

Site C Project Fish and Aquatic Program

June 2018

 **BC Hydro**
Power smart

Fish mitigation and monitoring

While the Site C reservoir is expected to support a new and productive fish community, the Site C Environmental Impact Statement (EIS) identified several potential changes that the project could have on fish and fish habitat, including:

- Changes to fish habitat
- Changes to fish health and survival
- Changes to fish movement

In order to address these potential changes, mitigation, management and monitoring plans were developed for the project, taking into account the measures outlined in the EIS, information received during the Joint Review Panel hearing process, and the Report of the Joint Review Panel on the project. The project's plans are consistent with and meet requirements set out in the conditions of the Environmental Assessment Certificate and the Decision Statement, and are available on the Site C project website.

Mitigation measures

A variety of mitigation measures will be used during the construction and operation of the project.

These include:

- Addressing fish and fish habitat through design considerations (e.g., turbine and spillway design),
- Habitat enhancements for fish in the Peace River, reservoir and tributaries, and
- Fish passage management, which will help facilitate safe and timely passage of fish at the dam site.

Planned habitat enhancements in the Peace River are significant in scope and size compared to other habitat enhancements in B.C. The planned enhancements associated with the Site C project include:

- Peace River channel contouring and side-channel enhancement, the bulk of which will take place downstream of the dam,
- Rock spurs along River Road (completed),
- Reservoir shoreline enhancement, and
- Reservoir shallow water habitat near the dam site.

Monitoring programs

Site C project teams have worked since the 1970s to establish long-term datasets on baseline conditions in the mainstem Peace River and many of its tributaries from the Peace Canyon Dam downstream to Alberta (distance of 275 km). General surveys completed during the 1970s were followed by large scale inventories of fish communities in the late 1980s and early 1990s. From 2005 to present, numerous baseline studies have been completed to investigate fish communities, fish habitats, fish movements, and genetic connectivity.

BC Hydro developed the Fisheries and Aquatic Habitat Monitoring and Follow-up Program (FAHMFP) to monitor fish and aquatic valued components during the construction phase (2015 to 2024) of the project and the **first 30 years of operation** (2024 to 2053).

The FAHMFP is a coordinated approach of 18 spatially and logistically distinct monitoring programs that monitor the abundance and life history of fish, movement of fish, and spawning, rearing, and feeding in the Peace River and its tributaries.

Fish and Aquatic Program

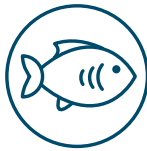
Summary of monitoring in 2017

- Spawner surveys and sampling of juvenile fish in the tributaries
- Monitoring numbers and health of large fish in the Peace River
- Water quality, fish habitat and fish food monitoring



Site C fish and aquatic monitoring programs

Underway (as of June 2018)	Upcoming (2018–2024)
Peace River Fish Food Organisms	Site C Reservoir Riparian Vegetation
Site C Reservoir Tributaries Fish Community and Spawning	Peace River Riparian Vegetation
Peace River Fish Community	Site C Fish Entrainment
Peace River Physical Habitat	Site C Total Dissolved Gas
Site C Reservoir Fish Food Organisms	Site C Fishway Effectiveness
Site C Reservoir Water and Sediment Quality	Site C Trap and Haul Fish Release Location
Peace River Water and Sediment Quality	Site C Small Fish Species Translocation
Site C Fish Stranding	Site C Reservoir Constructed Shallow Water Habitat Areas Sediment and Vegetation
Peace River Water Level Fluctuation	Site C Reservoir Fish Community



- 203,455 fish sampled in the Peace River from 2002 to 2017
- 28 fish species sampled in the Peace River
- Monitoring for the first 30 years of project operations



- 205 km of the Peace River sampled from Peace Canyon Dam to Many Islands, Alberta
- Hundreds of river kilometers sampled in the tributaries



- 867 fish tagged in tributaries of the Peace River in 2017
- 69,003 fish tagged in the Peace River since 2004

2018 field work season—planned studies

Peace River Water and Sediment Quality Monitoring

Monitoring water and sediment quality in the Peace River to evaluate the potential effects of the project.

Peace River Bull Trout Spawning Assessment

Assessment of Bull Trout spawning in known spawning locations in the Halfway River watershed through aerial and ground surveys. Resistivity fish counters and tag detection systems will be used to ground truth estimates of spawn timing, duration, and abundance. This will happen annually July to October.

Fish Population Indexing Survey

Monitoring fish populations to provide measures of fish abundance and distribution in representative index sections of the Peace River and its tributaries. This work will occur annually July to September.

Fish Stranding Monitoring Program

Assessment of fish stranding risk in the diversion headpond and Peace River downstream of the dam site. This work will occur annually May to October.

Fish Food Organisms Monitoring

Monitoring the production of fish food organisms in the Peace River as well as Williston and Dinosaur reservoirs in 2018.

Tributary Mitigation Opportunities Evaluation

Identification of fish habitat enhancement opportunities through habitat assessments in Peace River tributaries. The work will continue in 2018.

Beatton River Arctic Grayling Status Assessment

Monitoring Arctic Grayling in the Beatton River to provide abundance estimates during the summer of 2018.

Small Fish Translocation Monitoring

Monitoring small-fish populations in the Peace River to determine project impacts on genetic structure, movement, and genetic exchange of these species. This monitoring program will start in 2018 and is ongoing (will run until 2053).

Peace River Fish Habitat Enhancement Monitoring Program

Monitoring the effectiveness of Peace River fish habitat enhancement measures near the dam site construction area to confirm suitability of habitat for fish during the summer months in 2018.