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Flood Hydraulic Modeling and its Deliniation Using Orthophoto Pictures in Shapourkhesht River located in Kazeroun City

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Introduction

For the preparation of the river's area instead of land mapping, in the desired range, aerial photographs, imaging and digital map of the area has been prepared and then deviation, resulting in a camera system and deviations resulting from changes in the altitude, in the aerial photographs taken during the process, has been removed, finally by combining DEM with modified aerial images and using computer software, combined images with DEM have been produced, which is so-called " Orthophoto images ". Using these photos, addition to ease of use, can show all the complications in the river clearly in very high details. Even it can make clear all the impassable transits and conditions that are impossible to observe with the naked eye, with acceptable details.

Matherials and Methods

Shapourkheht River is located in Fars province, Shiraz (Kazeroun) from Chiti village to Corum village between the longitude and latitude of 25 51 17 51 35 29 35 29, with a length of 23

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km. Bed and river bed material, mainly consists of coarse-grained, stones, gravel and sand. It should be noted that due to palm gardens, agricultural lands and villages in the margin of the river, the area for the study were selected. The information needed HEC-RAS model to simulate the hydraulic flow of the river, summarized as: geometric or river's physics characteristics, flow discharge, flow resistance coefficient and boundary conditions. The geometry of the river is among the first and most important information to simulate the river's hydraulic. In fact, parameters such as speed, depth and surface flooding, are determined based on the shape of the river's cross-section.

Discussion and Conclusion

Studies on flow regime in subcritical and supercritical point of view, maximum and minimum speed, etc., can provide adequate information about the characteristics of flow in flood conditions. Therefore the chosen area of study in most intervals, experiences subcritical situation, also the average speed of the river with return periods of 25, 50 and 100 years, are 3.2, 3.4 and 3.6 meters per second respectively.

Conclusion

In order to understand the course of a river in human life as water supplier which causes destruction and damage, it is necessary to determine the flood zone with great accuracy. The aim of the present study is determining the flood Zone of Khesht River in Khesht and Komarej division in Kazeroon city; situated in south western of Fars with the length of 10 Km. In this research on of the newest type of aerial photos was used to determine the studied terrains and scope. The regional Orthophotos (aerial photos which reduce the diversions related to camera and change in altitude after photography and then they are made after combination with digital elevation model by means of special software) with an accuracy of 1:2000 have been modelled incorporation with HEC-GeoRas extension and HEC-RAS software with return period of 25, 50 ,100 years. In order to achieve this we used Orthophotos in HEC-GeoRas extension to extract (access) the geometric features for 344 cross sections and calibration of hydraulic HEC-RAS model. We estimated water profile in return period of 25, 50, 100 years. Also we used HEC-GeoRas extension to show the flood

zone of river. The results showed that there were no significant differences in flood zones; In addition river condition in the mentioned return periods was subcritical.

In general, flood zone maps can be used in the development of some issues such as: developing emergency plans dealing with floods, identifying flood areas in flood warning systems, aiding and evacuation of areas at risk of flooding, determining the flood insurance rates zoning with different risks and economic analysis of projects in the field of flood control and river engineering.