University of Zabol

Graduate school

Faculty of Water and Soil

Department of Water Engineering

**The Thesis Submitted for the Degree of Master of Science
(in the field of hydraulic structures)**

Determining the effect of Vegetation on flood capacity of Zahak-Niatek canal

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Abstract:

The interaction of vegetation and bed forms plays a key role on the main flow components such as speed, shear stress and turbulence intensity; Changes in the size and geometry of the roughness and channel bed materials have a direct effect on the roughness and resistance to flow. The Sistan River is the most important source of water in the Sistan Plain. The source of the Sistan River in the eastern border of Iran is the Hirmand River in Afghanistan, which enters Iran after traveling 1050 km. The 45-kilometer-long Niatek-Zahek spillway starts from the Niatek drain overflow and continues to Hamon Saburi. This floodgate was built in order to reduce the risks of Sistan River overflowing and increase the potential of taking water from the Hirmand River by 2200 cubic meters per second in flood conditions. In this research, the hydraulic modeling of flow by means of HEC RAS software, which is a conventional mathematical model in the analysis of permanent and non-permanent one-dimensional flow data, is used in order to model the vegetation cover and its effect on the amount of water level rise created in the flood bed of Zakh-Niatek. became First, the geometrical information of cross-sections was obtained through the mapping of the entire flow path in the floodgate, and the specifications of various structures along the river, such as bridges, were prepared. Then, the vegetation data of the entire route was collected and entered into the HECRAS model, and the length of its water return curve was determined in different conditions; The obtained results show that the vegetation has increased the water level and reduced the capacity of the flood channel on the Niatek drain to 400 cubic meters per second.

Keywords:

Vegetation River , Back Water Surface, HEC RAS