

link; <https://iopscience.iop.org/article/10.1088/1755-1315/419/1/012121/pdf>

## **Experimental study the effect of turbulent flows in bend channels as to a result of vegetation groin structure on permeable type**

A Mansida<sup>1</sup>, M P Hatta<sup>2</sup>, M S Pallu<sup>2</sup> and M Salintung<sup>2</sup>

<sup>1</sup>Doctoral Student of Department of Civil Engineering, Faculty of Engineering,

Universitas Hasanuddin, Makassar, Indonesia

<sup>2</sup>Department of Civil Engineering, Faculty of Engineering, Universitas Hasanuddin,

Makassar, Indonesia

Email: [amrullahmansida@gmail.com](mailto:amrullahmansida@gmail.com)

**Abstract.** Highly dynamic changes in flow regimes are caused by relatively high rainfall intensity, so that the excessive flood volume in the last ten years, and it is caused by watersheds experiencing a crisis or degradation due to conversion into economic and non-economic areas which ultimately impacts on river bank and beds by turbulent flow. The use of groin structure as a method of scouring prevention and channel flow control has not been able to fully meet the expectations of scouring prevention. We obtain the effect of changing the turbulent flow regime on the use of groins on the bent channel. Testing was conducted through laboratory experiments in artificial conditions to investigate the relationship between variables by providing certain treatments in several experimental groups with a comparative control of bend channel angle uses 60° with distance variations of groins and discharge; in addition, software Surfer used to describe scour contour pattern. Analysis of changes in flow behavior is done by using Froude (Fr) and Reynolds (Re) number approaches with the effect of turbulent flow on the bent channel scour. The results of the research indicate that the placement of the groins on the river bank channel bend causes a new phenomenon of turbulent flow with shear stress, resulting in local scouring around groin structure and the placement of looser permeable groin gives prevention 81% of river bank scour.