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Mitigation of Seawater Intrusion by Pumping Brackish Water

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ABSTRACT

This paper presents a technique to restore the balance between freshwater and saline water in coastal aquifers in order to mitigate seawater intrusion problems. Brackish water can be pumped from the dispersion zone and then used to develop green lands in the coastal areas or to irrigate certain types of crops. A two-dimensional finite element model, 2D-FED, has been employed to verify this technique. The model is based on the dispersion zone approach with a variable density flow. Simulations were preformed in the vertical view and equiconcentration and equipotential lines were plotted for different locations of brackish water pumping. In all of the tested runs the width of dispersion zone has reduced significantly due to brackish pumping. The quality of the pumped water differs according to the location of pumping. A study case on the Madras aquifer in India is presented.