

Peace River Hazard Study Update

We would like to provide you with a brief update on the status of the Peace River Hazard Study that commenced in the Peace River Area this fall. Although we have been making progress on several project components, the primary focus of Northwest Hydraulic Consultants (NHC) over the last few months has been the Survey and Base Data Collection work.

The purpose of the field survey was to collect river channel and ground elevation information, including specifics like river channel characteristics, bridge and culvert geometry, and the locations, elevations, and shapes of dedicated flood control structures (berms and dykes). Additionally, new [LiDAR](#) data was collected and processed over the last several months to provide floodplain ground elevations. This combination of LiDAR and survey data will be used to create the hydraulic model this spring.

NHC worked diligently to complete the field survey. They are currently working on the hydrologic analysis to determine open water flood frequency estimates in the study reach for regulated and naturalized scenarios. A draft report is expected this winter. Through the rest of the winter and spring, NHC will be using the LiDAR and collected survey data to develop the hydraulic model of the Peace River. The hydraulic model is a key deliverable for Alberta Environment and Parks as it will be foundational for future project deliverables, including the Flood Inundation Mapping, Ice Jam Analysis, Flood Hazard Mapping, and the Flood Risk Assessment and Inventory components.

The Peace River Hazard Study is expected to be complete in spring 2017. Our finalization process will include both local authority review and public engagement for major deliverables. Approved draft reports and maps will be provided to local authorities for comment following internal review to ensure they meet provincial Flood Hazard Identification Program standards. Following completion of the study, open houses will be held to give the public the opportunity to learn more about the Flood Hazard Identification Program and the products produced by the Peace River Hazard Study.

More information about the Alberta Flood Hazard Identification Program can be found at www.floodhazard.alberta.ca. If you have any questions regarding the work, please contact Chris Leptich by email at Christopher.Leptich@gov.ab.ca, or by phone at (403) 355-2491.

Project Background

The Peace River Hazard Study will identify and assess river-related hazards along approximately 52 kilometers of the Peace River and a little more than 1 km of the Heart River. This extends from just past the end of the Shaftesbury Trail, through the Town of Peace River to just past the Diashowa mill. This study will include the Heart River within the Town boundaries. The contributions of the Smoky River and its impact to the Peace River flood scenarios will be considered, although no mapping along the Smoky River will be produced. The study project reach includes the Town of Peace River, Birch Hills County, County of Northern Lights, Municipal District of Peace, and Northern Sunrise County.

The main study deliverables (outlined in more detail below) will include a hydrology assessment, new hydraulic river models (for both ice and open water conditions), updated and new flood inundation and flood hazard mapping, a flood risk inventory, and a channel stability assessment – all of which will be provided to each community within the study reach to support their local emergency response and land-use planning needs.

- **Hydrology Assessment**
 - The hydrology assessment estimates flows for a wide range of possible open water floods along the Peace River and its major tributaries, including the 2, 5, 10, 20, 35, 50, 75, 100, 200, 350, 500, 750 and 1000-year floods.
- **Hydraulic River Modelling**
 - A new hydraulic computer model of the entire river system will be created using new survey data and modern tools. The model will be calibrated using surveyed highwater marks from past floods to ensure that results for different floods are reasonable.
- **Open Water Flood Inundation Mapping**
 - Flood maps for 13 different sized floods, based on the hydraulic model results and the hydrology assessment will be produced. Flood inundation maps can be used for emergency response planning and to inform local infrastructure design. These maps show areas of isolated flooding or areas that could be flooded if local berms fail.
- **Open Water Flood Hazard Identification**
 - Open water floodway criteria maps divide the open water 100-year floodplain into floodway and flood fringe zones, which show where flooding is deepest and most destructive.
- **Ice Jam Assessment**
 - Ice conditions are known to cause some of the most significant flooding in the Town of Peace River. This assessment will include an analysis of the ice jam flood history in the area, and analysis to estimate water levels for the 50-, 100-, and 200-year ice jam floods. The hydraulic computer model will be enhanced to accommodate ice conditions. Flood maps for the 50-, 100-, and 200-year ice jam floods will be produced, as well as ice jam floodway criteria maps, which are based on the 100-year ice jam flood.
- **Governing Design Flood Hazard Mapping**
 - The governing design flood hazard mapping will reflect the worst-case flood hazard of the open water and ice jam scenarios. These maps can be used to help guide long-term development planning.
- **Flood Risk Assessment & Inventory**
 - AEP will create an inventory of structures at risk of flooding for all of the mapped flood scenarios. This flood risk assessment and inventory can support future flood damage assessments.
- **Channel Stability Investigation**
 - The main goal of this study component is to provide insight into general channel stability along the Peace River. We will compare current and historic riverbank locations and channel cross sections, going as far back as 1949 using historic aerial photos.