

JOHN HART GENERATING STATION REPLACEMENT PROJECT

Schedule 8

Environmental Obligations

SCHEDULE 8
ENVIRONMENTAL OBLIGATIONS

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SCHEDULE 8

ENVIRONMENTAL OBLIGATIONS

PART A – ENVIRONMENTAL OBLIGATIONS APPLICABLE TO CONSTRUCTION AND DESIGN WORK FROM EFFECTIVE DATE TO THE TOTAL COMPLETION DATE

Part A of this Schedule 8 [*Environmental Obligations*] applies to all Design and Construction during the period from the Effective Date to the Total Completion Date.

1. GENERAL PROVISIONS

1.1 Environmental Reference Documents

Project Co shall ensure that the Project, the Facility, the Project Work and the Site (to the extent impacted or affected by the Project Work) comply with, to the extent applicable thereto, all environmental guidelines, policies, standards and practices issued by or on behalf of any Governmental Authority, or by BC Hydro as set out in this Schedule, including each of the following reference documents (“**Environmental Reference Documents**”):

- (a) Land Development Guidelines for the Protection of Aquatic Habitat, published by the Department of Fisheries and Oceans and the British Columbia Ministry of Environment, Lands and Parks in May 1992;
- (b) Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters, prepared by D. G. Wright and G. E. Hopky in 1998, Canadian Technical Report of Fisheries and Aquatic Sciences 2107.;
- (c) Standards and Best Practices for Instream Works, published by the British Columbia Ministry of Water, Land and Air Protection in March 2004;
- (d) Terms and Conditions for Changes in and about a Stream, specified by British Columbia Ministry of Forests, Lands and Natural Resource Operations Habitat Officer, West Coast Region (Vancouver Island and Gulf Islands) in February 2011;
- (e) A Field Guide to Fuel Handling, Transportation & Storage, 3rd Edition, published by the Ministry of Water, Land and Air Protection in 2002;
- (f) Ambient Water Quality Criteria for pH: Technical Appendix, prepared by C. J. P. McKean and N. K. Nagpal for the British Columbia Ministry of Environment in June 1991;
- (g) Water Quality Criteria for Nitrogen (Nitrate, Nitrite and Ammonia): Technical Appendix, prepared by R. N. Nordin and L. W. Pommen for the British Columbia Ministry of Environment in November 1986;
- (h) Derivation of Water Quality Guidelines to Protect Aquatic Life in British Columbia, prepared by C. Meays for the Ministry of Environment in 2009;
- (i) Phosphorus: Canadian Guidance Framework for the Management of Freshwater Systems, published by Canadian Council of Ministers of the Environment in 2004;
- (j) Towards a Water Quality Guideline for Temperature in the Province of British Columbia, prepared by G. G. Oliver and L. E. Fidler for the Ministry of Environment, Lands and Parks in March 2001;

- (k) Ambient Water Quality Guidelines (Criteria) for Turbidity, Suspended and Benthic Sediment: Overview Report, prepared by H. J. Singleton for the British Columbia Ministry of Environment in 2001;
- (l) Progression and Severity of Gas Bubble Trauma in Juvenile Salmonids by M. G. Mesa, L. K. Weiland and A. G. Maule in Transactions of the American Fisheries Society, Volume 129, Pages 174-185 in 2000;
- (m) Canadian Water Quality Guidelines for the Protection of Aquatic Life: Introduction, published by Canadian Council of Ministers of the Environment in 1999;
- (n) Ambient Water Quality Guidelines for Sulphate: Overview Report, published by the British Columbia Ministry of Environment in 2000;
- (o) Canadian Water Quality Guidelines for the Protection of Aquatic Life, published by Canadian Council of Resource and Environment Ministers in 1987;
- (p) Canadian Water Quality Guidelines for the Protection of Aquatic Life: Cadmium, published by Canadian Council of Ministers of the Environment;
- (q) Guidelines for Canadian Drinking Water Quality, published by Health Canada in 2010;
- (r) Campbell River Interim Flow Management Strategy, prepared by the Campbell River Hydro/Fisheries Advisory Committee in 1997;
- (s) BC Hydro Standard for Environmental Incident Reporting, June 16, 2011;
- (t) Policy for the Management of Fish Habitat, published by the Department of Fisheries and Oceans in 1986;
- (u) Practitioners Guide to Habitat Compensation, published on the Internet by Fisheries and Oceans Canada;
- (v) Fisheries and Oceans Canada Pacific Region Operational Statements for British Columbia and Yukon regarding:
 - (1) Clear-Span Bridges;
 - (2) Temporary Ford Stream Crossing;
 - (3) Bridge Maintenance;
 - (4) Culvert Maintenance;
 - (5) Maintenance of Riparian Vegetation in Existing Rights-of-Way;
 - (6) Overhead Line Construction;
- (w) Riparian Areas and Revegetation, published on the Internet by Fisheries and Oceans Canada;
- (x) Long-term Aquatic Monitoring Guidelines for New and Upgraded Hydroelectric Projects, prepared by F. J. A. Lewis, T. Hatfield and A.J. Harwood for Fisheries and Oceans Canada in 2011;

- (y) Freshwater Intake End-of-Pipe Fish Screen Guideline, published by the Department of Fisheries and Oceans in 1995;
- (z) Development and Evaluation of a Model to Predict Effects of Buried Underwater Blasting Charges on Fish Populations in Shallow Water Areas, by D.R. Munday for the Department of Fisheries and Oceans in 1986;
- (aa) Environmental Assessment Best Practice Guide for Wildlife at Risk in Canada, First Edition, prepared by P. Lynch-Stewart for the Canadian Wildlife Service of Environment Canada in 2004;
- (bb) Active Migratory Bird Nest Surveys, Advice to Industry, prepared by the Canadian Wildlife Service of Environment Canada (undated).
- (cc) Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities, prepared for Environment Canada by Cheminfo Services Inc. and dated March 2005;
- (dd) A User's Guide to Working In and Around Water: Understanding the Regulation under British Columbia's *Water Act*, published by the British Columbia Ministry of Environment originally issued on May 18, 2005 and last updated on March 12, 2009;
- (ee) Fish-Stream Crossing Guidebook, published by the BC Ministry of Forests, Lands and Natural Resource Operations, B.C. Ministry of Environment and Fisheries and Oceans Canada in March 2012;
- (ff) Riparian Management Area Guidebook, published by the British Columbia Ministry of Forests in December 1995;
- (gg) Develop with Care 2012: Environmental Guidelines for Urban and Rural Land Development in British Columbia, published by the British Columbia Ministry of Environmental in March 2012;
- (hh) Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia, prepared for the British Columbia Ministry of Water, Land and Air Protection by Biolinx Environmental Research Ltd. and E. Wind Consulting and dated November 2004;
- (ii) Inventory Methods for Pond-breeding Amphibians and Painted Turtle, Standards for Components of British Columbia's Biodiversity No. 37, published by the Resource Inventory Committee in 1998.
- (jj) Pest Management Plan for Invasive Alien Plant and Noxious Weed Control on Provincial Crown Lands within the South Coastal Mainland of British Columbia, prepared by the British Columbia Ministry of Transportation and Infrastructure, British Columbia Ministry of Environment, British Columbia Ministry of Forests, Lands and Natural Resource Operations and the British Columbia Ministry of Agriculture in May 2011;
- (kk) Best Practices for Managing Invasive Plants on Roadsides, 2010 edition, prepared for the British Columbia Ministry of Transportation and Infrastructure by the Invasive Plant Council of British Columbia in 2010;
- (ll) Best Management Practices for Raptor Conservation during Urban and Rural Land Development in British Columbia, prepared by Mike W. Demarchi and Michael D. Bentley

and revised by Lennart Sopuck for the British Columbia Ministry of Environment on March 31, 2005;

- (mm) Archaeological Impact Assessment Guidelines published by the British Columbia Ministry of Small Business, Tourism and Culture in 1989 as revised in October 1998;
- (nn) Culturally Modified Trees of British Columbia, published by the British Columbia Ministry of Small Business, Tourism and Culture;
- (oo) Standard for Terrestrial Ecosystem Mapping in British Columbia, prepared by the Resources Inventory Committee, Terrestrial Ecosystems Task Force, Ecosystems Working Group in 1998;
- (pp) Field Manual for Describing Terrestrial Ecosystems, prepared by the British Columbia Ministry of Forests and Range and British Columbia Ministry of Environment in 2010;
- (qq) Invasive Alien Plant Program Reference Guide, Part 1, Module 1.5, prepared by the Ministry of Forests, Lands and Natural Resource Operations, Range Branch in 2010;
- (rr) Coastal Xeric Plant Species List, best management practice document prepared by BC Hydro in May 2003;
- (ss) Native Wetland Plant List (Coastal), best management practice document prepared by BC Hydro in May 2003;
- (tt) Installing Landscaping around Electrical Facilities, best management practice document prepared by BC Hydro in May 2003;
- (uu) Landscape, best management practice document prepared by BC Hydro (undated).

Unless expressly stated otherwise, each reference in this Schedule 8 [*Environmental Obligations*] to an Environmental Reference Document or to any other code, standard, specification or guideline published by any Governmental Authority or by BC Hydro shall be deemed to mean the latest version of that Environmental Reference Document, code, standard, specification or guideline regardless of any publication date stated in this Schedule 8 [*Environmental Obligations*].

Any change or modification made to an Environmental Reference Document after the Financial Submission Date: (1) by a Governmental Authority, other than as a result of an act or omission of a Project Co Person, shall be treated as if it is a Change in Law; and (2) by BC Hydro, shall be treated as if it is a change to a BC Hydro Policy and a Change pursuant to Section 7.1 [*Changes Required by BC Hydro*] and Schedule 14 [*Changes*].

Where more than one Environmental Reference Document is applicable to a particular circumstance, event or condition, Project Co must comply with the most stringent requirement in the Environmental Reference Documents.

1.2 Project Co's Environmental Obligations

- (a) Project Co shall comply with, observe, satisfy and perform all obligations set out in this Schedule 8 [*Environmental Obligations*], obligations relating to environmental personnel in Schedule 3 [*Roles and Representatives*], obligations relating to environmental matters in Schedules 5 [*Design and Construction Protocols*], 6 [*Design and Construction Specifications*] and 7 [*Services*], obligations relating to environmental quality management in Schedule 9 [*Quality Management*] and all other environmental obligations with respect to the Project, the Facility, the Project Work and the Site arising

under this Agreement or applicable Environmental Law, except only those specifically identified in this Agreement, including in the Table of Environmental Commitments attached as Appendix 8B [*Project Environmental Commitments*], as being the obligation of BC Hydro ("**Project Co's Environmental Obligations**").

- (b) Regardless of whether or not expressly so stated in any provision of this Agreement, Project Co shall cause all Project Co Persons to comply with all of Project Co's Environmental Obligations and Project Co shall be responsible for any failure by a Project Co Person to comply with any of Project Co's Environmental Obligations.
- (c) Project Co shall perform all Project Work in compliance with:
 - (1) all applicable Environmental Laws, Permits (including the BC Hydro Permits) and Environmental Reference Documents;
 - (2) the specifications, terms, conditions, commitments, requirements and mitigation measures set out in the EA; and
 - (3) the commitments set forth in the Table of Project Environmental Commitments attached as Appendix 8B [*Project Environmental Commitments*] (a summary document only) and as further explained by, and subject to the specific and more detailed requirements set forth in the EA, which is specifically incorporated by reference and made part of this Agreement for this purpose (collectively, the "**Project Environmental Commitments**").
- (d) For greater certainty, notwithstanding that the responsibility for any environmental obligation may not specifically be identified in this Agreement as an obligation of Project Co, Project Co shall be responsible, at its own cost and risk, for complying (and will cause all Project Co Persons to comply) with all environmental obligations arising out of, associated with or that must be addressed with respect to the Project, the Facility, the Project Work and the Site, excluding however those obligations specifically identified in this Agreement, including in the Table of Environmental Commitments attached as Appendix 8B [*Project Environmental Commitments*], as being the obligation of BC Hydro.

1.3 Project Environmental Commitments

- (a) Without limiting the generality of Section 1.2 [*Project Co's Environmental Obligations*] in this Schedule, Project Co shall at all times comply (and will cause all Project Co Persons to comply) with and shall do or not omit to do anything necessary to ensure satisfaction of, and will be responsible for, the activities set forth in the Project Environmental Commitments, with the exception only of those commitments or responsibilities that are expressly identified in Appendix 8B [*Project Environmental Commitments*] to this Schedule as the responsibility of BC Hydro or not the responsibility of Project Co.
- (b) Where BC Hydro proposes on its own initiative to make any amendment to the Project Environmental Commitments the provisions of Section 7 [*Changes, Minor Works and Innovation Proposals*] of this Agreement shall apply.

1.4 Environmental Impacts

- (a) Project Co shall ensure that environmental impacts from the Project, the Facility, the Project Work and the Site are kept within the magnitude and extent identified and described in the EA. Where that is not possible, Project Co shall submit to BC Hydro's Representative in accordance with the Consent Procedure a request to make an application to amend any Permit or this Schedule 8 [*Environmental Obligations*] as required to address the change in environmental impacts. The request must be

accompanied by information that establishes: (a) that it is not possible to keep the environmental impacts within the extent identified in the EA, (b) the additional impact that will be caused, (c) the additional impact has been minimized to the extent feasible, and (d) the additional impact does not constitute a breach of any Law or Permit or create any material risk of liability or other adverse impact on BC Hydro.

- (b) Project Co shall be responsible for addressing the mitigation and compensation of all Project, Facility, Project Work and Site environmental impacts, except where BC Hydro identifies otherwise in writing or as otherwise expressly provided in this Agreement.

1.5 Standard of Performance and Environmental Best Management Practices

Project Co shall ensure that the Project Work is performed to a standard that is at least equivalent to the standard of environmental performance reflected in BC Hydro's Environmental Responsibility Policy. Project Co shall use Environmental Best Management Practices to achieve that standard of environmental performance. Project Co shall ensure that the Project Work, the Project and the Facility complies with the requirements of Environmental Best Management Practices, and will not do or omit or permit to be done or omitted anything which is inconsistent with Environmental Best Management Practices.

For purposes of this Schedule 8 [*Environmental Obligations*], "*Environmental Best Management Practices*" means the then current environmental plans, policies and practices of companies, including BC Hydro and other Crown corporations, in British Columbia operating in similar conditions and dealing with similar environmental situations and regulatory requirements, and their work activities, practices, decisions, expenditures and strategies, that would be considered to be the most effective in the circumstances in prudently addressing the environmental management issue or matter in question based on a high standard of environmental protection and compliance with any environmental guidelines, policies, standards and practices issued or established by any Governmental Authority from time to time, including the Environmental Reference Documents.

1.6 Environmental Permits

According to the terms of Section 4.19 of the Project Agreement [*Regulatory Approvals and Permits*], Project Co shall:

- (a) obtain all Permits required under Environmental Laws in connection with the Project, the Facility, the Project Work and the Site, including the Fisheries Authorizations and all Permits necessary for Project Co to fulfill Project Co's Environmental Obligations.
- (b) without limiting any of its other obligations under this Agreement, observe and comply with the standards, practices, requirements, terms and conditions of all Permits issued under Environmental Laws, including the BC Hydro Permits.
- (c) be responsible for satisfying all requirements (including assisting BC Hydro as the lead in community consultations) for hearings, reviews, studies, reports and initial and ongoing mitigation and compensation in connection with or resulting from all Permits issued under Environmental Laws, including the BC Hydro Permits.
- (d) subject to Section 4.19 of the Project Agreement [*Regulatory Approvals and Permits*], where Project Co is unable to apply for any change or amendment to any Permit that is Project Co's obligation or responsibility to obtain under this Section 1.6 without obtaining information or administrative assistance from BC Hydro or without submitting the application for such change or amendment in the name of BC Hydro, BC Hydro shall at Project Co's cost provide or cause to be provided such information or administrative assistance as Project Co may reasonably request and as BC Hydro may reasonably be

able to provide and has the legal ability to provide under existing Laws all within the timeframes required to complete such applications as communicated to BC Hydro by Project Co acting reasonably, and, if requested, shall execute or cause to be executed such applications as are required to be in the name of BC Hydro to assist Project Co in obtaining such change or amendment.

1.7 Communication with Environmental Authorities

- (a) Project Co shall within two Business Days after receipt of a written request from BC Hydro's Representative, provide to BC Hydro's Representative such written authorizations as BC Hydro may require from time to time in order to make inquiries of any Environmental Authorities regarding Project Co or Project Co's compliance with Environmental Laws.
- (b) Except in the case of a spill or other similar environmental emergency that must be reported promptly under Environmental Laws and without limiting the requirements in Section 4.19 of the Project Agreement [*Regulatory Approvals and Permits*] with respect to certain communications with Governmental Authorities, Project Co shall forward to BC Hydro's Representative for information only a copy of any report, submission, application or other document relating to environmental matters on or at or affecting the Site, the Project, the Facility or the Project Work that is filed or lodged with or otherwise provided to any Environmental Authority not less than 5 days prior to sending such materials to the Environmental Authority.
- (c) Project Co shall comply with the requirements of Section 4.19 of the Project Agreement [*Regulatory Approvals and Permits*].
- (d) If Project Co submits an application to the Ministry of Forests, Lands and Natural Resource Operations to destroy a nest protected under Section 34(b) of the *Wildlife Act* (British Columbia), Project Co must concurrently provide notification to Identified First Nations (with a copy to BC Hydro) of their intent to obtain this permit. Such notification must include a copy of the application.

1.8 Environmental Records

Project Co shall maintain in accordance with the Records Management Protocol all documents and records (including all Permits) relating to environmental matters with respect to the Project, the Facility, the Site, and the performance of the Project Work, including all records required to be maintained pursuant to the CEMP, but excluding any documents or records retained in the possession of BC Hydro.

1.9 Public Consultation and First Nations Consultation

Without limiting Project Co's other consultation obligations under this Agreement, Project Co. shall provide support to, and participate with, BC Hydro in: (a) public consultation in accordance with Schedule 11 [*Communication and Consultation*], including organizing and holding field reconnaissance meetings with Interested Parties from time to time with a view to ensuring that Interested Parties' concerns are clearly communicated to Project Co., and (b) First Nations consultation, if any, in accordance with Section 4.19 of the Project Agreement [*Regulatory Approvals and Permits*] and Schedule 24 [*First Nations*], including with respect to the CEMP and the Fisheries Authorizations and any amendment, to the CEMP or the Fisheries Authorizations.

1.10 BC Hydro's Obligations

BC Hydro shall be responsible for the Project Environmental Commitments, or portions thereof, where BC Hydro is identified as the "Lead for Implementation" in Appendix 8B [*Project Environmental Commitments*].

2. ENVIRONMENTAL MANAGEMENT

2.1 Environmental Team

Project Co shall establish a team of personnel to address environmental issues and shall include, at a minimum, the following personnel on that team:

2.1.1 Environmental Director

Subject to subparagraph (f) below and the terms of Schedule 3 [*Roles and Responsibilities*]:

- (a) Project Co shall appoint an Environmental Director and the Environmental Director will, irrespective of such person's other responsibilities, have defined authority for ensuring the establishment and maintenance of the CEMP and auditing and reporting on the performance of the Project Work relative to the CEMP, Environmental Laws, the terms and conditions of all Permits under Environmental Laws, the Environmental Reference Documents and the requirements of this Schedule including the Project Environmental Commitments except those Project Environmental Commitments for which BC Hydro is expressly identified as the "Lead for Implementation" in Appendix 8B [*Project Environmental Commitments*].
- (b) The Environmental Director shall, as a minimum:
 - (i) have a bachelor degree or a higher degree in an appropriate field, such as biology, ecology, geography, environmental engineering or natural resources management;
 - (ii) be a registered member in good standing in British Columbia with an appropriate professional organization constituted under an Act, acting under that association's code of ethics and subject to disciplinary action by that association (examples of qualifying designations include R.P. Bio, P. Eng., P. Ag. P. Geo.); and
 - (iii) have experience managing fisheries issues and fisheries related issues in the design, construction and operation of large infrastructure projects and acting as Environmental Director on public sector projects involving a public – private partnership structure.
- (c) Project Co shall be responsible for ensuring that the Environmental Director acts only within the Environmental Director's area of expertise while fulfilling the role of Environmental Director and that, where an issue is outside the Environmental Director's expertise, the Environmental Director obtains assistance from another professional with appropriate expertise.
- (d) The Environmental Director shall be a Key Individual subject to the requirements of Section 2.3 [*Key Individuals*] in Schedule 3 [*Roles and Representatives*] and subparagraph (f) below.
- (e) Without limiting the generality of the foregoing, the job specification and responsibilities of the Environmental Director shall include the following:
 - (1) directing all aspects of Project Co's environmental program for the Project Work, including overseeing the environmental auditing program;

- (2) ensuring Project Co's Environmental Obligations are complied with in accordance with this Agreement;
 - (3) establishing and maintaining working relationships with relevant Environmental Authorities and Interested Parties,
 - (4) taking the lead role in internal environmental design reviews including development of mitigation and compensation proposals acceptable to BC Hydro's Representative and Environmental Authorities;
 - (5) liaising with BC Hydro's Representative and acting as the single point representative for Project Co on all matters relating to environmental management; and
 - (6) overseeing preparation and submission to BC Hydro's Representative of all reports required under the CEMP and all other reports required under this Schedule 8 [*Environmental Obligations*].
- (f) In accordance with and subject to the terms of Schedule 3 [*Roles and Responsibilities*] Project Co may combine the role and responsibilities of the Environmental Director with one of the other Key Individuals appointed by Project Co, and provided that at all times during the Construction Period: (i) a Key Individual appointed by Project Co will assume oversight responsibility for the foregoing matters; (ii) Project Co will have appointed and maintain in place at all times, the Environmental Manager as provided for in Section 2.1.2 below; and (iii) the Project Co appointee has the qualifications set out in subparagraph (b) above or has direct and timely access to other individuals who are Project Co Persons who do possess these qualifications.

2.1.2 Environmental Manager

Subject to subparagraph (g) below:

- (a) Project Co shall appoint an Environmental Manager and the Environmental Manager will, under the direction of the Environmental Director, have defined authority for ensuring the day-to-day implementation of the CEMP and auditing and reporting on the performance of the Project Work relative to the CEMP, Environmental Laws, the terms and conditions of all Permits under Environmental Laws, the Environmental Reference Documents and the requirements of this Schedule including the Project Environmental Commitments except those Project Environmental Commitments for which BC Hydro is expressly identified as the "Responsibility for Implementation" in Appendix 8B [*Project Environmental Commitments*].
- (b) The Environmental Manager shall, as a minimum:
 - (i) have a bachelor degree or a higher degree in an appropriate field, such as biology, ecology, geography, environmental engineering or natural resources management; and
 - (ii) be a registered member in good standing in British Columbia with an appropriate professional organization constituted under an Act, acting under that association's code of ethics and subject to disciplinary action by that association (examples of qualifying designations include R.P. Bio, P. Eng., P. Ag. P. Geo.).
- (c) Project Co shall be responsible for ensuring that the Environmental Manager acts only within the Environmental Manager's area of expertise while fulfilling the role of

Environmental Manager and that, where an issue is outside the Environmental Manager's expertise, the Environmental Manager obtains assistance from another professional with appropriate expertise.

- (d) The Environmental Manager will be a Key Individual subject to the requirements of Section 2.3 [*Key Individuals*] in Schedule 3 [*Roles and Representatives*] and to subparagraph (g) below.
- (e) Without limiting the generality of the foregoing, the job specification and responsibilities of the Environmental Manager shall include the following:
 - (1) managing all environmental issues associated with the Project Work on a day-to-day basis, including overseeing the environmental monitoring program;
 - (2) establishing and maintaining working relationships with relevant Environmental Authorities and Interested Parties;
 - (3) effective operation of the CEMP on a day-to-day basis; and
 - (4) ensuring Project Co's Environmental Obligations are complied with in accordance with this Agreement.
- (f) Project Co shall ensure that the Environmental Manager is on-Site a sufficient amount of time each week to demonstrate a working knowledge of the Site and the status of the Project Work and all environmental issues and conditions associated with the Project, the Project Work and the Facility.
- (g) During the Services Period the ongoing duties and responsibilities of the Environmental Manager may be combined with and performed by another Key Individual appointed by Project Co, provided that at all times during the Services Period: **(i)** one of the Key Individuals appointed by Project Co will assume oversight responsibility for the duties and functions of this role as set out above; **(ii)** the Project Co appointee has the qualifications set out in subparagraph (b) above or has direct and timely access to other individuals who are Project Co Persons who do possess these qualifications.

2.2 Environmental Specialists

Project Co shall have available, at all times during the Project Work, a multi-disciplinary team of qualified environmental specialists sufficient to ensure compliance by Project Co with Project Co's Environmental Obligations. The skills and experience of the environmental specialists must include, but shall not necessarily be limited to, the following:

- fisheries mitigation strategies for hydro-electric projects (including habitat compensation, entrainment and TGP);
- Hydraulic modelling and habitat modelling;
- Wildlife and vegetation ecology;
- Water quality;
- Archaeology; and
- Contaminated sites.

2.3 Environmental Monitor

At least 30 days prior to commencing Construction activities, Project Co shall retain a Person(s) with the qualifications set out in this Section ("**Environmental Monitor(s)**") to monitor environmental impacts from the Project, the Project Work and the Facility. The Environmental Monitor shall be independent from Project Co and any Project Co Person and shall, as a minimum, be an applied scientist or technologist, acting alone or together with another qualified environmental professional, and each person acting as an Environmental Monitor:

- (i) must be registered and in good standing in British Columbia with an appropriate professional organization constituted under an Act, acting under that association's code of ethics and subject to disciplinary action by that association; and
- (ii) must be acting within their area of expertise; or
- (iii) in each case, the combination of the individual's experience and formal education are sufficient to demonstrate that the individual is a working professional in their field of expertise.

Project Co shall within the CEMP provide a description of the duties (including the authority to order a halt to the Project Work) and reporting requirements of the Environmental Monitor(s). The description must include all functions required for the environmental monitoring required under the Project Environmental Commitments. Project Co shall ensure that all information and reports provided by the Environment Monitor(s) to Project Co are submitted to BC Hydro's Representative at the same time as the information and reports are submitted to Project Co.

For greater certainty, the Environmental Monitor appointed by Project Co; (a) is not required to perform its duties and provide services on a full time basis during the Construction Period or the Services Period; and (b) must be a separate Person and independent from the Environmental Monitor that BC Hydro intends to appoint and engage for the purposes of fulfilling the monitoring and reporting obligations BC Hydro may have under the *Water Act* (British Columbia) or as otherwise specified in the EA.

2.4 Environmental Plans and Reports

- (a) Project Co shall develop, implement, maintain, and update the plans, reports and certificates listed in Table 2.4 in accordance with the provisions of this Agreement applicable to each of the items listed in Table 2.4 and Project Co shall submit such plans, reports and certificates to BC Hydro by the due date specified in Table 2.4:

Table 2.4 Summary of Environmental Plans and Reports

Plan or Report Name	Due Date	Review Procedure (“RP”) or Consent Procedure (“CP”) under Schedule 2
Environmental Management Plan for the Construction	Within 90 days from the Effective Date	CP
Environmental Management Plan for the Commissioning Work	Not later than 6 months prior to the First Generating Unit Target Commercial Operation Date	CP
Environmental Management Plan for Decommissioning Work	Not later than 180 days prior to commencement of any on-Site physical activities that form part of the Decommissioning Work	CP
CEMP amendments and updates	As required under Section 2.5(c) in this Schedule or under the CEMP, and in any event not later than June 1 st annually	RP
Environmental Work Plans	Not later than 30 days prior to commencement of any activity for which an Environmental Work Plan is required as specified in this Schedule 8 or in the CEMP	RP
Environmental Monitoring Plan	Within 90 days from the Effective Date	CP
Environmental Quality Management Plan	As specified in Schedule 9	As specified in Schedule 9
Weekly Environmental Monitoring Reports	Within 7 days after the end of each week after the Project Work commences	RP
Monthly Environmental Reports	Within 7 days after the end of each month after the Project Work commences	RP
Annual Environmental Reports	By January 15 annually, provided that the last such report shall be delivered not less than 30 days prior to the end of the Term	RP

Plan or Report Name	Due Date	Review Procedure (“RP”) or Consent Procedure (“CP”) under Schedule 2
Annual Certificate of Compliance with Environmental Laws and Project Co’s Environmental Obligations	By January 31 annually and as otherwise requested by BC Hydro in accordance with this Schedule, provided that the last such certificate shall be delivered not less than 30 days prior to the end of the Term	RP
Independent Environmental Site Assessment, Environmental Audit, Environmental Reports and Test Results	Within 30 days after a request from BC Hydro in accordance with Section 2.4(j) of this Schedule	RP
Contaminated Soil Baseline Procedure	Not later than 60 days prior to the start of Construction activities	RP
Site-specific rehabilitation and revegetation plan that is prepared as a stand alone plan	By the date specified in Section 8.1 of this Schedule	RP
Drinking Water Management Plan	By the date specified in Section 9.4 of this Schedule	RP
Confirmation from Registered Professional Forester regarding vegetation clearing	Not less than 14 days before vegetation removal commences	RP
Plans required under Section 10	By the relevant date specified in Section 10 of this Schedule as applicable	RP or CP
Environmental Completion Report	Delivered as a chapter of the Final Design and Construction Report as specified in Schedule 5.	As specified in Schedule 5.
Environmental Management Plan for Services Period	Not less than 6 months prior to the First Generating Unit Target Commercial Operation Date	CP

- (b) The documents that are indicated in Table 2.4 of this Section to be subject to the Consent Procedure or the Review Procedure shall be submitted to BC Hydro’s Representative in accordance with the Consent Procedure or the Review Procedure, as the case may be, pursuant to Schedule 2 [*Review Procedure, Consent Procedure and Other Submittals*].

- (c) Project Co shall submit an Environmental Work Plan to BC Hydro's Representative not less than 30 days prior to entering into any location or commencing any activity for which an Environmental Work Plan is specified as a requirement under the CEMP or otherwise under this Schedule. Each Environmental Work Plan shall include, at a minimum, the following:
- (1) the activities and locations covered by the Environmental Work Plan;
 - (2) site and activity specific mitigation measures to prevent environmental damage from the activities covered by the Environmental Work Plan; and
 - (3) monitoring and testing that will be undertaken to ensure that mitigation measures are effective.
 - (4) drawings showing the locations covered by the Environmental Work Plan and the mitigation measures to be implemented;
 - (5) details regarding the construction techniques that will be used to ensure the work being conducted is consistent with the Permits, Laws, Project Environmental Commitments the CEMP and the requirements of this Schedule 8 [*Environmental Obligations*];
 - (6) sign-off by the Environmental Director.
- Project Co shall comply, and shall ensure that all Project Co Persons comply, with all Environmental Work Plans.
- (d) Project Co shall submit an environmental monitoring plan (the "**Environmental Monitoring Plan**") to BC Hydro's Representative within 90 days from the Effective Date. The Environmental Monitoring Plan shall include: (i) all of the monitoring requirements specified in the EA and the Project Environmental Commitments; and (ii) detailed monitoring plans, procedures and schedules sufficient to monitor, in accordance with Environmental Best Management Practices, the effectiveness of the mitigation measures implemented to address potential environmental effects of the Project Work, the Project and the Facility; and (iii) procedures and schedules for reporting the results of the environmental monitoring to BC Hydro and applicable Environmental Authorities as required under Environmental Laws or Permits. Project Co shall comply, and shall ensure that all Project Co Persons comply, with the Environmental Monitoring Plan.
- (e) Project Co shall prepare a weekly environmental report for each week after the Effective Date to the Total Completion Date and shall submit each such report to BC Hydro's Representative by the day specified in Table 2.4. Weekly environmental reports shall include, as a minimum, the following information:
- (1) name(s) of environmental monitor(s);
 - (2) period covered by report;
 - (3) date report submitted;
 - (4) report recipient(s);
 - (5) contractor(s) undertaking work during the reporting period;
 - (6) overall weather conditions during the reporting period;

- (7) description, photos and status of Project Work activities by area,
 - (8) list of meetings and any other material communications with any Environmental Authority (both those that occurred during the reporting period and any that are scheduled or anticipated in future reporting periods) and a summary of key issues discussed or expected to be discussed;
 - (9) a copy of any application for a Permit, report or other submission filed with any Environmental Authority during the reporting period, an updated list of all Permits issued under Environmental Laws for the Project Work and a schedule for obtaining any additional Permits required under Environmental Laws for the Project Work;
 - (10) status report regarding sediment and drainage management plans;
 - (11) description of outstanding environmental issues and/or non-compliance with Environmental Laws, Permits or other Project Co Environmental Obligations and corrective actions taken or that will be taken and a schedule for such actions;
 - (12) any issues or concerns raised by the Environmental Monitor and measures taken or that will be taken to address those issues or concerns; and
 - (13) water sampling data collected and results received during reporting period, including results of in-situ turbidity, dissolved oxygen and other water quality parameters as required by the Environmental Monitoring Plan, Environmental Authorities, Environmental Laws or Permits.
- (f) Project Co shall prepare a monthly environmental report for each month after the Effective Date to the end of the Term and shall submit each such report to BC Hydro's Representative by the day specified in Table 2.4 of this Section. Monthly environmental reports shall include, as a minimum, the following information:
- (1) a description of the key Project Work activities undertaken during the period and a schedule of future activities;
 - (2) a summary of key environmental issues identified or addressed during the reporting period, monitoring activities, mitigation measures (successes and failures), measures taken to address environmental impacts, and any failure by Project Co to comply with Project Co. Environmental Obligations and measures taken, or that will be taken, to address such failure and a schedule for such measures;
 - (3) a summary of environmental monitoring data collected and all results received during the reporting period, including water and soil sampling;
 - (4) a summary of any issues or concerns raised by the Environmental Monitor and measures taken or that will be taken to address those issues or concerns; and
 - (5) all notes (as an appendix) from meetings or key communications with Environmental Authorities, including action items;
 - (6) a list and summary of all environmental consultant reports received during the reporting period and a list of all environmental incident reports during the reporting period; and

- (7) a status report regarding implementation of all specific mitigation plans, including sediment and erosion control and drainage plans.
- (g) Project Co shall prepare an annual environmental report for each year or partial year after the Effective Date to the end of the Term and shall submit each such report to BC Hydro by the date specified in Table 2.4 of this Section. Annual environmental reports shall include, as a minimum, the following information:
 - (1) a description of the key Project Work activities undertaken by Project Co during the period covered by the report;
 - (2) a description of key environmental mitigation measures implemented, successes and failures of those mitigation measures and a list of all failures by Project Co to comply with Project Co Environmental Obligations and measures taken, or that will be taken, to address each such failure and a schedule for completion of any such measures;
 - (3) a description of how the Project Environmental Commitments are being complied with, or if they are not being complied with, the measures that Project Co is taking to rectify the failure;
 - (4) a schedule for implementing any Project Environmental Commitments that have not been satisfied or implemented.
 - (5) a description of outstanding environmental issues and/or non-compliance with Environmental Laws, Permits or other Project Co Environmental Obligations and corrective actions taken or that will be taken and a schedule for such actions;
 - (6) a summary of environmental monitoring data collected during the reporting period, including water and soil sampling, and an analysis of any trends within that data; and
 - (7) a summary of key issues discussed (in any manner whatsoever) with Environmental Authorities during the reporting period and measures taken to address any concerns raised by the Environmental Authorities.
- (h) Project Co shall, at the request of BC Hydro's Representative from time to time where there are reasonable grounds for making such request and in any event not less frequently than annually by the date specified in Table 2.4 of this Section, provide BC Hydro's Representative with a certificate signed by Project Co's Environmental Director certifying that Project Co has complied with all Environmental Laws and Permits and with all of Project Co's Environmental Obligations, providing evidence and documentation as reasonably required to demonstrate such compliance, or if any occurrence of non-compliance has taken place, providing full and complete particulars thereof and all documentation in connection therewith.
- (i) Project Co shall promptly provide BC Hydro's Representative with copies of all environmental site assessments, audits, reports and test results relating to the Site, the Project, the Facility or the Project Work including all assessments, audits, reports and tests conducted by or on behalf of or coming into the possession of Project Co at any time whether before or after the Effective Date.
- (j) Project Co shall, at the request of BC Hydro's Representative from time to time where there are reasonable grounds for making such request, obtain and submit to BC Hydro's Representative in accordance with the Review Procedure, from an independent environmental consultant (the identity of which has been accepted by BC Hydro's

Representative in accordance with the Consent Procedure), an environmental site assessment of the Facility and the Site (or any part or parts of any of the foregoing), including any testing required to determine whether any Contamination or Hazardous Substances is or are present, and/or an environmental compliance audit of the Project Work or the Facility. Compliance with any such request shall be at Project Co's own cost, including obtaining any additional investigations recommended by the environmental consultant.

2.5 Construction Environmental Management Plan

- (a) Project Co shall develop, implement, maintain and update the Construction Environmental Management Plan required under the Project Environmental Commitments by preparing and submitting the following three plans to BC Hydro's Representative in accordance with the Consent Procedure by the dates specified in Table 2.4 of this Schedule:
 - (i) an Environmental Management Plan for the Construction (the "**Construction CEMP**");
 - (ii) an Environmental Management Plan for the Commissioning Work (the "**Commissioning CEMP**"); and
 - (iii) an Environmental Management Plan for the Decommissioning Work (the "**Decommissioning CEMP**").

Each such plan shall be referred to individually as a "**CEMP**" and all such plans shall be collectively referred to the "**CEMP**" and the term "**CEMP**" includes all amendments to the CEMP made in accordance with this Schedule 8 [*Environmental Obligations*].

- (b) Project Co shall ensure that the CEMP:
 - (1) is consistent with the form of Environmental Management Plan prepared by BC Hydro dated December 2012;
 - (2) identifies roles and responsibilities of Project Co's environmental team that comply with, but are not necessarily limited to, the requirements specified in Sections 2.1 [*Environmental Team*] and 2.2 [*Environmental Specialists*] in this Schedule;
 - (3) identifies monitoring and reporting requirements and includes the information required under Section 2.3 [*Environmental Monitor*] in this Schedule with respect to the Environmental Monitor(s);
 - (4) addresses the full range of environmental issues associated with the Project Work and identifies actions and activities based on Environmental Best Management Practices that will be implemented during the Project Work to minimize to the extent feasible and to mitigate adverse environmental impacts from the Project, the Facility and the Project Work;
 - (5) contains all the component plans identified for the CEMP in the Project Environmental Commitments and otherwise contains all information contemplated for the CEMP in the EA;
 - (6) identifies measures that will be taken to ensure compliance with all of Project Co's Environmental Obligations and the Project Requirements;

- (7) describes the measures that will be implemented to restore and revegetate the Site and the schedule for completion of that work prior to the Total Completion Date
 - (8) identifies those activities and areas of the Site for which an Environmental Work Plan must be prepared and submitted pursuant to Section 2.4(c) [*Environmental Plans and Reports*] in this Schedule.
 - (9) contains sufficient detail to enable BC Hydro to conduct First Nations consultation with respect to the CEMP.
- (c) Project Co shall submit each CEMP to BC Hydro's Representative in accordance with the Consent Procedure. Notwithstanding Schedule 2 [*Review Procedure, Consent Procedure and Other Submittals*], BC Hydro shall within 14 days from the date of receipt of a CEMP, return a copy of the submittal to Project Co under subsection 5(a) [*Consent Procedure*] of Schedule 2 [*Review Procedure, Consent Procedure and Other Submittals*]. Project Co shall not submit a CEMP to any Environmental Authority or any other Person until BC Hydro has endorsed the CEMP as "accepted" or "conditionally accepted" in accordance with the Consent Procedure and, in the case of a "conditionally accepted" CEMP, Project Co has accepted the conditions in writing in accordance with the requirements of Schedule 2 [*Review Procedure, Consent Procedure and Other Submittals*] (the "**Acceptance Date**").

Within 10 days after the Acceptance Date, Project Co. shall submit the CEMP to appropriate Environmental Authorities as required under any Environmental Law or Permit or as otherwise directed by BC Hydro in writing and shall amend the CEMP based on comments received from those Environmental Authorities and shall submit the amended CEMP to BC Hydro for review in accordance with the Review Procedure, together with a description of all comments received from the Environmental Authorities.

- (d) Project Co. shall not:
- (i) except with the prior written consent of BC Hydro, undertake any physical work of any kind whatsoever on the Site until the Site Release Date. The "**Site Release Date**" is the day immediately following the date on which all of the following have occurred:
 - (A) Project Co has submitted the Construction CEMP to BC Hydro;
 - (B) the Acceptance Date has occurred in respect of the Construction CEMP, and
 - (C) BC Hydro has provided written notice to Project Co. that BC Hydro has completed First Nations consultation with respect to the Construction CEMP or that work may proceed.

If BC Hydro has not provided Project Co with written notice that First Nations consultation is complete with respect to the Construction CEMP or that work may proceed within 30 days after the Acceptance Date for the Construction CEMP, such failure will be deemed to be a Compensation Event subject to Section 8 [*Supervening Events*] of this Agreement;

- (ii) following the Site Release Date, undertake any physical work of any kind whatsoever that forms part of the Commissioning Work until the Commissioning Release Date has occurred. The “**Commissioning Release Date**” is the day immediately following the date on which all of the following have occurred:

- (A) Project Co has submitted the Commissioning CEMP to BC Hydro,
- (B) the Acceptance Date has occurred in respect of the Commissioning CEMP, and
- (C) BC Hydro has provided written notice to Project Co. that BC Hydro has completed First Nations consultation with respect to the Commissioning CEMP or that work may proceed.

If BC Hydro has not provided Project Co with written notice that First Nations consultation is complete with respect to the Commissioning CEMP or that work may proceed within 30 days after the Acceptance Date for the Commissioning CEMP, such failure will be deemed to be a Compensation Event subject to Section 8 [*Supervening Events*] of this Agreement;

- (iii) following the Site Release Date, undertake any physical work of any kind whatsoever that forms part of the Decommissioning Work until the Decommissioning Release Date has occurred. The “**Decommissioning Release Date**” is the day immediately following the date on which all of the following have occurred:

- (A) Project Co has submitted the Decommissioning CEMP to BC Hydro,
- (B) the Acceptance Date has occurred in respect of the Decommissioning CEMP, and
- (C) BC Hydro has provided written notice to Project Co. that BC Hydro has completed First Nations consultation with respect to the Decommissioning CEMP or that work may proceed.

If BC Hydro has not provided Project Co with written notice that First Nations consultation is complete with respect to the Decommissioning CEMP or that work may proceed within 30 days after the Acceptance Date for the Decommissioning CEMP, such failure will be deemed to be a Compensation Event subject to Section 8 [*Supervening Events*] of this Agreement. Project Co may subdivide the Decommissioning CEMP into two parts, one submitted with the Construction CEMP for part of the Decommissioning Work and the other submitted for the remainder of the Decommissioning Work prior to the date specified in Table 2.4 of this Schedule.

- (e) Project Co may at any time propose modifications or supplements to the CEMP if it determines such modifications or supplements to be appropriate and required for the protection of the environment by submitting the modification or supplement, as applicable, to BC Hydro for review in accordance with the Review Procedure.
- (f) Project Co shall:
- (i) in the event that: (A) a Change in Law; (B) any lawful order by a Governmental Authority; or (C) the EA; (D) the terms of any Permit, or (E) the Project Work schedule, Project Work or Facility conditions or any weather-dependent

contingency, requires a modification or supplement to the CEMP, promptly submit such modification or supplement to BC Hydro for review in accordance with the Review Procedure; and

- (ii) following the occurrence of any incident that was required to be reported to an Environmental Authority under any Environmental Law or Permit, assess the CEMP to determine if there are any defects or deficiencies in the CEMP and, if it determines there are defects or deficiencies in the CEMP, promptly submit to BC Hydro for review in accordance with the Review Procedure such modifications or supplements as are necessary to remedy such defect or deficiency.
 - (iii) amend the CEMP as required by written notice from BC Hydro following completion of First Nations consultation with respect to the CEMP and, within 15 days after receipt of such notice from BC Hydro, submit the amended CEMP to BC Hydro for review in accordance with the Review Procedure. If any amendment required by BC Hydro under this Section is a Change, the provisions of Section 7 [*Changes, Minor Works and Innovation Proposals*] of this Agreement shall apply to that Change.
- (g) Project Co shall submit all amendments to the CEMP simultaneously to BC Hydro's Representative in accordance with the Review Procedure and to any appropriate Environmental Authorities as required under any Environmental Law or Permit. Project Co acknowledges that BC Hydro may conduct First Nations consultation with respect to amendments to the CEMP as BC Hydro determines necessary in its discretion.
- (h) Project Co shall comply with, and shall ensure that all Project Co Persons comply with, the CEMP.

3. FISHERIES

3.1 General Requirements

Project Co shall conduct the Project Work and shall design and construct the Facility in a way that ensures that impacts to fish and fish habitat from the Project Work and the Facility will remain within the range identified in the EA, including the following (subject to Section 4.19 of the Project Agreement [*Regulatory Approvals and Permits*]):

- (a) undertaking all Project Work in a manner that complies with the federal *Fisheries Act*;
- (b) undertaking all Project Work in a manner that applies DFO's hierarchy of preferences for fish habitat impacts and mitigation;
- (c) obtaining and complying with the Fisheries Authorizations;
- (d) complying with the BC Hydro Fisheries Authorization;
- (e) providing BC Hydro with the information required to obtain the BC Hydro Fisheries Authorization;
- (f) offsetting any harmful alteration, disruption or destruction of fish habitat as defined in the *Fisheries Act* ("**HADD**") with compensation that is acceptable to DFO and maintaining the compensation habitat in accordance with the requirements specified by DFO;
- (g) upon receipt of a written notice from BC Hydro, designing and implementing mitigation measures agreed upon by BC Hydro and DFO to reduce fish entrainment at the Power

Intake. To the extent such mitigation measures constitute a Change, the provisions of Section 7 [*Changes, Minor Works and Innovation Proposals*] of this Agreement shall apply;

- (h) meeting performance specifications identified in Schedule 6 [*Design and Construction Specifications*] relating to flow split downstream of the Powerhouse and around First Island;
- (i) constructing the Bypass Systems in compliance with the requirements in Schedule 5 [*Design and Construction Protocols*] and Schedule 6 [*Design and Construction Specifications*];
- (j) conducting any in-water Project Work during the reduced risk instream work windows as specified in applicable Laws and Permits and Environmental Reference Documents unless permission is granted by Environmental Authorities to conduct work during other times; and
- (k) conducting Commissioning activities during periods and in a manner specified in the Project Environmental Commitments.

3.2 Fisheries Habitat Compensation

Except where otherwise expressly stated in this Agreement, and without limiting Section 1.4(b) [*Environmental Impacts*] or Section 1.6(c)(2) [*Environmental Impacts*] in this Schedule or any other provision of this Agreement with respect to Project Co's mitigation and compensation obligations, Project Co shall design and construct all compensation works required by DFO for any HADD caused by the Project, the Project Work or the Facility and shall conduct all post-construction monitoring and maintenance of fisheries compensation works, all in accordance with the terms of the Fisheries Authorizations, the BC Hydro Fisheries Authorization and any other requirements set out in the EA, the Project Environmental Commitments, and Environmental Laws and Permits, including posting any irrevocable letters of credit or other security required by DFO.

3.3 Fisheries Authorizations

- (a) Project Co shall not undertake any physical work of any kind whatsoever that requires a new authorization, or an amendment to an existing authorization, under section 35(2) of the *Fisheries Act* until the Fisheries Release Date has occurred. The "**Fisheries Release Date**" is the day immediately following the date on which all of the following have occurred:
 - (A) Project Co has submitted a copy of the application for such authorization or amendment to BC Hydro in accordance with Section 4.19 of the Project Agreement [*Regulatory Approvals and Permits*],
 - (B) BC Hydro has returned the application endorsed "received" or "received with comments" following completion of the Review Procedure and, where the application has been endorsed "received with comments", Project Co has accepted the comments in accordance with the requirements in Schedule 2 [*Review Procedure, Consent Procedure and Other Submittals*];
 - (C) BC Hydro has provided written notice to Project Co that BC Hydro has completed First Nations consultation, or that no further specific consultation is required, with respect to that application or that work may proceed; and

- (D) Project Co has obtained the authorization or the amendment to an existing authorization required for the work.

If BC Hydro has not provided Project Co with written notice that any required First Nations consultation is complete with respect to that application or that work may proceed by the date that is the later of: (E) 30 days after the application is endorsed "received" or "received with comments" following completion of the Review Procedure, and (F) the date on which Project Co obtains all Permits required for the work, including authorizations or amendments to existing authorizations under the *Fisheries Act*, such failure will be deemed to be a Compensation Event and will be subject to Section 8 [*Supervening Events*] of the Project Agreement.

- (b) Project Co shall amend the work that is the subject of the authorization or amendment described in Section 3.3(a) [*Fisheries Authorizations*] of this Schedule as required by written notice from BC Hydro based on comments received during First Nations consultation, if any, with respect to the application for the permit or permit amendment for that work and, within 15 days after receipt of such notice from BC Hydro, Project Co shall submit an amended permit application to BC Hydro for review in accordance with the Review Procedure. If any amendment required by BC Hydro under this Section is a Change, the provisions of Section 7 [*Changes, Minor Works and Innovation Proposals*] of this Agreement shall apply to that Change.

3.4 Confirmation of Fish Habitat Effects

Project Co is required under Section 4.19 [*Regulatory Approvals and Permits*] to submit to BC Hydro's Representative a copy of any proposed application to DFO for a Permit. Where a submission under Section 4.19 [*Regulatory Approvals and Permits*] relates to an application to DFO for a Permit to carry out Construction of the Facility, the submission under Section 4.19 [*Regulatory Approvals and Permits*] shall include:

- (a) a description of the reasonably estimated impact of the Facility on fish and fish habitat (both riparian and aquatic) based on the Final Design for the Facility;
- (b) a description of the expected indirect effects to fish habitat due to changes in river hydraulics. Those indirect effects must be confirmed using the Tailrace(s) and First Island Hydraulic Model described in Section 5.12 [*Preparation of Design Data*] in Schedule 5 [*Design and Construction Protocols*] and the habitat suitability index curves (HSI curves) used in the EA. The methodology used to confirm the indirect fish habitat effects must be consistent with the methodology and model extents used to determine those same effects in the EA. The results of the modelling must be included in the submission under Section 4.19 [*Regulatory Approvals and Permits*];
- (c) a description of expected post-construction water level changes in the lower Campbell River during a full Powerhouse load rejection. The expected water level changes must be modelled using the Tailrace(s) and First Island Hydraulic Model described in Section 5.12 [*Preparation of Design Data*] in Schedule 5 [*Design and Construction Protocols*] and unsteady flow boundary conditions. The methodology used to confirm the water level changes must be consistent with the methodology and model extents used to determine those same effects in the EA. The results of the modelling must be included in the submission under Section 4.19 [*Regulatory Approvals and Permits*]; and
- (d) confirmation from the Environmental Director that all of the foregoing estimated impacts and water level changes are within the limits estimated in the EA.

4. CONTAMINATION

4A Definition of “Contamination”

“Contamination” means the presence of any Hazardous Substance in soil, soil vapour, surface water, sediment or groundwater, except Hazardous Substances present in quantities or concentrations below the most stringent of the following applicable permissible levels:

- (a) the permissible levels as set by applicable Environmental Laws;
- (b) in the case of Hazardous Substances present in soil in the Operations Area, the numeric standards specified in the B.C. *Contaminated Sites Regulation* for industrial land use, where the “Operations Area” means: (i) the land beneath any part of the physical structure of the Facility, (ii) any land located inside an enclosed fenced area at the Facility, and (iii) all land beneath the permanent roads remaining on the Site following completion of Construction, but excluding any Contamination in the land under any parking lot, picnic area, trail or other public use area on the Site;
- (c) in the case of Hazardous Substances present in soil outside the Operations Area, the numeric standards specified in the B.C. *Contaminated Sites Regulation* for wildlands land use;
- (d) in the case of groundwater, the numeric standards specified in the B.C. *Contaminated Sites Regulation* for drinking water use or aquatic life use, whichever is the more stringent;
- (e) in the case of Hazardous Substances associated directly or indirectly with the Existing Penstocks, the numeric standards specified in the B.C. *Contaminated Sites Regulation* for wildlands land use and, for greater certainty, those numeric standards apply to the full extent of those Hazardous Substances even if the Hazardous Substances are located within the Operations Area (as defined in Section 4A(b) in this Schedule); and
- (f) in the case of Hazardous Substances Released onto or into soil, soil vapour, surface water, sediment or groundwater on, in or under the Site by:
 - (i) Project Co or a Project Co Person, or
 - (ii) any other Person to the extent the Release resulted directly or indirectly from a breach by Project Co or a Project Co Person of any of their obligations under this Agreement,

there is no permissible level for such Hazardous Substances and all such Hazardous Substances must be removed from the Site and all other lands and waters where any such Hazardous Substances are located.

If Contamination is present in soil, soil vapour, surface water, sediment or groundwater, then the soil, soil vapour, surface water, sediment or groundwater, as the case may be, containing the Contamination will also be deemed for the purposes of this Agreement to be Contamination.

4.1 Responsibility for Contamination

- (a) Subject to paragraph (e) of the definition of Compensation Event and to the limitations in this Section 4.1 [*Responsibility for Contamination*] and Section 4.2 [*Remediation Standards and Requirements*] of this Schedule, Project Co will be responsible for managing all Contamination encountered during the Project Work, including all

Contamination identified in the following documents, in compliance with the requirements in this Schedule 8 [*Environmental Obligations*] and all applicable Laws, including the *Environmental Management Act*, S.B.C. 2003, c. 53 and *Contaminated Sites Regulation* B.C. Reg. 375/96 and associated protocols and guidance documents, and all other Laws to the extent applicable:

- (1) Soil and Groundwater Investigation – Former Switchyard, Proposed New Operations Building Footprint, and Proposed New South Powerhouse Building, May 2009 (Hemmera).
- (2) Letter Report – Results of the Test Pit and Drainage Ditch Investigation at the Former Townsite, February 2010 (Hemmera).
- (3) Stage 2 Preliminary Site Investigation – Former Switchyard and Powerhouse Area, December 2010 (Hemmera).
- (4) Stage 2 Preliminary Site Investigation – Penstocks, Former Boneyard, Surge Towers, Former Construction Camp, December 2010 (Hemmera).
- (5) Closure Report – Former Switchyard at the John Hart Generating Station, BC Hydro, Campbell River, November 1994 (Gartner Lee Limited).
- (6) John Hart Replacement Project – Soil Investigation Results of Storage Shed (APEC 12) & for Herbicides along Steel Penstock (AEC 8), October 2012.

Notwithstanding Section 4.12 [*Disclosed Data and Investigations*], Project Co may refer to the documents listed in this Section in any dispute between BC Hydro and Project Co regarding disclosure of Contamination on the Site.

- (b) The following is “**Project Co Contamination**” for all purposes of this Agreement:
- (i) subject to the limitations in this section 4.1 [*Responsibility for Contamination*] and Section 4.2 [*Remediation Standards and Requirements*] of this Schedule, any Contamination that is encountered within the boundaries of any of the Restricted Environmental Areas numbered 4 or 5 in the drawing attached as Appendix 10G [*Restricted Environmental Areas Plan*] to Schedule 10 [*Lands*] if that Contamination is a substance identified in the documents listed in Section 4.1(a) [*Responsibility for Contamination*] of this Schedule as being present on the Site in any concentration above the detection limit for that substance even if that substance was not identified as Contamination in those documents. For greater certainty, Project Co's responsibility with respect to any such Contamination extends to any differences between the concentration of the substance identified in the documents listed in subsection 4.1(a) in this Schedule and the actual concentration of the substance at the Site;
 - (ii) any Contamination caused directly or indirectly by Project Co or a Project Co Person after the Effective Date, including Contamination described in Section 4.2A(f) [*Soil Management*] of this Schedule;
 - (iii) any Contamination caused directly or indirectly by any other Person to the extent that Contamination resulted directly or indirectly from a breach by Project Co or a Project Co Person of any of their obligations under this Agreement; and
 - (iv) any aggravation, exacerbation, migration or other increase in the area or costs of dealing with any other Contamination to the extent caused directly or indirectly by

the negligence of Project Co or a Project Co Person or a breach by Project Co or a Project Co Person of any of their obligations under this Agreement including any failure to comply with the CEMP or the OEMP.

(c) Except for Contamination described in any of Sections 4.1(b)(ii), (iii) or (iv) [*Responsibility for Contamination*] and Section 4.2(a) [*Remediation Standards and Requirements*] in this Schedule and subject to the limitations in this Section 4.1 and 4.2, where Project Co encounters Contamination that must be remediated as required under this Schedule:

- (i) Project Co's obligation to remediate that Contamination is limited to the lateral and vertical extent of that Contamination within the boundaries of the Restricted Environmental Areas numbered 4 and 5 in Appendix 10G [*Restricted Environmental Areas Plan*] to Schedule 10 [*Lands*]; and
- (ii) except in the case of Contamination described in subsection 4.2(a), any remediation BC Hydro directs Project Co to conduct outside those boundaries is a Change and is subject to Section 7 [*Changes, Minor Works and Innovation Proposals*] in this Agreement.

In the case of Contamination described in any of Sections 4.1(b)(ii), (iii) or (iv) [*Responsibility for Contamination*] and Section 4.2(a) [*Remediation Standards and Requirements*] in this Schedule, Project Co shall remove the full lateral and vertical extent of that Contamination including any Contamination that is outside the boundaries of the Restricted Environmental Areas numbered 4 and 5 in Appendix 10G [*Restricted Environmental Areas Plan*] to Schedule 10 [*Lands*].

(d) Where Project Co is required to remediate Contamination pursuant to this Schedule and that Contamination is located partially inside the boundaries of [*a Restricted Environmental Area numbered 4 or 5 in Appendix 10G to Schedule 10*] and partially outside those boundaries and Project Co's responsibility for that Contamination is limited under Section 4.1(c) [*Responsibility for Contamination*] of this Schedule to the boundaries of a Restricted Environmental Area numbered 4 or 5 in Appendix 10G [*Restricted Environmental Areas Plan*] to Schedule 10 [*Lands*], BC Hydro's share of remediation costs for the Contamination outside those boundaries is limited to those incremental remediation costs that would not have been incurred by Project Co but for the presence of Contamination outside those boundaries.

(e) Subject to Sections 4.1(h), (i) and (j) [*Responsibility for Contamination*] of this Schedule, in the case of Contamination located in soils in the area identified as the Penstock Area on the plan attached as Appendix 10G [*Restricted Environmental Areas Plan*] to Schedule 10 [*Lands*], the costs of remediating that Contamination as required under Section 4.2(a) [*Remediation Standards and Requirements*] of this Schedule will be allocated between Project Co and BC Hydro as follows:

TABLE 4.1(a)

Soil Type	(A)	(B)	(C)
	Project Co 100% Responsible for all costs of remediating Contamination up to the mass specified below	BC Hydro and Project Co each responsible for 50% of the costs of remediating Contamination within the range of mass	BC Hydro responsible for all costs of remediating Contamination in excess of the mass specified below.

		specified below	
Haz Waste Soil (tonnes)	5600	5601 – 7000	7001
Waste Quality Soil (tonnes)	19000	19001 - 24000	24001
IL Soil (tonnes)	2800	2801 - 3500	3501

- (f) Subject to Sections 4.1(h), (i) and (j) [*Responsibility for Contamination*] of this Schedule, in the case of Contamination located in soils in the area identified as the Area Behind the Powerhouse on the plan attached as Appendix 10G [*Restricted Environmental Areas Plan*] to Schedule 10 [*Lands*], the costs of remediating that Contamination as required under this Schedule will be allocated between Project Co and BC Hydro as follows:

TABLE 4.1(b)

Soil Type	(A)	(B)	(C)
	Project Co 100% Responsible for all costs of remediating Contamination up to the mass specified below	BC Hydro and Project Co each responsible for 50% of the costs of remediating Contamination within the range of mass specified below	BC Hydro responsible for all costs of remediating Contamination in excess of the mass specified below.
Waste Quality Soil (tonnes)	590	591 - 750	751
Haz Waste Soil (tonnes)			Any

- (g) For the purposes of Sections 4.1(e), (f) and (g) [*Responsibility for Contamination*] of this Schedule, the terms “Haz Waste Soil”, “Waste Quality Soil” and “IL Soil” have the meanings given in Schedule 1 [*Definitions and Interpretation*].

- (h) The costs for remediating Contamination allocated as BC Hydro costs under Section 4.1 (e) and 4.1(f) of this Schedule will be determined in accordance with a Contaminated Soil Baseline Procedure developed by Project Co and submitted to BC Hydro under the Review Procedure ("**Contaminated Soil Baseline Procedure**") by not later than 60 days prior to the commencement of Construction activities. The Contaminated Soil Baseline Procedure shall prescribe a calculation and payment methodology for determining the Contaminated Soil Payments consistent with the following:

- (1) all Contamination in the soil in the Penstock Area and the Area Behind the Powerhouse shall be classified, separated and managed in accordance with Section 4.2A [*Soil Management*] of this Schedule;
- (2) the excavated mass of each load and soil type shall be weighed at the Site;
- (3) the volume measurement of soil to be removed shall be of independent method from the mass measurement;
- (4) the relationship of 2.2 tonnes per m³ for the mass measured vs. the volume of soil removed. Where the independent volume and mass measurement are used to correlate the actual value of the mass removed. Divergence from the constant 2.2 tonnes per m³ provided for the actual measured mass vs. volume is the responsibility of Project Co whether due to management, handling, weather or practices;
- (5) partial tonnes shall be priced on a pro-rata basis;
- (6) once the total excavated adjusted mass of a soil type has exceeded the baseline values from column (A) of the applicable Table 4.1(a) or Table 4.1(b) of this Schedule, the Contaminated Soil Payment shall be calculated as follows:

$$\text{CSP} = (\text{Ms1}_i \times \text{Us}_i \times 50\%) + (\text{Ms2}_i \times \text{Us}_i \times 100\%)$$

where:	
CSP	The Contaminated Soil Payment payable by BC Hydro to Project Co in each instance
Ms1 _i	The mass of the applicable soil type within the range of mass specified in Column (B) of the applicable Table 4.1(a) or 4.1(b) of this Schedule
Ms2 _i	The mass of the applicable soil type above the maximum amount indicated for the soil type in Column (B) of the applicable Table 4.1(a) or 4.1(b) of this Schedule
Us _i	The unit rate \$/tonnes applicable to the soil type and location as provided in Appendix 8G [<i>Unit Rates for Contaminated Soil</i>] of this Schedule
BCHP	The applicable BC Hydro cost percentage in each instance 'i' as provided in Table 4.1(a) and 4.1(b) of this Schedule

- (7) an invoice with the supporting calculation shall be prepared by Project Co for each CSP and submitted to BC Hydro for payment in accordance with Section 15

Subject to the foregoing and to the provisions of Section 1.3 [Obligation to make Soil Contamination Payments] and Section 15.3 [Payment Terms] of Schedule 13 [Performance and Payment Mechanisms] BC Hydro shall pay to Project Co one or more Contaminated Soil Payments.

- (i) BC Hydro's obligation to reimburse Project Co for the costs of remediating Contamination in soils pursuant to Section 4.1(e) and Section 4.1(f) [Responsibility for Contamination] of this Schedule is conditional on Project Co complying with Project Co's obligations under Section 4.2A [Soil Management] of this Schedule. If Project Co fails to comply with any of its obligations under Section 4.2A [Soil Management] of this Schedule, BC Hydro shall be entitled to deduct from the amount otherwise payable by BC Hydro to Project Co under Section 4.1(e) or Section 4.1(f) [Responsibility for Contamination] of this Schedule, the portion of the costs of Remediation that resulted from Project Co's failure to comply with its obligations under Section 4.2A [Soil Management] of this Schedule.
- (j) Section 4.1(e) and Section 4.1(f) [Responsibility for Contamination] of this Schedule do not apply to any Contamination described in any of Sections 4.1(b)(ii), (iii) or (iv) [Responsibility for Contamination] of this Schedule.
- (k) If the actual mass of Contamination encountered and remediated by Project Co falls below a baseline threshold in Column A of Table 4.1(a) or 4.1(b) as determined by the Contaminated Soil Baseline Procedure, then Project Co shall be obligated to make a payment to BC Hydro (the "**Contaminated Soil Remittance Payment**") based on the difference between: (1) the estimated baseline cost of remediation of the soil type in question (baseline mass times unit rate \$/tonne); and (2) the actual cost of remediation of that soil type (actual mass times unit rate \$/tonne). This Project Co payment shall be made by way of an offset against Progress Payments or Availability Payments (if applicable) in accordance with Section 15 [Contaminated Soil Payments and Remittances] of Schedule 13 [Performance and Payment Mechanisms].

4.2 Remediation Standards and Requirements

- (a) Project Co shall remediate all Contamination in soils associated with the Existing Penstocks so that the concentrations of all substances in soils are reduced below the numeric standards specified in the B.C. *Contaminated Sites Regulation* for wildlands land use and Project Co shall complete such remediation prior to the Total Completion Date. For greater certainty, Project Co shall remediate the full lateral and vertical extent of that Contamination and that remediation obligation is not limited to the boundaries of Restricted Environmental Area 4.
- (b) Project Co shall remediate Contamination in soils, sediments, vapours and surface water caused or found during the Project Work, so that the concentrations of all substances are reduced below the permissible levels specified in the definition of "Contamination" in Section 4A [Definition of "Contamination"] in this Schedule and Project Co shall complete all such remediation prior to the Total Completion Date.
- (c) Project Co is not required to remediate any in-situ groundwater, except only for Contamination in groundwater as described in any of Sections 4.1(b)(ii), (iii) or (iv) [Responsibility for Contamination] of this Schedule. "In-situ groundwater" means groundwater that has not been brought to the surface. If any groundwater is captured or otherwise brought to the surface during the Project Work, Project Co must ensure that water complies with all standards under applicable Laws with respect to the handling,

management, treatment and discharge of that water and any costs associated with that water will be for the account of Project Co.

- (d) In the case of Contamination in groundwater as described in any of Sections 4.1(b)(ii), (iii) or (iv) [*Responsibility for Contamination*] of this Schedule, Project Co shall remediate that Contamination so that the concentrations of all substances in groundwater are reduced below the numeric standards specified in the B.C. *Contaminated Sites Regulation* for drinking water use or aquatic life use whichever is the more stringent and Project Co shall complete all such remediation prior to the Total Completion Date.
- (e) Project Co shall ensure that all Contamination is handled and transported only by qualified and reputable disposal agents and haulers that have all required Permits and that, unless BC Hydro otherwise consents in writing, which consent may be granted or withheld in BC Hydro's unfettered discretion, all Contamination is disposed of only at recognized waste disposal facilities in Canada that have all required Permits. Project Co shall ensure that all handling, transportation and disposal of Contamination occurs in accordance with all applicable Environmental Laws. Project Co shall not dispose of any Contamination on federal land or land within the Agricultural Land Reserve (established under British Columbia's *Agricultural Land Commission Act*) or at any facility located on any such land. Project Co shall maintain detailed records, including a manifest, of all Contamination disposed of at any off-Site location, including the types and volumes of Contamination sent to each such location and shall provide copies of such records to BC Hydro.
- (f) Project Co shall conduct and document remediation of Contamination as required under this Schedule in a manner such that BC Hydro can obtain a certificate of compliance pursuant to the B.C. *Environmental Management Act* at BC Hydro's option. Project Co shall provide to BC Hydro's Representative the results of investigations and confirmatory sampling and all other documentation as required to enable BC Hydro to obtain a certificate of compliance. Without limiting the foregoing, Project Co shall submit a remediation completion report to BC Hydro's Representative within 30 days after completing any remediation of Contamination required under this Schedule.

4.2A Soil Management

- (a) Project Co shall excavate and segregate contaminated soils characterized into soil quality classes under the *Contaminated Sites Regulation* of the *Environmental Management Act* ("soil classes") for disposal based on *in situ* analytical results and classification.
- (b) Project Co shall manage excavation and soil storage and transportation such that Haz Waste Soil, Waste Quality Soils and IL Soils are not mixed, and that those soils are not mixed with uncontaminated soils. The Contractor shall make all reasonable efforts to avoid over-excavation of Waste Quality Soils and IL Soils when removing Contamination in the soil.
- (c) Project Co shall not mix or dilute hazardous waste (as defined in the *Hazardous Waste Regulation, BC Reg. 63/88*) with any solid or liquid, including waste, water or rain water, or otherwise take action by dividing a hazardous waste to evade the requirements of the *Hazardous Waste Regulation*.
- (d) Without limiting Project Co's obligations under subsection 4.2(a) [*Remediation Standards and Requirements*] of this Schedule, Project Co shall conduct the excavation of Haz Waste Soil in the area of the Existing Penstocks by removing all soils to a minimum soil excavation depth of 15 cm below all creosote treated pipelines and to a minimum of the drip line of the creosote treated pipeline on each side of the pipeline. Project Co shall

ensure that all machinery conducting such work is capable of working accurately such that removal depths are accurate to within 10 cm of the desired excavation depth.

- (e) Uncontaminated topsoil or overburden shall be segregated and kept separate from [soil with Contamination.
- (f) Project Co shall ensure that any soils with Contamination stockpiled prior to loading for off-site disposal, or at temporary storage areas, will be located to avoid potential slumping or erosion into dry or wetted ditches, drains and culverts, and all other water bodies. Stockpiles shall be clearly identified with signage and any applicable safety warnings. Project Co shall prevent erosion of stockpiled soils by overland water flow. Should stockpiled soil become a source of siltation, Project Co shall immediately remedy the siltation and shall take steps to prevent such siltation from occurring. Project Co shall ensure that stockpiled soils will be covered securely with tarpaulins and managed to avoid any increase in moisture content within the soils prior to weighing for disposal purposes and calculation of payment. Project Co shall ensure that soils are covered with tarpaulins during transport to the disposal facility to avoid increases in moisture content prior to weighing for disposal purposes and calculation of Contaminated Soil Payments. Any soil that becomes unsuitable for stockpiling, loading or transport due to Project Co's failure to maintain dry excavations, conditions or adequate stockpile covers, shall be stabilized at Project Co's expense. Any water which becomes contaminated due to contact with stockpiled soils shall be Project Co Contamination.

4.3 Contamination Management Plan

Project Co shall:

- (a) as part of the CEMP, develop and implement a Contamination Management Plan that will guide the management of all Contamination caused or found during the Project Work in accordance with Environmental Best Management Practices, the requirements of this Schedule 8 [*Environmental Obligations*], the provisions of the EA and the Project Environmental Commitments, and all Environmental Laws and Permits and that contains provisions for notice to BC Hydro of any Contamination encountered during the Project Work and an opportunity for BC Hydro to direct Project Co with respect to the required remediation method and standards for remediating any Contamination that is an Undisclosed Environmental Liability. The Contamination Management Plan shall include, at a minimum, methodology and procedures for: excavation, sampling, handling, storage, transportation and disposal of soils; monitoring of soils that are known to contain, or that may potentially contain, Contamination; water management; and minimizing increases in moisture content during or following excavation of soils containing Contamination prior to disposal (including but not limited to conditions under which excavation will not occur or will be suspended).
- (b) carry out all Project Work in compliance with the Contamination Management Plan and this Schedule and ensure that all Project Co Persons comply with the Contamination Management Plan and this Schedule;
- (c) commence and complete, on or before the Total Completion Date, any and all required work, including all remedial and removal work, set out in the Contamination Management Plan and this Schedule 8 [*Environmental Obligations*];
- (d) comply with all Environmental Laws and their associated guidance and protocols to the extent applicable to the work set out in the Contamination Management Plan;

- (e) allow BC Hydro to perform environmental monitoring, inspections or audits to ensure compliance with the Contamination Management Plan, this Schedule 8 [*Environmental Obligations*] and all applicable Environmental Laws and Permits;
- (f) undertake testing, sampling and record keeping with respect to identification, remediation, removal, handling, transport and disposal of Contamination as required pursuant to the Contamination Management Plan, this Schedule 8 [*Environmental Obligations*] and all applicable Environmental Laws and associated protocols and guidance documents;
- (g) prepare and implement Environmental Work Plans as required under Section 10.1 [*Restricted Environmental Areas*] in this Schedule for the area shown as REA 4 on the drawing attached as Appendix 10G [*Restricted Environmental Areas Plan*] to Schedule 10 [*Lands*]; and
- (h) upon encountering any Contamination that is not the subject of an Environmental Work Plan, prepare and submit to the BC Hydro Representative in accordance with the Review Procedure a plan for the remediation or removal of such Contamination and, following the date on which that plan is "received" or is "received with comments" and Project Co has accepted the comments in accordance with the requirements in Schedule 2 [*Review Procedure, Consent Procedure and Other Submittals*], Project Co shall commence and complete any required remedial or removal work in accordance with such plan and all Environmental Laws to the extent applicable, provide the BC Hydro Representative with full information with respect to any such remedial or removal work, and comply with the reasonable requirements of BC Hydro with respect to any such remedial or removal work. BC Hydro may receive or reject a plan submitted under this Section in its sole and unfettered discretion.

4.4 Removal and Remediation of Contamination

Without limiting the obligations of Project Co under any other provision of this Section 4 [*Contamination*], Project Co shall promptly at any time, if requested by BC Hydro or by any Environmental Authority pursuant to Environmental Laws remediate all Project Co Contamination in, on, at or under the Site and any adjacent lands and waters to the numerical standards specified in this Agreement or as otherwise required by the Environmental Authority. A request by BC Hydro for Project Co to remediate Project Co Contamination described in Section 4.1(b)(i) [*Responsibility for Contamination*] in this Schedule (other than Contamination described in Section 4.2(a) [*Remediation Standards and Requirements*] of this Schedule) in any circumstance other than where Project Co has encountered such Project Co Contamination during the Project Work, is a Change and is subject to Section 7 [*Changes, Minor Works and Innovation Proposals*].

4.5 Title to Contamination

Notwithstanding any Laws or any other provision in this Agreement to the contrary, title to all Project Co Contamination shall transfer to Project Co on removal of the Project Co Contamination from the location where it is first encountered on the Site.

4.6 Waiver of Site Profile

Project Co waives the requirement, if any, for BC Hydro to deliver a site profile to Project Co pursuant to the B.C. *Environmental Management Act* and *Contaminated Sites Regulation*.

5. HAZARDOUS SUBSTANCES

5.1 No Use of Hazardous Substances

- (a) Project Co shall not use or permit to be used on or brought onto the Site or any part thereof for the sale, storage, manufacture, disposal, handling, treatment, generation, use, transport, refinement, processing, production, remediation or Release of, or any other dealing with, any Hazardous Substances without the prior approval of BC Hydro except for the Hazardous Substances contemplated in the CEMP and then only in the quantities contemplated in the CEMP and for the purposes contemplated in the CEMP and in compliance with all Environmental Laws and all other applicable Laws.
- (b) Any approval requested under Section 5.1(a) [*No Use of Hazardous Substances*] in this Schedule may be granted or withheld in BC Hydro's unfettered discretion.
- (c) In developing the CEMP and in performing the Project Work Project Co shall comply with BC Hydro's Best Management Practices for Regulated Products. Where that Best Management Practice states that a product "may be acceptable", Project Co shall, prior to bringing to the product or any equipment or material containing the product to the Site, submit to BC Hydro's Representative in accordance with the Consent Procedure a request for consent to use the product or the equipment or material. BC Hydro may accept or reject the request for consent in its discretion.
- (d) Notwithstanding the foregoing, Project Co shall ensure that the following substances are not used on the Site during the Project Work or on or in any products or materials used in the Project Work or forming part of the Facility:
 - (i) pentachlorophenol; and
 - (ii) lead paint.

5.2 Management of Hazardous Substances

- (a) Subject to subparagraph (e) of the definition of Compensation Event, Project Co will be responsible for managing all Hazardous Substances encountered during the Project Work, including the following Hazardous Substances which may be present on the Site, in compliance with the requirements in this Schedule 8 [*Environmental Obligations*] and the B.C. *Environmental Management Act*, *Hazardous Waste Regulation* B.C. Reg. 63/88 and associated protocols and guidance documents and all other applicable Laws:
 - (i) lead paint;
 - (ii) SF6;
 - (iii) PCBs;
 - (iv) mercury;
 - (v) asbestos;
 - (vi) chemical products (including solvents, paints, lubricating and other oils, fuels, welding gases);
 - (vii) silica; and

- (viii) any other Hazardous Substance that could reasonably be expected to be present in the Existing Facility given the nature and age of the Existing Facility.
- (b) Project Co shall remediate any Contamination resulting directly or indirectly from any Hazardous Substances brought onto or used at the Site by Project Co or any Project Co Person in accordance with the requirements of this Schedule 8 [*Environmental Obligations*] and all applicable Laws.
- (c) Project Co shall not install or use or permit any Project Co Person to install or use underground tanks to store any Hazardous Substances, including fuel or oil.

5.3 Responsibility for Hazardous Substances

- (a) Hazardous Substances that may exist within the Existing Facility are described in Section 5.2(a) [*Management of Hazardous Substances*] in this Schedule.
- (b) Without limiting Project Co's obligations under Section 1.4 [*Decommissioning Work*] of Schedule 6 [*Design and Construction Specifications*], but subject to paragraph (e) of the definition of Compensation Event, Project Co shall be responsible for removing all Hazardous Substances from the Existing Facility as part of the Decommissioning Work and disposing of those Hazardous Substances in accordance with this Schedule.
- (c) The provisions of Section 4.2(e) [*Responsibility for Contamination*] in this Schedule apply to the handling, transport and disposal of all Hazardous Substances removed from the Existing Facility.
- (d) The following Hazardous Substances are "**Project Co Hazardous Substances**" for all purposes of this Agreement:
 - (i) any Hazardous Substances described in Section 5.2(a) [*Management of Hazardous Substances*] in this Schedule. For greater certainty, Project Co is responsible for the full volume of the Hazardous Substances identified in Section 5.2(a) [*Management of Hazardous Substances*] in this Schedule regardless of any volume estimates or lack of volume estimates prepared by BC Hydro;
 - (ii) any Hazardous Substances that are brought onto, or created at, the Site by Project Co or any Project Co Person and that are not authorized for incorporation into the Facility in accordance with the approved design for the Facility;
 - (iii) any Hazardous Substances brought onto or created at the Site by any other Person to the extent the Hazardous Substances were brought onto or created at the Site directly or indirectly as a result of a breach by Project Co or a Project Co Person of any of their obligations under this Agreement; and
 - (iv) any aggravation, exacerbation, migration or other increase in the area or costs of dealing with any other Hazardous Substances to the extent caused directly or indirectly by the negligence of Project Co or a Project Co Person or a breach by Project Co or a Project Co Person of any of their obligations under this Agreement including any failure to comply with the CEMP.
- (e) Project Co shall notify BC Hydro's Representative promptly upon encountering any Hazardous Substances that are not identified in the documents listed in Section 5.2(a) [*Management of Hazardous Substances*] in this Schedule and Project Co shall comply with BC Hydro's directions with respect to the removal and disposal of any such Hazardous Substances.

5.4 Removal of Hazardous Substances

Without limiting the obligations of Project Co under any other provision of this Section 5 [Hazardous Substances] or any other provision of this Agreement, Project Co shall promptly at any time, if requested by BC Hydro or by any Environmental Authority pursuant to Environmental Laws remove all Project Co Hazardous Substances from the Site and any adjacent lands and waters in accordance with the requirements of this Schedule and the requirements of any Environmental Authority and all applicable Environmental Laws and other Laws. Any request by BC Hydro for Project Co to remove Project Co Hazardous Substances where such removal would not otherwise be required under this Agreement is a Change and Section 7 [*Changes, Minor Works and Innovation Proposals*] of this Agreement will apply to that request.

Notwithstanding the foregoing, Project Co shall, prior to the Total Completion Date, remove from the Site and any adjacent lands and waters all Project Co Hazardous Substances that are not required for performance of the Services or for operation of the Facility during the Services Period.

The provisions of Section 4.2(e) [*Remediation Standards and Requirements*] in this Schedule apply to the handling, transport and disposal of all Hazardous Substances removed from the Site under this Section 5 [*Hazardous Substances*].

5.5 Title to Hazardous Substances

Notwithstanding any Laws or any other provision in this Agreement to the contrary, all Hazardous Substances and goods or other items containing Hazardous Substances brought onto, used at or Released at or from the Site by Project Co or any Project Co Person shall be and remain the sole and exclusive property of Project Co and shall not become the property of BC Hydro, notwithstanding their incorporation into or affixation to the Site or the Facility and notwithstanding any termination of this Agreement or expiry of the Term, provided that the foregoing provision does not apply to any Hazardous Substances that are authorized for incorporation into the Facility in accordance with the approved design for the Facility. Title to any Hazardous Substances removed from the Site by Project Co as part of the Project Work shall transfer to Project Co on removal of the Hazardous Substance from the location where it is first encountered on the Site.

6. FORMER SWITCHYARD/SOCCER FIELD

Project Co shall comply with the following provisions with respect to the former switchyard that is commonly referred to as a soccer field and is located in the area shown as Restricted Environmental Area 5 on the drawing attached as Appendix 10G [*Restricted Environmental Areas Plans*] to Schedule 10 [*Lands*] (the "**Soccer Field**"):

- (a) The Soccer Field is considered to be an Operations Area for the purposes of Section 4A(b) [*Definition of "Contamination"*] in this Schedule.
- (b) The provisions of Section 12 apply to any Site Material excavated from the Soccer Field during the Project Work.
- (c) Prior to conducting any Project Work within the boundaries of the Soccer Field, Project Co shall prepare and submit to BC Hydro an Environmental Work Plan in accordance with subsection 2.4(c) [*Environmental Plans and Reports*] of this Schedule.
- (d) Notwithstanding the requirements of Section 8 [*Rehabilitation, Revegetation and Vegetation Management*] in this Schedule, following completion of the Construction and prior to the Total Completion Date, Project Co shall replant the area of the Soccer Field with grass and shall maintain and replace that grass as necessary throughout the Term to ensure a healthy grass cover, substantially free of weeds and other invasive plants.

- (e) Project Co shall ensure that the Soccer Field is inside the fenced area of the Site.

7. ENVIRONMENTAL INCIDENT REPORTING AND RESPONSE

7.1 Notification to BC Hydro

- (a) Project Co shall promptly, and in any event within 24 hours, notify BC Hydro's Representative of:
- (1) any Release of a Hazardous Substance or any other incident, occurrence or condition at or affecting the Site, the Facility, the Project or the Project Work that is required to be reported under any Environmental Law or Permit or that could cause Contamination of the Site or any other lands or waters in the vicinity of the Site or that could subject Project Co or BC Hydro to any fines, penalties, orders, investigations or other proceedings or to any liability under any Environmental Laws, together with full particulars of such Release, incident, occurrence or condition including the location, time, agencies involved, damages suffered or caused and remedial action taken;
 - (2) all charges, orders, investigations or notices of violation or non-compliance issued under any Environmental Laws against Project Co or relating to the Project, the Project Work, the Facility, or the Site; and
 - (3) any notice, claim, action or other proceeding by any Person against Project Co or relating to the Project, the Project Work, the Facility, or the Site.
- (b) In addition to, and without limiting, the requirements under Section 7.1(a) [Notification to BC Hydro] of this Schedule, Project Co shall report "Environmental Incidents" as required under BC Hydro's "Standard for Environmental Incident Reporting", as amended from time to time.

7.2 Notification to Environmental Authorities

Project Co shall notify the relevant Environmental Authorities of any Release of any Hazardous Substance at or from the Facility or the Site or of any other incident, occurrence or condition as required pursuant to and in accordance with Environmental Laws or Permits. Failure to provide such notice means BC Hydro may, but will not be obliged to, notify the relevant Environmental Authorities of the Release, incident, occurrence or condition.

7.3 Response Measures

If a Hazardous Substance is Released at or from the Facility or the Site or if the Project Work, the Project or the Facility causes any damage to the environment, Project Co shall promptly take all necessary steps to prevent the Release or damage and to counteract, mitigate or remedy any adverse effects that result or may reasonably be expected to result from, that Release or damage, including collecting and removing the Hazardous Substances from the Site.

8. REHABILITATION, REVEGETATION AND VEGETATION MANAGEMENT

Project Co shall rehabilitate and revegetate the Site prior to the Total Completion Date in compliance with the Rehabilitation and Restoration Plan contained in the CEMP, the plans required under this Section 8 [*Rehabilitation, Revegetation and Vegetation Management*] and the requirements of this Schedule. The boundaries of the special vegetation areas described in Section 8.2 [*Revegetation of Special Vegetation Areas*] in this Schedule, areas for landscaping described in Section 8.3 [*Landscaping*] in this Schedule, boundaries of fenced areas and public use areas will be determined in consultation with BC Hydro during

the Design process based on the objective of returning as much of the Site as reasonably possible to its natural state.

8.1 Rehabilitation and Revegetation of Disturbed Areas

This Section specifies the requirements for rehabilitating and revegetating all areas of the Site outside the boundaries of the area where landscaping is required as described in Section 8.3 [*Landscaping*] and the public use areas referred to in Section 8.4 [*Public Use Areas*].

- (a) Project Co shall prepare and implement site-specific rehabilitation and revegetation environmental work plans that provide detailed measures for the restoration and revegetation required under this Section 8 [*Rehabilitation and Revegetation of Disturbed Areas*]. These site-specific rehabilitation and revegetation plans may be stand alone plans or may be part of an Environmental Work Plan. Any such plans that are prepared as stand alone plans must be submitted to BC Hydro not less than 30 days prior to the date for commencing any work pursuant to that rehabilitation and revegetation plan. Project Co shall submit such plans to BC Hydro in accordance with the Review Procedure.
- (b) Each rehabilitation and revegetation plan, whether included in an Environmental Work Plan or developed as a site-specific stand-alone plan, must include:
 - (1) rehabilitation and revegetation measures that comply with the requirements of the Environmental Reference Documents, the EA, the Project Environmental Commitments and Environmental Best Management Practices, including the guidance on Riparian Areas and Revegetation, published on the Internet by Fisheries and Oceans Canada;
 - (2) ground cover must be re-established immediately to control erosion and sedimentation once Project Co is no longer actively using an area.
 - (3) nursery stock trees and shrubs must be a minimum of two years old and plant spacing shall be a maximum of 2.0 m;
 - (4) a detailed plan for restoring all cuts and excavations created during the Project Work so that all excavated and cut areas are left in a safe, stable and free-draining state;
 - (5) measures to ensure that all fill brought to the Site to fill any cuts or excavations is tested prior to delivery to the Site to ensure that it contains no Hazardous Substance in excess of the applicable numeric standards specified in Section 4 [*Contamination*] in this Schedule based on the area of the Site where the fill will be placed;
 - (6) a detailed list and drawing showing the proposed location of all species that will be planted on the Site. The species of plants used for replanting on the Site must be native plants appropriate for the site series at each location. Appendix 8E [*Site Series and Recommended Plant Species*] contains a list of site series and recommended species for each site series. Additional plants that may be suitable are listed in the BC Hydro Coastal Xeric Plant Species List and the Native Wetland Plant List (Coastal Best Management Practices);
 - (7) revegetation plans that are designed to: (i) minimize the risk of a forest fire or wild fire affecting the Facility, (ii) minimize maintenance requirements, and (iii) maintain slope stability; and

- (8) a post-Construction monitoring plan that includes annual monitoring of restored areas for a period of five years or until planted vegetation is self-sustaining (i.e., free to grow stage). The scope of the monitoring plan will include, but not be limited to, survival of plantings and the presence of invasive species.
- (c) Project Co will be responsible for avoiding the establishment of, and for the removal of, invasive plant species until such time as vegetation planted for the purposes of restoration is able to exclude invasive species as described in Section 8.5 [*Invasive Species*] in this Schedule.
- (d) Project Co will be responsible throughout the Term for maintaining and replanting all areas that have been restored and re-vegetated to ensure that all such areas have a vegetation cover that complies with the requirements of this Schedule 8 [*Environmental Obligations*], the requirements of the Rehabilitation and Revegetation Plan in the CEMP and the requirements of the site-specific rehabilitation and revegetation plans.

8.2 Revegetation of Special Vegetation Areas

This Section describes the revegetation requirements for areas that require vegetation with specific characteristics and placement. These special vegetation areas include the areas surrounding electrical infrastructure as well as the vegetation along fence lines and roads. The special vegetation areas and boundaries of those areas will be determined in consultation with BC Hydro during the Design process.

- (a) In addition to the information required pursuant to Section 8.1 [*Rehabilitation, Revegetation and Vegetation Management*] in this Schedule, the rehabilitation and revegetation plans for, or that include, special vegetation areas must include the following:
 - (1) a requirement that vegetation planted near electrical infrastructure, including all transmission line and distribution line rights-of-ways, shall be low height ground cover with the maximum height and placement of the vegetation consistent with BC Hydro Best Management Practices, including the BC Hydro Best Management Practice Installing Landscaping around Electrical Facilities and Planting Near Powerlines published on the Internet by BC Hydro. Vegetation heights and locations must be consistent with BC Hydro limits of approach requirements;
 - (2) a requirement that on the slope above the powerhouse and switchyard forming part of the Existing Facility only low growing plants, including but not limited to shrubs, will be planted. The type and placement of vegetation shall be consistent with BC Hydro Best Management Practices, including the BC Hydro Best Management Practice Installing Landscaping around Electrical Facilities;
 - (3) a requirement that vegetation planted along roads be appropriate species placed in locations that will not impede visibility along the road or cause other safety concerns; and
 - (4) a requirement that vegetation planted along fence lines (both inside and outside) be appropriate species placed in locations that will not provide means for climbing the fence or cause other security concerns.
- (b) Project Co shall be responsible throughout the Term for maintaining and replanting all vegetation within the special vegetation areas to ensure that all such areas have a vegetation cover that complies with the requirements of this Schedule 8 [*Environmental Obligations*], and the requirements of the Rehabilitation and Restoration Plan in the CEMP and the site-specific rehabilitation and revegetation plans.

- (c) Project Co will be responsible for avoiding the establishment of, and for the removal of, invasive plant species until such time as vegetation planted for the purposes of restoration is able to exclude invasive species as described in Section 8.5 [*Invasive Species*] in this Schedule.

8.3 Landscaping

Project Co shall be responsible for landscaping areas of the Site around the site office and the Facility. The boundaries of the landscaped area will be determined in consultation with BC Hydro during the Design Process. The landscaping must comply with the following requirements:

- (a) all landscaping shall be consistent with the BC Hydro Landscape Best Management Practices and the Coastal Xeric Plant Species List;
- (b) grading of areas used regularly by the public and BC Hydro personnel, including lawns, shall be smooth and free of variations in terrain that could pose a tripping hazard or other safety concerns; and
- (c) if there is a North Powerhouse, Project Co shall, prior to the Total Completion Date restore the grass and planters at the site office to the condition the grassed area and planters were in at the Effective Date.

Project Co will be responsible for maintaining and replanting all landscaped areas throughout the Term to maintain a neat, healthy and attractive landscaped area. The activities involved in maintaining the landscaped areas shall include, but not be limited to, mowing grass, trimming vegetation and maintaining and replanting flower beds.

8.4 Public Use Areas

Project Co shall be responsible for revegetating all public use areas in accordance with the requirements of Schedule 23 [*Public Safety and Public Use*]. Project Co will be responsible for ensuring public use areas are maintained in a neat and visually appealing state. Project Co's responsibility will include, but not be limited to, mowing grass, trimming vegetation and maintaining and replanting flower beds.

8.5 Invasive Species

As part of the post-Construction monitoring and maintenance of revegetated areas, Project Co shall implement an invasive species monitoring and management program based on the Pest Management Plan for Invasive Alien Plant and Noxious Weed Control on Provincial Crown Lands within the South Coastal Mainland of British Columbia.

The measures Project Co must take with respect to invasive species shall be based on the level of injury to the area(s) being monitored as defined below:

- (a) High Level of Injury/Threshold:
 - If invasive plants are topping or smothering newly planted areas, then they must be removed.
 - If invasive plants are found in a Sensitive Ecosystem Inventory (SEI) polygon or listed ecosystem polygon (within the 50 m buffer of the disturbed area), then they must be removed.
 - If invasive plants are found within a wetland or riparian area, then they must be removed.
 - If invasive plants have the potential to spread to Elk Falls Provincial Park, then they must be removed.

(b) Low Level of Injury/Threshold:

- If invasive plants are found but are not impacting any of the above, then they can be left but monitoring must continue to ensure they do not spread or damage replanted areas.

8.6 Site Clearing

Project Co shall ensure that all vegetation removal and cleaning of the Site is conducted in a manner that is adequate to prevent the risk of blow-down of vegetation that will remain following vegetation removal and clearing. Project Co shall not clear any vegetation from any area of the Site until Project Co has submitted to BC Hydro in accordance with the Review Procedure confirmation from a registered professional forester that the proposed clearing plan for the area to be cleaned is adequate to prevent the risk of blow-down of vegetation that will remain following the proposed clearing.

9. WATER QUALITY

9.1 Effects from Project Activities

Project Co shall not cause, and shall ensure that the Project Work does not cause and that no Project Co Person causes in each case, directly or indirectly, any effects to any water body, including the Reservoir, the Campbell River and streams and wetlands, that would result in water quality in that water body being out of compliance with the water quality standards for aquatic life specified in Appendix 8C [*Water Quality Guidelines*].

9.2 Discharge of Water from Project Activities

Project Co shall ensure that any water from any Project Work activity, including flow from detention ponds and tunnel process water, discharged into a receiving water body including the Reservoir, the Campbell River and streams and wetlands, complies with the water quality standards for aquatic life specified in Appendix 8C [*Water Quality Guidelines*].

9.3 Deleterious Substance

Without limiting Sections 9.1 [*Effects from Project Activities*] and 9.2 [*Discharge of Water from Project Activities*] in this Schedule, Project Co shall use and shall ensure that all Project Co Persons use best efforts to ensure that no Project Work activity results in the deposit of any deleterious substance (as defined in the *Fisheries Act*) to any water body or results in any water body containing any deleterious substance.

9.4 Reservoir Drinking Water Zones

- (a) Not less than 30 days prior to commencing any activities within, or that have the potential to affect, the Reservoir, Project Co shall deliver to BC Hydro's Representative in accordance with the Review Procedure a Drinking Water Management Plan that has been prepared in consultation with, and that is acceptable to, the City of Campbell River and the Vancouver Island Health Authority and Project Co shall comply and shall ensure that all Project Co Persons comply with that plan. The Drinking Water Management Plan shall include, at a minimum, the following information:
 - (i) communications protocols between Project Co, the City of Campbell River and the Vancouver Island Health Authority;

- (ii) steps to be taken should the water quality parameters within 100 m of either of the two existing intakes exceed the drinking water guidelines (Appendix 8C [*Water Quality Guidelines*]);
- (iii) steps to be taken should the turbidity within 100 m of either of the two existing intakes exceed 5 NTU and a boil water notice is required; and
- (iv) other information requested by the City of Campbell River or the Vancouver Island Health Authority.

The submission of the Drinking Water Management Plan to BC Hydro under the Review Procedure shall include evidence that the plan is acceptable to the City of Campbell River and the Vancouver Island Health Authority. Project Co shall comply with, and shall ensure that all Project Co Persons comply with, the Drinking Water Management Plan.

- (b) Notwithstanding any other provision of this Agreement: **(i)** Project Co shall not cause and shall ensure that the Project Work does not cause and that no Project Co Person causes, directly or indirectly, any disturbance or other impact or effect of any kind to the Reservoir or its tributaries or to water in the Existing Penstock or the new Penstock that would result in the water quality within 100 m of either of the two existing intakes in the Reservoir or the water in the Existing Penstocks or the new Penstock being out of compliance with the drinking water standards specified in Appendix 8C [*Water Quality Guidelines*] or the water quality standards for aquatic life specified in Appendix 8C [*Water Quality Guidelines*], whichever are the more stringent standards; and **(ii)** Project Co shall use reasonable efforts to ensure that the Project Work does not cause and that no Project Co Person causes, turbidity in the Reservoir to exceed 0.7 NTU.
- (c) Without limiting any other provision of this Section 9 [*Water Quality*], Project Co shall use and shall ensure that all Project Co Persons use best efforts to ensure that no Project Work activity results in any Release of any substance (including any flow from detention ponds and tunnel process water) to the Reservoir.
- (d) Project Co shall ensure that it undertakes continuous water quality monitoring and sampling during any Project Work that could create a risk of any impact on water quality within 100 metres of either of the two existing intakes in the Reservoir.
- (e) Project Co shall be responsible for all costs and liabilities arising as a result of or associated with water within 100 m of either of the two existing intakes: **(i)** failing to comply with the water quality standards for drinking water specified in Appendix 8C; and **(ii)** failing to satisfy its obligations in subparagraph (b)(ii) above; except to the extent Project Co can demonstrate that such failure was not caused directly or indirectly, by the Project Work. Such costs may include, but are not limited to, the costs associated with issuing the boil water notice and the costs associated with delivery of potable water to Campbell River.

9.5 Notice to BC Hydro

Where any water discharged during the Project Work or water disturbed or affected by the Project Work does not comply with the water quality standards specified in this Section 9 [*Water Quality*], Project Co shall provide written notice to BC Hydro within 24 hours after Project Co receives the water sampling results that identify such failure to comply. Project Co shall promptly conduct an investigation and tests as required to identify the cause of the failure to comply with the water quality standards. Project Co shall keep BC Hydro fully informed concerning the scope, timing and results of the investigation. Project Co shall take all steps required to remedy the effects of the non-compliance and to prevent future non-compliance.

10. RESTRICTED ENVIRONMENTAL AREAS

10.1 Restricted Environmental Areas

The drawing attached as Appendix 10G [*Restricted Environmental Areas Plan*] to Schedule 10 [*Lands*] identifies the location of the “**Restricted Environmental Areas**” described below. The AutoCad drawings provided to Project Co and showing the Site and the plans attached to Schedule 10 [*Lands*] shall be referred to in the event of any dispute regarding the location and boundaries of any of the REAs on the Site.

Without limiting any other applicable requirements in this Schedule 8 [*Environmental Obligations*], before commencing any Project Work in a Restricted Environmental Area, Project Co must comply with the requirements set out below with respect to that Restricted Environmental Area:

10.2 REA 1 Red Legged Frog Breeding Habitat

“Red legged frog breeding habitat” is defined as aquatic habitat that provides breeding habitat for red legged frogs and all areas within a 30 meter riparian buffer. Project Co. shall, prior to conducting any Project Work that might reasonably be expected to impact confirmed or potential red-legged frog breeding habitat:

- (a) develop and submit to BC Hydro under the Review Procedure, and implement a red-legged frog habitat management plan that includes the following requirements:
 - (i) methodology for a pre-construction relative abundance survey (including egg-mass and hydrophone surveys);
 - (ii) measures that have been considered for avoiding effects to confirmed red-legged frog breeding habitat;
 - (iii) a pre-Construction salvage plan using the methodologies described in Inventory Methods for Pond-breeding Amphibians and Painted Turtle, Standards for Components of British Columbia's Biodiversity No. 37, published by the Resource Inventory Committee in 1998;
 - (iv) a habitat compensation plan and schedule that Project Co. will implement prior to the Total Completion Date, in order to have no net loss of such habitat, where effects to such habitat cannot be avoided; and
 - (v) a monitoring and restoration plan that will be undertaken, following the construction of red-legged frog habitat compensation, until such time as it can be demonstrated that the replacement habitat is self-sustaining.

The area shown as REA 1 on the drawing attached as Appendix 10G [*Restricted Environmental Areas Plan*] to Schedule 10 [*Lands*] is the area BC Hydro has identified as containing actual or potential red-legged frog breeding habitat. The plan described above must be provided to BC Hydro not less than 30 days prior to the commencement of any Project Work within the boundaries of REA 1. However, the boundaries of REA 1 do not limit the obligations of Project Co with respect to potential red legged frog breeding habitat. Project Co is responsible to determine the boundaries of red legged frog breeding habitat by appropriate investigations and surveys prior to commencing the Project Work. Project Co shall comply with, and shall ensure that all Project Co Persons comply with the plan submitted under this Section.

- (b) If Project Work that may impact red-legged frog breeding habitat is required, Project Co. must schedule that Project Work to avoid the red-legged frog breeding windows of February 1 through March 31.

10.3 REA 2 – Limit of construction for installation of cofferdam at south powerhouse alternate.

The cofferdam for the south powerhouse alternate must not extend beyond the boundaries of the area shown as REA 2 in the drawing attached as Appendix 10G [*Restricted Environmental Areas Plan*] to Schedule 10 [*Lands*]. Not less than 30 days prior to commencing any physical Construction with respect to the cofferdam Project Co must submit the cofferdam design to BC Hydro's Representative in accordance with the Review Procedure. The design must demonstrate that the cofferdam will remain within the boundaries of REA 2.

10.4 REA 3 – Drinking water zone.

Prior to commencing any Project Work within the area shown as REA 3 in the drawing attached as Appendix 10G [*Restricted Environmental Areas Plan*] to Schedule 10 [*Lands*] Project Co shall deliver to BC Hydro the Drinking Water Management Plan in accordance with Section 9.4 [*Reservoir Drinking Water Zones*] in this Schedule. During any Project Work conducted in REA3, Project Co shall comply with, and shall ensure that all Project Co Persons comply with, the requirements set out in Section 9.4 [*Reservoir Drinking Water Zones*] in this Schedule.

10.5 REA 4 – Potentially contaminated soils.

Project Co shall not disturb any soil within the boundaries of any area labelled as REA 4 on the drawing attached as Appendix 10G [*Restricted Environmental Areas Plan*] to Schedule 10 [*Lands*] until an Environmental Work Plan for the area where the soil is being disturbed has been accepted by the BC Hydro Representative pursuant to Section 2.4(c) [*Environmental Plans and Reports*] in this Schedule. Project Co will be responsible for remediating Contamination in these areas as required pursuant to Section 4 [*Contamination*] in this Schedule. Soil excavated from these areas must be handled in accordance with Section 12 [*Excavated Material Management*] in this Schedule.

10.6 REA 5 – Soccer Field.

The area shown as REA5 on the drawing attached as Appendix 10G [*Restricted Environmental Areas Plan*] to Schedule 10 [*Lands*] is the soccer field. Project Co must comply with the requirements in Sections 6 [*Former Switchyard/Soccer Field*] and 12 [*Excavated Material Management*] in this Schedule with respect to the soccer field in addition to all other requirements of this Schedule 8 [*Environmental Obligations*] applicable to any Project Work within the boundaries of the soccer field.

11. WASTE MANAGEMENT

11.1 Prohibition on Open Burning

Project Co. is prohibited from open burning of any material, including land clearing debris, as a means of waste disposal.

11.2 Waste Water

Project Co is prohibited from discharging treated or untreated sewage effluent to the Campbell River or any other water body or wetland or stream or to any other location where the effluent may migrate to the Campbell River or any other water body or wetland or stream.

11.3 Waste Removal and Site Condition

Project Co shall ensure that the Site and the Facility are maintained in a neat and tidy condition during the Project Work and shall remove all waste and debris (including waste Hazardous Substances) from the Site and the Facility on a regular basis. Project Co shall ensure that all waste sent for off-Site disposal is handled and transported only by qualified and reputable disposal agents and haulers that have all required Permits and that all such waste is disposed of only at recognized waste disposal facilities in Canada that have all required Permits to accept such material for disposal. Project Co shall ensure that all handling, transportation and disposal of waste occurs in accordance with all applicable Environmental Laws. Project Co shall not dispose of any waste on any federal land or land within the Agricultural Land Reserve (established under British Columbia's *Agricultural Land Commission Act*) or at any facility located on any such land. Except for material, including Waste Material (i.e. the rock/soil), that is sent to a municipal landfill for disposal, Project Co shall submit to BC Hydro's Representative for information only a list of all material sent to off-Site disposal locations with the volumes and dates of delivery of material sent to each disposal location.

12. EXCAVATED MATERIAL MANAGEMENT

- (a) All Site Material excavated on the Site during Construction will be stockpiled and used in rehabilitation and revegetation of the Project Site, provided that:
 - (i) Site Material excavated from an area where Contamination is located or could reasonably be expected to be located will be stockpiled in the area of the Site from which the Site Material was excavated and will not be moved to another area of the Site or reused on the Site unless Project Co has first submitted to BC Hydro in accordance with the Review Procedure results of sampling which was conducted in accordance with the requirements of the BC *Environmental Management Act* and *Contaminated Sites Regulation* and associated protocols and guidance documents and which is sufficient to support an application for a Certificate of Compliance at a later date confirming that the Site Material contains no Contamination in excess of the applicable standards specified in this Schedule 8 [*Environmental Obligations*] for the area of the Site where the soil is proposed for reuse; and
 - (ii) notwithstanding Section 12(a)(i) in this Schedule, Site Material that is excavated from within the boundaries of REA5 as shown on the drawing attached as Appendix 10G [*Restricted Environmental Areas Plan*] to Schedule 10 [*Lands*] or that is excavated as part of the Project Work required pursuant to subsection 4.2(a) of this Schedule may only be reused within the boundaries of the Restricted Environmental Area from which it was excavated and only after Project Co has submitted to BC Hydro's Representative in accordance with the Review Procedure the sampling results required under Section 12(a)(i) [Excavated Material Management] in this Schedule.
- (b) Notwithstanding Section 12(a) in this Schedule, Project Co may reuse waste rock from the Site to restore cuts and excavations made during the Project Work, provided that any such waste rock is left in a safe and stable condition and further provided that Project Co has submitted to BC Hydro's Representative for review in accordance with the Review Procedure a notice of proposed reuse of waste rock which notice shall describe the area where the waste rock was excavated from, the area where the waste rock will be placed, the volume of waste rock involved and be accompanied by evidence that demonstrates that such waste rock will not cause acid rock drainage.
- (c) Project Co shall ensure that all Site Material that is not reused on-Site during the Project Work as permitted under this Agreement is removed from the Site prior to the Total

Completion Date. Subject to Schedule 24 [*First Nations*] requirements, Project Co shall ensure that all surplus Site Material (Waste Material) sent for off-Site disposal is handled and transported only by qualified and reputable disposal agents and haulers that have all required Permits and that all such Site Material is disposed of only at recognized waste disposal facilities in Canada that have all required Permits to accept such material for disposal. Project Co shall ensure that all handling, transportation and disposal of Site Material occurs in accordance with all applicable Environmental Laws. Project Co shall not dispose of any Site Material on any federal land or land within the Agricultural Land Reserve (established under British Columbia's *Agricultural Land Commission Act*) or at any facility located on any such land. Except for Site Material that is sent to a municipal landfill for disposal, Project Co shall submit to BC Hydro's Representative for information only a list of all Site Material sent to off-Site disposal locations with the volumes and dates of delivery of Site Material sent to each disposal location.

- (d) Project Co shall develop and implement a manifest system for all soil, fill and rock brought to or removed from the Site during the Project Work and shall provide copies of all manifests to the BC Hydro Representative within 48 hours after any soil, fill or rock is brought to or removed from the Site.

13. SPILL KITS

Project Co shall install spill kits at all locations in the Facility and on the Site where equipment containing more than 200 litres of oil will be located or where more than 200 litres of oil or waste oil will be stored or handled. Each spill kit location must be designed and located such that the spill kit will be stored in a dry, clean, easily accessible area with signage that clearly indicates the location of the spill kit. The location and signage of the kit must be sufficient to ensure that the spill kits can be easily located in an emergency situation. Project Co shall ensure that the spill kits contain all items specified in BC Hydro's Best Management Practice for Spill Kits in the quantities specified in that Best Management Practice. Project Co shall be responsible for maintaining, repairing and resupplying the spill kits throughout the Term in accordance with the requirements of this Section.

PART B – ENVIRONMENTAL OBLIGATIONS APPLICABLE TO THE SERVICES PERIOD

Part B of this Schedule 8 [*Environmental Obligations*] applies to all Services from the Services Commencement Date to the Termination Date.

14. SERVICES PERIOD REQUIREMENTS

14.1 BC Hydro Role and Responsibilities

According to the terms of Section 4.19 of the Project Agreement [*Regulatory Approvals and Permits*] BC Hydro will be responsible for obtaining any authorization required under the *Fisheries Act* with respect to the operation of the Facility during the Services Period (the “**BC Hydro Fisheries Authorization**”), but excluding any authorization required as a result of any activities of Project Co during the Services Period.]

14.2 Project Co Role and Responsibilities

In addition to Project Co’s responsibilities outlined in Schedule 7 [*Services*], during the Services Period, Project Co will be responsible for the following:

- (a) fish salvage activities during periodic maintenance of the Facility, as required pursuant to, and in accordance with the requirements of all applicable Laws, Permits, the OEMP and the Operating Orders;
- (b) conducting regular inspections of the Facility to identify any unauthorized Release to the environment and, where any such Release is identified, Project Co will report the Release as required pursuant to Section 7 [*Environmental Incident Reporting and Response*] in this Schedule and take the measures required pursuant to Section 7.3 [*Response Measures*] in this Schedule with respect to that Release;
- (c) maintaining, repairing and replacing oil containment systems, oil storage and handling systems and oil/water separator systems as required to ensure that those systems meet the specifications in Schedule 6 [*Design and Construction Specifications*] throughout the Services Period;
- (d) collection, management and removal of all waste from the Facility and the Site, including all waste Hazardous Substances in accordance with the requirements of all applicable Laws, Permits and the requirements of this Schedule 8 [*Environmental Obligations*]. Without limiting the foregoing, Project Co shall ensure that the volume of each type of Hazardous Substance listed in the Table in Appendix 8D [*Table of Hazardous Substance Volumes*] that is stored on the Site at any time does not exceed the volume specified in the Table in Appendix 8D [*Table of Hazardous Substance Volumes*]. The provisions of Section 4.2(e) [*Responsibility for Contamination*] in this Schedule apply to the handling, transport and disposal of all such Hazardous Substances;
- (e) stocking, maintenance and replenishment of all materials and supplies required at the Facility to effectively implement environmental management activities in accordance with the OEMP and this Schedule 8 [*Environmental Obligations*]; and
- (f) vegetation and landscape management in accordance with the requirements of Section 8 [*Rehabilitation, Revegetation and Vegetation Management*] of this Schedule.

14.3 Application of Schedule 8, Part A Requirements to Services Period

Project Co shall continue to be bound by all the provisions and requirements of Part A of Schedule 8 [*Environmental Obligations*] and shall be responsible for all the tasks and activities in Part A of Schedule 8 [*Environmental Obligations*] during the Services Period except as follows:

- (a) Project Co shall not be responsible for any environmental issues or incidents to the extent those issues or incidents are caused by BC Hydro's operation of the Facility and are not caused, directly or indirectly, by Project Co's failure to perform the Services in accordance with this Agreement (and subject to limitations and qualifications of Schedule 7 [*Services*]) or by any other act or omission of Project Co or a Project Co Person, provided that this Section 14.3(a) does not limit any responsibility Project Co may have to provide Services in respect of any such issue or incident as required under any other provision of this Agreement;
- (b) after the Total Completion Date, Project Co shall not be required to provide an Environmental Director. All other requirements in Sections 2.1.2 [*Environmental Manager*] and 2.2 [*Environmental Specialists*] in this Schedule remain in effect during the Services Period, except that the responsibilities of the Environmental Manager during the Services period shall include all of the responsibilities of the Environmental Director specified in section 2.1.1 [*Environmental Director*] of this Schedule and effective operation and implementation of the OEMP on a day to day basis and further provided that the Environmental Manager shall not be a full-time resource, but shall be available on an "as-needed basis" as necessary to ensure that Project Co complies with its obligations under the Agreement;
- (c) after the Total Completion Date, Project Co shall not be required to comply with Section 2.3 [*Environmental Monitor*] in this Schedule, but Project Co shall continue to be responsible for all environmental monitoring requirements in the OEMP, EA, Fisheries Authorizations, other Permits (including the BC Hydro Permits), the Project Environmental Commitments and any other Section of this Agreement;
- (d) after the Total Completion Date, Project Co shall not be required to comply with Section 2.4(e) [*Environmental Plans and Reports*] in this Schedule; and
- (e) for the purposes of Section 5.1(a) [*No Use of Hazardous Substances*] in this Schedule, Project Co may use or bring onto the Site those Hazardous Substances contemplated in the OEMP, but only in the quantities contemplated in the OEMP and for the purposes contemplated in the OEMP and in compliance with all Environmental Laws and all other applicable Laws.

Any reference in Part B of Schedule 8 [*Environmental Obligations*] to a specific Section or Sections in, or a specific requirement under, Part A of Schedule 8 [*Environmental Obligations*] does not limit the general application of Part A of this Schedule to the Services.

14.4 Operational Environmental Management Plan

- (a) Not less than 180 days prior to the First Generating Unit Target Commercial Operation Date, Project Co shall submit to BC Hydro's Representative in accordance with the Consent Procedure an environmental management plan for the Facility for the Services Period ("**OEMP**"). Project Co shall ensure that the OEMP:
 - (i) identifies environmental issues associated with the operation of the Facility that are reasonably anticipated to occur during the Services Period and identifies appropriate practices, procedures and protocols for managing those environmental issues to minimize adverse environmental impacts;

- (ii) incorporates BC Hydro's best management practices and protocols for the protection of the environment;
- (iii) includes Project Co's policies and procedures for:
 - (1) avoiding or minimizing the production or disposal of Hazardous Substances;
 - (2) ensuring the Services are performed in a careful and environmentally responsible manner to minimize adverse effects on health and the environment;
 - (3) monitoring the environmental impacts of the Facility;
 - (4) managing and minimizing air and waste water emissions including greenhouse gases, halocarbons and other ozone depleting substances;
 - (5) managing fuel storage tanks;
 - (6) managing sound pollution from the Facility;
 - (7) implementing a proactive indoor air quality management program;
 - (8) developing an occupant environmental awareness program in conjunction with BC Hydro;
 - (9) complying with, updating and maintaining as current the operational policies, procedures and practices for performance of the Services; and
 - (10) developing and implementing programs and procedures for reducing the environmental impact of the delivery of the Services; and
 - (11) reporting to BC Hydro on compliance with the OEMP.
- (b) Project Co may at any time propose modifications or supplements to the OEMP if it determines such modifications or supplements to be appropriate and required for the protection of the environment by submitting the modification or supplement, as applicable, to BC Hydro in accordance with the Review Procedure.
- (c) According to the terms set out in Section 4.20 [*Change in Laws, Permits, Legal Obligations and BC Hydro Policies*] Project Co shall:
 - (i) in the event that: (A) a Change in Law; (B) any lawful order by a Governmental Authority; or (C) the terms of any Permit, or (D) the Services or Facility conditions, requires a modification or supplement to the OEMP, promptly submit such modifications or supplements as are necessary to BC Hydro in accordance with the Review Procedure; and
 - (ii) following the occurrence of any incident that was required to be reported to an Environmental Authority under any Environmental Law or Permit, assess the OEMP to determine if there are any defects or deficiencies in the OEMP and, if it determines there are defects or deficiencies in the OEMP, promptly submit to BC Hydro in accordance with the Review Procedure such modifications or supplements as are necessary to remedy such defect or deficiency.

- (d) Project Co shall comply with and shall ensure that all Project Co Persons comply with the OEMP.

14.5 Permits and Communications with Government Authorities

- (a) According to the terms of Section 4.19 of the Project Agreement [*Regulatory Approvals and Permits*], and except as expressly provided otherwise in this Schedule 8 [*Environmental Obligations*], Project Co will be responsible for obtaining all Permits required under Environmental Laws for the Services. Project Co assumes all risk and costs arising in relation to Permits for which Project Co is responsible as described in this Section, including delays to the Services arising from delays in obtaining Permits or inability to obtain Permits, conditions of obtaining Permits, or amendments to Permits as may be required.
- (b) Project Co shall comply with the requirements of Section 3.5 [*Permits for Design and Construction*] in Schedule 5 [*Design and Construction Protocols*] during the Services Period, provided that all references to “Design and Construction” in that Section are deemed to be replaced with “Services”.

14.6 Maintenance Timing

Project Co will schedule maintenance of the Power Tunnel and any other maintenance activities that require spill flows through Elk Falls Canyon in a manner that:

- (a) minimizes, to the maximum extent feasible taking into account both Good Utility Practice and Environmental Best Management Practices, the frequency of Elk Falls Canyon releases greater than 40 m³/second; and
- (b) limits, to the maximum extent feasible taking into account both Good Utility Practice and Environmental Best Management Practices, the duration of flow releases through the Elk Falls Canyon.

14.7 Project Co Contamination and Project Co Hazardous Substances

- (a) The provisions of Section 4 [*Contamination*] in this Schedule continue to apply during the Services Period. Project Co shall complete any remediation required with respect to any Contamination caused or found after the Total Completion Date prior to the Termination Date.
- (b) The provisions of Section 5 [*Hazardous Substances*] in this Schedule continue to apply during the Services Period. Project Co shall prior to the Termination Date remove from the Site and any adjacent lands and waters all Project Co Hazardous Substances that are not required, as directed by BC Hydro, for continued operation of the Facility following the Termination Date.

14.8 Water Quality

- (a) Without limiting Project Co's obligation to comply and to ensure that all Project Co Persons comply with all applicable Environmental Laws, Project Co shall ensure that any water discharged into the environment from the Facility or the Site meets the aquatic life water quality standards specified in Appendix 8C [*Water Quality Guidelines*] and does not contain any other substance at concentrations that would constitute a deleterious substance under the *Fisheries Act*. Project Co will not be considered to have breached this requirement with respect to a water quality standard specified in Appendix 8C [*Water Quality Guidelines*] or a deleterious substance to the extent that Project Co can

demonstrate that: (a) water entering the Facility did not meet that water quality standard or contained that deleterious substance and the failure to meet that water quality standard or the presence of the deleterious substance was not caused, directly or indirectly, in whole or in part, by any act or omission of Project Co or any Project Co Person; or (b) the discharge that has caused the breach of this provision is oil from the oil separation system and the concentration of oil discharged from the oil separation system did not exceed the concentrations specified in Schedule 6 [*Design and Construction Specifications*].

- (b) Where any water discharged from the Facility does not comply with the water quality standards specified in this Section 14.8, Project Co shall provide written notice to BC Hydro within 24 hours after Project Co receives the water sampling results. Project Co shall promptly conduct an investigation and tests as required to identify the cause of the failure to comply with the water quality standards. Project Co shall keep BC Hydro fully informed concerning the scope, timing and results of the investigation. Project Co shall promptly make any repairs or modifications to the Facility required to ensure that the water discharged from the Facility complies with the requirements of this Section 14.8.

APPENDIX 8A

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APPENDIX 8B
Project Environmental Commitments

Introduction: As set out in Sections 1.2 and 1.10 of this Schedule 8 [*Environmental Obligations*], Project Co and BC Hydro are each required to perform obligations relating to this Appendix 8B [*Project Environmental Commitments*]. In respect of certain of these Project Environmental Commitments, Section 4.19(i) [*Regulatory Approval and Permits*] may apply. The parties acknowledge and agree that:

- (i) certain “Mitigation” items listed in this Appendix 8B necessarily involve the participation of both parties even if only one party is listed in the “Implementation” column and each party shall perform its respective obligations in relation to these matters in accordance with the terms of this Agreement, including this Appendix 8B; and
- (ii) BC Hydro’s failure to perform its obligations under this Project Agreement, including in relation to the Project Environmental Commitments, may have an impact on Project Co’s ability to perform or satisfy certain of these Appendix 8B Project Environmental Commitments and that in such circumstances said impact shall constitute a Compensation Event in accordance with Section 8.3 [*Project Co’s Entitlements upon Occurrence of a Compensation Event*] of the Agreement.

Any modifications that may be required by BC Hydro to this Appendix 8B as a consequence of ongoing consultation with DFO, Comptroller of Water Rights, First Nations and other stakeholders following the Effective Date will be by way of a Change.

Phase	Section and Mitigation Number	Mitigation	Responsibility for Implementation
General			
Pre-C	n/a	<p>BC Hydro will prepare a CEMP prior to commencement of the construction period to identify actions and activities that will be implemented during construction to mitigate potential adverse environmental impacts. It will include the following component plans:</p> <ul style="list-style-type: none"> • Sediment and Erosion Control Plan; • Contaminated Soils Management Plan; • Emergency Response Plan (including spill prevention); • Water Quality Management Plan; • ML/ARD Management Plan; • Construction Waste Management Plan (including hazardous materials); • Cementitious Materials Management Plan; • Air Quality and Dust Management Plan; • Traffic Safety Management Plan; • Health and Safety Plan; • Rehabilitation and Revegetation Plan; • Terrestrial Habitat Mitigation Plan; • Archaeological Resource Management Plan; • Fish and Fish Habitat Mitigation and Compensation Plan; • Switchover and Commissioning Plan [Commissioning CEMP]; • Blast Management Plan; • Recreation and Tourism Plan; and • Environmental Education and Awareness Plan. <p>BC Hydro will work with First Nations to incorporate their recommendations for site specific mitigation and management strategies into the CEMP where feasible.</p>	Project Co

Phase	Section and Mitigation Number	Mitigation	Responsibility for Implementation
Pre-C	n/a	Prior to the start of any construction activity, BC Hydro will develop an Environmental Monitoring Plan for the construction phase that will identify the type and frequency of observations and data collection, methodologies to be employed, and protocols to be followed. BC Hydro will work with First Nations to identify and facilitate First Nation involvement in monitoring.	Project Co
C	n/a	BC Hydro will retain a qualified Environmental Monitor to inspect, evaluate and report on the effectiveness of environmental mitigation measures as outlined in the CEMP. Reporting will be as required by agencies or as may be determined by BC Hydro.	Project Co
Pre-O	n/a	BC Hydro will review and update, where applicable, BC Hydro environmental management procedures, as well as a site specific Emergency Response Plan, that currently comprise the operational documentation for the JHT Facility (such as the Generation Operating Order (GOO) and the Local Operating Orders (LOO)) to reflect changes required as a result of the Project.	Project Co
Hydrology and Hydraulics			
C/O	6-M1	To minimize the effects of the replacement powerhouse and tailrace on river behaviour (and fish habitat) during construction and operation, BC Hydro will seek to minimize Project related changes to flow split around First Island through Project design that would result in measurable changes to hydraulic parameters (e.g. water depth and velocity).	Project Co
C	6-M2	In final design, BC Hydro will seek to minimize the loss of the deep water pool in the lower 400 m of Elk Falls Canyon (used by rearing and adult holding fish) and ensure areas of lower velocity are retained (used by upstream migrant fish). Options may include locating the north powerhouse alternate as close to the entrance to the canyon as possible, and, if not using the centre powerhouse alternate, retaining the existing tailrace pool.	Project Co
C	6-M3	Prior to the start of construction, BC Hydro will update the GOO to address flow disruption effects during construction.	Project Co
O	6-M4	Prior to Project operations commencing, BC Hydro will update the GOO to include procedures for use of the replacement flow bypass and the tunnel maintenance procedures, including shutdowns.	Project Co

Phase	Section and Mitigation Number	Mitigation	Responsibility for Implementation
C	6-M5	BC Hydro will develop a Switchover and Commissioning Plan [Commissioning CEMP] for acceptance by DFO. The plan will include all appropriate mitigation to minimize or reduce the potential impacts (e.g., provide a base flow of 40 m ³ /s or less from the existing spillway or as established by agreement with DFO).	Project Co
C	6-M6	Prior to selection of the powerhouse and tailrace alternate, BC Hydro will complete habitat surveys of Elk Falls Canyon, to establish a baseline to measure gravel movement.	Project Co
C	6-M7	For shutdowns of the John Hart Generating Station of up to twelve months during Project construction, BC Hydro will minimize the risk of high flows in the canyon that would change the behaviour of the channel in the canyon for a period longer than the shutdown period.	Project Co
C	6-M8	During detailed design of the tailrace, BC Hydro will minimize the encroachment of the cofferdam on the wetted area of the channel by limiting the area of in-river works to that defined in Figures 6-9 to 6-11.	Project Co
C	6-M9	BC Hydro will return the aquatic footprint area affected by the cofferdam to a condition similar to the condition of the river bed prior to installation of the cofferdam.	Project Co
AM (C)	6-M10	BC Hydro will provide protection against cofferdam erosion to a suitable design standard for temporary works in the lower Campbell River	Project Co
C	6-M11	BC Hydro will provide gravel placement to offset losses in the canyon if flows during a shutdown in the construction period are sufficient (>110 m ³ /s) to redistribute gravels in the canyon. Volume to be determined by surveys in #6-M6.	Project Co
Hydrogeology			
O	7-M1	During construction of the tunnel, BC Hydro will identify permeable zones (faults, joints, fractures, and buried channels and depressions).	Project Co
O	7-M2	BC Hydro will seal permeable zones that are found to have higher permeability to prevent or reduce permeability, should any be identified by #7-M1.	Project Co
O	7-M3	During final design, BC Hydro will evaluate the potential for excessive water loss from the tunnel that could lead to Elk Falls Canyon slope instability potential.	Project Co

Phase	Section and Mitigation Number	Mitigation	Responsibility for Implementation
O	7-M4	BC Hydro will mitigate excessive water loss from the tunnel to avoid or minimize risks to slope stability along Elk Falls Canyon side slopes identified by #7-M3 as having some potential for instability.	Project Co
Surficial Soils			
C	8-M1	BC Hydro will prepare and implement a Construction Waste Management Plan as part of the Project's CEMP for the proper management of all construction and demolition waste. All materials will be managed and transported following the Transport Canada Transportation of Dangerous Goods Regulations (Transport Canada 2011b) and the BC Hazardous Waste Regulation (HWR).	Project Co
C	8-M2	BC Hydro will prepare and implement a Contaminated Soils Management Plan as part of the Project's CEMP for the proper management (i.e. excavation, sampling, handling, and disposal procedures for contaminated soils and water) and monitoring of known and potentially contaminated soils impacted by Project construction activities. Contaminated soils that exceed CSR Industrial Land Use standards or HWR standards will be removed from the LSA if encountered during construction activities associated with the Project.	Project Co
C	8-M3	BC Hydro will prepare and implement a Construction Health and Safety Plan to address the protection of worker health during Project activities, including but not limited to excavation and handling of contaminated soils, hazardous waste materials and pipeline materials.	Project Co
C	8-M4	BC Hydro will identify measures within the Water Quality Management Plan to address potential effects to the environment related to excavation dewatering and tunnel construction (including discharges of water from these activities) in accordance with federal and provincial laws.	Project Co

Phase	Section and Mitigation Number	Mitigation	Responsibility for Implementation
AM (C/O)	8-M5	<p>BC Hydro will prepare and implement an Emergency Response Plan that includes BMPs from <i>A Field Guide to Fuel Handling, Transportation and Storage</i> (MWLAP 2002), <i>Standards and Best Practices for Instream Works</i> (MWLAP 2004) and <i>Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia</i> (MoE 2006b). Additional procedures or information to be included in the Emergency Response Plan include but are not limited to:</p> <ul style="list-style-type: none"> • Procedures for prevention of spills of contaminated water from Project work sites; • Procedures for emergency response should such a spill occur, including containment and removal of any contaminated soils to meet applicable CSR standards; • Identification of individuals or agencies that should be notified in the case of a spill or accident, the timeframe for notification, and requirement for remedial measures; • In the event of a spill, site clean-up will be managed to meet legislative requirements, including contaminated sites legislation; • The use, storage, and transport of chemicals, dangerous goods, and/or hazardous substances, such as fuel and lubricating oils for construction equipment, will be carried out in compliance with applicable federal and provincial environmental laws; • Mobile equipment will be refuelled, lubricated and serviced at designated locations, and refuelling, servicing, and equipment staging, storage areas will be at least 30 m from the nearest watercourse or wetland on level grade; • Concrete washout will occur in designated areas only or off site (see #9-M4); and • Only food-grade lubricants and antifreeze will be used in equipment working in and around John Hart Reservoir. All hydraulic machinery entering a water body will use environmentally sensitive hydraulic fluids that are non-toxic to aquatic life and that are readily or inherently biodegradable. • In the vicinity of the lower Campbell River BC Hydro will assess the risks associated with the potential effects of accidental leaks of lubricants and antifreeze and as warranted they may be mitigated through the use of mineral oil based lubricants (mixture of mineral oil (decomposable) and synthetic oil and propylene glycol, a food-grade antifreeze. 	Project Co

Phase	Section and Mitigation Number	Mitigation	Responsibility for Implementation
Water Quality			
C	9-M1	<p>BC Hydro will prepare and implement a Sediment and Erosion Control Plan as part of the CEMP. The Sediment and Erosion Control Plan will be based on BMPs, including Land Development Guidelines for the Protection of Aquatic Habitat (Chilibeck et al. 1993) and Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia (MoE 2006b). Mitigation practices include, but are not limited to, those in Section 9.4.2.1 and the following:</p> <ul style="list-style-type: none"> Excavation will be completed in-the-dry in the Campbell River; Manage particulates in water from dewatering excavations and tunnel process water to ensure that water meets applicable water quality guidelines before it is discharged into the receiving water body; Water discharged to the Campbell River or John Hart Reservoir, including water from inside the cofferdams for the replacement intake and detention ponds (if used), will be in compliance with the water quality guidelines in Table 9-2; Water quality will be monitored in accordance with the aquatic monitoring program; and Any material that is placed near a stream, whether temporarily or permanently, will be free of fine particles that could enter the water body and adversely affect fish habitat or drinking water sources. 	Project Co
C	9-M2	BC Hydro will avoid and reduce potential turbidity from dredging in John Hart Reservoir such that turbidity and total suspended solids levels are equal to or less than the water quality guidelines (Table 9-2) within 5 m of the dredge head or any device used to limit the dispersion of particles in the water.	Project Co
C	9-M3	To minimize the potential effects of construction related contaminants to water quality, BC Hydro will implement the Contaminated Soils Management Plan and Construction Waste Management Plan.	Project Co

Phase	Section and Mitigation Number	Mitigation	Responsibility for Implementation
C	9-M4	<p>To minimize the potential effects of blasting on water quality during construction, BC Hydro will prepare and implement a Blast Management Plan, which will include at a minimum the mitigation measures and BMP's outlined in Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters (Wright & Hopky 1998) and the Land Development Guidelines for the Protection of Aquatic Habitat (Chilibeck et al. 1993). In addition:</p> <ul style="list-style-type: none"> • Only the minimum amounts of explosives required to complete the job will be used in any work; and • Blasting operations will be controlled to minimize the possibility of blast residue and fly rock entering any watercourse. 	Project Co
C	9-M5	<p>To ensure that excavated material associated with tunnel construction does not contribute acidic waters to the local water bodies, or otherwise impact water quality, BC Hydro will:</p> <ul style="list-style-type: none"> • Develop and implement an ML/ARD Management Plan and Sediment and Erosion Control Plan as part of the CEMP; • Develop and implement an aquatic monitoring program as part of the construction and follow-up monitoring program; and • Manage particulates in water from tunnel seepage and tunnel process water to ensure that water meets applicable water quality guidelines. 	Project Co

Phase	Section and Mitigation Number	Mitigation	Responsibility for Implementation
C	9-M6	<p>To manage the potential effects of usage of concrete on water quality during construction, BC Hydro will develop and implement a Cementitious Materials Management Plan that outlines mitigation measures and best management practices. The Cementitious Materials Management Plan will include best management practices as applicable from Chilibeck et al. (1993) and MWLAP (2004). The measures will be inclusive of those in Section 9.4.2.5, including but not limited to:</p> <ul style="list-style-type: none"> • Limit the volume and extent of concrete pours in or about water bodies; • Contain concrete in formed structures; • Wash down water from exposed surfaces and concrete trucks will be trapped onsite in designated areas to allow sediment to settle out and reach neutral pH before the clarified water is allowed to percolate into the ground; and • Where underwater concrete pours are required, <ul style="list-style-type: none"> ▫ Water quality guidelines for aquatic life (Table 9-2) will be met in the immediate vicinity of the pour to avoid effects to aquatic life; ▫ Water quality guidelines for drinking water (Table 9-3) will be met within 100 m of the JHT intake; ▫ A concrete mix design that is appropriate for underwater use will be used.; and ▫ Water quality will be monitored in accordance with the Aquatic Monitoring Plan. If water quality data during concrete pours indicates non-compliance with the water quality guidelines, all concrete pouring activities will be suspended until a plan for maintaining compliance is established. 	Project Co
C/O	9-M7	To avoid or minimize the potential effects of TGP on fish, BC Hydro will keep spill flow rates less than 60 m ³ /s during shutdowns, switchover and commissioning, and normal operation, to reduce the risk of gas bubble trauma, unless otherwise approved by DFO.	Project Co
C	9-M8	During switchover and commissioning, BC Hydro will avoid changing the temperature of water that passes through the replacement tailrace or in the reach of the Campbell River downstream for 200 m below the spillway dam at a rate of more than 1°C per hour	Project Co

Phase	Section and Mitigation Number	Mitigation	Responsibility for Implementation
AM (C)	9-M9	<p>To avoid and mitigate potential accidents and malfunctions, BC Hydro will develop and implement the following plans in the CEMP, including:</p> <ul style="list-style-type: none"> • Environmental Education and Awareness Plan; • Emergency Response Plan; • Construction Materials Management Plan; • Cementitious Materials Management Plan; • ML/ARD Management Plan; and • Water Quality Management Plan. <p>The above plans will include mitigation measures as noted in mitigation for this section.</p>	Project Co
O	9-M10	To avoid and mitigate for accidents and malfunctions, BC Hydro will review and update the GOO and the LOO, as necessary to reflect changes to the JHT Facility, associated activities and the environmental setting.	Project Co
O	9-M11	BC Hydro will update the GOO to include measures to provide for flow buffering before and during tunnel maintenance outages to avoid or minimize potential in TGP impacts to fish in the Canyon during flow diversions.	Project Co
C, O	9-M12	Prior to the start of construction, BC Hydro will develop and implement an Aquatic Monitoring Plan to meet the monitoring requirements in Sections 8 and 9 and the guidelines in Table 9-2. The program will be designed to provide monitoring upstream and downstream of points of discharge. BC Hydro will work with First Nations to identify and facilitate First Nation involvement in monitoring.	Project Co

Phase	Section and Mitigation Number	Mitigation	Responsibility for Implementation
Fish and Fish Habitat			
C	10-M1	<p>BC Hydro will, with consultation with First Nations, prepare and implement a Fish and Fish Habitat Mitigation and Compensation Plan that outlines the mitigation measures and applicable BMP's to avoid and mitigate potential effects to aquatic habitat during construction of the Project and identify compensation that will be undertaken to address unavoidable impacts to fish habitat. Where avoidance is not possible through design, BC Hydro will implement BMPs (as applicable) listed below to facilitate the restoration and recovery of aquatic habitat, including:</p> <ul style="list-style-type: none"> • Standards and Best Practices for Instream Works. MWLAP (2004); • Land Development Guidelines for the Protection of Aquatic Habitat. Chilibeck et al. (1993); • Fish-stream Crossing Guidebook. MOF (2002); • Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia. MOE (2006b); and • Pacific Region Operational Statement: Temporary Ford Stream Crossings V 1.0. DFO (2008). 	Project Co

Phase	Section and Mitigation Number	Mitigation	Responsibility for Implementation
C	10-M2	<p>Before commencing Project construction, BC Hydro will conduct fish sampling in all upland tributaries and wetlands currently classified as non-fish bearing to confirm fish absence and SPEA widths.</p> <p>BC Hydro will, with consultation with First Nations, prepare and implement a Fish and Fish Habitat Mitigation and Compensation Plan that outlines the mitigation measures and applicable BMP's to avoid and mitigate potential effects to riparian fish habitat during construction of the Project and (if required) identify compensation that will be undertaken to address unavoidable impacts to riparian habitat. Where avoidance is not possible through design, BC Hydro will implement BMPs (as applicable) to facilitate the recovery of riparian habitat, listed below:</p> <ul style="list-style-type: none"> • Standards and Best Practices for Instream Works. MWLAP (2004); • Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia. MOE (2006b); • Approved Work Practices for Managing Riparian Vegetation (Appendix A). BC Hydro et al. (2003); • Overhead Line Construction, Pacific Region Operational Statement V 3.0. DFO (2008a). Transmission line voltage and ROW width are greater than the terms of this OS but the guidelines for avoiding a HADD are applicable • Design road crossings according to protocols outlined in MWLAP (2004); Chilibeck et al. (1993); MoF (2002) (mitigation #10-M1); • Riparian Areas and Revegetation (DFO 2009); and • Prior to commencing construction BC Hydro will incorporate the above BMPs, mitigation measures and site specific rehabilitation and revegetation measures into the Rehabilitation and Revegetation Plan (mitigation #11-M3). 	Project Co

Phase	Section and Mitigation Number	Mitigation	Responsibility for Implementation
C	10-M3	<p>To minimize the potential effects of changes in flow in the lower Campbell River to fish habitat during switchover and commissioning, BC Hydro will prepare and implement a Switchover and Commissioning Plan [Commissioning CEMP], which will include the following mitigation measures:</p> <ul style="list-style-type: none"> • Coordinate the timing of higher risk commissioning tests to avoid the most sensitive fish life history stages (i.e., fry emergence and spawning); • Conduct low risk tests first (shut-down over the lowest range of operational flow) and continue with tests that shutdown the units over a subsequently higher range of operational flows; • Balance flows between units for single or two unit tests; • Balance flows against an operational bypass; • Balance flows against the existing Powerhouse; • Provide a base flow of 40 m³/s or less from the existing spillway or as established by agreement with DFO; and • Provide a qualified crew to monitor and salvage stranded fish during high risk tests. 	Project Co

Phase	Section and Mitigation Number	Mitigation	Responsibility for Implementation
C/O	10-M4	<p>To minimize the potential effects of high flows during construction, switchover and commissioning, and tunnel maintenance during operation, BC Hydro will:</p> <ul style="list-style-type: none"> • Use a flow release schedule identified in the Switchover and Commissioning Plan [Commissioning CEMP] to limit the frequency and duration of flow releases at the spillway greater than 40 m³/s; • Define the tunnel maintenance periods and the associated Elk Falls Canyon flow releases in the GOO; • The flow release schedule for switchover and commissioning and the tunnel maintenance will take in account fish species and life history stage periodicity for fish in the canyon; • If prolonged shutdowns are required, , BC Hydro will complete gravel surveys of Elk Falls Canyon, to establish a baseline to measure gravel movement (#6-M6); • If prolonged shutdowns are required,, BC Hydro will determine residual effects to aquatic habitat that will be addressed in the Fish and Fish Habitat Mitigation and Compensation Plan (10-M1); and • BC Hydro will provide gravel placement to offset losses in the canyon if flows during a shutdown are sufficient (>110 m³/s) to redistribute gravels in the canyon. Volume to be determined by surveys in 6-M6 (#6-M12). 	Project Co
C	10- M5	<p>To avoid the potential effects of a cofferdam in the Campbell River on flow split during construction, BC Hydro will:</p> <ul style="list-style-type: none"> • Design and place the cofferdam to avoid effects on river behaviour near First Island; • The cofferdam will be designed by a professional engineer; • Detailed design will minimize the encroachment of the cofferdam on the wetted area of the channel and implement mitigations described in #6-M9; • BC Hydro will return footprint area affected by the cofferdam to a condition similar to the condition of the river bed prior to installation of the cofferdam (#6-M10); and • BC Hydro will provide adequate protection against cofferdam erosion to a suitable design standard for temporary works (#6-M11). 	Project Co

Phase	Section and Mitigation Number	Mitigation	Responsibility for Implementation
C	10-M6	To minimize the potential environmental effects of blasting during construction, BC Hydro will prepare and implement a Blast Management Plan, which will include at a minimum the mitigation measures and BMP's outlined in Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters (Wright & Hopky 1998) and the Land Development Guidelines for the Protection of Aquatic Habitat (Chilibeck et al. 1993).	Project Co
O	10-M7	To minimize the effects of the replacement powerhouse and tailrace on fish habitat during operation, BC Hydro will: <ul style="list-style-type: none"> • Avoid Project related changes to river behaviour through Project design that would result in measurable changes to hydraulic parameters (e.g. water depth and velocity); and • Compensate for modelled effects on fish habitat due to small changes in hydraulic effects from the selected powerhouse and tailrace alternate (mitigation #10-M10). 	Project Co
AM (O)	10-M8	To minimize the potential effects of the flow bypass and its tailrace on fish habitat, BC Hydro will: <ul style="list-style-type: none"> • Design the flow bypass tailrace to dissipate energy in water before it enters the river; • Locate the bypass tailrace adjacent to or within the Project tailrace; and • If the bypass tailrace is not located within the Project tailrace, design the bypass tailrace in a manner that limits fish stranding during bypass shutdown. 	Project Co
O	10-M9	To minimize the potential effects of vegetation management in transmission line ROWs during operation, BC Hydro will follow vegetation management protocols within riparian areas outlined in: <ul style="list-style-type: none"> • Standards and Best Practices for Instream Works (MWLAP 2004); • Integrated Vegetation Management Plan for Transmission Line Rights-of-way (BC Hydro 2010); • Approved Work Practices for Managing Riparian Vegetation (BC Hydro et al. 2003); • Approved BC Hydro vegetation management plans for the region for vegetation maintenance within the transmission line ROW; and • Use manual maintenance and removal techniques that allow the root system to stay intact in transmission line ROWs. 	Project Co

Phase	Section and Mitigation Number	Mitigation	Responsibility for Implementation
C and O	10-M10	<p>Prior to commencing construction, BC Hydro will develop a Fish and Fish Habitat Mitigation and Compensation Plan in consultation with DFO and First Nations. This plan will describe the expected permanent habitat losses as well as the compensation measures for these losses (Section 10.9.5)</p> <p>Follow-up monitoring for Fish and Fish Habitat Mitigation and Compensation Plan will be implemented to evaluate and ensure the success of the compensation projects.</p>	Project Co
AM	10-M11	<p>To prevent or minimize the potential effects of fire on fish habitat, BC Hydro will:</p> <ul style="list-style-type: none"> • Prepare and implement an Emergency Response Plan that includes responses to accidental fires; and • Implement the Rehabilitation and Revegetation Plan in the event of fire damage to riparian vegetation (#10-M2, #11-M3). 	Project Co
AM	10-M12	<p>To avoid the potential effects of unauthorized access into riparian and aquatic habitat, BC Hydro will:</p> <ul style="list-style-type: none"> • Flag cutting boundaries to identify riparian setbacks to construction workers in coordination with mitigation #10-M2 and #11-M2; and • Ensure an environmental monitor be on site to monitor construction activities within the SPEAs and aquatic habitat. 	Project Co
AM	10-M13	To manage the potential effects of unplanned shutdowns on dewatering of fish habitat, BC Hydro has included a flow bypass with a maximum discharge of 80 m ³ /s as a component of the Project. BC Hydro will, as part of the OEMP, update the GOO to include the correct response to unexpected plant shutdowns.	Project Co
C	10-M14	To address potential entrainment impacts on fish at the replacement intake BC Hydro commits to funding and facilitating the Fish Entrainment Strategy and mitigation agreed upon in consultation with DFO and First Nations.	BC Hydro
Vegetation			
C	11-M1	During detailed design, BC Hydro will locate Project components and construction activities to minimize disturbance of vegetation, including at-risk species and communities, and wetlands.	Project Co

Phase	Section and Mitigation Number	Mitigation	Responsibility for Implementation
C (AM)	11-M2	BC Hydro will establish vegetation clearing limits. Boundaries of work areas and BC Hydro property will be flagged to minimize accidental encroachment outside area where clearing is required.	Project Co
C	11-M3	BC Hydro will develop and implement a Rehabilitation and Revegetation Plan to rehabilitate disturbed areas not required for long-term operation so that the final Project footprint is equal to or less than the existing disturbance for the LSA. Requirements of the Rehabilitation and Revegetation Plan will include, but not be limited to: <ul style="list-style-type: none"> Rehabilitated areas will be revegetated with suitable native species with input on appropriate species from First Nations, (site specific revegetation and soil stockpiling prescriptions); and Natural drainage patterns will be maintained or restored. 	Project Co
C	11-M4	To manage invasive plant species during construction, BC Hydro will incorporate the following measures defined by the Invasive Plant Council of BC (IPCBC 2011), into the Rehabilitation and Revegetation Plan: <ul style="list-style-type: none"> Surveys for identification of invasive species (identification of issue); Use of removal and control measures defined by the Invasive Plant Council of BC (IPCBC 2011) Removal of invasive plants encountered during clearing; Inspecting and cleaning vehicles and equipment to keep free of invasive species; and Prompt treatment of temporarily used and exposed sites. 	Project Co
O	11-M5	BC Hydro will establish limits of maintenance activities on drawings that will be included in the JHT Facility OEMP (the GOO and LOO) to prevent encroachment into vegetated or remediated areas.	Project Co
O	11-M6	BC Hydro will include control of established invasive plant species during operation in the OEMP through surveys (identification of issue) and control (various methods) following measures defined by the Invasive Plant Council of BC (IPCBC 2011).	Project Co
AM	11-M7	BC Hydro will control potential for fire through vehicle maintenance and contractor education. Maintain a fire response kit. Should fire result in damage to natural ecosystems, the areas damaged will be revegetated in accordance with mitigation #11-M3 and #11-M4.	Project Co

Phase	Section and Mitigation Number	Mitigation	Responsibility for Implementation
AM	11-M8	BC Hydro will employ standard spill prevention and contingency measures described in the EMP (Section 21.2.1.3).	Project Co
Wildlife			
C	12-M1	<p>To avoid unauthorized destruction or disturbance of bird nests or the eggs of migratory birds BC Hydro will:</p> <ul style="list-style-type: none"> • Avoid vegetation clearing during songbird nesting season; • If clearing during the nesting season is required, conduct standard nest surveys to determine presence of active nests; and • Flag and avoid nests until breeding activity ceases following federal/provincial guidelines. 	Project Co
C	12-M2	<p>BC Hydro will protect year-round nests of Great Blue Heron, Bald Eagle, Golden Eagle, Peregrine Falcon, Gyrfalcon, Osprey and Burrowing Owl by:</p> <ul style="list-style-type: none"> • Conducting surveys prior to vegetation clearing to identify nests of the above species; • If a nest is found, avoiding it (see BC MoE 2005 for appropriate buffers and BMPs) or obtaining an authorization for its destruction from BC MoE; • Conducting annual species-specific surveys during Project construction to determine nesting locations of the above species as well as at risk owls to ensure Project activities during the breeding season do not affect these species. <p>Standards and best management practices for such surveys will be consistent with:</p> <ul style="list-style-type: none"> • Inventory methods for owl surveys (RISC 2006); and • Best Management Practices for Raptor Conservation during Urban and Rural Land Development in British Columbia (BC MoE 2005). 	Project Co
C	12-M3	<p>To minimize direct mortality of wildlife due to equipment operation during construction, BC Hydro will require:</p> <ul style="list-style-type: none"> • Construction personnel be trained to recognize potential for avoiding collisions with wildlife in an Environmental Education and Awareness Plan; and • A qualified environmental professional conduct clearance surveys for red-legged frog prior to footprint habitat disturbance/destruction to ensure none are harmed. This requirement and associated BMPs will be defined in the CEMP. 	Project Co

Phase	Section and Mitigation Number	Mitigation	Responsibility for Implementation
C/O	12-M4	BC Hydro will monitor red-legged frog breeding annually during the construction phase to ensure mitigation measures are preventing effects from Project activities.	Project Co
Socio Economics			
C	14-M1	BC Hydro will assist contractors to identify the available skilled workforce and businesses /suppliers in the communities proximal to the worksite.	BC Hydro
C	14-M2	BC Hydro will participate with local construction association(s) for a website to showcase the Project and employment and business opportunities	BC Hydro
C	14-M3	BC Hydro will support discussions between the community, First Nations and interested contractors to encourage local employment.	BC Hydro
C	14-M4	BC Hydro will: <ul style="list-style-type: none"> • Designate a project liaison officer during the construction phase to respond to potential Project related increased demand on community services and infrastructure; • Provide a Community Site Office open to the public; and • Facilitate a John Hart Construction Liaison Committee to liaise with and respond to the community. 	BC Hydro
C	14-M5	BC Hydro will provide prompt notification of construction events and activities affecting the City water supply to the City for consideration in their emergency supply back up planning.	Project Co
C	14-M6	Mitigation measures to manage runoff and sedimentation during construction will be included in the Water Quality Management Plan and the Sediment Control Plan to minimize the potential effects of the Project on John Hart Reservoir and drinking water quality (see #9-M1).	Project Co

Phase	Section and Mitigation Number	Mitigation	Responsibility for Implementation
C	14-M7	<p>BC Hydro will develop a traffic management plan to reflect recommendations in the John Hart Generating Station Traffic Management Assessment (McElhanney 2011), including:</p> <ul style="list-style-type: none"> • Access to the UV Water Treatment Plant by City employees will be maintained; • Determine traffic detours for Brewster Lake Road, for about three years to Highway 19A and Gordon Road, and potentially Iron River Road as a secondary route; • Access to Elk Falls viewpoint day-use area will be maintained by a new trail and parking lot located on BC Hydro property to the east of Brewster Lake Road; • No public access within the lower BC Hydro property, around the generating station area, with the exception of the Canyon View Trail/Station View Trail; • No public parking within the lower BC Hydro property, around the generating station area as all parking within BC Hydro property will be relocated to the upper parking area during construction; • A communications protocol to set out procedures for notification of work affecting Highway 28 and • Increase and/or improve signage along Highway 28 to inform the public of high traffic volume areas. 	Project Co
C	14-M8	The selected contractor(s) will be required to develop a health and safety management plan that meets BC Hydro and WorkSafe BC requirements.	Project Co
C	14-M9	BC Hydro will submit a Stage 2 Detailed Proposal to BC Parks regarding the Park Boundary Adjustment.	BC Hydro
C	14-M10	Prior to the closure of the existing trail near the existing powerhouse, BC Hydro will construct a rerouted trail for use during the construction period.	Project Co
C	14-M11	BC Hydro will install trail signs prior to the Project commencing to inform the public of the upcoming construction activities, trail closures and alternate trail routes.	Project Co
C	14-M12	BC Hydro will provide access to the river on a best case effort to key stakeholders, First Nations and government agencies.	Project Co

Phase	Section and Mitigation Number	Mitigation	Responsibility for Implementation
C/O	14-M13	BC Hydro will develop a trail management plan for trails on BC Hydro property, and for trail alignment near the river post-construction, in consultation with the public.	Project Co
C	14-M14	BC Hydro will continue to engage with the public during final design to help determine an appropriate location for river access.	BC Hydro
C	14-M15	BC Hydro will include in the Health and Safety Plan: <ul style="list-style-type: none"> • A public safety strategy; and • Liaison with Provincial Park employees to ensure proper safety, security and management of access to the Park areas adjacent to the construction site during the construction phase. 	Project Co
C	14-M16	BC Hydro will ensure that equipment is fitted with standard emission control devices appropriate for the equipment and in compliance with federal, provincial and municipal regulations.	Project Co
C	14-M17	BC Hydro will prepare and implement an Air Quality and Dust Control Plan to reduce dust pollution: <ul style="list-style-type: none"> • On rural, non-paved roads utilized by Project related traffic; • For trucks carrying loads of soil, crushed concrete, gravel, and other sources of dust or sediment; and • Include measures such as watering of roads, reduced speeds and covering loads. 	Project Co
C	14-M18	BC Hydro will consult with the City to provide guidance to its contractors for the preparation of a management plans to minimize the traffic congestion and the vehicle related noise in the community.	Project Co
C	14-M19	Contractors will be required to comply with BC Hydro health and safety policies and WorkSafe BC requirements for worker health related to noise.	Project Co
C	14-M20	BC Hydro will update and implement BC Hydro's Public Safety Management Plan (PSMP) for the JHT Facility during construction.	Project Co
C	14-M21	As part of the PSMP, BC Hydro will review the need for additional signage informing people of potential risks and hazards, including for navigation.	Project Co

Phase	Section and Mitigation Number	Mitigation	Responsibility for Implementation
C	14-M22	BC Hydro will restrict public access to construction areas for safety reasons, and provide fencing as necessary around construction areas.	Project Co
O	14-M23	BC Hydro will continue to assess and address potential public safety concerns during operations, through the PSMP.	Project Co
O	14-M24	<p>To identify where population increases due to the workforce associated with the Project may affect community services, BC Hydro will monitor:</p> <ul style="list-style-type: none"> • Number of local employees (i.e. residents of the LSA), directly employed by the Project; • Number of local business subcontracted to supply goods or services to the Project; and • Value of local business subcontract services. <p>To assist with Aboriginal inclusion objectives, BC Hydro will monitor:</p> <ul style="list-style-type: none"> • Number of Aboriginal employees directly employed by the Project; • Number of Aboriginal businesses subcontracted to supply goods or services to the Project; and • Value of Aboriginal subcontract services 	Project Co
Navigation			
	See Section 14	Mitigation for Indirect effects to Navigation is included in Section 14 for Tourism and Recreation and Human Health	
Archaeological and Heritage Resources			
C	16-M1	In accordance with BC Hydro's Best Management Practices (BC Hydro 2004), BC Hydro will inform contractors that archaeological sites are not to be disturbed without the appropriate pre-approved authority. This will be included in the in Environmental Education and Awareness Plan.	Project Co

Phase	Section and Mitigation Number	Mitigation	Responsibility for Implementation
C	16-M2	<p>BC Hydro will prepare an Archaeological Resource Management Plan to avoid impacts to any archaeological resources potentially identified during Project construction. In the event that subsurface archaeological remains are encountered (un-anticipated or chance finds), BC Hydro will:</p> <ul style="list-style-type: none"> • Suspend ground disturbance at the site and in the immediate vicinity at once; and • Designate an archaeologist to determine the appropriate steps to follow in accordance with the Best Management Practices (BC Hydro 2004). 	Project Co
O	16-M3	<p>BC Hydro will include unanticipated or chance finds during the construction phase in BC Hydro operational guidance for the JHT Facility (OEMP or GOO) to ensure that such sites or artifacts are not disturbed during operation and maintenance activities.</p>	Project Co

APPENDIX 8C Water Quality Guidelines

Table 1 – Water Quality Guidelines for the Protection of Aquatic Life

Indicator of Effect on Water Quality	Guideline for the Protection of Aquatic Life	Reference
pH	No restriction on changes between 6.5 and 9. Lethal effects observed below 4.5 and above 9.5.	(MacKean & Nagpal 1991)
Alkalinity	No guideline. Alkalinity is a diagnostic analyte to examine acid neutralizing capacity.	
Total Ammonia (NH ₃ + NH ₄ -N)	Dependent on pH and temperature, too numerous to present, lowest maximum allowable concentration of 680 µg/L occurs at a pH of 9 and water temperature of 8°C, lowest maximum average 30 day concentration of 102 µg/L occurs at a pH of 9 and water temperature of 20°C	(Nordin & Pommen 1986)
Nitrate (NO ₃ -N)	The 30 day average concentration to protect freshwater aquatic life is 3,000 µg·L ⁻¹ and the maximum concentration is 31,300 µg·L ⁻¹ .	(Meays 2009)
Soluble Reactive Phosphorus (SRP)	No provincial or federal guidelines	n/a
Total Phosphorus (TP) ¹	Trigger ranges that would signify a change in the trophic classification: <4: ultra-oligotrophic, 4-10 oligotrophic, 10 -20 mesotrophic, 20-35 meso-eutrophic, 35-100 eutrophic, > 100 hyper-eutrophic	(CCME 2004)

Indicator of Effect on Water Quality	Guideline for the Protection of Aquatic Life	Reference
Temperature	<p>The rate of temperature change in natural water bodies not to exceed 1°C per hour.</p> <p>Mean weekly maximum water temperatures should not exceed $\pm 1^\circ\text{C}$ beyond the optimum temperature range for each life history phase of the most sensitive salmonid species present.</p> <p>Maximum daily temperatures should not exceed 15°C to protect Dolly Varden.</p> <p>Maximum spawning temperature should not exceed 10°C to protect spawning success by Dolly Varden.</p> <p>Preferred incubation temperatures should range from 2- 6°C for protection of Dolly Varden eggs.</p>	(Oliver & L. E. Fidler 2001)
Turbidity	<p>During clear flow periods, induced turbidity should not exceed background levels by more than 8 NTU during any 24-hour period (hourly sampling preferred). For sediment inputs that last between 24 hours and 30 days (daily sampling preferred) the mean turbidity should not exceed background by more than 2 NTU.</p> <p>During turbid flow periods, induced turbidity should not exceed background levels by more than 5 NTU at any time when background turbidity is between 8 and 50 NTU. When background exceeds 50 NTU, turbidity should not be increased by more than 10 per cent of the measured background level at any one time. This condition is not expected in the John Hart Reservoir or in the Campbell River at any time.</p>	(Singleton 2001)

Indicator of Effect on Water Quality	Guideline for the Protection of Aquatic Life	Reference
Suspended Solids	<p>During clear flow periods, induced suspended sediment concentrations should not exceed background levels by more than 25 mg/L during any 24-hour period (hourly sampling preferred). For sediment inputs that last between 24 hours and 30 days (daily sampling preferred), the average suspended sediment concentration should not exceed background by more than 5 mg/L.</p> <p>During turbid flow periods, Induced suspended sediment concentrations should not exceed background levels by more than 10 mg/L at any time when background levels are between 25 and 100 mg/L. When background exceeds 100 mg/L, suspended sediments should not be increased by more than 10 per cent of the measured background level at any one time. This condition is not expected in the John Hart Reservoir or in the Campbell River at any time.</p>	(Singleton 2001)
TGP	<p>At water depths >1 m the maximum allowable ΔP (Total Gas Pressure – Barometric Pressure) is 76 mm Hg, which can yield 110 per cent saturation of gases.</p> <p>At water depths <1 m the maximum allowable ΔP (Total Gas Pressure – Barometric Pressure) is $73.89 \times \text{water depth (m)} + 0.15 \times pO_2$ where $pO_2 = 157 \text{ mm Hg}$ (i.e., sea level normoxic condition).</p>	(L. Fidler & Miller 1994) (Mesa et al. 2000)
PAHs	<p>Acenaphthene guideline is $5.8 \mu\text{g}\cdot\text{L}^{-1}$</p> <p>Acridine guideline is $4.4 \mu\text{g}\cdot\text{L}^{-1}$</p> <p>Anthracene guideline is $0.012 \mu\text{g}\cdot\text{L}^{-1}$</p> <p>Benz(a)anthracene guideline is $0.018 \mu\text{g}\cdot\text{L}^{-1}$</p> <p>Benzo(a)pyrene guideline is $0.015 \mu\text{g}\cdot\text{L}^{-1}$</p> <p>Fluoranthene guideline is $0.04 \mu\text{g}\cdot\text{L}^{-1}$</p> <p>Fluorene guideline is $3.0 \mu\text{g}\cdot\text{L}^{-1}$</p> <p>Naphthalene guideline is $1.1 \mu\text{g}\cdot\text{L}^{-1}$</p> <p>Phenanthrene guideline is $0.4 \mu\text{g}\cdot\text{L}^{-1}$</p> <p>Pyrene guideline is $0.025 \mu\text{g}\cdot\text{L}^{-1}$</p> <p>Quinoline guideline is $3.4 \mu\text{g}\cdot\text{L}^{-1}$</p>	(CCME 1999b)

Indicator of Effect on Water Quality	Guideline for the Protection of Aquatic Life	Reference
Glycols	192 mg·L ⁻¹ for ethylene glycol 500 mg·L ⁻¹ for 1,2-propylene glycol	(CCME 1999b)
Sulphate	100 mg·L ⁻¹	(BC MoE 2000)
Cu	2 µg·L ⁻¹ at any hardness	(CCREM 1987)
Pb	1 µg·L ⁻¹ at any hardness	(CCREM 1987)
Zn	30 µg·L ⁻¹	(CCREM 1987)
Cd	$Cd = 10^{0.86[\log_{10}(\text{hardness})]-3.2}$ in units of µg·L ⁻¹ . At a hardness of 21 mg·L ⁻¹ that is typical of the Campbell River (BC Hydro unpublished data), the guideline is 0.01 µg·L ⁻¹ .	(CCME 1999a)
Pentachlorophenol	0.5 µg·L ⁻¹	(CCREM 1987)

Table 2 – Water Quality Guidelines for Drinking Water

Indicator of Effect on Water Quality	Guideline for Drinking Water Quality (listed as maximum acceptable concentration (MAC) or aesthetic objective (AO))	Reference
pH	6.5 – 8.5 as AO	(Health Canada 2010)
Alkalinity	No guideline. Alkalinity is a diagnostic analyte to examine acid neutralizing capacity.	
Total Ammonia (NH ₃ + NH ₄ -N)	No guideline	
Nitrate (NO ₃ -N)	10,000 µg·L ⁻¹	(Health Canada 2010)
Soluble Reactive Phosphorus (SRP)	No guideline	
Total Phosphorus (TP)	No guideline	
Temperature	<15°C as AO	(Health Canada 2010)
Turbidity	1 NTU	Vancouver Island Health Authority (2010)
Suspended solids	Refer to turbidity	(Health Canada 2010)
TGP	Not relevant	
PAHs	0.01 µg·L ⁻¹ for Benzo(a)pyrene as MAC. Other PAHs are archived from guidelines because they have not been found in Canadian drinking water supplies at levels that could pose a risk to human health. For purposes of this project a guideline for PAHs is <0.01 µg·L ⁻¹ , which is the level in effect for Benzo(a)pyrene	(Health Canada 2010)
Glycols	No guideline	(Health Canada 2010)
Sulphate	500 mg·L ⁻¹	(BC MoE 2000)
Cu	<1000 µg·L ⁻¹ aesthetic objective	(Health Canada 2010)
Pb	10 µg·L ⁻¹ MAC	(Health Canada 2010)

Indicator of Effect on Water Quality	Guideline for Drinking Water Quality (listed as maximum acceptable concentration (MAC) or aesthetic objective (AO))	Reference
Zn	$\leq 5,000 \mu\text{g}\cdot\text{L}^{-1}$ as AO	(Health Canada 2010)
Cd	$5 \mu\text{g}\cdot\text{L}^{-1}$	(Health Canada 2010)
Pentachlorophenol	$60 \mu\text{g}\cdot\text{L}^{-1}$ MAC ≤ 30 as AO	(Health Canada 2010)

APPENDIX 8D
Table of Hazardous Substance Volumes

Store together in same area	Common Name	Shipping Name	Class	UN Number	Packing Group	Maximum Volume on Site
Batteries and other corrosives	Batteries, lead acid, automotive or station	Waste – Batteries, Wet, Filled with Acid	8	UN2794	III	1 pallet
	Batteries, lead acid, sealed (gel cells)	Waste – Batteries, Wet, Non-Spillable	8	UN2800	III	1 pallet
	Dry batteries, lantern, flashlight	Waste – Batteries, Dry, Containing Potassium Hydroxide Solid	8	UN3028	III	1 barrel
	Battery fluid, acid	Waste – Battery Fluid, Acid	8	UN2796	II	1 barrel
Flammables	Aerosols, flammable	Waste – Aerosols	2.1	UN1950	NA	2 barrels
	Paint thinners, oil based paint	Waste – Paint Related Material	3	UN1263	II or III	2 barrel
	Varsol	Waste – Petroleum Distillates, N.O.S.	3	UN1268	III	
	Rags or sorbents containing flammable liquids	Waste – Solids, Containing Flammable Liquid, N.O.S. (TECHNICAL NAME OF FLAMMABLE LIQUID*)Ω	4.1	UN3175	II	3 barrels
	Rags (cotton), containing non-flammable oil	Waste – Fabrics, Vegetable, N.O.S. [OILY RAGS]	4.2	UN1373	III	1 barrel
Oily waste	Oil, non-flammable, <50ppm PCB (lubricating, hydraulic or transformer oil) or filters containing such oil	Waste Oil [LUBE OIL OR FILTERS, ETC.*]	NA	NA	NA	24 barrels
	Rags (non-cotton), sorbents, booms, etc, containing non-flammable oil	Waste Oil [DESCRIPTION E.G. SORBENTS OR BOOMS*]	NA	NA	NA	
	Soil contaminated with oil, <50ppm PCB	Waste Oil [SOIL]	NA	NA	NA	

Store together in same area	Common Name	Shipping Name	Class	UN Number	Packing Group	Maximum Volume on Site
Leachables	Sandblast abrasive, used, exceeding <i>Hazardous Waste Regulation</i> leachate criteria	Leachable Toxic Waste (SUBSTANCE EXCEEDING LEACHATE CRITERIA*) Ω	NA	NA	NA	2 barrels

APPENDIX 8E

SITE SERIES AND RECOMMENDED PLANT SPECIES

Site Series	Description	Recommended Plant Species
HK (CWHxm1/01)	Zonal, medium soil moisture and nutrients	<ul style="list-style-type: none"> • Douglas-fir (<i>Pseudotsuga menziesii</i>) • Western redcedar (<i>Thuja plicata</i>) • Red huckleberry (<i>Vaccinium parvifolium</i>) • Salal (prefers shade) (<i>Gaultheria shallon</i>) • Baldhip rose (<i>Rosa gymnocarpa</i>)
DS (CWHxm1/03)	Dry soil moisture, poor soil nutrients	<ul style="list-style-type: none"> • Douglas-fir • Salal • Red huckleberry • Baldhip rose
RS (CWHxm1/05)	Moist and rich soil nutrients	<ul style="list-style-type: none"> • Douglas-fir • Western redcedar • Red huckleberry • Sword fern (<i>Polystichum munitum</i>)
RF (CHWxm1/07)	Very moist and rich soil nutrients	<ul style="list-style-type: none"> • Douglas-fir • Western redcedar • Red alder (<i>Alnus rubra</i>) • Bigleaf maple (<i>Acer macrophyllum</i>) • Salmonberry • False-azalea (<i>Menziesia ferruginea</i>) • Red huckleberry
RC (CWHxm1/12)	Wet and rich soil nutrients	<ul style="list-style-type: none"> • Western redcedar • Red alder • Salmonberry

APPENDIX 8F

ENVIRONMENTAL CONSEQUENCE TABLE

Consequence	AA	A	B	C	D	E	F
1 - Environmental Impact	Almost zero	Low	Moderate	Moderate to High	High	Very High	Extreme
1a - Extent of Environmental Damage	<10 m ²	10 m ² - 100 m ²	100 m ² - 1000 m ²	1000 m ² - 1 ha	1 ha - 10 ha	10 ha - 100 ha	100 ha - 1000 ha
1b - Duration of Environmental Damage	<2 hours	2 - 24 hours	1 - 7 days	1 - 4 weeks	1 - 12 months	1 - 10 years	> 10 years
1c - Damage Intensity to Ecosystem Function	Minimal	Slightly reduced	Moderately reduced	Moderate to highly reduced	Highly reduced	Very highly reduced	Eliminated
1d - Sensitivity of the Receiving Environment	Zero	Low	Moderate	Moderate to high	High	Very high	Extreme
2 – Damage to Reputation	None	Complaints to company or shareholder	Negative local profile	Small but vocal minority of customers critical	Many customers critical	Loss of trust, strategic change imposed by regulator or shareholder	Loss of consent to operate
3 - Public Response	Single person complaint	Complaints to company or shareholder	Small minority of public critical	Small but vocal minority of customers critical	Many customers critical	Majority of customers critical	Customers nearly unanimous in public criticism

Consequence	AA	A	B	C	D	E	F
4 - Media/ Opinion Leader Response	None	No coverage	Brief negative or mixed local media coverage	Possible isolated, one-off major media coverage	Some negative media coverage at provincial level	Widespread and sustained negative media coverage	Opinion leaders nearly unanimous in public criticism, sustained very negative provincial and national media coverage
5 - Response of Public Officials	None	None	Issue brought to attention of public officials	Questions raised by MLA's and/or municipal officials	Conduct questioned by legislature	BC Hydro subject to sustained criticism of government in legislature	Public inquiry/criminal investigation
6 - Regulatory	Incident reported Internally	Required reporting of issue/incident to regulator, no follow up by regulatory body	Regulatory body has some interest in the incident	Conduct questioned by regulatory body, corrective action required	Loss of trust from regulatory body, relationship severely harmed	Operational and/or strategic change imposed by regulator	Criminal investigation
7 - Regulatory Penalty	(<\$10k)	(\$10k - \$100k)	(\$100k - \$1M)	(\$1M - \$10M)	(\$10M - \$100M)	(\$100M - \$1B)	(\$1B - \$10B)

Notes:

1. The consequence category for an Environmental Incident is determined based on the highest category of effect resulting from the Environmental Incident. For example, if an Environmental Incident results in 50m² of environmental damage in a high sensitivity receiving environment, that Environmental Incident has a Category D consequence.

APPENDIX 8G

UNIT RATES FOR CONTAMINATED SOIL

Soil Type	Unit Rate (\$/tonne)
Penstock Area	
Haz Waste Soil	■
Waste Quality Soil	■
IL Soil	■
Area Behind the Powerhouse	
Waste Quality Soil	■
Haz Waste Soil	■