



Application of tidal methods to Neretva Valley Aquifer: From conceptual model to aquifer parameters

Ivan Lovrinovic (1), Veljko Srzic (1), Mijo Vranjes (1), and Marin Milin (2)

(1) Faculty of civil engineering, architecture and geodesy, University of Split, Croatia, (2) HIGRA, Split, Croatia

Problem of salt water intrusion in coastal aquifers has been recognised since the significant influence of the salt-water to reduced crops productivity. Due to the full understanding of the processes influencing saltwater dynamics in aquifers, their characteristics are mandatory to be known. In-situ data enable the insight to the processes and offer an understanding of transient nature of the tidal propagation through the aquifer. For that purpose, two boreholes are installed and equipped with probes generating data sets of piezometric head, temperature, electrical conductivity and pH values. Besides the boreholes, long-term tidal oscillations of the sea level are observed nearby the location of the boreholes.

Tidal methods are often used to determine coastal aquifer parameters which are mandatory to be know when dealing with saltwater intrusion and its mitigation. Analytical approach based on simplifying assumptions offers often a good capability for simple geometry and mostly aquifer homogeneity. Those solutions can be applied when aquifer geometry and characteristics are know so appropriate conceptual model can be selected.

Hereby, we demonstrate how different conceptual models can be used to assess coastal aquifer parameters when applied to river Neretva Valley coastal aquifer. To verify obtained parameter values we conduct in-situ slug test and we use in-situ observations.

Results demonstrate good approximation of analytical approaches to mimic transient feature of piezometric head as observed within the aquifer.