

عنوان مقاله:

ANALYTICAL SOLUTION FOR GROUNDWATER HEAD IN UNCONFINED COASTAL AQUIFER USING
VARIATIONAL ITERATION METHOD

محل انتشار:

دوازدهمین همایش بین المللی سواحل، بنادر و سازه های دریایی (سال: 1395)

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خلاصه مقاله:

Tides or other long waves induce a considerable oscillation in the groundwater table or head in a coastal aquifer system. These fluctuations are important for many environmental and engineering problems. For example, the variation of groundwater table remarkably affects the cross-shore sediment transport and may cause beach erosion. A high water table accelerates the beach erosion; conversely a low groundwater table may result in accretion at the beach foreshore [1]. Therefore, the proper modeling of groundwater hydraulics in coastal zone is vital. In the modeling of the flow in an unconfined-aquifer, the governing equations are nonlinear. In some of the previous studies, the reduced linear form of the governing equations for underground flow was used, assuming negligible error in the solution due to linearization. However; it has been shown that the nonlinearity of the governing equation has an important influence on the tide-induced fluctuations in unconfined aquifers [2]. Most recently, the perturbation methods have been widely used to solve the nonlinear Boussinesq equation for water table fluctuations in an unconfined coastal aquifer. However; like other techniques for solving nonlinear equations, a perturbation method has its own limitations [3]. The main limitation of a perturbation method is the fact that it is based on small values for some pre-determined parameters.

کلمات کلیدی:

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