

Base Flow Indices and their Relation to Physiography of Ontario

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The Source Water Protection Act in Ontario focuses largely on characterization of watersheds in Ontario, Canada. The objective of characterization is to relate surface and ground water reserves and sources to physiographic features of the area. The understanding of stream flow responses (base flow and surface flow) has been considered an essential tool in portraying the dominant features of a watershed. A variety of techniques are available for separating base and surface flows from the stream flow. However, two techniques, the digital filter and sliding interval, were found suitable under Ontario conditions. These two techniques were applied to 15 gauging stations located in different physiographical regions of Ontario. The base flow index (BFI, ratio between base flow and stream flow) was then computed on annual, seasonal and monthly basis and used to characterize the watersheds. The results indicated that BFI shows significant variation on the 15 selected watersheds which relates to the physiographic traits of those areas. Further analysis for seasonal and monthly BFIs is under process which will be presented at the conference.