
## The 43rd Annual Drainage Engineers Conference

The 2011 Drainage Engineers Course and Conference at the Holiday Inn Guelph Hotel and Conference Centre.

- Friday, October 21 – Drainage Engineers Conference

## Drainage Conference Program

**Union Marsh Drain – A Case Study –** John Kuntze, Senior Project Engineer and President, K. Smart Associates Ltd, Kitchener and Lisa Campbell, LCA Environmental Consultants

The presentation will give a before and after construction review of a drain maintenance project under the Drainage Act on the Union Marsh Drain in the City of Niagara Falls. Environmental issues that had to be addressed involved the impact of the drain maintenance on designated wetlands and grass pickerel habitat. John Kuntze P.Eng., will give background on the drain and the report he prepared for the drain maintenance. Lisa Campbell, LCA Environmental Consultants will give background on the environmental issues and how they were dealt with during construction.

**Highway No. 93 Drainage Works – A Case Study,** Tom Pridham, P.Eng. Drainage Engineer, R.J. Burnside & Associates Limited, Orangeville

As a result of overtopping of Highway No. 93, in the vicinity of Orr Lake, the Ministry of Transportation petitioned the Township of Springwater in accordance with the provisions of the Drainage Act to rectify the problem. Burnside completed a detailed hydrologic and hydraulic analysis to provide conveyance of the 100 year rainfall event safely under Highway No. 93 at a total of 5 culvert crossings.

Two new outlets were created between Highway No. 93 and Orr Lake. Due to the close proximity of the proposed works to Orr Lake, a natural channel design was completed at one location to direct flows away from road side ditches, through proposed culvert improvements and ultimately Orr Lake. The natural channel design incorporated pool-riffle sequencing and bio-engineering techniques to provide refuge for several species of aquatic life while providing conveyance for the 100 year event.

**Use of Technology for Surveying and Drafting,** Tom Marentette, P.Eng. P.E., Project

Manager Dillon Consulting Limited, Windsor, Ontario

Discussion will focus on the use of GPS for drain surveys and post processing of field data for design using Carlson Software.

**New Technologies for Surveying, Mapping and Modeling Drainage,** Ian Smith, Fluvial Geomorphologist, Urban and Environmental Management Inc., Niagara Falls

Advances in digital data collection and creation technologies potentially offer Drainage Engineers significant benefits for undertaking engineering analyses, assessments and designs. A primary benefit includes the availability of pre-existing digital data for areas that typically exhibited little or no topographic data in the past. For those areas that are still 'data-poor', newer surveying technologies present opportunities for very rapid and very accurate data collection/creation. Of course, there are numerous 'caveats' to consider when using relatively new technologies and techniques. This presentation will explore some of these new opportunities while looking at benefits and potential risk.

**Innovative Uses of the Drainage Act,** Sid Vander Veen, Drainage Coordinator, Ministry of Agriculture, Food and Rural Affairs

The traditional use of the Drainage Act to create and maintain drainage systems is widely known and used in rural Ontario. In an environment of increasing regulatory complexity and multi-resource environment, is the Drainage Act still up to the challenge? This session will explore some non-traditional uses of the Drainage Act to resolve some complex watershed issues.

**Short-Term Responses of Fish Assemblages to Agricultural Drain Maintenance,** Belinda Ward-Campbell, PhD Candidate, University of Guelph

The responses of fish assemblages following agricultural drain maintenance is of concern to fisheries managers, drainage engineers, superintendents as well as land owners. What is really going on following drain maintenance? The short-term responses of fish assemblages inhabiting 8 agricultural drains were followed for a period of 2 years. Fish assemblage structure, including abundance and species richness, as well as gross habitat features, including estimated percent cover, bank vegetation and in-stream vegetation were measured in order to determine the responses of both the fish assemblages as well as habitat. The fish assemblage responses appear to be highly variable, and against the background of natural variation are almost imperceptible. Conversely, the habitat features change significantly following drain maintenance and take, in comparison to the fish assemblages, a greater amount of time to return to pre-maintenance conditions. Is our perception of the impacts of drain maintenance driven primarily by the superficial changes in vegetation that we are able to see?

**Too Much, Too Little and Everything In Between – Designing in the Context of Climate Change,** Allan G. Douglas, Director of the Ontario Centre for Climate Impacts

and Adaptation Resources, Laurentian University, Sudbury