



Modelling Pollutant Load Reductions by Infiltration Facilities in Lake Inba Catchment, Japan

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ABSTRACT

Infiltration facilities are widely used as a means of reducing runoff loads and to remove pollutants by routing stormwater into soil. In this study, the COD, TN and TP loads in the catchment area of a eutrophic lake in Japan were calculated with a GIS-based model to evaluate the effectiveness of nonpoint source control by infiltration facilities. The baseline annual pollutant load to the lake was calculated to be 4,304 t-COD year⁻¹, 3,014 t-N year⁻¹ and 140 t-P year⁻¹. The reduction rates by infiltration soakaways in residential area were 44%, 53% and 42%, and permeable pavements reduced the road runoff load by 40%, 50% and 34% for COD, TN and TP, respectively. The total load to the lake including point sources and groundwater would be reduced by 14% and 7% for COD and TP, but would increase slightly for TN. In this scenario, the effect of infiltration seemed to be greater in extruding the contaminated groundwater than in reducing the surface runoff load. The surface runoff model was well calibrated with the monitoring data, but the groundwater model seemed to need further verification.

KEYWORDS

Infiltration facility, lake water quality, pollutant load, runoff control