River-Aquifer Interaction: A Mathematical Model For Vertical Groundwater Barriers

Cinzia Miracapillo
Institute of Civil Engineering
University of Applied Sciences Northwestern Switzerland

Abstract. In this paper the process of unsaturated aquifer recharge from a river channel and its flood plane laterally confined with fully penetrating barriers is investigated. The same basic methodology described previously by the authors [Morel Seytoux et al., 1988] for the cases of recharging areas in a homogeneous medium is applied here in case of heterogeneities due to damming. An approximate solution is obtained by matching two one-dimensional flows, a vertical and a horizontal one. The formulation leads to an integro-differential equation.