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黄河下游丁坝缩窄河道泥沙冲淤特性试验研究

Experimental study on characteristics of sediment scouring and deposition in dike narrowed river channel of Lower Yellow River

中文关键词:黄河下游 缩窄河道 丁坝位置与相对长度 泥沙冲刷淤积

英文关键词:spur dike narrowed river channel dike arrangement relative spur length scouring deposition main channel flood plain

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中文摘要:

通过动床模型试验研究了黄河下游裴峪至官庄峪丁坝缩窄河段，在河道不同位置布设丁坝，不同情况下丁坝相对长度(丁坝长度与原河道宽度之比值)对河道泥沙冲淤变化的影响。结果表明：水沙运动要素变化受丁坝布设位置和长度等影响较大，随着丁坝相对长度的增加，汛期主河槽冲刷量和滩地淤积量逐渐增大，主槽范围相应扩大，其高程普遍呈下降趋势，特别是缩窄断面导流堤顶端部位出现明显的局部冲刷坑，束水冲沙、增大输沙能力的效果明显。当丁坝相对长度大于0.50时，主流线偏移、断面流速分布和河床冲淤的变化速率明显增大，不利于河道稳定。

英文摘要:

The characteristics of sediment scouring and deposition in spur dike narrowed river channel were experimentally studied in the moveable river bed model for a typical river section of the Lower Yellow River. The effects of relative spur length (ratio of spur length to original river channel width) on flow and sediment transport were investigated. The results show that the variation of hydraulic and sediment factors in the narrowed river sections are closely related to the arrangement and lengths of spur dikes. In flood season, the scouring of main channel and deposition on flood plain increase as the relative length of spurs increase. The range of main river channel widened correspondingly, but the elevation of river bed tends to descend. Local scouring occurs to the front of spur dikes at the narrowed section. The effect of the scouring by narrowing the flow passage obviously enhanced. When the relative narrowing ratio is larger than 0.5 the wandering range of main stream, variation of flow velocity, scouring and deposition increase evidently, which are not advantage to the stability of river channel.

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