

The "Ensanche de Santiago de Compostela" Catchment. Evaluation of Flows and Pollutant Amounts During Rainfall Events

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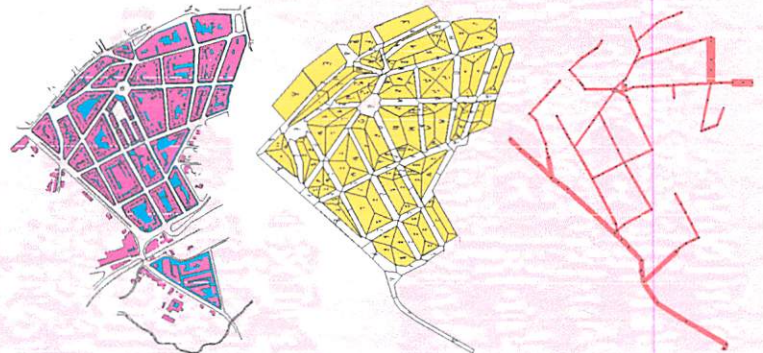
The Catchment:

The "Ensanche de Santiago de Compostela" Catchment is an urban area whose imperviousness is about 90%. The population is 40.000 people and the surface covered is 37 Ha. It is located in the city of Santiago de Compostela, in the North-West of Spain



The Model:

The numerical study of the catchment has been done with SWMM model. The rainfall-runoff process has been studied with RUNOFF module and the flows in the sewer network have been modelled with EXTRAN module. The catchment has been divided into 180 subcatchments, and the sewer network has been divided into two groups: a main network, to be modelled with EXTRAN, and a secondary one, to be modelled with RUNOFF



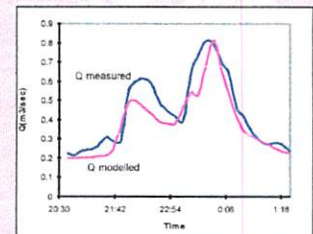
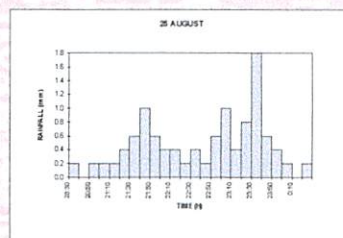
Experimental Setup:

A flow meter has been installed in the lowest point of the sewer network. The rainfall has been measured with five rain gauges located in or near the catchment. This facility is used to calibrate the results obtained from the numerical model



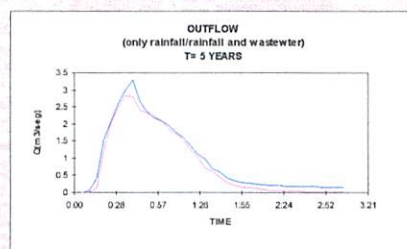
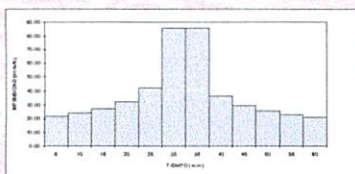
Calibration:

The numerical model is being calibrated by comparing the measurements of discharge in the lowest point of the sewer network with those obtained in the numerical model. The parameters to be fit are: roughness of the conduits, initial abstraction in the catchments, and the mean slope of the roofs



Results and future developments

According with the parameters obtained from the calibration, a estimation of the extreme floods has been made. It has been considered a 5-year return period rainfall, which has been calculated from IDF curves using the alternating blocks method. An enormous amount of black points have been pointed out. With a 2-year rainfall, the number of black points is quite fewer. A turbidity meter is going to be installed to control continuously pollutographs. A relationship between rainfall and pollution in the first-flush is going to be determined. With this data, a first-flush tank and a detentior lagoon are going to be designed.



Black points, T= 5 y