's planning horizon:

- forecast energy and capacity needs;
- committed supply (including heritage pool electricity, purchases authorized by the Régie, and energy blocks for particular sources of electric power supply approved by the Quebec Government);
- anticipated reductions in needs resulting from energy efficiency programs carried out by Hydro-Québec, the Quebec Energy Efficiency Agency or other actors;
- the evolution of its energy efficiency programs from 1990 through the present. This description should make note of and explain all significant differences between projected and actual savings and projected and actual expenditures for past energy efficiency programs;
- additional energy and capacity needs, beyond its committed supply;
- any statutory obligations on the part of Hydro-Québec Production to provide Hydro-Québec Distribution with energy above and beyond the heritage pool electricity;
- any commitments made by Hydro-Québec or Hydro-Québec Production to meet Hydro-Québec Distribution's energy needs, above and beyond its commitments to provide heritage pool electricity.

The Proponents shall then explain the process by which Hydro-Québec Distribution will choose resources to meet these additional energy and capacity needs, and the timetable under which this process will occur.

### **2.1.3 Additional Export Sales**

Insofar as the Project's justification includes additional sales outside Quebec, the Proponents shall provide:

- Hydro-Québec Production's objectives and strategies with respect to outside-Quebec sales;

- a list of all current commitments for off-system power sales and purchases (for energy and/or capacity), indicating for each the date the commitment was entered into, the effective delivery dates, any renewal options, the contract prices and any other relevant information;
- for each year from 1995 through 2002:
  - the volume and value of Hydro-Québec's physical electricity exports;
  - the volume and value of Hydro-Québec's physical electricity imports;
  - the volume and value of all electricity purchases and sales by Hydro-Québec and its subsidiaries that do not involve transmission across its grid and its interconnections.

The Proponents shall then provide their most recent estimates of market prices for electricity in neighbouring markets for their planning horizons. These must include monthly estimates of peak and off-peak bulk prices as well as whatever indicators the Proponents uses to reflect the volatility of short-term peak prices.

Finally, the Proponents shall demonstrate the cost-effectiveness of the Project as a source for additional export sales.

#### **2.1.4 Energy Reserves**

Insofar as the Project's justification makes reference to the need to ensure the sufficiency of Hydro-Québec's energy reserves to meet heritage pool and other obligations, the Proponents shall describe any changes to the energy reliability criteria used by Hydro-Québec since 1990, and provide the justification for any such changes. They shall then demonstrate the extent to which these criteria were respected for each year from 1990 through 2002.

Furthermore, the Proponents shall provide, for the 1990-2002 period:

- annual generation data from each of their generating stations;
- expected and actual annual runoff (in TWh);
- the evolution of the energy reserve (in TWh of storage);
- the extent to which exceptional measures were required to maintain energy reliability.

Finally, the Proponents shall provide, for the period 2002-2012:

- projections of their ability to respect their energy reliability criteria, with and without the Project, including a list of the exceptional measures upon which they can rely;
- Hydro-Québec's forecast loss-of-load expectancy with and without the Project;
- worst-case November 1 storage levels, based on a four-year sequence of very low streamflow.

Finally, the Proponents shall present a detailed analysis of the implications of climate change on the average annual production of Hydro-Québec's generating system, with and without the Project.

### **2.1.5 Project Economics**

For the proposed Project, the Proponents shall present:

- the total cost, broken down into construction and financing costs, for each year until commissioning;
- the expected total capital cost of the Project, including capitalized financing costs, in constant dollars of 2002 and of the year of commissioning;
- the projected depreciation charges for the first 20 years of Project operations;
- the expected annual generation of Eastmain-1-A;
- the expected increase in annual generation for Eastmain-1 and each downstream station;
- the average cost per kWh for each of the first ten years of Project operations;
- the levelized cost per kWh for the Project, together with the hypotheses used to derive it.

Furthermore, just as the study area includes the facilities and watercourses downstream of the Rupert River and the course of the La Grande Rivière and its powerhouses, the economic analysis of the Project must also take into account its interaction with the La Grande Complex and Eastmain-1 powerhouses. The Proponents shall provide, in regard to these existing facilities:

- historical monthly and annual generation from 1995 through 2002;
- simulated monthly and annual generation for the next twenty (20) years, with and without the Project;
- original cost and accumulated depreciation as of 12/31/2002 and as of the Project commissioning date, with and without the Project;
- average cost per kilowatt-hour in nominal dollars for each year from 2002 to 2012;
- levelized cost per kilowatt-hour, as of 2002 and as of the year following Project commissioning.

## **2.2 Alternatives to the Project**

The alternatives to a project are defined as functionally different ways of addressing the need for the Project. For each of the final purposes described previously, the Proponents will have to describe the relevant alternatives. The Proponents shall:

- identify the alternatives to the Project for each of the four purposes previously outlined;

- establish criteria making it possible to identify the costs and direct and indirect benefits at the environmental, economic and technical levels;
- show that the Project is a reasonable approach to the identified needs;
- where applicable, identify the alternative to the Project that is preferred based on the comparative analysis of the costs and the benefits at the environmental, social, economic and technical levels.

More specifically, insofar as the Project's justification refers to the Proponents' obligations to provide heritage pool electricity, the Proponents shall explain the other ways at their disposal to meet these obligations, in the event that the Project is not carried out.

Insofar as the Project's justification refers to Quebec needs served by Hydro-Québec Distribution, over and above heritage pool electricity, the Proponents will have to describe the alternatives available to Hydro-Québec Distribution in the same timeframe as that of the Project. More precisely, these alternatives to the Project should include in particular:

- management of the demand by means of energy savings and efficiency programs;
- the purchase of supplies from suppliers other than the Proponents (thermal, wind, nuclear sectors, etc.);
- the addition by the Proponents of more capacity at existing generating stations;
- all other options available to Hydro-Québec Distribution in the event that the Project is not carried out.

Insofar as the Project's justification includes additional sales outside Quebec, the Proponents will have to present an analysis of the consequences of not going ahead with the Project on their expenditures and revenues.

Insofar as the Project's justification refers to the adequacy of energy reserves, the Proponents will have to present the consequences of not proceeding with the Project on the reliability criteria as well as the other measures available to them to compensate for this shortage.

### **3 DESCRIPTION OF THE ALTERNATIVE MEANS CONSIDERED AND THE SELECTED PROJECT**

#### **3.1 Description of the Alternative Means of Carrying Out the Project**

The Proponents must describe the alternative means of carrying out the Project and its key elements, which are feasible at the technical and economic levels. The Impact Statement must indicate the feasible alternative means capable of meeting the Project's objectives, including the one that initially seems to be the optimal alternative mean in terms of environmental protection. These alternative means can be devised independently of the Project's design parameters agreed to in the Boumhounan Agreement, such as modifying the flooded areas. The choice of feasible alternative means is based on the information collected, among others, during the surveys of the

study area and, where applicable, based on the proposals received during the public consultations that may have been held by the Proponents.

Among other things, the Proponents must identify alternative means, without limiting themselves thereto, for the following components of the Project, but giving consideration to their combination into a viable project:

- dams and flow control structures (gates, spillways, weirs or other);
- powerhouses;
- headrace canals and tailrace canals;
- reservoirs (area, volume, level management);
- diversion works and structures (including the choice of waterways to divert);
- transmission lines;
- access roads;
- work camps.

For each of the above components, the Proponents may describe location or corridors, design, technology, etc.

In light of the Project's characteristics, the Proponents will have to pay special attention to the following alternative means:

- the determining and management of minimum and diverted flows by presenting various scenarios including the possibility of modifying the frequency and extent of discharges in the Rupert River;
- the construction of the Sarcelle powerhouse;
- the location of the Eastmain-1-A powerhouse;
- the construction of the Muskeg – Eastmain-1-A access road.

### **3.2 Selection of the Relevant Alternative Means**

The selection of the preferred alternative means must be based on a clearly described method and that for each alternative means proposed, would at least consider the following aspects:

- the ability to meet the Project's justification, as described above, taking into account its cost-effectiveness;
- the technical and legal feasibility (accessibility, land tenure, zoning, availability of services, implementation schedule, availability of manpower, etc.);

- the key adverse impacts on the biophysical and human environment including Crees and Cree communities, and the ability to limit these impacts and to maximize the positive impacts.

The Proponents will choose, among the possible alternative means, the most relevant alternative means to carry out the Project, underscoring the distinctive elements that influenced this choice, whether at the environmental, social, technical or economic levels. In the analysis of the alternative means selected, the Proponents shall take into account the repercussions of each alternative means on the components of the La Grande Complex and their management.

This exercise should lead to the choice of only one alternative means. The Proponents will then explain how the selected alternative means clearly stands out from the other alternative means envisaged and why the latter were not selected for the detailed analysis of the impacts.

### **3.3 Description of the Selected Project**

The Proponents shall describe all of the known and foreseeable characteristics associated with the alternative means selected. This description shall include the activities, structures and work planned during the various phases of the Project, namely the construction, operation, the foreseeable modifications and maintenance, as well as, where applicable, the decommissioning and restoration phase. The Proponents will also have to present the estimated useful life of the permanent works and the monitoring and maintenance activities. The Impact Statement must also stipulate the location of the temporary, permanent and related infrastructures. An estimate of the costs and a timetable of the various phases must be presented.

The Proponents will provide, among others, the relevant information pertaining to the components listed below:

- 1) the dams and dikes, specifying their location, number, type, dimensions, the angle of slopes, building materials, the area occupied in the water and on land, and the parameters of the water bodies that these works will create, and the other characteristics of these bays (e.g.: surface area, total volume, bathymetry, renewal time, duration of filling, etc.);
- 2) the Eastmain-1-A powerhouse, including the location, the general layout, the type, the net available head, the installed generating capacity, the rated flow, the number and type of turbines, the length of the bypassed bay and the type of management of the powerhouse (load factor, monthly turbinated flows and discharges, daily, monthly and annual flow patterns, etc.);
- 3) the modifications to the Eastmain 1 reservoir, stipulating the total land areas flooded, the depth, the total and effective volumes, the renewal time, the management, the size, duration and frequency of the drawdown level fluctuations, as well as the period and duration of filling;
- 4) the description of the management of diverted water prior to the commissioning of the Eastmain-1-A powerhouse and more specifically an evaluation of the quantities of water that could be discharged;
- 5) the water intake(s) of the powerhouses, indicating the location, dimensions, depth;



- 6) the headrace structures, indicating the location, type, dimensions;
- 7) the tailrace structures, indicating the location, type, dimensions, the flow release axis in the main watercourse;
- 8) the spillways, specifying the location, type, dimensions, the main characteristics, the discharge capacity and the frequency of use;
- 9) the diversion canals or tunnels, specifying the location, dimensions, the presence of gates, the maximum and mean capacities as well as their management. The excavation work associated with the maintaining of water levels must also be described as well as the expected water speeds and flows at these works;
- 10) the control structure between the forebay and tailbay on the Rupert River, including the detailed management conditions planned;
- 11) the changes to the Sarcelle control structure or the addition of a powerhouse at this site, including the location, the general layout, the type, the net available head, the installed generating capacity, the rated flow, the number and type of turbines, the length of the bypassed bay and the type of management of the powerhouse (load factor, turbined flows and monthly discharges, daily, monthly and annual flow patterns, etc.);
- 12) the diversion and control works, including those intended for the management of minimum flows, specifying their type, location and management which should, among others, include the detailed temporal modulation patterns proposed;
- 13) the works proposed as mitigation or compensation measures (e.g.: upstream or downstream migration works for fish; sills including their location, size, management as well as the nature and the period of the work), defining the nature of the access roads which will be built and maintained;
- 14) incoming and outgoing electrical substations, indicating their location, dimensions, outgoing lines and buildings, the modifications to be made to existing substations;
- 15) energy transmission lines, presenting the corridor, type of line and hook-up points to the existing grid;
- 16) permanent and temporary access infrastructures, taking into account the overall access strategy (road and air transport). For each of the access roads (new or modified), indicate the location, right-of-way, longitudinal and cross-sectional profiles, the road classes, anticipated traffic, useful life, longitudinal drainage, water crossing points, the general characteristics of bridges and culverts (e.g.: type, diameter, length, slope, location of piers etc.), clearing required, access control, police supervision, and specifying who will be responsible for the security and maintenance during construction and operation of the Project;
- 17) the developments at Nemiscau airport, specifying the current traffic (number of flights, type of planes, number of passengers, approach corridors, volume of merchandise, noise levels) and the planned changes to these parameters;

Some activities or components of the Project are linked to the Project construction phase. A description of the following components must also be provided:

- 18) the clearing, recovery and elimination of wood. The Proponents must provide the location of the cleared areas, the volumes and the market value of the wood as well as the cutting strategies and methods for eliminating wood debris;
- 19) site preparation and clearing, including vegetation, soil, and rock removal, and associated disposal or storage methods;
- 20) borrow pits and quarries, indicating their location and surface area, the available volumes and the volumes that will be used;
- 21) cuts and fills, specifying the volumes, origin, transport, disposal of excess amounts;
- 22) temporary diversion works (cofferdams, diversion canals or galleries), including all the technical characteristics, including their encroachment areas in an aquatic environment, and their length of use;
- 23) the worksites and work camps (location, accommodation capacity, temporary electricity supply, drinking water supply, wastewater treatment, waste management, management of water runoffs, etc.);
- 24) the management of residual and hazardous materials and the works required for this management;
- 25) the manufacture, storage and use of explosives;
- 26) any other development or activity required to carry out the Project (e.g.: service stations, roadside warehouses, storage areas for hazardous materials, petroleum products, spreading of abrasives or de-icing material, etc.) in particular those whose location is planned near watercourses, water bodies or sensitive areas.

Moreover, the Proponents shall describe the approach and conceptual plans for decommissioning the temporary facilities. The Proponents shall also specify ownership, transfer and control of the different Project components and responsibility for monitoring and maintaining the integrity of some of the structures. A decommissioning plan shall be provided for all structures that are of a temporary nature (less than 20 years), including:

- work camps and related structures;
- access roads;
- borrow areas;
- petroleum storage areas;
- equipment receiving, handling and storage areas;

- disposal sites;
- water crossings.

The Proponents will have to identify natural events or situations in which the integrity or stability of structures could be jeopardized, evaluate the likelihood of such events or situations arising, and describe the type of damage that the structures could sustain (e.g.: failure of dikes or dams, erosion or washout of protection structures, flooding, isostatic rebound or other effects). This may be the case, for instance, during earthquakes, severe meteorological events, flash floods, landslides or under special environmental conditions such as the nature of the existing soils or drainage characteristics.

The Proponents will have to show that this information has been incorporated in the Project design as well as in the planning of emergency measures.

To facilitate the understanding of the Project by the public, the Proponents shall produce a visual aid, such as a scale model or a video document.

#### **4 PUBLIC CONSULTATION**

The Proponents shall describe the consultations and the information periods that they will hold or that they have already held within the context of the Project at the local, regional and national levels, where applicable. They shall indicate the methods used and their relevance, the places where the consultation was held, the persons and organizations consulted, the concerns voiced and the extent to which this information was incorporated in the design of the Project as well as in the Impact Statement. Moreover, the Proponents shall describe any outstanding issues.

In addition, the Proponents shall describe the consultation and information structures put in place under the Boumhounan Agreement.

#### **5 STUDY AREA BOUNDARIES**

To describe and analyze the biophysical impacts, the Proponents will subdivide the study area into four sectors corresponding to the Rupert diversion sector, the Eastmain 1 reservoir and the La Grande Rivière watershed, the water bodies with a modified flow downstream from the diversion zone, the bays, estuaries and marine environments affected by the Project and, finally, the sectors affected by the works and related activities. The nature of the studies identified for each sector indicates the level of effort required of the Proponents to present the baseline description. Within those guidelines, the Proponents shall define the appropriate geographical boundaries.

The study area boundaries of the estuarine and coastal environments could be difficult to establish as a result of the size of the Project and the scale of the water bodies touched. In that context, the Proponents shall discuss the Project's potential impacts on large biophysical phenomena such as marine currents and ice dynamics and biological productivity in James Bay and Hudson Bay.

The Territory must be considered as the study area to assess most of the Project's impacts on the social environment. The boundaries of this larger study area include the territory as described in chapter 22 of the JBNQA.

The Proponents shall determine, justify and present in the form of maps a study area taking into account the extent of the anticipated impacts and the appropriate ecological and human boundaries for the various components of the environment related thereto. If necessary, this area may be composed of various sectors delimited according to the impacts studied. The sectors must cover all of the planned activities for the main works and the related components, including the other elements necessary to carry out the Project and to define all of the direct and indirect impacts of the Project on the biophysical and human environments.

With respect to baseline information on the environment, the Proponents shall present a sufficient time-depth of data and information to establish averages, trends and extremes. For the most important environmental and social components, the Proponents shall determine how far in the past the study should begin and how far into the future it should be carried. The Proponents shall, when relevant, include the studies carried out in the context of the La Grande Complex or other recent applicable studies. In cases where the Proponents determine these studies are not applicable, the Proponents shall explain why this is so.

The temporal boundaries of the Project shall cover all phases of the Project: construction, operation, maintenance, decommissioning, as well as the rehabilitation of the sites affected by the Project.

## **6 IDENTIFICATION OF THE KEY ISSUES**

To better focus the Impact Statement, the Proponents shall identify the key issues related to the Project. These issues refer to rather broad and general problems considered important from a scientific and social standpoint. Moreover, these issues take into account the concerns and worries of the communities affected by the Project and that can tip the balance in favor of or against the Project. The choice of key issues should be made on the basis of relevant criteria and should be transparent. The issues may depend on several interrelated elements. However, the identification of the key issues is not limited to the legal responsibilities and obligations of the Proponents.

It is understood that the process for defining the key issues is iterative and that the list of issues can be modified during the impact analysis phase. The issues can be revised and adjusted in relation to the information acquired in the field and during the consultations held by the Proponents.

For information purposes, here are a few criteria that could prove relevant in the choice of the key issues:

- the visibility of the valued component;
- the public importance given to the component;
- the economic significance;
- the protected status;
- the rarity or special status;
- the preservation of biodiversity;

- the sensitivity to disturbances or pollution;
- the importance of the component's ecological role;
- the cultural and social significance.

## **7 GENERAL DESCRIPTION OF THE ENVIRONMENT**

In this section of the Impact Statement, the Proponents shall draw a succinct general portrait of the Territory where the Project will be carried out. The Proponents shall also describe the general aspects of the biophysical and human environments. They shall describe the elements, processes and interrelations of the existing environment so that the reader has a portrait of the environment in which the Project will be carried out. In addition to this description, there will be details about the current and planned land use. Photographs of the main ecosystems encountered are also a support that should be used.

Generally and without being limited thereto, the Proponents will have to deal with the following topics:

- the climate, including the mean temperatures and the freezing and thawing periods;
- climate change trends and how they influence the Territory;
- the geology and geomorphology;
- isostatic rebound;
- the hydrographic network of watersheds;
- the plant cover;
- the location, type, composition and surface area of wetlands;
- the main wildlife species (aquatic, land and semi-aquatic) present, including their distribution and abundance;
- species that are rare, vulnerable, threatened, or likely to be designated threatened or vulnerable, and species at risk from the standpoint of their abundance and their habitat;
- specific habitats or habitats of great importance for wildlife and flora;
- the current and potential exploitation of the Territory and the natural resources including recreotourism uses;
- the land regime in effect and the delimitation of Cree hunting grounds and a description of the use and management of their hunting grounds (current system of Cree hunting leaders);

- the areas devoted to protection and conservation or that are of interest because of their ecological, recreational, esthetic, cultural, educational or spiritual values;
- the demographic and socioeconomic profile, including the traditional economy, of the populations;
- the service infrastructures and facilities located on the Territory.

## **8 DESCRIPTION OF THE BIOPHYSICAL ENVIRONMENT AND ASSESSMENT OF THE IMPACTS**

In the following section, the Proponents shall describe the reference state of the biophysical environment in the study area and thereafter identify the impacts associated with each of the components described in the following sections.

### **8.1 Description of the Biophysical Environment**

#### **Overview**

The Proponents shall describe the state of the existing environment in the study area. Using both qualitative and quantitative surveys, they will describe the components of the biophysical environments likely to be affected by the carrying out of the Project. The various biophysical components must be described and analyzed according to an ecosystemic approach. To this end, the study area must be divided into sectors corresponding to the Rupert diversion sector, the Eastmain 1 reservoir and the La Grande Rivière watershed, the water bodies with a modified flow downstream of the diversion zone, the bays, estuaries and marine environments affected by the Project and, finally, the sectors affected by the works and related activities.

Without limiting themselves thereto, the Proponents shall collect the available data from government, municipal, aboriginal or other agencies. If the data are insufficient or not representative, the Proponents shall complete the description of the environment with surveys. They must use the data collected during environmental studies or follow-ups on similar projects in northern settings, including those of the La Grande Complex follow-up program. However, in such cases, the Proponents must demonstrate the compatibility of the environments with the study area and the relevance of such studies to the assessment of the impacts. The Proponents shall present the best data available on the biophysical characteristics of these ecosystems and, when relevant, describe trends or extremes in the data, in relation to a proper period of time. They shall indicate the source of all the data and analyses used in the description of the environment and specify the limits regarding the use of such data. The Proponents shall comment on the quality and reliability of these data and to the purposes they are used, and clearly identify gaps, insufficiencies, and uncertainties, especially for potential impacts requiring monitoring programs.

The description of the environment must, wherever possible, explain the relations and interactions between the various components of the environment, to make it possible to delimit the ecosystems of special interest. The description must help the reader understand the presence and abundance of animal species based in particular on their life cycles, their migratory habits, their available habitats, their feeding behaviours and the level of harvest to which they are

subjected. Where relevant, the Proponents will have to consider the impact of the pathologies, vectors of diseases and parasites on species of special interest.

This description of the environment must reflect local and aboriginal knowledge, as well as social, cultural and economic activities and values related to the described components.

All of the components of the environment must be described and the analysis of the data will take into account the confidence levels of these data (e.g.: quality of data, number of years, sampling effort, etc.). To avoid making the Impact Statement cumbersome, the Proponents can limit themselves to a general description of some of these components when they are not related to a key issue or concerns of governments.

This section first deals with the environmental components that are common to the entire study area. It goes on to emphasize the specific characteristics found in each sector. In addition to describing these specific characteristics, the Proponents shall evaluate the Project's consequences on the balance and interdependence between the species found in these sectors and, if necessary, between some of these sectors.

All of the physical components that are important for understanding the dynamics of the environment, whether or not they are likely to be modified by the Project, must be described. Similarly, the biocenosis and biotope of these main ecosystems of the study area must be sufficiently detailed to understand and determine the extent and importance of the Project's environmental impacts. The Proponents shall not only describe, but also explain the conditions favoring the presence, abundance and productivity of the species present, integrating the use that they make of these environments according to their life cycle or their migration. The Proponents shall identify the food web linking the organisms and for some, their key role in the composition of various habitats.

#### **8.1.1 Matters relevant to all sectors**

Without limiting themselves thereto, the Proponents shall use the following list to describe the main biophysical components common for each of the various sectors of the study area:

##### **Physical Environment**

- watershed and sub-watersheds;
- sedimentology regime (erosion zones, transport of sediments, accumulation zones);
- the longitudinal profile, the water levels and the bathymetry of the watercourses affected by the Project for the high water, low water and average conditions;
- the natural hydrological regime and, if it is different, the hydrological regime prevailing prior to the construction of the Project, including the annual mean flow, the mean daily and monthly flows, low water (summer and winter) and high water flows, and the rated monthly flows for the watercourses affected. The Proponents shall discuss the origin and the availability of data, their validity, the levels of uncertainty associated with the data extrapolation and transposition methods;

- hydraulic conditions;
- the thermal regime and ice regime, the cover, type, thickness, duration of freeze-over, the formation of frazil ice and the risks of ice jams;
- the renewal time of the main lakes affected by flow modifications;
- the water quality using appropriate physical-chemical parameters and the factors that govern or control these variables, and the differences between each of the watersheds affected;
- for flooded areas, the mercury levels in the soils, in particular for soils with high organic content.

### **Biological Environment**

#### *Vegetation*

- the composition, distribution and abundance of aquatic, riparian and terrestrial vegetation, including forestry maps (plant groups, surface areas, age and density classes, volume and commercial value, disturbed sectors and year of the disturbance);
- the mapping of every exceptional plant community requiring special protection;
- the composition, distribution and abundance of medicinal plants;
- the composition, distribution, abundance and functions of wetlands;

#### *Habitat and wildlife*

- the main habitats found along the shoreline, banks, wetlands and, flood plains;
- the mapping of every exceptional wildlife habitat requiring special protection;
- plankton and benthos;
- the specific composition and the abundance of fish species of special interest, including the species that play a key role in their sustainability.
- the presence of populations or sub-populations of unique fish from a genetic or other standpoint. In addition, the Proponents must explain the differences between the methodological approaches of the studies carried out for the La Grande Complex and those use for the current studies and, where applicable, if these differences may have influenced the results obtained;
- for fish species of special interest, including the species that play a key role in their sustainability, an evaluation of the surface area and quality of the various types of fish habitats described for all of their life cycle functions (e.g.: spawning ground, fry-rearing area, feeding area, shelter);



- the use of the various habitats for the main fish species based on their life cycle and, more particularly, their strategy and their place of reproduction and feeding, their growth during the various ontogenic stages and their migratory requirements;
- the description and the availability of preferred habitats as well as other limiting factors for production such as the abundance of prey, obstacles to movement, etc., must, wherever possible, be taken into consideration;
- the general composition of the fish communities and the links among the species that comprise them (ex: predators-prey, mention of allopatry or sympatry between the species, etc.). This is a global type of assessment making it possible to better understand the relationship among the species;
- the essential parameters for understanding the dynamics of the populations, in particular the description of the abundance, distribution, breakdown of age classes, length and weight, the natural and man-induced mortality rates, the sex ratio, the length and age at maturity, the condition factor, fecundity, as well as the different phenotypes of certain species (e.g.: normal and dwarf forms of lake whitefish);

for fish species of special interest, including the species that play a key role in their sustainability, the description of the biophysical characteristics relevant to understanding the quality and productivity of the habitats (water levels, substrates, flow rate, vegetation, water quality, flood plain, etc.);

- the identification of the fish species that are likely to move at one time or another in the year or in their life cycle and the determination of the movement periods and life stages in question;
- the determination of critical or limiting habitats for the life cycle of those species likely to move about;
- the location and characterization of natural obstacles (whether permanent, temporary or partial) to the migration and movements of fish in the watercourses affected);
- the mercury levels in fish, with the emphasis on representative species at various levels of the food web and on the species consumed by aboriginal and sport fishers;
- the specific composition, abundance and habitats of birds (nesting, migration, breeding, feeding areas), and more specifically, migratory birds;
- the known waterfowl flyways and the possible influence of the La Grande Complex reservoirs on them during the last years;
- the specific composition, abundance and habitats of land mammals, in particular: moose, woodland caribou, migratory caribou, black bear and fur-bearing animals such as beaver, muskrat, marten;

- the specific composition, abundance and habitats of semi-aquatic and marine mammals;

#### *Special Status Species*

- wildlife and floral species of special interest (in terms of abundance, distribution and diversity) and the significant habitats of these species, whether they are terrestrial or aquatic, paying special attention to species that are rare, vulnerable, threatened, or likely to be designated as threatened, vulnerable, and at risk, in particular;
  - herpetofauna (boreal chorus frog);
  - avifauna (yellow rail, short-eared owl, Nelson's sparrow, harlequin duck, bald eagle, peregrine falcon, golden eagle, Barrow's goldeneye, Le Conte's sparrow, great gray owl, marbled godwit, sandhill crane, little gull, black tern, Wilson's phalarope, Connecticut warbler);
  - mammals (pigmy shrew, smoky shrew and arctic shrew, rock vole, wolverine);
- the unusual presence of species at the limit of their ranges, in particular the little brown bat.

The Proponents will have to refer to the existing legislation regarding endangered species.

#### **8.1.2 Rupert Diversion Sector**

The Rupert diversion sector is defined as being the sector upstream from the cut-off points of the diverted rivers and comprises the portion of the various watersheds affected by the increase in water levels up to their entrance into Eastmain 1 reservoir.

As the diversion sector will be a transitional aquatic environment between several watersheds formerly isolated from one another, the Proponents shall present, in addition to the description of the biophysical environment requested in section 8.1.1, the following specific details:

- migratory habits and requirements of fish species;
- the identification of the critical types of habitats required for the life cycle of the species present in the environment (e.g.: spawning sites in lotic environments);
- the population genotype of certain species located in various watersheds, in particular the lake sturgeon and the brook trout of the Rupert River genetic line;
- the nature and distribution of parasites as well as the diseases found in fish species according to the watersheds.

#### **8.1.3 Eastmain 1 Reservoir and the La Grande Rivière Watershed**

The sector that will have to be considered extends between the Eastmain 1 reservoir and the mouth of the La Grande Rivière. At the time of the commissioning of the Rupert diversion, the Eastmain 1 reservoir will have just been filled to supply the Eastmain-1 powerhouse. This new

reservoir will be affected by the current Project, as it will receive an additional inflow of water from the diversion of the Rupert River.

Within this context, and although this reservoir will likely be non-existent when the Impact Statement is drawn up, the Proponents shall present, in addition to the description of the biophysical environment requested in section 8.1.1, the following specific details:

- a theoretical reference state corresponding to the surface area of the Eastmain 1 reservoir, managed according to the parameters planned for the operation of the Eastmain-1 powerhouse;
- a characterization for the water bodies situated between the Eastmain 1 reservoir and the mouth of the La Grande Rivière;
- the evaluation of the fish populations likely to settle in the Eastmain 1 reservoir taking into account the fact that its recent filling will promote certain species to the detriment of others, as well as an increase in the mercury levels in fish flesh;
- the evaluation of the lake sturgeon population living downstream from the Eastmain-1 and Eastmain-1-A powerhouse;
- a detailed description of the components of the environment around the Sarcelle control structure as the latter will be, at the very least, modified to increase its evacuation capacity. The Proponents must pay special attention to certain fish species including lake sturgeon and walleye that frequent the area immediately downstream from this control structure.

#### **8.1.4 Water Bodies with a Modified Flow Downstream of the Diversion Zone**

This sector of the study area concerns the rivers and bodies of water that will see a change in their flow or level following the Project construction. The water bodies that will have to be considered are the Rupert, Nemiscau, and Lemare Rivers and the lakes found along their courses, as well as the watercourses located downstream from the dikes required for the creation of the bays. In light of the types of environment encountered, the Proponents must, in addition to the points listed in section 8.1.1, pay special attention to the following points:

- the description of the hydrological characteristics of the watersheds and sub-watersheds (e.g.: surface area, topography, slope, vegetation, surface geology, drainage network, pluviometry, etc.);
- the description of the geomorphology of the rivers by homogenous stretches according to the flow facies encountered (sill, rapids, basin, channel, etc.);
- the description of the sediment dynamics (erosion and sedimentation zones, transport of sediments and sediment assessment ) according to the hydrological regime;
- the analysis of the role of the hydrological regime, and in particular of high water periods for the geomorphology of the watercourse and for the functions of the flood plains;

- the description of the historical evolution of the geomorphology and the evaluation of the current state of dynamic balance of the watercourse;
- the contribution and the physical-chemical quality of the water of the tributaries along the rivers whose flows will be modified;
- the annual cycle and the inter-annual variability of the water temperature;
- the use of the various portions of the affected watercourses by the fish species of special interest, including the species that play a key role in their sustainability, according to their life cycle (spawning sites, feeding areas, migratory habits, etc.);
- the distribution and the function of the various wetlands spread out along these watercourses, in particular, those located between km 200 and 280 of Rupert River;
- the physical-chemical and biological characterization of lakes Champion and Nemiscau;
- the delimitation of the first sill of the tributaries of the Rupert River draining wetlands;
- the distribution and abundance of fur-bearing animals and birds in these watercourses and their tributaries.

The Rupert River includes sectors that are particularly important for the Crees that utilise them. A special attention shall be given to the following places: sturgeon spawning areas at km 215, 218 and 281 and Smokey Hill as well as Bras du Nord, Lemare and à la Martre rivers. For these places, a more comprehensive description of the biophysical characteristics shall be presented.

#### **8.1.5 Bays, Estuaries and Marine Environments**

The Proponents will define the Project's zone of influence in the Rupert River estuary and Rupert Bay. This delimitation must be based on, among other things, hydrodynamic criteria, the amplitude of tides and the nature of the ecotones. The same basis for the delimitation will be used for the La Grande Rivière estuary and James Bay.

The biophysical description of the bays and estuaries must include, in addition to the relevant elements listed in 8.1.1, all the components required for the characterization of the environment and the assessment of the potential impacts of the Project including among others:

- the temperature, salinity, currents, amplitude of the tides and characteristics of the mixing zones influenced both by the plume of fresh water and the saltwater intrusion, based on tides, prevailing winds and seasons;
- detailed information on the dynamics of the ice (formation, melting, cover, etc.);
- the sediment dynamics (transport and accumulation of sediments) including the presence and formation of deltas and the sensitivity of banks to erosion;

- the distribution, extent and abundance of riparian and aquatic vegetation, including eel grass, taking into account the species consumed by waterfowl;
- the use of these environments and all other wetlands, for nesting or migratory resting places by waterfowl, in particular Canada goose, brant and snow goose, as well as the trends observed in terms of the dynamics of these populations;
- the use of these environments by shorebirds, including, when impacts are anticipated, site-specific data collection regarding the food diet of rails and Charadriiforms that use the area;
- the distribution, abundance and use of the environment by the yellow rail, short-eared owl Nelson's sparrow;
- the use made of the Rupert Bay sector and its marshlands by birds, including the use as a moulting site by several species of ducks and possibly rails;
- the use of these environments by freshwater, estuarine, coastal and marine fish (e.g.: walleye, lake cisco, whitefish, ogac, sculpin, etc.);
- the seasonal distribution of coastal and estuarine fish communities near the mouths of the Rupert and the La Grande Rivière;
- the use of estuarine and marine environments by marine mammals likely to frequent them.

#### **8.1.6 Sectors affected by Works and Related Activities**

The Proponents will describe the relevant components of the biophysical environment for all road, path or transmission line corridors that will be built, moved or redeveloped. They shall also describe the sites where borrow pits and quarries will be developed and operated and where camps and waste elimination sites will be set up. The access roads to the borrow areas, quarries and waste elimination sites are included in this section of the Impact Statement.

In addition to the relevant points listed in 8.1.1, the Proponents shall pay special attention to the following aspects in the corridors and on the projected sites:

- the description of the areas to be cleared;
- the description of the aquatic environments (e.g.: width, depth, type of flow, substrate, cover, fish species, etc.) and the delimitation of fish habitats at water crossing sites or when developments are planned nearby;
- moose confinement areas and the frequentation of the Territory by woodland caribou, migratory caribou and black bear;
- the presence of fur-bearing animals such as marten, lynx, muskrat and the location of beaver dams;
- sectors that are conducive to waterfowl hunting.

To the extent that water bodies would be used to develop Project-related floatplane landing areas, the Proponents will describe the receiving environment.

## **8.2 Identification and Analysis of the Impacts on the Biophysical Environment**

### **Overview**

This section will describe the Project's impacts on the biophysical environment. The Proponents shall indicate the Project's impacts for the construction, operating, maintenance and foreseeable modification and when relevant, for the decommissioning and restoration phases, and describe their impacts using appropriate criteria. They must consider the direct and indirect environmental impacts, over the short and long terms, as well as the reversible and irreversible impacts of the Project. In predicting and evaluating the Project's consequences, the Proponents shall indicate the important details and clearly state which elements and which functions of the environment can be affected, where, to what extent, for how much time, and with what overall effect. This evaluation will deal in particular with the key issues identified by the Proponents.

The Proponents will have to specify the level of uncertainty of the foreseeable character of the environmental impacts identified. These forecasts will have to be based on clearly stated cause-effect hypotheses. The Proponents shall specify the indicators used and the way in which they make it possible to measure and verify these impacts, and in particular to distinguish the Project's impacts from those of other activities or processes.

This section will present the level of uncertainty of the methods and criteria used to forecast the Project's impacts. The methods will serve to judge the validity and the accuracy of the forecasts. As for the quantitative models and forecasts, the Proponents will have to discuss in this section the hypotheses underlying the model, the quality of the data and the level of certainty related to the predicted outcomes. Based on the level of uncertainty of the methods and the data used, the Proponents will have to be cautious in the assessment of the impacts and consequently in the choice and scope of the mitigation measures as well as in the environmental and social follow-up programs.

The Proponents shall clearly define the criteria and terms used to determine the anticipated impacts and to categorize them according to their significance. The Proponents may assess the significance of predicted effects, for example, according to the following criteria:

- magnitude or intensity of the impact;
- geographic extent;
- timing, duration and frequency;
- degree to which effects are reversible or mitigable;
- sensitivity or vulnerability of the component;
- uniqueness or rarity of the component;

- value of the component at the local and regional levels;
- formal recognition of the component by an act, policy, regulation or official decision (park, ecological reserve, threatened or vulnerable species, etc.);
- spin-off effects (links between the component affected and other components);
- risks to the health, safety or well-being of the local communities;
- probability of occurrence;
- the capacity of renewable resources to meet the needs of the present and those of the future.

The analysis of the significance of the impacts will contain sufficient information to allow the review bodies and the public to understand and evaluate the reasoning of the Proponents.

#### **8.2.1 Matters relevant to all sectors**

The Proponents shall present as precisely as possible the relevant key issues and the Project's anticipated impacts concerning the points described in section 8.1.1 which apply for each of the various sectors of the study area. Moreover, the Proponents shall describe the impacts on the following:

- the modification of aquatic, wetland, littoral, riparian, insular and terrestrial habitats on plant, planktonic, benthic, fish, bird communities as well as marine, semi-aquatic or land mammals;
- habitat availability changes by quantifying gains or losses. The surface areas lost should be itemized to allow for an adequate assessment of the impacts of the modifications of these habitats on the species that depend on them (e.g.: fish habitat, wetlands vs. birds);
- the potential imbalance in the food web in relation to the reference state;
- the anticipated changes in the dynamics of the populations of various fish species of importance, including an evaluation for the forage fish group;
- an evaluation of the changes in activities related to the life cycle of fish (e.g.: migration, reproduction, etc.) caused by the hydrological changes;
- an evaluation concerning the need to maintain fish passage for each of the structures built in the fish habitat and all the sectors where modifications in the hydraulic conditions may be associated with a limitation of fish movements;
- an evaluation of entrainment and induced mortality during the descent of fish at the sites of the various evacuation works (water intakes, powerhouses, tailrace canal, control structures, spillways, minimum flow works, etc.);

- the increase in mercury levels in fish species that are representative of each trophic level present in the study area, with emphasis on the species consumed by Aboriginal people and sport fishers;
- the state of knowledge regarding the mercury methylation phenomenon, the accumulation of mercury in the food chain as well as the toxicity of methyl-mercury for fish and fish-consuming species.

### **8.2.2 Rupert Diversion Sector**

For the Rupert diversion sector, in addition to the aspects listed in 8.2.1, the Proponents will describe and evaluate the following specific impacts:

- biophysical variations in the forebay and tailbay according to the management of the control structure separating these two environments;
- the reduction in lotic sectors and the modifications to lacustrine sectors following flooding in terms of the critical zone for the life cycle of certain fish species;
- the potential transfer between watersheds of parasites and diseases associated with fish;
- exchanges between genetically distinct fish populations, in particular for lake sturgeon and brook trout of the Rupert River genetic line;
- modifications in the abundance and distribution of land mammals, in particular fur-bearing animals present in the flooded areas;
- the contribution to greenhouse gas emissions following the flooding of this sector, specifying the type and area of the zones flooded as well as the height of the water column over those zones;
- an evaluation of the loss of areas considered as “carbon sinks”.

### **8.2.3 Eastmain 1 Reservoir and the La Grande Rivière Watershed**

The Proponents shall evaluate the impacts of an additional inflow of water caused by the diversion of the Rupert River and the commissioning of the Eastmain-1-A powerhouse on the management of the Eastmain 1 reservoir and its downstream course. More precisely, in addition to the points already mentioned in 8.2.1, the Proponents will pay special attention to the following points:

- the modifications to the Eastmain 1 reservoir;
- the modifications to the management of the Eastmain 1 reservoir as well as to that of the Opinaca reservoir, lakes Boyd and Sakami, and the Robert-Bourassa reservoir, including the terms and conditions under which spillways are used;



- the erosion of the banks and riparian vegetation, the transport and deposit of sediments caused by the variations in flows and levels (frequency and amplitude) and the ice regime of the La Grande Rivière;
- the water velocity, the fog formation and the ice regime in front of Chisasibi, as well as the bank erosion on Governors Island (Fort George).
- the environmental consequences of a major delay in the construction of the Eastmain-1-A powerhouse, ensuing in particular from a more frequent use of discharge works;
- the influence of the construction and management of the Eastmain-1-A powerhouse and, if applicable, the Sarcelle powerhouse, on fish and fish habitats, in particular walleye and lake sturgeon living downstream from these powerhouses.

#### **8.2.4 Water Bodies with a Modified Flow Downstream from the Diversion Zone**

In addition to the aspects previously mentioned in 8.2.1 and in the context of the eventual modifications of the watershed surface areas and hydrological and hydraulic conditions, the Proponents shall describe and assess the following specific impacts:

- the emergence of banks (periods and durations);
- the changes in the sediment assessment, by stretches of river;
- degradation and aggradation sectors as well as the characteristics over time and space of the new dynamic balance;
- the annual cycle and inter-annual variability of water temperature;
- the modifications to the composition of the riparian vegetation along the rivers and water bodies above the diversion point;
- the environmental consequences for lakes Champion and Nemiscau, as well as wetland zones, in particular those between km 200 and 280 of the Rupert River;
- the environmental consequences ensuing from the limited use of the spillways built at the diversion point of the Rupert, Lemare and Nemiscau Rivers, in particular during exceptional weather conditions;
- the modifications to fish populations such as the lake sturgeon, lake whitefish and lake cisco, particularly in the sectors valued by the aboriginal communities, including that of Smokey Hill and km 215, 218 and 281;
- for Lemare and Nemiscau Rivers, the environmental consequences of the anticipated differences between the natural conditions (level, flow, temperature, sediment assessment, etc.) and the operating conditions, considering their annual and inter-annual variations (amplitudes, durations, frequencies);

- the modifications to the abundance and distribution of the harlequin duck.

#### **8.2.5 Bays, Estuaries and Marine Environments**

In the assessment of the impacts, in addition to the relevant aspects stated in 8.2.1, the Proponents shall pay special attention to the modifications to the estuarine and marine conditions of the receiving environment (Rupert Bay and estuary, La Grande Rivière estuary and James Bay), in particular:

- the freshwater contribution of the Rupert River to Rupert Bay according to season;
- salinity patterns (longitudinal and vertical) of Rupert Bay and in the sector of James Bay near the La Grande Rivière;
- the nature and distribution of the currents in Rupert Bay and James Bay;
- saltwater intrusion in the estuary of Rupert River;
- the sediment dynamics (erosion, the transport and deposit of sediments) and the ice and thermal regimes in the estuaries;
- the distribution and abundance of riparian and aquatic vegetation, in particular eelgrass and the extent of the high marshes;
- the modification in planktonic and benthic production;
- the distribution and abundance of aquatic birds, in particular Canada goose, brant and snow goose, as well as the distribution and abundance of yellow rail, short-eared owl and Nelson's sparrow;
- the modifications in the functions of the fish habitats, the distribution and abundance of freshwater fish, in particular walleye confined further upstream in the estuary of the Rupert River;
- the modifications in the use of the environment by estuarine and marine fish with respect to their life cycle (e.g.: migration, spawning, emergence);
- the modifications in the use of the environment by marine mammals;
- the temporal distribution of new inflows from the diversion of the Rupert River in the estuary of the La Grande Rivière and James Bay, as well as the ensuing modifications.

#### **8.2.6 Sectors affected by the Works and Related Activities**

The Proponents shall identify the anticipated short-, medium- and long-term impacts of the infrastructures related to access (temporary or permanent, new or modified), transportation (airport, floatplane landing area) and reception, energy transmission as well as borrow areas and

quarries, whether for the construction phase or for the operation of these infrastructures, their maintenance, decommissioning or restoration.

For these facilities, the Proponents will describe and assess, in addition to the relevant points requested in 8.2.1, the impacts on the following points:

- the watercourses crossed by access roads, fish habitats (surface areas and functions) and the unrestricted movement of fish;
- the wildlife, following an additional habitat fragmentation;
- the neighbouring lakes and watercourses.

As the Project will impact the existing road network, the Proponents must describe the anticipated impacts on the Route du Nord and on the road linking to the Matagami-LG-2 road.

## **9 DESCRIPTION OF THE SOCIAL ENVIRONMENT AND ASSESSMENT OF THE IMPACTS**

The description of the social environment and the assessment of the impacts on this environment are of vital importance for the Project's acceptability and must be done meticulously. The Proponents shall adopt a comprehensive approach taking into account the ways of life of the local communities and the conditions that are essential for their preservation and development.

The description of the social environment and the assessment of the key issues and impacts must be done for the entire Project, including the related components and the various Project phases for the overall Territory. For this section, it was not deemed relevant to retain the division into sectors, as was the case for the previous section, as the impacts on the social environment are often difficult to link to a specific geographic unit.

This description mainly concerns the Cree communities present in the study area, Jamesians and, in some cases, the population of Quebec. Moreover, depending on the components of the social environment, the assessment of the impacts can be done at the local, regional or national levels. This entire exercise will have to be carried out in accordance with the generalities stipulated in section 8.1 and leave significant room for traditional knowledge and more specifically it must be envisaged from the standpoint of the relations that Cree and Jamesian communities have with the Territory. These relations are economic, social and cultural in nature. The changes that have occurred on the Territory and in its use since the construction of the La Grande Complex are an important aspect in the description of the social environment and the assessment of the Project's impacts on that environment.

The description of the social environment must be particularly detailed and understandable for the communities of Mistissini, Nemaska, Waskaganish and Eastmain that are directly impacted by the flooding, dam and diversion structure and by the impacts of the reduced flow of the Rupert River. For the communities of Wemindji and Chisasibi, impacted primarily by the change in the flow regime, the social impacts must be examined in terms of the direct impacts of these changes on the flow regime and what they mean for safety and land use. For all communities, the impacts on future territorial development, employment (short- and long-term) and on entrepreneurial activity should be examined.

The main components of the social milieu include, among other things, the social, economic and cultural environment, economic development related to hydroelectric projects, heritage, archaeology and burial sites, quality of life and social cohesion, public health and mercury, the occupation and use of the Territory, navigation, the landscape, recreotourism activities, and public services. If necessary, the Proponents can examine other subjects deemed relevant for the Project assessment.

## **9.1 Social, Economic and Cultural Environment**

The Proponents must draw a socioeconomic portrait of the Territory and must delimit the various administrative frameworks (administrative regions, municipalities, aboriginal communities) and identify the rules applicable to the Project in respect to hiring, conditions of employment, health, public safety and economic development

This portrait must include the point of view of the Crees, the elderly, adults, youth and women on the development and on the health, the social and economic benefits and impacts of development. Moreover, it must cover the transformation of Cree society over the last 30 years in terms of schooling and educational attainment, economic development and the evolution of local and Cree Nation government over the period.

The Proponents shall present a portrait of the Cree and non-aboriginal communities affected by the Project, by addressing the following points and by identifying and analyzing the Project's impacts:

### *Cree and non-aboriginal communities*

- the changes that have occurred in the field of schooling, economic development, public administration, including a discussion on these changes;
- the demographic profile of the Crees and Jamesians (birth, death and suicide rates, etc.) and employment rates, income distribution and education levels;
- the economic profile of the communities concerned (commercial and economic activities);
- job creation over the short-, medium- and long-term;
- the impacts on the local and regional economy over the short-, medium- and long-term;
- the economic spin-offs for Quebec over the short-, medium- and long-term;
- the development of businesses or service enterprises related to the Project or likely to be created following the opening up of the Territory;
- the relations and the conditions of co-existence between the Crees and non-aboriginals, both Jamesians and non-residents, for the construction and operating phases of the Project, and for previous projects, problems encountered and what was done to address them;
- the evaluation of the social and economic effect over the medium- and long-term of the jobs created or lost within the aboriginal and Jamesian communities;

- the perceptions of the Cree and the Jamesian communities in respect to whether the Project and the jobs created by it would have a positive, neutral or negative influence on the future of their community; on Cree harvesting, on other aspects of their lives.

#### *Cree communities*

- the major transformations in the social organization over the last 30 years;
- the cultural heritage of aboriginal traditional knowledge and the changes to the way of life that have occurred since the construction of the La Grande Complex;
- the changes to the aboriginal traditional way of life following the enhanced access to the Territory;
- the description, role, contribution and trends of the subsistence economy, including the Income Security Program, for the entire Cree economy, each of the communities and the trappers affected by the Project;
- the social relations within the communities affected by the Project and between these communities, in particular between men and women, and between generations, considering the major representation of young people in these communities;
- the impact of the Project on the distribution of wealth within the communities.

## **9.2 Economic Development in Relation to Hydroelectric Projects**

This section should begin with a characterization of the regional economy and the part played by the La Grande Complex in it. The role of the various agreements signed with the Crees in regard to hydroelectric development must be emphasized.

This description should include the present employment profiles of the communities in the Territory in terms of employment rates, education levels required and participation rates of community residents in the hydroelectric sector or in economic activity induced by this sector. The factors that help explaining this situation, determined by the historical content, should be described and include the employment policies of the Proponents, the agreements that they have with their workforce, training programs and other relevant factors. The current hiring policy regarding aboriginal workers, Jamesians and non-residents must also be considered, as well as the optimization of aboriginal hiring (measures and programs). The Proponents will also have to consider staggering the construction timetable as a measure for optimizing spin-offs in terms of jobs.

A characterization should be made of the existence and growth of the non-Cree and Cree private sectors and the role of the Proponents in the development of this sector in the respective communities. Factors promoting and discouraging the growth of this sector should be discussed, based on interviews with non-Cree and Cree entrepreneurs and planners. More globally, the Proponents will indicate the place and importance that they hold in the economic development of the Territory, as well as the regional socioeconomic spin-offs anticipated over the short- and long-term, from the carrying out of the Project.

Given the lessons of the past, as described above, the role of the Project in the regional economic development should be presented. Included in this should be an evaluation of any new approaches taken to promote the economic development of the region, in terms of its two resident populations, in the context of the Project, and the rationale for the new approach. The Proponents must also discuss any ongoing constraints on its success in promoting the expansion of the Cree, Jamesian and other private sectors.

The Proponents must describe the economic development that has occurred from the perspective of the local residents, including the main economic concerns. The Proponents must also describe:

- the role of the education and training system in preparing the Crees for employment;
- the perception and concerns of the Crees regarding the economic participation and opportunities open to them;
- the primary constraints on Cree and Jamesian access to job opportunities;
- the problems of retaining specialized manpower in Cree communities as a result of the attraction that employment opportunities on the Project could have on these workers.

More specifically, the Proponents shall evaluate the economic impacts of the Project on the km 257 Service Center on Matagami-LG-2 road, especially in terms of maintaining its client base.

### **9.3 Heritage, Archaeology and Burial Sites**

The Proponents shall describe burial sites present in the Project area, as well as other sites and areas valued by people for cultural, historical or spiritual reasons.

The Proponents shall present the current state of archaeological knowledge of the Project area, and provide an assessment of the type, relative number and significance of archaeological sites based on field surveys and site evaluations in representative portions of the Territory. A model of archaeological potential shall be presented indicating areas still to be surveyed and justifying selection criteria.

Local people shall be consulted with respect to historic and archaeological sites, and archaeological potential areas. Sites such as former trading posts and campsites could form the object of such studies. The Project's impacts on these sites must be presented and the historic and cultural value of the Rupert River shall also be presented and integrated into the discussion on archaeological knowledge of the area.

### **9.4 Quality of Life and Social Cohesion**

The Proponents shall present a portrait of the quality of life and social cohesion of the Crees as well as the mechanisms, programs and means that Cree local and regional authorities have devised and implemented to promote these aspects. Such a portrait will measure the transformations or continuities in this field over the last 30 years and the contribution of the hydroelectric development that has taken place on the Territory regarding these changes. It will give rise to an evaluation of these mechanisms, programs and means based on the results of a

perception survey conducted among the members of the affected communities from a representative sample of the sexes, age groups and socio-professional categories. The analysis of the impacts will take into account:

- the means implemented to manage social changes (integration in the work market; greater schooling; transformation of spending habits; impacts of past projects);
- the means implemented to manage changes of a cultural nature, in particular with respect to the transmission of knowledge between generations and the changes in values;
- the means implemented to manage social problems (drug addiction, delinquency, vandalism, etc.).

The Proponents will have to explain to what extent the Project will influence the quality of life and social cohesion of the Crees and how they intend to promote its integration and social acceptance. In particular, the Proponents must present the measures they intend to implement to improve the manner in which the Crees address the opportunities and challenges created by the Project in comparison with past experience.

#### **9.5 Public Health and Mercury**

The Proponents shall present the Project's impacts on the public health of aboriginal and Jamesian communities present in the study area. A portrait of the state of health based on a report of the main diseases (diabetes, cardiovascular diseases, asthma, infectious diseases, drug addiction, etc.) shall be prepared. The report should indicate the occurrence of these diseases and trends in recent years. A description should be presented of the changes in the health of the population of the communities most impacted by the La Grande project since its construction. From this, a list of factors that the local health authorities attribute to be the causes of these changes shall be compiled and an evaluation of the importance of the role of the La Grande project in these factors should be made.

The Proponents shall evaluate the Project's anticipated impacts on the health of the population. To this end, a general description shall be made of dietary changes that can lead to health risks and that could be attributed to changes in the biophysical environment or eating habits.

In addition, the Proponents must describe the health services and programs as provided and structured in each of the communities under study. They shall also consider the opportunity to collaborate with the Cree Board of Health and Social Services of James Bay for the requirements of this section.

Special attention must be paid to the mercury question. As the Project is likely to result in an increase in mercury concentrations in fish, the Proponents must make an assessment of the health risk associated with mercury exposure. With this task in mind, it will be necessary to consider the presence of contaminants in fish in the study area, including the varied concentrations in the parts consumed and representative fish consumption data for the consumers affected by the Project. It is recommended that the Proponents use recognized consumption standards, adapted to the Crees who are regular fish eaters. The calculation of mercury exposure should also consider the contribution that may come from other sources, in particular traditional food (e.g.: predators of contaminated fish).

The assessment of mercury exposure for Crees, Jamesians and the population in general should also consider:

- the initial mercury exposure (reference state) of the communities;
- sensitive populations, in particular young people, pregnant women (including transfer to the fetus) and the elderly;
- resource consumption rates, including the variability in consumption between communities.

The Proponents will have to discuss the evolution of the approach in the public health field concerning the benefits of fish consumption despite the presence of mercury levels exceeding the established standards. Similarly, and in light of the experience obtained for the La Grande Complex, the proponents will have to discuss the perception of the Crees regarding the mercury problem and its influence on the changes observed in their diet and, consequently, on their health in general.

The integration of a review of the results of the research undertaken, in particular within the context of the first *Convention on mercury*, will be relevant. This review should outline current knowledge and contribute to a better understanding of the evolution of mercury exposure among the Crees. More specifically, the Proponents shall present the health effects of a very long-term exposure to mercury at concentrations that are generally below those producing noticeable effects.

The Proponents will also have to discuss existing consumption standards and their relevance. On this matter, collaboration with the Cree Board of Health and Social Services of James Bay, which is developing an adapted standard to the Cree situation, is encouraged.

## **9.6 Occupation of the Territory and Land Use**

The occupation and use of the Territory represent one of the most important aspects to be dealt with regarding the impacts that will ensue from the Project. Indeed, in parallel with the organization and territorial management put in place by the various government agencies, the Cree population practices a sharing of the Territory and its resources, which varies according to the availability of such resources. The Territory is divided into hunting grounds (Ndoho Istchee), with each one being under the responsibility of a hunting leader (Ndoho Oujemaaou) who incidentally may authorize other families to use the hunting ground.

The description of the occupation and use of the Territory by the Crees will have to underscore the dynamic aspect according to the seasons of the year and the availability of resources. The Proponents must also describe the changes that have occurred, over the last 30 years, to the traditional use of the hunting grounds. It will also be necessary to consider that each of the Cree communities will be affected differently given that the hunting grounds affected by the Project, the proximity of the construction site, the potential jobs, etc., are all elements that will vary from one community to the next.

One of the important questions to consider in the Impact Statement is the enhanced (e.g.: development of the road network) or reduced (practice of navigation following the reduction in the flow of the Rupert River) accessibility to the Territory as well as the conflicts in usage that



may ensue. In addition, the Proponents must consider the changes made to the practice of activities, traditional activities in particular, by the Crees, over the short and long terms. The data used can come from multiple sources including the Cree populations and the other users of the Territory, as well as from local and regional government agencies.

More precisely, the Proponents shall describe the impacts of the Project on the occupation of the Territory. After consulting the appropriate stakeholders, the Proponents will present:

- the Cree land tenure system, based on hunting territories and the system of rights and obligations associated with this system, as well as the challenges to this system caused by the Project;
- the location of Cree camps, regardless of the degree of permanence;
- the tenure and the limits of Category I, II and III lands as well as the recognized rights and privileges of JBNQA beneficiaries;
- the location and description of protected areas, logging or mining sectors, quarries and borrow areas, outfitting operations and vacation leases, as well as any other type of occupation of the Territory and use of the natural resources;
- the areas of the Territory having a mining potential and the existing mining rights or mining leases;
- the northern limit of the commercial forest.

For each of the preceding points, the Proponents shall present the manner in which the Project will modify them, as well as the importance of this change.

The presentation on the use of the Territory must include in particular:

- the current frequentation and use of the Territory, including the species harvested by the Crees for the practice of traditional hunting, fishing, trapping and gathering activities, as well as other activities;
- the current frequentation and use of the Territory, including the species harvested by the Jamesians and the other users for the practice of sport hunting and fishing, boating, vacationing, gathering, cultural and other activities;
- the location of the hunting grounds affected by the Project. The study must describe the quality and the extent of the affected habitats on these hunting grounds in terms of species and their abundance, that are of interest to the Crees, etc.;
- a map illustrating the transportation and travel axes on the Territory (snowmobile trails, canoe routes, winter roads, etc.);
- the impacts of the opening up of the Territory and the infrastructures (roads, transmission lines, bays) on the hunting, fishing, trapping and gathering activities of the Crees, Jamesians and other Territory users;

- the impacts, among other things, of competition by Cree hunters and fishers with one another and with sport fishers, of the risks of over-harvesting resources, of the eventual re-arrangement of hunting grounds, etc.;
- the lessons learned from the La Grande Complex concerning the reorganization of hunting grounds and the means taken by trappers to adapt to the new conditions;
- the safe use of frozen water bodies that may be affected by the Project;
- the impacts associated with a major increase in road traffic, mainly during construction, in particular with respect to the noise levels and the risk of accidents.

## 9.7 Navigation

The Proponents shall produce a state of reference for the water bodies that will be affected by the Project and for which they will have to provide data pertaining to the bathymetry before and after the Project is carried out. The Proponents must consider the Cree traditional knowledge of navigation in the Project area and must include a description of this knowledge. They shall also describe the sectors currently used for navigation and identify those that will become accessible, dangerous or that will be lost following the construction of the Project, for the various periods of the year and taking into account the types of users. The Proponents must also draw on examples from the La Grande Complex to illustrate the types of obstacles created by development as well as how these have been dealt with in the past.

The Proponents shall describe the following elements:

- the state of reference and anticipated modifications on the type and density of navigation, for water bodies that will be affected by the Project;
- the distinction between the various types of navigation and boats (commercial, recreational, traditional) taking into account these distinctions in the descriptions and the assessment of the impacts.

The Proponents will also have to submit the following documents:

- maps identifying the zones at risk or impassible as well as navigable stretches of the rivers affected;
- maps identifying anticipated water level reductions as well as their location on the rivers and lakes affected by the Project;
- a table showing the current average depths and the anticipated reductions as well as their location on various stretches of the rivers and lakes affected;
- a table showing current and anticipated mean monthly flows and the influence of these flows on navigability at critical sites.

## **9.8 Landscape**

The Proponents shall describe the topography and the interesting elements of the landscapes of the study area. Natural landscapes of interest include in particular cliffs, unusual landforms, exceptional rivers, landmarks used by people from the area and any landscape recognized at the local, regional and national levels. The Proponents must discuss the importance and the exceptional character of the Rupert River in comparison to the other rivers of Quebec. The esthetic flows of rivers having a reduced flow shall be discussed. This should include an analysis of local Cree perceptions and values concerning such issues, which may differ from those of others.

The Proponents will provide a visual study of the sites recognized for their exceptional scenic quality that may be affected, taking into account the values associated with the visit of these sites, the communities' perceptions and the importance placed on these landscapes by users. It will be necessary to identify the impacts on the visual environment and the changes in the esthetic quality of the landscape. With this objective in mind and to clearly grasp the intensity of the impacts, the Proponents shall present visual simulations prior to the beginning and at the end of construction, of the main points of interest that they will have identified.

The Proponents shall also indicate the manner in which the works and infrastructures of the Project will be integrated into the landscape and the cultural environment. Moreover, they shall specify the steps that will be taken to maintain the esthetic and recreational interest of the zones affected by the various components of the Project. To this end, it is essential to integrate landscape impacts and recreotourism impacts into the assessment of the potential socioeconomic impacts and spin-offs.

The Proponents shall indicate if landscape development work will be carried out and if they plan to set up facilities to enhance the landscape such as scenic look-out points, nature interpretation stops, etc.

## **9.9 Recreotourism Activities**

The Proponents will draw a portrait of the recreotourism activities practiced in the study area including sport hunting and fishing activities, outdoor activities (canoeing, kayaking, snowmobiling, etc.) as well as cultural activities. The Proponents shall identify those sectors where elements of the study area are of special recreational interest.

The Proponents will present the profile and the number of persons practicing these activities, the sites used, the frequency and duration of the activities, the period of the year, the practices and expectations of users, as well as the economic contributions for Cree or other communities. For sport hunting and fishing activities, the portrait will also include the species sought and, when possible, the hunting and fishing success.

The Proponents shall describe the existing reception infrastructures making it possible to practice these activities and identify the stakeholders operating recreational-tourism enterprises in the study area. The various organizations involved in the recreotourism development of the region will be identified including, if possible, the location and description of their development projects.

As the study area comprises a portion of the La Grande Complex, the Proponents must present the recreotourism activities developed at the La Grande Complex by stipulating the partnership developed with local or other organizations.

The Proponents will describe and analyze the Project's impacts, both positive and negative, on the recreotourism activities in the assessment of the socioeconomic spin-offs and impacts. They shall also evaluate the recreotourism potential of the zone affected and the opportunities for developing businesses related to this activity sector and evaluate the Project's impact on such potentials and opportunities. The contribution that the Proponents plan to make to the tourism development of their facilities will also be presented. This will also include the multifunctional use of new water bodies created by the Project.

This analysis should include the perspective of the Cree Outfitting and Tourism Association, the Cree Regional Authority, the James Bay Municipality as well as the perspective of other pertinent actors in the Territory.

#### **9.10 Public Services**

The Proponents will identify the Project's impacts on the public services and place emphasis on the following elements:

- the drinking water supply sources that will be affected, in particular the water intake of the communities of Waskaganish and Chisasibi, and compare them with the situation in Eastmain following the Eastmain River diversion;
- where applicable, the anticipated impacts on the existing wastewater treatment systems or the receiving environment, in particular on Lake Champion;
- where applicable, the anticipated impacts on waste disposal sites;
- the evolution of traffic at the Nemiscau airport during the construction of the Project and the maintaining of services during the operating period.

### **10 OTHER IMPACTS TO CONSIDER**

#### **10.1 Accidents and Malfunctions**

The failure of certain works caused by human error or exceptional natural events (flooding, earthquake, etc.), in particular dams and dikes, could cause major impacts. It is therefore necessary to make an analysis of the risks of technological accidents, determine their impacts and present a preliminary emergency measures plan for the construction and operating phases of the works to be built and for existing works on which the operations will be modified.

The Proponents shall examine all factors that could compromise or improve safety conditions within the Territory in areas affected by the Project. The following factors in particular shall be addressed:

- **Works:** the Proponents shall study any possible dangers to users of the Territory or consequences to the environment resulting from construction, start-up and operation of the

works, no matter what the origin of these dangers may be (seismicity, precipitation, act of commission or omission, modification of river flow, changes in reservoir water levels, explosives, hazardous wastes and others). In the case of seismicity, the Proponents shall take into consideration the cumulative risks arising from the impoundment of other reservoirs;

- **Fires:** the Proponents shall study fire hazards related to construction and operation of the works and to increased human presence in the Territory. The consequences of an increased number of forest fires in the region shall be evaluated;
- **Roads:** the Proponents shall study the risk of road accidents for wildlife as well as for humans, including hazardous materials spillage;
- **Waterways:** the Proponents shall study the dangers in crossing waterways in all seasons in areas of increased flow and around the tailrace canals;
- **Power transmission lines:** the Proponents shall study the potential for a major malfunction of the transmission lines that would be caused by natural events (such as a major snow fall or ice storm).

The Proponents shall pay special attention to the sensitive elements of the environment (e.g.: villages, homes, natural sites of interest, areas of major use, etc.) that may be affected, in the event of an accident or a major malfunction.

Moreover, the Proponents shall present a preliminary emergency measures plan making it possible to react adequately in the event of an accident. This plan will address the main actions envisaged to deal with crisis situations. It must describe the dangers to the safety of individuals and property, describe the planned measures to protect the population and the environment in the event of an accident and indicate the type of expertise required on site. The Proponents shall explain how these measures will be presented to the concerned communities.

The preliminary plan will have to clearly indicate the link with municipal and aboriginal authorities, communication mechanisms, as well as the integration potential with the emergency plans of local communities. If an emergency plan has already been submitted for a given territorial unit, it can be updated to incorporate the new development.

For those accident scenarios having consequences (real or anticipated) on the neighbouring population, the Proponents must make sure to implement coordination measures with the James Bay municipality and the Cree communities, specifically Waskaganish and Chisasibi. In this regard, the Proponents shall present a summary of any simulation exercises undertaken in collaboration with the authority in Chisasibi to validate the emergency plan.

The description of the typical content of an emergency measures plan is presented in Appendix 2. A final emergency measures plan must be submitted by the Proponents prior to the commissioning of the Project. It will have to indicate how the Proponents plan to ensure the protection of the population and the environment if a major accident was to occur or if an unusual situation (weather related or other) was to arise.

## 10.2 Cumulative Impacts

The Proponents shall identify and evaluate the Project's cumulative environmental and social impacts combined with the effects of other existing works or activities, that have been carried out over the last 30 years, or that are reasonably foreseeable over the next decade. This latter period could be extended if the lessons learned from the La Grande Complex reveal that the impacts related to large scale hydroelectric projects could appear over a longer timeframe.

The Proponents shall take into account the fact that, based on the components studied, the Project's impacts can have repercussions well beyond the work construction site and period. The information on these developments, projects or activities must make it possible to identify the potential interactions with the proposed Project and, where applicable, their cumulative impacts.

The Proponents will have to:

- identify the valued components on which the assessment of the cumulative impacts will focus. The valued components for the analysis of the cumulative environmental and social impacts will have to be those associated with the key issues. To this end, the Proponents must consider, without limiting themselves thereto, the following components likely to be affected by the construction of the Project:
  - endangered wildlife and plant species;
  - fish and their habitat, in particular the lake sturgeon living in the Eastmain and Rupert Rivers as well as the lake cisco of Smokey Hill;
  - the increase in the number of water bodies with high mercury concentrations in fish;
  - avian wildlife and their habitat, in particular the harlequin duck and migratory birds;
  - terrestrial wildlife and their habitat, in particular the woodland caribou;
  - the quality of life and health of the Crees;
  - hunting grounds and how they are used by the Crees;
  - the transmission and usefulness of Cree traditional knowledge related to the rivers of the Territory following the diversion of several rivers in the last 30 years;
  - recreotourism activities, in particular hunting, fishing and whitewater navigation.
- propose and justify a choice of projects and activities selected for the cumulative effects analysis. These will have to include past activities and projects and those being carried out, as well as any future project or activity likely to be carried out. To this end, the Proponents should consider, without limiting themselves thereto, the following elements:
  - the facilities of the La Grande Complex as well as those of Eastmain-1;

- forest harvesting and the forest fire regime;
  - prospecting and mining;
  - the layouts of roads and energy transmission lines;
  - hunting and fishing (sport and subsistence).
- in addition to the temporal boundaries specified previously, present a justification concerning the geographical boundaries for the assessment of cumulative impacts. The Proponents shall note that these limits can vary from one valued component to another. Based on new information unknown at the beginning of the Project assessment, it may be necessary to modify these limits;
  - describe the mitigation measures that are technically and economically feasible, determine the significance of the cumulative impacts and, where applicable, the compensation measures. The Proponents must evaluate the effectiveness of the measures applied to mitigate the cumulative impacts. To minimize the predicted impact, they will evaluate the importance of the residual impacts over the long term. In cases where there are measures outside of the responsibility of the Proponents that could be effectively applied to these impacts, the Proponents will identify these measures and the parties that have the competence to act. In such cases the Proponents will summarize the discussions that took place with the other parties to undertake the necessary measures over the long term.
  - consider the need for a follow-up program to verify the accuracy of the assessment or to dispel the uncertainty concerning the assessment of certain cumulative impacts.

### **10.3 Renewable Resources**

The Proponents will determine, based on the results of their assessment, whether the Project is likely to cause significant impacts on renewable resources and therefore compromise their capacity to meet present and future needs.

Renewable resources are defined as resources that can be renewed on a regular basis, either naturally or by human action. While the emphasis is often placed on living renewable resources such as fish, wildlife and forest, the analysis of the effects on renewable resources should also consider non-living renewable resources such as water.

First, the Proponents will briefly describe the renewable resources that may be affected by the Project. Secondly, the Proponents will clearly establish, taking into account the result of their impact assessment, whether these renewable resources are likely to be significantly affected following the implementation of proposed mitigation measures (residual significant impacts). Should this be the case, the following points will have to be addressed:

- a brief description of the Project's impacts on the renewable resource;
- an indication as to the way in which the capacity of this resource was measured or evaluated;

- an indication of the temporal and geographic boundaries used to assess the capacity of the affected resource;
- a determination of the capacity of the resource to meet current needs;
- a determination of the capacity of the resource to meet future needs;
- a description of any other appropriate mitigation measures;
- a determination of the significance of the residual impacts on the renewable resource and its capacity to meet the need of current and future generations;
- an identification of the risks and uncertainties that remain and the description of the next steps, if any, that will be required to address this impact.

The Proponents shall integrate the analysis of the anticipated changes to traditional activities into their study of Cree methods for managing the resources of the Territory. The analysis will also have to consider, where applicable, non-traditional uses of renewable resources that may be affected.

## **11 MITIGATION, COMPENSATION AND RESIDUAL IMPACTS**

In this section, the Proponents shall first describe the standard mitigation practices, policies and commitments that will be followed as part of standard practice and applied regardless of location. The Proponents shall then describe their Environmental Protection Plan and their environmental management system, through which they will deliver this plan. The plan shall provide an overall perspective on how potentially adverse impacts will be managed over time. As well, the Proponents shall describe their commitments, policies and arrangements directed at promoting beneficial or mitigating adverse socio-economic impacts. The Proponents shall discuss any requirements for contractors and sub-contractors to comply with these policies.

The aim of mitigating impacts is to promote the best possible integration of the Project in the environment and to reduce major negative impacts. In this respect, the Impact Statement must specify the actions, works, corrective measures or additions planned during the various Project construction and operating phases to eliminate or reduce the intensity of the negative impacts associated with each of the Project components. The Impact Statement must also present an assessment of the effectiveness of the proposed mitigation measures, based on past hydroelectric projects, and provide an estimate of their costs. Moreover, the Proponents shall assess the anticipated impacts of these measures, including the undertakings necessary for their realization.

Where applicable, the Proponents shall present the proposed measures to promote or maximize the positive impacts such as, for example, hiring regional manpower, awarding certain contracts to regional businesses or promoting the multipurpose use of new water bodies. However, it should be noted that a positive impact cannot be interpreted as compensating for a negative impact.

For all of the biophysical and human impacts, the Proponents shall present the mitigation measures that they intend to implement. Wherever possible, they shall provide detailed



information on the nature of these measures, their implementation, their management and the post-installation follow-up.

### **11.1 Biophysical Environment**

As for the biophysical environment, the following measures will have to be considered:

- the terms and conditions and the steps to protect the environment, paying special attention to shores, surface water, vegetation, wildlife and wildlife habitats, including temporary measures;
- the management of reservoir filling periods, water levels, flows and fluctuation ranges according to uses and valued species;
- the establishment of ecological, esthetic or navigation minimum flows taking into account government policies and existing agreements on this subject;
- the installation of protective devices to prevent fish from being pulled into the works and fish mortality;
- the installation of fish-ways;
- the restoration of the plant cover on altered sites;
- the installation of sills and any other permanent or temporary work located in the bodies of water affected by the Project;
- the development of replacement habitats;
- the protection or relocation of rare, vulnerable and threatened species;
- measures that would contribute to an accelerated reduction of mercury levels in the fish of the reservoirs, in particular the management of fish populations (intensive fishing) and the removal of plant organic matter.

Needless to say, this short list can be complemented by other measures deemed adequate by the Proponents to mitigate the anticipated impacts.

### **11.2 Minimum Flow Regimes**

Among all the mitigation measures that will be chosen to limit the Project's impacts, the establishment and application of a minimum flow regime will take on special importance, not only in the protection of aquatic ecosystems but also in the protection of the uses made thereof. Moreover, given the scope of the water stretches affected and the variety of fish species present, it is essential that an in-depth discussion be held on the choice of the methods and their reliability in terms of habitat protection. Within this context, the following points, among others, will have to be explained in detail:

- the chosen hypotheses and their justification (choice of target species, description of life cycle, choice of physical variables, etc.);
- the number and the location of physical and biological measures and the representative nature of the data;
- the way in which the requirements of the various species at all stages of their life cycle are taken into account and integrated;
- the approach leading to the choice of the methods for assessing these flows, taking into account the characteristics of each of the rivers (e.g.: size, level of disturbance, winter conditions, etc.) as well as the uncertainties associated with the methods chosen and the data collected;
- the way in which the various uses to be protected are taken into account;
- where applicable, the transposition of the methods chosen from one drainage area to another or from one river to another;
- the taking into account of specific hydrological events (high-water periods, low-water periods, etc.) in the application of an ecological minimum flow regime;
- the validation of the predictions obtained through the various models chosen;
- the temporal distribution (annual and interannual) of these minimum flows;
- the insertion of the minimum flow regime in the management of the total flows of Rupert, Nemiscau and Lemare Rivers;
- the taking into account of the various assessment scales (spatial, biological, temporal);
- the choice of minimum flow selection criteria based upon the results obtained by means of the various assessment methods;
- the quantitative and qualitative appreciation of the residual habitats following the determination of the minimum flows;
- the permanence of these flows, regardless of the natural Rupert River hydrological conditions, for example, in an extended drought.

It is understood that the determination of the minimum flows must include, in addition to the Rupert River, the Lemare and Nemiscau Rivers, as well as the stretch or stretches of the Eastmain River that will be affected by the operation of the Eastmain-1-A powerhouse. Any other stretch of watercourse affected by a reduction in flow will also have to be the subject of the evaluation of an ecological minimum flow.

Finally, for those rivers whose flows will be restored, the Proponents will have to explain the data upon which they are relying to determine the temporal modulation of these flows during the

operating period. If these data are non-existent, it is suggested that the Proponents begin the acquisition of these data right away.

### **11.3 Human Environment**

For the human environment, the mitigation measures can have a very broad or, on the contrary, a very narrow scope to mitigate a local or selective impact, although deemed important for those who will be subject thereto. Ideally, these measures should be discussed with the populations concerned. Thus, among others, the following mitigation measures may be considered:

- inform the concerned populations of the potential impacts related to the sampling and handling of specimens necessary to acquire knowledge;
- inform the concerned populations of the importance of the mercury problem to public health;
- inform the concerned populations of the tailbay and forebay flooding schedule;
- setting up of navigation aids or other means intended to ensure access and the safety of users in stretches of watercourses with a modified flow and in watercourses newly created, including the implementation of a minimum flow which would ensure that navigability is maintained;
- identify the portage trails that will be set up or improved;
- reduce the number and importance of impassable obstacles in watercourses;
- identify the replacement watercourses having a mercury level suitable for subsistence fishing;
- redevelopment of the Waskaganish water intake;
- archaeological supervision and safeguarding of sites of great value, salvage excavations and the survey of sites threatened with destruction or submersion;
- establishment of a program for the protection or possible relocation of burial sites;
- an enhancement of archaeological discoveries and traditional knowledge in cooperation with Cree communities;
- the identification and implementation of measures seeking to reduce the impacts on the practice of cultural, recreational and tourism activities as well as to reduce or compensate for economic or job losses, where applicable
- encouragement of a multi-functional use of newly created water bodies, in particular through the clearing of land areas that will be flooded;
- planning a program to sensitize Cree workers, prior to hiring, about the contractors requirements in order to decrease any problems of lateness, absenteeism and dismissals;

- planning the creation of joint venture committees to facilitate the integration of Cree workers into the work force.

#### **11.4 Compensation Measures**

For certain components, where negative residual impacts are anticipated, the Proponents will have to implement compensation measures. These measures will apply both to the biophysical environment and the human environment. The choice of measures is made in cooperation with their users as well as with the authorities concerned.

Moreover, the compensation measures put in place within the context of the Project, including the Regional Development Fund in particular, as well as those provided under the agreements (including the Boumhounan Agreement) will have to be described.

As for the compensation of fish habitat losses, the Proponents will have to refer to the applicable legislation and policies.

#### **11.5 Determining the Significance of the Residual Impacts**

After having established the mitigation and compensation measures, the Proponents shall determine the significance of the impacts, including residual cumulative impacts, on the components of the biophysical and human environments in accordance with the general information set out in sections 8.2 and 10.2.

The Proponents will summarize the Project's residual impacts following the application of the mitigation measures so that the reader clearly understands the real consequences of the Project, the degree of mitigation of the impacts and which impacts will not be mitigated. A summary table grouping the impacts prior to mitigation on the various components of the environment, the mitigation measures applied and the residual impacts will have to be submitted.

### **12 INTEGRATION AND SUMMARY OF THE IMPACTS**

The Proponents will have to proceed with the integration and summary of the impacts. They must provide a global view of the impacts. Wherever possible, this summary will bring together the biophysical and human environments as, most of the time, they are related.

The objective of the integration of the impacts is to promote an analysis for all of the sectors that will complete the analysis requested in sections 8, 9 and 10. This also consists of analyzing the influence or the interdependence of the impacts. This integration must be done without limiting oneself to an artificial or sector-based subdivision of the environment and by linking the biophysical and human impacts.

### **13 MONITORING AND FOLLOW-UP PROGRAMS**

The following sections aim to establish the outline of the monitoring and environmental and social follow-up programs associated with the Project.

### **13.1 Monitoring Program**

The Proponents shall prepare an environmental monitoring program, which they plan to carry out during the construction, operation, maintenance and the foreseeable modifications phases and, where applicable, during the closure, decommissioning and restoration phases of the Project and of the related developments, activities and projects.

This program will help ensure that the mitigation or compensation measures proposed in the Impact Statement will be respected, as well as the conditions set at the time of the Project's authorization and the requirements pertaining to the relevant laws and regulations.

The monitoring program also makes it possible to check the proper operation of works, equipment and facilities. If necessary, the program will help reorient works and eventually make improvements at the time of construction and implementation of the various elements of the Project.

The environmental monitoring program must include in particular:

- the identification and location of the elements requiring environmental monitoring;
- all of the measures and means contemplated to protect the environment;
- the characteristics of the monitoring program, when they are foreseeable (e.g.: location of interventions, planned protocols, list of measured parameters, analysis methods, completion timetable, human and financial resources assigned to the program);
- an intervention mechanism in the event of the observation of non-compliance with the legal and environmental requirements or with the obligations imposed on contractors by the environmental provisions of their contracts;
- the terms and conditions pertaining to the production of monitoring reports (number, content, frequency, format).

### **13.2 Environmental and Social Follow-up Program**

The purpose of the follow-up is to verify in the field the accuracy of the assessment of the impacts and the efficiency of the planned mitigation or compensation measures for which an uncertainty remains.

The Proponents shall submit a preliminary follow-up program. This program must include the following elements in particular:

- the objectives of the follow-up program and the components targeted by the program;
- a list of the elements requiring follow-up;
- the number of follow-up studies planned as well as their main characteristics (list of the parameters to be measured, planned realization timetable);

- the intervention mechanism used in the event that an unexpected deterioration of the environment is observed;
- the commitments of the Proponents regarding the dissemination of follow-up results among the concerned populations;
- the accessibility and sharing of data for the population;
- the advisability for the Proponents to take advantage of the participation of stakeholders on the territory affected by the implementation of the program;
- the involvement of local and regional organizations in the design, implementation, the assessment of the results of the follow-ups and their updating, including a communication mechanism between these organizations and the Proponents;
- measures for post-Project monitoring with respect to protecting burial and archaeological sites. In addition, the Proponents shall discuss measures to preserve sites and areas valued by local people for cultural, historical, aesthetic, or spiritual reasons, and measures (such as cultural or educational programs) to mitigate loss, disturbance or significant change of environmental context;
- the harmonization of the Project's follow-up program with the follow-up program for the Eastmain-1 project;
- the harmonization and coordination of follow-up programs with the measures and programs put in place by other stakeholders or authorities (School board, Public Health, Weh-Sees agreement).

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## APPENDIX 2: SPECIAL METHODOLOGIES AND REFERENCES

### Introduction

For information purposes, this Appendix describes certain regulatory processes managed by the levels of government concerned and methodological references relevant to the environmental and social assessment of the Project. The Proponents are encouraged to ensure that information is exchanged with the governmental authorities so that the Impact Statement that will be submitted to the review bodies will meet the requirements of the Directives. The Proponents must report on the information exchanges in the impact statement.

### 1 Assessment of impacts for fish and fish habitat

The Project is subject to the *Canadian Environmental Assessment Act* ("CEAA") since it requires an authorization to alter, destroy or disrupt fish habitat under Subsection 35(2) of the *Fisheries Act* ("FA") as well as a formal approval under Subsection 5(1) of the *Navigable Waters Protection Act*. In the context of the application of the *Policy for the Management of Fish Habitat* ("PMFH"), the main mandate of the Fish Habitat Management Directorate ("FHMD") of the federal Department of Fisheries and Oceans ("DFO") consists of ensuring that the Project and the activities related to the Project do not result in any net loss in the production capacity of the fish habitat. To this end, the FHMD must ensure that the Project does not contravene any of the provisions of the FA dealing with the protection of the fish habitat, in particular Sections 20 (fish-ways), 22 (maintaining of a sufficient water flow), 32 (prohibition concerning the destruction of fish) and 35 (prohibition concerning the harmful alteration, destruction or disruption of the fish habitat).

The Proponents are invited to contact the FHMD to obtain further details on the specific information to be provided regarding the PMFH.

#### 1.1 Fish habitat

For all of the fish species present in the study area, the Proponents must describe (surface areas and functions) the components of fish habitats linked to their life cycle (e.g: spawning, fry-rearing, growth, feeding, wintering and migratory passage areas, etc.) and evaluate for these various habitats, the changes resulting from the implementation of the Project. It must be pointed out that fish species which must be considered are those that support, directly or indirectly, commercial, recreational or subsistence fisheries or may eventually support such fisheries. For forage fish species, typical habitats can be defined on the basis of common characteristics prevailing for each group of these species.

The description of the fish habitats (surface area and function) shall be based on appropriate biophysical parameters (e.g.: depth, substrate, type of flow, vegetation, cover, water quality, flood plain, etc.) regarding the species found there. Given the extent of the sectors to be evaluated, the Proponents can characterize the fish habitats by sub-sampling a sufficient number

of representative stretches of the same watercourse or a sufficient number of representative water bodies (lotic, lacustrine) of a territory (e.g., bay) to extrapolate the results obtained to the river in question or to all of the water bodies of the sector affected.

The selected water bodies and rivers will have to be characterized with all the parameters requested in these Directives so that a comprehensive characterization is obtained. The approaches used (stages, criteria, etc.) for sub-sampling, characterizing the fish habitats and extrapolating the results obtained will have to be validated by DFO.

## 1.2 Fish-ways

The Proponents will have to characterize fish movements to evaluate the need to maintain fish-ways for each of the structures built in fish habitat and for all sectors where the modifications in the hydraulic conditions can lead to a limitation of fish movements. The Proponents can characterize fish movements by conducting telemetry studies, by capture-marking-recapture methods or by fisheries using bi-directional trap nets located at the sites of future structures or zones with flow modifications. Depending on the characterization done, the level of confidence to determine the need to build fish-ways will be higher or lower.

## 1.3 Minimum flow regime

The ministère de l'Environnement du Québec suggests that Québec's policy for determining ecological minimum flows be fully applied in all stretches of rivers whose flow will be modified by the hydroelectric developments. This includes, in addition to the Rupert River, the Lemare and Nemiscau Rivers, as well as the stretch or stretches of the Eastmain River that will be affected by the construction of the Eastmain-1-A powerhouse. Any other stretch of watercourse affected by a flow reduction will also have to be the focus of an ecological minimum flow assessment.

If a habitat method is used for the assessment of minimum flow, it must be used jointly with other methods and be done in the context of an integrated process such as the IFIM (Instream Flow Incremental Methodology) process. This integrated process anticipate that all concerned stakeholders will have to be involved from the initial problem identification phase and throughout the process (planning of the study, implementation of the study, analysis of the alternatives and resolution of the problem). The Proponents will have to justify the relevancy of the selected methods.

For rivers with restored flows, the Proponents will have to explain the data which were used to determine the temporal modulation of the flows during the operating period. If these data are non-existent, it is suggested that the Proponents begin acquiring these data right away. The establishment of the criteria pertaining to the temporal modulation of flows could be done, for example, by means of relations between the current parameters (flow, temperature, etc.) of the sectors affected and the current parameters of control sectors (e.g.: Nemiscau and Lemare Rivers upstream from the diversion zone).

#### 1.4 Fish habitat compensation measures

In the event that DFO considers that fish habitat losses are acceptable and can be compensated, an authorization may be issued for altering, destroying or disrupting the fish habitat under Subsection 35(2) of the FA. However, before this authorization is issued, the Proponents must propose a fish habitat compensation program that is satisfactory to DFO.

The compensation plan will have to comply with the DFO's policy in this field. Ideally, the created habitats should be located in the same sector and be similar to those affected by the works, and benefit the same species as those affected by the Project. The evaluation of the new functions created can only be made by having a precise specification of the type of fish habitat to be developed.

The choice of the type of fish habitat developments must be made according to a strict hierarchy of preference and the choice of a lower level preference option must be justified. Compensation measures could take into account the needs of the local fishery.

The Proponents are responsible for finding and proposing an adequate compensation project for residual habitat losses ensuing from the Project. Within the context of the PMFH, it is important to note that no monetary compensation is accepted.

A description must be made of the compensation project. This description will include the following elements:

- exact location (latitude and longitude) of each site to be developed, as well as its surface area and ownership;
- presentation of the goal(s) sought by the compensation project, as well as a description of the objectives;
- justification of the benefits of the development;
- description of the interventions, planned measures and work timetable;
- description of the biological, hydrological, physical and chemical characteristics at the target sites before and after the developments;
- description of the functions of the fish habitat that will be created;
- estimate of the time required to achieve the objectives;
- presentation of a follow-up program to verify achievement of the objectives.

The Proponents are invited to contact DFO to obtain more information concerning the compensation requirements for fish habitats.

## **2 Mercury**

The Federal Department of Health proposes its own reference values (available upon request) for assessments of toxicological risks. However, the toxicological characterization approach and methodology proposed in the *Lignes directrices pour la réalisation des évaluations du risque toxicologique pour la santé humaine dans le cadre de la procédure d'évaluation des impacts sur l'environnement (Guidelines for carrying out assessments of the toxicological risk for human health within the context of the environmental impact assessment procedure)* of the ministère de la Santé et des Services Sociaux du Québec are also appropriate.

## **3 Avifauna**

The Proponents shall pay special attention to commercial and non-commercial bird species due to their ecological role and their contribution to the richness of the environment. Among these species, there are rare or endangered species, species specific to the James Bay territory or exceptional species.

For information, here is a list of non-commercial bird species that require special attention:

- Yellow rail, short-eared owl and Nelson's sparrow: these three species nest in the study area, in particular in the coastal high marshes, and perhaps also in the minerotrophic peatlands located inland;
- Harlequin duck: could nest along some rivers in the Territory;
- Bald eagle: nests on the Territory;
- Peregrine falcon and golden eagle: both these species may nest on certain escarpments in the study area;
- Barrow's goldeneye: the surveys of waterfowl should take into account the possible presence of this species in the study area;
- Other species of interest for the study area: Le Conte's sparrow, great gray owl, marbled godwit, sandhill crane, little gull, black tern, Wilson's phalarope, Connecticut warbler.

## **4 Endangered species**

As for those species that are rare, vulnerable, threatened, likely to be designated as threatened or vulnerable, and at risk, the Proponents shall consult the lists available at the ministère de l'Environnement du Québec, the ministère des Ressources naturelles, de la Faune et des Parcs du Québec and at Environment Canada.

Environment Canada anticipates that the federal *Species at Risk Act* will be in force in the summer of 2003. The main objective of this Act is to improve the protection of endangered species. Consequently, the Proponents will have to take into account the requirements of this

new Act and compile all the information that could be necessary to adequately evaluate the Project's potential impacts on the species contemplated by this Act.

Moreover, the Proponents will have to make sure that they adequately describe the use of the environment and the habitats by the endangered species identified in the Schedule of the Act, the potential impacts and the mitigation measures required for their protection, and to comply with said Act and its regulations. It is suggested that the Proponents familiarize themselves with the notions of "habitats, essential habitats and homes" defined in the *Species at Risk Act*.

## **5 Wetlands**

The Proponents will have to use a definition and a classification compatible with the application of the *Federal wetlands conservation policy* (available upon request) to be able to transpose the characterization of the environment and the loss of functions due to the Project's impacts. More specifically, the wetlands and intertidal zones are used by several species of birds during spring and fall migrations. The study should quantify the use of these habitats by avifauna.

## **6 Navigation**

The Navigable Waters Protection Act applies to all navigable water bodies located in Canada. It concerns first and foremost the protection of the public navigation right in accordance with its provisions and related regulations. Secondly, it makes it possible to ensure the safety of navigators by ensuring that approved works are properly identified. The requirement to obtain a formal approval under Subsection 5(1) of this Act is a trigger of the CEEA.

## **7 Heritage, archaeology and burial grounds**

The Proponents must survey and describe the prehistoric, historic and spiritual sites present on the Territory, the sites of special interest such as burial grounds, sacred or cultural sites, archaeological sites and the archaeological potential based on the criteria set by the ministère de la Culture et des Communications du Québec and by the Cree Regional Authority, the built environment and any other elements of interest, whether or not protected under the *Cultural Property Act*.

The sites that have been recognized from a heritage or archaeology standpoint, whether at the local, regional or national levels, must be identified. The Project's impacts on these sites must be presented.

In the archaeology field, the impact study will be based on the archaeological guidelines issued by the ministère de la Culture et des Communications du Québec and, more specifically, on the *Guide de référence archéologique pour la réalisation des études d'impact sur l'environnement relative aux aménagements linéaires et ponctuels (Archaeological reference guide for producing environmental impact studies pertaining to linear and localized developments)*. It must include a potential study and a field survey carried out in accordance with recognized practices.

If the study area has already been evaluated in the past, the data and recommendations will have to be updated.

## **8 Use of explosives**

The *Explosives Act* governs the manufacture, handling and use of explosives. A licence application must be submitted for certain explosive factories and depots (paragraph 7(1)(a)). The federal department of Natural Resources assumes responsibility for administering the *Explosives Act*. When the Project requires the use of explosives, the Proponents must make sure that they respond to the prerogatives of this Act.

Moreover, when the use of explosives is planned, it must comply with the *Guidelines for the use of explosives in or near Canadian fisheries waters* (Wright and Hopky 1998). The details pertaining to the blasting method (type of explosives and stemming, depth of the charge, use of primers, type of detonators, protection measures, timetable of operations, etc.), calculations of the theoretical fatal distance (namely the distance within which overpressure exceeds 100 kPa) as well as the planned mitigation methods must also be provided.

## **9 Typical content of an emergency measures plan**

An emergency measures plan must contain the following elements to comply with the *Dam Safety Act* administered by the ministère de l'Environnement du Québec:

- operations and decision-making centre;
- protection measures contemplated to protect the populations that risk being affected;
- the planned means for alerting the populations that may be affected, in cooperation with concerned municipal and government organizations (transmission of the alert to public authorities and subsequent information on the situation);
- emergency measures updating and re-evaluation program;
- a list of situations likely to result in a dam failure;
- alert and evacuation plans for powerhouse employees;
- relevant information in the event of an emergency (people in charge, available equipment, plans and maps indicating the location of works, etc.);
- emergency response structure and decision-making procedures within the enterprise;
- the names of the municipalities, aboriginal communities and any regional entity whose territories would be affected by dam failure as well as the contact information for the persons to be contacted where necessary;
- the communication methods with the external public security organization;

- general description of the territory that would be affected by the dam failure including in particular the identification of the main infrastructures that would be destroyed or severely damaged;
- a description of the human, material and organizational resources, both internal and external, that would be available in the event of a disaster;
- a description of the surveillance and alert measures planned by the Proponents in the event of an actual or imminent failure of the dam;
- the description of the prevention, failure indicator detection and mitigation measures put in place by the Proponents;
- the alert and staff mobilization measures according to the various situations likely to cause the dam to fail, the procedure for alerting the authorities in charge of public safety and where applicable, the public.

## 10 References

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Québec. 1999. Ministère de la santé et des Services sociaux. Lignes directrices pour la réalisation des évaluations de risques toxicologiques pour la santé humaine dans le cadre de la procédure d'évaluation et d'examen des impacts sur l'environnement et l'examen de réhabilitation de terrains contaminés.

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From: Ontario Environment Network <oen@oen.ca>

Subject: update from CELA

Date: Fri, 3 Sep 2004 09:47:01 -0400

Dear Friends,

You are receiving this message because of a previous expression of interest in Great lakes Issues. It is an important time to show your concern and ideas about the Great Lakes. Newly proposed draft agreements about the future of the Great Lakes have been released and are open for comments until October 18, 2004. The Ontario Ministry of Natural Resources has scheduled a number of consultative meetings across the province in September to hear from concerned citizens of Ontario.

To help people better understand what is going on and how to participate, the Canadian Environmental Law Association is in the process of preparing information for Ontarians who may wish to attend these hearings. This information will be posted on the Canadian Environmental Law Association web site early next week. In the meantime, we thought it was important to contact those who have already expressed a strong interest in Great Lakes water issues and provide them with some resource pointers. This information follows below. As well, a PDF document of pages extracted from Water Resources Management Decision Support System for the Great Lakes Final Report, Great Lakes Commission (May 2003) is attached to show Great Lakes consumptive use.

Who:

People with an interest in the future of the Great Lakes

What:

The governments of Ontario, Quebec and the eight Great Lakes states have negotiated draft agreements to protect and conserve the waters of the Great Lakes Basin. Several meetings will be held across Ontario to give an overview of proposed agreements, and to provide forums for questions and discussions.

When & Where:

\* Monday, September 13, 2004 - Thunder Bay Public meeting

7:00pm-9:00pm

Victoria Inn, 555 West Arthur Street Kensington Room

Phone: (807) 577-8481 Website:

<<http://www.victoriainn.ca/ThunderBay/>>

\* Tuesday, September 14, 2004 - Sault Ste. Marie Public meeting

7:00pm-9:00pm

Water Tower Inn, 360 Great North Road Courtyard Room

Phone: (705)949-8111 Website:

<<http://www.watertowerinn.com>> <<http://www.watertowerinn.com>>

\* Monday, September 20, 2004 - Toronto Public Meeting and Open

House 5:00pm-9:00pm (Presentations at 6 pm) Regional Meeting Hosted by the Council of Great Lakes Governors Novotel Toronto Centre, 45

The Esplanade Champagne and Alsace Ballrooms

Phone: (416) 367-8900 Website: <<http://www.novotel.com>>

\* Tuesday, September 21, 2004 - Windsor Public meeting

7:00pm-9:00pm

Ramada Plaza Hotel and Suites, 430 Ouellette Ave. Guard Room

Phone: (519) 256-4656 Website: <<http://www.ramadawindsor.com/>>

\* Wednesday, September 22, 2004 - London Public meeting

7:00pm-9:00pm

Best Western Lamplighter Inn, 591 Wellington Road S. Chelsea 1

Room

Phone: (519) 681-7151 Website: <<http://www.lamplighterinn.ca/>>

\* Tuesday, September 28, 2004 - Kingston Public meeting

7:00pm-9:00pm

Ambassador Resort Hotel, 1550 Princess St. London Room

Phone: (613) 548-3605 Website: <<http://www.ambassadorhotel.com>>

How to Get Involved & Resource Pointers:

\* Visit the Ontario Ministry of Natural Resources web site:

<<http://www.mnr.gov.on.ca/mnr/water/greatlakes/index.html>>

\* Read the Draft Great Lakes Basin Sustainable Water Resources

Agreement, a good faith agreement between the eight Great Lake States and the provinces of Ontario and Quebec:

<[http://www.mnr.gov.on.ca/mnr/ebr/gl\\_charter/StateProvincialAgreement.pdf](http://www.mnr.gov.on.ca/mnr/ebr/gl_charter/StateProvincialAgreement.pdf)>

\* Read the Draft Great Lakes Basin Water Resources Compact, a

binding agreement between the 8 Great Lake States:

<[http://www.mnr.gov.on.ca/mnr/ebr/gl\\_charter/InterStateCompact.pdf](http://www.mnr.gov.on.ca/mnr/ebr/gl_charter/InterStateCompact.pdf)>

\* Read the International Joint Commission's Protection of the

Waters of the Great Lakes - Review of the Recommendations in the February 2000 Report a good yardstick to compare against drafts of the

Annex: <<http://www.ijc.org/php/publications/pdf/ID1560.pdf>>

\* Visit the Great Lakes basin environmental protection groups

web site: <<http://www.speakongreatlakes.org/>> which has a lot of information, although most is from a US perspective.

\* Visit the Waterhole website:

<<http://www.thewaterhole.ca/twp/glcannex2001.htm>> for more resource pointers.

\* Other Supporting Documents:

Council of Great Lakes Governors Introductory Statement:

<[http://www.mnr.gov.on.ca/mnr/ebr/gl\\_charter/PublicComment.pdf](http://www.mnr.gov.on.ca/mnr/ebr/gl_charter/PublicComment.pdf)>

Great Lakes Basin Map:

<[http://www.mnr.gov.on.ca/mnr/ebr/gl\\_charter/GreatLakesBasinMap.pdf](http://www.mnr.gov.on.ca/mnr/ebr/gl_charter/GreatLakesBasinMap.pdf)>

Great Lakes Charter, 1985:

<[http://www.mnr.gov.on.ca/mnr/ebr/gl\\_charter/Charter1985.pdf](http://www.mnr.gov.on.ca/mnr/ebr/gl_charter/Charter1985.pdf)>

Great Lakes Charter Annex 2001:

<[http://www.mnr.gov.on.ca/mnr/ebr/gl\\_charter/Annex2001.pdf](http://www.mnr.gov.on.ca/mnr/ebr/gl_charter/Annex2001.pdf)>

## How to make Comments

\* The draft agreements are posted until October 18, 2004, on the Environmental Bill of Rights Registry for public comment at

<[http://www.ene.gov.on.ca/envision/env\\_reg/ebr/english/index.htm](http://www.ene.gov.on.ca/envision/env_reg/ebr/english/index.htm)>  
(Registry Number PBO4E6018).

If you wish to comment on the draft agreements, please contact the Ontario Ministry of Natural Resources by fax at (705) 755-1267, or by

mail to:

Paula Thompson, Senior Policy Advisor  
MNR Water Resources Section, Lands and Waters Branch  
300 Water Street, P.O. Box 7000  
Peterborough, Ontario, K9J 8M5  
PHONE: (705) 755-1218 FAX: (705) 755-1267

\* You should also send comments to the Council of Great Lakes Governors directly by e-mail at [Annex2001@cglg.org](mailto:Annex2001@cglg.org) (electronic comments will be posted to the Council of Great Lakes Governors website at <<http://www.cglg.org>>, by fax at (312) 407-0038, or by mail to:

David Naftzger  
Executive Director  
Council of Great Lakes Governors  
35 East Wacker Drive, Suite 1850  
Chicago, Illinois 60601 U.S.A.

\* You can also visit and engage in discussion at the new International Joint Commission bulletin board discussion room <[http://www.ijc.org/rel/boards/b\\_board/en/index.php](http://www.ijc.org/rel/boards/b_board/en/index.php)>

There is also a discussion room specifically for students:  
<[http://www.ijc.org/rel/boards/b\\_board\\_youth/en/index.php](http://www.ijc.org/rel/boards/b_board_youth/en/index.php)>

Please contact Sarah Miller at the phone number or email below for any further information:

Sarah Miller  
Canadian Environmental Law Association  
130 Spadina Avenue  
Suite 301  
Toronto, ON M5V 2L4  
tel: 416-960-2284 x 213  
fax: 416-960-9392  
e-mail: <<mailto:millers@lao.on.ca>>  
CELA web site: <<http://www.cela.ca/>>  
CELA library web site: <<http://www.ecolawinfo.org/>>

(Darryl Finnigan for Sarah Miller)

Sarah Winterton

Programme Director

Environmental Defence

500-615 Yonge Street

Toronto, ON M4Y 1Z5

Tel: 416-323-9521

Fax: 416-323-9301

Email:

<<mailto:swinterton@environmentaldefence.ca>> swinterton@environmentaldefence.ca

web: <<http://www.environmentaldefence.ca>> [www.environmentaldefence.ca](http://www.environmentaldefence.ca)