Al-Bireh wastewater treatment plant: reliability of operation and effluent quality for reuse

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Abstract: Palestine still suffers from a sanitation calamity exacerbated by the limited access to water resources, thus halting economic development and pose environmental degradation and serious public health risks. A study was conducted to evaluate the performance of Al-Bireh wastewater treatment plant (AWWTP), a single-stage activated sludge system with simultaneous nitrification-denitrification and aerobic sludge stabilization. Five full years (2001-2006) of operating data, compiled from available monthly operating reports, were statistically analyzed and evaluated. Additional data on microbiological analysis and information about facility unit operations were gathered through review of published local literature and interviews with AWWTP personnel. Influent and effluent data evaluated were the chemical oxygen demand (COD); total suspended solids (TSS); total Kjeldahl nitrogen (TKN) and total nitrogen; and total phosphorus (TP). Despite seasonal variations in AWWTP influent for COD, TSS, TN and TP, the Palestinian wastewater reuse requirements for restricted irrigation were met. Process design, operation and monthly effluent concentrations are presented and discussed in this study. The study concludes that regardless of the design capacity and process type of AWWTP, adequate administrative and operational management dictates the sustainability of any planned wastewater reuse scheme.

Keywords: Wastewater treatment; biological nutrient removal; activated sludge; effluent reuse