



## **The 47<sup>th</sup> Annual Drainage Engineers Conference**

The 2015 Drainage Engineers Course and Conference at the Holiday Inn Guelph Hotel and Conference Centre.

- Thursday, October 22 – Drainage Engineers Course
- Thursday, October 22 - 7:00 to 9:00 pm – Drainage Practitioners Meeting, including Tribunal Updates
- Friday, October 23 – Drainage Engineers Conference,

### **Drainage Conference Program**

**Welcome and Introductions**, Tony Peralta, Chair, OSPE Land Drainage Committee

**Use of the RSWMM for Drainage Projects**, Alec Scott, Water and Planning Manager, Ausable Bayfield Conservation Authority, Kathleen Rooyakkers, Project Engineer, R.J. Burnside & Associates Limited and Adrian Holvik, Water Resources Engineer, R.J. Burnside & Associates Limited

As part of an initiative to improve water quality along the Lake Huron shoreline between Tobermory and Sarnia, the Healthy Lake Huron group has undertaken a project to develop a Rural Stormwater Management Model. This new model provides a tool to better understand how storm runoff moves across the rural landscape and allows for evaluating the impacts of various conservation practices to help reduce erosion and water quality pollution.

By walking through two sample projects using RSWMM, the presentation will look at how the model software functions when being used for drainage applications. This will include evaluation of the accuracy of the results when compared to measured data and events that cannot be captured accurately with the available inputs of the model.

**State of Climate Change Modelling and Impacts on Highway Drainage Infrastructure**, Hani Farghely, Senior Engineer, Hydrotechnical Design, Ministry of Transportation

The Presentation will provide a review of some of the current climate change model results for Ontario. Examples of resilience assessment of highway drainage infrastructure using the results of the climate models investigated will be presented.

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**Limited Engineering Licence**, Wm. Paul MacIntrye, Senior Project Manager, R. J. Burnside & Associates. Ltd.

My presentation to the Drainage Engineers Conference will define what a Limited Engineering Licence is and why I chose to pursue the Licence. I will further discuss the Application process with the Professional Engineers of Ontario (P.E.O.) including the academic and minimum experience requirements. My presentation will detail the Application Review process with P.E.O., as well as the mandatory Interview and Professional Practice exam requirements. I will conclude the presentation with an introduction of the new Licensed Engineering Technologist (L.E.T.) designation and the contrasts between the two.

**Resilience and the Management of Fish Habitat in Agricultural Landscapes: Drain maintenance alters habitat but not fish assemblages**, Rob McLaughlin, Associate Professor, Integrative Biology, University of Guelph

This presentation will summarize findings from an investigation of the resilience of physical habitat features, and macroinvertebrate and fish assemblages, to drain maintenance. Drain maintenance has been the source of tension between the agricultural community and fish habitat managers. Uncertainty about the resilience of these systems to drain maintenance has underlain these tensions. Our research tracked the responses of physical habitat features, invertebrates, and fishes in eight maintained and unmaintained headwater drain pairs from 3-6 months before to 22-24 months after drain maintenance. Drain maintenance altered physical habitat features considered important to fishes for up to two years following maintenance; however, consistent changes in the abundances and diversity of macroinvertebrates (fish prey) were not detected. Further, we found no evidence of consistent changes in the abundances and composition of fishes in response to the alteration of physical habitat features. Following drain maintenance, abundances of individual fish species in sections of the maintained drains were positively correlated with the abundances of each species in corresponding unmaintained, reference sections both nearby (downstream) and farther away (in an adjacent branch of the watercourse), suggesting that fish assemblages are influenced by broader scale movements and ecological processes. We speculate that concerns regarding drain maintenance may be inflated because drain maintenance alters habitat features that are highly visible to humans, but apparently not critical to fishes, and because agricultural practices have selected for adventitious fish species that are adapted to the ephemeral conditions of headwater stream habitats, including drains. Our findings demonstrate how improved scientific knowledge of resilience can help resource managers understand trade-offs between ecosystem services and help with the allocation conservation resources to systems where management actions are needed most.

**Working Collaboratively to Balance Both Worlds**, Jack Imhof, Director of Conservation Ecology, Trout Unlimited Canada

Trout Unlimited Canada is an on-the-ground conservation organization that works  
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towards restoring healthy functions in our streams and rivers. In order to accomplish this, we need to both understand the demands of landowners as well as the needs of healthy rivers and streams in order to restore function to streams and still satisfy key needs of landowners. This presentation explores the need for partnerships and collaboration in stream rehabilitation and provides examples of projects designed to provide a balance and win:win solution.

**Drainage and the Endangered Species Act**, Kyle Stanley, Management Biologist, Ministry of Natural Resources and Forestry

MNRF staff will provide a brief overview of Species at Risk in Ontario, the Endangered Species Act and requirements under the ESA associated with Drainage projects.

**Exeter Diversion Drain – A Case Study**, Bill Dietrich, President, and Michel Terzian, Project Supervisor, Dietrich Engineering Limited

The Town of Exeter in the Municipality of South Huron has had a history of flooding. The drainage basin consists of primarily agricultural lands with a strip of residential development along Huron Street. A storm drainage system was designed to intercept the surface runoff from upstream lands and roads and provide a subsurface outlet for the agricultural lands and the Huron Street Municipal Drain. The roads Superintendent for the Municipality of South Huron signed a petition under Section 4 (1)(c) of the Drainage Act RSO 1990 to have a municipal drain constructed to divert the flood waters from entering the Town of Exeter. This storm sewer was installed through privately owned agricultural lands and the 12th fairway of the Ironwood Golf course to an outlet in the Ausable River. The drainage system consisted of the installation of 1228 metres of 750mm to 1350 dia. sewer pipe at an estimated cost of \$1,600,000. Two drain reports were prepared by Dietrich Engineering Limited which resulted in hearings before the Ontario Drainage Tribunal.

**Optimizing WASCoB Design for Drainage and Water Quality Improvement**, Kevin McKague, Engineer, Water Quality, Ontario Ministry of Agriculture, Food and Rural Affairs

There is growing interest among property owners in using Water and Sediment Control Basin's (WASCoBs) to manage surface drainage waters on their property, either as standalone systems or as part of municipal drain designs. This presentation will give an overview of WASCoB design methodology, the pros and cons of WASoCBs as a water management approach and tools available to assist with their design. Research investigating their impact on peak flows and water quality will be summarized. As well, research currently underway investigating customized inlet design options that may enhance WASCoB effectiveness in lowering seasonal discharge rates and protecting water quality will be presented.