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1.1 Guiding Principles	<p><b>Environmental Assessment</b>                      Environmental Assessment (EA) is a comprehensive process to identify and evaluate the potential effects of a proposed major project and ways to avoid or mitigate adverse effects.</p> <p><b>Public Participation</b>                      The overall objective of public participation is best achieved when all parties have a clear understanding of the proposed project as early as possible in the review process. The public will be provided with opportunities to participate in the environmental assessment process.</p> <p><b>Aboriginal Consultation</b>                      BCEAO and Canada are committed to working constructively with Aboriginal groups to ensure that the Crown fulfills its duties of consultation and accommodation. The proponent must ensure that it engages with Aboriginal groups that may be affected by the project, or that have asserted or established Aboriginal rights or treaty rights in the project area, as early as possible in the project planning process.</p> <p>An environmental assessment conducted in accordance with the agreement between the Ministers of Environment of BC and Canada with respect to the environmental assessment of the Project and with these EIS Guidelines, which have been developed under that Agreement, will meet the objectives of these principles.</p>	Volume 1	Section 1.1	<u>Page 1-1</u>
1.2 Purpose of the Environmental Impact Statement	<p>The EIS will describe the provincial triggers for the environmental assessment. Pursuant to Part 4 of the Reviewable Projects Regulation, an environmental assessment is required because the Proponent is proposing the following:</p> <ul style="list-style-type: none"> <li>▪ Construction of a new hydroelectric power generating station with a rated nameplate capacity of greater than 50 MW</li> </ul>	Volume 1	Section 1.2	<u>Page 1-2</u>

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	<ul style="list-style-type: none"> <li>▪ A new 500 kV transmission line greater or equal to 40 km in length</li> <li>▪ A new sand and gravel pit that will have a production capacity of greater than or equal to 500,000 tonnes per year, or over a period of less than or equal to a period of four years of operation greater than or equal to 1,000,000 tonnes, or a modification of an existing pit if it meets the criteria above or results in an expansion of 35 per cent of the existing permitted facility</li> <li>▪ A new construction stone quarry that will have a production capacity of greater than or equal to 250,000 tonnes per year, or a modification of an existing quarry of the above capacity or 750 hectares of land not previously permitted, or an area of land at least 50 per cent of the area previously permitted</li> </ul> <p>The EIS is not intended to constitute a Certificate of Public Convenience and Necessity for the Site C Project. The Site C Project is exempt from the requirement for a Certificate of Public Convenience and Necessity as per Section 7 of the B.C. <i>Clean Energy Act</i>.</p> <p>Under the former CEAA, a federal environmental assessment was commenced because:</p> <ul style="list-style-type: none"> <li>▪ Fisheries and Oceans Canada (DFO) concluded that the Project required <i>Fisheries Act</i> authorizations (Section 32 and 35) for works or undertakings associated with the Project</li> <li>▪ Transport Canada concluded that it must issue approvals under the <i>Navigable Waters Protection Act</i> (Section 5)</li> </ul> <p>On July 6, 2012 the new <i>Canadian Environmental Assessment Act 2012</i> (CEAA) came into force.</p> <p>The Project is also subject to the Major Resource Project Initiative led by the Major Projects Management Office, which works collaboratively with federal departments and Agencies, and acts as a single window into the federal regulatory process.</p>			

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	<p>On September 30, 2011 the federal Minister of the Environment and the BC Minister of the Environment announced a cooperative environmental assessment of the Site C Clean Energy project including the establishment of a joint review panel.</p> <p>This section of the EIS will also describe:</p> <ul style="list-style-type: none"> <li>▪ The purpose of the cooperative EIS</li> <li>▪ The relationship between these EIS Guidelines and the EIS</li> </ul> <p>In the interest of brevity, the cooperative EIS and Environmental Assessment Certificate Application (Application) are referred to collectively as the EIS. The joint terms of reference, called the EIS Guidelines-Application Information Requirements (AIR) are collectively referred to as these EIS Guidelines.</p> <p>The EIS will be structured generally in the same way as these EIS Guidelines and will include: Preface; Acknowledgements; Table of Concordance; Executive Summary; Abbreviations and Acronyms; Definitions; Table of Contents; Project Overview and Description; Needs for, Alternatives to, Purpose of, and Alternative Means of Undertaking the Project; Project Benefits; Public, Aboriginal Groups and Agency Information Distribution and Consultation; Assessment of Potential Environmental, Economic, Social, Heritage and Health Effects, Mitigation and Significance of Residual Effects; Assessment of Potential Adverse Impacts to Asserted or Established Aboriginal Rights and Treaty Rights, Aboriginal Interests and Information Requirements; Requirements for the Federal Environmental Assessment; Summary of Potential Residual Effects; Table of Conditions; and Conclusions.</p> <p>The EIS that is made publicly available for comment should not contain:</p> <ul style="list-style-type: none"> <li>▪ Information that is sensitive or confidential (i.e., financial, commercial, scientific, technical, personal, cultural or other nature), that is treated consistently as confidential, and the person affected has not consented to the disclosure</li> <li>▪ Information that is likely to endanger the life, liberty or</li> </ul>			

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	security of a person through its disclosure			
1.3 Presentation and Organization of the EIS	<p>The EIS should be written in clear, precise language. The proponent shall provide charts, diagrams, tables, maps and photographs, where appropriate, to clarify the text. Perspective drawings that clearly convey the various components of the project shall also be provided. Wherever possible, maps shall be presented in common scales and datum to allow for comparison and overlay of mapped features.</p> <p>For purposes of brevity and to avoid repetition, cross-referencing is preferred. The EIS may make reference to the information that has already been presented in other sections of the document, rather than repeating it. The exception to this preference is the cumulative effects assessment, which should be readily identifiable in each VC section where applicable. Detailed studies (including all relevant and supporting data and methodologies) shall be provided in separate appendices and shall be referenced by appendix, section and page in the text of the main document of the EIS.</p> <p>The proponent shall provide copies of the EIS for distribution, including an electronic version in an unlocked, searchable PDF format, as directed by the BCEAO and the Agency.</p> <p>Section 5 of CEAA describes specific categories of direct and indirect environmental effects that must be considered in the EA. The EIS should contain clearly identifiable sections that summarize the effects assessment; the mitigation measures, follow-up and related commitments identified; the residual environmental effects (including cumulative environmental effects); and the significant adverse environmental effects in relation to the following categories noted below:</p> <ul style="list-style-type: none"> <li>▪ Changes to components of the environment within federal jurisdiction</li> <li>▪ Changes to the environment that would occur on federal or transboundary lands</li> <li>▪ Changes to the environment that are directly linked or</li> </ul>	Volume 1	Section 1.3	<a href="#">Page 1-4</a>

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	<p>necessarily incidental to federal decisions</p> <ul style="list-style-type: none"> <li>▪ Effects of changes to the environment on Aboriginal peoples</li> <li>▪ Effects of changes to the environment that are directly linked or necessarily incidental to federal decisions</li> </ul> <p><b>Scientific advice</b> Section 20 of CEAA requires that every federal authority with specialist or expert information or knowledge with respect to a project subject to an EA make that information or knowledge available to the Agency. The Agency will advise the proponent in a timely manner of the availability of any pertinent information or knowledge.</p> <p><b>Community knowledge and Aboriginal traditional knowledge</b> Subsection 19(3) of CEAA states that “community knowledge and Aboriginal traditional knowledge may be considered in conducting an EA”. For the purposes of these guidelines, community knowledge and Aboriginal traditional knowledge should be understood to refer to knowledge acquired and accumulated by a community or an Aboriginal community, through generations of living in close contact with nature.</p> <p>The proponent shall incorporate into the EIS the community and Aboriginal traditional knowledge to which it has access or that is acquired through Aboriginal engagement activities, in keeping with appropriate ethical standards and without breaking obligations of confidentiality, if any. Agreement should be obtained from Aboriginal groups regarding the use, management and protection of their existing traditional knowledge information during and after the EA.</p> <p><b>Existing information</b> In preparing the EIS, the proponent is encouraged to make use of existing information relevant to the project. However, when relying on existing information to meet requirements of the EIS Guidelines, the proponent must either include the information directly in the EIS or clearly direct the reader to where it may obtain the information (i.e., through cross-referencing). When</p>			

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	relying on existing information, the proponent must also comment generally on how the data have been applied to the project and any limitations on the inferences or conclusions that can be drawn from the existing information.			
2 Proponent Description	This section of the Environment Impact Statement (EIS) describes the Proponent.	Volume 1	Section 2	<a href="#">Page 2-1</a>
3 Project Overview	The EIS will describe the Proponent's project governance process for the Project. It will then describe the project location and project components and activities.	Volume 1	Section 3	<a href="#">Page 3-1</a>
3.1 Project Governance Process	The Proponent will describe: <ul style="list-style-type: none"> <li>▪ The governance and multi-staged decision-making process for the Project</li> <li>▪ Specify the mechanism used to ensure that corporate policies will be implemented and respected for the project</li> <li>▪ Explain corporate and management structures, as well as insurance and liability management related to the project</li> <li>▪ The name of the legal entity that would develop, manage and operate the project</li> </ul>	Volume 1	Section 3.1	<a href="#">Page 3-1</a>
3.1.1 Scheduling	An estimated month by month construction schedule based on project planning at the time of preparation of the EIS will be incorporated into the EIS. The schedule will commence on the anticipated date of certification. The EIS will describe the anticipated scheduled maintenance activities and the potential future capital upgrades.	Volume 1	Section 3.2	<a href="#">Page 3-5</a>
3.2 Project Location	The EIS should contain a concise description of the geographical setting in which the project will take place, including a map of the project's location and components at an appropriate scale. The location map should include the boundaries of the proposed site, the major existing infrastructure, adjacent land uses and any important environmental features. In addition, site plans/sketches and photographs showing project location, site features and the intended location of project components should be included.	Volume 1	Section 4.1	<a href="#">Page 4-1</a>

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	<p>This description should focus on those aspects of the project and its setting important for understanding the potential effects of the project. The description should address the natural and human elements of the environment in order to explain the interrelationships between the biophysical environment and people and communities. The following information must be included:</p> <ul style="list-style-type: none"> <li>▪ Environmentally sensitive areas, such as national, provincial and regional parks, ecological reserves, wetlands, estuaries, and habitats of provincial or federally listed species at risk and other sensitive areas</li> <li>▪ Current land use in the area and the relationship of the project facilities and components with any federal lands</li> <li>▪ Location of nearby communities, including Aboriginal communities</li> <li>▪ Tenure, ownership and land management details for lands within the areas of project components</li> <li>▪ Traditional Aboriginal territories, treaty lands, Indian reserve lands</li> <li>▪ The UTM coordinates of the main project site</li> <li>▪ The environmental significance and value of the geographical setting in which the project will take place and the surrounding area</li> </ul> <p>The dam and hydroelectric generating station will be located on the Peace River in northeast B.C., approximately 7 km southwest of the City of Fort St. John.</p>			
3.3 Project Components and Activities	<p>The EIS will describe the project components and activities. The description of the project components and activities will be supported by:</p> <ul style="list-style-type: none"> <li>▪ Maps depicting the spatial scope and local context</li> <li>▪ Plan and cross-section drawings</li> <li>▪ Tables containing pertinent data</li> </ul>	Volume 1	Section 4.3	<a href="#">Page 4-8</a>

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	<p>If available, the EIS shall include a detailed schedule including time of year, frequency, and duration for all project activities. The temporal context of the project component and activities will be described, and the Proponent will provide a rationale in instances where all temporal phases are not considered relevant.</p> <p>The description of the construction activities will be based on construction planning and assumptions at the time the EIS is submitted. Some activities may be different during implementation depending on procurement, including contractors' preferences for equipment, construction means and methods, and competitive pricing. Therefore, feasible options for some activities may be described if required to define the likely range of potential effects of the construction activities.</p> <p>This would include detailed descriptions of the activities to be carried out during each phase, the location of each activity, and an indication of the activity's magnitude and scale.</p> <p>The EIS will describe the expected performance of the structures during and after major earthquakes, including the ability of earth dams and other water retaining and flow control structures to withstand earthquakes. This will include a review of lessons learned from major earthquakes that have occurred elsewhere.</p> <p>The EIS will include at a minimum the following project components and activities.</p>			
<p>3.3.1 Dam and Generating Station</p> <p>3.3.1.1 Earthfill Dam</p>	<p>The EIS will describe:</p> <ul style="list-style-type: none"> <li>▪ The principal dimensions of the earthfill dam and associated buttress</li> <li>▪ The characteristics and anticipated quantities of material used to construct each zone of the earthfill dam</li> <li>▪ Explosives use, manufacturing, and storage facilities</li> <li>▪ The anticipated quantities of material used to construct the buttress</li> <li>▪ Seepage control and drainage provisions</li> <li>▪ Freeboard requirements to accommodate potential flood,</li> </ul>	Volume 1	Section 4.3.1 Section 4.3.1.1	<p><a href="#">Page 4-8</a></p> <p><a href="#">Page 4-9</a></p>



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	<p>seiche, and wind and landslide-generated waves</p> <ul style="list-style-type: none"> <li>▪ The specifications for the design of the earthfill dam and the testing that has been performed to determine the suitability of the materials from which the dam will be constructed</li> </ul> <p>The EIS will characterize the geotechnical parameters of the materials that will be quarried and excavated and describe their suitability for use as construction materials.</p>			
3.3.1.2 Generating Station	<p>The EIS will describe:</p> <ul style="list-style-type: none"> <li>▪ The principal dimensions of each structure that is part of the generating station , including the associated buttress</li> <li>▪ The approach channel that conveys water from the reservoir to the generating station and spillways</li> <li>▪ The type and anticipated quantities of materials used to construct each structure</li> <li>▪ Seepage control and drainage provisions</li> <li>▪ The principal characteristics of the generating equipment</li> <li>▪ The ancillary mechanical and electrical systems</li> <li>▪ The tailrace that conveys water from the powerhouse to the river downstream of the dam</li> </ul>	Volume 1	Section 4.3.1.4	<a href="#">Page 4-16</a>
3.3.2 Spillways	<p>The EIS will describe:</p> <ul style="list-style-type: none"> <li>▪ The principal dimensions of each part of the spillway, including the associated buttress</li> <li>▪ The type and anticipated quantities of materials used to construct each structure</li> <li>▪ Seepage control and drainage provisions</li> <li>▪ The equipment used to operate the spillway</li> <li>▪ The hydraulic capacity of the spillway at the maximum normal reservoir level and the maximum flood level</li> <li>▪ The tailrace that conveys water from the spillways to the river downstream of the dam</li> </ul>	Volume 1	Section 4.3.1.5	<a href="#">Page 4-17</a>

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	<ul style="list-style-type: none"> <li>▪ The energy dissipation and erosion protection provisions</li> </ul>			
3.3.3 Reservoir	<p>The EIS will describe the physical characteristics of the reservoir, including:</p> <ul style="list-style-type: none"> <li>▪ Its normal operating range</li> <li>▪ Its overlap with the Peace River and its spatial extent into Peace River's tributaries</li> <li>▪ The surface area at the maximum normal reservoir level, with the area of each tributary arm</li> <li>▪ The normal operating water volume, and the volume between the maximum normal reservoir level and the minimum normal reservoir level</li> <li>▪ Reservoir bathymetry</li> </ul>	Volume 1	Section 4.3.2	<a href="#">Page 4-18</a>
3.3.4 Transmission Line to Peace Canyon	The EIS will describe all the facilities required to connect to the bulk transmission system, including access roads required for clearing, construction and maintenance of the transmission line.	Volume 1	Section 4.3.3	<a href="#">Page 4-19</a>
3.3.5 Access Roads and Rail	The EIS will describe the permanent and temporary access routes required for access to the project site and other project components including a description of the temporal aspects of road use (e.g. traffic management plans, expected traffic patterns and volumes for different phases of project development, deactivation schedules). The EIS will also describe any improvements that would be required to existing roads and rail. Maps showing the access roads and rail will be provided.	Volume 1	Section 4.3.7	<a href="#">Page 4-36</a>
3.3.6 Highway 29 Realignment	The EIS will describe alternative highway realignment options and a rationale for selection of the preferred options. The EIS will describe the proposed sections of Highway 29 that would be realigned. The description will include the approximate length of bridges and causeways at watercourse crossings, clearance between bridges and the reservoir and the factors considered in alignment selection. Drawings showing the preliminary design of the bridges and causeways for each section of Highway 29 that has to be realigned will be included in the EIS.	Volume 1	Section 4.3.4	<a href="#">Page 4-22</a>

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	The EIS will identify any driveways, properties or existing crown tenures that may need entirely new access routes constructed as a result of the highway realignment.			
3.3.7 Quarried and Excavated Construction Materials	The EIS will describe the sources of riprap, aggregates and till that would be required to construct the dam and generating station, for highway realignment, and for the berm at Hudson's Hope. Maps showing the location of the proposed sources will be included with the descriptions.	Volume 1	Section 4.3.5	<a href="#">Page 4-25</a>
3.3.8 Worker Accommodation	The EIS will describe plans for temporary worker accommodation for construction, at the dam site and other locations, as well as any plans for provision of worker accommodations in nearby communities. The projected size and use of camp facilities will be described, including any related project employment policies or restrictions.	Volume 1	Section 4.3.6	<a href="#">Page 4-34</a>
3.3.9 Construction Phase Activities	<p>The EIS will describe the expected construction sequence and activities for each project component. A description of the information to be provided is listed below.</p> <p>The EIS will describe the following activities for construction of the dam and generating station:</p> <ul style="list-style-type: none"> <li>▪ Site clearing and grubbing</li> <li>▪ Construction of temporary and permanent access and haul routes</li> <li>▪ Modifications to rail</li> <li>▪ Construction of a temporary access bridge over the Peace River and one over the mouth of the Moberly River, including a rationale for the choice of installation of temporary rather than permanent crossings over the Peace and Moberly rivers</li> <li>▪ Transportation of equipment and materials to the site</li> <li>▪ Set up and operation of the temporary facilities required for construction</li> <li>▪ Excavations to stabilize slopes and for the foundations of structures</li> </ul>	Volume 1	Section 4.4	<a href="#">Page 4-40</a>

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	<ul style="list-style-type: none"> <li>▪ Stockpiling of excavated materials for use in construction</li> <li>▪ Relocation of surplus excavated materials that are unsuitable for construction, including estimated quantities, locations and treatment of relocation areas</li> <li>▪ Construction of cofferdams to confine the river to the main channel and isolate the north and south banks of the river so that work can be performed in the dry</li> <li>▪ Construction of the diversion tunnels</li> <li>▪ Diversion of the river through the tunnels</li> <li>▪ Construction of cofferdams across the main river channel to isolate the foundations of the earthfill dam</li> <li>▪ Construction of the earthfill dam</li> <li>▪ Placing roller-compacted concrete in the buttress abutting the earthfill dam and supporting the generating station and spillways</li> <li>▪ Placing reinforced concrete for the generating station and spillways</li> <li>▪ Placing the impervious lining and erosion protection in the approach channel</li> <li>▪ Placing erosion protection in the tailrace and spillway outlet channel</li> <li>▪ Fabricating and erecting the steel penstocks of the generating station</li> <li>▪ Erection of buildings and powerhouse superstructure</li> <li>▪ Installation of mechanical and electrical equipment</li> <li>▪ Testing and commissioning the generating facility and spillways</li> <li>▪ Removal of temporary construction facilities, including roads and bridges</li> <li>▪ Disposal of construction waste</li> <li>▪ Site reclamation</li> </ul>			

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	<p>The EIS will describe the following construction activities for reservoir preparation, including:</p> <ul style="list-style-type: none"> <li>▪ Estimated volumes of merchantable and non-merchantable wood within the reservoir area</li> <li>▪ Proposed extent and locations of cleared areas</li> <li>▪ Clearing strategy and methods</li> <li>▪ Proposed access routes, including transportation of merchantable timber resources to processing facilities</li> <li>▪ Construction of temporary access roads</li> <li>▪ Construction of the shoreline protection berm at Hudson's Hope</li> <li>▪ Removal or treatment of existing structures or utilities including any other potential hazard to navigation at the minimum normal reservoir level</li> <li>▪ Reservoir filling</li> <li>▪ Methods for managing wood debris during construction and reservoir filling</li> <li>▪ Methods for managing vessel traffic during construction and reservoir filling</li> </ul> <p>The EIS will describe the following construction activities for the connection to the transmission system:</p> <ul style="list-style-type: none"> <li>▪ Clearing to widen the existing right-of-way</li> <li>▪ Construction of new access roads and upgrading of existing roads</li> <li>▪ Construction laydown areas along the transmission corridor for the storage of materials and assembly of components</li> <li>▪ Installation of tower foundations</li> <li>▪ Batching of concrete for tower foundations</li> <li>▪ Assembly and erection of towers and supporting structures</li> <li>▪ Stringing conductor wires</li> </ul>			

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	<ul style="list-style-type: none"> <li>▪ Installation of grounding systems (i.e., counterpoise)</li> </ul> <p>The EIS will describe the following construction activities for access roads and rail to the dam site:</p> <ul style="list-style-type: none"> <li>▪ Construction of access roads on the north bank including connections to and, where required, upgrades of, existing municipal roads</li> <li>▪ Construction of an access road on the south bank connecting to the existing Jackfish Lake road and any upgrades required to the existing road</li> <li>▪ Traffic management during modifications to existing roads</li> <li>▪ Addition of new rail sidings and associated facilities on the existing Canadian National railway</li> </ul> <p>The EIS will describe the following construction activities for each section of Highway 29 that has to be relocated or modified:</p> <ul style="list-style-type: none"> <li>▪ Clearing and grubbing</li> <li>▪ Removal/decommissioning of existing pavement</li> <li>▪ Excavation and embankment construction</li> <li>▪ Sources of gravel fill, sub-base, base course and asphalt</li> <li>▪ Pavement construction</li> <li>▪ Bridge construction</li> <li>▪ Construction of connections to existing driveways and local roads</li> <li>▪ Construction sequence</li> <li>▪ Traffic management</li> </ul> <p>The EIS will describe the following construction activities for each quarried and excavated material source:</p> <ul style="list-style-type: none"> <li>▪ Development plan</li> <li>▪ Clearing and grubbing</li> <li>▪ Construction of access roads</li> <li>▪ Excavation and stockpiling of unsuitable material, including</li> </ul>			

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	<p>topsoil</p> <ul style="list-style-type: none"> <li>▪ Excavation of suitable material, including drilling, blasting, sorting and screening in rock quarries and moisture conditioning of impervious material</li> <li>▪ Reclamation plan, or plan for ongoing use by others</li> </ul> <p>The EIS will describe how the construction contracts will include:</p> <ul style="list-style-type: none"> <li>▪ Commitments to perform all construction activities in accordance with the Project Environmental Management Plan</li> <li>▪ The process to be followed for upgrading any bridges required to meet load capacity</li> </ul>			
3.3.10 Operations Phase Activities	<p>A description of activities to be conducted during the operations phase will be included in this section of the EIS. Refurbishment and maintenance activities needed to prolong the operational capacity of the dam should be described in the EIS. Maintenance activities along the transmission line and access road (e.g., vegetation management and dust control) will be described in the EIS.</p> <p>The Proponent proposes to operate the Project to respond to provincial electricity demand in the same manner as the Proponent's other generating facilities on the Peace River. A water management approach will be developed for the Project which will describe reservoir operations and resulting downstream flows and water levels. A draft of a Water Management Plan will be appended to the EIS. The final Water Management Plan will require approval by the BC Comptroller of Water Rights as part of the water licensing process.</p> <p>The EIS will include an estimate of the magnitude, frequency, seasonality, and duration of potential spillway discharges.</p> <p>The EIS will also include a list of operating plans where there would be a potential interaction with the Valued Components and provide outlines of each of those plans.</p>	Volume 1	Section 4.5	<a href="#">Page 4-63</a>
3.3.11 Decommissioning	The EIS will describe	Volume 1	Section 4.6	<a href="#">Page 4-69</a>

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Activities	<ul style="list-style-type: none"> <li>▪ Offsite components of the Project that are going to be retained and maintained as part of the ongoing maintenance of the Project</li> <li>▪ Decommissioning of temporary construction facilities and any associated reclamation</li> </ul> <p>Once operational, the Project would be a major addition to the Proponent's hydroelectric generating assets. Such assets are operated and maintained over the long term with no future decommissioning contemplated. The EIS should state the Proponent's commitment, should a proposal be made in the future to decommission the Site C dam and generating station, to address a plan for decommissioning and restoration in accordance with applicable regulations at that time.</p>			
4 Need for, Purpose of, Alternatives to, and Alternative Means of Carrying Out, the Project		Volume 1	Section 5.0	<a href="#">Page 5-1</a>
4.1 Need for and Purpose of the Project	The EIS will describe the "need for" and "purpose of" the Project.	Volume 1	Section 5.2	<a href="#">Page 5-1</a>
4.1.1 Need for the Project	The EIS will provide the fundamental rationale for proceeding with the development at this time within the relevant legal and policy context. The "need for" the Project is defined as the problem or opportunity that the Project is intending to address, solve or satisfy (Agency 2007b). The "need for" establishes the fundamental justification or rationale for the Project.	Volume 1	Section 5.2	<a href="#">Page 5-3</a>
4.1.2 Purpose of the Project	The EIS will present the "purpose of" the Project. The purpose of the Project is defined as what is to be achieved by carrying out the Project (Agency 2007b). The "purpose of" the Project will be established from the perspective of the Proponent, and will provide context for the consideration of alternatives to the Project in Section 4.2.  The project will be designed to achieve specific objectives and	Volume 1	Section 5.3	<a href="#">Page 5-22</a>



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	these should be described. If the objectives of the project are related to or contribute to broader private or public sector policies, plans or programs, this information should also be included.			
4.2 Alternatives to the Project	<p>The EIS will describe the functionally different ways to meet the need for the Project. The EIS will contain an analysis of technically and economically feasible alternatives to the Project. The EIS must include an analysis of alternatives to the project; describing functionally different ways to meet the project's need and achieve the project's purpose from the perspective of the proponent.</p> <p>The proponent will:</p> <ul style="list-style-type: none"> <li>▪ Identify the alternatives to the project that were considered</li> <li>▪ Develop criteria to identify the major environmental, economic and technical costs and benefits of the alternatives</li> <li>▪ Identify the preferred alternatives to the project based on the relative consideration of the environmental, economic and technical costs and benefits.</li> </ul> <p>This analysis must be done to a level of detail which is sufficient to compare the proposed project with its alternatives.</p>	Volume 1	Section 5.4 Section 5.5	<a href="#">Page 5-25</a> <a href="#">Page 5-37</a>
4.3 Alternative Means of Carrying Out the Project	<p>The EIS must identify and consider the potential environmental effects of alternative means of carrying out the project that are technically and economically feasible. The proponent will complete the following procedural steps for addressing alternative means:</p> <p>Identify the alternative means to carry out the project.</p> <ul style="list-style-type: none"> <li>▪ Develop criteria to determine the technical and economic feasibility of the alternative means</li> <li>▪ Identify those alternative means that are technically and economically feasible, describing each alternative means in sufficient detail</li> </ul> <p>Identify the environmental effects of each alternative means</p> <ul style="list-style-type: none"> <li>▪ Identify those elements of each alternative means that could</li> </ul>	Volume 1	Section 6.0	<a href="#">Page 6-1</a>

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	<p>produce effects in sufficient detail to allow a comparison with the effects of the project</p> <p>Identify the preferred means</p> <ul style="list-style-type: none"> <li>▪ Identify the preferred means based on the relative consideration of environmental effects</li> <li>▪ and of technical and economic feasibility</li> <li>▪ Determine criteria to examine the environmental effects of each remaining alternative means to identify the preferred means.</li> </ul>			
5 Project Benefits	<p>The EIS will include a section describing the predicted environmental, economic and social benefits of the project. This information will be considered in assessing the justifiability of the significant adverse environmental effects, if necessary.</p> <p>The EIS will include the extent, distribution and duration of benefits of the Project and describe the following information.</p> <p>Projected financial benefits of the Project, as measured by standard financial indicators including:</p> <ul style="list-style-type: none"> <li>▪ The value of the electricity generated by the Project</li> <li>▪ Initial capital construction cost and operating cost estimates (including taxes and grants-in lieu) and a description of the methodology for developing the cost estimates and the dollar basis</li> <li>▪ Annual federal, BC provincial, municipal, and regional government revenues that will accrue during the construction and operation phases of the Project</li> <li>▪ Annual federal and BC provincial Gross Domestic Product that will accrue during the construction and operations phases of the Project</li> </ul> <p>Projected economic development benefits (broken down by gender if available), including:</p> <ul style="list-style-type: none"> <li>▪ Estimated direct employment stated in number of person years, to be created by major job category (e.g., labour,</li> </ul>	Volume 1	Section 7.0	<a href="#">Page 7-1</a>

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	<p>management, business services) during construction and operations</p> <ul style="list-style-type: none"> <li>▪ Estimated indirect employment (i.e., employment in industries that supply goods and services used to produce an industry’s output or to be consumed by individuals) and induced employment (i.e., employment due to the spending and re-spending of directly and indirectly generated incomes in the broader economy) during construction and operation predicted by the British Columbia Input-Output Model developed and maintained by BC Stats (BC Stats 2011a)</li> <li>▪ Predicted locality of direct and indirect hires</li> <li>▪ Contractor supply services estimates, including the value of supply of service contracts expected for the Project’s construction and operations phases</li> </ul> <p>Projected economic development benefits for Aboriginal groups (broken down by gender if available), including:</p> <ul style="list-style-type: none"> <li>▪ Employment</li> <li>▪ Contracting and business development, including small and medium sized enterprises</li> <li>▪ Capacity-building initiatives</li> </ul> <p>Projected social benefits, including:</p> <ul style="list-style-type: none"> <li>▪ Potential for use of local human resources that are currently not in the labour market</li> <li>▪ Potential for use of existing local facilities for construction and operations activities, and an indication of their current level of use</li> </ul> <p>Provided benefits to sustainable development, including:</p> <ul style="list-style-type: none"> <li>▪ The ability of the Project to integrate intermittent generation resources such as wind and small hydro</li> <li>▪ The ability of the Project to generate electricity with a low amount of greenhouse gas emissions per unit of energy delivered</li> </ul>			

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	All assumptions and reference sources used to develop the above information will be identified. The EIS will include a summary of the changes that have been made to the project since proposed in the project description for this environmental assessment, including the benefits of these changes to the environment, Aboriginal groups, and the public.			
6 Assessment Process		Volume 1	Section 8.0	<a href="#">Page 8-1</a>
6.1 Provincial Agencies, Departments and Organizations	The EIS will list the provincial agencies, departments and organizations that will be involved in the Project's environmental assessment process. A summary of the issues and concerns identified by provincial, local and regional government agencies will be provided in the EIS. Detailed agency comments and the Proponent responses will be provided in an issues tracking table to be prepared by the Proponent and posted on the Agency's and BCEAO's website.	Volume 1	Section 8.1 <del>Section 9.4</del> Section 9.3	<a href="#">Page 8-1</a> <a href="#">Page 9-45</a>
6.2 Federal Authorities	The EIS will include a description of the federal authorities. A summary of the issues and concerns identified by the federal authorities will be provided in the EIS. These comments and the Proponent responses will be provided in an issues tracking table to be prepared by the Proponent and posted on the Agency's and BCEAO's website.	Volume 1	Section 8.2 Section 9.3	<a href="#">Page 8-2</a> <a href="#">Page 9-45</a>
6.3 Co-operative Review Process	The EIS will describe the cooperative BC and Canada review process. The EIS will describe the Proponent's preparation of the first draft of the EIS Guidelines, its review by the BCEAO, the Agency and the Working Group, preparation of the April 10, 2012 draft EIS Guidelines by the BCEAO and the Agency, the public comment period on the draft EIS Guidelines, and its finalization by the Minister of Environment of Canada and the Executive Director of the BCEAO. The EIS will be prepared by the Proponent according to these EIS Guidelines and will be submitted to the Agency and BCEAO.	Volume 1	Section 8.3	<a href="#">Page 8-3</a>

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6.4 Permitting	<p>The EIS will list applicable federal, provincial, and municipal or regional licences, permits and approvals required for the construction and operation of the Project, and will identify:</p> <ul style="list-style-type: none"> <li>▪ The activity requiring regulatory approval</li> <li>▪ The name of the permit or regulatory approval</li> <li>▪ The applicable legislation in each case</li> <li>▪ The regulatory agencies responsible for each permit or approval</li> </ul> <p>A preliminary list of key licences, permits and approvals is provided in the Project Description Report accepted by the BCEAO and the Agency in August 2011.</p>	Volume 1	Section 8.4	<a href="#">Page 8-12</a>
7 Information Distribution and Consultation	<p>The requirements for distribution of information to and consultation with the public, Aboriginal groups and agencies will be described in this section.</p>	Volume 1	Section 9.0	<a href="#">Page 9-1</a>
7.1 Public Information Distribution and Consultation	<p>The EIS will describe and summarize the Proponent's information distribution and consultation activities with local government, communities, stakeholders, property owners and the public prior to and during the environmental assessment process. This section will also describe expected public and stakeholder consultation during post-certification stages.</p> <p>The Proponent will report on the results of all public and stakeholder pre-consultation, project definition consultation and other consultation activities in the EIS.</p> <p>This section will summarize measures identified for addressing public concerns in relation to the project. Measures should be written as specific commitments that clearly describe how the proponent intends to implement them.</p>	Volume 1	Section 9.1	<a href="#">Page 9-1</a>

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7.1.1 Pre-panel Review Stage	<p>The EIS will include a description and summary of the Proponent's information distribution and consultation activities undertaken with the public and stakeholders.</p> <p>This section will include:</p> <ul style="list-style-type: none"> <li>▪ A description of the public consultation program</li> <li>▪ A summary of the issues and interests identified by the public during the course of the Project's information distribution and consultation activities during the pre-panel stage and the means that the Proponent has used, or proposes to use, to consider them. Issues tracking tables will be provided</li> <li>▪ A summary of comments provided by the public with respect to these EIS Guidelines, and the Proponent's responses to those comments. Issues will be summarized by the Proponent in an issues tracking table, which will also describe how the issues will be considered, list the party or parties responsible for addressing issues, and list the status of issues.</li> <li>▪ A summary of additional Proponent-led public consultation on project planning and completion of the environmental assessment</li> <li>▪ A description of the key outstanding public concerns in relation to the project.</li> </ul> <p>The EIS will describe consultation undertaken to cover both the preparation of these EIS Guidelines and the EIS.</p>	Volume 1	Section 9.1.2	<a href="#">Page 9-2</a>
7.1.2 Construction Communication	<p>The EIS will describe the Proponent's approach to continuing communications with affected communities, stakeholders, property owners, leaseholders, businesses and the public in the project area during project construction. The EIS will outline a construction communication plan for the public.</p>	Volume 1	Section 9.1.4	<a href="#">Page 9-18</a>
7.2 Aboriginal Group Information Distribution and Consultation	<p>In preparing the EIS, the proponent is encouraged to integrate Aboriginal consultation (e.g. information gathered and potential accommodation measures where appropriate) into the</p>	Volume 1	Section 9.2	<a href="#">Page 9-19</a>

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	<p>consideration and mitigation of effects.</p> <p>The EIS will describe the Proponent's general approach and detailed activities to consultation with Aboriginal groups prior to and during the environmental assessment process.</p> <p>The EIS will identify the Aboriginal groups potentially adversely affected by the Project identified in Section 20.1 of these EIS guidelines.</p>			
7.2.1 Pre-Panel Review Stage	<p>The EIS will present detailed information regarding the information distribution and consultation activities undertaken with Aboriginal groups.</p> <p>The EIS will also include:</p> <ul style="list-style-type: none"> <li>▪ A description of how project information has been made available to potentially affected Aboriginal groups</li> <li>▪ A summary of the Proponent's approach to facilitating the participation of Aboriginal groups in the environmental assessment process</li> <li>▪ A description of the activities undertaken to notify and consult with potentially affected Aboriginal groups, during the preparation of both of these EIS Guidelines and the EIS</li> <li>▪ The issues, concerns and interests identified by Aboriginal groups. This will be presented in an issues tracking table, prepared by the Proponent for posting on the BCEAO and Agency's websites</li> <li>▪ The activities undertaken (or proposed to be undertaken) by the Proponent to address any issues, concerns and interests identified by Aboriginal groups, including the degree to which Aboriginal issues have been taken into account, resolved and addressed</li> <li>▪ The methods and processes to resolve any outstanding issues</li> </ul> <p>The Proponent will provide a description of consultations with Aboriginal groups to cover both the preparation of these EIS Guidelines and the EIS.</p>	Volume 1	Section 9.2-3	<u>Page 9-25</u>

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7.2.2 Construction Communication	The EIS will describe the Proponent's proposed approach to consulting with Aboriginal groups potentially affected by the Project during project construction and issuances of permits and authorizations. The EIS will also describe a proposed process for tracking and reporting regulatory issues and concerns raised by potentially-affected Aboriginal groups during project construction and operations.	Volume 1	Section 9.2.5	<a href="#">Page 9-44</a>
7.3 Government Agency Information Distribution and Consultation	The EIS will describe and summarize the Proponent's information distribution and consultation activities undertaken with federal, provincial, territorial and local governments prior to and during the environmental assessment process. This section will also comment on what would be expected with respect to government agency consultation during post-certification stages.	Volume 1	Section 9.3	<a href="#">Page 9-45</a>
7.3.1 Pre-Panel Review Stage	The EIS will describe the consultation and information sharing with the government agencies that occurred prior to entering the environmental assessment process and during the pre-panel review stage (development of the EIS Guidelines and EIS). This section will identify issues raised during these consultations, and describe the Proponent's response or suggested solutions.  In the EIS, the Proponent will summarize issues raised prior to entering the environmental assessment process, primarily through the Proponent's Technical Advisory Committees process.  The EIS will summarize engagement with government agencies that occurred with working groups, topic-specific engagement with appropriate government agencies with the Proponent, and issues raised during these meetings.  Issues identified during consultation with government agencies will be provided in an issues tracking table prepared by the Proponent for posting to the BCEAO and Agency's websites.	Volume 1	Section 9.3.2	<a href="#">Page 9-45</a> <a href="#">Page 9-55</a>
7.3.2 Construction Communication	The EIS will describe the Proponent's approach to engaging with federal and provincial regulatory agencies and local governments during project construction. The EIS will describe the methods to be used to document and report the status of project compliance with respect to requirements and conditions to the Agency,	Volume 1	Section 9.3.3	<a href="#">Page 9-65</a>



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	federal authorities, BCEAO and provincial ministries. The EIS will also describe a proposed process for tracking and reporting regulatory issues and concerns raised during project construction and operations.			
8 Effects Assessment Methodology		Volume 2	Section 10.0	<a href="#">Page 10-1</a>
8.1 Overview	<p>The Proponent shall explain and justify all methods used in the preparation of the EIS. In describing its overall approach, the Proponent shall explain how it used scientific engineering, Aboriginal traditional and community knowledge. All hypotheses and assumptions shall be clearly identified and justified. All data collection methods, models and studies shall be documented so that the analyses are transparent and reproducible. The degree of uncertainty, reliability and sensitivity of models used to reach conclusions shall be indicated.</p> <p>The Proponent proposes to identify the potential adverse effects of the Project using the environmental assessment methodology outlined in Figure 8.1 (of the EIS) and described in the sections below.</p>	Volume 2	Section 10.0	<a href="#">Page 10-1</a>
8.2 Technical Studies and Planning	<p>To conduct an environmental assessment of the Project, planning and technical studies will be undertaken and reports will be prepared. The planning and technical studies will fall within these general categories:</p> <ul style="list-style-type: none"> <li>▪ Reports summarizing consultation with government agencies, Aboriginal groups, and the public</li> <li>▪ Baseline conditions</li> <li>▪ Predictive studies</li> <li>▪ Certain steps in project planning, for example, estimates of the direct employment required for construction of the Project will be derived</li> <li>▪ A framework for environmental management to be implemented during construction and operation of the Project</li> </ul> <p>The EIS will describe the planning and technical studies</p>	Volume 2	Section 10.1	<a href="#">Page 10-1</a>

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	undertaken to produce the information required for the EIS, and will include descriptions of, or attach, the results of the planning and the technical studies.			
8.3 Selection of Valued Components	<p>The Proponent will identify the VCs deemed appropriate to ensure the full consideration of the factors listed in Appendix 1 of the Agreement to Conduct a Cooperative Assessment, Including the Establishment of a Joint Review Panel, of the Site C Clean Energy Project. The rationale for selecting these components as VCs and for excluding others should be stated. Challenges may arise regarding particular exclusions, so it is important to document the information and the criteria used to make each determination. Examples of justification include primary data collection, computer modelling, literature references, public consultation, expert input or professional judgement. If comments are received on a component that has not been included as a VC, these comments should be summarised and addressed in this section.</p> <p>The Proponent proposes to describe the valued components (VCs) identified in accordance with the process described below in Sections 8.3.1 to 8.3.3 and shown in Figure 8.2.</p>	Volume 2	Section 10.2	<a href="#">Page 10-1</a>
8.3.1 Identification of Candidate Valued Components – Step 1	<p>The EIS will describe, as Step 1, the process for identification of candidate-valued components (“candidate VCs”). Candidate VCs will be selected based on interests and concerns raised by the public and Aboriginal groups prior to the issuance of these EIS Guidelines, and input obtained during consultation with the public, government agencies and Aboriginal groups leading up to submission of the EIS to the Agency and the BCEAO. In doing so, the Proponent will seek to identify those components that are valued:</p> <ul style="list-style-type: none"> <li>▪ For environmental, economic, social, heritage or human health reasons</li> <li>▪ As land or resources currently used by Aboriginal persons for traditional purposes</li> </ul> <p>Identification of candidate VCs will include the following:</p>	Volume 2	Section 10.2.1	<a href="#">Page 10-2</a>

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	<ul style="list-style-type: none"> <li>▪ Interests and concerns raised by Aboriginal groups</li> <li>▪ Interests and concerns raised by the public</li> <li>▪ Regulatory status</li> <li>▪ Protected status</li> <li>▪ Preservation of biodiversity</li> <li>▪ Rarity or special status</li> <li>▪ Sensitivity to disturbance or pollution</li> <li>▪ Important ecological role</li> <li>▪ Transboundary Issues</li> <li>▪ Human Health.</li> </ul>			
8.3.2 Project Interaction Identification – Step 2	<p>The EIS will describe how the candidate VCs will be evaluated to identify whether there is an interaction, a cause-and-effect pathway, linking the candidate VC to the Project in Step 2. The approach for determining potential project interactions involved the following steps:</p> <ul style="list-style-type: none"> <li>▪ Identify project components and activities</li> <li>▪ Map project activity zones temporally and spatially</li> <li>▪ Locate the candidate VC temporally and spatially</li> <li>▪ Identify potential interactions between the candidate VC and project components or activities</li> </ul> <p>In the EIS the Proponent proposes to identify, rank and present the interactions between the project components and each of the candidate VCs in the format shown in Table 8.1.</p> <p>Potential interactions will be ranked as follows:</p> <ul style="list-style-type: none"> <li>▪ A rank of “0” will be given where no interaction is predicted between a project component and a candidate VC</li> <li>▪ A rank of “1” will be given where an adverse effect may result from an interaction, but standard measures to avoid or minimize the potential effect are available and well understood to be effective, and any residual effects are</li> </ul>	Volume 2	Section 10.2.2	<a href="#">Page 10-3</a>

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	<p>negligible</p> <ul style="list-style-type: none"> <li>A rank of "2" will be given where interactions may result in an adverse effect and mitigation measures are not well understood to be effective</li> </ul> <p>Candidate VCs subject to an interaction ranked "2" will be carried forward into Step 3 of the VC selection process.</p>			
8.3.3 Selection of Valued Components – Step 3	<p>Step 3 is a determination as to whether the effect of an interaction on each candidate VC carried through to this point in the selection process can be effectively assessed under a separate and related, but more appropriate, candidate VC. A key consideration in determining whether a more appropriate candidate VC exists is whether, given the nature of the candidate VC, it falls within the same effects pathway as another candidate VC. An example of an effects pathway is: the burning of project-related woody debris, which may in turn lead to deterioration in "air quality", which may in turn ultimately contribute to an adverse effect on human health. In this example, parameters of "air quality" will be identified, measured and reported. This data will be used to assess the potential impact of the Project on the human health VC.</p> <p>The candidate VCs that are not rejected in Steps 1, 2 and 3, and that cannot be effectively assessed under another VC will be taken forward through the effects assessment.</p> <p>Not all candidate VCs will be carried forward through the effects assessment. However, technical data collected for these candidate VCs will be taken into account in the assessment of potential effects on the VCs that are carried through.</p>	Volume 2	Section 10.2.3	<a href="#">Page 10-3</a>
8.4 Assessment Boundaries		Volume 2	Section 10.3	<a href="#">Page 10-4</a>
8.4.1 Spatial Boundaries	<p>The EIS will describe the spatial boundaries within which each of the potential adverse effects of the Project will be assessed and provide a rationale for each boundary. It is recognized that the spatial boundary for each VC may not be the same.</p>	Volume 2	Section 10.3.1	<a href="#">Page 10-4</a>

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	<p>Study boundaries must be defined taking into account as applicable the appropriate scale and spatial extent of potential effects, and as available, community and Aboriginal traditional knowledge, current land and resource use by Aboriginal groups, ecological, technical and social considerations. The description of the project setting must be presented in sufficient detail to address the relevant effects of the project.</p> <p>It is noted that the BCEAO and the Agency received many comments regarding the spatial scope of the environmental assessment, including requests to include the Peace Athabasca Delta (PAD). The EIS shall include a scientific justification for the selection of relevant spatial boundaries.</p> <p>In response to comments submitted during the draft EIS guidelines review, the Proponent indicated that should a technically valid concern with respect to study area boundaries arise during the course of environmental assessment, they would address it in the EIS.</p> <p>The Proponent has proposed the following approach and presentation for consideration of spatial boundaries in their EIS. The spatial boundaries will be presented as described in the spatial boundary tables in the VC specific effects assessment sections in these EIS Guidelines. Spatial boundaries will also describe the relevant administrative and technical boundaries, where applicable.</p> <p>These spatial boundaries will be defined based on applicable discipline guidance documents (e.g., BCMOE 2008, BCOGC 2009). Spatial boundaries descriptors are listed in Table 8.2.</p>			
8.4.2 Temporal Boundaries	<p>The EIS will present the rationale for the temporal boundaries to be used to assess potential adverse effects of the Project relevant to each VC.</p> <p>The temporal boundaries of the EA should span all phases of the project: construction, operation, maintenance, and foreseeable modifications where appropriate. Temporal boundaries shall also</p>	Volume 2	Section 10.3.2	<a href="#">Page 10-6</a>

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	<p>consider seasonal and annual variations for relevant VCs for all phases of the project, where appropriate. If made available, community and Aboriginal traditional knowledge should be considered where appropriate.</p> <p>If the temporal boundaries do not span all phases of the project, the EIS must identify the boundaries used and provide a rationale.</p>			
8.5 Effects Assessment Methods	The EIS will describe the methods used to assess potential adverse effects on VCs as described below.	Volume 2	Section 10.4	<a href="#">Page 10-7</a>
8.5.1 Baseline Conditions	<p>For each VC carried through the effects assessment, the EIS will identify, describe and present an analysis of each of the potential adverse effects resulting from the Project.</p> <p>The assessment of the effects of each of the project components and physical activities, in all phases, shall be based on a comparison of the biophysical and human environments between the predicted future conditions with the project and the predicted future conditions without the project. In undertaking the effects assessment, the Proponent will use best available information and methods. All conclusions must be substantiated. Predictions shall be based on clearly stated assumptions. The Proponent shall describe how it has tested each assumption. With respect to quantitative models and predictions, the Proponent shall discuss the assumptions that underlie the model, the quality of the data and the degree of certainty of the predictions obtained.</p> <p>The EIS will summarise the analysis of changes to the environment in relation to:</p> <ul style="list-style-type: none"> <li>▪ Changes to components of the environment within federal jurisdiction</li> <li>▪ Changes to the environment that would occur on federal or transboundary lands</li> <li>▪ Changes to the environment that are directly linked or necessarily incidental to federal decisions</li> <li>▪ Effects of changes to the environment on Aboriginal peoples</li> </ul>	Volume 2	Section 10.4.1	<a href="#">Page 10-7</a>

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	<ul style="list-style-type: none"> <li>▪ Effects of changes to the environment that are directly linked or necessarily incidental to federal decisions</li> </ul>			
8.5.2 Analysis of Effects	For each VC carried through the effects assessment, the EIS will identify, describe and present an analysis of each of the potential adverse effects resulting from the Project.	Volume 2	Section 10.4.2	<a href="#">Page 10-7</a>
8.5.2.1 Description of Potential Adverse Effects on Valued Components	<p>For each VC carried through the assessment process, potential adverse effects on the VCs will be described, including:</p> <ul style="list-style-type: none"> <li>▪ Cause-and-effect pathway, the mechanism by which the Project may result in each potential adverse effect</li> <li>▪ Quantitative and qualitative parameters by which each potential adverse effect will be characterized</li> <li>▪ Emphasis must be on those species, communities and processes identified as VCs. However, the interrelations and interactions of these components and their relation to the entire ecosystem and communities of which they are a part of must be indicated</li> </ul>	Volume 2	Section 10.4.2	<a href="#">Page 10-7</a>
8.5.2.2 Identification of Mitigation Measures	<p>The EIS will describe the technically and economically feasible measures that the Proponent is proposing to mitigate any potentially significant adverse effects of the Project.</p> <p>The rationale for and effectiveness of the proposed mitigation measures should be presented.</p> <p>Other mitigation measures, if any, which were considered shall be identified, and the rationale for rejecting these measures shall be explained. Trade-offs between costs and predicted effectiveness of the mitigation measures shall be justified.</p> <p>The Proponent shall identify who is responsible for the implementation of these measures and the system of accountability, including the obligations of all its contractors and subcontractors.</p> <p>Where mitigation measures are proposed to be implemented for which there is little experience or for which there is some question as to their effectiveness, the potential risks should be</p>	Volume 2	Section 10.4.2.1	<a href="#">Page 10-8</a>

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	<p>described.</p> <p>If relevant, the Proponent will identify the extent to which technology innovations could help mitigate environmental effects. Where possible, information on such measures, their implementation, their management and on whether follow-up will be required should be included.</p> <p>Where mitigation measures have been identified in relation to species and/or critical habitat listed under SARA, the mitigation measures should be consistent with any applicable recovery strategy and action plans.</p> <p>The EIS will summarise the mitigation measures, follow-up and related commitments identified in relation to:</p> <ul style="list-style-type: none"> <li>▪ Changes to components of the environment within federal jurisdiction</li> <li>▪ Changes to the environment that would occur on federal or transboundary lands</li> <li>▪ Changes to the environment that are directly linked or necessarily incidental to federal decisions</li> <li>▪ Effects of changes to the environment on Aboriginal peoples</li> <li>▪ Effects of changes to the environment that are directly linked or necessarily incidental to federal decisions</li> </ul>			
8.5.2.3 Characterizing Residual Effects	<p>Residual adverse effects are the effects of the Project that may remain after taking into account the implementation of mitigation measures.</p> <p>The EIS will summarise the residual effects (including residual cumulative environmental effects see Section 8.5.3 below) identified in relation to:</p> <ul style="list-style-type: none"> <li>▪ Changes to components of the environment within federal jurisdiction</li> <li>▪ Changes to the environment that would occur on federal or transboundary lands</li> <li>▪ Changes to the environment that are directly linked or</li> </ul>	Volume 2	Section 10.4.2.2	<a href="#">Page 10-9</a>



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	<p>necessarily incidental to federal decisions</p> <ul style="list-style-type: none"> <li>▪ Effects of changes to the environment on Aboriginal peoples</li> <li>▪ Effects of changes to the environment that are directly linked or necessarily incidental to federal decisions</li> </ul> <p>The criteria listed in Table 8.3 will be used to characterize any residual adverse or beneficial effects that may result from the Project.</p> <p>Where possible, these criteria will be described quantitatively for each VC. When residual effects cannot be characterized quantitatively, they will be characterized qualitatively. Definitions will be provided when qualitative terms are used. For each VC, the characterization criteria provided in Table 8.3 will be defined in specific terms in the EIS.</p>			
8.5.2.4 Significance of Residual Effects	<p>In the EIS, the Proponent will provide its assessment of the significance of any residual adverse effects and its rationale for that determination.</p> <p>The determination will incorporate the federal and provincial guidance (e.g., Agency 1999, FEARO 1994). The EIS will contain a summary of residual effects in a table format as shown below (Table 8.4).</p> <p>In addition, the EIS will summarise the significant adverse environmental effects identified in relation to:</p> <ul style="list-style-type: none"> <li>▪ Changes to components of the environment within federal jurisdiction</li> <li>▪ Changes to the environment that would occur on federal or transboundary lands</li> <li>▪ Changes to the environment that are directly linked or necessarily incidental to federal decisions</li> <li>▪ Effects of changes to the environment on Aboriginal peoples</li> <li>▪ Effects of changes to the environment that are directly linked or necessarily incidental to federal decisions</li> </ul>	Volume 2	Section 10.4.2.3	<a href="#">Page 10-10</a>
8.5.3 Cumulative Effects	<p>The EIS will provide an assessment of the cumulative effects that</p>	Volume 2	Section 10.5	<a href="#">Page 10-11</a>

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Assessment	<p>are likely to result from the Project in combination with other projects or activities that have been or will be carried out. Federal and provincial guidance will be consulted (e.g., Agency 2007c, BCEAO 2010, Hegmann et al. 1999).</p> <p>A cumulative effects assessment of the Project on a VC will be conducted if the potential residual adverse effect of the Project on that VC has a spatial and temporal overlap with a residual effect of another project or activity.</p> <p>Information contained in Section 9.1 Previous Developments may contribute to the cumulative effects assessment.</p> <p>The EIS will describe the cumulative effects assessment methodology.</p> <p>The Proponent has proposed a cumulative effects assessment methodology, which would follow the method outlined above for the project-specific VC effects assessment, and proposes the following steps:</p> <ul style="list-style-type: none"> <li>▪ Determination of spatial and temporal boundaries</li> <li>▪ Consideration of other projects and activities and identification of project interactions</li> <li>▪ Description of cumulative effects</li> <li>▪ Identification of mitigation measures</li> <li>▪ Characterization of cumulative residual effects</li> <li>▪ Determination of significance of cumulative residual effects</li> </ul>			
8.5.3.1 Spatial and Temporal Boundaries	<p>The EIS will describe the spatial boundaries within which each cumulative effect of the Project will be assessed and provide a rationale for each boundary.</p> <p>The Proponent proposes to assess the cumulative effects within the proposed RAA defined for each VC. The spatial boundaries of the RAA will be based on:</p> <ul style="list-style-type: none"> <li>▪ Where possible interactions with other projects or activities overlap</li> <li>▪ For ecological boundaries, they will be ecologically</li> </ul>	Volume 2	Section 10.5.1	<a href="#">Page 10-11</a>

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	<p>defensible (e.g., wildlife range boundaries)</p> <p>The adequacy of data will be assessed in terms relevant to the purpose of the cumulative effects assessment.</p> <p>To assess the cumulative 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 Proponent proposes to present the following in the EIS:</p> <p>Baseline Case: The Baseline Case will demonstrate the current status of the VC. In doing so, it will reflect the effect of all projects and activities that have been carried out.</p> <p>Future Case without the Project: To identify the potential adverse effects of projects and activities that will be carried out, the Future Case without the Project will be developed to predict the status of the VC by taking into account the Baseline Case and projects and activities that are at least as foreseeable as the Project. This will demonstrate the potential residual effects of projects and activities that have been and will be carried out.</p> <p>Project Case: To demonstrate the cumulative effects that are likely to result from the Project, the Project Case will demonstrate the status of the VC, taking into account the residual effects of the Project that are likely combined with those identified in the Future Case without the Project.</p>			
8.5.3.2 The Project Inclusion List	<p>The Proponent is proposing to search for projects and activities that will be carried out within the RAA to be taken into account in the Future Case without the Project and in the Project Case:</p> <ul style="list-style-type: none"> <li>▪ Registered active projects on the BCEAO and CEA Agency website, including hydroelectric projects, such as Dunvegan</li> <li>▪ Registered oil and gas applications</li> <li>▪ Registered water licence applications</li> <li>▪ Projects or activities associated with existing or “accepted” applications for land tenure under the <i>Land Act</i> (e.g., range tenures, grazing licenses, wind, gravel)</li> <li>▪ Currently harvest plans associated with tenured forest</li> </ul>	Volume 2	Section 10.5.2 Section 10.5.3	<a href="#">Page 10-13</a> <a href="#">Page 10-20</a>

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	<p>operations and timber sales</p> <ul style="list-style-type: none"> <li>▪ Official Community Plans, and parks and recreation plans</li> <li>▪ Large waste discharges into the Peace River from Peace Canyon Dam to Vermilion Chutes, Alberta</li> </ul> <p>The EIS will provide an assessment of the adequacy of existing data in conducting the cumulative effects assessment.</p> <p>The project-interaction methodology used to determine project interactions for the project-specific effects assessment (shown in Section 8.3.2) is proposed by the Proponent to be used to identify interactions with other projects and activities.</p> <p>The EIS will provide maps that show the projects and activities that overlap with the Project for each residual effect.</p>			
8.5.3.3 Analysis of Cumulative Effects	<p>Description of Potential Cumulative Effects on VCs</p> <p>The EIS will describe the potential cumulative effects on VCs, including the following:</p> <ul style="list-style-type: none"> <li>▪ Overview of the project or activity</li> <li>▪ Status of project or activity</li> <li>▪ Spatial and temporal boundary</li> <li>▪ Potential residual cumulative effects</li> </ul> <p>Identification of Cumulative Effects Mitigation Measures</p> <p>If cumulative effects are identified, the EIS will recommend possible regional approaches to mitigation.</p> <p>Characterizing Residual Cumulative Effect</p> <p>The EIS will characterize the residual cumulative effects using the approach outlined for the Project-specific effects assessment described in Section 8.5.2 and the criteria provided in Table 8.3.</p> <p>Significance of Residual Cumulative Effects</p> <p>In the EIS, the Proponent will provide its assessment of the significance of any residual adverse cumulative effect that may result from the Project, in combination with other projects, and the rationale for its assessment.</p>	Volume 2	Section 10.5.4 Section 10.5.5 Section 10.5.6 Section 10.5.7	<a href="#">Page 10-21</a> <a href="#">Page 10-22</a>

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9 Environmental Background		Volume 2	Section 11	<a href="#">Page 11-1</a>
9.1 Previous Developments	<p>Upstream of Site C, the flow of the Peace River is regulated by the operation of two existing hydroelectric facilities, the WAC Bennett Dam and the Peace Canyon Dam. An understanding of those facilities, of the environmental changes understood to have resulted from those facilities, and of the mitigation measures employed may provide information that could be used to better assess the potential effects of the Project and the feasibility of proposed mitigation measures.</p> <p>The EIS will include a narrative discussion of existing hydro-electric generation projects on the Peace River (W.A.C. Bennett Dam and the Peace Canyon Dam). The narrative will include the description of any existing studies of changes to the environment resulting from those projects that are similar to potential changes resulting from the project, including any mitigation measures that were implemented, and any long term monitoring or follow up program that were conducted. The effectiveness of those mitigation measures and key results of monitoring or follow-up programs would be described. This narrative discussion should include historical data, where available and applicable, to assist interested parties to understand the potential effects of the Project and how they may be addressed.</p>	Volume 2	Section 11.1	<a href="#">Page 11-2</a>
9.2 Land		Volume 2		
9.2.1 Geology, Terrain and Soils	<p>The EIS will describe the physiographic and topographic setting and the stability of the terrain within the project activity zone.</p> <p>The EIS will contain a description of bedrock and surficial geology, key landforms (such as mountains, uplands, slopes, terraces and streams), existing and predicted changes to seismic conditions, and geotechnical and geochemical processes (such as erosion, slope stability and acid rock drainage) that may affect land or resource use. This will include:</p> <ul style="list-style-type: none"> <li>▪ Regional bedrock and surficial geology, terrain stability and</li> </ul>	Volume 2	Section 11.2	<a href="#">Page 11-14</a>

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	<p>soil conditions, including an interpreted geological history of valley formation and landsliding</p> <ul style="list-style-type: none"> <li>▪ Regional seismicity and seismic hazard</li> <li>▪ Pertinent physical and chemical properties of soils and bedrock and potential for contaminants based on current and historic land uses</li> <li>▪ Relevant geologic structures such as lineaments, faults and joints</li> </ul> <p>The EIS will describe the geochemical characterization program for acid rock drainage and metal leaching potential that has been undertaken for the overburden and rock materials that will be excavated, exposed or disturbed at the dam site and at off-site materials sources.</p> <p>The studies described in the EIS will conform to the requirements of:</p> <ul style="list-style-type: none"> <li>▪ Policy for Metal Leaching and Acid Rock Drainage at Minesites in British Columbia</li> <li>▪ Guidelines for Metal Leaching and Acid Rock Drainage at Minesites in British Columbia</li> <li>▪ Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials</li> </ul> <p>The EIS will:</p> <ul style="list-style-type: none"> <li>▪ Describe the regional geology and the local geology relative to acid rock drainage and metal leaching potential</li> <li>▪ Identify the geologic units that will be excavated, exposed or disturbed</li> <li>▪ Describe the collection of representative samples of the geologic unit</li> <li>▪ Present the results of static tests (one time tests to determine the balance of acid generating versus acid neutralizing components of the geologic units)</li> <li>▪ Present the results of kinetic tests (laboratory and field</li> </ul>			

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	<p>temporal tests to determine the primary rates of acid generation versus acid neutralization, and the time to the on-set of acid rock drainage)</p> <ul style="list-style-type: none"> <li>▪ Define management units (dependent on geological, geochemical and engineering factors)</li> <li>▪ Predict drainage chemistry through time for each management unit.</li> </ul> <p>The Acid Rock Drainage Management Plan will outline:</p> <ul style="list-style-type: none"> <li>▪ The management measures to mitigate acid rock drainage and metal leaching to reduce risks to water quality, with the recognition and understanding that the site geochemical characterization and the management plan will be updated as new information/results are subsequently obtained, through a systematic testing program during construction</li> <li>▪ Describe the requirements for post construction monitoring</li> </ul> <p>Characterization and classification of the proposed reservoir shoreline will be carried out, including:</p> <ul style="list-style-type: none"> <li>▪ Description of the geology at select representative cross-sections and extrapolation along the shoreline using borehole and surface mapping observations to produce geological fence diagrams</li> <li>▪ Descriptions of geological materials and/or thickness of colluvium and a description of the underlying geological materials located at the normal maximum reservoir level</li> <li>▪ Inventory of landslides, including their estimated mechanism, volume and current degree of activity</li> <li>▪ Site-specific characterization of significant historic and pre-historic landslides based on the results of surface mapping, geotechnical drilling, instrumentation monitoring, and slope stability analyses, where available</li> <li>▪ Predictions of potential for groundwater changes, including sensitivity to changes in recharge rates and other aquifer characteristics, that could alter the potential for landslides</li> </ul>			

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	<ul style="list-style-type: none"> <li>▪ Classification of the erosion and landslide potential of the reservoir shoreline materials (including tributaries) under current and proposed reservoir conditions</li> <li>▪ Estimation of short and long-term beach profiles (physical changes associated with erosion due to wind generated waves) for reservoir operation periods up to 100 years</li> <li>▪ Physical and numerical modelling of waves that could potentially be generated by landslides into the reservoir</li> <li>▪ Predicted changes to shoreline erosion and slope stability due to the Project will be assessed based on the results of shoreline classification. A series of reservoir impact lines will be prepared to delineate areas where limitations on residential land use or other measures may be required to manage public safety</li> </ul> <p>Sources of information regarding geology and terrain stability conditions within the technical study area will include:</p> <ul style="list-style-type: none"> <li>▪ Historical aerial photographs, ortho-photographs and satellite imagery</li> <li>▪ Published topographic maps</li> <li>▪ Published studies, maps and academic research on regional bedrock and surficial geology and engineering geology</li> <li>▪ Topography and digital elevation models generated from aerial photography and from LiDAR</li> <li>▪ Published studies and academic research on landslides within the region, a detailed landslide inventory within the proposed reservoir area, and relevant landslide case histories</li> <li>▪ Historical and recent geotechnical investigations (mapping, drilling, test pits, material classification, testing, instrumentation monitoring and other techniques)</li> </ul> <p>The EIS will describe a regional and site-specific seismic hazard assessment, which will include:</p> <ul style="list-style-type: none"> <li>▪ The studies done to assess the seismic hazard at Site C,</li> </ul>			



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	<p>which will incorporate current understanding of regional plate tectonics and seismotectonics including known and inferred faults, the earthquake recurrence rates, and the maximum earthquake magnitudes considered possible in each potential earthquake source zone</p> <ul style="list-style-type: none"> <li>▪ The qualifications of the seismic experts who conducted and reviewed the studies</li> <li>▪ The seismic design criteria selected for the project and compare them to the guidelines suggested by the Canadian Dam Association and other relevant guidelines or codes</li> <li>▪ The potential for seismicity induced by reservoir filling</li> <li>▪ The potential for seiches and tsunamis</li> <li>▪ Current understanding of how fracking or other petroleum industry related activities may affect seismicity</li> <li>▪ Ongoing seismic monitoring during operation</li> </ul>			
9.2.2 Land Status, Tenure, and Project Requirements	<p>The EIS will:</p> <ul style="list-style-type: none"> <li>▪ Identify land ownership by area of private, the Proponent owned, and Crown land within the Project activity zones</li> <li>▪ Provide a summary of land tenure within the Project activity zones, with potential effects to tenured areas or activities to be assessed in accordance with Section 16 Land and Resource Use</li> <li>▪ Provide maps illustrating the ownership, tenure and land management areas with the Project activity zone</li> <li>▪ Describe the requirements to acquire or obtain new rights over private or government owned property to construct and operate the Project</li> <li>▪ Describe the approach for acquiring private property and rights to Crown land</li> </ul>	Volume 2	Section 11.3	<a href="#">Page 11-53</a>
9.3 Water		Volume 2		
9.3.1 Surface Water Regime	The EIS will describe existing surface water hydrology conditions	Volume 2	Section 11.4	<a href="#">Page 11-62</a>

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	<p>in the Peace River. The Proponent proposes that the spatial boundary would be from Peace Canyon Dam downstream to Peace Point, Alberta.</p> <p>The EIS will describe existing surface hydrological features (reservoirs, rivers, tributaries), watershed boundaries, mean annual flows, mean monthly and seasonal flows; and extreme monthly, seasonal, and annual flows, if available, and flood zones. The Proponent proposes that the spatial boundary would be from the Peace River down to Peace Point, Alberta, and the main drainage tributaries to the proposed reservoir (Lynx Creek, Farrell Creek, Halfway River, Moberly River).</p> <p>The EIS will describe in detail the hydraulic models that will be used to predict the potential changes in the hydrological regime as a result of the Project.</p> <p>The EIS will describe the following information for each model used:</p> <ul style="list-style-type: none"> <li>▪ Input parameters and assumptions</li> <li>▪ Outputs provided by the model</li> <li>▪ Basis of the model methodology</li> <li>▪ The level of confidence</li> <li>▪ Purpose for the model</li> </ul> <p>Models, as well as additional quantitative and qualitative assessment methods as required, will be used to describe:</p> <ul style="list-style-type: none"> <li>▪ The proposed reservoir (volume, bathymetry, maximum and minimum surface areas, active storage volume, and residence time)</li> <li>▪ Anticipated changes in the hydraulic regime during construction (e.g., channelization, diversion, reservoir filling, and commissioning), including predicted ranges of water levels with inundation mapping for the construction headpond during channelization and diversion phases</li> <li>▪ Seasonal flow patterns of post-construction flows, water levels, wetted widths, and average cross-sectional velocity</li> </ul>			

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	<p>statistics at selected locations on the Peace River downstream of the proposed dam to Peace Point, Alberta</p> <ul style="list-style-type: none"> <li>▪ Expected frequency and range of water levels for the project reservoir</li> </ul> <p>A representative flow record will be used to assess hydrological conditions during construction and operation phases.</p> <p>The EIS will describe how the creation of the Project's reservoir will affect existing hydro metric (water gauging) stations, including those on the Peace River and tributaries entering the new reservoir.</p>			
9.3.2 Water Quality	<p>The EIS will describe existing water quality conditions in the Peace River and its tributaries. The Proponent proposes the spatial boundaries to be from Williston Reservoir to Alces River, Alberta. The location of public surface drinking water sources will be identified. Water quality parameters recorded during baseline studies (including but not limited to nutrient and metals concentrations (dissolved and total metals), suspended sediment levels, dissolved gas pressure levels, pH, alkalinity, temperature) will be summarized and compared with provincial and federal guidelines, including:</p> <ul style="list-style-type: none"> <li>▪ British Columbia Approved Water Quality Guidelines for freshwater aquatic life, drinking water supply, wildlife water supply, recreation and aesthetics, irrigation, and livestock water supply, as applicable (BCMOE 2010a)</li> <li>▪ Canadian Water Quality Guidelines for the protection of freshwater aquatic life and agricultural water uses, and recreational water quality and aesthetics (CCME 2011a)</li> </ul> <p>The EIS will include a description of sediment quality in the Peace River. Sediment data from the proposed reservoir will be summarized and compared with provincial and federal guidelines (CCME 2011b).</p>	Volume 2	Section 11.5	<a href="#">Page 11-84</a>
9.3.3 Groundwater Regime	<p>The EIS will contain a description of the following existing conditions and potential changes to the groundwater regime. The</p>	Volume 2	Section 11.6	<a href="#">Page 11-92</a>

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	<p>Proponent proposes the spatial boundary to be from Peace Canyon Dam to the proposed Site C dam site:</p> <ul style="list-style-type: none"> <li>▪ Location of water wells, springs, infrastructure, contamination, and land use that could be affected by changes to the groundwater regime</li> <li>▪ Development of a series of two-dimensional cross-sections at representative reservoir locations where reservoir filling could affect slope stability, land or resource use</li> <li>▪ In the cross-sections, subsurface geology, aquifers and water table positions will be estimated for the baseline and reservoir conditions. Estimates will be based on a literature review, surface mapping, historic and recent geotechnical drilling, water well data, instrumentation monitoring results installed for the project, aquifer tests (specifically single well rising and falling head tests), lab testing and two-dimensional numerical groundwater flow results.</li> <li>▪ Qualitative extrapolation of the results of the two-dimensional cross-sections to lands nearby and adjacent to the reservoir using shoreline classification, geological fence diagrams and other available relevant hydrogeological information along the reservoir</li> <li>▪ The potential adverse effects of project construction and operations on groundwater quality will be evaluated qualitatively by assessing the potential changes to groundwater chemistry due to the release of substances related to non-natural sources (known or potential contamination) or natural sources (geologic materials).</li> </ul>			
9.3.4 Thermal and Ice Regime	<p>The EIS will include a description of the existing water temperature and ice regimes of the Peace River. This section of the EIS will support a description of the anticipated predictive changes in these parameters related to the Project.</p> <p><b>Reservoir</b></p>	Volume 2	Section 11.7	<a href="#">Page 11-102</a>

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	<p>The water temperature and ice regimes of the proposed reservoir will be predicted. The Proponent proposes using H3D, a three-dimensional numerical model (Stronach et al. 1993). The Proponent proposes the spatial boundary for the technical study area for thermal and ice regimes in the reservoir to be from the tailrace of the Peace Canyon Dam to the proposed Site C dam. The Proponent proposes the study period will extend from 1995 to 2011, the period for which the data set is available for analysis. These years will be used to simulate post-construction conditions. A description of the model, calibration and validation methods and predicted water temperature and ice characteristics of the proposed reservoir will be provided.</p> <p><b>Downstream Temperature</b></p> <p>Potential changes to downstream water temperature will be described in the EIS. The Proponent proposes the spatial boundary to be to the confluence of the Alces River with the Peace River (approximately 60 km downstream). The Proponent proposes to conduct analysis using a two-dimensional cross-sectionally averaged hydrodynamic and water quality model (CE-QUAL W2). This model is being used primarily for the purpose of examining aquatic productivity. The CE-QUAL W2 model simulates basic eutrophication processes such as temperature-nutrient-algae-dissolved oxygen-organic matter and sediment relationships (Portland State University, 2011). The Proponent proposes that changes to water temperature due to Site C will be negligible at Alces River; however, if warranted, the downstream extent of the assessment will be extended to capture the entire extent of Project influence.</p> <p><b>Downstream Ice</b></p> <p>Existing and post-construction ice conditions in the Peace River will be studied. The Proponent proposes using the Comprehensive River Ice System Simulation Program model (CRISSP), a one-dimensional numerical ice simulation model. The Proponent proposes the technical study area for downstream ice conditions to extend from the proposed Site C dam to a</p>			

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	<p>location over 700 km downstream near Fort Vermilion, Alberta. The Proponent's proposed CRISSP model simulates ice processes in natural rivers, including water temperature variation, young ice, anchor ice evolution, surface ice run, ice cover formation, surface and undercover ice transport and jam, thermal growth and decay of ice, and breakup (Clarkson University, 2005).</p> <p>The EIS will describe the calibration, validation, and expected accuracy of the Proponent's proposed CRISSP ice model.</p> <p>The Proponent's proposed CRISSP model will be run using a representative range of atmospheric conditions. Results will be compared to determine the potential change on the following characteristics as a result of the Project:</p> <ul style="list-style-type: none"> <li>▪ timing of ice cover formation and breakup</li> <li>▪ maximum upstream extent of ice cover</li> <li>▪ ice thickness</li> <li>▪ conditions that affect river transportation</li> </ul>			
9.3.5 Fluvial Geomorphology and Sediment Transport	<p>The EIS will present information regarding the existing conditions and predicted project-related changes to fluvial geomorphology and sediment transport. The Proponent proposes the spatial boundary to be the Peace River between the Peace Canyon Dam and Peace Point, Alberta. The Proponent proposes the reservoir technical study area to extend from the Peace Canyon Dam to the proposed Site C Dam location. The Proponent proposes the downstream technical study area to extend from Site C to Peace Point, Alberta.</p> <p>The fluvial geomorphology and sediment transport investigations will characterize baseline conditions of the following parameters:</p> <ul style="list-style-type: none"> <li>▪ Suspended sediment characteristics and transport rates in the Peace River and tributaries in the reservoir technical study area and in the downstream technical study area to Peace Point, Alberta, as proposed by the Proponent</li> <li>▪ Bed material characteristics and bedload transport rates in</li> </ul>	Volume 2	Section 11.8	<a href="#">Page 11-122</a>

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	<p>the Peace River and tributaries in the reservoir technical study area and in the downstream technical study area within the anticipated extent of Project-related effects as determined from existing information</p> <ul style="list-style-type: none"> <li>▪ Historical locations, patterns, and rates of channel erosion and deposition in the downstream technical study area</li> <li>▪ The sources of information reviewed will include:                             <ul style="list-style-type: none"> <li>▪ Channel mapping from remote sensing imagery (aerial photographs and satellite imagery)</li> <li>▪ Water Survey of Canada streamflow records</li> <li>▪ Project streamflow, turbidity and suspended sediment records</li> <li>▪ Project bed material sampling and bedload transport calculations</li> <li>▪ Any other available relevant information</li> </ul> </li> </ul> <p>The EIS will also present the results of predictive modelling, including a discussion of model reliability, used to characterize the potential changes in fluvial geomorphology and sediment transport and will consider the following:</p> <ul style="list-style-type: none"> <li>▪ Suspended sediment dynamics (inflow, deposition and outflow) in the proposed reservoir</li> <li>▪ Suspended sediment concentrations and tributary sediment mixing in the Peace River downstream of the proposed reservoir. The Proponent proposes the spatial boundary to be to Peace Point, Alberta</li> <li>▪ Bed material mobilization in the proposed Site C tailrace area</li> <li>▪ Channel erosion and deposition downstream of proposed Site C dam site. The Proponent proposes the spatial boundary to be to Peace Point, Alberta.</li> </ul> <p>The EIS will describe the approaches used for predictive analyses of these parameters.</p>			

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9.3.6 Methylmercury	<p>The EIS will describe the approach used to determine the dynamics of mercury in the environment and an understanding of the conversion of inorganic mercury to methylmercury in the reservoir. The Proponent proposes the spatial boundary to be from the reservoir creation from the Peace Canyon Dam to the proposed Site C dam.</p> <p>The Proponent proposes that existing conditions and an understanding of the methylation process will be conducted by:</p> <ul style="list-style-type: none"> <li>▪ Reviewing historic information within the Peace River system</li> <li>▪ Collecting mercury and methylmercury baseline data in the technical study area</li> <li>▪ Reviewing other hydroelectric developments elsewhere in Canada that may pertain to mercury</li> </ul> <p>The EIS will summarize aquatic and terrestrial baseline information on mercury in environmental media within the technical study area, and will consider mercury concentrations within and downstream of the Site C reservoir. The Proponent proposes the spatial boundary to be from the Site C reservoir to Vermilion Chutes, Alberta by incorporating data collected for the Dunvegan project for the reach between Many Islands and Vermilion Chutes.</p> <p>The EIS will also describe the methods used to develop a mechanistic model (RESMERC is proposed by the Proponent) for the purpose of predicting mercury and methylmercury concentrations in water and biota (e.g., invertebrates, fish) over the life of the Site C reservoir. This section of the EIS will summarize modelling results that will predict the rates of mercury methylation and de-methylation, as well as transfer and bioaccumulation of mercury through the food chain.</p>	Volume 2	Section 11.9	<a href="#">Page 11-147</a>
9.4 Air		Volume 2		
9.4.1 Micro-Climature	The EIS will present information regarding the existing conditions and predicted project-related changes to the microclimate. The Proponent proposes the spatial boundary to be the Peace River	Volume 2	Section 11.10	<a href="#">Page 11-171</a>



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	<p>valley and at the Fort St. John Airport.</p> <p>The Proponent proposes the microclimate technical study area to be defined by the results of preliminary modelling that indicated the spatial extent of potential project changes to meteorology and microclimate. This area the Proponent proposes is the segment of the Peace River valley from upstream of Hudson’s Hope to downstream of Taylor, includes the predicted extent of the reservoir, and includes the Fort St John Airport. This length is buffered by a rectangular shape with the edges between 10 to 20 km away from the reservoir’s water surface.</p> <p>The Proponent proposes to use the most current 30-year climate normals and hourly meteorological observations, both from Fort St John Airport, to characterize baseline climate conditions. For parameters not provided in standard climate normal format (e.g., absolute humidity), the hourly data for the 30-year period will be summarized in a format consistent with the climate normals provided by Environment Canada. This will include the following parameters:</p> <ul style="list-style-type: none"> <li>▪ Temperature: Annual average, extreme minimum and maximum, daily average, minimum and maximum by month</li> <li>▪ Precipitation: Annual and monthly total precipitation</li> <li>▪ Wind speed: Monthly and annual average, monthly extreme maximum</li> <li>▪ Relative and absolute humidity: Monthly and annual average humidity</li> <li>▪ Fog: Monthly and annual hours of potential fog</li> </ul> <p>The climate monitoring network in the Peace River valley between Hudson’s Hope and Taylor installed by the Proponent will be used to improve the understanding of micro-climate parameters, including precipitation levels, wind speed and direction, air temperature, barometric pressure, humidity, solar radiation, and heat flux.</p> <p>The Proponent proposes to use the Weather Research and Forecast model to assess and evaluate potential changes in</p>			

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	<p>microclimate due to the proposed reservoir. The Weather Research and Forecast Model is a mesoscale numerical weather prediction system designed to serve both operational forecasting and atmospheric research needs. It is suitable for a broad spectrum of applications across scales ranging from metres to thousands of kilometres. It allows practitioners the opportunity to conduct simulations reflecting either real data or idealized configurations.</p> <p>The EIS will describe the model, including a discussion of the level of confidence of the predictions of the model, and its input and outputs. Inputs to the model that will be described in the EIS include: meteorological data and geophysical inputs that define land use category and terrain.</p>			
9.4.2 Air Quality	<p>The EIS will present information regarding the existing conditions and predicted project-related changes to air quality. The Proponent proposes the spatial boundary to be in the Peace River valley associated with project activity zones. The air quality technical study area proposed by the Proponent encompasses all of the project activity zones and a rectangular spatial buffer that is 135 km by 100 km.</p> <p>This section of the EIS will describe current ambient levels of the following:</p> <ul style="list-style-type: none"> <li>▪ Nitrogen Oxides (NOx)</li> <li>▪ Sulphur Dioxide (SO2)</li> <li>▪ Particulate Matter less than 10 microns (PM10)</li> <li>▪ Particulate Matter less than 2.5 microns (PM2.5)</li> <li>▪ Other possible contaminants and emissions from the proposed project, as may be identified</li> </ul> <p>Baseline air quality conditions will be determined from ambient air quality data and emission inventories. Ambient air quality monitors were installed for the Project to collect baseline particulate matter (PM10 and PM2.5) data. Background ambient air quality data for other contaminants will be obtained from the</p>	Volume 2	Section 11.11	<a href="#">Page 11-187</a>

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	<p>BC Ministry of Environment (BCMOE). The BCMOE operates a network of ambient air quality monitoring stations in the province of British Columbia. The closest ambient air quality monitoring stations to the potential Site C reservoir that would be included in the baseline study are located at the Fort St. John North Peace Cultural Centre, Taylor Town site, and Taylor South Hill. Information on existing emissions in the technical study area will also be obtained from BCMOE's 2000 provincial emission inventory and from the National Pollutant Release Inventory.</p> <p>This section of the EIS will describe the estimated air quality emissions during construction activities. The emission estimation methodology will primarily adhere to the US Environmental Protection Agency's Compilation of Air Pollutant Emission Factors guidelines (US EPA 1995). The scope of the emission inventory will consider vehicles and equipment, clearing and burning of vegetation and debris, extraction of construction materials from quarries, gravel pits and borrow pits, material handling and processing, and fugitive emissions from access roads.</p>			
9.4.3 Noise and Vibration	<p>The EIS will present information regarding the existing conditions and predicted project-related changes to noise and vibration. The Proponent proposes the spatial boundary to be within the project activity zone, buffered by 1.5 km. The Proponent also proposes that the Technical Noise study will consider human receptors identified in the Human Health Assessment in Section 19 of these guidelines, and will utilize this information in choosing the most appropriate sized technical study area. The EIS will summarize baseline noise conditions determined from noise monitoring at identified receptor sites and through transportation studies.</p> <p>Noise receptors will be identified in the vicinity of anticipated construction and operation activities and along equipment movement corridors that are used by people and wildlife. The criteria available from the BC Oil and Gas Commission guidance document (BCOGC 2009) and the Ministry of Transportation and Infrastructure will be considered for the purposes of identifying</p>	Volume 2	Section 11.12	<a href="#">Page 11-201</a>

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	<p>noise effects.</p> <p>Noise levels will be modelled for selected scenarios during construction and operations. The Proponent proposes to use the CadnaA noise modelling prediction software (ISO 9613). The CadnaA modelling will include, where applicable, the topographic, temperature and wind effects on noise propagation of transportation- and equipment-generated sound emissions. The modelling will be conducted on the basis of sound power levels emitted by equipment that are established using previous measurements, published literature or manufacturer data.</p> <p>The EIS will describe the evaluation of blasting vibration and "sound-induced" or airborne vibration.</p> <p>Airborne vibration will be estimated using Canadian and international standards for calculation of vibration, including guidance from the Ontario Ministry of Environment NPC 119 and the US Office of Surface Mining and Reclamation.</p>			
9.5 Electric and Magnetic Fields	<p>The EIS will describe the existing electric and magnetic fields associated with the existing 138 kV transmission lines, and will identify and evaluate the potential changes from operational activities on these parameters.</p> <p>The EIS will summarize baseline conditions based on measurements of electric and magnetic field levels associated with the existing sources. It will describe the modelling approach and results used to predict electric and magnetic fields associated with existing sources and potential changes associated with the Project.</p>	Volume 2	Section 11.13	<a href="#">Page 11-215</a>
10 Fish and Fish Habitat Effects Assessment	<p>The Proponent proposes to summarize the effects assessment on the aquatic environment based on the methodology described in Section 8, including characterization of the benefits of the Project.</p> <p>Technical data will inform the fish and fish habitat effects assessment. The interests of Aboriginal groups will be presented in the EIS in accordance with Section 15 and Section 20 of these EIS Guidelines. Where Aboriginal groups have identified interests</p>	Volume 2	Section 12	<a href="#">Page 12-1</a>

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	in a VC, The Proponent will incorporate Aboriginal traditional and local knowledge studies as made available.			
10.1 Valued Component Scoping and Rationale	The Proponent's rationale for selection of the fish and fish habitat VC is described in Table 10.1. Fish and fish habitat have the potential to interact with the Project.	Volume 2	Section 12	<a href="#">Page 12-1</a>
10.2 Fish and Fish Habitat		Volume 2	Section 12	<a href="#">Page 12-1</a>
10.2.1 Fish and Fish Habitat Spatial Boundaries	The Proponent proposes the LAA and RAA as described in Table 10.2.	Volume 2	Section 12.1.5.1	<a href="#">Page 12-5</a>
10.2.2 Fish and Fish Habitat Temporal Boundaries	The EIS will describe the temporal boundaries which will reflect the methodology described in Section 8 of these EIS Guidelines.	Volume 2	Section 12.1.5.2	<a href="#">Page 12-6</a>
10.2.3 Fish and Fish Habitat Baseline	<p>The fish and fish habitat baseline data will provide an understanding of the existing fish community, distribution, movement and life history parameters of species populations, fish habitat characteristics, biological assemblages, water quality, and production of aquatic invertebrates that support fish populations in the Peace River and its tributaries in the LAA as proposed by the Proponent. The Proponent proposes that aquatic conditions in the proposed reservoir and downstream of the dam site will be assessed using a predictive modelling approach and that data will be collected for the following key indicators:</p> <ul style="list-style-type: none"> <li>▪ Fish species including identification of species composition, distribution, relative abundance, migration and movement patterns, and general life history parameters (including spawning periods) in the LAA. Fish communities will also be described</li> <li>▪ Fish habitat use including an evaluation of the quality and quantity of fish habitats in the LAA. Critical or sensitive areas such as spawning, rearing, and over-wintering habitats and migration routes will be described and/or mapped. Seasonal variability of the habitat will be considered. The criteria used in the evaluation process will be described.</li> <li>▪ Changes in environmental factors in their environment (e.g.,</li> </ul>	Volume 2	Section 12.3	<a href="#">Page 12-9</a>

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	<p>food, water temperature, sediment transport)</p> <p>The EIS will identify sensitive fish species or species of provincial or federal conservation concern, including any species listed in the federal <i>Species at Risk Act</i> (SARA), endangered fish species listed in the BCMOE’s Endangered Species and Ecosystems, Provincial Red and Blue Lists (BCMOE 2010b), and fish species of conservation or ceremonial concern identified by Aboriginal groups. The principles of the BC Conservation Framework will be applied.</p> <p>Information used to describe baseline conditions and predictive analyses will consist of:</p> <ul style="list-style-type: none"> <li>▪ Traditional land use studies or traditional knowledge made available to the Proponent by Aboriginal groups</li> <li>▪ Peace River and tributaries fish and fish habitat inventories</li> <li>▪ Peace River radio telemetry studies</li> <li>▪ Peace River microchemistry-genetics studies</li> <li>▪ Peace River water quality studies</li> <li>▪ Peace River baseline aquatic productivity studies</li> <li>▪ Site C aquatic productivity modelling, consisting of:                             <ul style="list-style-type: none"> <li>○ Multivariate statistical approaches to estimate changes in primary and secondary production based on field data and habitat variables</li> <li>○ The Proponent proposes to use predictive computer modelling using the CE-QUAL W2 software package originally developed by the US Corps of Engineers for simulating conditions in reservoirs and associated influent and effluent streams to simulate physical and chemical conditions, and primary production</li> <li>○ The Proponent proposes to use ECOPATH (Christensen and Walters 2004), a steady state model that provides a biological mass balance of an ecosystem</li> <li>○ Peace River mercury studies and modelling</li> </ul> </li> </ul>			

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10.2.4 Potential Effects of the Project and Proposed Mitigation	<p>The EIS will assess how the Project has the potential to adversely affect fish populations.</p> <p>The potential to adversely affect fish and fish habitat will be assessed by taking into account the potential for the Project to result in changes to the following key aspects of fish and fish habitat:</p> <ul style="list-style-type: none"> <li>▪ Habitat changes created by the reservoir in the mainstem and affected tributaries as well as upstream and downstream of the dam due to flow alterations</li> <li>▪ Upstream and downstream fish migrations by species and life history stage and their potential to be affected by the Project</li> <li>▪ Fish mortality</li> <li>▪ Potential impacts on the genetic diversity of fish populations above and below the project site</li> <li>▪ Potential impacts to predator-prey interactions and expected changes</li> <li>▪ Potential impacts to food web composition and structure</li> <li>▪ Potential impacts of gas pressure on fish resulting from water discharge over the structure</li> </ul> <p>Should potential adverse effects be identified, the potential mitigation and benefit enhancement measures will be identified and will include a description of how the mitigation measures can address the potential adverse effect on fish and fish habitat and any mitigation options being considered to minimize the impacts of the project on fish passage.</p> <p>The EIS will identify and describe the aquatic and riparian habitat and fisheries resources expected to be impacted by the by the project. Proposed mitigation measures to offset losses to fisheries resources during construction and operation of the project will be discussed in relation to applicable legislation and DFO policy, and in relation to any applicable Provincial objectives for the management of fisheries. The EIS will provide sufficient</p>	Volume 2	<a href="#">Section 12.4</a> <a href="#">Section 12.5</a> <a href="#">Section 12.7</a> <a href="#">Section 12.8</a>	<a href="#">Page 12-30</a> <a href="#">Page 12-75</a> <a href="#">Page 12-95</a> <a href="#">Page 12-96</a>

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	<p>detail to demonstrate the extent to which applicable DFO policy objectives can be achieved and will identify measures that are technically, economically and biologically feasible.</p> <p>The EIS will describe follow up and monitoring plans to determine the effectiveness of measures to mitigate or compensate for the adverse environmental effects of the project.</p> <p>The EIS will describe project residual effects, and cumulative effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.</p>			
10.2.5 Summary of Residual Effects on Fish and Fish Habitat	The EIS will summarize residual effects in a table format as shown in Table 8.4.	Volume 2	Section 12.6	<a href="#">Page 12-80</a>
11 Vegetation and Ecological Communities Effects Assessment	<p>The EIS will summarize the vegetation and ecological communities' effects. The Proponent proposes to do this based on the methodology described in Section 8.</p> <p>Technical data will inform the vegetation and ecological communities' effects assessment. The interests of Aboriginal groups will be presented in the EIS in accordance with Section 15 and Section 20 of these EIS Guidelines. Where Aboriginal groups have identified interests in a VC, the Proponent will incorporate Aboriginal traditional and local knowledge studies as made available.</p>	Volume 2	Section 13	<a href="#">Page 13-1</a>
11.1 Valued Component Scoping and Rationale	<p>The Proponent's rationale for selection of the vegetation and ecological communities VC is described in Table 11.1. Where available, supporting information that shows the importance of the VC is included as part of the rationale for selection, as are regulatory requirements.</p> <p>The EIS will identify and assess any change the project may cause to the listed vegetation and ecological communities species, its critical habitat or the residences of individuals of that species as defined in SARA.</p>	Volume 2	Section 13	<a href="#">Page 13-1</a>
11.2 Vegetation and		Volume 2	Section 13	<a href="#">Page 13-1</a>



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Ecological Communities				
11.2.1 Vegetation and Ecological Communities Spatial Boundaries	The Proponent proposes the LAA and RAA as described in (Table 11.2).	Volume 2	Section 13.1.5.1	<a href="#">Page 13-7</a>
11.2.2 Vegetation and Ecological Communities Temporal Boundaries	The EIS will describe the temporal boundaries, which will reflect the methodology described in Section 8 of these EIS Guidelines.	Volume 2	Section 13.1.5.2	<a href="#">Page 13-8</a>

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11.2.3 Vegetation and Ecological Communities Baseline	<p>The EIS will consider the following in describing the Vegetation and Ecological Communities baseline:</p> <ul style="list-style-type: none"> <li>▪ Important habitats found within the project area including shoreline habitats, banks, wetlands and floodplain</li> <li>▪ Aquatic and riparian vegetation</li> <li>▪ A description of the composition, distribution and abundance of terrestrial flora</li> <li>▪ Existing patterns of habitat and ecosystem alteration</li> </ul> <p>Mapping information will provide an understanding of the existing location and spatial extent of these ecosystems within the LAA as proposed by the Proponent using completed ecosystem mapping and field verification. Key indicators will include:</p> <ul style="list-style-type: none"> <li>▪ Total area (hectares) of each ecosystem type, including wetlands, within the mapped area</li> <li>▪ Area (hectares) of each ecosystem by structural stage will be calculated for each of the mapped ecosystems using the final map databases. The seven class structural stage classification system will be used (BCMOE and BCMFLNRO 1998).</li> <li>▪ Number of unique ecosystems mapped and their distribution within the technical study area described</li> <li>▪ Number of and distribution of rare plant species observed within the technical study area</li> </ul>	Volume 2	Section 13.2	<a href="#">Page 13-8</a>
11.2.3.1 Rare and Sensitive Ecological Communities	<p>The EIS will describe ecological communities at risk, which are identified as those ecological communities currently designated on the provincial Red and Blue lists, communities that are ranked 1 or 2 for Goal 2 of the Conservation Framework, and sensitive communities that are communities that are less resilient to disturbance such as wetlands.</p> <p>The EIS will describe the methods used to identify rare and sensitive ecological communities including:</p> <ul style="list-style-type: none"> <li>▪ Descriptions of rare and sensitive ecological community</li> </ul>	Volume 2	Section 13.2.1.2	<a href="#">Page 13-11</a>

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	<p>posted on the Conservation Data Center's website, along with descriptions in local field guides (De Long in prep and MacKenzie and Moran 2004) will be used to identify occurrences within the technical study area</p> <ul style="list-style-type: none"> <li>▪ An assessment of wetland function, including migratory birds, SARA and COSEWIC listed species</li> <li>▪ Evaluation and mapping of potential rare and sensitive communities will be conducted using the protocol developed by the Conservation Data Center. Field visits will be used as required to verify community occurrences</li> <li>▪ Field verification of rare and sensitive ecological communities will be conducted using the protocol outlined in the Field Manual for Describing Terrestrial Ecosystems (Ministry of Forests and Range, and Ministry of Environment 2010)</li> <li>▪ Traditional land use studies or traditional knowledge made available to the Proponent by Aboriginal groups</li> </ul>			
11.2.3.2 Rare Plants	<p>The EIS will describe rare plants, including both vascular and non-vascular species; focal species, including species listed in Schedule I of the SARA; provincially Red-listed and Blue-listed species; and species considered to be rare, based on the professional judgment of the rare plant specialist.</p> <p>The Proponent proposes to identify the locations of rare plants observed within the proposed LAA. The methods used to identify rare plants will be based on the following:</p> <ul style="list-style-type: none"> <li>▪ Timing (Klinkenberg and Penny 2006)</li> <li>▪ Survey selection and intensity (Whiteaker et al. 1998; USDA FS and USDI BLM 1999)</li> <li>▪ Voucher collection (Klinkenberg and Penny 2006; RIC 1999a)</li> <li>▪ Traditional land use studies or traditional knowledge made available to the Proponent by Aboriginal groups</li> </ul> <p>The EIS will also discuss the results of reviews of established</p>	Volume 2	Section 13.2.2	<a href="#">Page 13-11</a>

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	herbarium collections that include the University of British Columbia, the University of Alberta, the Royal Alberta Museum, the Royal British Columbia Museum and the Canadian National Museum.			
11.2.4 Potential Effects of the Project and Proposed Mitigation	<p>The EIS will assess how the Project has the potential to adversely affect terrestrial habitat.</p> <p>The Proponent proposes to assess the potential to adversely affect Vegetation and Ecological Communities by taking into account the potential for the Project to result in changes to the following key aspects:</p> <ul style="list-style-type: none"> <li>▪ The area of vegetation/ecological community loss, assessed by overlaying the project activity zone on the ecosystem maps and conducting a GIS-based analysis of the area lost due to project activities</li> <li>▪ The area of vegetation/ecological community fragmentation, identified through GIS analysis</li> <li>▪ The area of temporary vegetation/ecological community disturbance will be assessed by overlaying the project activity zone on the ecosystem maps and conducting a GIS-based analysis of the area disturbed</li> <li>▪ The long-term effects of maintenance of vegetation/ecological communities in an early seral stage along the transmission line and around the dam site</li> <li>▪ Wetlands</li> </ul> <p>Should potential adverse effects be identified, the potential mitigation measures will be identified (including a wetland compensation plan, if applicable) and will include a description of how the mitigation measures can address the potential adverse effect.</p> <p>The EIS will describe project residual effects, and cumulative effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.</p>	Volume 2	<a href="#">Section 13.3</a> <a href="#">Section 13.5</a> <a href="#">Section 13.6</a>	<a href="#">Page 13-13</a> <a href="#">Page 13-40</a> <a href="#">Page 13-49</a>

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11.2.5 Summary of Residual Effects on Vegetation and Ecological Communities	The EIS will summarize residual effects in a table format as shown in Table 8.4.	Volume 2	Section 13.4	<a href="#">Page 13-34</a>
12 Wildlife Resources Effects Assessment	<p>The EIS will summarize the wildlife resources effects. The Proponent proposes to use the methodology described in Section 8 of these EIS Guidelines.</p> <p>Technical data will inform the effects assessment on wildlife resources. The interests of Aboriginal groups will be presented in the EIS in accordance with Section 15 and Section 20 of these EIS Guidelines. Where Aboriginal groups have identified interests in a VC, the Proponent will incorporate Aboriginal traditional and local knowledge studies as made available.</p> <p>The EIS will identify and assess any change the project may cause to a listed wildlife species, its critical habitat or the residences of individuals of that species as defined in SARA.</p>	Volume 2	Section 14	<a href="#">Page 14-1</a>
12.1 Valued Component Scoping and Rationale	The Proponent's rationale for selection of the wildlife resources VC rationale is described in Table 12.1. Where available, supporting information that shows the importance of wildlife resources is included as part of the rationale for selection, as are regulatory requirements. Assessment of potential adverse effects on wildlife resources will be based on the following key species groups: butterflies and dragonflies; amphibians and reptiles; migratory birds; non-migratory game birds; raptors; bats; furbearers; ungulates; and large carnivores.	Volume 2	Section 14	<a href="#">Page 14-1</a>
12.2 Wildlife Resources		Volume 2	Section 14	<a href="#">Page 14-1</a>
12.2.1 Wildlife Resources Spatial Boundaries	The Proponent proposes the LAA and RAA as described in Table 12.2.	Volume 2	Section 14.1.5.1	<a href="#">Page 14-12</a>
12.2.2 Wildlife Resources Temporal Boundaries	The EIS will describe the temporal boundaries, which will reflect the methodology described in Section 8 of these EIS Guidelines.	Volume 2	Section 14.1.5.2	<a href="#">Page 14-12</a>
12.2.3 Wildlife Resources Baseline		Volume 2	Section 14.2	<a href="#">Page 14-13</a>

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12.2.3.1 Butterflies and Dragonflies	<p>The butterfly and dragonfly baseline information will provide an understanding of the existing habitat and species within the LAA as proposed by the Proponent.</p> <p>The baseline information will be collected following methodology guidelines presented in Inventory Methods for Terrestrial Arthropods (RIC 1998a). Surveys will focus on establishing presence/not-detected status for each listed taxon.</p>	Volume 2	Section 14.2.1	<a href="#">Page 14-13</a>
12.2.3.2 Amphibians and Reptiles	<p>The amphibian and reptile baseline information will provide an understanding of the existing habitat and species within the LAA as proposed by the Proponent.</p> <p>All species observations will be summarized, but the focus will be placed upon the western toad (<i>Bufo boreas</i>) as it is a species of concern under SARA.</p> <p>The baseline information will be collected following the protocols outlined in Inventory Methods for Pond-breeding Amphibians and Painted Turtle (RIC 1998b) and Inventory Methods for Snakes (RIC 1998c).</p>	Volume 2	Section 14.2.2	<a href="#">Page 14-13</a>
12.2.3.3 Migratory Birds	<p>The migratory bird baseline information will provide an understanding of the existing habitat, species, relative abundance, distribution and temporal use within the LAA as proposed by the Proponent for the following categories of migratory birds:</p> <ul style="list-style-type: none"> <li>▪ Songbirds</li> <li>▪ Waterfowl and shorebirds</li> <li>▪ Marsh birds (Yellow Rail, American Bittern, Le Conte's Sparrow, Nelson's Sharp-tailed Sparrow)</li> <li>▪ Woodpeckers</li> <li>▪ Common Nighthawk</li> <li>▪ Others as appropriate</li> </ul> <p>All species observations will be summarized.</p> <p>The baseline information will be collected following the protocols outlined in Inventory Methods for Forest and Grassland</p>	Volume 2	Section 14.2.3	<a href="#">Page 14-14</a>

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	Songbirds (RIC 1999b), Inventory Methods for Swallows and Swifts (RIC 1998d), Inventory Methods for Riverine Birds: Harlequin Duck, Belted Kingfisher and American Dipper (RIC 1998e) and Inventory Methods for Waterfowl and Allied Species: Loons, Grebes, Swans, Geese, Ducks, American Coot and Sandhill Crane (RIC 1999c), Inventory Methods for Marsh Birds: Bitterns and Rails (RIC 1998f), Inventory Methods for Woodpeckers (RIC 1999d), and Inventory Methods for Nighthawk and Poorwill (RIC 1998g).			
12.2.3.4 Non-Migratory Game Birds	The non-migratory game bird baseline information will provide an understanding of the existing habitat, species, relative abundance, distribution and location of lek sites (Sharp-tailed Grouse only) within the LAA as proposed by the Proponent. The baseline information will be collected following the methods outlined in Inventory Methods for Upland Game birds (RIC 1997a). The location of lek sites for Sharp-tailed Grouse within the Peace River valley will be included with baseline information where available and permitted.	Volume 2	Section 14.2.4	<a href="#">Page 14-16</a>
12.2.3.5 Raptors	The raptor (eagles, hawks and owls) baseline information will provide an understanding of the existing habitat, location of observed nests, presence, abundance (as feasible) and distribution, and temporal use patterns within the LAA as proposed by the Proponent. All species observations will be summarized. The Broad-winged Hawk and Short-eared Owl are listed species while Northern Goshawk, Northern Harrier and Bald Eagle are species of regional concern. The baseline information will be collected following the protocols outlined in Inventory Methods for Raptors (RIC 2001) and Inventory Methods for Owl Surveys (Hausleitner 2006). Call playback and stand watch studies will be used to document and confirm the presence, possible abundance, and associated habitat use of select species of owls (including Northern Saw-whet, Short-eared, Great Horned, Great Gray, and Boreal	Volume 2	Section 14.2.5	<a href="#">Page 14-16</a>

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	Owls), Northern Goshawk, Northern Harrier and Broad-winged Hawk. An inventory of large raptor nest sites along the Peace River will be collected.			
12.2.3.6 Bats	<p>The bat baseline information will provide an understanding of the existing habitat, presence and characteristics of hibernacula, and location and characteristics of roost sites within the LAA as proposed by the Proponent.</p> <p>The baseline information will be collected following protocols outlined in Inventory Methods for Bats (RIC 1998h), using mist-netting (to confirm species presence), acoustic detection (to verify bat activity, quantify the level of activity and document species not captured), and radio-telemetry (to investigate day-roost selection).</p>	Volume 2	Section 14.2.6	<a href="#">Page 14-17</a>
12.2.3.7 Furbearers	<p>The furbearer baseline information will provide an understanding of the population estimates and distribution of beavers, distribution of potential fisher den trees, seasonal habitat use, orientation and size of fisher home ranges within the LAA as proposed by the Proponent.</p> <p>All species observations will be summarized, but the focus will be on species that are provincially listed.</p> <p>The baseline information will be collected following the protocols outlined in Inventory Methods for Beaver and Muskrat (RIC 1998i) and Inventory Methods for Medium Sized Terrestrial Carnivores: Coyote, Red Fox, Lynx, Bobcat, Wolverine, Fisher and Badger (RIC 1997b).</p>	Volume 2	Section 14.2.7	<a href="#">Page 14-18</a>
12.2.3.8 Ungulates	<p>The ungulate (including moose, elk and mule deer) baseline information will provide an understanding of the population estimates; habitat use; movement and migration patterns, including river crossings; and birthing site locations and characteristics within the LAA as proposed by the Proponent.</p> <p>The baseline information will be collected following the protocols outlined in: Aerial-based Inventory Methods for Selected Ungulates: Bison, Mountain Goat, Mountain Sheep, Moose, Elk, Deer and Caribou (RIC 2002); Ground-Based Inventory Methods</p>	Volume 2	Section 14.2.8	<a href="#">Page 14-19</a>



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	for Selected Ungulates (Moose, Elk and Deer) (RIC 1998j); and Ground-Based Inventory Methods for Ungulate Snow-track Surveys (D'Eon et al. 2006).			
12.2.3.9 Large Carnivores	The baseline conditions will be characterized using information from published studies and information made available to the Proponent from local, regional, and provincial organizations and governments.	Volume 2	Section 14.2.9	<a href="#">Page 14-21</a>
12.2.4 Potential Effects of the Project and Proposed Mitigation	<p>The EIS will assess how the Project has the potential to adversely affect habitat available for wildlife resources, as represented by the key species groups.</p> <p>The potential to adversely affect wildlife resources will be assessed by taking into account the potential for the Project to result in changes to the following key aspects:</p> <ul style="list-style-type: none"> <li>▪ Permanent and temporary habitat alteration and fragmentation</li> <li>▪ Disturbance and/or displacement</li> <li>▪ Potential for direct and indirect mortality to individuals</li> </ul> <p>Should potential adverse effects be identified, the potential mitigation measures will be identified and will include a description of how the mitigation measures can address the potential adverse effects.</p> <p>The EIS will describe project residual effects, and cumulative effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.</p>	Volume 2	Section 14.3 <a href="#">Section 14.4</a> <a href="#">Section 14.6</a>	<a href="#">Page 14-23</a> <a href="#">Page 14-49</a> <a href="#">Page 14-91</a>
12.2.5 Summary of Residual Effects on Wildlife Resources	The EIS will summarize residual effects in a table format as shown in Table 8.4.	Volume 2	Section 14.5	<a href="#">Page 14-66</a>
13 Greenhouse Gases Effects Assessment	The Proponent proposes to describe the greenhouse gases (GHG) effects based on the methodology described in Section 8 of these EIS Guidelines. Technical data will inform the GHG effects assessment. The	Volume 2	Section 15	<a href="#">Page 15-1</a>

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	interests of Aboriginal groups will be presented in the EIS in accordance with Section 15 and Section 20 of these EIS Guidelines. Where Aboriginal groups have identified interests in a VC, the Proponent will incorporate additional baseline information as made available.			
13.1 Valued Component Scoping and Rationale	The Proponent's rationale for selection of the greenhouse gases VC is described in Table 13.1. Where available, supporting information that shows importance of the VC is included as part of the rationale for selection, as are regulatory requirements.	Volume 2	Section 15	<a href="#">Page 15-1</a>
13.2 Greenhouse Gases		Volume 2	Section 15	<a href="#">Page 15-1</a>
13.2.1 Greenhouse Gases Spatial Boundaries	The Proponent proposes the LAA and RAA as described in Table 13.2.	Volume 2	Section 15.1.5.1	<a href="#">Page 15-5</a>
13.2.2 Greenhouse Gases Temporal Boundaries	The EIS will describe the temporal boundaries, which will reflect the methodology described in Section 8 of these EIS Guidelines.	Volume 2	Section 15.1.5.2	<a href="#">Page 15-6</a>
13.2.3 Greenhouse Gases Baseline	The GHG baseline information will provide an understanding of the potential net contribution of GHG by using site specific mass balance models to account for net GHG emissions under current conditions using CO2 equivalents.	Volume 2	Section 15.2	<a href="#">Page 15-6</a>
13.2.4 Potential Effects of the Project and Proposed Mitigation	<p>The EIS will provide an assessment of how the Project has the potential to result in a net change in GHG emissions and GHG intensity based on inundation over a 100-year period.</p> <p>Methods developed by the Intergovernmental Panel on Climate Change (IPCC) will be used to estimate emissions associated with land use conversion to the reservoir as well as construction-phase emissions based on estimates for quantities of fuel, electricity and materials expected to be required during project development.</p> <p>This section of the EIS will provide:</p> <ul style="list-style-type: none"> <li>▪ An estimate of the multi-year GHG emissions profile associated with the construction and ongoing operations of the Project</li> <li>▪ An estimate of the net change in GHG emission from current</li> </ul>	Volume 2	Section 15.3 <a href="#">Section 15.4</a>	<a href="#">Page 15-9</a> <a href="#">Page 15-18</a>

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	<p>conditions to post-inundation scenarios</p> <ul style="list-style-type: none"> <li>▪ A comparison of the GHG profile of the Project with other electricity supply options</li> </ul> <p>Should potential adverse effects be identified, the potential mitigation measures will be identified and will include a description of how the mitigation measures can address the potential adverse effects.</p> <p>The EIS will describe project residual effects, and cumulative effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.</p>			
13.2.5 Summary of Residual Effects for Greenhouse Gas	The EIS will summarize residual effects in a table format as shown in Table 8.4.	Volume 2	Section 15.4	<a href="#">Page 15-18</a>
Economic Effects Assessment	The EIS will summarize the economic effects based on the methodology described in Section 8 of these EIS Guidelines. Technical data will inform the economic effects assessment. The interests of Aboriginal groups will be presented in the EIS in accordance with Section 15 and Section 20 of these EIS Guidelines. Where Aboriginal groups have identified interests in a VC, the Proponent will incorporate additional baseline information as made available.	Volume 3	Sections 16 to 18	<a href="#">Page 16-1 to -20</a> <a href="#">Page 17-1 to -28</a> <a href="#">Page 18-1 to -29</a>
14.1 Valued Component Scoping and Rationale	Economic effects arise from changes to economic transactions, such as the Project's use of goods and services, employment of direct and indirect labour, and contracting and business opportunities, as well as Project-induced changes to government revenues. Government revenues will be reported in the Project Benefits section. The Proponent's rationale for selection of the economic VCs, and the proposed VCs are described in Table 14.1.	Volume 3	Sections <del>16.1 to 18</del> <a href="#">Section 17.1</a> <a href="#">Section 18.1</a>	<a href="#">Page 16-1</a> <a href="#">Page 17-1</a> <a href="#">Page 18-1</a>
14.2 Local Government Revenue		Volume 3	Section 16	<a href="#">Page 16-1</a>

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14.2.1 Local Government Revenue Spatial Boundaries	The Proponent proposes the LAA and RAA as described in Table 14.2.	Volume 3	Section 16.1.5.1	<a href="#">Page 16-4</a>
14.2.2 Local Government Revenue Temporal Boundaries	The EIS will describe the temporal boundaries, which will reflect the methodology described in Section 8 of these EIS Guidelines.	Volume 3	Section 16.1.5.2	<a href="#">Page 16-5</a>
14.2.3 Local Government Revenue Baseline	<p>The EIS will describe the current local government revenue baseline and likely future local government revenue and expenditure streams. Key indicators will include:</p> <ul style="list-style-type: none"> <li>▪ Local government expenditures on specific programs and services</li> <li>▪ Local government revenue from the Proponent grants-in-lieu payments, property taxes, transfers, income taxes, consumption taxes and royalties.</li> </ul> <p>Information sources for the baseline will include publicly available federal, provincial and local government data and reports and additional information made available to the Proponent.</p>	Volume 3	Section 16.3	<a href="#">Page 16-6</a>
14.2.4 Potential Effects of the Project and Proposed Mitigation	<p>The EIS will assess how the Project has the potential to adversely affect local government revenues.</p> <p>The potential to adversely affect local government revenues will be assessed by taking into account the potential for the Project to result in changes to the following key aspects:</p> <ul style="list-style-type: none"> <li>▪ Legal and policy factors that may influence the effects</li> <li>▪ The British Columbia Input-Output Model (BC Stats, 2011a) proposed by the Proponent will be used to model the timing and magnitude of project-related transactions</li> </ul> <p>Should potential adverse effects be identified, the potential mitigation measures will be identified and will include a description of how the mitigation measures can address the potential adverse effects.</p> <p>The EIS will describe project residual effects, and cumulative effects, if applicable, using the residual effects characterization</p>	Volume 3	<a href="#">Section 16.4</a> <a href="#">Section 16.5</a> <a href="#">Section 16.6</a> <a href="#">Section 16.7</a>	<a href="#">Page 16-11</a> <a href="#">Page 16-14</a> <a href="#">Page 16-16</a> <a href="#">Page 16-16</a>

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	described in Table 8.3. A statement of significance will be provided.			
14.2.5 Summary of Residual Effects on Local Government Revenue	The EIS will summarize residual effects in a table format as shown in Table 8.4.	Volume 3	Section 16.6	<a href="#">Page 16-16</a>
14.3 Labour Market		Volume 3	Section 17	<a href="#">Page 17.1</a>
14.3.1 Labour Market Spatial Boundaries	The Proponent proposes the LAA and RAA as described in Table 14.3.	Volume 3	Section 17.1.5.1	<a href="#">Page 17-5</a>
14.3.2 Labour Market Temporal Boundaries	The EIS will describe the temporal boundaries, which will reflect the methodology described in Section 8 of these EIS Guidelines.	Volume 3	Section 17.1.5.2	<a href="#">Page 17-6</a>
14.3.3 Labour Market Baseline	<p>The EIS will describe labour market, including the Aboriginal labour market where information is available, baseline and forecast conditions. The labour market baseline data collection will focus on skills and occupations required by the Project, using the following key indicators:</p> <ul style="list-style-type: none"> <li>▪ Number of persons by occupation and industry affiliation, available skills in the local labour force, and turnover rates</li> <li>▪ Unemployment rates, demographics and characteristics, length of unemployment, and job search period</li> <li>▪ Contribution of non-resident workers in the North East Development Region's labour force</li> <li>▪ Estimates of skill shortages and surpluses</li> </ul> <p>Baseline information sources will include published employment studies and statistics, and information made available to the Proponent from local, regional, provincial and federal governments (e.g., BC Stats 2011b) and from interviews with local, regional and provincial employment and trade organizations.</p>	Volume 3	Section 17.3	<a href="#">Page 17-8</a>
14.3.4 Potential Effects of the Project and Proposed Mitigation	The EIS will assess how the Project has the potential to adversely affect the labour market, including the Aboriginal labour market where information is available.	Volume 3	Section 17.4 <a href="#">Section 17.6</a> <a href="#">Section 17.7</a>	<a href="#">Page 17-17</a> <a href="#">Page 17-26</a> <a href="#">Page 17-26</a>

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	<p>The potential to adversely affect the labour market will be assessed by taking into account the potential for the Project to result in changes to the following key aspects:</p> <ul style="list-style-type: none"> <li>▪ The direct Project's needs for labour relative to the expected availability and type of skills of the persons in the LAA as proposed by the Proponent</li> <li>▪ The indirect project employment calculated using the BC Input-Output Model</li> <li>▪ A comparison of the project labour requirements against the baseline and forecast local labour supply and demand by skill category where possible (Work B.C. 2009)</li> </ul> <p>Should potential adverse effects be identified, the potential mitigation measures will be identified and will include a description of how the mitigation measures can address the potential adverse effects.</p> <p>The EIS will describe project residual effects, and cumulative effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.</p>			
14.3.5 Summary of Residual Effects on Labour Market	The EIS will summarize residual effects in a table format as shown in Table 8.4.	Volume 3	Section 17.6	<a href="#">Page 17-26</a>
14.4 Regional Economic Development		Volume 3	Section 18	<a href="#">Page 18-1</a>
14.4.1 Regional Economic Development Spatial Boundaries	The Proponent proposes the LAA and RAA as described in Table 14.4.	Volume 3	Section 18.1.5.1	<a href="#">Page 18-4</a>
14.4.2 Regional Economic Development Temporal Boundaries	The EIS will describe the temporal boundaries, which will reflect the methodology described in Section 8 of these EIS Guidelines.	Volume 3	Section 18.1.5.2	<a href="#">Page 18-5</a>

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14.4.3 Regional Economic Development Baseline	<p>The EIS will describe current and likely future regional economic development activity. The regional economic development baseline data collection will focus on the types of businesses and contractors required by the Project, as well as those currently required and forecast to be required by other industries in the region, using the following key indicators:</p> <ul style="list-style-type: none"> <li>▪ Regional business and contracting profile</li> <li>▪ Regional business and contracting capabilities and capacity</li> <li>▪ Regional Aboriginal business and contracting profile, capabilities and capacity where information is available.</li> <li>▪ Information sources will include: <ul style="list-style-type: none"> <li>▪ Information about the project procurement strategy, including local purchasing policies, if any</li> <li>▪ Published studies and statistics</li> <li>▪ Information made available to the Proponent from the private sector, industry and trade organizations, and local, regional and provincial organizations and governments</li> </ul> </li> </ul>	Volume 3	Section 18.3	<a href="#">Page 18-7</a>
14.4.4 Potential Effects of the Project and Proposed Mitigation	<p>The EIS will assess how the Project has the potential to adversely affect regional economic development. The potential to adversely affect regional economic development will be assessed by taking into account the potential for the Project to result in changes to the following key aspects:</p> <ul style="list-style-type: none"> <li>▪ Project contract opportunities in the LAA as proposed by the Proponent</li> <li>▪ A comparison of the Project's contracting requirements with the regional business and contracting profile, capabilities and capacity</li> </ul> <p>Should potential adverse effects be identified, the potential mitigation measures will be identified and will include a description of how the mitigation measures can address the potential adverse effects.</p> <p>The EIS will describe project residual effects, and cumulative</p>	Volume 3	Section 18.4 <a href="#">Section 18.6</a> <a href="#">Section 18.7</a>	<a href="#">Page 18-19</a> <a href="#">Page 18-27</a> <a href="#">Page 18-27</a>

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	effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.			
14.4.5 Summary of Residual Effects on Regional Economic Development	The EIS will summarize residual effects in a table format as shown in Table 8.4.	Volume 3	Section 18.6	<a href="#">Page 18-27</a>
15 Traditional Lands and Resource Use Effects Assessment	<p>The EIS will summarize the traditional lands and resource use effects based on the methodology described in Section 8 of these EIS Guidelines.</p> <p>The EIS will contain an assessment of the potential adverse effects of the Project on the current use and reasonably anticipated future use of lands and resources by Aboriginal persons for traditional purposes. This could also include activities conducted in the exercise of asserted or established Aboriginal rights and treaty rights identified in Section 20 of the EIS Guidelines.</p> <p>In describing current uses of land and resources by Aboriginal groups for traditional purposes, the Proponent should include activities related, but not limited, to hunting, fishing, trapping, cultural and other traditional uses of the land (e.g. collection of medicinal plants, use of sacred sites). Potential effects on current uses include access to areas that are of importance or concern to Aboriginal groups.</p> <p>Technical data, traditional land use studies and traditional knowledge will inform the effects assessment on current use of lands and resources for traditional purposes. Requirements for Aboriginal interests and information requirements are addressed in Section 20 of these EIS Guidelines. Where Aboriginal groups have identified interests in a VC, the Proponent will incorporate additional baseline information as made available.</p>	Volume 3	Section 19	<a href="#">Page 19-1</a>
15.1 Valued Component Scoping and Rationale	The potential for effects on current use of lands and resources for traditional purposes arise from the Project's use of land or resources. Table 15.1 outlines the rationale for selection of this	Volume 3	Section 19	<a href="#">Page 19-1</a>



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	VC based on Aboriginal interests and federal regulatory requirements.			
15.2 Current Use of Lands and Resources for Traditional Purposes		Volume 3	Section 19	<a href="#">Page 19-1</a>
15.2.1 Current Use of Lands and Resources for Traditional Purposes Spatial Boundaries	The Proponent proposes the LAA and RAA as described in Table 15.2.	Volume 3	Section 19.1.5.1	<a href="#">Page 19-10</a>
15.2.2 Current Use of Lands and Resources for Traditional Purposes Temporal Boundaries	The EIS will describe the temporal boundaries defined for the assessment of the potential adverse effects of the Project on current use of lands and resources for traditional purposes in accordance with the methodology set out in Section 8 of these EIS Guidelines.	Volume 3	Section 19.1.5.2	<a href="#">Page 19-11</a>
15.2.3 Current Use of Lands and Resources for Traditional Purposes Baseline	<p>The EIS will describe the current use of lands and resources for traditional purposes by Aboriginal groups within the Proponent's proposed LAA and RAA using the following key indicators:</p> <ul style="list-style-type: none"> <li>▪ Current use of lands and resources for hunting, fishing and trapping activities, including the location of the activity, the species targeted, and the traditional uses of the harvested animals</li> <li>▪ Current use of lands and resources for activities other than hunting, fishing and trapping by Aboriginal groups, including the nature, location and traditional use purpose</li> </ul> <p>Information sources may include publicly available information and information as made available to the Proponent, including traditional land use studies, traditional knowledge, consultations between Aboriginal groups and the Proponent, consultations between Aboriginal groups and the provincial and federal governments.</p>	Volume 3	Section 19.3	<a href="#">Page 19-13</a>
15.2.4 Potential Effects of the Project and Proposed Mitigation	The EIS will assess how the Project has the potential to adversely affect current use of lands and resources by Aboriginal persons for traditional purposes.	Volume 3	Section 19.4 <a href="#">Section 19.5</a>	<a href="#">Page 19-65</a> <a href="#">Page 19-99</a>

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	<p>The potential to adversely affect current use of lands and resources by Aboriginal persons for traditional purposes will be assessed by taking into account the potential for the Project to result in changes to key aspects:</p> <ul style="list-style-type: none"> <li>▪ Use of and access to lands used for traditional purposes</li> <li>▪ Availability of harvested species based on the results of the assessment of the potential effects of the Project on fish and fish habitat, vegetation and ecological communities, and wildlife resources</li> <li>▪ Other relevant considerations raised by Aboriginal groups</li> </ul> <p>Should potential adverse effects be identified, the potential mitigation measures will be identified and will include a description of how the mitigation measures can address the potential adverse effects.</p> <p>The EIS will describe project residual effects, and cumulative effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.</p>		<a href="#">Section 19.6</a>	<a href="#">Page 19-108</a>
15.2.5 Summary of Residual Effects for Current Use of Lands and Resources for Traditional Purposes	The EIS will summarize the residual adverse effects on the current use of lands and resources for traditional purposes VC in a table format as shown in Table 8.4.	Volume 3	Section 19.56	<a href="#">Page 19-99</a>
16 Land and Resource Use Effects Assessment	<p>The EIS will summarize the Land and Resource Use effects based on the methodology described in Section 8 of these EIS Guidelines.</p> <p>Technical data will inform the effects assessment on land and resource use. The interests of Aboriginal groups will be presented in the EIS in accordance with Section 15 and Section 20 of these EIS Guidelines. Where Aboriginal groups have identified interests in a VC, the Proponent will incorporate additional baseline information as made available.</p>	Volume 3	Sections 20 to 27	<a href="#">Page 20-1 to -82</a> <a href="#">Page 21-1 to -20</a> <a href="#">Page 22-1 to -22</a> <a href="#">Page 23-1 to -16</a> <a href="#">Page 24-1 to -60</a> <a href="#">Page 25-1 to -48</a> <a href="#">Page 26-1 to -34</a> <a href="#">Page 27-1 to -28</a>
16.1 Valued Component	The land and resource use VCs are agriculture, forestry, oil, gas	Volume 3	Sections 20 to 27	<a href="#">Page 20-1</a>

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Scoping and Rationale	and energy, minerals and aggregates, harvest of fish and wildlife resources, outdoor recreation and tourism, navigation (air and water), and visual resources. Section 23.4 will summarize in a table format the renewable resources that have been considered in the various sections of the EIS.  Table 16.1 outlines the Proponent's rationale for selection of VCs in the Land and Resource Use section.			<a href="#">Page 21-1</a> <a href="#">Page 22-1</a> <a href="#">Page 23-1</a> <a href="#">Page 24-1</a> <a href="#">Page 25-1</a> <a href="#">Page 26-1</a> <a href="#">Page 27-1</a>
16.2 Agriculture		Volume 3	Section 20	<a href="#">Page 20-1</a>
16.2.1 Agriculture Spatial Boundaries	The Proponent proposes the LAA and RAA as described in Table 16.2.	Volume 3	Section 20.1.5.1	<a href="#">Page 20-5</a>
16.2.2 Agriculture Temporal Boundaries	The EIS will describe the temporal boundaries, which will reflect the methodology described in Section 8 of these EIS Guidelines.	Volume 3	Section 20.1.5.2	<a href="#">Page 20-6</a>
16.2.3 Agriculture Baseline	The agricultural baseline information will provide an understanding of the current agricultural land base, operations and systems, including the following key indicators: <ul style="list-style-type: none"> <li>▪ Agricultural land capability ratings, using updated field observations or existing provincial mapping, and updated climatic capability using current climate data (see Kenk and Cotic 1983)</li> <li>▪ Agricultural suitability of lands within the project activity zone for growing different crops, determined using updated or available capability ratings, and rated as well suited, suited or not suited for various crops using methodologies similar to the former Gough et al. (1994)</li> <li>▪ Agricultural utility ratings, to reflect the likelihood of each area being used for agricultural production in the future. The rating will be based on land capability ratings, as well as constraints to agricultural use (such as location, access, parcel size, land ownership or tenure, and land use plans or designations).</li> <li>▪ Agricultural land use, determined from recent air photos of</li> </ul>	Volume 3	Section 20.2	<a href="#">Page 20-6</a>

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	<p>the project area, Crown land tenures, field observations and land owner/operator interviews</p> <ul style="list-style-type: none"> <li>▪ Agricultural tenure on Crown lands, including range tenures and grazing licenses, determined from provincial data sources, within and near the project activity zone</li> <li>▪ Current and expected future agricultural operations and practices, determined through interviews with owners and operators of potentially affected agricultural operations, as well as through review of agricultural census information for the LAA as proposed by the Proponent</li> <li>▪ Local and regional agricultural economic activity, determined through interviews with owners and operators, relevant agricultural associations, representatives of agriculturally related industries and representatives of government agencies</li> <li>▪ Local and regional food production and consumption estimates, determined through interviews with owners and operators of potentially affected agricultural operations, relevant agricultural associations, representatives of agriculturally related industries and representatives of government agencies</li> </ul>			
16.2.4 Potential Effects of the Project and Proposed Mitigation	<p>The EIS will assess how the Project has the potential to adversely affect agriculture.</p> <p>The potential to adversely affect agriculture will be assessed by taking into account the potential for the Project to result in changes to the following key aspects:</p> <ul style="list-style-type: none"> <li>▪ An estimate of the loss of agricultural land, including a description of these changes to the agricultural resource base on a local, regional and provincial scale</li> <li>▪ Description of effects to individual farm operations, including loss of land, effects to farm infrastructure, and changes to farm activities</li> <li>▪ Quantification of projected immediate and longer-term effects</li> </ul>	Volume 3	<a href="#">Section 20.3</a> <a href="#">Section 20.5</a> <a href="#">Section 20.6</a>	<a href="#">Page 20-26</a> <a href="#">Page 20-71</a> <a href="#">Page 20-76</a>

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	<p>to local, regional and provincial agricultural economies. This will include estimating changes in agricultural costs and revenues at the farm level, changes in opportunities for potential new agricultural economic activity, and changes to primary and secondary agricultural economic activity.</p> <ul style="list-style-type: none"> <li>▪ Identification of potential changes to local food production and any changes to the ratio of food production to food consumption (a measure of food self-reliance)</li> <li>▪ Should potential adverse effects be identified, the potential mitigation measures will be identified and will include a description of how the mitigation measures can address the potential adverse effects</li> </ul> <p>The EIS will describe project residual effects, and cumulative effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.</p>			
16.2.5 Summary of Residual Effects on Agriculture	The EIS will summarize the residual effects in a table format as shown in Table 8.4.	Volume 3	Section 20.5	<a href="#">Page 20-71</a>
16.3 Forestry		Volume 3	Section 21	<a href="#">Page 21-1</a>
16.3.1 Forestry Spatial Boundaries	The Proponent proposes the LAA and RAA as described in Table 16.3.	Volume 3	Section 21.1.5.1	<a href="#">Page 21-5</a>
16.3.2 Forestry Temporal Boundaries	The EIS will describe the temporal boundaries, which will reflect the methodology described in Section 8 of these EIS Guidelines.	Volume 3	Section 21.1.5.2	<a href="#">Page 21-6</a>
16.3.3 Forestry Baseline	<p>The EIS will provide an overview of forest and land management planning, and forest industry activities, within the LAA, as proposed by the Proponent, and the Peace Forest District. The future case will consider forest management plans, including any constraints on timber harvesting or land use management. Baseline information using the following key indicators will be collected:</p> <ul style="list-style-type: none"> <li>▪ Timber harvesting land base</li> <li>▪ Site productivity</li> </ul>	Volume 3	Section 21.3	<a href="#">Page 21-7</a>

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	<ul style="list-style-type: none"> <li>▪ Annual Allowable Cut</li> <li>▪ Forest sector employment</li> <li>▪ Forest sector based government revenue</li> <li>▪ The inventory of existing merchantable and non-merchantable timber in the reservoir as identified in the project clearing plan</li> </ul> <p>The forest industry activity information will be collected from industry and Ministry of Forests, Lands and Natural Resource Operations sources. Spatial indicators will be collected from an analysis of GIS data obtained from the same sources.</p>			
16.3.4 Potential Effects of the Project and Proposed Mitigation	<p>The EIS will assess how the Project has the potential to adversely affect forestry.</p> <p>The potential to adversely affect forestry will be assessed by taking into account the potential for the Project to result in changes to the following key aspects:</p> <ul style="list-style-type: none"> <li>▪ Land use, resource use, access and activities related to industrial forestry use</li> <li>▪ Crown forest management</li> </ul> <p>The spatial analysis will identify tenured interests or facilities occurring within the Project activity zone that may be alienated from future use, or affected by changes in Crown land use and access during construction and operations.</p> <p>Should potential adverse effects be identified, the potential mitigation measures will be identified and will include a description of how the mitigation measures can address the potential adverse effects.</p> <p>The EIS will describe project residual effects, and cumulative effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.</p>	Volume 3	Section 21.4 <a href="#">Page 21.6</a> <a href="#">Page 21.7</a>	<a href="#">Page 21-13</a> <a href="#">Page 21-18</a> <a href="#">Page 21-18</a>
16.3.5 Summary of Residual Effects on Forestry	<p>The EIS will summarize the residual effects in a table format as shown in Table 8.4.</p>	Volume 3	Section 21.6	<a href="#">Page 21-18</a>

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16.4 Oil, Gas and Energy		Volume 3	Section 22	<a href="#">Page 22-1</a>
16.4.1 Oil, Gas and Energy Spatial Boundaries	The Proponent proposes the LAA and RAA as described in Table 16.4.	Volume 3	Section 22.1.5.1	<a href="#">Page 22-6</a>
16.4.2 Oil, Gas and Energy Temporal Boundaries	The EIS will describe the temporal boundaries, which will reflect the methodology described in Section 8 of these EIS Guidelines.	Volume 3	Section 22.1.5.2	<a href="#">Page 22-6</a>
16.4.3 Oil, Gas and Energy Baseline	<p>The EIS will describe current conditions and recent trends related to oil, gas and energy sectors within the LAA as proposed by the Proponent, using the following key indicators:</p> <ul style="list-style-type: none"> <li>▪ Tenured oil, gas and energy activities, operations and facilities</li> <li>▪ Production activity</li> <li>▪ Industry characteristics including new extraction technologies</li> </ul> <p>Spatial indicators will be collected using a GIS analysis. Other industry data will be collected from the Oil and Gas Commission, Canadian Association of Petroleum Producers and B.C. Ministry of Energy and Mines. Interviews and information requests will be made with these same agencies for information pertaining to production activity and investments.</p>	Volume 3	Section 22.3.	<a href="#">Page 22-7</a>
16.4.4 Potential Effects of the Project and Proposed Mitigation	<p>The EIS will assess how the Project has the potential to adversely affect oil, gas and energy sectors.</p> <p>The potential to adversely affect the oil, gas and energy sectors will be assessed by taking into account the potential for the Project to result in changes to the following key aspects:</p> <ul style="list-style-type: none"> <li>▪ Land use</li> <li>▪ Resource use</li> <li>▪ Access and activities for the oil, gas and energy sectors</li> </ul> <p>Should potential adverse effects be identified, the potential mitigation measures will be identified and will include a description of how the mitigation measures can address the potential adverse effects.</p> <p>The EIS will describe project residual effects, and cumulative</p>	Volume 3	Section 22.4 <a href="#">Section 22.6</a> <a href="#">Section 22.7</a>	<a href="#">Page 22-13</a> <a href="#">Page 22-19</a> <a href="#">Page 22-19</a>

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	effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.			
16.4.5 Summary of Residual Effects on Oil and Gas	The EIS will summarize the residual effects in a table format as shown in Table 8.4.	Volume 3	Section 22.6	<a href="#">Page 22-19</a>
16.5 Minerals and Aggregates		Volume 3	Section 23	<a href="#">Page 23-1</a>
16.5.1 Minerals and Aggregates Spatial Boundaries	The Proponent proposes the LAA and RAA as described in Table 16.5.	Volume 3	Section 23.1.5.1	<a href="#">Page 23-4</a>
16.5.2 Minerals and Aggregates Temporal Boundaries	The EIS will describe the temporal boundaries, which will reflect the methodology described in Section 8 of these EIS Guidelines.	Volume 3	Section 23.1.5.2	<a href="#">Page 23-5</a>
16.5.3 Minerals and Aggregates Baseline	<p>The EIS will provide an overview of current conditions related to mineral and aggregate resource development within the LAA as proposed by the Proponent, using the following key indicators:</p> <ul style="list-style-type: none"> <li>▪ Record of metal, industrial mineral, and aggregate potential</li> <li>▪ Record of exploration and development</li> <li>▪ Historic production records</li> <li>▪ Remaining mine, quarry or pit life</li> <li>▪ Existing mineral or aggregate tenures</li> <li>▪ Local and regional aggregate pricing and current and forecast consumption profile</li> </ul> <p>Spatial data will be collected (e.g., mineral potential, tenures, mineral reserves, current and past producers). Baseline information will be collected from government databases (e.g., mineral potential, mineral tenures, record of development activity), and interviews with Ministry of Transportation and Infrastructure staff, and other information as made available to the Proponent.</p>	Volume 3	Section 23.3	<a href="#">Page 23-6</a>
16.5.4 Potential Effects of the	The EIS will assess how the Project has the potential to	Volume 3	Section 23.4	<a href="#">Page 23-11</a>



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Project and Proposed Mitigation	<p>adversely affect the mineral and aggregate sector.</p> <p>The potential to adversely affect the mineral and aggregate sector will be assessed by taking into account the potential for the Project to result in changes to the following key aspects:</p> <ul style="list-style-type: none"> <li>▪ Land use, resource use, access and activities related to industrial mineral and aggregate utilization within the Project activity zone</li> <li>▪ The Project's consumption of local aggregate deposits for construction activities</li> <li>▪ Any new or improved access to aggregate sources created by the Project</li> </ul> <p>Spatial analysis will be used to determine the Project's effect on minerals and aggregates in the context of the market for minerals and aggregates.</p> <p>Should potential adverse effects be identified, the potential mitigation measures will be identified and will include a description of how the mitigation measures can address the potential adverse effects.</p> <p>The EIS will describe project residual effects, and cumulative effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.</p>		<a href="#">Section 23.5</a> <a href="#">Section 23.6</a>	<a href="#">Page 23-15</a> <a href="#">Page 23-15</a>
16.5.5 Summary of Residual Effects on Minerals and Aggregates	The EIS will summarize the residual effects in a table format as shown in Table 8.4.	Volume 3	Section 23.5	<a href="#">Page 23-15</a>
16.6 Harvest of Fish and Wildlife Resources		Volume 3	Section 24	<a href="#">Page 24-1</a>
16.6.1 Harvest of Fish and Wildlife Resources Spatial Boundaries	The Proponent proposes the LAA and RAA as described in Table 16.6.	Volume 3	Section 24.1.5.1	<a href="#">Page 24-7</a>
16.6.2 Harvest of Fish and Wildlife Resources	The EIS will describe the temporal boundaries, which will reflect the methodology described in Section 8 of these EIS Guidelines.	Volume 3	Section 24.1.5.2	<a href="#">Page 24-8</a>

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Temporal Boundaries				
16.6.3 Harvest of Fish and Wildlife Resources Baseline	<p>The Proponent proposes to provide an overview of current conditions related to the public and tenured harvest of fish and wildlife resources within the proposed LAA using the following key indicators:</p> <ul style="list-style-type: none"> <li>▪ Public Hunting and Fishing:                             <ul style="list-style-type: none"> <li>○ Public hunting and fishing licence sales</li> <li>○ Public hunting and fishing areas</li> <li>○ Public hunting and fishing harvest information, including numbers and species</li> <li>○ Angler creel survey results within the LAA as proposed by the Proponent</li> </ul> </li> <li>▪ Tenured Trapping:                             <ul style="list-style-type: none"> <li>○ Tenured trapline areas</li> <li>○ Tenured trapline infrastructure (e.g. cabins, trails)</li> <li>○ Tenured trapline harvest volumes and areas</li> <li>○ Tenured trapline operating and economic information</li> <li>○ Aboriginal employment or use of tenured traplines</li> </ul> </li> <li>▪ Tenured Guide-Outfitting:                             <ul style="list-style-type: none"> <li>○ Tenured guide outfitter areas</li> <li>○ Tenured guide outfitter infrastructure (e.g., cabins, trails)</li> <li>○ Tenured guide-outfitter harvest volumes and areas</li> <li>○ Tenured guide-outfitter operating and economic information</li> <li>○ Aboriginal participation in tenured guide outfitting operations</li> </ul> </li> </ul> <p>Public hunting data will be acquired from BCMOE hunter harvest data, studies on economic effects and value of resident hunting, wildlife studies, interviews with local rod and gun clubs, traditional land use studies, and other data as made available to the Proponent.</p>	Volume 3	Section 24.3	<a href="#">Page 24-10</a>

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	<p>Fishing data will be acquired from BCMOE licence sales, creel survey results (LGL 2010), regional angling surveys, fisheries studies, interviews with rod and gun clubs, traditional land use studies, and other data as made available to the Proponent.</p> <p>Trapping data will be acquired from trapper interviews, trapline tenure and harvest data from provincial government sources, and other information as made available to the Proponent.</p> <p>Data will be acquired from wildlife studies, BCMOE hunter harvest data, guide outfitter licence areas, Guide Outfitting Association of BC database, and studies on the economic effects and value of guided hunting, and other information as made available to the Proponent.</p>			
16.6.4 Potential Effects of the Project and Proposed Mitigation	<p>The EIS will assess how the Project has the potential to adversely affect the use of fish and wildlife resources. The potential to adversely affect harvest of fish and wildlife resources will be assessed by taking into account the potential for the Project to result in changes to the following key aspects:</p> <ul style="list-style-type: none"> <li>▪ Use of and access to hunting and fishing areas</li> <li>▪ Use of and access to trapline areas</li> <li>▪ Use of and access to guide outfitter areas</li> <li>▪ Tenured areas, and specific harvest areas within tenured areas, using spatial analysis</li> <li>▪ Availability of harvested species based on the results of the assessment of the potential effects of the Project on the VC, fish and fish habitat, and on the VC wildlife resources</li> </ul> <p>Should potential adverse effects be identified, the potential mitigation measures will be identified and will include a description of how the mitigation measures can address the potential adverse effects.</p> <p>The EIS will describe project residual effects, and cumulative effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.</p>	Volume 3	<p>Section 24.4 <a href="#">Section 24.6</a> <a href="#">Section 24.7</a></p>	<p><a href="#">Page 24-29</a> <a href="#">Page 24-49</a> <a href="#">Page 24-54</a></p>

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16.6.5 Summary of Residual Effects on Harvest of Fish and Wildlife Resources	The EIS will summarize the residual effects in a table format as shown in Table 8.4.	Volume 3	Section 24.6	<a href="#">Page 24-49</a>
16.7 Outdoor Recreation and Tourism		Volume 3	Section 25	<a href="#">Page 25-1</a>
16.7.1 Outdoor Recreation and Tourism Spatial Boundaries	The Proponent proposes the LAA and RAA as described in Table 16.7.	Volume 3	Section 25.1.5.1	<a href="#">Page 25-6</a>
16.7.2 Outdoor Recreation and Tourism Temporal Boundaries	The EIS will describe the temporal boundaries, which will reflect the methodology described in Section 8 of these EIS Guidelines.	Volume 3	Section 25.1.5.2	<a href="#">Page 25-7</a>
16.7.3 Outdoor Recreation and Tourism Baseline	<p>The EIS will present an overview of current conditions related to outdoor recreation and tourism within the LAA as proposed by the Proponent, using the following key indicators:</p> <ul style="list-style-type: none"> <li>▪ Outdoor recreation features and amenities, including recreation sites, trails, parks, and proposed Peace River Boudreau Lakes protected area</li> <li>▪ Outdoor recreation use levels</li> <li>▪ Tourism features and amenities, including visitor centres, tourist accommodations, and attractions</li> <li>▪ Regional tourism visitor levels</li> <li>▪ Recreation activities undertaken on the land base, including activities, locations and seasonal nature of activities</li> <li>▪ Commercial outdoor recreation interests</li> </ul> <p>Spatial data will be collected through a GIS analysis using available provincial data and data from other sources. Information sources will include information from and interviews with government agencies, local recreation and tourism groups, and other information as made available to the Proponent.</p>	Volume 3	Section 25.3	<a href="#">Page 25-8</a>
16.7.4 Potential Effects of the	The EIS will assess how the Project has the potential to	Volume 3	Section 25.4	<a href="#">Page 25-22</a>

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Project and Proposed Mitigation	<p>adversely affect outdoor recreation and tourism.</p> <p>The potential to adversely affect outdoor recreation and tourism will be assessed by taking into account the potential for the Project to result in changes to the following key aspects:</p> <ul style="list-style-type: none"> <li>▪ Managed and unmanaged outdoor recreation sites, trails and parks, using spatial analysis</li> <li>▪ Visitor centres, tourist accommodations, tourist attractions, and regional visitor levels</li> <li>▪ Outdoor recreation use, outdoor recreation use levels, and regional tourism visitor levels</li> </ul> <p>Should potential adverse effects be identified, the potential mitigation measures will be identified and will include a description of how the mitigation measures can address the potential adverse effects.</p> <p>The EIS will describe project residual effects, and cumulative effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.</p>		<a href="#">Section 25.6</a> <a href="#">Section 25.7</a>	<a href="#">Page 25-39</a> <a href="#">Page 25-43</a>
16.7.5 Summary of Residual Effects on Outdoor Recreation and Tourism	The EIS will summarize the residual effects in a table format as shown in Table 8.4.	Volume 3	Section 25.6	<a href="#">Page 23-39</a>
16.8 Navigation		Volume 3	Section 26	<a href="#">Page 26-1</a>
16.8.1 Navigation Spatial Boundaries	The Proponent proposes the LAA and RAA as described in Table 16.8.	Volume 3	Section 26.1.5.1	<a href="#">Page 26-9</a>
16.8.2 Navigation Temporal Boundaries	The EIS will describe the temporal boundaries, which will reflect the methodology as proposed by the proponent described in Section 8 of these EIS Guidelines.	Volume 3	Section 26.1.5.2	<a href="#">Page 26-10</a>
16.8.3 Navigation Baseline	<p>The Proponent proposes to present an overview of current conditions related to navigation within the proposed LAA using the following key indicators:</p> <ul style="list-style-type: none"> <li>▪ Defined existing navigable waters using the methodology</li> </ul>	Volume 3	Section 26.3	<a href="#">Page 26-12</a>

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	<p>outlined in the River Classification System established for rivers in British Columbia</p> <ul style="list-style-type: none"> <li>▪ Current navigation use (e.g., vessel/boat traffic) of the defined navigable waters for transportation, recreation and commercial purposes</li> <li>▪ Air navigation routes and airports</li> <li>▪ The ice bridge at Shaftesbury and Tompkins Landing</li> </ul> <p>Information sources will include information from and interviews with government agencies, local boating groups, Aboriginal groups, and other information as made available to the Proponent.</p>			
16.8.4 Potential Effects of the Project and Proposed Mitigation	<p>The EIS will assess how the Project has the potential to adversely affect navigation.</p> <p>The EIS will contain sufficient detail to inform Transport Canada, under the <i>Navigable Waters Protection Act</i> Navigable Waters Works Regulations, of the impacts to navigation both up and downstream of the proposed dam and assist with determination of appropriate mitigation measures.</p> <p>The potential to adversely affect navigation will be assessed by taking into account the potential for the Project to result in changes to the following key aspects:</p> <ul style="list-style-type: none"> <li>▪ The navigability and navigation use of defined navigable waters existing, altered or created by the Project in the context of the operation of the W.A.C. Bennett Dam and the Peace Canyon Dam</li> <li>▪ Potential navigation hazards in waterways</li> <li>▪ Proposed public and navigation safety measures, the rationale for any restrictions, and the cause of any interferences to navigation</li> <li>▪ Micro-climate changes (Section 9.4.1) on aviation use at the Fort St. John airport</li> <li>▪ Visibility of structures and overhead wiring, and proposed</li> </ul>	Volume 3	<p>Section 26.4</p> <p><a href="#">Section 26.6</a></p> <p><a href="#">Section 26.7</a></p>	<p><a href="#">Page 26-14</a></p> <p><a href="#">Page 26-27</a></p> <p><a href="#">Page 26-33</a></p>

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	<p>temporary aviation restrictions</p> <ul style="list-style-type: none"> <li>▪ Operation of the Shaftesbury and Tompkins Landing ice bridges and associated ferry operations, using the results of the Proponent's proposed CRISSP ice model in Section 9.3.4</li> </ul> <p>Should potential adverse effects be identified, the potential mitigation measures will be identified and will include a description of how the mitigation measures can address the potential adverse effects.</p> <p>The EIS will describe project residual effects, and cumulative effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.</p>			
16.8.5 Summary of Residual Effects on Navigation	The EIS will summarize the residual effects in a table format as shown in Table 8.4.	Volume 3	Section 26.6	<a href="#">Page 26-27</a>
16.9 Visual Resources		Volume 3	Section 27	<a href="#">Page 27-1</a>
16.9.1 Visual Resources Spatial Boundaries	The Proponent proposes the LAA and RAA as described in Table 16.9.	Volume 3	Section 27.2.4.1	<a href="#">Page 27-3</a>
16.9.2 Visual Resources Temporal Boundaries	The EIS will describe the temporal boundaries, which will reflect the methodology described in Section 8 of these EIS Guidelines.	Volume 3	Section 27.2.4.2	<a href="#">Page 27-4</a>
16.9.3 Visual Resources Baseline	<p>The EIS will identify current visual resource conditions within the LAA as proposed by the Proponent that may be changed by the Project, using the following key indicators:</p> <ul style="list-style-type: none"> <li>▪ Representative visual receptor sites, considering provincial Visual Landscape Indicator (VLI) sites, and sites identified during field reconnaissance, that offer views of the proposed reservoir and dam site</li> <li>▪ A public viewpoint of the river from Hudson's Hope, and from near the dam site</li> </ul> <p>For each site the baseline conditions will be characterised using a photomontage, with quantitative and descriptive information for visual sensitive units. The VLI classifies the provincial land base</p>	Volume 3	Section 27.4	<a href="#">Page 27-9</a>

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	into visually sensitive areas versus not visually sensitive areas and, for each visually sensitive unit in terms of its existing visual condition, visual absorption capability, biophysical and viewing characteristics, determines or recommends a visual sensitivity class. The provincial Visual Landscape Inventory receptor sites proposed for use in the baseline are shown in Table 16.10. The location and number of receptor sites will be confirmed by field reconnaissance to cover the main view opportunities.			
16.9.4 Potential Effects of the Project and Proposed Mitigation	<p>The EIS will assess how the Project has the potential to adversely affect visual resources.</p> <p>The potential to adversely affect visual resources will be assessed by taking into account the potential for the Project to result in changes to the following key indicators:</p> <ul style="list-style-type: none"> <li>▪ The visibility of project features from selected receptor sites using GIS-based viewshed modelling proposed by the Proponent</li> <li>▪ Scenic values predicted using photomontages and assessed according to the Visual Impact Assessment Guidebook's visual impact summary form (BCMOF, 2001).</li> </ul> <p>Should potential adverse effects be identified, the potential mitigation measures will be identified and will include a description of how the mitigation measures can address the potential adverse effects.</p> <p>The EIS will describe project residual effects, and cumulative effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.</p>	Volume 3	<a href="#">Section 27.5</a> <a href="#">Section 27.7</a> <a href="#">Section 27.8</a>	<a href="#">Page 27-11</a> <a href="#">Page 27-17</a> <a href="#">Page 27-23</a>
16.9.5 Summary of Residual Effects on Visual Resources	The EIS will summarize the residual effects in a table format as shown in Table 8.4.	Volume 3	Section 27.7	<a href="#">Page 27-17</a>
17 Social Effects Assessment	The EIS will summarize the social effects based on the methodology described in Section 8 of these EIS Guidelines. Technical data will inform the social effects assessment. The	Volume 4	Sections 28 to 31	<a href="#">Page 28-1 to -23</a> <a href="#">Page 29-1 to -38</a> <a href="#">Page 30-1 to -66</a>



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	interests of Aboriginal groups will be presented in the EIS in accordance with Section 15 and Section 20 of these EIS Guidelines. Where Aboriginal groups have identified interests in a VC, the Proponent will incorporate additional baseline information as made available.			<a href="#">Page 31-1 to -48</a>
17.1 Valued Component Scoping and Rationale	Social considerations include potential adverse effects of the Project on the workforce, on local population, housing and community services, including health, emergency, education and transportation. Table 17.1 outlines the Proponent's proposed rationale for the selection of social VCs.	Volume 4	Sections 28 to 31	<a href="#">Page 28-1</a> <a href="#">Page 29-1</a> <a href="#">Page 30-1</a> <a href="#">Page 31-1</a>
17.2 Population and Demographics		Volume 4	Section 28	<a href="#">Page 28-1</a>
17.2.1 Population and Demographics Spatial Boundaries	The Proponent proposes the LAA and RAA as described in Table 17.2.	Volume 4	Section 28.1.5.1	<a href="#">Page 28-4</a>
17.2.2 Population and Demographics Temporal Boundaries	The EIS will describe the temporal boundaries, which will reflect the methodology described in Section 8 of these EIS Guidelines.	Volume 4	Section 28.1.5.2	<a href="#">Page 28-5</a>
17.2.3 Population and Demographics Baseline	The Proponent proposes to present an overview of current baseline and forecast population and demographic characteristics within the proposed LAA, using the following key indicators: <ul style="list-style-type: none"> <li>▪ Population numbers (gender, age profile, labour force participation)</li> <li>▪ Household number and demographic characteristics, including marital status and dependents</li> </ul> Information sources will include published studies and statistics, and information made available to the Proponent from local, regional and provincial organizations and governments. Information sources will include historic and most currently available census data and population forecasts.	Volume 4	Section 28.3	<a href="#">Page 28-7</a>
17.2.4 Potential Effects of the Project and Proposed	The EIS will assess how the Project has the potential to adversely affect population and demographics.	Volume 4	Section 28.4 <a href="#">Section 28.5</a>	<a href="#">Page 28-11</a> <a href="#">Page 28-16</a>

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Mitigation	<p>The potential to adversely affect population and demographics will be assessed by taking into account the potential for the Project to result in changes to the following key aspects:</p> <ul style="list-style-type: none"> <li>▪ The Peace River Regional District population, with specific reference to the City of Fort St. John</li> <li>▪ The results of the assessment of the Project on the labour market will be used to assess the effects on population and demographics</li> </ul> <p>Should potential adverse effects be identified, the potential mitigation measures will be identified and will include a description of how the mitigation measures can address the potential adverse effects.</p> <p>The EIS will describe project residual effects, and cumulative effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.</p>		<a href="#">Section 28.6</a>	<a href="#">Page 28-22</a>
17.2.5 Summary of Residual Effects on Population and Demographics	The EIS will summarize the residual effects in a table format as shown in Table 8.4.	Volume 4	Section 28.5	<a href="#">Page 28-16</a>
17.3 Housing		Volume 4	Section 29	<a href="#">Page 29-1</a>
17.3.1 Housing Spatial Boundaries	The Proponent proposes the LAA and RAA as described in Table 17.3.	Volume 4	Section 29.1.5.1	<a href="#">Page 29-4</a>
17.3.2 Housing Temporal Boundaries	The EIS will describe the temporal boundaries, which will reflect the methodology described in Section 8 of these EIS Guidelines.	Volume 4	Section 29.1.5.2	<a href="#">Page 29-5</a>
17.3.3 Housing Baseline	<p>The EIS will describe housing baseline conditions within the LAA as proposed by the Proponent, using the following key indicators:</p> <ul style="list-style-type: none"> <li>▪ Occupancy and vacancy rates</li> <li>▪ Occupancy costs</li> <li>▪ Multiple Listing Service activity (BC Stats 2011c)</li> <li>▪ Residential construction activity</li> <li>▪ Planned housing developments</li> </ul>	Volume 4	Section 29.3	<a href="#">Page 29-7</a>

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	<ul style="list-style-type: none"> <li>▪ Land zoned and available for housing development</li> </ul> <p>Information sources will include published studies and statistics, and information made available to the Proponent from the private sector, local, regional and provincial organizations and governments.</p>			
17.3.4 Potential Effects of the Project and Proposed Mitigation	<p>The EIS will assess how the Project has the potential to adversely affect housing.</p> <p>The potential to adversely affect housing will be assessed by taking into account the potential for the Project to result in changes to the following key aspects:</p> <ul style="list-style-type: none"> <li>▪ The demand for housing, with specific reference to the City of Fort St. John</li> <li>▪ The assessment of the Project on the labour market and on Population and Demographics will be used to assess the effects on housing</li> <li>▪ Specific plans by the Proponent to directly provide worker accommodation</li> </ul> <p>Should potential adverse effects be identified, the potential mitigation measures will be identified and will include a description of how the mitigation measures can address the potential adverse effects.</p> <p>The EIS will describe project residual effects, and cumulative effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.</p>	Volume 4	<p>Section 29.4</p> <p><a href="#">Section 29.6</a></p> <p><a href="#">Section 29.7</a></p>	<p><a href="#">Page 29-21</a></p> <p><a href="#">Page 29-30</a></p> <p><a href="#">Page 29-35</a></p>
17.3.5 Summary of Residual Effects on Housing	The EIS will summarize the residual effects in a table format as shown in Table 8.4.	Volume 4	Section 29.6	<a href="#">Page 29-30</a>
17.4 Community Infrastructure and Services		Volume 4	Section 30	<a href="#">Page 30-1</a>
17.4.1 Community Infrastructure and	The Proponent proposes the LAA and RAA as described in Table 17.4.	Volume 4	Section 30.1.5.1	<a href="#">Page 30-7</a>

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Services Spatial Boundaries				
17.4.2 Community Infrastructure and Services Temporal Boundaries	The EIS will describe the temporal boundaries, which will reflect the methodology described in Section 8 of these EIS Guidelines.	Volume 4	Section 30.1.5.2	<a href="#">Page 30-8</a>
17.4.3 Community Infrastructure and Services Baseline	<p>The EIS will describe the capacity, statistics of, and approved plans for community infrastructure and services, using the following key indicators:</p> <ul style="list-style-type: none"> <li>▪ Community Services – recreation and leisure facilities, sewer and water services</li> <li>▪ Emergency Services – police, court, fire protection, ambulance services and provincial emergency planning</li> <li>▪ Education Services – public schools, private schools, post-secondary institutions</li> <li>▪ Health and Social Services – vital statistics, medical service expenditures, medical and dental facilities, practitioner numbers and services</li> </ul> <p>Information sources will include published studies and statistics, and information made available to the Proponent from the private sector, local, regional and provincial organizations and governments.</p>	Volume 4	Section 30.3	<a href="#">Page 30-11</a>
17.4.4 Potential Effects of the Project and Proposed Mitigation	<p>The EIS will assess how the Project has the potential to adversely affect community infrastructure and services. The potential to adversely affect community infrastructure and services will be assessed by taking into account the potential for the Project to result in changes to the following key aspects:</p> <ul style="list-style-type: none"> <li>▪ The demand for or provision of community, emergency, education, and health and social services and facilities</li> <li>▪ Specific displacement or effects to infrastructure, such as sewer and water systems</li> <li>▪ The results of the assessment of the Project on population</li> </ul>	Volume 4	Section 30.4 <a href="#">Section 30.5</a> <a href="#">Section 30.6</a>	<a href="#">Page 30-38</a> <a href="#">Page 30-53</a> <a href="#">Page 30-58</a>

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	<p>and demographics will be used to assess the effects on community infrastructure and services</p> <p>Should potential adverse effects be identified, the potential mitigation measures will be identified and will include a description of how the mitigation measures can address the potential adverse effects.</p> <p>The EIS will describe project residual effects, and cumulative effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.</p>			
17.4.5 Summary of Residual Effects on Community Infrastructure and Services	The EIS will summarize the residual effects in a table format as shown in Table 8.4.	Volume 4	Section 30.5	<a href="#">Page 30-53</a>
17.5 Transportation		Volume 4	Section 31	<a href="#">Page 31-1</a>
17.5.1 Transportation Spatial Boundaries	The Proponent proposes the LAA and RAA as described in Table 17.5.	Volume 4	Section 31.1.5.1	<a href="#">Page 31-7</a>
17.5.2 Transportation Temporal Boundaries	The EIS will describe the temporal boundaries, which will reflect the methodology described in Section 8 of these EIS Guidelines.	Volume 4	Section 31.1.5.2	<a href="#">Page 31-8</a>
17.5.3 Transportation Baseline	<p>The EIS will describe current road and rail transportation conditions, using the following key indicators:</p> <ul style="list-style-type: none"> <li>▪ Road traffic volumes</li> <li>▪ Road traffic counts</li> <li>▪ Road accident rates</li> <li>▪ Regional Road restrictions</li> <li>▪ Rail movements</li> </ul> <p>Information sources will include published studies and statistics, and information made available to the Proponent from the private sector, local, regional and provincial organizations and governments, as well as traffic counts conducted by the Proponent.</p>	Volume 4	Section 31.3	<a href="#">Page 31-10</a>

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17.5.4 Potential Effects of the Project and Proposed Mitigation	<p>The EIS will assess how the Project has the potential to adversely affect transportation.</p> <p>The potential to adversely affect transportation will be assessed by taking into account the potential for the Project to result in changes to the following key aspects:</p> <ul style="list-style-type: none"> <li>▪ Road and rail transportation in the LAA as proposed by the Proponent</li> <li>▪ The need to develop and use regional road and rail transportation routes for the movement of equipment, materials and people</li> <li>▪ Specific transportation plans proposed by the Proponent</li> <li>▪ Local road and rail traffic forecasts of vehicle and rail movements, with specific reference to intersections near the City of Fort St. John, and to specific rail sidings and yards</li> <li>▪ The results of the assessment of the Project on population and demographics, the workforce accommodation plan, and assumptions about workforce shift schedules during construction will be used to assess the effects on transportation</li> </ul> <p>Should potential adverse effects be identified, the potential mitigation measures will be identified and will include a description of how the mitigation measures can address the potential adverse effects.</p> <p>The EIS will describe project residual effects, and cumulative effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.</p>	Volume 4	Section 31.4 <a href="#">Section 31-6</a> <a href="#">Section 31.7</a>	<a href="#">Page 31-17</a> <a href="#">Page 31-39</a> <a href="#">Page 31-46</a>
17.5.5 Summary of Residual Effects on Transportation	The EIS will summarize the residual effects in a table format as shown in Table 8.4.	Volume 4	Section 31.6	<a href="#">Page 31-39</a>
18 Heritage Resources Effects Assessment	The EIS will summarize the potential adverse effects of the Project on heritage resources, including physical and cultural heritage resources, and any structure, site or thing that is of	Volume 4	Section 32	<a href="#">Page 32-1</a>

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	<p>historical, archaeological, paleontological or architectural significance.</p> <p>Technical data for physical and cultural heritage resources will inform the effects assessment on the heritage resources VC. The interests of Aboriginal groups, including intangible heritage resources, will be presented in the EIS in accordance with Section 20 of these EIS Guidelines. Where Aboriginal groups have identified interests in a VC, the Proponent will incorporate additional baseline information as made available.</p> <p>The EIS assessment should be informed by the Canadian Environmental Assessment Agency "Reference Guide: Assessing Environmental Effects on Physical and Cultural Heritage Resources (April 1996)".</p>			
18.1 Valued Component Scoping and Rationale	The heritage resource VC includes paleontological, historical and archaeological sites, and the Proponent has proposed the rationale for its selection is described in Table 18.1. The selected VC for heritage resources has an identified interaction with the Project and there is a legal requirement to address potential adverse effects on heritage resources.	Volume 4	Section 32	<a href="#">Page 32-1</a>
18.2 Heritage Resources		Volume 4	Section 32	<a href="#">Page 32-1</a>
18.2.1 Heritage Resources Spatial Boundaries	The Proponent proposes the LAA and RAA as described in Table 18.2.	Volume 4	Section 32.1.6.1	<a href="#">Page 32-14</a>
18.2.2 Heritage Resources Temporal Boundaries	The EIS will describe the temporal boundaries, which will reflect the methodology described in Section 8 of these EIS Guidelines.	Volume 4	Section 32.1.6.2	<a href="#">Page 32-14</a>

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18.2.3 Heritage Resources Baseline	<p>The EIS will describe location and nature of known heritage resources that could be impacted by the project. The proponent proposed this description to be within the LAA.</p> <p>Baseline data will be acquired through literature reviews of published and unpublished records, interviews with stakeholders, and inventory field work. Interviews and literature reviews will identify cultural heritage resources from various sources of information including, but not limited to, Aboriginal communities, academic and research institutions, professional societies and organizations, land use plans, and local citizens or associations involved in the area of heritage conservation and protection.</p> <p>Archaeological and historical site inventory field work will include surface and subsurface inspections, completed in accordance with British Columbia Archaeological Impact Assessment Guidelines (BCMNR 1998:13) and permits issued under the <i>Heritage Conservation Act</i>. Paleontological field work will include surface inspections and specimen collection, completed in accordance with standard practice for the paleontological impact assessment, including development of a geologically based paleontological sensitivity map to guide field investigations.</p> <p>The significance of archaeological and historical resources will be determined using criteria set out in the British Columbia Archaeological Impact Assessment Guidelines (BCMNR 1998:13). Categories of significance include scientific, public, ethnic, historic and economic. The developing BC Fossil Management Framework (BCMNR 2010) will guide the significance evaluation of paleontological resources.</p>	Volume 4	Section 32.2	<a href="#">Page 32-14</a>
18.2.4 Potential Effects of the Project and Proposed Mitigation	<p>The EIS will assess how the Project has the potential to adversely affect heritage resources.</p> <p>The potential to adversely affect heritage resources will be assessed by taking into account the potential for the Project to result in changes to the following key aspects:</p> <ul style="list-style-type: none"> <li>▪ Disturbing heritage sites and features</li> <li>▪ Disturbing elements essential to the heritage character of</li> </ul>	Volume 4	<a href="#">Section 32.3</a> <a href="#">Section 32.4</a> <a href="#">Section 32.5</a>	<a href="#">Page 32-14</a> <a href="#">Page 32-53</a> <a href="#">Page 32-65</a>



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	<p>features</p> <ul style="list-style-type: none"> <li>▪ Disturbing artifacts, features, human remains and fossils</li> <li>▪ Hindering or increasing access to sites and destroying contextual information (Davis et al. 2004; Williams and Corfield 2003)</li> <li>▪ Other relevant considerations raised by Aboriginal groups</li> </ul> <p>Should potential adverse effects be identified, the potential mitigation measures will be identified and will include a description of how the mitigation measures can address the potential adverse effects.</p> <p>The EIS will describe project residual effects, and cumulative effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.</p>			
18.2.5 Summary of Residual Effects on Heritage Resources	The EIS will summarize the residual effects in a table format as shown in Table 8.4.	Volume 4	Section 32.4	<a href="#">Page 32-53</a>
19 Health Effects Assessment	The EIS will summarize the human health effects based on the methodology described in Section 8 of these EIS Guidelines. Technical data will inform the effects assessment on human health. The interests of Aboriginal groups will be presented in the EIS in accordance with Section 15 and Section 20 of these EIS Guidelines. Where Aboriginal groups have identified interests in a VC, the Proponent will incorporate additional baseline information as made available.	Volume 4	Section 33	<a href="#">Page 33-1</a>
19.1 Valued Component Scoping and Rationale	The health VC and Proponent's rationale for its selection is described in Table 19.1. The selected VC is based on health values with potential interaction with the Project, regulatory requirements, and health assessment guidelines (e.g., HC 2010a, HC 2010b, HC 2011).	Volume 4	Section 33	<a href="#">Page 33-1</a>
19.2 Human Health		Volume 4	Section 33	<a href="#">Page 33-1</a>
19.2.1 Human Health Spatial	The Proponent proposes the LAA and RAA as described in	Volume 4	Section 33.1.5.1	<a href="#">Page 33-15</a>

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Boundaries	Table 19.2. A map characterizing the location of known human receptors will be included in the EIS.			
19.2.2 Human Health Temporal Boundaries	The EIS will describe the temporal boundaries, which will reflect the methodology described in Section 8 of these EIS Guidelines.	Volume 4	Section 33.1.5.2	<a href="#">Page 33-16</a>
19.2.3 Human Health Baseline	The EIS will describe the current baseline data for human health indicators using information provided in technical data reports on air quality, water quality, noise, electric and magnetic fields, and methylmercury. The baseline data will include the identification of human health receptor locations.	Volume 4	Section 33.3	<a href="#">Page 33-25</a>
19.2.4 Potential Effects of the Project and Proposed Mitigation	<p>The EIS will assess how the Project has the potential to adversely affect human health.</p> <p>The potential to adversely affect human health will be assessed by taking into account the potential for the Project to result in changes to the following key aspects:</p> <ul style="list-style-type: none"> <li>▪ Ambient air quality</li> <li>▪ Potable and recreational water quality</li> <li>▪ Noise and vibration</li> <li>▪ Electric and magnetic fields</li> <li>▪ Country Foods, including reduced consumption and methylmercury concentrations in fish consumed by humans</li> </ul> <p>Should potential adverse effects be identified, the potential mitigation measures will be identified and will include a description of how the mitigation measures can address the potential adverse effects.</p> <p>The EIS will describe project residual effects, and cumulative effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.</p>	Volume 4	Section 33.4 <a href="#">Section 33.6</a> <a href="#">Section 33.7</a>	<a href="#">Page 33-38</a> <a href="#">Page 33-67</a> <a href="#">Page 33-67</a>
19.2.5 Summary Residual Effects on Human Health	The EIS will summarize the residual effects in table format as shown in Table 8.4.	Volume 4	Section 33.6	<a href="#">Page 33-67</a>

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20 Asserted or Established Aboriginal Rights and Treaty Rights, Aboriginal Interests and Information Requirements	<p>The EIS will contain an assessment of the potential adverse impacts of the Project the exercise of asserted or established Aboriginal rights and treaty rights.</p> <p>The EIS will provide the Proponent’s understanding of:</p> <ul style="list-style-type: none"> <li>▪ How the environment is valued by each potentially affected Aboriginal group for current use of lands and resources for traditional purposes, including activities conducted in the exercise of asserted or established Aboriginal rights and treaty rights, and how that current use may be affected by the project to the extent that this information does not duplicate the information provided pursuant to Section 15 of the EIS Guidelines</li> <li>▪ The asserted or established Aboriginal rights and treaty rights held by each potentially affected Aboriginal group</li> </ul>	Volume 5	Section 34	<a href="#">Page 34-1</a>

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20.1 Aboriginal Groups	<p>The Proponent must consult with the Aboriginal groups that have the potential to be adversely affected by the Project.</p> <p>Treaty 8 First Nation Signatories:</p> <p>BC:</p> <ul style="list-style-type: none"> <li>▪ Doig River First Nation</li> <li>▪ Halfway River First Nation</li> <li>▪ Prophet River First Nation</li> <li>▪ Saulneau First Nations</li> <li>▪ West Moberly First Nations</li> <li>▪ Fort Nelson First Nation</li> <li>▪ Blueberry River First Nations</li> <li>▪ McLeod Lake First Nation</li> </ul> <p>Alberta:</p> <ul style="list-style-type: none"> <li>▪ Athabasca Chipewyan First Nation</li> <li>▪ Beaver First Nation</li> <li>▪ Dene Tha' First Nation</li> <li>▪ Duncan's First Nation</li> <li>▪ Horse Lake First Nation</li> <li>▪ Little Red River Cree Nation</li> <li>▪ Mikisew Cree First Nation</li> <li>▪ Smith's Landing First Nation</li> <li>▪ Sturgeon Lake Cree Nation</li> <li>▪ Tallcree First Nation</li> <li>▪ Woodland Cree First Nation</li> </ul> <p>Northwest Territories:</p> <ul style="list-style-type: none"> <li>▪ Deninu K'ue First Nation</li> <li>▪ Salt River First Nation</li> </ul> <p>Métis</p>	Volume 5	Section 34.1	<a href="#">Page 34-1</a>

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	<ul style="list-style-type: none"> <li>▪ Métis Nation of Alberta – Zone 6</li> <li>▪ Paddle Prairie Métis Settlement Society</li> <li>▪ Fort Chipewyan Métis Association</li> <li>▪ Northwest Territory Métis Nation</li> <li>▪ Métis Nation of British Columbia (Canada only)</li> <li>▪ Kelly Lake Métis Settlement Society (Canada only)</li> </ul> <p>BC First Nations:</p> <ul style="list-style-type: none"> <li>▪ Kwadacha First Nation</li> <li>▪ Tsay Keh Dene First Nation</li> </ul> <p>Should the Proponent have knowledge of potential adverse impacts to an Aboriginal group not appearing on the above list, the Proponent should bring this to the attention of the Agency and the BCEAO at the earliest opportunity.</p>			
20.2 Aboriginal Groups Background Information	<p>The EIS will:</p> <ul style="list-style-type: none"> <li>▪ Identify Aboriginal groups whose asserted or established Aboriginal rights and treaty rights and Aboriginal interests are potentially affected by the Project</li> <li>▪ Provide background information for each potentially affected Aboriginal group identified in Section 20.1 to the extent that information is made available to the Proponent by the Aboriginal groups, or that may be publicly available. This will include:               <ul style="list-style-type: none"> <li>○ A map of the Aboriginal group's traditional territory</li> <li>○ Information related to ethnography, language, land use setting and planning, governance and economy</li> </ul> </li> </ul>	Volume 5	Section 34.2	<a href="#">Page 34-2</a>

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20.3 Asserted or Established Aboriginal Rights and Treaty Rights	The EIS will: <ul style="list-style-type: none"> <li>▪ Identify past, current and reasonably anticipated future use of lands and resources by Aboriginal groups for traditional purposes that may be adversely affected by the project to the extent that this information does not duplicate the information provided pursuant to Section 15 of the EIS Guidelines</li> <li>▪ Identify any asserted or established Aboriginal rights and treaty rights of Aboriginal groups who may be adversely impacted by the project</li> <li>▪ Assess potential adverse impacts of the Project on the exercise of asserted or established Aboriginal rights and treaty rights identified above</li> </ul>	Volume 5	Section 34.3	<a href="#">Page 34-2</a>
20.4 Aboriginal Accommodation	This section will describe the measures identified to mitigate/accommodate the potential adverse impacts of the project described in Section 20.3 on the asserted or established Aboriginal rights and treaty rights. Accommodation measures should be written as specific commitments that clearly describe how the Proponent intends to implement them. This description will include a summary of: <ul style="list-style-type: none"> <li>▪ Measures to avoid, reduce or otherwise mitigate potential adverse impacts on the exercise of asserted or established Aboriginal rights and treaty rights identified in Section 20.3</li> <li>▪ Specific suggestions raised by Aboriginal groups for measures to avoid, reduce or otherwise mitigate the potential adverse impacts of the project on asserted or established Aboriginal rights and treaty rights in relation to environmental effects</li> <li>▪ Environmental mitigation measures identified that also serve to avoid, reduce or otherwise mitigate potential adverse impacts on asserted or established Aboriginal rights and treaty rights.</li> </ul>	Volume 5	Section 34.4	<a href="#">Page 34-18</a>
20.5 Outstanding Aboriginal Issues	This section will describe the potential adverse impacts on potential or established Aboriginal and Treaty rights that have not	Volume 5	Section 34.5	<a href="#">Page 34-22</a>

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	been mitigated/accommodated as part of the environmental assessment and associated consultations with Aboriginal groups. This includes potential adverse impacts on asserted or established Aboriginal rights and treaty rights that may result from the residual and cumulative environmental effects			
20.6 Other Interests of Aboriginal Groups	<p>The EIS will:</p> <ul style="list-style-type: none"> <li>▪ Identify interests that Aboriginal groups may have with respect to potential social, economic, health, and physical and cultural heritage effects of the Project</li> <li>▪ Describe how the potential effects on those interests have been considered in the assessment of the potential adverse effects of the Project on VCs or otherwise</li> <li>▪ Describe the Proponent's approach to building capacity, for example opportunities for Aboriginal employment, contracting, and business development</li> </ul>	Volume 5	Section 34.6	<a href="#">Page 34-23</a>
20.7 Aboriginal Consultation and Engagement	<p>The EIS will:</p> <ul style="list-style-type: none"> <li>▪ Identify any Impact Benefit Agreements that have been concluded by the time the EIS is submitted</li> <li>▪ Describe consultation and engagement methods, including specific consultation agreements entered into between the Proponent and Aboriginal groups, and opportunities provided to Aboriginal groups to identify rights, interests and concerns related to the Project, if this information is not contained in Section 7.2</li> </ul>	Volume 5	Section 34.7	<a href="#">Page 34-27</a>
20.8 Aboriginal Summary	The EIS will provide a summary of the Proponent's understanding of the Aboriginal groups' asserted or established Aboriginal rights and treaty rights, and other Aboriginal interests potentially impacted by, and concerns with respect to, the Project. The summary will also provide the Proponent's understanding of the potential adverse effects of the Project on those asserted or established Aboriginal rights and treaty rights and interests. The Proponent will provide a copy of the summary to Aboriginal	Volume 5	Section 34.8	<a href="#">Page 34-29</a>

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	groups.			
21 Summary of Proposed Environmental Management Plans	<p>The EIS shall include a commitment by the Proponent to implement EMPs should the project proceed. The Proponent has proposed the following:</p> <p>The EIS will describe the framework for environmental management to be implemented during construction and operation to mitigate potential adverse effects. The framework will include:</p> <ul style="list-style-type: none"> <li>▪ The Proponents' environmental policies</li> <li>▪ Statutory requirements</li> <li>▪ Objectives and voluntary commitments</li> <li>▪ Relevant human resource plans</li> <li>▪ Environmental compliance monitoring</li> <li>▪ Mitigation and environmental protection measures</li> <li>▪ Contingency planning for accidents</li> </ul> <p>The framework, in the form of an annotated outline, will be presented in the EIS for each Environment Management Plan (EMP). Annotated outlines will be provided for the following EMPs:</p> <p>Construction Safety Management Plans</p> <ul style="list-style-type: none"> <li>▪ Emergency Response Plan</li> <li>▪ Fire Hazard and Abatement Plan</li> <li>▪ Public Safety Management Plan</li> <li>▪ Worker Safety and Health Management Plan</li> </ul> <p>Construction Environmental Management Plans</p> <ul style="list-style-type: none"> <li>▪ Acid Rock Drainage Management Plan</li> <li>▪ Air Quality Management Plan</li> <li>▪ Archaeological and Heritage Resources Management Plan</li> <li>▪ Blasting Management Plan</li> <li>▪ Borrow and Quarry Sites Reclamation Plan</li> </ul>	Volume 5	Section 35	



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	<ul style="list-style-type: none"> <li>▪ Communication Plan: Construction</li> <li>▪ Construction Waste Management Plan</li> <li>▪ Contaminated Sites Management Plan</li> <li>▪ Dust Control Plan</li> <li>▪ Environmental Training Management Plan</li> <li>▪ Erosion Prevention and Sediment Control Plan</li> <li>▪ Fisheries and Aquatic Habitat Management Plan</li> <li>▪ Groundwater Protection Plan</li> <li>▪ Hazardous Waste Management Plan</li> <li>▪ Ice Management Plan</li> <li>▪ Noise and Vibration Management Plan</li> <li>▪ Reservoir, Transmission Line and Road Clearing Plans</li> <li>▪ Soil Management, Site Restoration and Re-Vegetation Plan</li> <li>▪ Solid Waste Management Reduction and Recycling Plan</li> <li>▪ Surface Water Quality Protection Plan</li> <li>▪ Traffic Management Plan</li> <li>▪ Wildlife Management Plan</li> <li>▪ Vegetation and Invasive Plant Management Plan</li> </ul> <p>Operational Safety Management Plans</p> <ul style="list-style-type: none"> <li>▪ Emergency Response Plan</li> <li>▪ Public Safety Management Plan</li> <li>▪ Worker Safety and Health Management Plan</li> <li>▪ Reservoir Shoreline Monitoring and Management Plan</li> </ul> <p>Operational Environmental Management Plans</p> <ul style="list-style-type: none"> <li>▪ Hazardous Materials Management Plan</li> <li>▪ Ice Management Plan</li> <li>▪ Materials Management Plan</li> <li>▪ Vegetation Management Plan</li> </ul>			

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	<ul style="list-style-type: none"> <li>▪ Waste Management Plan</li> <li>▪ Water Management Plan</li> </ul> <p>The Emergency Response Plans for construction and operations and the Environmental Management plans will address contingency and response planning for the accidents and malfunctions identified in the EIS.</p>			
22 Compliance Reporting	The EIS will describe the reporting structure as identified in the environmental management plans and conditions.	Volume 5	Section 36	<a href="#">Page 36-1</a>
23 Requirements for the Federal Environmental Assessment	<p>Federal requirements of the environmental assessment of the Project are addressed in various sections of these EIS Guidelines. Table 23.1 describes how the federal requirements will be addressed in the EIS.</p> <p><b>Changes to the environment</b></p> <p>Section 5 of CEAA describes specific categories of direct and indirect environmental effects that must be considered in the EA. However, to be able to assess these categories of environmental effects, a complete understanding of the changes the project will cause to the environment is required, including changes that are directly linked or necessarily incidental to any federal decisions that would permit the project to be carried out.</p> <p><b>Changes to components of the environment within federal jurisdiction</b></p> <p>The EIS will include a section that summarises those changes that may be caused by the project on the components of the environment listed in paragraph 5(1)(a) of CEAA, namely fish and fish habitat, aquatic species and migratory birds.</p> <p>Changes to the environment that would occur on federal or transboundary lands</p> <p>The EIS will include a section that summarises any change the project may cause to the environment that may occur on federal lands or lands outside the province in which the project is to be located (including outside of Canada).</p> <p><b>Changes to the environment that are directly linked or</b></p>	Volume 5	Section 37	<a href="#">Page 37-1</a>

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	<p><b>necessarily incidental to federal decisions</b> In situations where the project requires one or more federal decisions the EIS will also include a section that describes any change that may be caused by the project on the environment that is directly linked or necessarily incidental to these decisions.</p> <p><b>Effects of changes to the environment on Aboriginal peoples</b> The EIS will describe the effects of any changes the project may cause to the environment, with respect to Aboriginal peoples, on health and socio-economic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes, or any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.</p> <p><b>Effects of changes to the environment that are directly linked or necessarily incidental to federal decisions</b> In situations where the EIS has identified changes to the environment that are directly linked or necessarily incidental to federal decisions identified the EIS will also include a section that describes the effects of these changes on health and socio-economic conditions, physical and cultural heritage, or any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, other than as they pertain to Aboriginal peoples (who are considered in the previous section).</p>			
23.1 Effect of the Environment on the Project	<p>The EIS must take into account how local conditions and natural hazards, such as severe and/or extreme weather conditions and external events could adversely affect the project and how this in turn could result in impacts to the environment (e.g., extreme environmental conditions result in malfunctions and accidental events). These events should be considered in different probability patterns (i.e. five-year flood vs. 100-year flood). Longer-term effects of climate change must also be discussed. This discussion should include a description of climate data and models used.</p> <p>The EIS must provide details of any planning, design and</p>	Volume 5	Section 37.1	<a href="#">Page 37-2</a>

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	<p>construction strategies intended to minimize the potential effects of the environment on the project.</p> <p>The Proponent proposes to assess the following environmental factors: extreme weather events; sedimentation of the reservoir; seismic activity; wildfire; flooding; low flow or drought conditions; slope stability and mass wasting events; and climate change.</p>			
23.2 Potential Accidents and Malfunctions	<p>The EIS will review all parts of the Project to identify those that have the potential, through accident or malfunction, to adversely affect the environment. This must include an identification of the magnitude of an accident and/or malfunction.</p> <p>The EIS will identify potential accidents and malfunctions that could occur during the construction and operations phases. For example:</p> <p>Construction phase:</p> <ul style="list-style-type: none"> <li>▪ Release or spill of chemicals or hazardous materials; containment pond leakage or failure; cofferdam failure; sediment control failure; fire and explosion</li> </ul> <p>Operations phase:</p> <ul style="list-style-type: none"> <li>▪ Dam safety incidents; release or spill of chemicals or hazardous materials; fire and explosion</li> </ul> <p>The Proponent proposes to describe the effects of a dam break at Site C by tabulating the expected flood arrival time and water surface elevation at downstream communities along the Peace River to Peace Point, Alberta until the estimated water surface is within the estimated 200 year flood level (the level used in British Columbia to delineate natural flood hazard areas).</p> <p>Dam break analyses will be described for:</p> <ul style="list-style-type: none"> <li>▪ Construction – failure of the main upstream cofferdam</li> <li>▪ Operations – failure of the earthfill dam</li> </ul> <p>The EIS will describe the Emergency Preparedness Plans that will be prepared for the cofferdams and the completed facility. Emergency Preparedness Plans will follow the Canadian Dam Association’s Dam Safety Guidelines and comply with the BC</p>	Volume 5	Section 37.2	<a href="#">Page 37-47</a>

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	<p>Dam Safety Regulations. The EIS will commit to submitting the Emergency Preparedness Plans to the BC Comptroller of Water Rights (as the regulator responsible for dam safety in BC). The Emergency Preparedness Plans for the cofferdams will be submitted prior to diversion of the river through the diversion tunnel, and the Emergency Preparedness Plans for the dam would be submitted prior to reservoir filling. In both cases the Emergency Preparedness Plans will be submitted with sufficient time to make changes that the BC Comptroller of Water Rights may require prior to impounding water.</p> <p>The EIS will identify the potential effects of accidents and malfunctions on Valued Components.</p> <p>The likelihood and circumstances under which these events could occur will be assessed along with the potential adverse effects that may result from such events.</p> <p>The EIS will provide an overview of the measures that would be implemented to reduce the likelihood and those that could be implemented to mitigate the potential occurrence of an accident or malfunction.</p>			
23.3 Cumulative Environmental Effects	The EIS will provide an assessment of the potential cumulative adverse effects that are likely to result from the Project in combination with other physical activities that have been or will be carried out.	Volume 5	Section 37.3	<a href="#">Page 37-76</a>
23.4 Capacity of Renewable Resources	The EIS will describe the type of renewable resources that may be significantly adversely affected by the Project.	Volume 5	Section 37.4	<a href="#">Page 37-82</a>
23.5 Requirements of any Follow-up Program	A Follow-up Program is designed to verify the accuracy of the effects assessment and to determine the effectiveness of the measures implemented to mitigate the adverse effects of the project. The EIS should describe the proposed Follow-up Program in sufficient detail to allow independent judgment as to the likelihood that it will deliver the type, quantity and quality of information required to reliably verify predicted effects (or absence of them), and to confirm both the assumptions and the effectiveness of mitigation. The Follow-up Program should	Volume 5	Section 37.5	<a href="#">Page 37-84</a>

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	<p>include specific commitments that clearly describe how the Proponent intends to implement them.</p> <p>The Follow-up Program must be designed to incorporate baseline data, compliance data (such as established benchmarks, regulatory documents, standards or guidelines) and real time data (such as observed data gathered in the field). The Proponent must describe the reporting methods to be used, including frequency, methods and format.</p> <p>The effects predictions, assumptions and mitigation actions that are to be tested in the follow-up program must be converted into field-testable monitoring objectives. The monitoring design must include a statistical evaluation of the adequacy of existing baseline data to provide a benchmark against which to test for project effects, and the need for any additional pre-construction or pre-operational monitoring to establish a firmer project baseline.</p> <p>The Follow-up Program shall include a schedule indicating the frequency and duration of effects monitoring.</p> <p>The description of the Follow-up Program must include any contingency procedures/plans or other adaptive management provisions as a means of addressing unforeseen effects or for correcting exceedances as required to comply or to conform to benchmarks, regulatory standards or guidelines.</p> <p>The Follow up Program must also be designed to monitor the implementation of mitigation/accommodation measures resulting from Aboriginal consultation conducted during the EA, including:</p> <ul style="list-style-type: none"> <li>▪ Verifying predictions of environmental effects with respect to Aboriginal peoples, as well as residual impacts that could not be mitigated/accommodated within the context of the EA</li> <li>▪ Determining the effectiveness of mitigation/accommodation measures as they relate to environmental effects with respect to Aboriginal peoples in order to modify or implement new measures where required</li> <li>▪ Supporting the implementation of adaptive management</li> </ul>			

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	measures to address previously unanticipated adverse environmental effects with respect to Aboriginal peoples or unanticipated adverse impacts to asserted or established Aboriginal rights and treaty rights			
24 Summary of Potential Residual Effects of the Project	The EIS will summarize each residual environmental, economic, social, heritage or health effect in a table format as shown below.	Volume 5	Section 38	<a href="#">Page 38-1</a>
25 Complete List of Mitigation and Follow-up Measures	The EIS will provide a complete list of mitigation measures contained in the EIS that may be necessary to conclude that a potential adverse effect is either unlikely to result from the Project or unlikely to be significant. The EIS will provide a complete list of follow up measures identified in the EIS.	Volume 5	Section 39	<a href="#">Page 39-1</a>
26 Conclusion	The EIS will provide the Proponent's conclusion as to the potential benefits of the Project and whether the Project will result in any significant adverse effects	Volume 5	Section 40	<a href="#">Page 40-1</a>