

Suchada Sornwatana 2010: The Hydrological Characteristics prior and after Check-dam Performed at Mae Tam Head Watershed, Dok Khamtai District, Phayao Province. Master of Science (Watershed and Environmental Management), Major Field: Watershed and Environmental Management, Department of Conservation. Thesis Advisor: Associate Professor Veerasak Udomchoke, D.Tech.Sc. 144 pages.

The purpose of this research were the changing of the hydrological characteristics of Mae Tum head watershed prior and after check-dams performed. The rainfall and runoff data were collected continuously during 2006 to 2007 before and after 4 check dams were performed. Hydrograph, unit hydrograph and recession coefficient were analyzed as the major characteristics for comparing the effect of check-dam on the head watershed.

The results revealed that the shape of hydrographs prior check-dams performed are very steep rising limb, sharp peak and steep falling limb. After performing check-dams the hydrograph showed longer time to peak, lesser steep rising limb, smaller sharp peak and gentle falling limb. The results of 30 minutes unit hydrograph showed time to peak at prior performed check dam were 70 minute and after performed check dam were 135 minute. Time to peak of rising hydrograph at 25, 50 and 75 percent of peak flow prior performed check dam were 44, 33 and 23 minutes respectively and after performed check dam were 75, 55 and 39 minutes respectively. Time from peak of falling limb hydrographs prior performed check dam were 100, 45 and 25 minutes respectively and after performed check dam were 440, 165 and 70 minutes respectively. Time base at prior performed check-dams were 11 hours and 45 minute and after performed check-dams were 31 hours. Recession coefficient of direct runoff before check dam constructed was 0.80 but after check dam constructed was 0.93. The results shown that after performed check dam peak direct runoff were decreased due to the influence of check-dams can decrease peak direct runoff and increase recession flow. The research outcome will be a guideline for peak flow assessment of stream without check dams and with check dams for flood protection stream design at the footslope to floodplain.

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Thesis Advisor's signature