Abstract

In this research, we used available data in the downstream network of the Doroodzan dam, given the current status of the water distribution and the current status of the fracture some channels on the downstream network, and a corrective proposal was presented. Then, the drain distance with these conditions was obtained from the Hooghoudt, Donnan and Glordam formulas in a steady state and unsteady state condition and were compared with each other. we compared the error rate available for each method with existing conditions and the final recommendations were presented. On the basis of this comparison, it is concluded that the Glordam formula may indeed in unsteady state conditions have better performance and alignment. A Questionnaire software was used to calculate the drainage distance through the Hooghoudt model in the C^{++} environment on subsurface drainage. Also, Dutch osterban software to calculate drainage distance, sensitivity of different parameters in drainage, including hydraulic head and hydraulic conductivity and water level alignment compared with drainage distance and depth, and other computational methods, i.e energy balance and Darcy were investigated. Finally, drainage distances and hydraulic head changes in the conditions of isotropic and non-isotropic soils were also compared using the outputs of the software with each other, as well as with the existing situation and with the proposed Hooghoudt model and corrective suggestions on this issue for the Doroodzan network was presented.

Keywords: Drainage, Drainage models, Hooghoudt, Endrain

University of Zabol

Graduate school

Faculty of Engineering

Department of civil engineering

The thesis submitted for the degree of master of science (M.Sc)

(In the field of civil Engineering - Water Engineering)

Issue:

Draudzan drainage study in Marvdasht, Fars

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Summer 2018