

Punyasiri Pajorn 2010: Nitrogen Removal Efficiency by Nitrification-Denitrification Process in Centralized Municipal Wastewater Treatment Plants. Master of Engineering (Environmental Engineering), Major Field: Environmental Engineering, Department of Environmental Engineering. Thesis Advisor: Assistant Professor Sanya Sirivithayapakorn, Ph.D. 94 pages.

In this study, the efficiency of nitrogen removal through nitrification – denitrification process in centralized domestic wastewater treatment plant was studied. The samples were collected from Nongkhaem Wastewater Treatment Plant (NWTP) and Suvarnabhumi Wastewater Treatment Plant (SWTP) during June 2008 – April 2009. The results indicated that NWTP and SWTP had COD/Nitrogen ratios of 6.3 and 9.38, respectively. While NWTP and SWTP had nitrogen removal efficiencies of 70.1% - 93.1% and 88.6% - 97.2%, respectively. Even though both wastewater treatment plants had optimal COD/Nitrogen ratio, RBCOD/Nitrogen ratios of both treatment plants were not optimum. RBCOD/Nitrogen ratio of NWTP was 3.2, while that of SWTP was 4.5. In addition, total nitrogen removal efficiencies of NWTP and SWTP were 40.4% - 55.8% and 40.8% - 87.8%, respectively. These results indicated that the nitrogen removal efficiencies of both of wastewater treatment plants were relatively low. Specific ammonium utilization rate (SAUR) from sludge taken from aeration tank of NWTP and SWTP were 2.10 and 5.07 mg $\text{NH}_4\text{-N/g MLVSS-h}$, respectively. This study could not conclude about specific nitrate utilization rate of NWTP. For SWTP, however, specific nitrate usage rate was varied with organic carbon source in system which changed with time

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