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Heede and

(1973) Muffich

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(Morgan, 2005)

Chunhoug et al., 2004, Gray)
(and Leiser, 1982

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Gray and Leiser,)
(1982

(Roshani, 2003)

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Zougmore and Kabore(2000)

(Lenzi, 2002)

(1977) Heede .(Piriardekani, 2000)

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Heede and Muffich .

(1973)

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(1999) Tulu

Heede

(1973) and Muffich

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(1973) Heede and Muffich .

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(1973) Heede and Muffich .

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$$L = \frac{H}{KG \cos \theta}$$

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:L (

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:H

:G= tanθ

:θ

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 G S 0.2 / :K
 () tanθ>0.2 / tanθ≤
 Heede and Muffich,)
 () K .(1973

S=(1-K)G ()
 K=1-(S/G) () K

() K
 ()
 () (1999)Tulu
 .(Shiva, 1996)

$$MSE = \frac{\sum_{i=1}^n (Lo-Lc)^2}{n}$$
 ()

$$L = \frac{100H}{G-S}$$
 ()

() :L
 :MSE () :H
 :Lo (%) :G
 :Lc (%) :S
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 SPSS10

(1999)Tulu

S ()	G ()	
/	>	
/	≤	
/	≥	
/	<	
/	≥ /	
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Heede and

(1973) Muffich
(1999) Tulu

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(MSE =)

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G S

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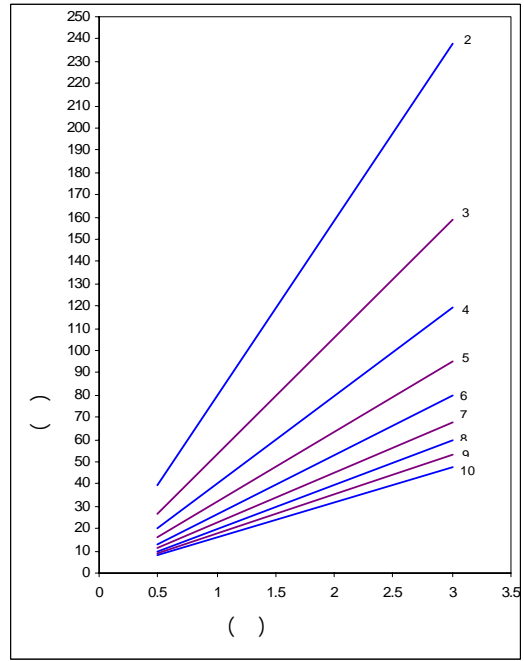
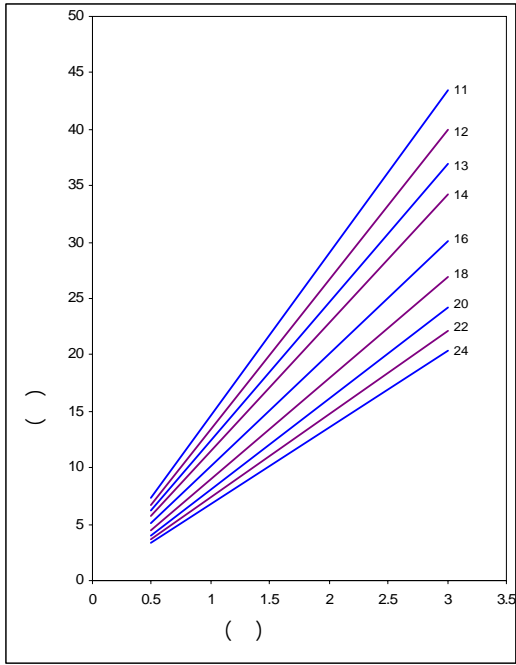
	(G) (%)	() (Lo)	(Lc) ()	() (Lc)	() (Lc)
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MSE			/	/	/

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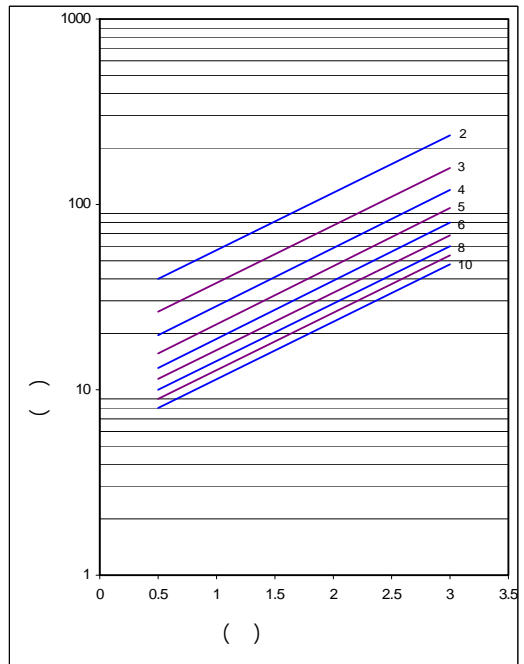
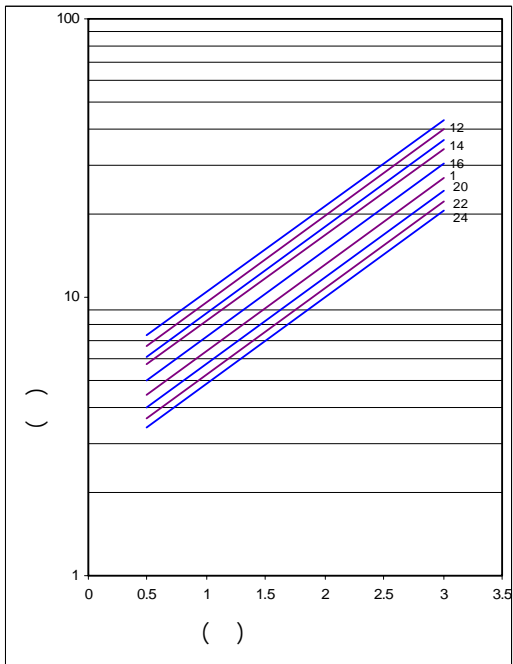
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A Comparison of Models Precision for Distance Estimation between Check Dams in Order to Design Distance- Height- Slope Nomographs in Doroudzan Dam Watershed

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Abstract

Check dam spacing is of great importance technically and economically in mechanical watershed management. Empirical models are usually used to determine check dam spacing developed in certain conditions in other countries but they are not calibrated in Iranian watershed conditions. This research has been carried out in the watershed of Doroudzan dam due to oldness and frequency of check dams. After field surveying and visiting of 2000 dams with ages ranging from 10 to 30 years, 73 check dams were selected to measure required parameters in the models such as Heede and Mufich(1973). Parameters such as effective height, stream bed gradient, sediment balancing gradient and length of deposition were measured. Empirical coefficient of Heede and Mufich model was estimated using the obtained data for 80 percent (60 dams) of check dams. The precision of empirical models such as primary Heede and Mufich, revised Heede and Mufich and Tulu were tested using data obtained from 13 remained dams. The results of this research reveal that primary Heede and Mufich and Tulu models have maximum and minimum errors, respectively, between current empirical models. Statistical comparison show that between primary Heede and Mufich and other models exist there is a significant difference in 95% level but no significant difference was obtained between modified Heede and Mufich and Tulu models. Due to non-significant difference between modified Heede and Mufich and Tulu models, simplicity and the need for fewer parameters to measure, using modified Heede and Mufich model is recommended in the watershed of Doroudzan dam and those of similar conditions. Linear and semi- logarithmic curves for a proper suggested model are drawn and introduced to use in similar conditions that require to measure effective height and stream bed gradient.

Key Words: Check dams, Optimum spacing, Doroudzan dam watershed, Heede and Mufich, Tulu