

Upper Bow River Hazard Study Update

We would like to provide an update on the status of the Upper Bow River Hazard Study.

Substantial progress has made since the multi-year study started in fall 2015. All components of work are either complete or in late stages. Although the study was expected to be complete in December 2017, project timelines were extended to include additional analysis and an expanded set of deliverables. Technical work is now expected to continue through spring 2018.

We recognize there will be tremendous interest in any new flood mapping. Our study finalization process includes municipal and First Nation review and public engagement for major components, as appropriate. Our goal is to provide useful tools to communities and the public as soon as possible.

The Upper Bow River Hazard Study is being completed under the provincial Flood Hazard Identification Program, the goals of which include enhancement of public safety and reduction of future flood damages through the identification of river and flood hazards.

More information about the Alberta Flood Hazard Identification Program can be found at:

- www.floodhazard.alberta.ca

If you have any questions regarding this work, the project engagement specialist, Julia Frohlich, can be contacted at:

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Project Background and Study Progress

The Upper Bow River Hazard Study will identify and assess river-related hazards along 120 km of the Bow River, including Canmore, Cochrane, Exshaw, Kananaskis Improvement District, Lac des Arcs, Municipal District of Bighorn, Rocky View County, and Stoney Nakoda First Nation. The study extends from the Banff National Park boundary to Bearspaw Dam. Major tributaries at select communities are included.

The main study deliverables outlined below include a hydrology assessment, new hydraulic river models, 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.

- **Survey & Base Data Collection – Complete**
Hydraulic models and flood maps require high-accuracy base data. Field surveys and LiDAR remote sensing are used to collect river and floodplain elevations, channel cross section data, bridge and culvert information, and dedicated flood control structure details.
- **Hydrology Assessment – Complete**
The hydrology assessment estimates flows for a wide range of possible floods along the Bow River, including the 2, 5, 10, 20, 35, 50, 75, 100, 200, 350, 500, 750 and 1000-year floods. The analysis will include the 2013 flood.
- **Hydraulic River Modelling – Complete**
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.
- **Flood Inundation Mapping – Late Stages**
Flood maps for thirteen 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.
- **Ice Jam Assessment – Late Stages**
Along the Bow River reach through Cochrane, ice conditions are known to have caused significant historical flooding. This assessment will include an analysis of the ice jam flood history along this reach, 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 inundation 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.
- **Flood Hazard Mapping – Late Stages**
Flood hazard mapping divides the 100-year floodplain into floodway and flood fringe zones, which show where flooding is deepest and most destructive. The 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 – Late Stages**
An inventory of structures at risk of flooding for all of the mapped flood scenarios will be created. This flood risk assessment and inventory can support future flood damage assessments.
- **Channel Stability Investigation – Complete**
The main goal of this study component is to provide insight into general channel stability along the Bow River. We will compare current and historic riverbank locations and channel cross sections as far back as 1949 using historic aerial photos.