

Kotowski, A., Kazmierczak, B., Nowakowska, M. Analysis of the Drainage System Load in Case of the Predicted Increase in Frequency and Intensity of Rain due to Climate Change. *Ochrona Srodowiska* 2013, Vol. 35, No. 1, pp. 25–32.

Abstract: This paper presents hydraulic consequences of storm water drainage overload related to the so called high scenario of increase in rainfall intensity in the future. The storm water drainage was dimensioned using delay factor method (DFM) against the model of maximum precipitation for Wrocław. The simulations conducted using SWMM program led to conclusions that projected climate change scenarios until the year 2100 need to be taken into consideration while dimensioning the drains existing today. In order to dimension safe storm water drainage system, according to PN-EN 752:2008 and DWA-A118:2006 standards as well as current maximum precipitation standards (IDF, DDF), it is necessary to increase rainfall frequencies to simulate maximum backwater occurrence to ground level. Then, the acceptable drain outflow frequencies will be observed also in the future. However, on account of uncertainty of current forecasts of future precipitations it is recommended to additionally test the systems for extreme rainfalls (C=50 and 100 years). The above arrangements are currently recommended for designing storm water drainage and combined sewage system in many European countries.

Keywords: Rainfall, stormwater drainage, climate change, hydrodynamic modeling, SWMM.