MICA GENERATING STATION UNIT 5 PROJECT

Terms of Reference

As Approved by the Environmental Assessment Office

On December 19, 2008

For BC Hydro's Application for an Environmental Assessment Certificate

BRITISH COLUMBIA
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INTRODUCTION

Background

BC Hydro is proposing the installation of a 500 megawatt (MW) generating unit (Mica Unit 5) into an existing empty turbine bay at the Mica Generating Station and a capacitor station on the existing Mica-Nicola 500 kilovolt (kV) transmission line (the Project) as a cost-effective, low impact way to add capacity, improve system reliability, and optimize the operation of the integrated electricity system.

The Mica Generating Station, located approximately 135 kilometres north of Revelstoke, was completed in 1977 and was licensed, designed and built as a six unit facility. Four units were installed at the time of construction and BC Hydro has now identified the need for additional capacity and has initiated the regulatory process for Mica Unit 5 (Figure 1) and the associated capacitor station (Figure 2).

The additional capacity is required as demand for electrical energy in BC is expected to grow by up to 45% over the next 20 years and the BC Government's Energy Plan has set a goal of energy self-sufficiency for the province by 2016. During the 2006 Integrated Electricity Planning (IEP) process, BC Hydro examined a wide range of scenarios to meet the growing demand for electricity and additional units at Mica were identified as a means to meet domestic system capacity needs. The 2008 Long-Term Acquisition Plan (LTAP) provides further analysis in support of the need for Mica Unit 5. As part of the Project, the capacitor station will provide voltage support for the existing Mica-Nicola transmission lines thereby increasing their power transfer capability which is presently limited by voltage stability.

BC Hydro also recently completed a "Sequence Identification' consultation process relative to the addition of generation units at the Mica and Revelstoke Dams. Mica Unit 5 followed by Mica Unit 6 and Revelstoke Unit 6 was identified as the preferred sequence for developing additional capacity on the Columbia River system.

If approved, on-site construction of Mica Unit 5 would take approximately three years with the construction workforce being housed at the Mica Creek town site. The Project would create approximately 400 person years of employment and has a contingency operational date of October 2013. Construction of the capacitor station would create approximately 30 person years of employment and would occur over two consecutive spring/summer/fall periods although some clearing may occur prior to construction starting.

With the addition of the new unit, the Mica Generating Station will continue to be operated within the limits of its water license and, as such, no significant operational impacts are expected.

Proponent Information

BC Hydro is a Crown corporation that began operations in 1962. BC Hydro's primary business activities are the generation and distribution of electricity. As one of the largest electric utilities in Canada, BC Hydro serves over 94% of British Columbia's population. BC Hydro endeavours to provide energy to its customers in an environmentally and socially responsible way by balancing the provinces energy needs with the concerns of the environment.

The corporate contacts for the Project are:

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Project Scope

For the purposes of the BCEAA review, the Project scope will include the following facilities, as identified in the Section 11 Order, and the activities associated with their construction, operation and, in the case of temporary facilities, their decommissioning:

Mica Unit 5

- a vertical shaft Francis turbine with a runner throat diameter of approximately 5.5 m and a maximum discharge capability of approximately 330 m^3/s ;
- an umbrella type generator, air cooled, with a rated capacity of approximately 500 MW;
- a bank of three single phase 16 kV/500 kV generator transformers. The switchgear building will be extended to accommodate the new 500 kV circuit breakers;
- additional ancillary mechanical and electrical equipment for the turbine, generator and switchgear;

- contractor's offices, parking and lay-down areas, contractor's concrete batch plant, source, transport and storage of aggregates, and upgrade of existing warehouse facilities required for the project; and

- expansion of the existing Mica Village facilities.

Capacitor Station

- a 500 kV capacitor station situated at Site 76 along the existing 5L71/72 transmission line corridor which connects Mica Generating Station to Nicola Substation.

Regulatory Overview

Although the installation of a fifth unit was previously licensed, BC Hydro has chosen to opt into the *BC Environmental Assessment Act* (BCEAA) process because of the certainty the process will provide to the review. As a result, the project is subject to review under the terms of the British Columbia Environmental Assessment Act, SBC 2002, C.43 (BCEAA) pursuant to the Order issued by the BC Environmental Assessment Office (BC EAO) under Section 7(3)(a) of the BCEAA on March 31, 2008. An Order under Section 10(1)(c), issued April 18, 2008 requires that the project receive an Environmental Assessment Certificate prior to proceeding.

BC Hydro consulted with federal agencies and it was determined that a federal review under the Canadian Environmental Assessment Act (CEAA) is not required for the Project. However, cumulative effects, accidents and malfunctions, alternatives to the project and the effects of climate change have been included in this Terms of Reference at the request of the Mica Unit 5 Core Committee.

The contents of this document constitute the Terms of Reference (TOR) for BC Hydro's Application for an Environmental Assessment Certificate (Application) for the Project and address the requirements of the BCEAA process. Specifically, the TOR identifies the key areas to be addressed and the information that must be provided in the Application.

The TOR are based on input from the Proponent and the results of consultation undertaken to date with First Nations, federal and provincial government agencies, local governments, local residents and local interest groups. These consultations began prior to the BC EAO accepting the project for review and are ongoing.

The TOR has been developed in accordance with the general procedures set out in *A Guide to Preparing Terms of Reference*, BC EAO, September 2007. The remainder of this document presents the information required to be addressed in, as well as a structure for, the Application. The Application will be developed according to the Approved Terms of Reference (ATOR) and will meet other directions provided in the Section 11 Order.

CONTENT REQUIREMENTS FOR THE APPLICATION

PREFACE

This section will introduce the project and provide a general statement of context and purpose for the development of the Application. Specifically, it will include:

- Identification of the Project.
- Reference to the purpose and intent of conducting an EA for the Project.
- Indication that the Project is subject to review under the BCEAA pursuant to a request by the Proponent and an Order issued under Section 7(3)(a) of the BCEAA.
- Indication that the Application has been developed pursuant to the TOR approved by the BC EAO and any other relevant instructions provided in the Section 11 Order issued by the BC EAO.
- Identification of the government agencies, First Nations named in the Section 11 Order, stakeholders and other parties involved in the development of the Application.
- A Table of Concordance which cross-references the information presented in the Application with the information requirements identified in the Approved Terms of Reference.

EXECUTIVE SUMMARY

This section will contain a summary of the Application including:

- Concise description of key project facets including facilities, activities, location and proponent.
- Summary of consultation with First Nations, government agencies, the public and stakeholder groups.
- General overview of key impacts or benefits identified and proposed mitigation or enhancement measures.
- Summary of the proponent's conclusions from the assessment.

TABLE OF CONTENTS

- The Application will contain a Table of Contents that is generally consistent with the outline that follows.

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TABLES

A list of all Tables referenced in the text of the Application will be provided.

FIGURES

A list of all Figures referenced in the text of the Application will be provided.

APPENDICES

A list of all Appendices referenced in the text of the Application will be provided.

LIST OF ACRONYMS AND ABBREVIATIONS

A list of all acronyms and abbreviations used in the document will be provided in the Application and will build on the following list.

AIA	Archaeological Impact Assessment
AOA	Archaeological Overview Assessment
Application	Application for an Environmental Assessment Certificate
ATOR	Application Terms of Reference
BCEAA	British Columbia Environmental Assessment Act
BCTC	British Columbia Transmission Corporation
BCUC	British Columbia Utilities Commission
CDC	Conservation Data Center
CEAA	Canadian Environmental Assessment Act
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CPCN	Certificate of Public Convenience and Necessity
CWS	Canadian Wildlife Service, Environment Canada
DFO	Fisheries and Oceans Canada
EA	Environmental Assessment
EAO	BC Environmental Assessment Office
EMP	Environmental Management Plan
HADD	Harmful Alteration, Disruption, or Destruction
IEP	Integrated Electricity Plan
LTAP	Long-term Acquisition Plan
MOE	Ministry of Environment
MW	Megawatts of electricity
NGOs	Non-government Organizations
RISC	Resources Inventory Standards Committee
SARA	Species at Risk Act (Federal)
Section 11 Order	Procedural Order issued under Section 11 of BCEAA

TUS	Traditional Use Study
VEC	Valued Ecosystem Component
WUP	Water Use Plan

GLOSSARY OF TERMS

The Application will contain a glossary of terms used in the document.

1. SECTION 1 - INTRODUCTION

This section will provide contextual background information on the Project, the Proponent, the Application and the regulatory regime which applies to the Project.

1.1 Proponent Identification

- Overview of BC Hydro.
- Project contacts and contact information (i.e., address, phone, fax, email).
- Identification of consultants involved in preparing the Application.

1.2 Background

- Purpose of the Application.
- Overview of Application structure.

1.3 Project Overview

- Brief description of the Project purpose.
- Summary of Project planning and history to date.
- Description of project size, location (including figures or maps showing regional context and site-specific setting) and key features.
- Identification and listing of Project elements included in the "Project Scope" including reference to orders defining the scope of the Project for the purposes of the environmental assessment under BCEAA.
- Identification of First Nations with an interest in the project.
- Overview of land use and tenure in the project area (e.g., Crown land, First Nations, private land).
- Estimate of the direct labour required during construction and operations.
- Estimate of the capital costs of the project.

- List of Project benefits (e.g., capacity, social, and economic benefits).

1.4 Regulatory Framework

- Summary of relevant provincial and federal legislative requirements governing the project and any applicable local government official community plan and zoning requirements.

- Summary of any legal orders or agreements applying to the project review (e.g., procedural orders issued under Sections 10 and 11 of BCEAA).

- Identification of licenses, permits and authorizations required for Project construction and operation.

- Statement as to whether or not a request for concurrent EA certification and permitting is being requested.

Figure 1.1 Mica Dam Regional Area Access Map

Figure 1.2 Capacitor Station Study Area

2. INFORMATION DISTRIBUTION AND CONSULTATION

This Section will summarize BC Hydro's past, ongoing and proposed notification and consultation activities with First Nations, government agencies and the public. The notification and consultation activities will comply with the Public Consultation Policy Regulation (B.C. Reg. 373/2002) under BCEAA and will be undertaken in accordance with the consultation provisions of the Section 11 Order.

2.1 Overview of First Nations, Public, and Agency Consultation

- Summary of the consultation objectives.
- Identification of interested parties and description of the means through which information has been distributed and the consultation activities undertaken.
- Indication of how comments from the public, First Nations, and regulatory agencies have been integrated into Project planning and design.

2.2 First Nations Consultation

2.2.1 Pre-Application Consultation

- Description of any understandings reached with First Nations regarding consultation (excluding confidential information) including any consultation agreements/protocols between First Nations and BC Hydro.
- Description of the efforts undertaken to distribute Project material to First Nations during preparation of the Application.
- Summary of consultation activities, including a description of the means through which the First Nations were made aware of the activities.
- A tabulated summary/record of issues and concerns raised by the First Nations prior to submission of the Application, the means through which they have been addressed, and any outstanding issues.
- Description of the proposed process for attempting to resolve any outstanding issues.

2.2.2 Future Consultation Activities

- Outline of BC Hydro's proposed First Nations consultation program for the Application Review phase and, should the project be approved, for construction, operations and decommissioning.

- Description of the proposed process for attempting to resolve any outstanding issues.

2.3 Public, Interest Group and Key Stakeholder Consultation

2.3.1 Pre-Application Consultation

- Description of the efforts undertaken to distribute Project information during the pre-Application phase.

- Summary of consultation activities undertaken with community officials and groups, NGO's and individuals including a description of the means through which they were made aware of the activities.

- A tabulated summary/record of issues and concerns raised prior to submission of the Application, the means through which they have been addressed, and any outstanding issues.

- Description of the proposed process for attempting to resolve any outstanding issues.

2.3.2 Future Consultation Activities

- Outline of BC Hydro's proposed public consultation program for the Application Review phase and, should the project be approved, for construction, operations and decommissioning.

- Description of the proposed process for attempting to resolve any outstanding issues.

2.4 Government Agency Notification and Consultation

2.4.1 Pre-Application Consultation

- Description of the efforts undertaken to distribute Project material to agencies during preparation of the Application.

- Summary of consultation activities undertaken with government agencies, including a description of the means through which they were made aware of the activities.

- A tabulated summary/record of issues and concerns raised prior to submission of the Application, the means through which they have been addressed, and any outstanding issues.

- Description of the proposed process for attempting to resolve any outstanding issues.

2.4.2 Future Consultation Activities

- Outline of BC Hydro's proposed public consultation program for the Application Review phase and, should the project be approved, for construction, operations and decommissioning.

- Description of the proposed process for attempting to resolve any outstanding issues.

3. REVIEW OF ALTERNATIVES

3.1 Alternatives to the Project

This section will address "alternatives to" the project or functionally different ways to meet the project objective and achieve the project purpose. It will include the following information:

- Description, at an overview level of detail, the "alternatives to the Project" that have been considered.
- Description of the rationale for the preferred alternative as a reasonable approach to meeting the need and purpose.

The discussion in this section will be based on the BC Hydro Long-term Acquisition Plan and the BC Hydro Integrated Electricity Plan processes which evaluate a range of potential alternatives to determine which are best able to meet system requirements.

3.2 Alternative Means of Carrying out the Project

"Alternative means" are the various technically and economically feasible ways that a specific project can be implemented or carried out (e.g., alternative locations, routes, methods of development). The following information will be provided:

- Description, at an overview level of detail, technically and economically feasible "alternative means of carrying out the project".
- Brief description of the rationale as to why certain alternatives were not considered viable and identification of the factors which led to the selection of the preferred means of carrying out the project.
- Identification of where in the Application the preferred alternative is described.

4. PROJECT DESCRIPTION AND SCOPE

This section of the Application will provide a project rationale and describe project facilities and activities for all relevant stages of project development. Sufficient detail regarding facilities and activities during construction, operations and, where relevant, decommissioning, will be provided to allow a meaningful assessment of potential Project effects to be conducted.

The scope of the project proposed for environmental review purposes has been defined in the "Introduction to the TOR" and includes on-site and off-site facilities and associated activities related to the construction, operation and, where relevant, decommissioning of the Project. The scope of the project for environmental review purposes was confirmed in the Section 11 Order and the project assessment will be based on that scope.

4.1 Background and Rationale

- Overview of project history.
- Outline of project rationale including a description of the project's objectives.
- Description of any sustainability principles that have guided project planning.

4.2 Project Location

- Description of Project location including longitude and latitude.
- Maps, plans, and/or aerial photographs showing both the regional setting and the layout of Project components and activities.
- Description of the proximity of designated environmentally sensitive areas or cultural sites (e.g., national/provincial/regional parks, ecological reserves, heritage sites) to the project area.

4.3 Project Facilities

4.3.1 Proposed Facilities

Description, at a conceptual level, of proposed on-site project components and associated on-site and off-site infrastructure and other facilities to be developed for the project including:

- a vertical shaft Francis turbine with a runner throat diameter of approximately 5.5 m and a maximum discharge capability of approximately 330 m^3/s;
- an umbrella type generator, air cooled, with a rated capacity of approximately 500 MW;
- a bank of three single phase 16 kV/500 kV generator transformers. The switchgear building will be extended to accommodate the new 500 kV circuit breakers;
- additional ancillary mechanical and electrical equipment for the turbine, generator and switchgear;
- contractor's offices, parking and lay-down areas, contractor's concrete batch plant, source, transport and storage of aggregates, and upgrade of existing warehouse facilities required for the project;
- expansion of the existing Mica Village facilities; and
- a 500 kV capacitor station situated at Site 76 along the existing 5L71/72 transmission line corridor which connects Mica Generating Station to Nicola Substation.

Descriptions will be supported by plans, drawings and/or figures depicting each of the major project components. Maps and drawings provided in the Application will be geo-referenced and will include:

- General regional and local setting.
- Existing infrastructure and features, especially for the Mica Generating Station.
- Layout of Project components and activities.

4.4 Project Activities and Schedule

4.4.1 Construction

- Description of construction activities for key Project components.
- Description of proposed schedules and milestones related to Project construction.
- Description of intended approaches for delivery of services required for construction and associated logistics (e.g., water supply, waste disposal, sewage systems, material requirements, energy supply, concrete batch plant, transportation/traffic, workers' accommodations, emergency procedures).

4.4.2 Operations

- Overview of the incremental operational changes at the Mica Generating Station including changes to reservoir levels, water volumes, downstream flows, and flow schedules. Daily and seasonal changes in water use patterns will also be described.
- Description of capacitor station operations activities.
- Reference to any operations and flow constraints as per Treaties, agreements and Water Use Plans.
- Description of maintenance activities for the generating unit, roads, capacitor station and other infrastructure.
- Description of intended approaches for delivery of services required for operations and associated logistics.
- Description of any monitoring and management activities.

4.4.3 Decommissioning

- Outline of decommissioning activities associated with temporary facilities.

- Commitment to develop a decommissioning and reclamation plan in consultation with regulatory agencies if and when major project components are decommissioned.

4.5 Capital Costs

- Estimate of capital costs.

4.6 Labour Force and Skills Requirements

- Estimate of construction and operations workforce requirements (direct jobs only) by type and number.

5. ENVIRONMENTAL ASSESSMENT METHODOLOGY

5.1 Scope of Assessment

Sections 5 through 8 and Sections 12 and 13 of the TOR constitute the Scope of Assessment for the purposes of the BCEAA review. Sections 9 through 11 have been included at the request of the Mica Unit 5 Core Committee. The assessment will focus on effects for which a reasonably direct causal link can be demonstrated between Project components identified in Section 4.3 and the Project scope. The Application will primarily focus on effects for which the Proponent has the ability to directly implement impact management measures to mitigate the concern.

Where a reasonably direct causal link cannot be established between a project and some aspect of the receiving environment, the process will not address the issue.

Specifically, this section will contain:

- An outline of the items considered in the Application (e.g., aquatic resources, vegetation).

- Discussion of the influence of consultation with the public, First Nations and government agencies on the scoping of issues addressed in the Application.

5.2 Study Area Boundaries

The Application will describe the study boundaries, both temporal and spatial, to be used for each component of the Project, and will include an explanation of the rationale adopted for establishing study boundaries.

5.2.1 Temporal Boundaries

- Description of the time frames during which project construction, operations and maintenance and decommissioning are anticipated to occur.

5.2.2 Spatial Boundaries

- Description of the general geographical areas considered in the baseline and impact assessment.

- Discussion of the rational for selection of the study areas.
- Discussion of the influence of consultations with First Nations, government agencies, stakeholders, interest groups and the public on the definition of study areas.

Key study areas are discussed below.

5.2.2.1 Biophysical/Environmental

The findings of the hydrology assessment will be used as the basis for determining and/or confirming the geographic area of influence of the Project and the scoping of specific bio-physical study areas. The focus of the studies will be on the areas where notable hydraulic impacts (i.e., increased flows and water velocities, changes in reservoir elevations) are identified.

The extent of the terrestrial study area boundaries will include any new infrastructure and structures as well as construction-related staging areas and facilities. In general, this involves an area of up to 400 meters on either side of the Revelstoke Reservoir in the area from the Mica tailrace to Mica Creek Village.

The general bio-physical study area for the capacitor station will include the capacitor station and reflector site, the immediate footprint of the construction area, as well as any new associated infrastructure, if needed, and a 100 meter buffer around those facilities.

For some specific assessments, a regional study area may be defined to address potential impacts that are likely to have farther-reaching implications and extend beyond the immediate area of the physical footprint of the project. These areas, where required, will be described in the specific study sections.

5.2.2.2 First Nations

Spatial boundaries for assessment of potential effects on First Nations will be determined based on the extent to which there is identified interference with the exercise of First Nations interests. Consultation will be undertaken with all First Nations identified in the Section 11 Order.

5.2.2.3 Socio-community/Socio-economic

The primary study area for the socio-community impact assessment will include the City of Revelstoke, Mica Creek Village and the adjacent Electoral Area B of the Columbia Shuswap Regional District as well as the community (to be determined) from which the

capacitor station activities would be staged as these are the areas where most direct effects would be experienced.

For the purpose of assessing the economic impacts associated with employment and business opportunities, the study area will extend to the east to include the community of Golden, to the west to include the communities of Sicamous and Salmon Arm, to the south to include Nakusp and to the north to include Valemount. These communities were included because it was felt that skilled trades people in these areas could be interested in and able to commute to jobs at the generation or capacitor station site.

For some specific assessments (e.g., land-use), a regional study area may be defined to address potential impacts that are likely to have farther-reaching implications and extend beyond the immediate area of the physical footprint of the project. These areas will be described in the specific study sections that follow.

5.3 Environmental Assessment Methodology

This section of the Application will describe the environmental assessment methodology utilized for the project. The assessment presented in the Application will use the process outlined below to ensure interactions between the Project components and the environment are described, any likely effects of the Project are identified and properly assessed, mitigation measures are applied and the significance of any residual effects determined. The process is as follows:

- Step 1: Describe the Project facilities and activities.
- Step 2: Identify and describe those components of the Project setting (environmental, socioeconomic, heritage, First Nations, etc.) that will be, or could be, affected by Project development.
- Step 3: Describe the nature and extent of the effect of any interaction between the Project and the existing Project setting during construction, operations and, where relevant, decommissioning.
- Step 4: Describe proposed measure(s) available to manage the effects identified above.
- Step 5: Identify the magnitude, frequency, duration, extent (geographic or otherwise) and reversibility of any residual effects of the Project after mitigation measures are applied.
- Step 6: Assess the significance of any residual effects.

6. ENVIRONMENTAL ASSESSMENT

This section will describe the existing environmental conditions for the issues included in the scope of the Assessment, assess the impacts of the Project on those issues, and identify mitigation requirements and residual effects. A rationale will be provided for considering certain environmental components and not others in the Assessment.

In the Application Mica Unit 5 and the capacitor station will be discussed in separate sections. If a particular study area is not addressed for a particular component, the reason will be provided.

6.1 Hydrology

6.1.1 Study Area

- Study area description and rationale.

6.1.2 Hydrology Models

- Description of models used to define the baseline and complete the impact assessment for Mica Unit 5.
- Description of field calibration of the HEC RAS model.

6.1.3 Baseline

- Description of the current operating regime of the Mica Generating Station including reservoir levels, water volumes, downstream flows, and flow schedules. Daily and seasonal changes in water use patterns as well as spill events will also be described.
- Description of the existing hydrology and watercourses in the study areas.

6.1.4 Assessment of Potential Effects

- Description of the incremental effects of Mica Unit 5 operations on the Mica Unit 5 study area.
- Description of other potential effects on waterways in the study areas including the potential for erosion.

6.1.5 Mitigation Measures

- Identification of potential mitigation measures and environmental management strategies, as required, to address project effects.

6.1.6 Potential Residual Effects

- Identification and assessment of the significance of any residual effects.

6.2 Water Quality

6.2.1 Study Area

- Study area description and rationale.

6.2.2 Baseline

- Summary of available baseline information on ambient water quality parameters: temperature, dissolved oxygen (DO), total gas pressure (TGP), and turbidity for the Mica Unit 5 aquatic study area.

- Description of existing water quality in waterbodies in the footprint of the capacitor station and associated facilities using standard physical, chemical and biological parameters.

6.2.3 Assessment of Potential Effects

- Identification of any potential sources of increased sediment and erosion and assessment of their effects on receiving environments.

- Identification of sources, types and concentrations of effluents and evaluation of their potential effects on water quality parameters.

- Identification of potential effects on water quality parameters from operational changes.

6.2.4 Mitigation Measures

- Identification of potential mitigation measures and environmental management strategies, as required, to address project effects..

6.2.5 Potential Residual Effects

- Identification and assessment of the significance of any residual effects.

6.3 Geophysical Environment

6.3.1 Study Area

- Study area description and rationale.

6.3.2 Baseline Studies

- General description of the geophysical environment of the areas directly impacted by the project including:
  - key terrain features;
  - geotechnical/soils/stability information for key facility sites; and
  - any previous disturbances.

6.3.3 Assessment of Potential Effects

- Description of changes to notable landscape features.
- Description of potential for soil erosion.

6.3.4 Mitigation Measures

- Identification of potential mitigation measures and environmental management strategies, as required, to address project effects.

6.3.5 Potential Residual Effects

- Identification and assessment of the significance of any residual effects.

6.4 Atmospheric Environment

6.4.1 Study Area

- Study area description and rationale.

6.4.2 Baseline Studies

- Description of existing baseline in the area of the capacitor station.

6.4.3 Assessment of Potential Effects

- Description of the nature of interactions between the project and the atmospheric environment.
- Use SCREEN3 Model to show the worst-case effects of small (nominally 100 kw) diesel generators associated with the capacitor station if it is determined to be required by the Ministry of Environment.

6.4.4 Mitigation Measures

- Identification of potential mitigation measures and environmental management strategies, as required, to address project effects.

6.4.5 Potential Residual Effects

- Identification and assessment of the significance of any residual effects.

6.5 Fish and Aquatic Habitat

6.5.1 Study Area

- Study area description and rationale.

6.5.2 Baseline

- Description of aquatic habitat and fisheries resources in the aquatic study areas including identification of known or potential presence in the project area of listed fish species as identified by Schedule 1 of the *Species at Risk Act* (SARA), the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), and the BC Conservation Data Centre (CDC).

- Identification of important habitats for resident fish species and critical habitats for listed species.

- Identification of in-stream work windows and sensitive times of the year for resident populations of fish in consultation with regional fish and wildlife habitat biologists with Fisheries and Oceans Canada (DFO) and the Ministry of Environment (MOE).

- Description of aquatic macrophytes, benthic substrate and invertebrate populations within the aquatic study areas.

- Brief description of the existing limnological environment and biological productive capability of the aquatic study areas.

- Description of BC Hydro's Entrainment Strategy and relevant study findings to date.

6.5.3 Assessment of Potential Effects

- Description of potential effects on fish and fish habitat in portions of the study areas where significant effects are identified.

- Description of potential for increased fish entrainment in the Mica 5.

- Estimation of areas and types of aquatic habitat potentially affected (both temporary and permanent) and its importance within a local and regional context.

- Identification of potential project related changes to biological productivity in the aquatic study areas and assess potential consequent effects on fish resources and habitat suitability.

- Based on the review of available information and field reconnaissance-level surveys, determine the risk that any incremental changes resulting

from the project will affect any identified listed fish species within the aquatic study areas.

6.5.4 Mitigation Measures

- Identification of potential mitigation measures and environmental management strategies, as required, to address project effects.

6.5.5 Potential Residual Effects

- Identification and assessment of the significance of any residual effects.

6.6 Vegetation Resources

6.6.1 Study Area

- Study area description and rationale.

6.6.2 Baseline

- Description of vegetation resources, including riparian vegetation, in the areas directly affected by project components and activities.
- Description of the potential for rare plant species and rare ecosystems to occur in the study areas including mapping of any identified rare species or ecosystems.
- Identification of any listed or noxious weeds within the project study areas.

6.6.3 Assessment of Potential Effects

- Assessment of impacts to vegetation and rare plant species.

6.6.4 Mitigation Measures

- Identification of potential mitigation measures and environmental management strategies, as required, to address project effects.

6.6.5 Potential Residual Effects

- Identification and assessment of the significance of any residual effects.

6.7 Wildlife and Terrestrial Habitat

6.7.1 Study Area

- Study area description and rationale.

6.7.2 Baseline

- Description of terrestrial habitat and wildlife resources within the study area.
- Description of areas of special ecological importance within the study area.
- Documentation of wildlife inventories, including regionally important species.
- Identification of critical and sensitive areas potentially used by wildlife species, including those used for nesting, breeding, and foraging. Identify known locations of wildlife trees including stick and cavity nests and raptor nests within the study areas.
- Identification of sensitive times of the year which are critical for nesting and breeding activity and migration and locations of sensitive habitat.
- Identification of any listed species (COSEWIC, SARA, CDC) found in the project vicinity.
- Description of the role of fishery resources immediately downstream of Mica Dam on wildlife, in particular birds and fish eating mammals.

6.7.3 Assessment of Potential Effects

- Description of potential effects on wildlife and wildlife habitats such as those used for nesting, breeding, and foraging in the study areas.

- Description of the potential for increased wildlife mortalities due to incidents with project vehicles and machinery as well as the increased potential for predation.

- Description of potential effects on any identified critical habitats (e.g., raptor nests, heron rookeries, snake hibernacula, migratory bird nesting habitat).

- Description of potential effects on threatened or endangered species.

6.7.4 Mitigation Measures

- Identification of potential mitigation measures and environmental management strategies, as required, to address project effects.

6.7.5 Potential Residual Effects

- Identification and assessment of the significance of any residual effects.

6.8 Archaeological Resources

6.8.1 Study Area

- Study area description and rationale.

6.8.2 Baseline

- Presentation of a non-confidential summary of the identified archaeological resources in the study areas with separate sub-sections for First Nations and other resources.

6.8.3 Assessment of Potential Effects

- Description of the potential interactions between project components and identified and yet unidentified archaeological resources.

- Summary of consultation with, and involvement of, First Nations in efforts to protect identified archaeological and heritage resources including

assessing potential impacts, developing mitigation measures and assessing the significance of any residual effects.

6.8.4 Mitigation Measures

- Identification of potential mitigation measures and environmental management strategies, as required, to address project effects.

6.8.5 Potential Residual Effects

- Identification and assessment of the significance of any residual effects.

6.9 Noise

6.9.1 Study Area

- Study area description and rationale.

6.9.2 Baseline

- Description of existing noise sources.

6.9.3 Assessment of Potential Effects

- Description of the potential effect of project components and activities on noise levels.

6.9.4 Mitigation Measures

- Identification of potential mitigation measures and environmental management strategies, as required, to address project effects.

6.9.5 Potential Residual Effects

- Identification and assessment of the significance of any residual effects.

7. FIRST NATIONS SPECIFIC INTERESTS

This section will describe the likely effects of the Project specific to First Nations. It will provide an overview of First Nations with an interest in the study areas and assess areas identified as being important by the First Nations. As with the environmental effects, it will present a description of the existing baseline socio-economic conditions, assess the impacts of the Project, and identify enhancement opportunities/mitigation requirements and residual benefits/effects. A rationale will be provided for considering certain socio-economic issues and not others for First Nations.

First Nations, as part of the broader community, will also be considered in the socio-community and socio-economic assessments.

7.1 First Nations Setting and Overview

- Identification of First Nations with an interest in the project area.
- Description of the traditional territories covering the project area.
- Identification of the treaty status of the First Nations.
- Overview of socio-community and socio-economic information on First Nations with an interest in the project area.
- Description of general land use in the project study areas by First Nations.
- Identification of the social, cultural and environmental values identified by First Nations as being important to them through consultation.
- Description of how issues and concerns raised by the First Nations have been incorporated into the planning and design of the Project.

7.2 Traditional Land Use and Knowledge

7.2.1 Study Area

- Study area description and rationale.

7.2.2 Baseline

- Summary of non-confidential findings of any baseline traditional land use or traditional knowledge studies completed. BC Hydro will support the preparation of a baseline traditional land use study and a traditional knowledge study for the project footprint area. The scopes of the studies and study areas are being determined in consultation with First Nations.

7.2.3 Assessment of Potential Effects

- Non-confidential description of the potential effects on traditional land use activities (e.g., hunting, fishing, gathering and spiritual activities) and features (e.g., culturally modified trees, rock paintings, trails, legendary land features and other sites or areas of significance) of importance to the First Nations.

7.2.4 Mitigation Measures

- Identification of potential mitigation measures and management strategies, as required, to address project effects.

- Document any non-confidential agreements with First Nations regarding project effects.

7.2.5 Potential Residual Effects

- Identification of potential residual effects.

7.3 Employment, Income and Business Opportunities

7.3.1 Study Area

- Study area description and rationale.

7.3.2 Baseline

- Description of available baseline data on employment, income and business activity for First Nations with an interest in the project.

- Brief review and documentation of the employment of First Nations, to date, with the Revelstoke Unit 5 project, including discussion of challenges or successes, numbers employed, and level of training of First Nations employees.

- Brief review and documentation of the involvement, if any, of First Nations businesses in the project, including discussion of challenges or successes.

7.3.3 Assessment of Potential Effects

- Identification of the number and types of jobs that will be created.

- Discussion of the level of training required for the available jobs.

- Description of any existing initiatives to increase First Nations participation in the project (e.g., Columbia Hydro Constructors Agreement).

- Identification of the types of business opportunities that will be created during project construction and operations.

7.3.4 Mitigation Measures

- Identification, through discussions with First Nations, potential mitigation and/or enhancement measures and management strategies, as required, to address project effects.

7.3.5 Potential Residual Effects

- Identification of potential residual effects.

8. SOCIO-COMMUNITY/SOCIO-ECONOMIC

This section will present a description of the existing socio-community and socio-economic conditions for key areas of interest, assess the impacts of the Project on these areas, and identify enhancement opportunities/mitigation requirements and residual benefits/effects. A rationale will be provided for considering certain socio-community/socio-economic issues and not others in the Assessment.

8.1 Overview

- General description of study area communities and the study areas.
- Identification of major trends and developments in the study areas.

8.2 Population and Demographics

8.2.1 Study Area

- Study area description and rationale.

8.2.2 Baseline

- Description of existing population and key demographic characteristics (i.e., age and sex).

8.2.3 Assessment of Potential Effects

- Description of potential effects on population and demographics.

8.2.4 Mitigation Measures

- Identification of potential mitigation measures and management strategies, as required, to address project effects.

8.2.5 Potential Residual Effects

- Identification of potential residual effects.

8.3 Economy and Regional Economic Benefits

8.3.1 Study Area

- Study area description and rationale.

8.3.2 Baseline

- Description of the existing labour market (e.g., unemployment, labour supply).
- Brief review and documentation of the outcomes, to date, for the Revelstoke Unit 5 project on employment of local workers, including discussion of challenges or successes, numbers employed, and level of training of local employees.
- Description of the existing business community relevant to the project.

8.3.3 Assessment of Potential Effects

- Description of employment created by the project.
- Estimate of potential local, regional and provincial government benefits.
- Description of potential business opportunities.
- Documentation of any potential conflicts or collaboration with other major regional and provincial projects.

8.3.4 Mitigation Measures

- Identification of potential mitigation measures and management strategies, as required, to address project effects. Means through which to enhance positive effects will also be discussed.

8.3.5 Potential Residual Effects

- Identification of potential residual effects.

8.4 Accommodation

8.4.1 Study Area

- Study area description and rationale.

8.4.2 Baseline

- Description of existing permanent and temporary housing and accommodation supply, including tourist accommodation, where relevant to construction and operations.

8.4.3 Assessment of Potential Effects

- Estimate of housing needs and plans for Project construction and operation.
- Description of housing to be provided by the proponent.
- Assessment of potential effects on permanent and temporary housing and accommodation (including tourist accommodation), supply and cost.

8.4.4 Mitigation Measures

- Identification of potential mitigation measures and management strategies, as required, to address project effects.

8.4.5 Potential Residual Effects

- Identification of potential residual effects.

8.5 Community/Public Services, Emergency Services and Facilities

8.5.1 Study Area

- Study area description and rationale.

8.5.2 Baseline

- Description of existing services, including service areas.

8.5.3 Assessment of Potential Effects

- Identification of health and safety measures to be implemented during construction of the Project, to minimize requirements for provision of emergency response services.
- Identification of the proponent's commitments to implement emergency response plans for the project or provide other services at site.
- Description of the potential effects of the project on study area services.

8.5.4 Mitigation Measures

- Identification of potential mitigation measures and management strategies, as required, to address project effects.

8.5.5 Potential Residual Effects

- Identification of potential residual effects.

8.6 Traffic

8.6.1 Study Area

- Study area description and rationale.

8.6.2 Baseline

- Description of exiting transportation infrastructure.
- Description of existing traffic volumes and patterns.

8.6.3 Assessment of Potential Effects

- Estimate of the incremental increase in traffic usage and patterns on public roadways.
- Assessment of the effects of any increase (e.g., effects on public safety and other road users).
- Description of increased usage of forestry roads, if required, by the capacitor station.

8.6.4 Mitigation Measures

- Identification of potential mitigation measures and management strategies, as required, to address project effects.

8.6.5 Potential Residual Effects

- Identification of potential residual effects.

8.7 Land Use

8.7.1 Study Area

- Study area description and rationale.

8.7.2 Baseline

- Description of zoning and land use planning context for the study areas.
- Description of current land use in the study areas (e.g., forestry, recreation, agriculture, industry).
- Description of current land tenures in the study areas as relevant to the project.
- Description of current visual aesthetic conditions in the capacitor station study area.

8.7.3 Assessment of Potential Effects

- Outline of land requirements for each component of the project.
- Assessment of potential effects on existing land use.
- Discussion of potential visual effects.

8.7.4 Mitigation Measures

- Identification of potential mitigation measures and management strategies, as required, to address project effects. Identification of measures to mitigate potential adverse effects or to enhance positive effects as well as any management plans, based on the assessment.

8.7.5 Potential Residual Effects

- Identification of potential residual effects.

8.8 Recreation

8.8.1 Study Area

- Study area description and rationale.

8.8.2 Baseline

- Description of existing recreational use in the study areas.

8.8.3 Assessment of Potential Effects

- Discussion of the potential incremental changes due to the Project, if any, in recreational use.
- Discussion of potential recreation use by project contractors/employees.

8.8.4 Mitigation Measures

- Identification of potential mitigation measures and management strategies, as required, to address project effects.

8.8.5 Potential Residual Effects

- Identification of potential residual effects.

8.9 Public Health and Safety

8.9.1 Study Area

- Study area description and rationale.

8.9.2 Baseline Studies

- Description of the existing public health setting including existing hospitals, clinics, ambulance stations, and other emergency services.

- Description of baseline factors affecting the public health setting in the area of the Mica Generating Station and in the vicinity of the capacitor station.

8.9.3 Assessment of Potential Effects

- Assessment of potential project effects on public health (e.g., air quality, noise, EMF) and health services.

8.9.4 Mitigation Measures

- Identification of potential mitigation measures and management strategies, as required, to address project effects.

8.9.5 Potential Residual Effects

- Identification of potential residual effects.

9. CLIMATE CHANGE

- Discussion of the potential for long-term climactic fluctuations at the generation site and a description of the potential effects of those fluctuations on the Project.

10. ACCIDENTS AND MALFUNCTIONS

- Identification of the potential for accidents or malfunctions which could lead to environmental impacts and their likely potential effects on the environment or local communities.

- Documentation of any proposed mitigation measures or contingency plans.

- Commitment to having an Environmental Management Plan (EMP) in place for Project start-up that would address potential accidents, spills and malfunctions.

11. CUMULATIVE EFFECTS ASSESSMENT

The Application will include a Cumulative Effects Assessment. This section of the Application will:

- Describe the approach, methods and information used to identify and assess the cumulative environmental effects of the Project.
- Identify existing and foreseeable future projects considered for inclusion in the Cumulative Effects Assessment.
- Describe the combined effects of the Project and other Projects for the assessment areas being considered.
- Provide a summary of the Cumulative Effects Assessment.

Methodologies used for the cumulative effects assessment will generally follow guidelines set out by the CEA Agency in "Addressing Cumulative Environmental Effects under the Canadian Environmental Assessment Act" (CEAA 1999) and the *Cumulative Effects Assessment Practitioners Guide (1999).*

12. ENVIRONMENTAL MANAGEMENT PLANS

The Application will include a framework of the Environmental Management Plans (EMPs) for the Project, to be finalized following, if granted, an Environmental Assessment Certificate. EMPs are documents that describe the environmental practices and procedures to be applied during the construction, operation and decommissioning of the Project to help avoid or mitigate potential adverse environmental and socio-economic effects.

12.1 Construction and Operations

The EMPs may include, but are not limited to the following components:

- Construction Environmental;
- Sediment and Erosion Control;
- Oil Spill Prevention and Emergency Response;
- Construction Waste;
- Air Quality and Dust Control;
- Archaeological Impact Management;
- Landscape Design and Site Restoration;
- Traffic Safety;
- Health and Safety;
- Fire Protection;
- Hazardous Materials Storage and Handling;
- Accommodation; and
- Fish and Fish Habitat.

The Application will include outlines of the plans identified as being required based on the findings of the assessment.

12.2 Decommissioning Management Plan

Statement that the Decommissioning Management Plan will be prepared prior to future decommissioning activities in accordance with the regulatory regime and environmental sensitivities at that time.

13. SUMMARY OF COMMITMENTS

- Provision of a stand-alone summary table of all significant proposed impact management measures contained in the Application.

14. CONCLUSION

The Application will outline conclusions of the assessment and will recommend, based on the effects assessment, one of the following conclusions:

- The Project is not considered to result in significant adverse environmental, socio-economic/ community, First Nations or other effects, provided all recommended management measures identified in the Application are implemented appropriately;

- The Project is considered likely to result in significant adverse environmental, socio-economic/ community, First Nations or other effects, even taking into account if recommended management measures identified in the Application are implemented appropriately; or

- It is uncertain at the time of the review whether or not the Project will result in significant adverse environmental, socio-economic/community, First Nations or other effects, taking into account the implementation of appropriate management measures identified by the Application.

The final determination on whether or not the project is likely to cause significant adverse effects will be made by the BC EAO.

15. REFERENCES AND APPENDICES

- Reference documents cited in the Application.
- Documentation of referenced consultation meetings with First Nations, government agencies, the general public and stakeholders.
- A list of all enclosures (such as appendices) included with the Application.