

Funding for Flood Mitigation Turns a Blind Eye to River Ecology

The southern Alberta floods of June 2013 were devastating. Over the past year AWA has engaged with various government and watershed stakeholders, particularly in the hard-hit Bow watershed, about ways to manage land to increase flood and drought resiliency. So far our message is falling on too many deaf ears. Most resources for longer term 'flood preparedness' are being devoted to engineering approaches to divert rivers that are naturally highly mobile into channels or reservoirs and hope they don't breach in the next large flood event.

On April 29, 2014 the Alberta government announced it would spend \$625 million over the next three years on flood protection work. Only a meagre three percent of that money will go to strengthening the flood and drought-buffering potential of wetlands, forests, and river corridors. All the rest of the cash is assigned to projects to further harden riverbanks, or to build or expand weirs, dams, and reservoirs.

Mountain-fed rivers need room to flex, to stretch their shoulders, when their waters are high. Across their flood plains, our western rivers dissipate the force of flood waters, carve new channels, and renew river corridor vegetation. Across their flood plains, shallow groundwater reserves connected to these rivers are replenished, filtered, and slowly released as base flow in drier seasons. While it is more understandable why we've hardened the Bow river channel in the highest density parts of downtown Calgary, AWA isn't convinced that other measures taken in the past year make as much sense. This applies particularly to narrowing and hardening many kilometres of river channels in low-density areas along the Bow and Elbow watershed with concrete and boulders. And... much more of this approach is in store: of the announced provincial flood mitigation

funding in the next three years, 56 percent (\$350 million) will be directed to community projects that appear to favour narrowing and hardening of river channels within a small portion of the flood plain.

Apart from very negative effects on fish and wildlife, this armouring of riverbanks accelerates downstream flows in low to medium flood periods and cannot withstand higher flows. New provincial regulations against building in a “flood way”, but permitting building in a “flood fringe”, fundamentally misunderstand our rivers’ behavior. Allowing more construction in flood plains is doubly dangerous. It increases the risk to families and infrastructure from groundwater or overland flooding in future big flood events. It also degrades our river corridors and the groundwater reserves needed to withstand dry seasons.

Forty-one percent (\$254 million) of the announced flood mitigation funding is for new or enlarged artificial water diversion or impoundment structures. Diversion channels are proposed for High River and a tunnel is being considered within the City of Calgary. The Alberta government’s Flood Recovery Task Force report of early June 2014, on flood mitigation measures for the Bow, Oldman, and Elbow watersheds, recommended further studies into building one or two water holding structures for the Elbow River. The first would be an earthen dam across the mainstem of the upper Elbow near McLean Creek in Kananaskis Country. The second would be an off-stream diversion channel below Bragg Creek that would run into an offstream reservoir on ranch lands west of Calgary.

AWA is concerned about the false sense of security these dams and diversions will convey to communities downstream. This risk factor is embedded in the Bow/Oldman Flood Mitigation report, prepared by an engineering firm. It advises that “(flood mitigation measures cannot guarantee that flooding will never occur in the protected area. In fact, the introduction of some structural mitigation measures merely changes the pathway to flooding or nature of the risk.”

For example, the report’s recommendations aimed to cope with a 1:100 year flood, also called a 1 percent annual exceedance flood. Such a flood would have a peak flow of 930 m³/s and a seven day volume of 130,00 dam³ into Glenmore Reservoir at the western edge of Calgary (a dam³ is a cubic decameter, which equals 1 million liters). The June 2013 flood was significantly higher than this: it saw a peak flow of 1,260 m³/s and a seven-day volume of 154,000 dam³. The Kananaskis Country Elbow proposal includes building an auxiliary earth cut channel spillway to protect the dam from blowing out during extreme floods up to the probable maximum flood (PMF) event of three times the 2013 flood levels. Use of the earth cut channel spillway during high flows in this headwaters location would create enormous erosive force. It would also send high waters on to downstream communities. The report recommends “that the GoA communicate to the public that flood risk can only be reduced, not eliminated.”

Containing even a 1 percent annual exceedance flood is expensive. The report gives a preliminary estimate of \$200 million for the Springbank diversion and \$300 million for the McLean Creek area dam. These costs are likely to escalate dramatically during construction; this money would be better spent reducing infrastructure in strategic areas along the Elbow to give the river more room to move and to dissipate flood waters. The proposed Kananaskis Country Elbow dam is of particular concern since it is designed to be easily used as a permanent reservoir; it will further degrade an ecologically sensitive headwaters area that is important to absorb, purify, and slowly release surface water and groundwater.

Does the Alberta government attach anything more than symbolic value to watershed ecology? It’s hard to answer “yes” when it relies almost entirely on activities that reduce natural flood and drought resiliency and watershed health and facilitate ongoing construction in floodplains. Alberta Wilderness Association has asked the Alberta government to implement ecologi-

cally-sound watershed management principles to better protect Albertans from future floods and droughts.

- Carolyn Campbell