

# Demonstration of Treatment Performance Improvement of Final Settling Tank (B-DASH)

(Research for FY 2017-18)

## 1. Purpose

This study deals with the technology that qualitatively/quantitatively improves the treatment performance of a final settling tank with low-cost retrofitting and no additional tank.

The demonstration is adopted as B-DASH Project<sup>\*1</sup> 2017 of MLIT<sup>\*2</sup>. The consortium of Metawater Co.,Ltd; JS and Matsumoto City conduct the demonstration as an entrusted research project of NILIM<sup>\*3</sup>.

\*1.B-DASH Project: Breakthrough by Dynamic Approach in Sewage High Technology Project

\*2.MLIT: Ministry of Land, Infrastructure, Transportation, and Tourism

\*3.NILIM: National Institute for Land and Infrastructure Management

## 2. Outline of the demonstration

The demonstration technology has a filtration section at the downstream part of an existing final settling tank. After influent flows into the final settling tank, its upper part precipitates most of the suspended solids from influent. Then in the downstream of the tank, the filtration section removes remaining solids by its cylindrical floating filter media. This mechanism improves effluent quality. Solids captured by filter media return back to the upstream of the treatment section as elutriate. Figure 1 describes a conceptual diagram of the technology.

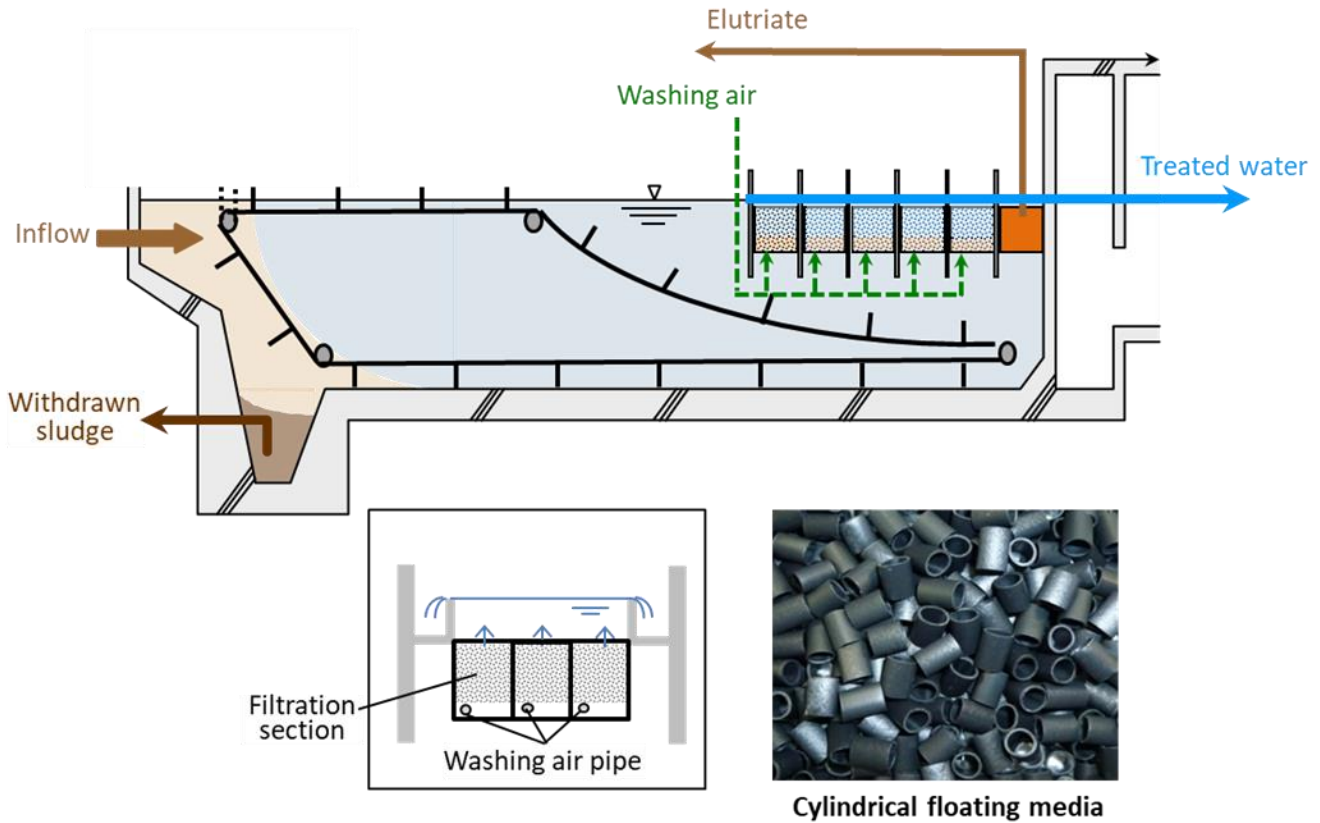


Figure 1: Conceptual diagram of the demonstration technology

This study aims to demonstrate that the technology can improve the effluent quality of the final settling tank equivalent to rapid filtration as “qualitative improvement,” and can treat twice as much influent as the design maximum daily flow with no degradation of effluent quality as “quantitative improvement.” The study also aims to verify the reduction effect of LCC.

### 3. Achievements of this year

The demonstration was carried out at Ryoshima WWTP, Matsumoto City of Nagano Prefecture. Ryoshima WWTP has a final settling tank with nine channels. The filtration units for the demonstration were installed at three channels out of that and their total treatment capacity is 10,950m<sup>3</sup>/day. The

researchers carried out a comparative study of the "demonstration channels" and the neighbor three "comparative channels" for five days each.

**(1) The results of the demonstration relating to the qualitative improvement**

The "demonstration channels" always had lower SS concentration than the "comparative channels" at the same inflow quantity. They had T-BOD concentration of 2mg/L or less while the comparative channels had 7mg/L, which means the removal of solid BOD brought a stable and good quality of treated water. The equivalent treatment performance was also verified in the BOD compared to the rapid filtration treated water through the compact filtration facility.

**(2) The results of the demonstration relating to the quantitative improvement**

The "demonstration channels" treated 1.5 times amount of wastewater than the "comparative channels." The researchers verified the quality of treated water was good with equal or less turbidity than the "comparative channels."

#### **4. Future issues**

The demonstration continues next year. The researchers evaluate the year-round treatment stability by operation conditions for qualitative/quantitative improvement, verify the LCC reduction effects and establish the design factors of the technology.

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***Keywords: Final settling tank, LCC reduction, Filtration, Performance improvement of wastewater treatment***

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