

Fisheries and Aquatic Habitat Management Plan Annual Report: April 1 to December 31, 2016

*Site C Clean Energy Project
March 31, 2017*

Table of Contents

1.0 Introduction	4
1.1 Background	4
1.2 Status of Project Construction.....	5
1.3 Summary.....	5
2.0 Fisheries and Aquatic Habitat Management Plan.....	6
3.0 Summary of Plan Implementation.....	20
Section 3.1 “Remove temporary structures as soon as they are no longer required.”	20
Section 3.2 “Place material relocation sites (R5a, R5b, and R6) 15 m back from the mainstem to avoid affecting Peace River fish habitat.”	20
Section 3.3 “Contour mainstream bars to reduce potential for fish stranding, as advised by FLNR.”	20
Section 3.4 “The Plan shall include: Erosion and sediment control measures, riparian zone avoidance measures, best practices for watercourse crossings, in-stream work guidelines, and in-stream work timing windows;”	20
Section 3.5 “The Plan shall include: Measures to avoid or reduce fish stranding;”	21
Section 3.6 “The Plan shall include: An approach to monitor changes to fish and fish habitat baseline conditions in the Local Assessment Area;.....	21
An approach to monitor and evaluate the effectiveness of mitigation or offsetting measures and to verify the accuracy of the predictions made during the environmental assessment on fish and fish habitat;”	21
Section 3.7 “The Plan shall include: Any other requirements identified by Fisheries and Oceans Canada in support of its application for an authorization under the Fisheries Act.” ...	21
Section 3.8 “The Proponent shall develop an offsetting plan, in consultation with Fisheries and Oceans Canada, to offset residual serious harm to fish and monitor the effectiveness of offsets.”	22
Section 3.9 Conditions 8.9 and 8.10 refer to “an analysis for any physical fish habitat offsets proposed in the offsetting plan”	22
4.0 Analysis of Plan Implementation	23
5.0 Revisions to the Plan	23
Qualified professionals.....	23

LIST OF TABLES

Table 1. Environmental Assessment Certificate Conditions and Relevant Plan Sections ..	6
Table 2. Federal Decision Statement Conditions and Relevant Plan Sections.....	13

LIST OF FIGURES

Figure 1. Temporary access platforms and haul-out areas used during in-river excavation of the bar referred to as Upper Site 109L.

Figure 2. Temporary Moberly River vegetation clearing bridge removed in March 2016.

Figure 3. Example erosion and sediment control measures at an ephemeral channel in the area of construction of the causeway for the Moberly River construction bridge, Sept 30, 2016.

1.0 Introduction

1.1 Background

The Fisheries and Aquatic Habitat Management Plan (FAHMP, or 'the Plan') describes the measures that will be used to mitigate the adverse effects of the Site C Clean Energy Project (the Project) on fish and fish habitat during the construction and operation of the Project. The Plan has been developed in accordance with the conditions of the Project's provincial Environmental Assessment Certificate (EAC #14-02, or 'the EAC'), including the EAC's Schedule B, and Federal Decision Statement issued for the Project, dated October 14, 2014 and reissued November 25, 2014 (the FDS). FDS conditions 8.3 to 8.7 refer to "a fish and fish habitat management plan", while EAC condition 4 refers to "a Fisheries and Aquatic Habitat Management Plan". Each refers to similar requirements for fish. For simplicity, BC Hydro developed one plan, entitled "Fisheries and Aquatic Habitat Management Plan" (the Plan or FAHMP) that satisfies the conditions of both the EAC and the FDS. Revision 1 of the FAHMP was submitted on June 1, 2015, and is available on the Project's website¹.

As described in the FAHMP Section 7 and per the reporting requirement in condition 8.7 of the FDS – Implementation and Reporting, BC Hydro will provide annual reports on the implementation of the Plan to the Canadian Environmental Assessment Agency (the Agency). Condition 8.7 states:

The Proponent shall implement the plan and provide to the Agency an analysis and summary of the implementation of the plan, as well as any amendments made to the plan in response to the results, on an annual basis during construction and for the first ten years of operation and once every five years for the next 20 years

This report is submitted to satisfy Condition 8.7. BC Hydro previously submitted to the Agency an annual report for the reporting period from the start of Project construction, July 27, 2015), through March 31, 2016. The reporting period for this report covers April 1, 2016 through December 31, 2016. The intent of this reporting period is to establish a consistent, calendar reporting period for future reports, and to submit these reports by March 31 each year required, as requested by the Agency.

This report is part of a broader set of information that BC Hydro reports to the Agency, per the FDS, on the Project's construction and environmental management. For example, BC Hydro provides to the Agency 'Monthly Environmental Monitoring Summary Reports' (the Monthly Reports) as follows:

"Under Section 2.1 of the Construction Environmental Management Plan (CEMP), BC Hydro must submit monthly reports on construction and environmental monitoring activities for the Site C Clean Energy Project to the Independent Environmental Monitor (IEM), the BC Environmental Assessment Office (BCEAO), and the Canadian Environmental Assessment Agency (CEA Agency). The reports must summarize:

- weekly information provided by contractor Environmental Monitors to BC Hydro
- results of BC Hydro field inspections
- environmental incidents and applicable corrective actions, and

¹ Available at: <https://www.sitecproject.com/document-library/environmental-management-plans-and-reports>

-compliance of construction activities with the Environmental Requirements for the Project.”

The Monthly Reports include information on many aspects of the Project’s construction and environmental management. This report is specific to the implementation of mitigation measures for fisheries and aquatic habitat.

1.2 Status of Project Construction

Construction activities during the reporting period included Site preparation and early components of Project construction, as described in the Project’s Environmental Impact Statement (Volume 1 Section 4 Project Description, sub-section 4.4 Construction). Additional information on construction progress has been submitted to the Agency previously as part of BC Hydro’s Monthly Reports. The Project’s website² also provides information and regular updates on construction activities.

1.3 Summary

Per FDS Condition 8.7, this report documents the measures to mitigate the adverse effects of the Project on fish and fish habitat during the reporting period (Tables 1 and 2). Standard mitigation measures and Project-specific mitigation measures were implemented to mitigate potential effects on fish and fish habitat in accordance with the implementation schedules in the FAHMP. BC Hydro audits compliance with these requirements by reviewing contractor Environmental Protection Plans (EPPs) and conducting audits and inspections during construction to verify implementation of the EPPs. The effective implementation of these measures was documented during most inspections. Corrective actions, where required, were identified and implemented.

Annual reporting will continue to document the implementation of the FAHMP. In addition, monitoring of physical habitat, lower trophic levels, fish abundance, and community composition under the Fisheries and Aquatic Habitat Monitoring and Follow-up Program will provide information to evaluate the effectiveness of these measures to mitigate potential effects on fish and fish habitat over the longer term.

² Information on construction activities available at the: <https://www.sitecproject.com/construction-activities/construction-bulletins>

2.0 Fisheries and Aquatic Habitat Management Plan

The objective of this report (the Report) is to describe the mitigation measures implemented during this period to meet the reporting requirements of Decision Statement condition 8.7. The Report follows the information in Section 7.0 Implementation and Reporting of the FAHMP.

Tables 1 and 2 outline the structure of the Report. These tables list the Conditions (and components of the Conditions), as well as the corresponding sections of the FAHMP that pertain to the Conditions. These tables also list whether components within the Conditions occurred or were implemented during the reporting period, and if so, the corresponding section in the Report that summarizes the implementation. Section 7 of the Report is an analysis of implementation of the Plan.

Table 1. Environmental Assessment Certificate Conditions and Relevant Plan Sections

EAC Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
FISH AND FISH HABITAT				
4	The EAC Holder must manage harmful Project effects on fish and fish habitats during the construction and operation phases by implementing mitigation measures detailed in a Fisheries and Aquatic Habitat Management Plan.	Described in rows below	Described in rows below	Not Applicable
	The Fisheries and Aquatic Habitat Management Plan must be developed by a QEP	No. Occurred prior to the reporting period.	Not Applicable	This condition is addressed in FAHMP Section 8.0 Qualified Professionals
	The Fisheries and Aquatic Habitat Management Plan must include at	Described in rows below	Described in rows below	Described in rows below

EAC Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
	least the following:			
	<ul style="list-style-type: none"> Remove temporary structures as soon as they are no longer required. 	Yes	Section 6.1	These conditions are addressed in Construction Environmental Management Plan (CEMP) Section 4.5, Fisheries and Aquatic Habitat Management.
	<ul style="list-style-type: none"> Maintain a 15 m machine free zone adjacent to watercourses during reservoir clearing (as measured from the Ordinary High Water Mark). 	No, planned for implementation during subsequent stage of construction	Not Applicable	
	<ul style="list-style-type: none"> Place material relocation sites (R5a, R5b, and R6) 15 m back from the mainstem to avoid affecting Peace River fish habitat. 	Yes	Section 6.2	
	<ul style="list-style-type: none"> Contour mainstream bars to reduce potential for fish stranding, as advised by FLNR. 	Yes	Section 6.3	This condition is addressed in FAHMP Section 6.2.1.1, Peace River Channel Contouring and Side Channel Enhancement.
	<ul style="list-style-type: none"> Incorporate fish habitat features into the final capping of 	No, planned for implementation during subsequent stage of construction	Not Applicable	This condition is addressed in FAHMP Section 6.2.3.4, Dam Site Material

EAC Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
	material relocation sites upstream of the dam.			Relocation Site Enhancement.
	<ul style="list-style-type: none"> Contour and cap with gravels and cobble substrate the spoil area between elevations 455 m and 461 m to provide a productive fish habitat that will be available to fish during the operation phase. 	No, planned for implementation during subsequent stage of construction	Not Applicable	This condition is addressed in FAHMP Section 6.2.3.4, Dam Site Material Relocation Site Enhancement.
	<ul style="list-style-type: none"> Include fish habitat features (e.g., shears, large riprap point bars, etc.) in the final design of the north bank haul road bed material that would be placed in the Peace River. 	No, constructed and reported during previous reporting period.	Not Applicable	This condition is addressed in FAHMP Section 6.2.1.2, River Road Habitat Enhancement.
	<ul style="list-style-type: none"> Incorporate fish habitat features into the final design of the Highway 29 roadway that 	No, planned for implementation during subsequent stage of construction	Not Applicable	This condition is addressed in FAHMP Section 6.2.3.2, Highway 29 Realignment Fish Habitat.

EAC Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
	would border the reservoir, east of Lynx Creek.			
	<ul style="list-style-type: none"> Construct the Hudson's Hope shoreline protection with large material that will provide replacement fish habitat. 	No, planned for implementation during subsequent stage of construction	Not Applicable	This condition is addressed in FAHMP Section 6.2.3.3, Hudson's Hope Shoreline Protection Fish Habitat.
	<ul style="list-style-type: none"> Incorporate additional fish habitat features (e.g., shear zones and point bars) into the final design of the Hudson's Hope shoreline protection. 	No, planned for implementation during subsequent stage of construction	Not Applicable	This condition is addressed in FAHMP Section 6.2.3.3, Hudson's Hope Shoreline Protection Fish Habitat.
	<ul style="list-style-type: none"> Contour Highway 29 borrow sites prior to decommissioning to provide littoral fish habitat in the reservoir. 	No, planned for implementation during subsequent stage of construction	Not Applicable	This condition is addressed in FAHMP Section 6.2.3.1, Site C Reservoir Shoreline Enhancement.
	<ul style="list-style-type: none"> Cap material repositioning areas with gravel and cobble, and contour to enhance fish habitat 	No, planned for implementation during subsequent stage of construction	Not Applicable	This condition is addressed in FAHMP Section 6.2.3.4, Dam Site Material Relocation Site Enhancement.

EAC Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
	conditions.			
	<ul style="list-style-type: none"> Plant a 15 m wide riparian area along the reservoir shoreline adjacent to BC Hydro-owned farmland where necessary to provide riparian habitat and bank stabilization except as approved by the onsite environmental monitor. 	No, planned for implementation during subsequent stage of construction	Not Applicable	This condition is addressed in FAHMP Section 6.2.3.5, Reservoir Shoreline Riparian Planting.
	<ul style="list-style-type: none"> Increase wetted habitat by creating new wetted channels and restoring back channels on the south bank island downstream of the dam. 	No, planned for implementation during subsequent stage of construction	Not Applicable	This condition is addressed in FAHMP Section 6.2.1.1, Peace River Channel Contouring and Side Channel Enhancement.
	<ul style="list-style-type: none"> Enhance side channel complexes between the dam site and the confluence of the Peace and Pine rivers during low flows. 	No, planned for implementation during subsequent stage of construction	Not Applicable	This condition is addressed in FAHMP Section 6.2.1.1, Peace River Channel Contouring and Side Channel Enhancement.

EAC Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
	<ul style="list-style-type: none"> Manage reservoir fluctuation within a 1.8 m maximum normal operating range from the maximum operating level of 461.8 m. 	No. Will occur during Project operations.	N/A	
	<ul style="list-style-type: none"> If the reservoir deviates from the normal operating range, the EAC Holder must report the event in accordance with water licence requirements. 	No. Would apply during Project operations	N/A	
	The EAC Holder must manage construction footprints to reduce the harmful Project effects on fish and fish habitat, in accordance with the conditions of the applicable <i>Fisheries Act</i> authorization(s) and direction provided by FLNR.	Yes. Construction footprints were in accordance with the conditions of the applicable <i>Fisheries Act</i> authorizations		
	This draft Fisheries and Aquatic	No. Occurred prior to the reporting	N/A	This condition is addressed in

EAC Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
	Habitat Management Plan must be provided to FLNR, MOE and Aboriginal Groups for review a minimum of 90 days prior to commencement of construction.	period.		FAHMP Section 2.3 Consultation
	The EAC Holder must file the Final Fisheries and Aquatic Habitat Management Plan with EAO, FLNR, MOE and Aboriginal Groups a minimum of 30 days prior to commencement of construction.	No. Occurred prior to the reporting period.	N/A	
	The EAC Holder must develop, implement and adhere to the Final Fisheries and Aquatic Habitat Management Plan, and any amendments, to the satisfaction of EAO.			

Table 2. Federal Decision Statement Conditions and Relevant Plan Sections

FDS Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
8.	Fish and Fish Habitat			
8.1	The Proponent shall undertake efforts to avoid or minimize adverse impacts to fish and fish habitat to ensure the continued availability of fisheries resources in the Local Assessment Area.	Yes, see rows below.	See rows below.	
8.2	The Proponent shall prepare and submit to the Agency an annual schedule identifying the location and timing of construction activities that may impact fish or fish habitat 90 days prior to such activities occurring.	Yes	Not applicable	Submitted under separate cover.
8.3.	The Proponent shall prepare, in consultation with Fisheries and Oceans Canada, Reservoir Area Aboriginal groups and Immediate Downstream Aboriginal groups, a fish and fish habitat management plan.	No. Occurred prior to the reporting period	Not applicable	These conditions are addressed in the Fisheries and Aquatic Habitat Management Plan (FAHMP).
8.4	The Plan shall include:			

FDS Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
8.4.1.	Identification of baseline conditions for fish and fish habitat in the Local Assessment Area;	No. Occurred prior to the reporting period	Not applicable	This condition is addressed in FAHMP Section 4.0, Fish and Fish Habitat Baseline Conditions.
8.4.2.	Measures to mitigate potential effects on fish and fish habitat during construction and operation of the Designated Project including:	Yes, see rows below.	See rows below.	This condition is addressed in FAHMP Section 6.0, Fish and Fish Habitat Mitigation.
8.4.2.1.	Erosion and sediment control measures, riparian zone avoidance measures, best practices for watercourse crossings, in-stream work guidelines, and in-stream work timing windows;	Yes	Section 6.4	These conditions are addressed in CEMP Section 4.5, Fisheries and Aquatic Habitat Management.
8.4.2.2.	Measures to avoid or reduce fish stranding;	Yes	Section 6.5	This condition is addressed in CEMP Section 4.5, Fisheries and Aquatic Habitat Management. See also FAHMP 6.2.1.1, Peace River Channel Contouring and Side Channel Enhancement.
8.4.2.3.	Operational practices,	No, planned	Not Applicable	This condition is

FDS Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
	technologies and design features that minimize downstream fish entrainment past the dam site;	for implementation during subsequent stage of construction		addressed in FAHMP Section 6.2.2.1, Fish Entrainment.
8.4.2.4.	Measures to mitigate the effects of Total Dissolved Gas concentrations in tailwater on fish; and	No, planned for implementation during subsequent stage of construction	Not Applicable	This condition is addressed in FAHMP Section 6.2.2.3, Mitigation of Total Dissolved Gas.
8.4.2.5.	Measures to mitigate obstructed upstream fish passage for bull trout and, as appropriate and feasible, other migrating fish species;	No, planned for implementation during subsequent stage of construction	Not Applicable	This condition is addressed in FAHMP Section 6.2.2.2, Upstream Fish Passage.
8.4.3.	An approach to monitor changes to fish and fish habitat baseline conditions in the Local Assessment Area;	Yes	Section 6.6	The approach is summarized in FAHMP Section 2.2, Scope as well in the monitoring programs listed in Appendix D. Further information on monitoring is provided in the Fisheries and Aquatic Habitat Monitoring and Follow-up Program.
8.4.4.	An approach to monitor and evaluate the effectiveness of mitigation or offsetting measures and to verify the accuracy of the	No	Section 6.6	The approach is summarized in FAHMP Section 2.2, Scope as well in the monitoring programs listed in

FDS Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
	predictions made during the environmental assessment on fish and fish habitat; and			Appendix D. Further information on monitoring is provided in the Fisheries and Aquatic Habitat Monitoring and Follow-up Program.
8.4.5.	Any other requirements identified by Fisheries and Oceans Canada in support of its application for an authorization under the <i>Fisheries Act</i> .	Not applicable	Section 6.7	To date, Fisheries and Oceans Canada has not identified other requirements in support of an application for an authorization under the <i>Fisheries Act</i> . Should DFO identify other requirements, these will be taken into account in amendments to the plan, as described in condition 8.7
8.5.	The Proponent shall submit a draft copy of the plan to the Agency, Fisheries and Oceans Canada, Reservoir Area Aboriginal groups and Immediate Downstream Aboriginal groups 90 days prior to submitting its application for authorization under the <i>Fisheries Act</i> .	No. Occurred prior to the reporting period	Not applicable	This condition is addressed in FAHMP Section 2.3 Consultation
8.6.	The Proponent shall submit to the Agency the final plan a minimum of 30 days prior to	No. Occurred prior to the reporting period	Not applicable	This condition is addressed in FAHMP Section 2.3 Consultation

FDS Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
	submitting its application for authorization under the Fisheries Act. When submitting the final plan, the Proponent shall provide to the Agency an analysis that demonstrates how it has appropriately considered the input, views or information received from Fisheries and Oceans Canada, Reservoir Area Aboriginal groups and Immediate Downstream Aboriginal groups and shall describe how it has taken the plan into consideration as part of its application for an authorization under the Fisheries Act.			
8.7.	The Proponent shall implement the plan and provide to the Agency an analysis and summary of the implementation of the plan, as well as any amendments made to the plan in response to the results, on an annual basis during construction and for the first ten years of operation and once every five years for the next 20 years.	Yes	This report, addressed Condition 8.7	This condition is addressed in FAHMP Section 7 Reporting
8.8	The Proponent shall develop an offsetting plan, in consultation with Fisheries and Oceans Canada, to offset residual serious harm to fish and	No, plan developed during a previous reporting period	Section 6.8	Offsetting plans were submitted as a component of the applications for authorization under the Fisheries Act. Information from

FDS Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
	monitor the effectiveness of offsets.			offsetting plans were submitted to CEAA as described under FDS Condition 8.9.
8.9	The Proponent shall conduct an analysis for any physical fish habitat offsets proposed in the offsetting plan, in consultation with Transport Canada, Environment Canada, Reservoir Area Aboriginal groups and Immediate Downstream Aboriginal groups, that includes:	Yes	Section 6.9	These conditions will be met in a separate analysis.
8.9.1	the effects on migratory birds and their habitats;			
8.9.2	the effects on terrestrial species and their habitats;			
8.9.3	the effects on species at risk and species at risk habitat;			
8.9.4	the effects on current use of lands and resources for traditional purposes by Aboriginal			

FDS Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
	peoples;			
8.9.5	identification of navigation impacts; and			
8.9.6	identification of potential sources of contamination (e.g. mercury).			
8.10	The Proponent shall submit to the Agency the results of the analysis in condition 8.9, including a description of how the input, views or information received have been taken into account in finalizing its fish habitat offsetting plan.	Yes	Section 6.9	This condition was met in a stand-alone document that was submitted to CEAA on June 24, 2016 prior to implementing the offsetting plan.

3.0 Summary of Plan Implementation

Section 3.1 “Remove temporary structures as soon as they are no longer required.”

The temporary access platforms and haul-out areas used during in-river excavation of the bar referred to as Upper Site 109L (see Section 6.3 below) were removed once they were no longer required. Temporary access platforms and haul-out areas were removed as excavation at these sites was completed (Figure 1). The temporary Moberly River clearing bridge was removed in March 2016 prior to freshet (Figure 2)

Section 3.2 “Place material relocation sites (R5a, R5b, and R6) 15 m back from the mainstem to avoid affecting Peace River fish habitat.”

Development of Relocated Surplus Excavated Material (RSEM) areas R5a, R5b and R6 commenced greater than 15 m back from the mainstem to avoid affecting Peace River fish habitat.

Section 3.3 “Contour mainstream bars to reduce potential for fish stranding, as advised by FLNR.”

Contouring of the bar referred to as Upper Site 109L was completed during the reporting period. Contouring of this bar (shown in Figure 1) is described in the FAHMP Section 6.2.1.1 Peace River Channel Contouring and Side Channel Enhancement. The contouring is expected reduced fish stranding risk by reducing the area of the bars that dewater when discharge in the Peace River fluctuates.

Section 3.4 “The Plan shall include: Erosion and sediment control measures, riparian zone avoidance measures, best practices for watercourse crossings, in-stream work guidelines, and in-stream work timing windows;”

These measures are listed in the CEMP Section 4.5, Fisheries and Aquatic Habitat Management. The CEMP specifies the requirements for site-specific EPPs that are developed for specific components of work. BC Hydro audits compliance with this requirement by reviewing contractor EPPs and conducting environmental audits during construction to verify implementation of the EPP. Environmental issues and associated corrective actions reported during environmental monitoring and compliance auditing are described in the BC Hydro Monthly Environmental Monitoring Summary Reports. The monthly reports for 2016 have been submitted previously to the Agency. Specific issues that could interact with fish and fish habitat relate to erosion prevention and sediment control is described below.

The CEMP requires that contractors identify and isolate work areas to prevent sediment from entering the downstream environment (e.g., Figure 3). BC Hydro audits compliance with this requirement by reviewing contractor EPPs and conducting environmental audits during construction to verify implementation of the EPPs. In addition, BC Hydro has implemented an enhanced site-wide erosion and sediment control program that requires assessment of sites and preparation of detailed prescriptions by Qualified Erosion and Sediment Control Professionals and overseeing installation of measures by these professionals and ongoing re-inspections. Inspections of ESC measures have identified on average greater than 98% of sites

are compliant with prescribed measures. These non-compliant sites are usually brought into compliance in less than a week.

During the reporting period, the Project has experienced extreme weather events that caused local inflows to exceed pumping capacity and/or caused local runoff that has overwhelmed erosion and sediment control measures. BC Hydro and its contractors implemented corrective actions following these events to restore controls.

Suspended sediment levels in the Peace River, as well as inputs to Peace River as a result of construction were monitored and indicate that construction inputs are low relative to the background suspended sediment levels. These results are consistent with predictions in the Project's Environmental Impact Statement (EIS). Baseline suspended sediment load in the Peace River at the dam site is estimated at 1,136,000 tonnes / year, and increases to 3,540,000 tonnes / year downstream of the Pine River confluence (Table 5.3 and Fig 5.3a of the EIS, Vol 2 Appendix I Fluvial Geomorphology and Sediment Transport Technical Data Report). Over the eight-year construction phase, fine sediment inputs related to instream construction activities would represent an estimated increase of 0.2% to 0.3% above mean annual baseline sediment load immediately downstream of the Site C dam site (EIS Volume 2 Appendix I).

Section 3.5 “The Plan shall include: Measures to avoid or reduce fish stranding;”

The contouring of mainstem bars (described in the section 6.3) has reduced the risk of fish stranding by reducing the area of the bars that dewater when discharge in the Peace River fluctuates.

Section 3.6 “The Plan shall include: An approach to monitor changes to fish and fish habitat baseline conditions in the Local Assessment Area;

An approach to monitor and evaluate the effectiveness of mitigation or offsetting measures and to verify the accuracy of the predictions made during the environmental assessment on fish and fish habitat;”

A Fisheries and Aquatic Habitat Monitoring and Follow-up Program³ (FAHMFP) has been developed and will be implemented to monitor changes in habitat conditions in the Local Assessment Area, the effectiveness of mitigation and offsetting measures, and to verify the predictions made during the environmental assessment. The general monitoring approach in the Fisheries and Aquatic Habitat Monitoring and Follow-up Program is to monitor changes in baseline conditions in the Local Assessment Area for physical habitat, lower trophic levels, fish abundance, and community composition. This information will be used to evaluate the effectiveness of Project mitigation or offsetting measures and verify the accuracy of predictions made during the Environmental Assessment. The monitoring under the FAHMFP during 2016 is summarized in BC Hydro's report: Fisheries and Aquatic Habitat Monitoring and Follow-up Program Annual Report: Dec 22, 2015 to Dec 31, 2016.

Section 3.7 “The Plan shall include: Any other requirements identified by Fisheries and Oceans Canada in support of its application for an authorization under the Fisheries Act.”

Fisheries and Oceans Canada has not identified other requirements in support of an application for an authorization under the Fisheries Act in addition to those in the FAHMFP.

³ Available at: <https://www.sitecproject.com/document-library/environmental-management>

Section 3.8 “The Proponent shall develop an offsetting plan, in consultation with Fisheries and Oceans Canada, to offset residual serious harm to fish and monitor the effectiveness of offsets.”

Offsetting plans were developed in consultation with Fisheries and Oceans Canada, and are described in:

1. “Section 9.0 Offsetting Plan” of the document titled “DFO – Application for Authorization Site Preparation – Site C Clean Energy Project British Columbia Hydro and Power Authority”
2. “Section 9.0 Offsetting Plan” of the document titled “DFO – Application for Authorization Dam Construction, Reservoir Preparation, and Filling – Site C Clean Energy Project British Columbia Hydro and Power Authority”

Section 3.9 Conditions 8.9 and 8.10 refer to “an analysis for any physical fish habitat offsets proposed in the offsetting plan”

The analysis of physical fish habitat offsets⁴ was completed and submitted to the Agency during the reporting period.

⁴ “Site C Clean Energy Project, Site Preparation: Environmental Analysis of Physical Fish Habitat Offsets” dated Aug 5, 2015 and “Site C Clean Energy Project, Dam Construction, Reservoir Preparation and Filling: Environmental Analysis of Physical Fish Habitat Offsets” dated June 24, 2016.

4.0 Analysis of Plan Implementation

The FAHMP describes the following categories of measures:

- Standard mitigation measures during construction activities described in the CEMP (e.g., erosion and sediment control measures)
- Project-specific mitigation measures described in the FAHMP (e.g., habitat enhancements for reservoir shoreline habitat enhancement works, capping of dam site material relocation site with fish habitat features)

During the period under this Report, both standard mitigation measures and Project-specific mitigation measures were implemented to mitigate potential effects on fish and fish habitat.

Monitoring of physical habitat, lower trophic levels, fish abundance, and community composition under the Fisheries and Aquatic Habitat Monitoring and Follow-up Program will provide information to evaluate the effectiveness of these measures to mitigate potential effects on fish and fish habitat over the longer term.

5.0 Revisions to the Plan

There are no revisions to the Fisheries and Aquatic Habitat Management Plan since Revision 1 dated Jun 1, 2015.

Revisions were made during the reporting period to the following sections of the CEMP⁵ that are referenced in the Fisheries and Aquatic Habitat Management Plan: Fisheries and Aquatic Habitat Management (Section 4.5), Erosion Prevention and Sediment Control Management (Section 4.4), and Surface Water Quality Management (Section 4.14). These revisions clarified the environmental requirements in these sections.

Qualified professionals

This report was prepared by the following Qualified Individuals:

Qualified Individual	Expertise
Dave Hunter, BSc., RPBio	Fisheries
Brent Mossop, MRM, RPBio	Fisheries

⁵ Revision 4 of the CEMP, dated July 26, 2016.

Figure 1. Temporary access platforms and haul-out areas used during in-river excavation of the bar referred to as Upper Site 109L.



Figure 2. Temporary Moberly River vegetation clearing bridge removed in March 2016.



Figure 3. Example erosion and sediment control measures at an ephemeral channel in the area of construction of the causeway for the Moberly River construction bridge, Sept 30, 2016.

