

The Flooding Management Strategy in Urban Areas: Reusing Public Facilities Land as Flood-Detention Space for Multi-Purpose

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Abstract : Taiwan is an island country which is affected by the monsoon deeply. Under the climate change, the frequency of extreme rainstorm by typhoon becomes more and more often Since 2000. When the extreme rainstorm comes, it will cause serious damage in Taiwan, especially in urban area. It is suffered by the flooding and the government take it as the urgent issue. On the past, the land use of urban planning does not take flood-detention into consideration. With the development of the city, the impermeable surface increase and most of the people live in urban area. It means there is the highly vulnerability in the urban area, but it cannot deal with the surface runoff and the flooding. However, building the detention pond in hydraulic engineering way to solve the problem is not feasible in urban area. The land expropriation is the most expensive construction of the detention pond in the urban area, and the government cannot afford it. Therefore, the management strategy of flooding in urban area should use the existing resource, public facilities land. It can archive the performance of flood-detention through providing the public facilities land with the detention function. As multi-use public facilities land, it also can show the combination of the land use and water agency. To this purpose, this research generalizes the factors of multi-use for public facilities land as flood-detention space with literature review. The factors can be divided into two categories: environmental factors and conditions of public facilities. Environmental factors including three factors: the terrain elevation, the inundation potential and the distance from the drainage system. In the other hand, there are six factors for conditions of public facilities, including area, building rate, the maximum of available ratio etc. Each of them will be according to it characteristic to given the weight for the land use suitability analysis. This research selects the rules of combination from the logical combination. After this process, it can be classified into three suitability levels. Then, three suitability levels will input to the physiographic inundation model for simulating the evaluation of flood-detention respectively. This study tries to respond the urgent issue in urban area and establishes a model of multi-use for public facilities land as flood-detention through the systematic research process of this study. The result of this study can tell which combination of the suitability level is more efficacious. Besides, The model is not only standing on the side of urban planners but also add in the point of view from water agency. Those findings may serve as basis for land use indicators and decision-making references for concerned government agencies.

Keywords : flooding management strategy, land use suitability analysis, multi-use for public facilities land, physiographic inundation model

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