

Study on planning stormwater pumping station network system

Whole term

2006.5~2008.3

(Purpose)

In recent years, because of developed urban areas, increased localized downpour and advanced urban community, the potential for suffering damages from inundation is becoming greater than ever in many urban areas. So that most municipalities are now struggling to flood damage preventing works to level up stormwater drainage systems.

As a part of those efforts, many stormwater pumping stations (SPS) have been built so far, but some of those facilities become obsolete, and are needed to renovate or update earthquake-proof. However, it is supposed that construction works will be challenging and costing because space is limited in urban areas. To avoid those difficulties, there lay a great possibility in building up stormwater pumping station network (SPSN).

For the recent tendency of frequent occurrence of thunderstorm, some useful effect may be expected by taking advantage of efficiency of vast catchments basin networks.

In this study, we will investigate how to use the networks to restructure SPSs and level up stormwater drainage systems efficiently and effectively.

(Results)

1. Planning flowchart

A flowchart of planning SPSN system is shown as Figure-1. Basic purpose of this study is to level up stormwater drainage systems efficiently and effectively, and this is considered as renovations and reconstructions of existing obsolete stormwater drainage systems (especially old SPSs).

Furthermore after the network systems are completed, by using those systems, effects of response to localized and uneven distributed exceed rainfalls, and to deterioration of drainage function caused by earthquake are evaluated, and when discharges to surface water are limited, effects of network systems are also evaluated. Then the network systems will be evaluated comprehensively.

2. Subjects

- ① Select a pattern of SPSN plan.
- ② Investigate rainfall conditions(include uneven distribution of exceed rainfall).
- ③ Select a size of drainage systems
- ④ Evaluate effects and risks after restructured systems are operated.
- ⑤ Evaluate structures of facilities (such as deep pumping stations).
- ⑥ Case study (select 3 cities)

(Study schedules)

Based on the study results, a manual is going to be developed.

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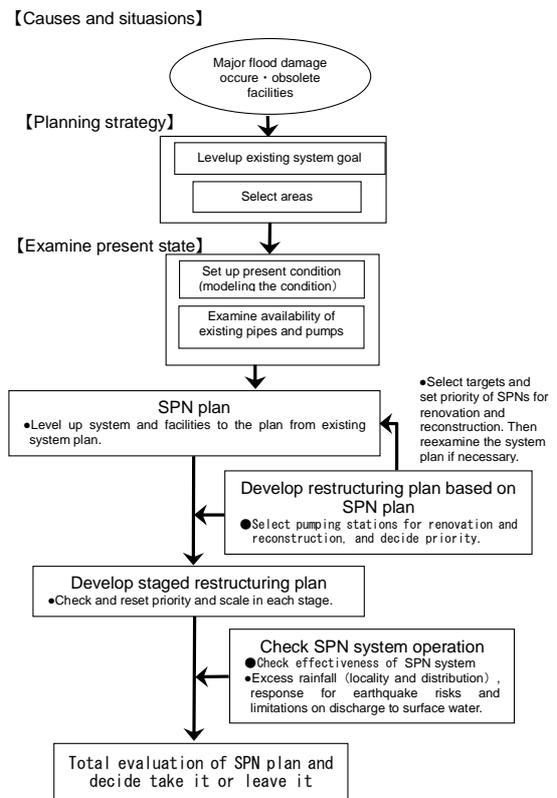


Figure-1 Stormwater pumping station network planning flowchart

Key words

Urban inundation, restructuring, rebuilding, network planning, uneven distribution of rainfall, exceeded rainfall.