IMPACT OF SEPTIC SYSTEMS ON GROUNDWATER QUALITY AT PARQUE ECOLÓGICO DO TIETÊ - SÃO PAULO, BRAZIL.

1VARNIER, C. L.; 1HIRATA, R. 1Instituto de Geociências/USP, São Paulo, Brasil.

Groundwater impacts caused by septic systems on unconfined aquifer in São Paulo City were studied using geophysical surveys, piezometry and chemical analysis of 38 monitoring wells installed in a 50x50m polygon cutting Quaternary alluvial deposits of the Tietê River.Regional groundwater flow is mainly directed towards the Tietê River, considered the discharge of the studied unconfined aquifer, with low hydraulic gradient due to small variation of the topography. Recharge occurs in all area and is more effective during rainy periods. The water table levels oscillate due to seasonal recharge. Monthly potentiometric maps show that groundwater flow does not change during dry and wet periods.According to geophysical methods (EM31 and GPR), piezometry and fortnightly chemical analysis of the monitoring wells and septic system since 1998, the plume has the same direction of the groundwater flow. Contents of nitrogen compounds (organic nitrogen, nitrate, nitrite, ammonia, ammonium) and other chemical parameters change during dry and wet periods as a consequence of recharge and changes in geometry of streamtubes. In rainy periods the nitrate contents vary from 3 to 62mg/L and during dry periods vary from 3 to 115mg/L. The streamtubes with greater contents of contaminants are moved downward by the new set of streamtubes in rainy periods, promoting a decrease on their concentrations in collected samples.