Investigation on the advanced treatment of simultaneous removal of nitrogen and phosphorus in the sewerage system		
Whole term	2001. 4 ~ 2002. 3	

(Purpose)

Fukuoka City has had projects to reduce phosphorus since 1993 for the prevention of eutrophication of Hakata Bay. Moreover, the anaerobic-oxic activated sludge (A/O) method in the wastewater treatment plants and MAP method in the sludge treatment facility have been used since 2000. Not only that, Fukuoka city selected " nitrification-accelerating anaerobic-anoxic-oxic method (media-injected A^2/O method)" as the simultaneous removal method of nitrogen and phosphorus for future use. The design resources and operational guide were investigated through pilot plant experiments from 1998 to 2000.

The treatment process and the experimental plan suitable to the Eastern Water Treatment Center and the object of this research were determined. The reconstruction of actual facilities was examined based on the experimental plan. The research contents of 2001 were as follows:

1) Estimation of inflow water quality in the reactor 2) selection of the treatment process 3) examination of the method of estimating the capacity 4) actual-sized experimental design 5) investigation on the reconstruction of the actual-facility

(Results)

(1) Estimation of inflow water quality in the reactor

The inflow water quality in the reactor was estimated using recent data (1998~2000) of Eastern Water Treatment Center based on the calculation method of design inflow water quality of Fukuoka City.

(2) Selection of the treatment process

The literature review on the newest technology of the simultaneous removing method of nitrogen and phosphorus was performed. The principles, characteristics and removal efficiencies of five treatment methods from the literature review were summarized and the capacity of the reactor, maintenance and etc. were evaluated. As a result, " media-injected A^2O method" was selected.

(3) Examination of the method of estimating the capacity

The reinvestigation on the calculation of the capacity studied in 2000 was performed. The calculation method of denitrification rate was reinvestigated and the temperature and nitrified liquid circulation rate as well as BOD-SS load were presented as constants.

(4) Actual-sized experimental design

The main themes of the actual-sized experiment were as follows:

1) Verification of the achievement of the targeted quality
2) Investigation on the possibility of economization (energy and cost)
3) Data collection on the operational and maintenance guide
4) Publication of the design resources and management guide

(5) Examination on the reconstruction of the actual-facility.

The specific contents of the reconstruction of the actual-facility were investigated for 4 modules of the Eastern Water Treatment Center.

(Future plan)

(1) Actual-scale reconstruction design in 2002
(2) Actual-scale reconstruction in 2003
(3) Actual-scale experiments in 2004~2005.

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