On intensive process of quantity and quality improvement of wastewater treatment plant under rainfall conditions

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ABSTRACT

The large quantity and sharp appearance of influent flow of combined sewerage system always exceed the hydraulic capacity of wastewater treatment plant (WWTP) and the deterioration of the performance of WWTP and the discharge of bad effluent water quality to surface water occur during rainfall events. To determine the influence of rainfall, the upriver combined sewerage system and the performance of WWTP were simulated by InfoWorks CS and Biowin software, respectively. Three kinds of intensive processes, i.e. chemically enhanced primary treatment (CEPT), CEPT combined with secondary treatment and CEPT combined with secondary treatment with decreased hydraulic retention time were proposed based on the original process of WWTP. The results showed that the proposed wastewater treatment processes are all powerful to weaken the adverse impacts of rainfall on WWTP and to reduce greatly the pollution to receiving waters during the rainfall events.

Keywords: Rainfall; Combined sewerage system; Wastewater treatment plant; Intensive process

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