

Winter Freeze-up and Ice Conditions on the Peace River

Ice conditions on the Peace River have the potential to cause flooding at the Town of Peace River. The governments of Alberta and British Columbia, and BC Hydro formed a Joint Task Force to establish guidelines to influence ice processes on the Peace River and minimize the potential for ice-related problems during river freeze-up and river breakup, specifically at the Town of Peace River

During river freeze-up, the Joint Task Force has three main objectives:

- encourage the formation of a stable ice cover at an elevation which would not cause groundwater seepage in the Lower West Peace subdivision;
- maintain a freeze-up water level elevation with enough freeboard from the top of the dikes to allow for sudden water level increases due to collapse of the ice cover; and
- encourage the formation of a stable ice cover at a high enough elevation so that there is enough capacity for the passage of high flows experienced during spring break-up.

These objectives are met with the use of a target freeze-up water level elevation of 315.0 metres (plus or minus 0.5 metres, and measured at the Water Survey of Canada gauge just downstream of the Highway 2 bridge). In advance of freeze-up, BC Hydro and Alberta Environment and Parks develop a flow release plan to meet this target freeze-up water level, even as normal ice cover formation processes raise water levels. As the ice front approaches the Town of Peace River, BC Hydro reduces flows in accordance with this plan.

With the reduced flows on the river, it is normal for water levels to rise between 2.5 and 3.5 metres as the ice cover reaches and forms at the Town of Peace River. After the initial freeze-up water level rise during this year's river freeze-up, water levels stabilized within the target freeze-up elevation range for the Town of Peace River.

During freeze-up on rivers, a collapse of the newly formed ice cover can lead to localised high water levels. This year, recent warm temperatures have prevented the ice cover from strengthening, and the ice cover has collapsed a number of times over the past few days. These collapses have raised water levels an additional 2 metres above the target freeze-up elevation. Since then, water levels have remained steady at 3 metres below the top of the dike. With the warm weather persisting, further ice cover collapses are possible.

In response to rising groundwater levels in the Lower West Peace subdivision, BC Hydro has pre-emptively activated their new dewatering well and pump system. BC Hydro has previously used groundwater pumps to mitigate high groundwater levels during freeze-up. No basement water seepage issues in the Lower West Peace subdivision have been reported since these systems were put in place. BC Hydro has also further reduced their flow releases in response to the probability of additional ice cover collapses.

Alberta Environment and Parks, BC Hydro and the Town of Peace River are working together to continuously monitor ice conditions, water levels and weather forecasts. Observation information is gathered using a combination of on-site observers, water level gauges, web cameras, satellite images, and observations flights. Alberta Environment and Parks is in close contact with the Town of Peace River emergency managers to provide real-time updates on changing river conditions.