

ENVIRONMENT AND SOCIO-ECONOMIC

Fish and Aquatics

Report: **Site C Fisheries Study – Analysis and Assessment of Compilation of the Ministry of Environment’s Peace River Bull Trout and Arctic Grayling Radio Telemetry Database 1996 to 1999**

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Summary: During the 1996-1999 period, the Ministry of Environment (MOE) radio-tagged and tracked bull trout (primarily from the upper Halfway River) and Arctic grayling (upper Halfway and Sukunka rivers) to determine their movements seasonally within and between the tributaries and the Peace River mainstem (Figure 1). To obtain a more detailed understanding of the movements of these tagged fish, BC Hydro, in agreement with MOE, commissioned analysis of this database in more detail. The objective was to digitize, map, and re-analyze the MOE database using the methodology used in recent radio telemetry studies conducted for BC Hydro.

In total 71 bull trout (primarily from the upper Halfway River) and 48 Arctic grayling (upper Halfway and Sukunka rivers) were tracked (primarily by aerial surveys) to determine fish movements within and among the tributaries and Peace River mainstem. The key findings are:

- 36% (25 of 69) of the bull trout released in the Halfway River watershed did not exit the river, whereas 64% (44 of 69) made at least one foray into the Peace River mainstem.
- The majority (63-77%) of bull trout detected were in the Halfway River watershed from July-September. In all other months, the majority (56-75%) of individuals were detected in the Peace River mainstem.
- Other than the Halfway River, no bull trout were detected in any tributary of the Peace River mainstem.
- Only one of the Arctic grayling released in the Halfway River, and none of the Sukunka River fish, emigrated into the Peace River mainstem.
- Arctic grayling released in the Halfway River drainage moved significantly longer distances (median 127 km) than those released in the Sukunka River (median 79 km); the Halfway watershed consisted of minor (<100 km), moderate (100-200 km) and extensive (>200 km) movers.
- Bull trout displacement was primarily upstream in July-August (pre-spawning) and pronouncedly downstream in September (post-spawning);

Arctic grayling displacement was clearly upstream from May-July (spawning/feeding), and downstream from August-November (pre over-wintering movement).

- 21% (15 of 71) of the bull trout moved past the potential Site C Dam location.