

## HydroNet Project Title: Hydraulics of Hugh Keenleyside dam

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Project Code: 2.2.1



**Rationale:** *Fish entrainment occurs when resident fish are passed through a dam's water release structures, resulting in displacement and possibly injury or death. Fish entrainment risk is a function of both reservoir flow characteristics and fish behavioural characteristics. This multi-disciplined study will combine both hydraulic and biological research to study this risk.*

**Description:** *Three dimensional computational fluid dynamic (CFD) models will be used to study the intake-induced velocity fields at reservoirs located on the Columbia River system in British Columbia. Engineering field programs will be conducted to collect detailed velocity measurements using an acoustic Doppler current profiler for input into the CFD models for model validation and refinement. Furthermore, a review and analysis of collected water temperature profile data and how it is affected by reservoir dynamics and/or dam intake operations will be undertaken.*

### Outcomes:

- *CFD models of several BC Hydro reservoirs to assess various intake operational effects on velocity regimes*
- *A better understanding of the impact of hydropower operations on thermal regimes and reservoir dynamics*

### Benefits from this research

*This research will help develop a better understanding of fish behaviour within a reservoir and how they are affected by the operation of hydropower facilities. The overall objective is to develop general methods to assess the risk of fish entrainment within reservoirs in order to aid in facility operation decisions to mitigate these risks.*



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