

Planning for Water and Supporting Ecosystems

A Panel Discussion on Ecohydrology

Laturnell Conservation Symposium
November 4, 2025

Host:
Nyssa Hardie, M.Sc., E.P.



Ecohydrology

- Integrating *Ecology* and *Hydrology*
- Focus is on the interconnections and dependencies between SW and GW with natural features and wildlife
- A multidisciplinary field integrating:
 - aquatic and terrestrial biology,
 - hydrogeology,
 - hydrology,
 - fluvial geomorphology,
 - stormwater management,
 - etc.

Example: Headwaters



- Connect overland flow to downstream watercourses
- Consolidate runoff
- Concentrate groundwater seepage
- Support wetlands

- Provide seasonal and indirect fish habitat
- Extend habitats during sensitive life stages
- Network of micro habitats and natural features connected by water



Ecohydrology Goals

- 1) Protect and sustain natural features
- 2) Ensure continual support to existing and created features during / after site alteration
- 3) Plan for resilient ecosystems into the future

Legislative Changes

The only constant is change:

- 2024 Conservation Authorities Act amendments
- 2025 / 2026 Creation of the Species Conservation Act
- 2025 Fighting Delays, Building Faster Act
- 2025 / 2026 Changes to the Clean Water Act
- And more

Trevor Frasier

Project Manager | Crozier Consulting Engineers

Email: tfraser@cfcrozier.ca

Trevor Frasier, P.Eng., is a Project Manager at Crozier with 14 years of experience in land development engineering across Ontario. With strong project management skills and relationships with local review agencies, he helps drive successful residential, commercial, institutional, and industrial projects, providing developer-focused solutions that meet regulatory requirements.

At Crozier, Trevor applies leadership, collaboration, and technical expertise to streamline project execution. He regularly speaks at public and council meetings, as well as at industry conferences and events.



CROZIER

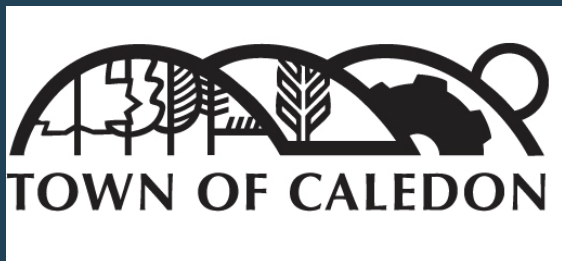
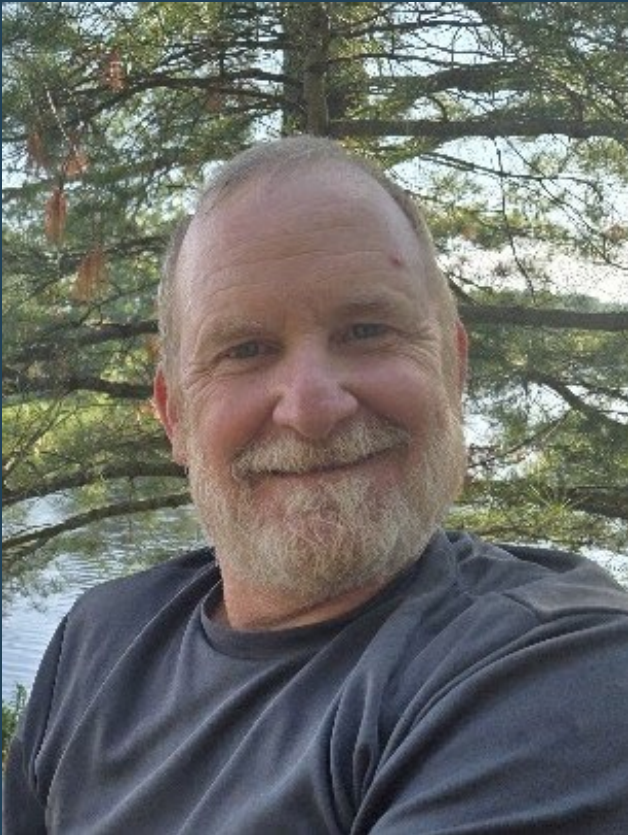
Jason Elliott

**Senior Planner, Environment - Parks
and Natural Heritage | Town of Caledon**

Email: jason.elliott@caledon.ca

Jason has been working as a Natural Heritage professional for 18 years. Over that span he has worked for a consulting company, Conservation Authorities and several municipalities, and moonlighted teaching college courses. He is currently employed at the Town of Caledon.

Although field botany was his initial passion, water resources soon became paramount in his work. Over his career he has worked with engineers on countless water balance, dewatering and wetland creation proposals to ensure the design appropriately addressed natural heritage considerations.



Stephen Van Drunen

Ecologist | Credit Valley Conservation

Email: stephen.vandrunen@cvc.ca

Stephen Van Drunen is an Ecologist with the Natural Heritage Management team at Credit Valley Conservation. He has been leading CVC's ecohydrology program since 2021. A focus of this work is to improve knowledge of wetland hydrology and vegetation interrelationships.

Stephen has a diverse environmental monitoring and research background, including surface and groundwater monitoring, habitat characterization, and species at risk research. He received his Ecosystem Management Technologist Diploma from Fleming College, and B.Sc. and M.Sc. from the University of Guelph.



**Credit Valley
Conservation
FOUNDATION**



Todd Smith

**Senior Landscape Architect | Beacon
Environmental**

Email: tsmith@beaconenviro.com

Todd is a certified arborist and licensed landscape architect with over 25 years of industry experience incorporating rigorous environmental assessment and sensible design solutions into the needs of growing urban areas and communities.

At scales from multi-residential to regional, he assesses conditions of existing and future needs as they pertain to protection and enhancement of habitat; ecological and resilient human landscapes, and streetscape and public realm associated with public transit. His experience and skills as a certified arborist combine with design strategy to balance needs of ecological systems within commercial and cultural landscapes.



Nyssa Hardie

Ecohydrologist | Natural Resource Solutions Inc.

Email: nhardie@nrsl.on.ca

As an ecohydrologist, Nyssa integrates the fields of ecology and hydrology to assess the form, function, and hydrological needs of natural heritage systems and habitats. She has spent her career in the 'grey zone' between ecology and water sciences, and advocates for the advancement of ecohydrology in her work as a consultant.

Nyssa thrives in environments where creative and innovative solutions are top of mind, and with project teams who work side by side to develop systems that support the hydrological needs of natural features. She has had the pleasure of working for Natural Resource Solutions Inc. for the past 14 years.



**NATURAL RESOURCE
SOLUTIONS INC.**

Aquatic, Terrestrial and Wetland Biologists

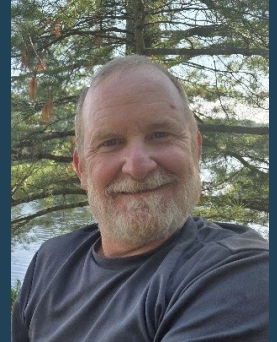
Ecohydrology in Development Planning

- Data collection
- Understanding existing conditions
- Analysis
 - Functional
 - Sensitivity
 - Water balance modelling
 - Impacts
- Approvals
- Implementation

A Discussion on Ecohydrology



Trevor Frasier
Crozier Consulting Engineers
tfraser@cfcrozier.ca



Jason Elliott
Town of Caledon
jason.elliott@caledon.ca



Stephen Van Drunen
Credit Valley Conservation
stephen.vandrunen@cvc.ca



Todd Smith
Beacon Environmental
tsmith@beaconenviro.com



Nyssa Hardie
Natural Resource Solutions Inc.
nhardie@nrsi.on.ca