Unsteady Flow to a Multiaquifer Artesian Well

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Analysis of unsteady flow to a multi-aquifer well, which is open to a number of aquifers, has been made using a discrete kernel approach. The aquifers are separated by aquicludes and have different potentiometric surfaces prior to pumping. The following flow characteristics have been presented for a case in which the well taps three confined aquifers: (a) the exchange of flows that takes place through the well screens among the aquifers prior to pumping owing to the differences in piezometric surfaces, (b) the contributions of each of the aquifers to the discharge of the well during pumping, (c) the exchange of flows that takes place among the aquifers after stoppage of pumping, and (d) variations of drawdown in the piezometric surfaces with time at the well point. It is found that prior to pumping, aquifers having equal initial hydraulic head and diffusivity, receive water in proportion to their respective transmissivity values from the aquifer having highest potentiometric surface.