



## **Integrated modelling of CSO discharges in the Miño River at Lugo (Spain)**

Jose Anta<sup>1</sup>, María Bermúdez<sup>2</sup>, Luis Cea<sup>3</sup>, Joaquín Suárez<sup>4</sup>, Jerónimo Puertas<sup>5</sup>

<sup>1</sup> University of A Coruña, Spain, jose.anta@udc.es

<sup>2</sup> University of A Coruña, Spain, mbermudez@udc.es

<sup>3</sup> University of A Coruña, Spain, lcea@udc.es

<sup>4</sup> University of A Coruña, Spain, jsuarez@udc.es

<sup>5</sup> University of A Coruña, Spain, jpuertas@udc.es

### **ABSTRACT**

In this study an integrated modelling of the Lugo sewer network was developed in order to analyze the CSO impacts over the Miño river. Sewer network modelling was performed with the SWMM software package, while a 2D shallow water code was used for river quality modelling. Emission Standards (CSO spill frequency/volume) and Environmental Quality Standards presented in the Urban Pollution Manual were applied to evaluate the receiving water quality. The main results show that the studied river is not suitable for salmonid fishery in terms of dissolved oxygen concentrations, whereas total ammonia limitations were verified throughout the reach.

### **KEYWORDS**

Combined sewer, integrated modelling, receiving water impact, shallow water model, water quality modelling