

Analyzing and Estimating the Highway Drainage Capacity with the Aid of Geographic Information Systems (GIS)

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Abstract:

In this research, geographic information systems (GIS) were used to analyze the basic features of the catchments within the study area. The GIS were used to calculate the data required to design several bridges and culverts of the Ramadi Nukhaib highway in the western region within Al-Anbar province. Hydrological and climatic data were collected, and soil texture analyses were performed on selected soil samples from the study area. Hydraulic calculations were designed to estimate the maximum flood discharge of the valleys crossing the road for different flood return periods. Also, the points of intersection between the valleys and the road were identified. Additional information was obtained from digital elevation models (DEM), rational method, and the Soil Conservation Service (SCS) method in order to suggest suitable sites, sizes, and types of the bridges and culverts along the route of the highway within the study area.