FOR PUBLIC COMMENT

DRAFT PROJECT-SPECIFIC GUIDELINES

AND

COMPREHENSIVE STUDY SCOPING DOCUMENT

For the proposed

Little Bow Reservoir Rehabilitation and Upgrading Project

Alberta Transportation and Alberta Environment

Prepared by:
Canadian Environmental Assessment Agency
Fisheries and Oceans Canada
Transport Canada

CEA Registry Reference Number: ***09-01-49421***

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TABLE OF CONTENTS

1.0 INTRODUCTION

Alberta Transportation and Alberta Environment (the proponent) have been pursuing the rehabilitation, upgrading, and modernization of the Carseland-Bow River Headworks (CBRH) system in order to address dam safety requirements for flood handling and to meet the water supply requirements for its users. The rehabilitation of the CBRH system has been undertaken in a phased approach under multiple contracts.

In a May 21st, 2009 letter to Fisheries and Oceans Canada (DFO), Alberta Transportation (AT) detailed plans to begin the final phase of the CBRH rehabilitation with works to the Little Bow Reservoir (LBR) and associated structures. The works are intended to upgrade the structures in the reservoir to address flood management issues and establish a new Full Supply Level (FSL) and operating regime for the LBR.

DFO and Transport Canada (TC) have determined that the proposed Little Bow Reservoir Rehabilitation and Upgrading Project (the LBR Project) may require federal approvals under the *Fisheries Act* and the *Navigable Waters Protection Act* in order to proceed. As such, DFO and TC are required to conduct an environmental assessment, as prescribed by the *Canadian Environmental Assessment Act* (the Act), prior to decisions on the issuance of their regulatory approvals.

As responsible authorities under the Act, DFO and TC have determined that a comprehensive study is required in relation to the LBR Project. The Act requires that the responsible authorities determine what should be included in the comprehensive study.

This Draft Project-Specific Guidelines and Scoping Document (PSG&S document) has been prepared to assist the proponent in conducting the environmental impact assessment (EIA) and in preparing of the Environmental Impact Statement (EIS). This document reflects concerns and issues regarding the proposed project and identifies the information that should be included in the EIS.

This document also provides information to the public and the proponent on the federal environmental assessment process. The responsible authorities are seeking the views of the public on:

- the proposed scope of the project for the purposes of the environmental assessment;
- the factors proposed to be considered in the assessment;
- the proposed scope of those factors; or,
- any other matter contained in this document

Following this consultation, the responsible authorities will consider comments from the public and amend the PSG&S document as appropriate.

In their comments on this document, the public is encouraged to identify any reasons why issues associated with the project that are considered within the federal environmental assessment can or cannot be properly addressed within the comprehensive study process (see also Section 11.0).

Persons wishing to submit comments on the PSG&S Document may do so in writing to the Canadian Environmental Assessment Agency.

Comments must be received by December 2, 2010. Comments may be sent to:

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Please note that all documents and/or responses received regarding this project are considered public and will become part of the public Canadian Environmental Assessment Registry (the registry), in accordance with the *Access to Information Act* and the *Privacy Act*.

The following sections of this document provide:

- an overview of the project as proposed by Alberta Transportation and Alberta Environment;
- a description of the federal environmental assessment process;
- a presentation of the scope of the environmental assessment proposed by the responsible authority;
- information on the ability of the comprehensive study to address issues relating to the project;
- guidance for the proponent regarding the information that must be included in the EIS; and,
- further information on public consultation opportunities.

1.1 General Information on the Draft Project-Specific Guidelines and Scoping Document

This document should not be regarded as either restrictive or exhaustive, as concerns other than those identified herein could arise during the investigations associated with the EIA.

The EIA should focus on potential new environmental impacts which may result from the proposed upgrading and rehabilitation of the Little Bow Reservoir and on potential alterations to the existing levels of environmental impacts that result from the current operation and maintenance of the Little Bow Reservoir. Information provided in the EIS which is related to the Project should be complete and detailed. Existing information on environmental parameters or ongoing operational activities at the LBR Project site that will not be affected by the rehabilitation and upgrading works, or information which is cited to provide context for the discussion of potential impacts, may be referenced and provided in summary form.

Should the LBR Project be found to have no significant adverse environmental effects, the proponent would then be required to apply for all the necessary approvals, permits and licences that regulate construction, operation and decommissioning of the Project to comply with all applicable laws and regulations.

1.2 Summary of the Project

The Carseland-Bow River Headworks (CBRH) System Rehabilitation Project is a phased upgrading and rehabilitation program of the canals and three major reservoirs of the CBRH system by Alberta Environment and Alberta Transportation. The CBRH system includes:

- the Bow River diversion at Carseland;
- the McGregor Lake Reservoir and main canal from the Bow River;
- the Travers Reservoir and connecting canal from the McGregor Lake Reservoir ;and
- the LBR and connecting canal from the Travers Reservoir.

The final phase of the rehabilitation program involves the construction of new structures and the modification of existing structures in the Little Bow Reservoir and connecting canal in order to ensure the Travers and LBR are capable of passing the probable maximum flood, as directed in the Canadian Dam Association Guidelines, and provide a reliable supply of water available to users of the Bow River Irrigation District. The proposed works will result in the increase in the surface area of the LBR from 6.16 sq. km to 8.86 sq. km and enable the Little Bow and Travers Reservoirs to be operated in tandem under a common full supply level (FSL) of 856.18m.

This section outlines the main components of the development as proposed by Alberta Transportation and Alberta Environment.

1.2.1 Physical Works

Little Bow Reservoir

Works on the Little Bow Reservoir (LBR) include:

- raising of the main dam by approximately 3.35 m;
- extension of the dam length from 1.2 km to 3.7 km;
- construction of a new irrigation outlet structure at the main dam;
- demolition and removal of the existing outlet structure at the main dam;
- installation of temporary cofferdams at the site of the new and existing irrigation outlets to permit construction and demolition, respectively, in the dry;
- excavation of an inlet channel and outlet canal to tie the LBR to the existing Bow River Irrigation District canal through the new outlet structure;
- placement of riprap and bedding materials on the existing upstream slopes of the dam;
- placement of drain materials in the widened downstream section of the dam;
- installation of geotechnical and structural instrumentation; and,
- construction of an enhancement dyke within the south end of the reservoir.

Travers-Little Bow Connecting Canal

Works proposed in the Travers-Little Bow Connecting Canal include:

- expansion of the connecting canal system from 25 m to 50 m wide (with 1.3 km of the 3.1 km long connecting canal previously completed);
- installation of the road culvert crossing in the Travers-Little Bow connecting canal;
- demolition and removal of the existing LBR inlet chute;
- demolition and removal of the existing Travers Reservoir outlet control structure to the connecting canal; and,
- construction of temporary cofferdams around the areas where the new structure will be placed and the demolition of the existing structures will occur.

Little Bow Reservoir Provincial Recreation Area

Works proposed in the Little Bow Reservoir Provincial Recreation Area include:

- demolition and removal of the existing recreation facilities; and,
- construction of a new Provincial Recreation Area south of its current location, above the new operating full supply level for the LBR.

Miscellaneous Works

Other works in and around the LBR relating to the rehabilitation project include:

- reconstruction of a small portion of the existing gravel road north of the LBR dam;
- installation of concrete protective slabs for existing roads crossing pipelines;
- excavation of free draining earth borrow areas located in areas that are to be inundated once the new FSL is established;
- reclamation of disturbed areas through redistribution of topsoil and re-seeding with native vegetation;
- installation of fencing and gates around the reservoir to restrict cattle access (a large portion of fencing has already been completed);

1.2.2 Operating Regime

Little Bow Reservoir – Current Regime

The LBR currently operates as a stable balancing reservoir with a year round operating level of approximately 852.83 m.

Little Bow Reservoir – Proposed Regime

In order to permit the installation of cofferdams in the connecting canal and near the main dam, and to permit the placement of riprap on the main dam, the LBR will be drawn down to a water level of 849.00 masl for one to two winter seasons, from October to April.

Following the proposed works, as described in 1.2.1, LBR will operate in tandem with the Travers Reservoir as a fluctuating storage reservoir with a FSL of 856.18 m and a winter operating level of at least 854.05m.

2.0 ENVIRONMENTAL ASSESSMENT PROCESS

2.1 Requirement for a Federal Environmental Assessment

The *Canadian Environmental Assessment Act* applies to federal authorities when they contemplate certain actions or decisions in relation to a project that would enable it to proceed in whole or in part.

A federal environmental assessment is required in relation to the proposed Little Bow Reservoir Rehabilitation and Upgrading Project (the LBR Project) because DFO and TC have determined, as per section 5 of the Act, that certain components of the proponent's

development proposal are likely to require an authorization that would enable the project to be carried out in whole or in part.

Specifically, DFO has indicated that it is considering issuing an authorization pursuant to subsection 35(2) of the *Fisheries Act* for the harmful alteration, disruption or destruction of fish habitat, and section 32 for the destruction of fish by means other than fishing, associated with:

- the change to the operation of the LBR during construction;
- the rehabilitation of the LBR Dam and its associated works or activities;
- the construction of the irrigation outlet in the LBR and its associated works or activities;
- the construction of the culvert crossing and its associated works or activities in the Travers-Little Bow Canal;
- the decommissioning of the existing control structures in the Travers-Little Bow Canal and its associated works or activities; and
- the change to the annual operations of the Little Bow Reservoir post construction.

TC has identified that there is a potential requirement for Approval under Section 5(1) of the *Navigable Waters Protection Act* (NWPA) for some components of the proposed project including; but not limited to, raising of the main dam and East dyke, the extension of the dam from 1.2 km to 3.3 km and the new higher capacity irrigation structure. TC will act as a responsible authority on an 'in-until-out' basis. As a NWPA authorization may be required, detailed engineered drawings must be provided in the regulatory phase.

Therefore, DFO and TC are responsible authorities and are required to ensure that an environmental assessment in relation to the LBR Project is conducted pursuant to the Act.

Any component of the project as proposed may determine whether a comprehensive study is to be conducted under the Act. Part III, section 8 of the *Comprehensive Study List Regulations* reads that a comprehensive study is required when:

> *8. The proposed construction, decommissioning or abandonment of a dam or dyke that would result in the creation of a reservoir with a surface area that would exceed the annual mean surface area of a natural water body by 1500 hectares or more, or an expansion of a dam or dyke that would result in an increase in the surface area of a reservoir of more than 35 per cent.*

The expansion of the LBR Dam and subsequent increase in Reservoir surface area exceeds the 35% threshold listed under paragraph 8 of the *Comprehensive Study List Regulations*, and consequently the responsible authorities must ensure a comprehensive study is conducted pursuant to the Act.

2.2 Overview of the Comprehensive Study Environmental Assessment Process

As stated in Section 1.0, the purpose of this PSG&S document is to provide information to the public and to the proponent on the federal environmental assessment process, and to seek public comment on the federal environmental assessment to be conducted in relation to the LBR Project.

During the conduct of the comprehensive study, the adverse environmental effects of the project as scoped for the purposes of the comprehensive study will be assessed and the effectiveness of proposed mitigation measures will be evaluated. The responsible authorities must ensure there are opportunities for public participation during the conduct of the comprehensive study. Following its completion, the responsible authorities will submit the comprehensive study report to the Minister and to the Agency.

The Agency will then invite the public to comment on the comprehensive study report prior to the Minister making a decision. If, prior to issuing the environmental assessment decision statement, the Minister determines that additional information is necessary or that there are public concerns that need to be further addressed, the Minister will request that the responsible authorities or the proponent ensure that any such additional information is provided or actions are taken to address such public concerns. Once the Minister issues the environmental assessment decision statement, the project will be referred back to the responsible authorities for appropriate action.

Whether the environmental assessment proceeds by means of a comprehensive study or is referred to a mediator or review panel, participant funding will be made available by the Agency to facilitate public participation in the comprehensive study (see Section 7.1 for additional information).

2.3 Role of the Canadian Environmental Assessment Agency

For all comprehensive studies, the Agency is the responsible authority under the Act and is responsible for ensuring the comprehensive study is conducted and a comprehensive study report prepared.

The Agency will post certain records on the Canadian Environmental Assessment Registry Internet Site as prescribed under subsection 55.2(1) of the Act (e.g. news releases, notices and environmental assessment decision statements and other records as required by the Act) and manages the Participant Funding Program, which makes funding available for participation in the comprehensive study process. The Agency will also conduct a public comment period on the comprehensive study report, once it has

been finalized and submitted by the responsible authority to the Minister and to the Agency.

2.4 Role of Responsible and Federal Authorities

DFO and TC are responsible under the Act for ensuring that a comprehensive study is conducted, and a comprehensive study report is prepared. They are also responsible for providing specialist or expert knowledge or information with respect to the project. Through participation in a project committee chaired by the Agency, the responsible authorities have worked with federal authorities and the Agency to prepare the PSG&S document for the proposed LBR Project that is the subject of this public consultation.

The responsible authorities will assist the Agency in responding to comments received from the public and identify any significant concerns which may arise.

Environment Canada (EC) and Natural Resources Canada (NRCan) have indicated that they will participate in the environmental assessment as expert federal authorities with specialist or expert knowledge or information expertise.

3.0 PROPOSED SCOPE OF THE ENVIRONMENTAL ASSESSMENT

Scoping establishes the boundaries of the federal environmental assessment in order to focus the assessment on relevant issues and concerns. The scope identifies which elements of the development proposal are to be considered in the comprehensive study, which factors will be considered under section 16 of the Act, and which environmental components are likely to be affected. The public is being asked to comment specifically on this section of the PSG&S document.

The proposed scope of the assessment includes the proposed scope of the project as outlined below, the factors proposed to be considered under subsections 16(1) and 16(2) of the *Canadian Environmental Assessment Act* and the proposed scope of those factors. DFO and TC are proposing to scope the assessment as described in this section.

The rehabilitation of the CBRH system has been undertaken in a phased approach under multiple contracts. Alberta Environment currently holds section 32 and 35(2) *Fisheries Act* authorizations for the operation and maintenance of the CBRH system, provided it is operated as described in the 2001 Preliminary Operating Strategy. The proposed expansion of the Little Bow Reservoir and its change from a stable balancing reservoir to a fluctuating storage reservoir have the potential to cause the harmful alteration, disruption, or destruction of fish or fish habitat beyond what is permitted under the existing authorization.

The existing CBRH structures are considered to be lawful under the NWPA. Existing works owned by the Crown up to March 12, 2009 have been grandfathered by the amendments to the NWPA as amended by Part 7 of the Budget Implementation Act,

2009. Any proposed changes, modification or rebuilding of these structures require an application for Approval under the NWPA. The mechanism of Approval will be dependant on the extent and type of changes, modifications and work required. Section 10(1) and 10(2) can be used to approve rebuilding or alternations respectively. Sections 5(2) and 5(3) of the NWPA can be used to approve works that do not apply to the previously mentioned sections of the NWPA, depending on the likelihood of those works causing a substantial interference to navigation. Detailed construction plans and drawings are required before Transport Canada can identify which section of the NWPA Applies to the various components of work.

The proposed scope of the assessment is to encompass all works associated with the final phase of the CBRH system rehabilitation program which includes all physical works or activities required to increase the current operating level in the Little Bow Reservoir from 852.83m to the new FSL of 856.16m and to allow the Travers and Little Bow Reservoirs to operate in tandem as one fluctuating storage reservoir.

3.1 Proposed Scope of the Project for the Purposes of the Environmental Assessment

The proposed scope of the project refers to the various components of the proposed development that are considered to be part of the project for the purpose of the environmental assessment.

DFO and TC present the following proposed scope of the project for the purposes of the environmental assessment in relation to the LBR project.

- The change to the operation of the LBR during construction.
- The rehabilitation of the LBR Dam and its associated works or activities including any construction, operation and maintenance works related to the raising of the main dam, the extension of the dam, the placement of riprap and drainage materials, and the installation of geo-technical and structure instrumentation.
- The construction, operation and maintenance of the enhancement dyke at the south end of the LBR.
- The construction, operation and maintenance of the new irrigation outlet in the LBR and its associated works or activities.
- The decommissioning of the existing control structures in the Travers-Little Bow Canal and its associated works or activities.
- The construction, operation and maintenance of the culvert crossing and its associated works or activities in the Travers-Little Bow Canal.
- The demolition and removal of the LBR inlet chute and Travers Reservoir outlet control structure in the connecting canal, and its associated works or activities.

- The enlargement of the remaining 1.8 km of connecting canal from 25m to 50 m and any associated works or activities.
- The operation and maintenance of the enlarged connecting canal;
- The demolition and removal of the existing recreation facilities in the LBR Provincial Recreation Area and any associated works or activities.
- The construction, operation and maintenance of the infrastructure for the new Provincial Recreation Area and its associated works and activities.
- The reconstruction of the existing gravel road north of the LBR Dam.
- The installation and maintenance of concrete protective slabs for the existing roads crossing pipelines.
- The construction of the remaining sections of fencing and gates around the reservoir boundary and the maintenance of the fencing and gates throughout its operation.
- The reclamation of disturbed areas including the redistribution of topsoil and re-seeding with vegetation native to the area.
- The change to the annual operations, and associated maintenance activities, of the Carseland Bow River Headworks system post construction with particular focus on operations within the LBR and any changes to timing or rate of water withdrawal from the Bow River to the Carseland Bow River Headworks system required for the purpose of filling and maintaining the Little Bow Reservoir to its new expanded capacity.

3.2 Factors Proposed to be considered in the Comprehensive Study

This section defines the factors proposed to be considered in the environmental assessment and the proposed scope of those factors. The responsible authorities are required to consider the factors specified in section 16 of the Act, taking into consideration the definitions of “environment”, “environmental effect”, and “project” set out in the Act. Further details regarding the scope of factors are provided in Sections 5.0 through 9.0.

The responsible authorities must consider the following factors in the comprehensive study, pursuant to section 16 of the Act:

- the environmental effects of the project, including the environmental effects of malfunctions or accidents that may occur in connection with the project and any cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out;
- the significance of the effects referred to in the previous paragraph;
- comments from the public that are received in accordance with the Act and its regulations;

- measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project;
- the purpose of the project;
- alternative means of carrying out the project that are technically and economically feasible and the environmental effects of any such alternative means;
- the need for, and the requirements of, any follow-up program in respect of the project; and,
- the capacity of renewable resources that are likely to be significantly affected by the project to meet the needs of the present and those of the future.

As defined under the Act, “environmental effect” means, in respect of a project:

a) any change that the project may cause in the environment, including any change it may cause to a listed wildlife species, its critical habitat or the residences of individuals of that species, as those terms are defined in subsection 2(1) of the Species at Risk Act

b) any effect of any change referred to in paragraph (a) on

   i) health and socio-economic conditions

   ii) physical and cultural heritage

   iii) the current use of lands and resources for traditional purposes by aboriginal persons, or

   iv) any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, or

c) any change to the project that may be caused by the environment whether any such change or effect occurs within or outside Canada.

Under section 79 of the *Species at Risk Act*, the responsible authorities must identify adverse effects of the project on listed species and their critical habitat or residences. The responsible authorities must also ensure that measures are taken to avoid or lessen adverse effects and that effects are monitored. Mitigation measures must be consistent with recovery strategies and action plans for the species.

3.3 Proposed Scope of the Factors to be Considered

The responsible authorities propose that the following scope of factors be considered in the comprehensive study. Selection of these factors is based on the anticipated potential for the works, undertakings and activities that are included in the proposed scope of project, for the purposes of the environmental assessment, to cause adverse environmental effects.

3.3.1 Biophysical Environment

- Climate, meteorology, and air quality
- Terrain, soils and geology
- Surface hydrology and water quality
- Noise
- Aquatic environment (e.g. aquatic life, fish, fish habitat)
- Vegetation and plant communities
- Wildlife and Wildlife Habitat

3.3.2 Socio-Economic and Cultural Environments

The EIS must consider how a change the project may cause in the environment may impact the following socio-economic components, including:

- Current use of lands and resources for traditional purposes by Aboriginal persons;
- Other land and resource use (e.g. commercial fisheries);
- Physical and cultural heritage;
- Health and socio-economic conditions;
- Navigation; and,
- Any resources of historical, archaeological, paleontological or cultural significance.

3.3.3 Valued Ecosystem Component

The assessment will consider potential effects the project may have on the environment and other aspects considered to be Valued Ecosystem Components (VECs). VECs of interest in this area are to be chosen through consultation with RAs, Environment Canada, provincial agencies and potentially affected communities, incorporating traditional knowledge and land use. Environment Canada should be consulted on the VECs for wildlife and vegetation. SARA listed species should be represented as a VEC.

3.3.4 Spatial and Temporal Boundaries

Impacts with respect to spatial and temporal boundaries may vary depending on the VEC, and the assessment of these impacts should consider:

- Timing/scheduling of project activities
- Natural variations in the population size or distribution of a species;

- The time necessary for an effect to become evident;
- The time required for recovery from an impact, including the estimated degree of recovery;
- Cumulative effects;
- Comments from the public; and
- Traditional knowledge.

The proponent shall clearly define (in text and maps) the rationale for the spatial boundaries that are used in the environmental assessment. The spatial boundaries should be determined specific to each VEC to effectively assess the potential environmental effects of the project. The study area, i.e. the geographic scope of the investigations, shall include those local areas directly impacted by the undertakings associated with the project and also zones within which there may be environmental effects that are regional or global in their nature.

The temporal scale of the assessment must encompass the entire lifespan of the project, and will include construction, operation (including maintenance and/or modifications) and decommissioning (if contemplated).

4.0 PROJECT-SPECIFIC GUIDELINES

The following sections (4 through 10) outline the specific studies that should be undertaken and the information that should be obtained as part of the EIA, and how these should be presented and evaluated in the proponent's EIS. They also provide further details regarding what the responsible authorities propose to include in their scope of factors to consider in the conduct of the federal environmental assessment.

4.1 EIS Executive Summary

An executive summary of the EIS is required. It should briefly summarize and cross-reference the EIS under the following topic areas:

- Description of the project;
- Purpose of and alternative means of carrying out, the project;
- Environmental effects of the project, including the potential for spills/ malfunctions/ accidents;
- Any cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out;
- Technically and economically feasible mitigation measures;

- The significance of the environmental effects;
- The requirements of a follow-up program in respect of the project;
- Comments from the public and proponent's responses;
- Identification of uncertainties in regards to the project elements and/or environmental impacts of the project and how those uncertainties were addressed in the assessment;
- Strategies for avoiding environmental effects; and,
- Anticipated outcomes for decommission and reclamation (if contemplated).

The executive summary, which may be under separate cover, should avoid the use of technical terms and jargon.

4.2 **Comprehensive Study Report**

The EIS will form the basis of the draft Comprehensive Study Report (CSR), to be developed concurrently with the EIS and finalized once the EIS is deemed complete by the federal responsible and expert authorities.

The CSR is a stand alone document which is intended to provide the public, Aboriginal Groups, federal authorities and other stakeholders sufficient information to understand the project, the environmental setting, the project-environment interactions, the environmental effects, the proposed mitigation measures, the significance of potential adverse environmental effects, the concerns of the public and how they were addressed, and the nature and requirements of a follow-up program.

5.0 PROJECT DESCRIPTION

5.1 Overview

The EIS should include clear and comprehensive statements of the purpose of the project. The EIS shall provide detailed descriptions of any works and/or activities that would occur within the CBRH System that would enable the construction, operation, ongoing maintenance and decommissioning, if contemplated, of the LBR Project. Included in this overview shall be the designed capacities of the project, location of all its components on a site-development plan, phasing and sequencing of the various undertakings associated with the components, a description of activities relating to the LBR Project that have been undertaken to date, and a description of how the proponent has incorporated consideration of traditional ecological knowledge in the Project's design and operation.

In order to further inform the cumulative effects assessment, an overview of the purpose and works associated with the broader CBRH System Rehabilitation should be provided. Included in this overview should be a comprehensive description of the operation of the CBRH system prior to, during and following the completion of the rehabilitation program in its entirety.

5.2 Project Phases

5.2.1 Construction

The EIS shall describe all elements of the construction of the proposed project. Detailed descriptions of timing and the methods proposed for the various undertakings related to the construction of any of the components of the LBR Project should be provided. This should also include:

- Plans and descriptions of, as well as detailed site maps for any existing works, temporary work areas, cofferdams, required for any component of the project as described in the scope of project.
- A description of the proposed construction methods that could have an effect on the environment such as those required for placement and removal of cofferdams, large scale clearing, grading or earth removal and disposal and a discussion of possible alternative construction methods;
- A description of the proposed drawdown of the LBR in order to undertake construction in the dry, including the duration, timing and recurrence of such events;
- A description of measures that will be taken to protect the health and safety of workers and the general public in and around the construction areas; and,
- A description of the proposed construction schedule including sequencing of the various undertakings.

5.2.2 Operation and Maintenance

The EIS shall describe how the Little Bow Reservoir would be operated and maintained in the local and regional context. The EIS shall:

- Cleary document the operation of the LBR, including identifying the source of water that will be used to raise and maintain the Little Bow Reservoir at the higher full supply level;
- Present the methodology and results of detailed computer modeling to clearly establish any impacts the project will have on water levels and stream flows upstream and downstream of the proposed water diversion and in the Little Bow River downstream of the Travers Reservoir. The modeling will be conducted on a suitable time period and time interval to clearly identify any

impacts of the proposed development over the range of hydrological and operating conditions that may be reasonably expected to occur. Clearly present and summarize the results of the computer modeling to clearly identify any impacts, or lack thereof, on water levels and stream flows.

5.3 Alternative Means of Carrying out the Project

The EIS shall include a discussion of the alternative means of carrying out the project that were considered technically and economically feasible. A discussion of the potential environmental effects that were considered relative to any such alternative means shall also be included. Consideration of alternative means for achieving the goals of the project, for the purpose of the EIS, will include discussion of other operating regimes that could have been implemented or alternative locations for the new components of the LBR Project that could have been chosen to achieve a similar end result.

5.4 Accidents and Malfunctions

The EIS shall include consideration of the potential accidents, malfunctions and unplanned events that could occur in any phase of the project, including a discussion of the likelihood and circumstances under which these events could occur. The potential environmental effects that may result from such events should be included in the impact assessment as part of the EIS.

In addition, information on any spill contingency plans for various components of the site (fuel storage and handling areas) will also need to be provided.

6.0 DESCRIPTION OF EXISTING ENVIRONMENT

The EIS shall describe the existing environmental setting for the proposed project. This will include a broad overview of the local area and the zones within which there may be environmental effects that are regional or global in their nature. This description is intended to provide a context for a detailed understanding of the potential effects of the project. A description of any deficiencies or limitations in the existing environmental database shall be reported. The EIS shall provided a discussion of the rationale for the determinations taken regarding the spatial and temporal boundaries chosen for the study areas used for the assessment, as discussed in section 3.3.4.

All relevant data that are included in the EIS should be collected using accepted methodologies. These methodologies should be consistent in order to allow comparative use of the data and facilitate ecosystem management.

The environmental data in the EIS should satisfy the following criteria:

- That the baseline data accurately describe the existing environment that may be affected by the project as proposed;

- That the data provide a sound basis for comparative monitoring and the development of sound decommissioning, reclamation and abandonment procedures (if or when contemplated); and,

- That the EIS be self-supporting, in terms of data availability and presentation.

6.1 Physical Environment

The EIS shall identify and describe at minimum the following environmental components:

6.1.1 Climate, Meteorology and Air Quality

Current climatic, meteorological and air quality information, including dust, should be referenced. Sufficient data must be provided to predict the effect of the project on these components. The potential effects of climate on the project must also be discussed.

6.1.2 Terrain, Soils and Geology

The following information should be presented:

- Detailed information and maps on the terrain and soils in which the project is proposed to occur. This includes any aspects of terrain and soils that may have potential implications for the project (slope, soil types, etc). Any relevant information should be discussed in terms of any potential effects on the project.
- Local and regional land and geology, including any aspects of the geological and/or hydrogeological environments that may have potential implications for the project. Any relevant information on surficial geology/geomorphology should be discussed in terms of any potential effects on the project e.g., ground stability, slumping, material weathering and acid/metal release; and,
- The identification of any other features, such as faults, fractures, shears, seismic activity or hydrogeologic characteristics e.g. artesian conditions, that may have an impact on the project and a description of its significance.
- Where appropriate, bedrock geology and surficial geology maps to accompany the text.

6.1.3 Surface Hydrology

The EIS should identify and characterize the major water bodies, watercourses, drainage areas and watersheds that may be potentially affected by the proposed development including the LBR, the Bow River and the Little Bow River. The EIS should include information on the current water allocation for the Bow River, any changes to the water allocations in order to allow the LBR to operate under the new regime, and any information on any current or known future application for potential increase water

withdrawal from the Bow River, including any changes into the Bow River Irrigation District system.

6.1.4 Noise

Noise control is important because of its potential impact on wildlife and human health. The EIS shall describe existing noise conditions at the proposed project site, and will describe (qualitatively and quantitatively) and assess potential noise generation sources during construction activities, and their potential impacts to human and wildlife receptors.

6.2 Aquatic Environment

The EIS shall describe the existing aquatic biological resources and associated habitat, and shall establish a suite of biotic and abiotic indicators for the area including a discussion of the rational for their selection. This description must be in sufficient detail to allow for a full analysis of potential effects of the project in the environmental effects section of the report. Descriptions shall be both quantitative and qualitative in nature, as appropriate.

6.2.1 Water Quality

The EIS should provide sufficient detail regarding the pre-project water quality parameters including temperature to predict the effect of the project on water quality for major water bodies identified as being potentially affected by the construction or operation of the LBR project.

6.2.2 Lower Trophic Levels and Aquatic Invertebrates

Sufficient detail regarding existing primary producers and decomposers shall be included to provide a basis to predict the potential effect(s) of the project on energy (food) production.

Sufficient detail respecting the existing species composition and abundance of aquatic invertebrates shall be provided in order to assess the overall productivity of the aquatic eco-system, biodiversity, and potential effects on fish populations and their range and the specific impacts to the benthic invertebrate communities in terms of biomass and species richness.

6.2.3 Fish and Fish Habitat

For the purpose of the assessment, “fish” refers to all life stages of resident fish, shellfish and crustaceans. “Fish Habitat” refers to the spawning grounds, nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life support processes.

The EIS should identify:

- Key fish-bearing water bodies and watercourses that may be affected by the construction and operation of the LBR project: waterbodies of concern include but are not limited to the LBR, the Bow River and the Little Bow River;
- Potentially affected species and local populations, including seasonal and life cycle movements, habitat requirements for each life stage,
- Key species used for traditional harvesting activities, commercial fishing or sport fishing in potentially affected water bodies; and,
- Any known issues currently affecting fish and aquatic life forms in the local study area.

Relevant information on aquatic biota and associated habitat likely to be affected by the project should be included in the EIS. Sufficient physical, chemical and biological data should be obtained to permit losses in the productive capacity of fish habitat resulting from the LBR Project to be quantified. This information should include:

- Fish abundance/density and biomass; fish species diversity, growth rate and condition for various fish species for various trophic levels; fish movement and migration patterns; and habitat use according to fish species, life stage, time of year, etc.;
- Fish habitat assessments, through collection of data on bathymetry, substrate type, aquatic vegetation, etc., and the identification of important or limiting habitat types (e.g. spawning habitat); in particular, the habitat assessments should look at those areas that are likely to be directly impacted on a seasonal and annual basis (i.e. shallow near shore areas along the perimeter of the lake or any islands, potential spawning shoals, floodplain areas, connected wetlands, creation of migration barriers to small inlet streams, etc.) and how important the habitats are to the different fish species and life stages of these species in the reservoir. The assessment needs to include the quantity and quality of habitat available in pre, during and post construction conditions; and,
- Assessment of the existing littoral zone, including vegetation, substrate, footprint, and fish use; and,
- The identification of any threatened and endangered aquatic species that may occur in the study area that is listed in SARA, Provincial Act and/or by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

6.3 Terrestrial Environment

The EIS shall provide a detailed description of the terrestrial environment including vegetation and wildlife. This description must be in sufficient detail to allow for a full analysis of potential effects of the project in the environmental effects section of the report. Descriptions shall be both quantitative and qualitative in nature, as appropriate. This detailed description should also include the area of land to be inundated as a result of the increase in FSL.

6.3.1 Vegetation and Plant Communities

The proponent shall identify information on plant communities, “Species at Risk”, and “Rare Species” that may be affected by the project, including riparian and wetland vegetation. Relevant data on any potentially-affected soil and vegetation, including rare and endangered flora that need to be protected, avoided or transplanted should be described.

- As part of a vegetation/wildlife evaluation, the proponent must undertake a rare plant species survey. The field work should include a determination of habitat types and specific examination of the potential disturbance to critical habitats. Field work should be supervised by a qualified botanist (see final main bullet of 6.3.2 for further information).

The Federal Policy on Wetland Conservation promotes the wise use of wetlands and protection through adequate consideration of wetland concerns in environmental assessments of development projects. The objective of the Policy is to promote the conservation of Canada’s wetlands to sustain their ecological and socio-economic functions, now and into the future. The Policy goals promote the maintenance of the functions and values derived from wetlands throughout Canada, recognition of wetland functions in resource planning and economic decisions, enhancement and rehabilitation of wetlands in areas where continuing loss or degradation of wetlands or their functions have reached critical levels, and utilization of wetlands in a manner that enhances prospects for their sustained and productive use by future generations. Wetlands do not operate in isolation and adjacent upland habitats play an integral part in the maintenance of the functions of wetlands.

The proponent should include the following information with respect to wetlands:

- A description of the location, size of wetlands, wetland type, condition, flora and fauna;
- A discussion of all species listed in Schedule 1 of SARA and those recognized as “at risk” by COSEWIC that depend on the wetland for habitat for any part of their life cycles;
- A description of the contribution of the wetland to the quantity and quality of surface water and groundwater;
- A description of the terrestrial and aquatic habitat functions; and,
- A description of the ecological function of the wetlands in the surrounding ecosystem.

6.3.2 Wildlife and Wildlife Habitat

The proponent shall provide information on wildlife and wildlife habitat in order to evaluate the potential for impact during construction, operation and maintenance of the LBR

project. The information provided should be of sufficient detail (qualitative and quantitative descriptions, including maps) to predict the effect of the project on wildlife and wildlife habitat in the study area, including the following:

- Sufficient information on wildlife species, populations, wildlife habitat, including critical wildlife habitat, and seasonal use and movement patterns in the study area to predict, avoid and mitigate, to the extent practicable, the effects of the project on wildlife habitat and populations in the study area.
- For all wildlife species listed on Schedule 1 of SARA and those recognized as “at risk” by COSEWIC that may occur in the project area, identification of residences, seasonal movements, movement corridors, habitat requirements, key habitat areas, critical habitat and general life history.

To assist proponents in accounting and managing Species at Risk, Environment Canada has developed a guide titled, "*Environmental Assessment Best Practice Guide for Wildlife at Risk in Canada*".

6.4 Socio-Economic Environment

As noted in Section 3.2 of this document, every federal environmental assessment must include an assessment of socio-economic impacts resulting from any change the project may cause in the environment, including impacts to health and socio-economic conditions, physical and cultural heritage, the current use of lands and resources for recreational or commercial purposes or traditional use by aboriginal person, or any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.

6.4.1 Land and Resource Use

The EIS must consider the following:

- Domestic harvesting of resources including fishing, hunting, trapping and gathering medicinal and other plants and berries by Aboriginal groups;
- Traditional land uses such as trails, portages, campsites, etc.; and,
- Commercial use of resources by Aboriginal and other groups, including commercial fishing, sport fishing and hunting, etc.

6.4.2 Heritage and Archaeological Resources

The EIS should identify any heritage and archaeological resources that may be impacted by the LBR project and provide sufficient detail to allow for a full analysis of any effects. For any structure, site or thing, maps identifying the location of these resources shall be provided. Details regarding of any mitigation measures that will be implemented to ensure their preservation shall be included.

7.0 ENVIRONMENTAL EFFECTS ASSESSMENT AND MITIGATION

7.1 Assessment Methodology

The environmental impact assessment process must address all the potential environmental effects of the LBR Project, their significance, and the likelihood of occurrence, of any malfunctions, accidents, unexpected conditions or unplanned events that may occur in any phase of the project. Any cumulative environmental effects that are likely to result from the project in combination with other past, current or future project activities that will be carried out must be evaluated.

Residual environmental impacts which cannot be mitigated during operation should be identified and their significance discussed.

The assessment of significance shall include consideration of the following criteria:

- Magnitude
- Extent (spatial and temporal)
- Duration
- Frequency and timing
- Permanence
- Ecological Impacts

Impacts with respect to spatial and temporal boundaries may vary depending on the VEC. Refer to Section 3.3.4 for further guidance on spatial and temporal boundaries for the assessment.

7.2 Project-Specific Effects

The EIS shall provide consideration of all environmental effects associated with the project in a systematic and traceable manner. Both positive and adverse environmental effects shall be described. The environmental and related socio-economic effects and associated mitigation shall relate to each phase of the project including site preparation, construction and post construction, operation, maintenance and, if contemplated, decommissioning, and shall assess all components of the environment. An assessment of the potential environmental effects of malfunctions or accidents that may occur in connection with the project is also required. Section 3.2 outlines the factors that must be considered in the effects assessment, as per the Act. Section 3.3 outlines the proposed scope of factors for the LBR Project that must be included in the EIS, as determined by the responsible authorities.

The assessment shall consider scientific analysis of ecosystem effects, along with traditional ecological knowledge (TEK), local knowledge and available experience in

determining the significance of potential effects. Mitigation and habitat enhancement measures to manage or avoid adverse effects shall be described for these components and for each undertaking in relation to the project.

While the assessment should consider all environmental effects, for all factors identified in section 3.3, that may occur due to the LBR project, the subsections below provide additional guidance for addressing specific concerns related to the following environmental components:

7.2.1 Physical Environment

7.2.1.1 Surface Hydrology

The EIS should provide detailed information on the impacts to water levels in the LBR and on the hydrological and hydraulic characteristics of the Bow River and the Little Bow River downstream of the CBRH diversion and the Travers spillway, respectively, under the new operating regime for the CBRH system.

7.2.2 Aquatic Environment

7.2.2.1 Water Quality

The EIS should include an assessment of:

- An Assessment of the impacts to water quality, including temperature, in the Bow River and Little Bow River, due to any changes in flows resulting from the new operation of the CBRH system, with the baseline of comparison being conditions as found under the CBRH 2001 preliminary operating strategy
- Effects to water quality in the LBR including;
    - The effects on water quality when drawing down the reservoir during construction;
    - The erosion and sedimentation impacts of the new FSL and changes in the operation of the reservoir; and,
    - The impact of decaying vegetation on water quality due to the new FSL and changes in the operation of the reservoir.

With respect to construction activities and sedimentation, the proponent is reminded of subsection 36(3) of the Fisheries Act that states:

> "Subject to subsection (4), no person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish or in place under conditions where the deleterious substance or any other deleterious substance that results from the deposit of the deleterious substance may enter such water."

Given that, despite any approvals that may be issued, there is no authorization for the deposit of materials such as noted above under the Fisheries Act, their deposit would be in contravention of this general prohibition. Subsection 78(6) of the Fisheries Act also indicates that:

"No person shall be convicted of an offense under this Act if the person establishes that the person:

a) Exercised all due diligence to prevent the commission of the offence...,".

The proponent must therefore demonstrate that all reasonable measures to prevent the deposit of deleterious substances are being exercised.

7.2.2.2 Fish and Fish Habitat

The EIS should include modeling of the littoral zone in the LBR at the new FSL, including vegetation, substrate, footprint and potential fish use. The impact of the fluctuating water levels on an "unestablished" littoral zone, and the impact on fish and their life stages (i.e., spawning, rearing, feeding etc.), fish habitat, and aquatic invertebrate shall also be assessed.

The EIS must examine the impacts of the reduced flow on the Bow River aquatic habitats and fish populations that rely on these habitats, especially under low flow scenarios (i.e., flows lower than the annual averaged), due to any increases in water diversion required for the new operating regime for the LBR, with the starting point of the assessment being the operating regime as described in the 2001 Preliminary Operating Strategy. The EIS must also examine potential impacts to fish and fish habitat in the Little Bow River which may result from a change in flows the new operating regime in the Carseland-Bow River Headworks system.

The EIS should provide detailed information related to potentially affected fish and fish habitat, and the loss in productive capacity of fish habitat for the entire project must be quantified. To determine the loss of productive capacity resulting from the drawdown and operational changes in LBR, a standard approach that is acceptable to DFO must be followed. A fish habitat compensation plan that includes follow-up and monitoring must be provided to ensure that there will be no net loss in productive capacity as a result of this project.

7.2.3 Terrestrial Environment

7.2.3.1 Vegetation and Plant Communities

Due to the importance of native prairie habitat, for any necessary works the proponent should identify potential impacts and mitigation measures which will be implemented to decrease adverse effects of the Project on contiguous native prairie and sensitive habitat. The EIS should outline the plans for shoreline stabilization and erosion control measures to minimize the deterioration of native prairie and water quality issues.

In addition to the studies to be conducted on rare and “Species at Risk” plant communities, as outlined in Section 6.3.1, the EIS shall also include:

- A discussion of how wetland function and ecosystem functions that contribute to the integrity of the wetland will be affected by the Project;
- A discussion of mitigation measures to be implemented to ensure the no net loss of wetland function; and,
- A discussion of how the mitigation measures are expected to meet the Federal Policy on Wetland Conservation.

7.2.3.2 Wildlife and Wildlife Habitat

The proponent should undertake surveys for and outline the potential impacts on wildlife and wildlife habitat and vegetation, including species at risk, to reflect the entire zone of expected inundation. The proponent should also outline the type and breadth of the surveys undertaken. Sufficient information on wildlife species, populations, wildlife habitat, including critical wildlife habitat, and seasonal use and movement patterns in the study area should be provided in order to predict, avoid and mitigate, to the extent practicable, the effects of the project on wildlife habitat and populations in the study area.

The EIS shall include a quantitative and qualitative assessment of aquatic mammal, waterfowl, water bird, shorebird, or colonial nesting species habitats which will be affected by long term water level changes and/or fluctuations expected from the project. In general, impacts should be avoided by planning construction or operations for timelines that take into consideration breeding/nesting seasons for all migratory bird species. Should there be a need for clearing any vegetation in areas where migratory birds may be nesting clearing should take place before April 15 or after July 31. If clearing must take place within this timeframe, the proponent should ensure that a person with qualified bird expertise confirm that there are no active nests in the area within 7 days of clearing commencing. The proponent should also be reminded that the deposit of oil, oil wastes or other substances that are harmful to migratory birds in any waters or any area frequented by migratory birds is prohibited.

For species listed under SARA and those recognized as “at risk” by COSEWIC, the EIS shall:

- Describe the potential effects of the proposed project on these species, their critical habitat, and residences of individuals of those species;
- Discuss measures taken to avoid or lessen those effects;
- Discuss measures taken to monitor all adverse effects on listed wildlife species and their critical habitat; and,

- Discuss how measures taken to monitor the adverse effects are consistent with any applicable recovery strategy, management plans and action plans.

7.2.4 Species at Risk

Under section 79(1) and 79(2) of the *Species at Risk Act*, it states:

> "Every person who is required by or under an Act of Parliament to ensure that an assessment of the environmental effects of a project is conducted must, without delay, notify the competent minister or ministers in writing of the project if it is likely to affect a listed wildlife species or its critical habitat."
>
> "The person must identify the adverse effects of the project on the listed wildlife species and its critical habitat and, if the project is carried out, must ensure that measures are taken to avoid or lessen those effects and to monitor them. The measures must be taken in a way that is consistent with any applicable recovery strategy and actions plans."

Therefore, in this section, the proponent shall provide a summary table of the information contained in all previous sections pertaining to Species at Risk, including:

- Identification of all species listed in Schedule 1 of SARA and those recognized as "at risk" by COSEWIC that may be within the local or regional study area;
- Potential impacts to this species as a result of the project and the applicable section of the EIS detailing these impacts; and,
- Mitigation and monitoring measures that will be implemented to ensure that adverse effects to these species are avoided and the applicable section of the EIS detailing these measures, including the location, or timelines for the development, of any monitoring plans.

Species specific timing restrictions and setbacks should also be respected. For a list of wildlife species appropriate setbacks, the proponent is referred to Environment Canada's *Petroleum Industry Activity Guidelines for Wildlife Species at Risk in the Prairie and Northern Region*. For a list of plant species appropriate setbacks and survey protocols, the proponent is referred to Environment Canada's *Occupancy Survey Guidelines for Prairie Plant Species at Risk* and *Activity Set-back Distance Guidelines for Prairie Plant Species at Risk*.

7.2.5 Socio-Economic Environment

7.2.5.1 Land and Resource Use

The EIS shall assess the potential effects of any environmental changes on human health, or recreational, domestic or commercial uses of land or resources. Any effects to local resources (e.g. surface and groundwater, fish, food, fur animals and plants), habitat losses and resource disruption which may affect activities such as subsistence hunting

and fishing, gathering, outfitting, and ceremonial/burial sites for local First Nations and non-First Nations resource users shall be assessed. The potential entry of contaminants into food chains and the terrestrial or aquatic environment should be considered from the perspective of human health impacts.

7.2.6 Navigable Waters

To satisfy requirements under the federal *Navigable Waters Protection Act,* the following details should be provided in an application to Transport Canada – Navigable Waters Protection Program (application to be submitted as soon as practicable). The information shall be summarized in the EIS, as follows:

- Provide an assessment of potential impacts to traditional, commercial and recreational waterway use in the project area resulting from both the construction and operation phases of all project components. Identify any proposed mitigation measures that will be used to reduce or eliminate these impacts;
- Provide any information related to public or aboriginal consultation regarding the potential impacts of the proposed project on traditional, commercial and/or recreational waterway users;
- Provide details regarding any proposed Boater Safety programs that will implemented during construction and operation of project;
- Clearly identify all new proposed works in, on, over, under or through a navigable waterway;
- Provide appropriate scaled maps illustrating the location of all in-water works;
- Provide detailed drawings (plan and profile) of those works;
- Provide plans and descriptions of all temporary works including coffer dams, temporary crossings, or other infrastructure; and,
- A description of proposed construction schedules and methods for all in-water works.

Based on the information, the predicted impacts to navigation should be determined and measures should be proposed to improve navigational safety. Please note, the application to Transport Canada – Navigable Waters Protection Program should be done as early as reasonably possible to avoid potential future delays.

The EIS should discuss the possible impacts of the new operational regime of the LBR on reservoir navigation, including impacts on existing launches, wharves, etc. and proposed mitigation measures for each effect.

7.3 Effects of the Environment on the Project

In addition to evaluating the effects of the project on the environment, the EIS must take into account how the environment could adversely affect the project, e.g. severe weather,

seismic events, etc. The assessment must also address any potential effects of climate change on the project. Reference to the guide “Incorporating Climate Change Considerations in Environmental Assessment: General Guidance for Practitioners” (The Federal-Provincial-Territorial Committee on Climate Change and Environmental Assessment, 2003) is recommended. This guide can be accessed on the Agency website at http://www.ceaa-acee.gc.ca.

This part of the assessment will be conducted in a step-wise fashion, similar to that described for the project effects. The EIS should identify any such hazards, possible important interactions between the natural hazards and the project, an assessment of the effects of those interactions, the available mitigation measures including design strategies, and the significance of any remaining (residual) likely adverse effects on the project.

7.4 Cumulative Effects

The residual effects of the project must be considered together with those of other projects and activities that have been or will be carried out, and for which the effects are expected to occur in combination with those of the project (i.e., *overlap* in same geographic area and time). These are referred to as cumulative effects.

The evaluation of potential cumulative environmental effects will include the residual environmental effects associated with the project, as identified in the comprehensive study, in combination with the environmental effects of other past, present or future projects or activities on those environmental components. The cumulative effects assessment must include, but will not necessarily be limited to: all previous works completed as part of the Carseland-Bow River Headworks System Rehabilitation, the current water withdrawal from the Bow River, with a baseline of the withdrawal in place at the time of the 2001 Preliminary Operating Strategy, and any future proposed allocation that may be reasonably expected to occur, including allocations to the Bow River Irrigation District system.

The EIS shall explain the approach and methods used to identify and assess the cumulative effects and provide a record of all assumptions and analysis that support the conclusions, including the level of confidence in the data used in the analysis. The Canadian Environmental Assessment Agency guidance documents “*Operational Policy Statement OPS-EPO/3-1999 Addressing Cumulative Environmental Effects under the Canadian Environmental Assessment Act,* and *Cumulative Effects Assessment Practitioners Guide* should also be consulted regarding the scope of cumulative impacts to be evaluated in the EIS. The general framework for the assessment should comprise Scoping, Analysis, Mitigation, Determining Significance of the Effects, and Follow-up.

The proponent is encouraged to discuss the data and methodology to be used in the cumulative effects assessment in the scoping phase (list of other projects to be considered, residual effects of the proposed project to be considered in this assessment,

etc.) and prior to the completion of the cumulative effects assessment to ensure that the assessment will meet the needs of the federal responsible and expert authorities.

7.5 Effects on the Capacity of Renewable and Non-renewable Resources

The potential interactions between the project and the environment will be identified and assessed in order to determine the likelihood of interactions between the project and resource sustainability. This will include a consideration of the capacity of renewable resources that are likely to be significantly affected by the project to meet the needs of the present and those of the future

7.6 Mitigation and Contingency Planning

All mitigation measures described throughout the EIS must be documented in the mitigation section.

The EIS should discuss existing mitigation measures and current contingency planned at the Little Bow Reservoir site and any changes necessary to manage activities associated with the proposed LBR Project. The EIS must identify and describe technically and economically feasible mitigation measures that may be applied to each likely adverse environmental effect. Mitigation strategies should reflect avoidance, precautionary and preventive principles.

The proponent should outline the plans for and undertake shoreline stabilization and erosion control measures (for during and after construction) in a sediment and erosion control plan to minimize the deterioration of native prairie, water quality or fish habitat. The proponent should also develop monitoring programs to determine the effectiveness of the shoreline stabilization and erosion control measures undertaken. The proponent should also outline the plans for and address the loss of the 270 ha of native prairie to be inundated as a result of the increase in FSL.

The proponent should develop a detailed post-construction wetland monitoring plan to assist in identifying additional mitigation measures or remedial actions should monitoring reveal unforeseen impacts or any mitigation measures be deemed unsuccessful; the proponent should also provide details regarding their wetland restoration/compensation program including the proposed program timeline.

Prior to raising the level of water during each consecutive summer period and in the final inundation stages to the FSL of 856.18 masl, the proponent should ensure that a person with qualified bird expertise survey the area to be inundated to ensure that there are no active nests of migratory birds. Immediately prior to the filling of the reservoir to the new operating level the area that will be flooded out should be cleared of all native prairie habitats (only areas that will be under water). This will make the area undesirable as nesting, feeding, burrow locations; thus limiting the number of wildlife species that may be impacted in the spring when the area is flooded out. This can be undertaken through a

number of methods, including sod-turning, scraping or mowing. These methods should be discussed with appropriate provincial or federal agencies to determine the best way to remove the native prairie habitat without significantly increasing sediment loading or other negative impacts to the water supply/quality.

In addition, for the following three listed species at risk that have been identified to occur in the area, the proponent should adhere to the following setbacks:

- Burrowing Owl: Maintain a year round setback distance of 500 m from an active burrow for two years following the last sighting.
- Ferruginous Hawk: Maintain a setback distance of 1000 m from March 1 to July 15 and 500 m from July 16 to February 28.
- Sprague's Pipit: Maintain a setback distance of 350 m from May 1 to August 31. This setback distance would also have to be adhered to in regard to the inundations during each of the four consecutive summer periods as well as the final inundation to the FSL of 856.18 masl.

The proponent should provide detailed maps demonstrating that these setback distances will be adhered to.

The EIS should also document mitigation and contingency plans which would be implemented in the event of any potential containment failures, spills, malfunctions, accidents or inadvertent waste releases associated with the project.

The EIS should also address potential crop depredation associated with overwintering waterfowl as a result of the dam expansion.

7.7 Significance of Residual Adverse Environmental Effects

The EIS shall describe the nature and extent of any residual environmental effects of the project, and include a characterization as to whether residual environmental effects are significant or insignificant, and the rationale for such characterization. It shall provide a detailed plan for responding to any known or predicted residual effects, and provide a procedure for identifying and responding to effects that were not predicted or foreseen. The proponent is encouraged to consult guidance materials from the Canadian Environmental Assessment Agency on determining significance of adverse environmental effects.

7.8 Sources of Information

All assessment conclusions shall be supported by credible technical information and traditional ecological and local knowledge. The EIS shall describe the primary sources of information used to conduct the environmental assessment of the proposed project. This information shall include:

- technical studies of similar facilities and processes which are operating elsewhere;
- original studies performed by qualified engineers or scientists commissioned by the proponent specific to the project;
- identification of facility design documents prepared by qualified engineers as they become available;
- scientific reports and papers on topics relevant to the project; and,
- traditional ecological and local knowledge.

Credible analysis and documentation shall support all conclusions of 'no or insignificant effect'.

8.0 ENVIRONMENTAL MONITORING

The EIS shall provide a detailed description of the proposed monitoring activities of effects of the project on the physical, aquatic, terrestrial and socioeconomic environments arising for the site preparation, construction, operation and eventual decommissioning, if contemplated, of the project. It shall describe the equipment to be used, the parameters to be measured, the methodology and frequency of measurement and the mechanism for reporting results of proposed monitoring of the environmental conditions affected by the project. The design of the environmental monitoring proposal and its implementation shall incorporate traditional ecological and local knowledge.

The EIS shall describe how the proposed monitoring activities will help to verify and manage environmental effects and confirm the performance of mitigation and habitat enhancement measures to be employed. It should also identify the proponent's commitments for operational response procedures should monitoring identify environmental changes or unforeseen/ unacceptable impacts. Monitoring programs should be consistent with baseline data sampling methodology.

Monitoring not only should ensure compliance with regulatory requirements but also should allow the systematic audit of the environmental impact assessment process, specifically the accuracy of predictions and the adequacy of proposed mitigation measures. If regulatory approval for the project is provided, and prior to construction, a project-specific Environmental Protection Plan (EPP) shall be developed. The EPP will be designed to commit the proponent to a long term monitoring program, including accountability and reporting requirements, which would encompass both the construction and operational phases of the project in order to confirm predictions of effects and to determine whether unexpected effects are occurring. The EPP shall be developed to accomplish the following goals:

- to facilitate the mitigation of environmental effects throughout the full-life cycle of the project by providing field construction and operating personnel with clear instruction on the mitigation measures to be implemented and on the appropriate lines of communication and means of reporting to be followed;
- to incorporate issues and concerns identified through the consultation process, including protocols put in place by the First Nation or other Aboriginal communities;
- to identify modifications to construction methods or schedules, summarize environmental sensitivities and mitigation actions, list emergency response plans and reporting protocols, including mitigation of potential hazards to public safety and mitigation to address land reclamation concerns; and,
- to monitor construction practices to ensure that the work proceeds in accordance with the EPP.

9.0 FOLLOW-UP

The EIS will describe the need for and requirements of a federal “follow-up program” in respect of the project. The purpose of the follow-up program is to assist in determining if the environmental and cumulative effects of the project are as predicted and to confirm whether the mitigation measures are effective. Information gathered during the follow-up will be posted on the CEA Registry, allowing others to review the results. Therefore, the monitoring program must describe a specific CEAA follow-up program that includes the detailed scope of the program together with schedule and reporting milestones. The follow-up may be a component of the larger monitoring program, but should be specifically defined and presented.

10.0 REPORT FORMAT

The EIS should provide a concise, complete statement of the anticipated net environmental costs and benefits of the proposed project in both the short and long-terms. The discussion should include, if possible, any intangible costs and benefits that cannot be expressed in economic terms. To satisfy CEAA requirements, this statement must include conclusions specifically on whether the project is likely to cause significant adverse environmental effects.

11.0 PUBLIC PARTICIPATION

11.1 Ability of the Comprehensive Study to Address the Issues

Projects or classes of projects, prescribed on the *Comprehensive Study List Regulations* are those for which the Governor in Council, on the recommendation of the Minister of the Environment, is satisfied that they are likely to have significant adverse environmental effects. At any time when the responsible authority or the Minister is of the opinion that significant adverse environmental effects are likely, or public concern warrants, the

Minister may refer a project to a review panel or a mediator. Such a decision has not yet been made for this project.

In a comprehensive study, the responsible authority will ensure that environmental effects are identified and assessed, and will determine whether, taking into account mitigation, the project is likely to cause significant adverse environmental effects. As identified earlier in this PSG&S document, this process has mandatory provisions for public consultation on the project and conduct of the comprehensive study at the start of the environmental assessment, on the final comprehensive study report and an additional opportunity for participation during the environmental assessment, to be determined by the responsible authorities.

When considering the ability of the comprehensive study to address issues relating to the project, responsible authorities will consider a number of matters, including the following questions:

- Is the environmental setting generally well understood?
- Does the project involve technology that is new, unproven or not well understood, or is it known and proven?
- Does the proponent have experience with similar projects?
- Do the responsible and federal authorities have experience conducting environmental assessments of similar types of projects?
- Was this previous experience in similar environmental settings?
- Is the project the first of its type in the Region/Community?
- Have public concerns been expressed about similar projects in the past?
- Are there other projects being undertaken or planned in the same environmental setting, community or region?
- Are the issues relatively straight-forward, or is there a wide range of opposing views regarding the proposed project?
- Are there policy issues that may be difficult to address in a comprehensive study?

When commenting on the ability of the comprehensive study to address the issues, the public may want to consider whether the proposed scoping for the comprehensive study include the issues or concerns that they might have about the project and the environmental assessment, and if not, will such issues be addressed in an environmental assessment being conducted by another (e.g. provincial) jurisdiction?

11.2 Submission of Public Comments on the PSG&S document

As previously indicated in Section 1.0, and in consideration of information contained in this document, the public is invited to provide its views and opinions at this scoping stage of the environmental assessment on the following matters:

- the proposed scope of the project;
- the factors proposed to be considered in the assessment;
- the proposed scope of those factors; and
- the ability of the comprehensive study to address issues relating to the project; and,
- any other matter contained in this document.

When providing comments, clearly reference the Little Bow Reservoir Rehabilitation and Upgrading Project and the Registry Reference Number 09-01-49421 on your submission. Contact information and deadline for receipt of comments are provided in Section 1.0.

Please note that all documents and/or responses received regarding this project are considered public and will become part of the public registry, in accordance with the *Access to Information Act* and the *Privacy Act.*

11.3 Further Opportunities for Public Involvement

The public was provided an opportunity to comment on the LBR Project. The Agency will provide an opportunity for the public to review and provide comment on the comprehensive study report, after it has been submitted to the Minister of the Environment and to the Agency. The public will also have opportunities to participate in the assessment in the event the project is referred to a mediator or a review panel.

11.4 Participant Funding Program

Through its Participant Funding Program, the Agency makes funds available for individuals, Aboriginal groups and incorporated not-for-profit organizations wishing to become involved in the comprehensive study for the project. The notice indicating the availability of funding through this program was posted separately on the Canadian Environmental Assessment Registry Internet Site, and placed in local newspapers. The closing date for applications was August 20, 2010. The report of the Funding Review Committee is available on the Canadian Environmental Assessment Registry Internet Site.

11.5 Canadian Environmental Assessment Registry

Pursuant to subsection 55(1) of the Act, the Canadian Environmental Assessment Registry (the Registry) has been established to provide timely notice of the environmental assessment and to facilitate public access to records related to the environmental assessment. The Registry consists of a project file and an Internet Site. The Internet Site contains the following key records about the environmental assessment:

- Notice of Commencement
- Notice of Termination (if applicable)
- Summary description of the project, including the scope of the project
- Description of factors and scope of those factors
- Notices to request public input or other opportunities for public participation in the comprehensive study
- Comprehensive study report
- Minister's environmental assessment decision statement;
- Responsible authorities course of action decisions and statement of mitigation measures
- Description summarizing the follow-up program and its results
- Any other information considered appropriate

The Internet Site of the Registry can be accessed at the following address:

http:/www.ceaa-acee.gc.ca/050/index_e.cfm (search using the Registry Reference Number).

Anyone wishing to obtain copies or view records on the Registry project file may contact:

Canadian Environmental Assessment Agency
Alberta/Northwest Territories Regional Office
61 Airport Road
Edmonton, Alberta
T5G 0W6
Telephone: (780) 495-2037
Email: CEAA.Alberta@ceaa-acee.gc.ca

If you have general questions in relation to the Act, you can access the Agency website at: http://www.ceaa-acee.gc.ca/ or contact:

Erin Groulx
Canadian Environmental Assessment Agency
Alberta/ Northwest Territories Regional Office
Telephone: 780-495-2629
Fax: 780-495-2876
Email: Erin.Groulx@ceaa-acee.gc.ca