

ABSTRACT

Analysis of Water Runoff Mitigation Petir River with Magnatank System in Bukit Pamulang Indah Housing Estate.

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Bukit Pamulang Indah Housing Estate is one of the areas that frequently experience water runoff or flooding. In January 2020, it faced the most severe flood event ever recorded due to the inadequate capacity of the Petir River to handle the water discharge. Therefore, water runoff mitigation needs to be implemented by utilizing a modern infiltration well system called Magnatank. Magnatank is a modular tank made from recycled polypropylene material, which is environmentally friendly and offers advantages such as space efficiency and spatial management since it is installed underground, occupying minimal space. By processing rainfall data, the intensity of rainfall can be analyzed using the hyetograph diagram approach. For this analysis, the planned flood discharge uses a 50-year recurrence interval (Q50) with a value of 53.986 m³/second. It is then simulated using the HEC-RAS application, which helps determine whether the drainage channels are capable of accommodating the water flow or not. Based on the research findings, the land designated for installing the Magnatank modern infiltration wells in three locations within the RW 09 park area of Bukit Pamulang Indah Housing Estate can effectively manage water runoff. The total land area is 3178 m², with a soil depth of 0.45 m (1 layer of modular tanks) in the first location and a soil depth of 0.9 m (2 layers of modular tanks) in the second and third locations. These installations can accommodate a total water volume of 2493 m³, with a capacity of 19944 units of Magnatank modular tanks.

Keywords: *Flood, Peitr River, Magnatank, HEC-RAS, Bukit Pamulang Indah Housing Estate*

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