

First urban MBR facility in Palestine, a cleantech for sustainable wastewater management and reclaimed water use

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Abstract: The shortage of water in Palestine and public concerns about the quality of groundwater resources have led to awareness that a national wastewater management and reclamation program should be developed and implemented. Unused reclaimed water is a wasted water resource. Impaired effluent quality is among major challenges behind lack of successful large scale effluent reuse schemes in Palestine, exacerbated by institutional and socio-political issues. This paper presents the local experience gained from the construction and operation of the first urban membrane bioreactor (MBR) in Alteereh suburb of Ramallah city, the first advanced domestic wastewater treatment facility in Palestine. The MBR facility is designed to serve 25000 capita with a current daily average flow rate of 1500 m³. The start-up phase of the MBR facility, during November 2014, faced two major operational challenges considering wastewater characteristics; an illicit discharge of petroleum and olive mill wastewater. Despite the challenges faced exacerbated by the severe cold winter conditions prevailed, the process performance of the MBR facility was stable. Reclaimed water produced, permeate, complied with stringent effluent quality. Beside public health protection, the reclaimed water quality is suitable for unrestricted beneficial uses including agricultural irrigation, cement industry, car wash, aquifer recharge, recreation and water for nature.

Keywords: MBR, advanced sewage treatment, water use, irrigation, reclaimed water, agriculture