

## **Quantification of soil erosion and transport processes in the in the Myjava Hill Land**

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The aim of the study is a complex analysis of soil erosion processes and proposals for erosion control in the region of the Myjava Hill Land located in western Slovakia. The Myjava Hill Land is characteristic of quick runoff response, intensive soil erosion by water and related muddy floods, which are determined by both natural and socio-economic conditions. In this paper a case study in the Svacenícký Creek catchment, with a focus on the quantification of soil loss from the agriculturally arable lands and sediment transport to the dry water reservoir (polder) of the Svacenícký Creek is presented. Erosion, sediment transport, and the deposition of sediments in the water reservoir represent a significant impact on its operation, mainly with regard to reducing its accumulation volume. For the analysis of the soil loss and sediment transport from the Svacenícký Creek catchment, the Universal Soil Loss Equation, the USLE 2D, and the Sediment Delivery Ratio (SDR) models were applied. Because the resulting values of the soil loss exceeded the values of the tolerated soil loss, erosion control measures by strip cropping were designed. Strip cropping is based on altering crop strips with protective (infiltration) strips. The effectiveness of the protective (infiltration) strips for reducing runoff from the basin by the SCS-CN method was estimated.

Monitoring the morphological parameters of bottom sediments and their changes over time is crucial information in the field of water reservoir operations. In September 2015, the AUV EcoMapper was used to gather the data information on the Svacenícký Creek reservoir. The data includes information about the sediment depths and parameters of the water quality. The results of the surveying are GIS datasets and maps, which provide a higher resolution of the bathymetric data and contours of the bottom reservoir. To display the relief of the bottom, the ArcMap 10.1. software was used. Based on the current status of the bottom bathymetry, the current status of the clogging of the reservoir was evaluated. After an evaluation of all the analyses, we can conclude that within five years of the acceptance run, 10,515 m<sup>3</sup> of bottom sediments accumulated in the Svacenícký Creek reservoir.