Day Two - Track One
Thursday, March 22nd, 2018
9:30 a.m. – 10:00 a.m.

Design Storms and Parameters for Sustainable Drainage Systems

Presenter: Gilles Rivard, Lasalle/NHC

Biography

Gilles Rivard has 35 years of experience in civil engineering in the fields of hydrological studies, urban networks and water resources. In the last twenty years, he has specialized in storm water management, has written a book for storm water management concepts (1998) and is the author of the Quebec provincial guide on storm water management. He is now with Lasalle-NHC, as Vice-President, Urban Hydrology. He is also actively involved at the national level, being the President of the Quebec Branches of CWRA and of IECA, and, at the international level, being since 2002 the Chairman of the SOCOMA (Source Control Management), which is part of the international Joint Committee on Urban Drainage (IWA/IAHR).

Abstract

Quality control criteria for urban runoff are now part of many guidelines for stormwater management. Recognizing that it is not necessary to capture and treat the extreme runoff events, the target most commonly defined in these guidelines is based on an analysis of the precipitation with a rainfall distribution plot to determine a rainfall quantity to be used for design. The basic assumption is that by capturing the runoff generated by a given quantity of precipitation (between 85th to 95th percentile usually), a significant part of the annual runoff will be treated. Existing design criteria for water quality control as us ed in different North American regions are first given, distinguishing between Source Control Measures (SCM) designed with a volume-based criteria or a rate-based criteria. Runoff simulations with a database of 14 years of rainfall at 5 minutes interval is thereafter used to assess the different criteria as given in the Stormwater Management Manual for the Province of Quebec (MDDEP/MAMROT, 2011) or the Ontario Stormwater Manual. The results obtained from the continuous simulations and further analyses of the rainfall data finally provide a basis for specific recommendations to properly define design storm distribution and parameters for water quality control and sustainable drainage systems.

Learning Objectives

1. To provide background design information for LID practices, with an overview and historical perspective for design storms as used in stormwater management practice;
2. To determine the relevant parameters for the design of LID practices, distinguishing between practices designed with volume or discharge rate; and
3. To understand the overall importance of managing the entire rainfall spectrum to ensure that drainage systems are designed with a sustainable perspective.