

## **NITRATE ATTENUATION ON GROUNDWATER BY WETLAND IN SÃO PAULO, BRAZIL**

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Nitrate is one of the most serious pollutants of groundwater in the world, so much for its persistence and mobility as for the number of observed cases. A method used mainly in developed countries, for treatment of polluted superficial waters and groundwater, is wetlands system. This habitat type can occur naturally or be created artificially. It is characterised by ecosystems that are partially or totally flooded during the year. Its characteristics and properties vary according to the geology, geomorphology and climatic conditions of the considered area. Several authors have demonstrated the high efficiency of the wetlands in attenuation of nitrate in groundwater, through denitrification. Among other advantages, it is a system relatively simple and of low constructive and operational cost although it is not very used and studied in Brazil. The aim of this work is to evaluate the efficiency of that system in degradation processes of nutrients, mainly nitrogen. An artificial wetland built by Institute of Applied Ecology has been studied. This system is located at Parque Ecológico do Tietê, in São Paulo, Brazil. According to periodically chemical analyses results simulations were done with mathematical models, as Visual Modflow and MT3D softwares. These simulations are based on interaction between wetland and groundwater (shallow aquifer), as well as physical-chemical processes of the system. Besides several situations of its application were tested for contaminant plume by septic systems, with the creation of scenarios that allow the attenuation of nitrate in areas of high demographic density and population of low income.