

## Salmon Watershed Springs a Leak

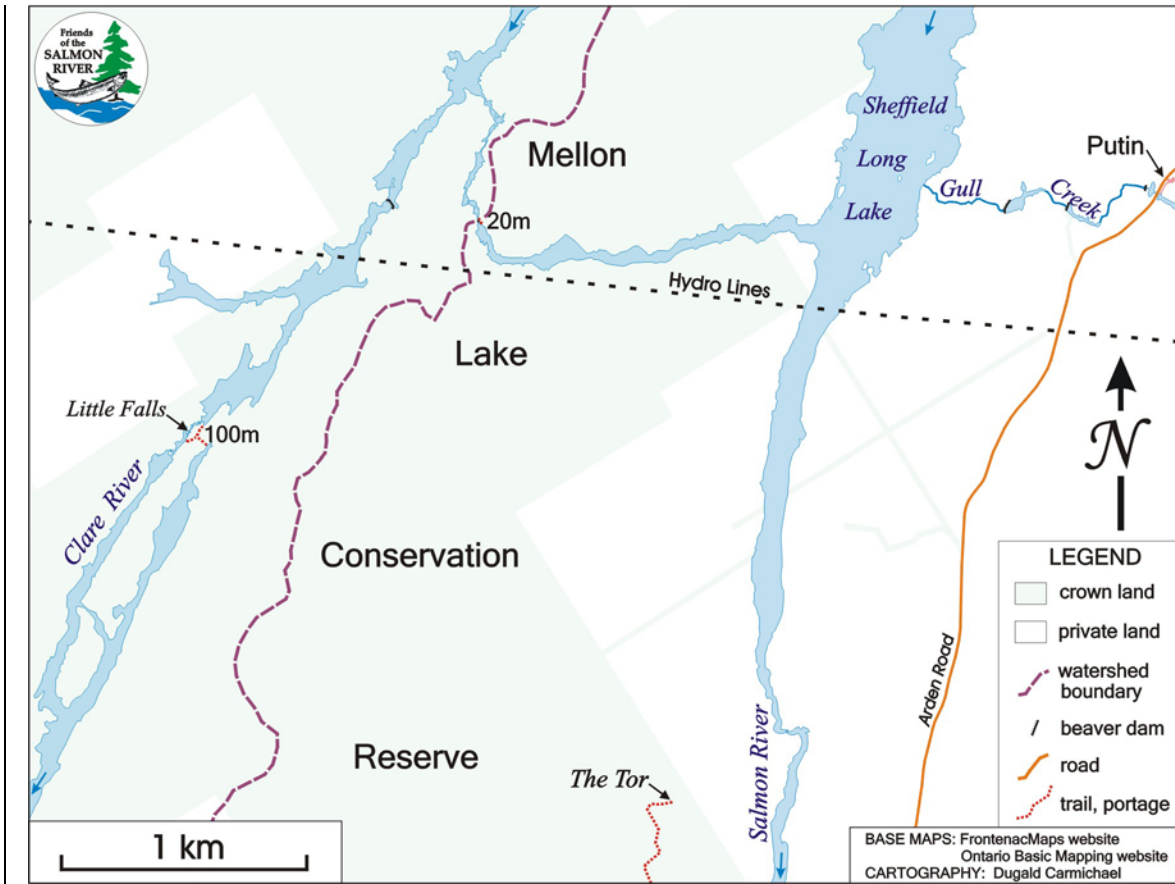
by Dugald Carmichael and Gray Merriam

Westward from Sheffield Long Lake, a long narrow bay extends all the way to the boundary of the Salmon Watershed, which is marked by a small dam about one metre higher than the midsummer level of the lake. By lifting over the dam or portaging 20 metres, paddlers can explore the upper reaches of the Clare River, a tributary of the Moira. The dam is made of earth and rocks, many of which are far too large to be moved by beavers. When the dam was built is anybody's guess, but by now it has sprouted several sizeable trees.



April 22, 2011: Paddling from Salmon to Clare across the small dam on the midsummer watershed boundary. Later in the day these kayakers were just able to paddle back upstream, but our tandem canoeists did a liftover behind the maples on river left. *Photo by Dugald*

In the spring, when meltwater raises the level of Sheffield Lake enough to overflow that small man-made dam, the Salmon Watershed springs a huge leak.



On the map, the small dam is where the midsummer watershed boundary is crossed by the 20-m portage.

This linkage of the Salmon and the Clare is not a new discovery. In 1827, Provincial Surveyor John Smith Jr. cited the “connexion” between the Salmon and the Moira watersheds, noting that the two rivers both “... leave the same lake in Sheffield...” (Smith’s report is reprinted by Edwin C. Guillet in *The Valley of the Trent*, 1957). An 1878 map of Sheffield Township (in the *Historical Atlas of Frontenac, Lennox and Addington*) shows the linkage of the two rivers, and on the Clare “Little Falls” is labelled. A 1963 geological map from the Ontario Dept. of Mines (*Map 2053 Madoc Area*) also shows the Clare River with a connection to Sheffield Long Lake. However, prior to 1998, every edition of the *Kaladar* 1:50,000 National Topographic map and of the *Kingston* 1:250,000 map wrongly showed the upper Clare River as a tributary of the Salmon, flowing *into* Sheffield Long Lake as if water could flow *uphill* across the bedrock scarp at Little Falls and *uphill* across the small dam on the midsummer watershed boundary!



April 22, 2011: Dugald on the brink of Little Falls on the Clare River. Almost 90% of this water has been captured from the Salmon River.  
*Photo by Maureen Beamish*

On April 22 of this year, we paddled the connection and found that the Salmon is supplying a lot of water to the Clare. To estimate the rate of leakage that day, we noted that Salmon Watershed has 585 square km upstream of the Tamworth gauge, whilst Clare Watershed has 303 square km upstream of the Bogart gauge. Assuming the same weather and "sponginess" in both watersheds, Clare should have had 34% of the total discharge from both watersheds, or 14.0 cubic metres per second (cms), but instead it had 17.8 cms. This gives 3.8cms as the flow-rate across the divide (16.5% of the Salmon's flow-rate at Tamworth), and it implies piracy of the runoff from about 83 square km somewhere in the upper Salmon Watershed. Serious water capture!

What should the Friends of the Salmon do about this mid-watershed capture from Sheffield Long Lake? Should we claim 83 square kilometres of the Moira watershed? Do we want it? Or should we send a bill to Quinte Conservation for 7.8 million cubic metres of high-quality water? This is the extra discharge of the Clare at Bogart during March and April in 2009 due to leakage from the Salmon, as calculated from the tabulated monthly total discharge of both rivers in that year. At, say, \$5/ cubic metre, that would be \$39 million, and we could submit a similar bill each year. Probably more than QC can afford! But it does seem only fair, in view of our role as supplier of so much clean water to the Moira every spring, that Quinte Conservation should pay more attention and direct more resources to the Salmon River Watershed.