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PhD Thesis: Accumulation of pollutants in highway detention ponds: Department of Civil Engineering : Aalborg University, 2008. 151 p. (DCE Thesis; 13)

Abstract: This PhD study deals with issues related to water and pollutant transport from highway surfaces caused by rain. It is essential in the study to apply methods and models in which improvements in relation to removal of pollutants can be identified and to be able to predict the yearly discharges of heavy metals and polycyclic aromatic hydrocarbons from an arbitrary detention pond to the natural environment.

The present thesis is a part of a co-operation between the Danish Road Directorate (Vejdirektoratet) and Aalborg University and is founded in the Danish construction act for new highways and expressways by Herning, between Odense and Svendborg and between Holbæk and Vig. Special problems occur, when it comes to prediction of pollutant load from road runoff. One of the main problems is that the temporal varying intensity of the rain causes high variation of the runoff. Hence it is impossible from few measurements to predict annual pollutant loads from the runoff. The method that has been shown to be the most effective for coping with the time variation in the rain is a so-called hindcast where several years of measured rain are used for simulating the exact variation in runoff from every single rain event. From the hindcast results it is possible to calculate mean water and pollutant loads. This method is commonly used in urban drainage systems for capacity analysis or for prediction of CSO's.

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