

Water Supply from Brackish Coastal Aquifers. 1. System Concept; 2. Natural Recharge Estimation; 3. Screening Model for an Optimal Artificial Recharge Strategy.

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Abstract. This paper describes a methodology for water supply in coastal areas whereby artificial recharge may be used to control salinity in the aquifer. The paper is divided into three parts: part1 covers the overall concept of pumping, desalination, wastewater treatment, and artificial recharge and the mathematical models that support those functions. The second part explains the methodology used in estimating the natural recharge in the Akrotiris aquifer in Cyprus, using the USGS' Modular Modeling System (MMS), and groundwater level observations. The third part describes a Dynamic Programming based screening model to determine the optimal recharge strategies as a function of pumping and artificial recharge well locations. The salinity in the aquifer is modeled using the USGS Saturated Unsaturated Transport Model (SUTRA), which is used both as the simulation tool, and as the basis for the Dynamic Programming Screening Model.

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