



University of Zabol
Graduate School
Faculty of Water and Soil
Department of Range and Watershed Management

The Thesis Submitted for the Degree of M. Sc
In the field of Watershed Management

Using Flooding Prioritization of Nikshahr Green Watershed
TOPSIS Model

Supervisor:

Dr. A. Dehviri

Advisors:

MSc. S. Kherad Narooei

MSc. A. Dehghan

By:

MSc. A. Dehghan

September 2022

Abstract:

Floods are one of the natural disasters that cause a lot of human and financial losses in different parts of the world. Identifying and prioritizing sub-watersheds based on flooding is very important from the point of view of watershed management, flood control and watershed management projects. The purpose of this research is to prioritize the sub-basins of the green watershed based on flooding using the TOPSIS model. The studied area is Sabz watershed, with an area of 6027.26 hectares in Nikshahr city of Sistan and Baluchistan province. The average annual rainfall of the region is 165.5 mm. The climate of the basin is modified according to the method of Dumartin and Amberje, respectively, dry hot desert and dry moderate. In this research, the TOPSIS model, which is one of the multi-criteria decision-making techniques (MADM), was used to prioritize sub-basins. First, the factors were determined based on the expert questionnaire. Based on expert opinion and review of scientific sources from 10 criteria (area, Gravel's coefficient, average height under the watershed, percentage of impervious land, curve number, drainage density, average slope under the watershed, length of the main waterway, slope of the main waterway and concentration time) to determine Prioritization of flooding in sub-basins was used. After the implementation of the model, the final flood map of the studied area was prepared and the priorities of each one were determined. The sensitivity analysis of the model was also measured. The results showed that the criterion of impermeability and curve number had the most weight.

Key words: Watershed Management, Flooding, Sabz Watershed, TOPSIS