

**GROUNDWATER QUALITY IN A COASTAL DETRITAL AQUIFER  
IMPACTED BY AGRICULTURAL CONTAMINATION (VÉLEZ-MÁLAGA,  
SPAIN)**

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**ABSTRACT**

Water quality conditions were assessed in the Río Vélez coastal aquifer (Andalusia, south Spain). This shallow glaciofluvial aquifer consists of coarse detrital deposits, of Quaternary age, that extend over about 20 km<sup>2</sup>, being subdivided in two sectors –the continental and deltaic sector- by a substratum sill. Due to its hydrogeological setting, the deltaic sector is highly vulnerable to seawater intrusion, but at time of severe drought the sill prevents from the advance of the saltwater to the continental sector. In spite of this, permeable and sandy deposits -that generally underlie the agricultural areas of the inner sector- provide favorable conditions for vertical leaching of nitrate and pesticides to the aquifer. Nitrate concentrations exceed the maximum contaminant level (MCL) for drinking water of 50 mg/l established by the E.C. in almost all the wells sampled in the aquifer, with an average value of 85 mg/l and maximum up to 400 mg/l. In addition, the construction in the 1990s of a dam in the upper basin has resulted in a decrease in aquifer recharge and in a significant advance of saltwater intrusion. At present, the main objective of hydrological policy is to use the reservoir to supply water for both irrigation and human consumption, and to stop the pumping of freshwater from the aquifer. Such a combination requires careful management of the water supply strategy in order to improve water-quality in the aquifer, which it is considered as a groundwater reserve.

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