

# **Meander Belt Width Procedures: Developing Predictive Model for Southern Ontario**

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Meander belt width delineation has been recognized in Ontario as a primary regulatory tool for determining the extent a river or stream requires for natural migration tendencies; thus, providing input to channel restoration projects, development setbacks, and protection for species-at-risk. Current procedures primarily utilize site-specific historical migration assessments. However, many southern Ontario watercourses have experienced modification due to land use changes, and the available record often lacks the information necessary to conduct historical meander morphology and migration assessments. In the case of small, low order watercourses, the meander belt width delineation is driven by the application of empirical relations. Many of these empirical relations were developed from watercourses outside southern Ontario, in geomorphic conditions and morphological types different from those in the region. For those empirical equations developed within southern Ontario, the predictive meander belt widths do not always correlate well with other relations.

Beacon Environmental Ltd. and the University of Western Ontario initiated a research project to investigate the relations of meander belt width and primary hydrogeomorphic variables and to evaluate the applicability of predictive models currently used in practice. Drawing on a sample population of river reaches in the Credit River watershed, results suggest meander belt width correlated well to drainage area, discharge, and bankfull channel width. Drainage area demonstrated the most statistically significant relation, but may be problematic for meander belt prediction in situations where land use is anticipated to change, causing alterations to hydrologic regimes. While the research identifies similar hydrogeomorphic variables compared to commonly used relations in Ontario, the results suggest that many models currently utilized under predict the meander belt width. These findings suggest the need for further research and empirical model testing. Furthermore, the research indicates further consideration on the use of planimetric assessments to determine meander belt width as a planning tool in Ontario.

## **Biography**

Julia Howett received a M.Sc. in geography from the University of Western Ontario. Her research focused on meander belt delineation procedures; primarily that of predictive models which estimate meander belt width. Julia currently works for Ecosystem Recovery Incorporated, a professional engineering and geosciences company specializing in water resources, as a fluvial specialist.