

HOW DYNAMIC ARE OUR STREAMS? HOW STABLE ARE OUR DESIGNS?

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This paper presents research that has been completed over the last decade on the rates of channel adjustment (width, area and migration) from over 30 sites from streams in southern Ontario that are in a natural setting and situated on glacial till (not bedrock). The findings are insightful in channel designs as one of the main tenets governing stream and river restoration and management is that alluvial channels are dynamic systems that continually adjust their form to accommodate changes in flow regime and sediment supply. However, do we know what those rates are and how they adjust? Are they gradual or episodic?

The other aspect of this research is the performance from natural channel designs that have been monitored, in some instances over a similar duration. The research is from 10 channel designs in the GTA and includes similar metrics of changes in channel area, width and degree of movement or migration. The results suggest that the rate of adjustment is lower than natural rates and that change typically occurs within the first two years after construction. The results provide insight on future channel designs and illustrate the benefits of an AEM approach.