Piyapong Rodratana 2008: The Sudy of Flood Alleviation of Chiang Mai City Area. Master of Engineering (Water Resources Engineering), Major Field: Water Resources Engineering, Department of Water Resources Engineering. Thesis Advisor: Assistant Professor Napaporn Piamsa-nga, Ph.D. 123 pages.

Because of hydrological and hydrodynamic changes from land use and urban development in the upper Ping River Basin, floods occur more frequently and each flood also has higher degree of severity at Chiang Mai city area. Although there are many reports from many flood protection project, those reports are not clearly useful. In this research, a mathematical model for analyzing flood behaviour and conditions is proposed about options that use construction such as flood wall or reservoir and not use construction such as planning of reservoir operating or increase of river capacity. Result of each option can use to decision for flood alleviation of Chiang Mai city area. The model is also used further for designing a plan for abating floods in the greater Chiang Mai municipal areas. The experimental results show that roughness coefficient in waterways of Ping River's flow environment passing the greater Chiang Mai municipal areas is between 0.030 and 0.035 and around 0.080 on floodplains. The best method for abating floods is to renovate Ping River's surface; however, it is not practical. Therefore, the suggested method is to have a portion of construction measure and non construction measure, besides the permanent solution, its use to bring benefit to other sector such as tourism, shoreline public park, and water reservation.

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