

## Day Two - Track Two

Thursday, March 22<sup>nd</sup>, 2018

10:00 a.m. – 10:30 a.m.

## “Oops!...that wasn’t our intention”: Recognition and Avoidance of Unintended Consequences of Uncoordinated In-stream Erosion Mitigation in Southern Ontario

**Presenters:** Robin McKillop and Tatiana Hrytsak, Palmer Environmental

### Biography



Robin McKillop is a Principal and Senior Geomorphologist with Palmer Environmental, responsible for leading a team of seven geomorphologists working across Canada. Robin has 15 years of experience leveraging his knowledge of rivers, hillslope processes and glacial landforms to develop innovative and practical strategies for addressing environmental challenges. Robin’s work in southern Ontario focuses on applications of fluvial geomorphology, including erosion hazard assessment and natural channel design.



Tatiana Hrytsak has over 5 years of experience specializing in fluvial geomorphology in the consulting industry. During this time, Tatiana has worked on a number of subwatershed studies and completed numerous natural channel designs. This has given her the opportunity to assess unaltered, pre-development watercourses and to address the challenges posed by urbanized watercourses. Prior to her consulting career, Tatiana completed her Master’s degree in fluvial geomorphology at the University of Western Ontario.

## Abstract

Watercourses in southern Ontario are responding to the effects of urbanization by eroding their beds and banks, and adjusting their channel morphologies. Significant efforts are now being made to reduce erosion and adjustments in order to protect at-risk infrastructure and restore in-stream and riparian habitat. Erosion control efforts are typically reactive, as opposed to proactive, and implemented piecemeal, without full consideration of downstream implications or reach- to watershed-scale drivers of channel morphology. Stakeholders are increasingly witnessing the unintended and undesirable consequences of reactive, piecemeal erosion control on channel morphology, aquatic habitat and valleyland infrastructure. Uncoordinated erosion control efforts necessitate repeated disturbance along erosion-prone reaches, concentrate erosion within gaps between mitigation sites, and disregard potential cumulative downstream effects. Excessive armouring of banks commonly reduces the availability of sediment normally transported by watercourses, projects into and narrows channels, and concentrates erosion along unprotected beds. Consequential down-cutting compromises bank protection such as stone revetments and retaining walls. Using examples from southern Ontario, we showcase benefits of proactively coordinating erosion control efforts, effective design elements for avoiding undesirable consequences, and the importance of considering maintenance requirements.

## Learning Objectives

1. To appreciate the unintended consequences of uncoordinated in-stream erosion control efforts;
2. To understand how morphological cause-and-effect relationships inform erosion control strategies; and
3. How can we adjust contracts to reflect the multi-year rehabilitation process required in these projects.