

ERIKSMÅLA ROAD STORMWATER DAMS – OBJECTIVES AND OBSTACLES

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ABSTRACT

Building wetlands/dams for treating polluted waters is increasingly “in fashion” in Sweden. Mostly diffuse eutrophication due to agriculture is in focus, but also for remediation of road stormwater. Draining a four-road roundabout, located 40 km east of Kalmar, a dam system was designed. The “normal” objectives were to reduce the water flow and the water’s content of mainly nutrients and metals, before the water falls into river Lyckebyån. A special ambition was to study to what extent this really happens, depending on biological contents. Therefore a three-dam system was built, of which the first aimed at lowering high velocity flows and allow some sedimentation. From this, water was in parallel led to two dams (each ca 60 m²), of which one was supplied with vegetation, the other not.

Throughout almost two years, water flows in the three dams were registered and flow-compensated water samples were taken weekly and analysed. The metals Cd, Cr, Cu, Pb, Zn were focused, but also total and fractions of nitrogen and phosphorous, PAH, and suspended solids were monitored. Metals in sediment and dominating plants and invertebrates were studied. The purpose was to construct a mass balance for at least the metals in the two main dams, but also to evaluate if the metal levels could reach “unsafe” concentrations.

Water metal levels were in several cases “moderate to high”, with “through-dam” reduction figures at 15-30% (Cd however uncertain). Sediment levels were in most cases and at most times “very low to low”. The overall picture and calculation validity were however obscured by uncertainties regarding whether a rather substantial additional water flow entered from an esker besides the dam area. Presently compensatory modelling of the effect of this flow is taking place.