

Stormwater Flooding in Dhaka City: Causes and Management

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ABSTRACT:

Dhaka, the capital of Bangladesh, is a rapidly growing Mega city. A master plan for flood mitigation and stormwater drainage improvement in Dhaka city was prepared in 1991 for flood protection of approximately 262 km² of the city. Partial implementation of this plan has protected the western half of the city from river flood by embankments and raised roads. Although internal stormwater flooding in the western part was expected to be mitigated after rehabilitating the drainage system and installing permanent pump stations, the flooding condition has been deteriorating. This declining situation calls for investigation into the causes of stormwater flooding. The urgent need to resolve urban flooding problem has been felt after a disastrous stormwater flooding caused by unprecedented rainfall in September 2004 and the preceding countrywide flood in July of the same year. At the same time, it appears to be imperative to set forth a realistic plan for flood mitigation and stormwater drainage for the eastern part of the city. The original master plan needs revision because of the unplanned land use changes that took place since the plan was prepared. This paper presents different aspects of stormwater flooding and drainage in Dhaka city supported by results of analysis based on secondary information and field observations. Encroachment of natural runoff detention areas and drainage routes, lack of maintenance of storm sewers, inefficient pumping out of stormwater, and lack of coordination among relevant organizations are found to be the main causes of flooding. Although the permanent pump stations are performing reasonably well, continuing encroachment into their retarding ponds may hamper smooth operation of the pumps in future. These experiences in the western part of the city will be useful in planning development activities in the eastern part to be flood-protected. Although complete and on-schedule implementation of the previous master plan has been unsuccessful due to unforeseen situations, future implementation of a plan and overall stormwater management will largely depend on strong political commitment and public awareness.

Keywords: Flooding, Urban runoff, Stormwater management, Drainage.