

### **Request Number 3: Navigation – Boating Hazards**

**References:** EIS Guidelines Sec. 16.8.4; EIS Vol. 3, Section 26; gov\_0008-023

**JRP Context:** The EIS Guidelines state that the EIS will contain sufficient detail to inform Transport Canada, under the Navigable Waters Protection Act, of the impacts to navigation, including potential navigation hazards in waterways, both upstream and downstream of the proposed dam. The Proponent noted that based on general wood absorption and decay processes as well as interaction with the water column, submerged trees breaking free and ascending quickly is an unlikely occurrence. Transport Canada noted that based on historical knowledge of reservoir creation, submerged trees breaking free of the soil and ascending quickly to the surface without warning are a risk to navigation. It noted that all efforts should be made to reduce this possibility.

**JRP Question:** Conduct an assessment of the effects on navigation of quickly ascending trees, with appropriate justification and references on the likelihood. If adverse effects are identified, outline appropriate mitigation.

#### **BCH Response:**

Transport Canada's note about historical knowledge refers to anecdotes about trees rapidly ascending to the surface of reservoirs where no or minimal clearing was undertaken in advance of reservoir filling, such as Williston Reservoir.

In the case of the Project, BC Hydro has incorporated a number of measures that will reduce navigation hazards due to vegetation. These include:

- Clearing the reservoir area prior to filling, including removal of approximately 95% of the merchantable trees (which are larger diameter trees), and a substantial volume of non-merchantable vegetation, which will reduce the volume of submerged trees and vegetation;
- Advance clearing of the areas of early shoreline erosion, which will reduce the volume of floating debris in the reservoir;
- Operation of debris booms during construction, which will enable the removal of woody debris from the river in advance of reservoir filling and reduce the volume of floating debris in the reservoir; and
- Debris management during reservoir operations, which will reduce the volume of floating debris that would otherwise, overtime, become saturated and submerged. Once this vegetation reaches the bottom of the reservoir it is typically trapped by sediment deposition.

Over time, the buoyancy of the remaining submerged, rooted vegetation would decrease as the trees absorb more water. Underwater logging studies and fisheries studies provide evidence of both rooted and unrooted vegetation attaining negative buoyancy and remaining in place (see supporting references below).

Based on the above, quickly ascending trees are expected to be a very low probability occurrence, and thus were not specifically identified as a hazard to navigation in the assessment. The presence of other potential navigation hazards, including floating woody debris, were assessed as potential effects to navigation following reservoir filling, and in addition to the clearing plan, additional mitigation measures were proposed consistent with BC Hydro's Public Safety Management Program. A Public Safety Management Plan (PSMP) would be developed for the Project, and it would include identification of public safety hazards, including navigational hazards, during BC Hydro's proposed shoreline and reservoir monitoring program. The PSMP will describe appropriate measures to manage public safety risks, and to communicate to the public about potential or identified navigation hazards or other conditions relevant to

safe boating on the reservoir. Specifically identified hazards would be marked or signed, in accordance with Canadian Dam Association guidelines.

Supporting references:

G.L. Godshalk and J.W. Barko, 1985, Chapter 4 Vegetative Succession and Decomposition in Reservoirs  
Bluewater Marine Services, 1997, Forest Renewal BC Report, Kinbasket Underwater Wood Project Final.

Chris Stead, Triton Logging Ltd. Personal communication September 2013. (underwater logging operator, Ootsa Lake).