



Planning method and application case of check dams in a small-scale watershed

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Check dams are transverse structures build across gullies and they are very important engineering measure in soil restoration hazard mitigation. After the Wenchuan earthquake in China, a numerous of flood and debris flow was trigged, some of them caused serious secondary disasters. To solve this problem, a debris-flow prevention method by controlling debris-flow magnitude and avoiding blocking river was proposed, it can effectively prevent secondary disasters and control unconsolidated soil supply and debris-flow movement from upstream to downstream. Based on this method, a series of new types of check dams are proposed, the regulation effect on sediment particle size of slot check dam was qualitative analyzed, and the design parameters of the check dam are deduced, such as deposition slope, deposition length, and dam height. An engineering application case was given in Xiaogangjian Gully, which is in Wenchuan earthquake area, the proposed watershed planning method and a series of check dams with different orifices sizes are used. The engineering application experience may provide a useful way for developing check-dams as restoration tools and hazard mitigation methods at watershed scale.