

Sustainable Urban Sewer Systems as Stormwater Management and Control Mechanisms

Authors : Ezequiel Garcia-Rodriguez, Lenin Hernandez-Ferreira, Luis Ochoa-Franco

Abstract : The Sustainable Sewer Urban Systems (SSUS) are mechanisms integrated into the cities for manage rain water, reducing its runoff volume and velocity, enhancing the rain water quality and preventing flooding and other catastrophes associated to the rain, as well as improving the energy efficiency. The objective of SSUS is to mimic or to equal the runoff and infiltration natural conditions of the land before its urbanization, reducing runoff that may cause troubles within the houses, as well as flooding. At the same time, energy for warming homes and for pumping and treating water is reduced, contributing to the reduction of CO₂ emissions and therefore contributing to reduce the climate change. This paper contains an evaluation of the advantages that SSUS may offer within a zone of Morelia City, Mexico, applying support tools for decision making. The hydrological conditions prior to and after the urbanization of the study area were analyzed to propose the recommended SSUS. Different types of SSUS were proposed in this case study, assessing their effect on the rainwater flow behavior within the study area. SSUS usage in this case resulted, positively, in an important reduction of the magnitude and velocity of runoff, reducing therefore the risk of flooding. So that, it is recommended the implementation of SSUS in this case.

Keywords : energy efficiency, morelia, sustainable sewer, urban systems

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