

Mitigation of COD and TP by Implementing Total Pollutant Load Management System in the Shiwa Coastal Reservoir

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Total Pollutant Load Management System (TPLMS) has been implemented to control Chemical Oxygen Demand (COD) and Total Phosphorus (TP) in the Shiwa Coastal Reservoir (SCR). Both conventional and special water quality control measures including constructions of wastewater treatment plants, relocation of effluent outfalls to outside of the SCR, and increased tidal mixing by opening sluices and operating a tidal power plant had been implemented, but it was not sufficient to reach the designated swimmable and fishable levels (COD=2 mg/, TP=0.05 mg/L). At the same time, anticipated large-scale development projects threatened more water quality deterioration so that it raised serious public concerns. The first-phase TPLMS action plans was implemented in 2013 to accomplish the interim water quality targets (COD=3.3 mg/L, TP=0.065mg/L) by 2018. Maximum daily loads were allocated to four municipalities within the SCR watershed. The load reduction measures included traditional point source measures as well as diverse nonpoint source control measures such as constructions of nonpoint source treatment facilities, road sweeping, wetland improvement, and dredging contaminated sediments. These measures were implemented timely but the scheduled development projects were delayed because of the recent economic setback so that the interim water quality targets of the first phase TPLMS could be successfully attained.

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