

## **The effect of small impoundments on nutrient transport in a suburban watershed**

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**Abstract** The objective of this study was to confirm the effect of small impoundments on nutrient transport on a catchment scale. We examined the effect using the ratio that dissolved nitrogen (DN) is divided by Cl<sup>-</sup>. The ratio increased in the summer season and decreased in the winter season at the outlet of the impoundments. The reason for decreasing of the ratio may be explained by the decline of DN concentration, by assimilation or denitrification. The relation between residence time and magnitude of nitrate removal showed that long residence time can lead to greater reduction of nitrate. However, DN was produced in larger impoundments and sediment interaction may occur as a result. Therefore, smaller impoundments may be more effective for nitrate attenuation than larger ones. From the results, small impoundments management is important for better water environments in a watershed in future, because it has a potential for nutrient removal that can be used more positively for improving water quality at a local scale.

**Key words** small impoundment; residence time; nitrogen removal