

## **Sustainability of the aquifer system of the sedimentary basin of the Peixe River in the semi-arid region of Brazil**

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**Abstract** The exploration of an aquifer system will only be sustainable if the average annual pumping does not exceed the annual recharge. In the present paper a sequential water balance model was utilized to estimate the recharge for a period of three years in the sedimentary basin of the Peixe River, located in the semi-arid region of Brazil. The period covered both low and high rainfall years. The infiltration, which leads to the recharge, is obtained by deducting the surface runoff from the daily rainfall. The water balance is applied to the root zone of the soil on a daily basis to obtain the daily net value of deep percolation. The results showed that the method is capable of providing reliable estimates of annual recharge of the aquifer system of the Peixe River and thus, is extendable to other semi-arid regions.

**Key words** aquifers; recharge; water balance; semi-arid region; River Peixe, Brazil