5th International Conference on Natural Channel Systems

NATURAL CHANNELS

Linking Processes to Practice

2016 **Program**

September 26th & 27th, 2016

Marriott Gateway on the Falls

Niagara Falls, Ontario

CHAIRS' MESSAGE

Whether you are a first time attendee or have participated since the first conference in 1994, it is our pleasure to welcome you to the 5th International Natural Channel Systems Conference – Linking Processes to Practice!

Since our last gathering in 2010, our understanding of the importance, complexity, and interconnectedness of watercourses and their relation with biological and ecological processes has advanced. At the same time, scientific and technological advances have become more accessible, and are changing how data is collected and how restoration work is being completed. Results from monitoring activities are now becoming available, allowing us to evaluate how well we are doing and, ideally, to use the insight gained to adjust our management and restoration approach(es) as part of the adaptive management cycle. While we have learned and advanced, there continue to be challenges and inconsistencies in our approach to protecting our green infrastructure: the stream corridor.

This conference provides a forum for professionals, including: practitioners, regulators, contractors, academics, municipalities, and non-governmental organizations. We are here to celebrate successes, learn from failures, exchange ideas, learn from others, challenge our perspectives, and expand our 'tool box'. This conference provides a collective opportunity to evaluate where we are, to consider how we can improve our understanding and approaches to watercourse management and rehabilitation, and to explore how the 'Natural Channel Systems' community of professionals might best equip themselves to enhance and protect our natural infrastructure into the future. Finally, with regards to the future, we hope to foster discussion concerning the need for a sustained regional and national presence as a resource for professionals in the realm of natural channel restoration. Our program includes a moderated panel which will include related discussions.

Planning for this conference began more than a year ago by the dedicated team of individuals listed at the bottom of this page. Without the countless hours of personal time and the support of their respective employers, this conference would not have come together. Conference planning was also supported by those in the restoration community who attended a vision-setting workshop in June 2015 and all those who participated in the conference planning questionnaire distributed earlier this year. The feedback received by the committee has led to the selection of inspiring keynote speakers and of the program itself. The positive response to the call for abstracts has enabled a wide array of presentation topics, ranging from advances in science and technology to proposals for new and improved regulatory frameworks. New to this conference is the Living Lab which provides a learning opportunity, showcasing various aspects of stream restoration, through displays, videos, flumes, and case study slide shows.

We hope that you will be inspired and challenged to plan, monitor, evaluate, and adjust the practice of stream restoration as needed; and to support and participate in our collective advancement of stream restoration and management. We sincerely hope that you will take the time to share your views regarding the future of Natural Channel Systems through the conference sessions, informal networking opportunities such as the Ice Breaker and Wine and Cheese, and through the follow-up survey. Finally, we encourage you to keep an open mind to new ideas, to listen and learn, and to share your thoughts with regards to the overarching theme of linking stream restoration process to practice.

Sincere regards,

Mariëtte Pushkar and Jeff Hirvonen

COMMITTEE

Bill Annable, *University of Waterloo*
Hazel Breton, *City of Toronto*
Andrea Doherty/Dave Gibson, *Fisheries and Oceans Canada*
Jacqui Empson-Laporte, *Ontario Ministry of Agriculture, Food and Rural Affairs*
Brad Fairley, *Stantec Consulting*
Ed Gazendam, *Water's Edge Environmental Solutions Team Ltd.*
Jeff Hirvonen (conference co-chair), *GeoProcess Research Associates*
Jack Imhof, *Trout Unlimited Canada*
Mariëtte Pushkar (conference co-chair), *Ecosystem Recovery Inc.*
Fabio Tonto, *Toronto and Region Conservation*

PROGRAM AT A GLANCE

Pre-Conference - Sunday, September 25	
8:00 PM – 10:00 PM	**Ice Breaker Reception -** Registration will be open
Day 1 - Monday, September 26	
7:15 AM – 9:15 AM	**Registration**
8:00 AM – 9:00 AM	**Training Workshops:** Workshop 1 - A Primer of Key Disciplines in NCS Applications Workshop 2 - Best Management Practices in Design and Construction
9:15 AM – 10:30 AM	**Welcome, Introductions and Opening Remarks** (Held in the Plenary Hall) Master of Ceremonies Serge Metikosh Keynote Speaker Colin Thorne
10:45 AM – 12:15 PM	**Concurrent Sessions -** M1A / M1B / M1C / M1D
12:15 PM – 1:15 PM	**Luncheon – Part I** Held at Milestones (Located in Hotel)
1:15 PM – 2:00 PM	**Luncheon – Part II** Luncheon Keynote Speaker Chester Watson (Held in the Plenary Hall)
2:15 PM – 3:45 PM	**Concurrent Sessions -** M2A / M2B / M2C / M2D
3:45 PM – 4:15 PM	Refreshment Break with Exhibitors
4:15 PM – 5:45 PM	**Concurrent Sessions -** M3A / M3B / M3C / M3D
5:45 PM – 7:15 PM	Wine and Cheese Networking Reception (Held in Exhibitors' Gallery)
Day 2 - Tuesday, September 27	
7:00 AM – 8:30 AM	**Registration**
8:30 AM – 10:00 AM	**Concurrent Sessions -** T1A / T1B / T1C / T1D
10:00 AM – 10:30 AM	Refreshment Break with Exhibitors
10:30 AM – 12:00 PM	**Concurrent Sessions -** T2A / T2B / T2C / T2D
12:00 PM – 1:00 PM	**Luncheon – Part I** Held at Milestones (Located in Hotel)
1:00 PM – 2:00 PM	**Luncheon – Part II** Keynote Speaker Marc Gaboury
2:00 PM – 3:30 PM	**Concurrent Sessions -** T3A / T3B / T3C / T3D
3:30 PM – 4:00 PM	Refreshment Break with Exhibitors
4:00 PM – 5:15 PM	**Discussion Panel** (Held in the Plenary Hall)
5:15 PM – 5:30 PM	**Closing Plenary and Wrap-Up** (Held in the Plenary Hall) Master of Ceremonies Serge Metikosh

SPONSORS AND EXHIBITORS

RIVER LEVEL SPONSORS

Ontario
Ministry of Natural Resources and Forestry

Stantec

Ontario
Ministry of Agriculture, Food and Rural Affairs

STREAM LEVEL SPONSORS

AHYDTECH GEOMORPHIC

GEO MORPHIX
Geomorphology Earth Science Observations

North State Environmental

Ontario
Ministry of Agriculture, Food and Rural Affairs

Aquafor Beech Limited

GeoProcess Research Associates

BEACON ENVIRONMENTAL

CWRA ACRH
Canadian Water Resources Association
Association Canadienne des Ressources Hydriques

ecosystem recovery inc.
PROFESSIONAL ENGINEERS

HOSKIN SCIENTIFIC

RM CONSTRUCTION

Verbinnen's Nursery Ltd

filtrexx CANADA
SUSTAINABLE TECHNOLOGIES
let nature do it.

Matrix Solutions Inc.
ENVIRONMENT & ENGINEERING

terrafix geosynthetics inc.

water's edge

WINE & CHEESE RECEPTION SPONSOR

Stantec

1-DAY LUNCHEON SPONSORS

DYNEX CONSTRUCTION INC
Since 1989

GEMS

REFRESHMENT BREAK SPONSOR

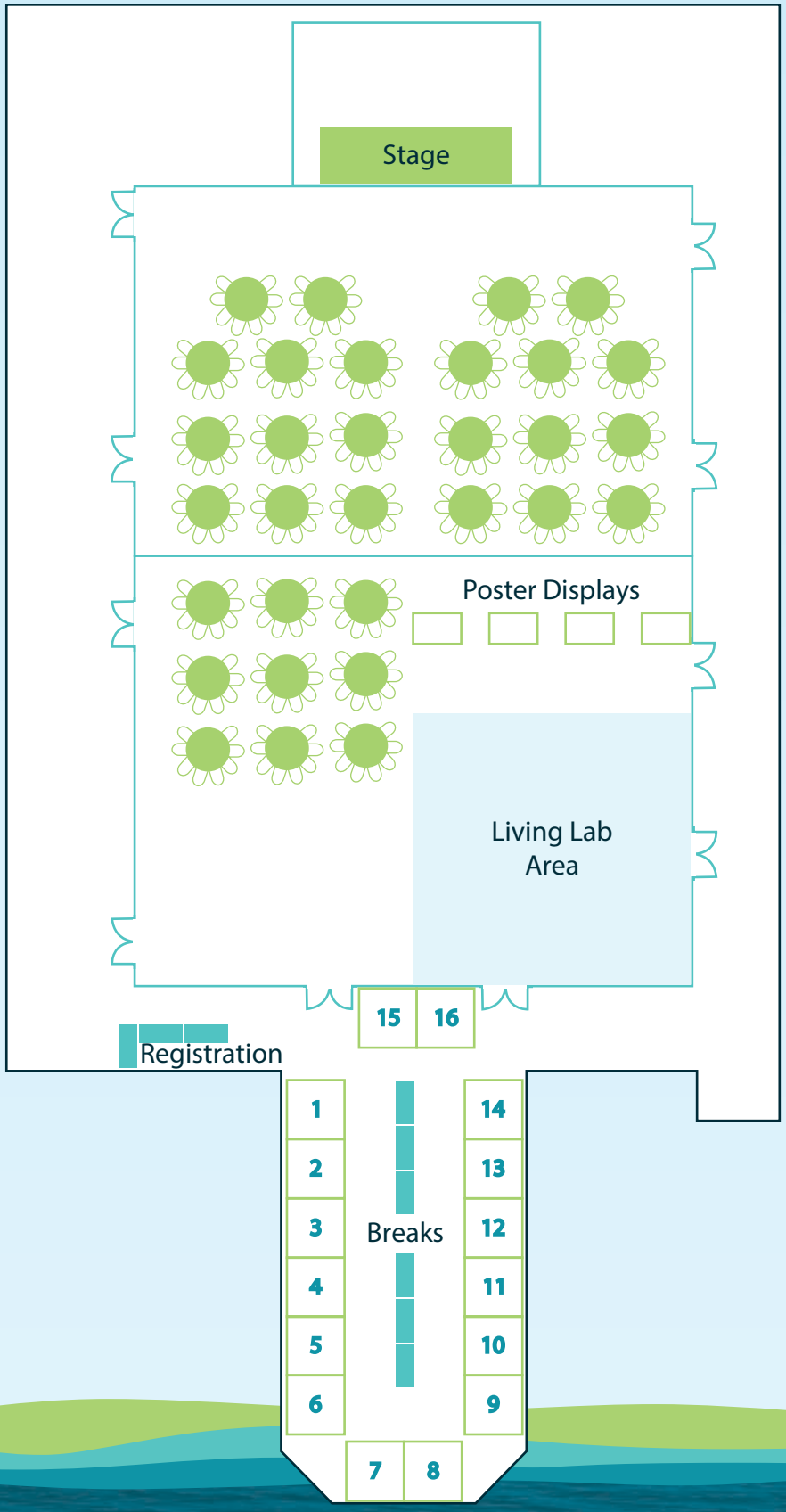
Conservation ONTARIO
Natural Champions

CAST-A-LINE SPONSOR

Ontario
Ministry of Agriculture, Food and Rural Affairs

RM CONSTRUCTION

EXHIBITOR FLOORPLAN



We would like to thank the following organizations for their contributions to the Living Lab:

- R & M Construction
- Verbinnen's Nursery
- Dillon Consulting
- Arborvitae Ecological Landscapes
- Ecosystem Recovery Inc.
- Ontario Ministry of Agriculture, Food & Rural Affairs
- Fisheries and Oceans Canada
- Trout Unlimited Canada

We welcome you to enjoy the Poster Displays and our new Living Lab available during the conference. Please note this hall will be closed during plenary addresses and concurrent sessions. See page 14 for Poster descriptions.

EXHIBITORS

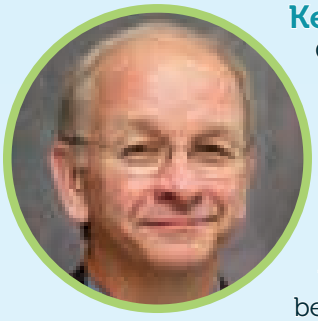
1. North State Environmental
2. Water's Edge Environmental Solutions Team Ltd
3. Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)
4. R&M Construction
5. Beacon Environmental Ltd.
6. Filtrexx Canada Inc.
7. GeoProcess Research Associates
8. Canadian Water Resource Association (CWRA)
9. Verbinnen's Nursery
10. GEO Morphix Ltd.
11. Aquafor Beech Ltd.
12. AHYDTECH Geomorphic
13. Hoskin Scientific Ltd.
14. Ecosystem Recovery Inc.
15. Matrix Solutions Inc.
16. Terrafix Geosynthetics Inc.

2016 KEYNOTE SPEAKERS

Master of Ceremonies • Serge Metikosh

Serge Metikosh, is a Sr. Fish Habitat Biologist and President of Fish Habitat Solutions Inc. with more than 40 years of experience as a Fish and Fish Habitat Biologist and as an environmental impact assessment practitioner. Before starting Fish Habitat Solutions Inc. in 2012, Serge Metikosh was a Principal and Senior Fish Habitat Biologist at Golder Associates Ltd in Calgary for 15 years. As a consultant, Serge Metikosh's focus was on his clients with technical and strategic advice for obtaining regulatory approval for various resource development projects throughout Canada. He has been Project Manager and Discipline Lead on numerous pipeline, oil and gas, coal mining and diamond mining projects and has prepared Environmental Impact Statements and applications for authorizations under the Fisheries Act. This work included issue scoping, the design and implementation of baseline studies, analysis and reporting, development of mitigation strategies, determination of residual effects and development of Offsetting Plans. In addition to being involved with projects in the preconstruction and approval stages, Mr. Metikosh also participated in their construction and operation phases. Mr. Metikosh's work in relation to the construction and operation phases of resource development projects focused on the implementation of mitigation measures for various aspects of construction, implementation of No Net Loss Plans, as well as the design and implementation of effects monitoring studies required as conditions of regulatory approval.

Prior to joining Golder Associates Ltd. in 1997 Mr. Metikosh was a Senior Fish Habitat Biologist with Fisheries and Oceans Canada (DFO) in Burlington Ontario where he was responsible of the delivery of the Fish Habitat Management program in Ontario. He is familiar with the regulatory requirements of the Fisheries Act, DFO's Policy for the Management of Fish Habitat (including the guiding principle of No Net Loss) and the Canadian Environmental Assessment Act. He was also instrumental during his time with DFO in promoting and supporting major science-based guidance documents for watershed planning and the Natural Channel Systems Initiative. Mr. Metikosh has kept up to date with changes in Federal legislation that have taken place over the last several years and continues to provide advice to his clients on policy and implementation issues related to the fisheries protection provisions of the amended Fisheries Act. He has developed guidelines and procedural manuals for DFO and other government and industry organizations related to the Fisheries Act and CEAA.



Keynote Speaker • Chester Watson

Chester Watson is an Emeritus Professor of Civil Engineering and presently is a private consultant. His career spans industrial water supply, construction of municipal water and waste water conveyance and treatment, teaching advanced level University classes, short courses and conference lectures pertaining to stream restoration. He has lectured in the U.S., U.K., Canada, and China, and has written numerous publications.

Dr. Watson is an engineer with experience in fluvial morphology, erosion, and sediment transport in modified and managed watersheds and streams. Much of his career has been spent in the study and rehabilitation of incised stream channels caused by watershed modification and channelization, and an equal portion of his career has been in the study of large rivers, particularly the Mississippi river. He is presently engaged with an advisory role in a physical model of the drainage from Mount St. Helens.

Keynote Speaker • Colin Thorne

Colin Thorne is Professor and Chair of Physical Geography at the University of Nottingham. His educational background is in environmental sciences, civil engineering and physical geography. He has published 9 books and over 130 refereed journal papers and book chapters. To date, his work has nearly 8,000 citations, including one paper that has been cited over 800 times. He has an h-index of 44 and an i10-index of 99. During a career spanning four decades, he has held posts with UEA, Colorado State University, the University of London, USDA National Sedimentation Laboratory, USACE Waterways Experiment Station, NOAA Fisheries, and currently, the University of Nottingham. He is also a visiting Professor at Tsinghua University, China and an Affiliate Professor at both Portland State and Colorado State Universities.

Professor Thorne is an environmental scientist with expertise in erosion, sediment transport and sedimentation in natural, modified and managed rivers, particularly with respect to the restoration of lost river functions, form and habitat. Internationally, Thorne's experience with rivers extends to the basins of the Awash, Brahmaputra, Clutha, Columbia, Ganges, Mekong, Mississippi, Missouri, Parana, Salado, San Juan, Toutle, Yangtze, and Yellow Rivers, including research on a number of the alluvial deltas associated with these watercourses.

Through his research and consultancy work, Thorne has acquired particular skills in expert knowledge elicitation, stakeholder engagement, multi-criteria analysis and risk assessment (qualitative and quantitative). He is adept at working with stakeholders in the co-production of knowledge and delivering key messages to non-specialist decision makers in ways they understand and can act on, as evidenced by uptake in the UK of the principles of 'natural flood management' and 'working with natural processes'. He currently leads a 9-university consortium investigating the generation of multiple flood risk benefits using Blue-Green infrastructure (http://www.bluegreencities.ac.uk/bluegreencities/index.aspx).

Keynote Speaker • Marc Gaboury

Marc Gaboury has over 28 years of experience in fish habitat restoration and enhancement, environmental impact assessment, and research. He has worked throughout British Columbia, Yukon, Canadian prairies and eastern United States. He has worked cooperatively on research, impact assessment and restoration projects with First Nations in Manitoba and British Columbia, including Cowichan Tribes, Cree, Haida, Lheidli T'enneh, Huu-Ay-Aht, T'Sou-ke, Nisga'a Lisims Government, Okanagan Nation Alliance, Nuu-chah-nulth, and Uchucklesaht First Nations.

Marc has extensive experience in preparing integrated watershed restoration plans and the design and construction of fish habitat restoration structures. He has co-authored comprehensive restoration plans for the Okanagan, Englishman, Coldwater and Cowichan rivers in B.C. and designed specific treatments to restore stream habitats and watershed processes in another 58 watersheds in B.C. and 15 in Manitoba. He has also designed and constructed fishways for low head dams, as well as backwatering schemes for existing culverts to allow fish passage.

Marc is a Registered Professional Biologist with the College of Applied Biology of British Columbia.

THE NATURAL CHANNELS INITIATIVE IN ONTARIO – Your Feedback is Needed on Next Steps

Stream corridors are the backbone of our Natural Heritage System in Ontario, in general, and more so in the settled landscapes of southern Ontario. These systems continue to be altered, changed, and damaged by ongoing land uses and new developments. Extreme storm events resulting from a changing climate further exacerbate these problems, especially in urban areas.

The Natural Channels Initiative (NCI) was introduced in Ontario in the early 1990's by an informal working group comprised of federal, provincial and municipal governments, conservation authorities, professional practitioners, and academia. Over the following years, this group met informally and developed 2 manuals and 4 successful international conferences in Ontario (approximately 5 years apart) to provide direction and knowledge sharing opportunities.

Consultation carried out in 2015 found that in general, current practices in Ontario are protecting corridors through local scale policies. There are more design practitioners now and partnerships are being formed with non-government agencies. Natural channel concepts are being taught in universities and colleges. However there is need for improvements concerning making better links to infrastructure and better recognition that cookie cutter methods are not always appropriate because streams are complex and dynamic. Constructors could benefit from more inspection as it relates to design of new systems. Better support to the private sector to understand the need for interdisciplinary teams and in particular to understand the cost/benefits of natural channel design. While practitioners are good at learning from their mistakes, there could also be more learning from monitoring and research. To date three major sectors are involved in natural channel systems which include: Conservation Authorities; Private Development and Consultants; and Municipalities.

In order to move forward advice was sought through the 2015 consultation, with the key sectors and others, for furthering NCI. This feedback identified the following major themes:

1. Developing a Business Case for Ontario for NCI
2. Creating a Resource Centre at the National Level
3. Providing on-going training for all involved

These themes will help build capacity of the key sectors and are not new. However, what is new is the economic, social, and environmental conditions under which we must now practice. The Business Case for Ontario, for example, could propose mechanisms to create: a set of best practices; consolidate local existing studies; help to place streams into asset management programs etc. The National Resource Centre (form to be determined) could conduct world-wide environmental scans, create a scientific and technical body of information, to name a few ideas. Both the NCI (Ontario- based) and the Resource Centre (Canada-wide) could plan and hold frequent and appropriate training for all sectors (those identified and yet to be identified).

We ask that you consider this approach and provide your feedback to us. Stop by the NCI display in the Living Lab during the conference or fill out the conference survey which will be provided in hard copy and digitally to you.

Our sincere thanks and appreciation!

2016 Natural Channels Conference Steering Committee

DAY ONE – Monday, September 26

10:45 AM - 12:15 PM

Room: Oakes North East

M1A
Innovation

Streamline Your Design with Civil3D
Randy Brook and Hamish Trenam, Stantec Consulting Ltd.

Innovative Stream Restoration Techniques: Dam Removal, Channel Reconstruction, and Large Wood Placement in the Pacific Northwest Region of the US
Dr. Janine Castro, US Fish and Wildlife Service and NOAA National Marine Fisheries Service

The Use of Unmanned Aerial (UAV) Technologies to Detect Groundwater Inputs in the Credit River
Ken Glasbergen, CrossWind Geomatics. Inc.

Room: Hennepin South

M1B
Southern Ontario Procedure

Meander Belt Width Procedures: Developing a Regional Model for Southern Ontario
Imran Khan, Beacon Environmental Limited

Regional Reference Curves for Small and Medium Watercourses in Southern Ontario
Trevor Chandler, Stantec Consulting Ltd.

Limitations and Misuse of the Rapid Geomorphic Assessment for Preliminary Characterization of Channel Stability
Robin McKillop, Palmer Enviromental

Room: Hennepin North

M1C
Historical Context

Twenty Plus Years Since the Rural Ontario Data Base and Relationships was Produced. Looking Back to Look Forward
Bill Annable, University of Waterloo

Applied Fluvial Geomorphology: Where Have We Come from, Where Do We Go?
Dr. Roger TJ Phillips, Western University and Aquafor Beech Limited

The Evolution of Natural Channel Design Practice in the Maritimes: From Digger Logs to Holistic Channel Realignments
John Parish, Matrix Solutions Inc.

Room: Oakes South

M1D
Climate Change

Pilot Study - Environmental and Infastructure Vulnerabilities to Climate Change - Implications for Natural Channels
Karen Hofbauer, Matrix Solutions Inc.

Freedom Space for Rivers: An Economical Approach to Sustainable Management in a Changing Climate
Joanna Eyquem, AECOM

State of Climate Change Science and Practice in the Great Lakes Basin: A Focus on Climatology, Hydrological and Ecological Effects
Edmundo Fausto, Ontario Climate Consortium - Toronto and Region Conservation Authority

Notes

2016 SESSIONS

DAY ONE – Monday, September 26

2:15 PM - 3:45 PM

Room: Oakes North East

M2A
Natural Resources: Challenges and Opportunities

Pipeline Associated Watercourse Crossings Fisheries Self-Assessment Tool
Lucas Warner, Stantec Consulting Ltd.

Once Upon a Gravel Pit: Reconnecting Floodplain through Aggregate Extraction
Crystal Allan, Grand River Conservation Authority

Treatments to Mitigate Aquatic Habitat Impacts Associated with Land and Resource Developments
Marc Gaboury, LGL Limited

Room: Hennepin South

M2B
Tools

The Science and Practice of Erosion Threshold Theory in Applied Geomorphology
Dr. Roger TJ Phillips, Western University and Aquafor Beech Limited

The Applicability of Using Fractional Bedload Transport Modelling as a Tool to Predict Geomorphic Change: A Novel Framework for Practitioners Using Commony Available Data
Jeff Hirvonen, GeoProcess Research Associates and University of Waterloo

A Tool to Optimize Understanding of Hydromorphological Charactersitics for French River Management and Restoration (CARHYCE)
Frederic Gob, Université Panthéon-Sorbonne, Paris

Room: Hennepin North

M2C
Habitat Banking

Proponent-Led Habitat Banking
Brent Valere, Fisheries and Oceans Canada

Regulatory Approvals for Stream Restoration - Two Approaches to DFO Authorization
Jessica Kellerman, City of Waterloo

Recreational Fisheries Conservation Partnerships Program
Cynthia Mitton-Wilkie, Fisheries and Oceans Canada

Room: Oakes South

M2D
Monitoring – TRCA

Evaluating the Effectiveness of Stream Rehabilitation Projects: Lessons Learned from 10 Years of Monitoring
Dean Young, Toronto and Region Conservation Authority

Temporal Changes in Terrestrial Biota Observed through Toronto and Region Conservation Authority's Natural Channel Design Monitoring Program 2-14 Year Post Restoration
Lyndsay Cartwright, Toronto and Region Conservation Authority

Evaluating the Effect of Natural Channel Design on Fish and Benthic Macroinvertebrate Communities
Raymond Biastoch, Toronto and Region Conservation Authority

Notes

DAY ONE – Monday, September 26

4:15 PM - 5:45 PM

Room: Oakes North East

M3A
In Stream Techniques

Evaluating Stream Restoration Designs with Engineered Log Jams in Experimental River Channels
Michael S. Gallisdorfer, University at Buffalo

The "Threshold" of Habitat: Spawning Salmon in a Restored Threshold Channel
Jeff Muirhead, Stantec Consulting Ltd.

2-D Hydraulic of Proposed Fish Ramp to Design for Fish Passage Potential
Bradley Burrows, Ecosystem Recovery Inc.

Room: Hennepin South

M3B
Approaches

A Process-Based Approach for Proposing Ecological Flows for Geomorphic Purposes
Ashraf Zaghal, MMM Group

Engineering Design Meets Geomorphic Design
Steve Braun, Matrix Solutions Inc.

Restoring Rivers as Part of Flood Risk Management - Recent Experience Gained from Projects in Scotland and England
Colin Thorne, Nottingham University

Room: Hennepin North

M3C
Fish Habitat

Changes in Fisheries Act, Policy and Review Process
Thomas Hoggarth, Fisheries and Oceans Canada

Fish Habitat Offsetting in Pristine Wilderness: Regulatory Challenges
Heather Amirault and David Luzi, Stantec Consulting Ltd.

Brook Trout Creek Restoration under Challenging Conditions
Laura Lawlor, GHD Limited

Room: Oakes South

M3D
Monitoring – 2

Assessment of the Performance of a Riffle-Pool Restoration Project over Two Years of Floods Using Radio Frequency Identification (RFID)
Bruce MacVicar, University of Waterloo

Long-Term Erosion Monitoring on Niagara Escarpment Watercourses
Anna C.J. Howes, Aquafor Beech Ltd

How Dynamic Are Our Streams? How Stable Are Our Designs?
John Parish, Matrix Solutions Inc.

Notes

DAY TWO – Tuesday, September 27

8:30 AM - 10:00 AM

Room: Oakes North East

T1A
Biology

Restoring Ecological Functions – TUC Loweville Project
Jack Imhof, Trout Unlimited

First Nations Engagement in Developing and Rehabilitating Watersheds - Natural Channels
Jon Bisset, Canadian Columbia River Inter-tribal Fisheries Commission

Fish, Benthic Insects, and Trees of Riparian Ecosystems Mexico's Northeastern Rio San Juan
Jose Navar, Tecnologico Nacional de Mexico

Room: Hennepin South

T1B
Case Studies 1

How to Communicate a Natural Channel Design Effectively
Sarah Matchett, Conservation Halton

Little Stewart Creek Abstract
Brandon Spaugh, North State Enviromental

Buckhorn Creek: Removal of an Old Low Head Hydroelectric Project and Restoration of the Creek on the Floor of the Drained Reservoir
Darrell Westmoreland, North State Environmental

Room: Hennepin North

T1C
Agricultural Drains 1

Application of Natural Channel Design (NCD) Principles in Agricultural Drainage
Scott Robertson, Stantec Consulting Ltd.

Using a Systematic Approach to Natural Channel Designs and Agricultural Stewardship
Sarah Fleischhauer, Maitland Valley Conservation Authority

The Scott Drain – Integrating Natural Channel Design, Controlled Drainage and Agricultural Practices
Geoff King, Maitland Valley Conservation Authority

Room: Oakes South

T1D
Sediment Transport 1

River Bank Rehabilitation in Sandbed Channels
Ahmed Siddiqui, GEO Morphix Ltd.

Where Does All the Sediment Go? Modelling the Sixteen Mile Creek Sediment Plume
Jeffrey Doucette, GHD Limited

The Evolution of Gravel-Bed Morphology Due to Changing Hydrologic Regimes: A Case Study of an Urban Watercourse in Southern Ontario, Canada
Ben Plumb, University of Waterloo

Notes

DAY TWO – Tuesday, September 27

10:30 AM - 12:00 PM

Room: Oakes North East

T2A
Redside Dace

Natural Channel Design for Redside Dace
Shari Faulkenham, Matrix Solutions Inc.

Implementation of Natural Channel Projects for Redside Dace; The Lessons Learned in Implementing Two Ecologically Different Projects
Ralph Toninger, Toronto and Region Conservation Authority

Review of Redside Dace Habitat Corridor Realignments: Morphology, Sedimentology and Habitat Suitability within Aged Natural Corridor Designs
Paul V. Villard, GEO Morphix Ltd.

Room: Hennepin South

T2B
Case Studies 2

Avonhead Creek Daylighting Project: Field Monitoring Techniques to Understand Watershed Hydrology
Jayeeta Barua and Karen Chisholme, Credit Valley Conservation Authority

Reconstruction of Amberlea Creek Valley Corridor to Protect Frenchman's Bay Provincially Significant Wetland
Robert Amos, Aquafor Beech Ltd

The Do's and Don'ts of Natural Channel Realignments
Shawn R. Taylor, Ecosystem Works Inc.

Room: Hennepin North

T2C
Agricultural Drains 2

Lost Land Reclamation in N.O.T.L Irrigation Channel
Brandon Cormier, Devron Sales Ltd.

Use of Drainage Act Assessments to Evaluate Costs of Rural Natural Channel Design
Tim Brook, Ontario Ministry of Agriculture, Food and Rural Affairs

Educating the Appropriate Target Audience for Stewardship Initiatives
Jacqui Empson Laporte, Ontario Ministry of Agriculture, Food and Rural Affairs

Room: Oakes South

T2D
Sediment Transport 2

Sediment Budget of the Rhine River for Fractions Clay/Silt Sand & Gravel
Stefan Vollmer, Federal Institute of Hydrology (BfG), Koblenz, Germany

The Quasi-Stability of Urban Stream Channels and the Importance in Bed Material Transport
Bill Annable, University of Waterloo

Bedload Transport in Urbanized Creeks with and without Stormwater Management
Elli Papangelakis, University of Waterloo

Notes

DAY TWO – Tuesday, September 27

2:00 PM - 3:30 PM

Room: Oakes North East

T3A
Erosion and Sediment Control

Erosion and Sediment Control for Stream Restoration in Canada
Harry Reinders, R & M Construction

Erosion and Sediment Control for Stream Restoration in the US
Darrell Westmoreland, North State Environmental

Erosion and Sediment Control: Can We See the Forest for the Trees?
Brad Fairley, Stantec Consulting Ltd.

Room: Hennepin South

T3B
Stormwater

Using Green Infrastructure to Meet Environmental Flow Needs
Cassie Schembri, Credit Valley Conservation Authority and Wolfgang Wolter, Ecosystem Recovery Inc.

The Influence of Erosion Control Criteria on Stormwater Management Facility Design
Aaron Farrell, Amec Foster Wheeler and John Parish, Parish Aquatic Services

Designing Stormwater Management Facilities to Minimize Downstream Watercourse Impacts
Mike Gregory, Computational Hydraulics International

Room: Hennepin North

T3C
Modelling

The Effects of Aquatic Vegetation Growth on Discharge Calculation in Natural Watercourses: A High-Resolution Study Featuring Novel Techniques
Lorenzo Brignoli, University of Waterloo

Using Two-Dimensional Hydraulic Modelling to Quantitatively Assess Fish Habitat Improvements
Nick Hodges and Joanna Eyquem, AECOM

Habitat Suitability Modelling
Amanda McKay, Matrix Solutions Inc.

Room: Oakes South

T3D
Urban Streams

The Role of Eco-Hydraulics in the Restoration of a Degraded Urban Stream
Ian D. Smith, Urban & Environmental Management Inc.

Urban Channel Rehabilitation - a Fine Balance
Jeff Daniel, GHD Limited

Sediment Management on the North Fork of the Toutle River
Chester Watson, Biedenharn Group

Event Coordination support provided by Karen Anderson and Mario Maillet, Allset Inc.

POSTER DISPLAYS

We welcome you to enjoy the Poster Displays next to the Living Lab, available during the conference. Please note this hall will be closed during plenary addresses and concurrent sessions.

Assessing Channel Adjustment and Design Feature Performance in Urban Hybrid Channel Restoration Projects Post-Construction: Highland Creek, Toronto, Canada	Patrick Padovan[1], Jaclyn Cockburn[1], Paul Villard[2] [1]Department of Geography, University of Guelph [2]GEO Morphix Ltd.
Overwinter Habitat of Minnows in Small Southern Ontario Streams	Lindsay Davis[1, 2], Jaclyn Cockburn[1], Paul Villard[1, 2] [1]University of Guelph [2]GEO Morphix Ltd.
Conversion of an On-Line Pond in Downtown Newmarket Into a Naturalized Watercourse	Melody Brown[1], Mark Bassingthwaite[1], Jason Morris[2], Harry Reinders[3] [1]Cole Engineering Group Ltd [2]The Regional Municipality of York [3]R&M Construction
Turbulence Modulation by Biological Agents: Hydrodynamic Impacts of Freshwater Mussels in Stream Systems	Brandon Sansom[1], Joseph Atkinson[1], Sean Bennett[2] [1]Department of Civil, Structural, and Environmental Engineering, The State University of New York at Buffalo [2]Department of Geography, The State University of New York at Buffalo
Sediment Dynamics in Semi-alluvial Urban Channels	Matilde Welber[1], Peter Ashmore[1] [1]University of Western Ontario
Geomorphic Channel Terminology: A Refresher	Mariëtte T.H. Pushkar[1], Peter E. Ashmore[2] [1]Ecosystem Recovery Inc. [2]University of Western Ontario
Upper Niagara River and Lake Erie Connectivity Potential for the Emerald Shiner Minnow (Notropis atherinoides)	K. E. Vorenkamp[1], B.J. Sansom[1], J.F. Atkinson[1], S.J. Bennett[2], [1]Department of Civil, Structural, and Environmental Engineering, The State University of New York at Buffalo [2]Department of Geography, The State University of New York at Buffalo
Development of a Community Based Network of Low Cost, Internet Enabled Water Level Sensors for Flood Risk Monitoring	Rebecca Swabey[1], Patrick Sapinski[2] [1]Ecosystem Recovery Inc. [2]Kitchener Design Group

NATURAL CHANNELS

Linking Processes to Practice

www.naturalchannels.ca