

Pocket wetlands as additions to stormwater treatment train systems: a case study from a restored stream in Brampton, ON, Canada

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Natural channel designs and stream restoration projects incorporate wetlands as habitat diversity that provides additional stormwater storage and additional water quality benefits to the stormwater treatment train. This study evaluated the value-added effectiveness of a pocket wetland (PW) located at the outlet of a stormwater management facility within the floodplain of a major channel realignment in Brampton, Ontario, Canada. The PW was located between the outflow of the stormwater pond and the Churchville Tributary. The Churchville Tributary is designated habitat for redbreasted dace, a species-at-risk. Runoff, water temperature, suspended and dissolved loads were monitored during 21 rainfall events between May – October 2014. Average residence time in the PW was ~2 hours and the overall changes in water quality between instream monitoring sites were negligible. Instream water temperature changes were minor (less than 1°C) during flow events, with small increases in water temperature (less than 0.5°C) observed during baseflow. The change in suspended sediment between the stream and flow from the PW was between -22 – 31 mg/L. Suspended sediment inputs were greatest in the fall, which coincides with larger rainfall events. This study demonstrates that PWs provide additional water storage time, and improve traditional stormwater management. Although PWs are not formally included in current policy requirements, evidence from this study suggests the inclusion of PWs in future projects would be valuable.

Biography

Jason Krompart is a Geomorphology Technician at Credit Valley Conservation. He gained his understanding of the principles and applications of geomorphology through the completion of an undergraduate studies and graduate research at the University of Guelph. His experience includes natural channel design, environmental modelling, construction supervision, erosion and sediment control inspections, watershed monitoring, program development, and geomorphological assessments. He is also a member of the Canadian Certified Inspector of Sediment and Erosion Control and has worked in a range of environments throughout the Greater Toronto Area.