

FLOOD- A Five Letter Word

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Gordon Lightfoot, the icon of Canadian folk music, intones, “When the skies of November turn gloomy” as a warning to ships plying the waters of Lake Superior, even big iron ore carriers. In land locked and generally water short Alberta, Lightfoot’s words don’t have the same cachet, but recent storm events have begun to sensitize us. The floods of 1995, 2002 and 2005 (with both spring and fall flooding, as if once a year isn’t enough) have made us start to search the skies of late May and early June for signs of impending doom. Spring rain used to fill our prairie souls with joy; now the same rain, especially when it persists for days, fills us with a sense of angst.

Is there a reason for concern this spring, or are we over these ‘floods of the century’? Why do we have these large floods and is there anything we can do about them? With recent experiences we’ve started to look at a flood as a four-letter word. Are we justified in thinking of this phenomenon in such harsh terms? We need to talk about this to see if “flood” is a four or a five-letter word.

Floods happen and they reoccur in a predictable nature in Alberta as the accumulated snow of winter meets the rising air temperature of spring. Water turns from a solid state to a liquid one and that transformation is faster than the earth’s absorption rate. That’s especially evident when heavy rain accompanies or follows snowmelt. The surplus water swells the thousands of tiny drainages and coalesces in the smaller streams. Those hundreds of small streams feed the larger streams and rivers, as gravity pulls water from higher elevations lower. A wave of water rolls downstream, filling the channel and often spilling into the adjoining low-lying areas. Most of these ‘floods’ go by and we hardly notice, short of some brownish water that can thwart the efforts of anglers and possibly with a greater than detectable taste of chlorine in the tap water.

What all floods have in common, the average and the not so average, is that measured over the year, this is the time of greatest volume, highest speed and most energy. All of these features are important to consider and understand flood dynamics. Volume is the easiest one to observe; there is simply a lot more water. That water has to fit somewhere and when the volume exceeds the capacity of the channel (the area between the banks) it climbs out of the restriction into the low lying area called the floodplain. It’s a rather clever adaptation to periodic bursts of water and provides a river with a safety valve to temporarily store the excess water, outside of its channel. Because floodplains are only used on infrequent occasions we tend to forget they exist and what role they provide. Like house insurance we hope we will never need it but without it we shoulder tremendous risk. It’s worthwhile taking a little windshield tour after floodwaters have receded to remind ourselves of the outer boundaries of the floodplain. The accumulated flood flotsam and jetsam are the silent messages of the river, telling us where it needs to be after the gales of June come slashing.

Speed and energy are inextricably linked. Water is a heavy substance, a cubic meter of it weighing almost as much as a Toyota Corolla. If you've ever been 'bombed' by some trickster with a pail of water, you have instant understanding of the shock of an innocuous liquid hitting with such power. Unlike the pail of water, a river's volume keeps pounding away, and as the speed increases so does the power of that water. A mere doubling of the velocity of the water quadruples its ability to erode; that's a lot of aqueous Toyota Corollas with more horsepower. When the energy of a flood comes rushing down the channel it can be alarming- pounding, grinding and carving away at the bank as it does. This is also where the safety valve of the floodplain becomes apparent, slowing the water down as it escapes the channel. It helps to have a floodplain bristling with trees and shrubs because they blunt the force of that rushing water. Think of it this way: slower water, less energy.

The problem is that floodplains are such inviting places. They lure us with their flat nature, the pleasant umbrella of trees and the proximity to water. The river doesn't use them very often so why don't we develop them? When we do, and the river periodically reoccupies its land, great consternation erupts. Rivers become enemies, they need to be controlled, straightjacketed and made mindful of our developments. We resort to engineering solutions, like channelization, berms, dikes, riprap and straightening, to keep the river off our land. Sometimes those solutions work, or they seem to for a while and then a larger flood tests them and finds the weaknesses. To watch a river work in flood times- probing, pushing, attacking and outflanking the 'solutions'-is an exercise in military maneuvering that most generals would envy. There is an axiom, rarely heeded, that says in the tension between water and land, water always wins. Water always wins!

This is cold (maybe wet) comfort to many who live on floodplains. A partial solution might include thinking about not only the volume of water in a flood but also how fast it is delivered to your front door. Water from snowmelt and rainfall used to take longer to get downstream. A survey of your watershed probably will show that collectively we've cleared, cultivated, logged, built roads, paved portions, removed the meanders of streams, blown the beaver dams and drained the wetlands. It's a short and speedy run for water to a basement near you. Those watersheds have lost the retentive capacity to hold, store and slow down run off. In effect we've assisted gravity in the upper portion of the watershed and then tried to fight it downstream. That's a losing proposition. Our efforts might be better placed, working at the watershed scale, with all of our watershed neighbours. We will still have floods but we may be able to moderate the effects. Oh, and let's not build anything else on the floodplain. If we continue to, Gordon may be inclined to pen another classic, maybe called "The wreck of the Alberta landscape". It will be a hit when the skies of May turn gloomy.

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