

Surveillance study on Otsu City combined sewer system urgent improvement plan

Whole term

2002.11 ~ 2004.3

(Purpose)

The purpose of the present study is to formulate “Urgent Combined Sewerage Improvement Plan of Otsu City” (hereinafter referred to as “Urgent Improvement Plan”) by letting the contents of the “Combined Sewerage Improvement Plan” formulated by Otsu City in FY1999 conform to the implementation procedure of the “Urgent Improvement Scheme for Combined Sewerage” of the national government and by compiling the outline of the region covered, planned targets, scheme period, the contents of the scheme, the effects of improvement measures and annual schedules, based on the already initiated improvement scheme (including the portions presently designed) and the latest findings.

(Result)

1. Outline of the region covered

The region covered is about 155 ha of the combined sewerage region in the Otsu and Zeze Effluent Districts out of about 1,471 ha of Otsu Treatment Area. The region covered has nine storm outlets of eleven storm overflow chambers (storm overflow chambers 7, 8 and 9 have one common storm outlet) and one storm outlet of Otsu Purification Center. According to the rainfall survey performed at Otsu Observation Station (AMeDAS observation site of Japan Meteorological Agency), the average number of rainfalls per year is 116, and the average annual rainfall amount is 1,620 mm.

2. Planned targets

The planned improvement targets to be achieved in the “Urgent (5 years later)” stage and the “Medium-Term (10 years later)” stage of Otsu City are as shown in Table 1.

Table 1 Planned Improvement Targets of Otsu City

Improvement Target Indicator (Otsu City)		Reduction of Pollutant Load Amounts	Safe Water	Improvement of Scenery
Improvement Target Indicator (National Government)		Reduction of Pollutant Load Amounts	Security of Safety in Terms of Public Health	Prevention of Outflow of Impurities
Improvement Target Levels of Otsu City	Urgent	Implementing the measures for achieving high effects in about 5 years		
		Lowering the annual effluent loads to “the levels of separate sewerage”	Halving the number of untreated effluent discharge times from all outlets	Impurities control measure at every sewer outlet
	Medium-Term		High level disinfection of primary effluent and highly treated effluent	

3. Scheme period

Five years from FY2005 to FY2009

4. Contents of the scheme

The Urgent Improvement Plan includes four improvement measures: (1) Optimization of intercepted amount (1Q + 2 mm/hour), (2) Nos. 1 and 2 intercepting trunk sewers (intercepting and flow-down type storage sewers), (3) filter screens and (4) high velocity coagulating sedimentation. Based on the four improvement measures, the contents of the scheme were compiled in accordance with the “Urgent Improvement Plan Form for Combined Sewerage” to be submitted to the national government.

5. Effects of improvement measures

(1) Reduction of pollutant load amounts to the “levels of separate sewerage”

If improvement measures (optimization of intercepted amount, installation of intercepting and flow-down type storage sewers and introduction of high velocity coagulating sedimentation equipment) for reduction of pollutant load amounts are implemented, BOD will be 15.1 t/year in wet weather and 59.5 t/year in each whole year, and COD will be 16.4 t/year in wet weather and 74.0 t/year in each whole year. So, it was found that the pollutant load amounts can be reduced to the levels of separate sewerage {annual effluent load amounts (BOD 17.0 t/year in wet weather and 61.4 t/year in each whole year, and COD 16.6 t/year in wet weather 74.2 t/year in each whole year) on the assumption that separate sewerage is fully employed with the treatment facilities of the

medium-term target (the carrier used in 5 lines among 9 lines and sand filtration used in 9 lines among 9 lines) and with the population and land use of the reference year (FY1996)}.

(2) Halving the number of untreated effluent discharge times

It was found that if intercepting and flow-down type storage sewers are installed, the number of discharge times of untreated effluents at all storm outlets can be decreased to less than one half (from 666 times to 141 times).

(3) Impurities control measure

It can be considered that impurities can be removed by 60 to 80% by installing filter screens with a mesh size of 4 mm in respective storm overflow chambers.

6. Fiscal yearly schedules

Fiscal yearly schedules are shown for the respective improvement measures.

7. Conclusion

It was found that if all the improvement measures are taken, the improvement target indicators can be achieved. Henceforth, it is desired to examine in detail the implementation of the formulated Urgent Combined Sewerage Improvement Plan, and to implement the plan steadily.

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Keywords

Combined sewer system, Urgent improvement plan

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