Collaborative research on post audit of combined flow from Chofu infiltration facilities		
Year of Research	2013	Improvement of combined sewerage system

(Purpose)

In Chofu, a combined sewerage improvement plan has been formulated to reduce the discharge frequency of untreated water in the rainy weather by the rainwater infiltration facility, and the setup of rainwater infiltration facilities is being promoted. As of the end of FY 2012, 12,653 subsurface pits, 17,018 m of infiltration trenches, and 19,061 m^2 of water-permeable pavements have been provided. The objective of this research is to perform a post audit of the improvement plan by checking the feasibility of accomplishing the goal of the target infiltration amount and untreated water discharge frequency by setting up these infiltration facilities.

(Results)

1. Understanding the setup status of infiltration facilities

   The installation location of the already-set infiltration facilities was checked, and among these, the facilities suitable for infiltration were tabulated for each of the 27 outfall regions.

2. Checking the existing discharge frequency

   The untreated water discharge countermeasures aimed at reducing the discharge frequency by half as compared to that before the implementation of measures, in the outfall unit. The total infiltration volume by outfall was calculated for the infiltration facilities installed by FY 2013 using the unit infiltration volume, based on the research findings of previous years, and the discharge frequency was checked through simulation. It was concluded that there were four outfalls for which the target discharge frequency could not be attained.

3. Grouping the outfall regions

   It was determined that the outfall regions for which the target could not be attained had few facilities suitable for infiltration, and it was difficult to set up additional infiltration facilities. Therefore, it was decided to change the attainment target of the combined flow improvement plan in cooperation with Basin Sewerage Headquarters of Tokyo Metropolitan, and based on the condition that the discharge destination river environment standard and the nearest intake of the sewerage is the same, several outfalls were grouped, and a reduction in the discharge frequency of the group as a whole was aimed at (**Figure 1**).

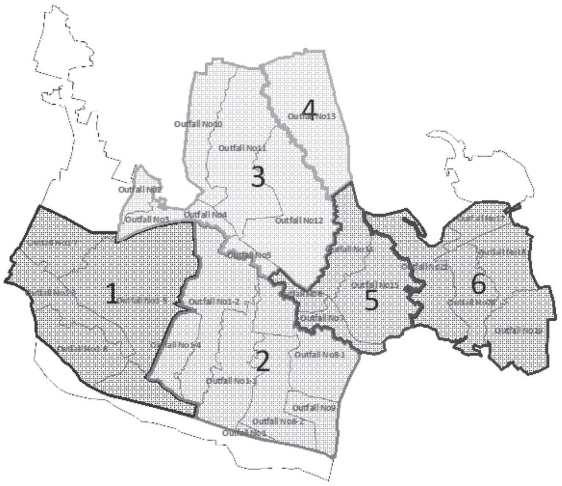

Figure 1 Grouping of outfall regions

4. Examining the scale of facilities necessary for attaining the target

   As a result of tabulating the discharge frequency for each group in which several outfalls are integrated, it was concluded that the goal of reducing the discharge frequency by half could not be achieved for one group (**Table 1** – top). Therefore, the number of infiltration facilities to be set up in order to attain the target was calculated for the group in which the target could not be attained, and when the discharge frequency was verified based on this, it was concluded that the target could be attained for all groups (**Table 1** – bottom).

(Summary)

Additional infiltration facilities are being set up in Chofu based on the result of the above investigation. This research confirms the efficacy of rainwater infiltration facilities on the combined flow improvement measures, and while it is applicable even in cases where there are no premises for large-scale hard measures, such as a retardation basin, the infiltration facilities that have already been set up in the past can also be counted as a part of the required number of facilities for attaining the target. Also, since this research is effective as an infiltration measure, the results of this research can be taken advantage of in spreading the infiltration facilities and strengthening the overall rainwater management.

Table 1 Untreated water discharge frequency by group

Group	Improvement target	Attainment status	Feasibility of attainment
1	107 times	94 times	○
2	156 times	135 times	○
3	208 times	217 times	×
4	27 times	25 times	○
5	106 times	82 times	○
6	132 times	117 times	○

Group	Improvement target	Attainment status after additional measures	Feasibility of attainment
1	107 times	94 times	○
2	156 times	135 times	○
3	208 times	208 times	○
4	27 times	25 times	○
5	106 times	82 times	○
6	132 times	117 times	○

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Key words	Improvement in combined flow, infiltration, infiltration map, basin analysis