# ASSESSMENT OF GROUNDWATER VULNERABILITY USING GIS AS A TOOL FOR LICENSING POTENTIAL POLLUTING ACTIVITIES

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Many activities can cause groundwater contamination. Some of them are related directly to the degree of development of each region. Leakages of fuels from underground storage systems, as an exception, are a world wide problem. The definition of areas where groundwater is less susceptible to pollution and, therefore, where potentially polluting activities could be implemented is a challenge for the authorities. The assessment of groundwater vulnerability seems to be a promising method, when coupled with a geographic information system (GIS), to manage the location of such activities. In this work we use the GOD method and the GIS MGE (Modular GIS Environment) to determine the groundwater vulnerability for the XXIV Administrative Region of Rio de Janeiro City (XXIV R.A. - Barra da Tijuca) - Brazil. It was demonstrated how, using a vulnerability map, it is possible to plan the use and occupation of soil by activities that can potentially pollute aquifers. Additionally, with the information obtained from this first step, we could determine aquifers' risk to fuel pollution from gas stations' leaking underground storage tanks. Presently, the assessment of aquifers' risk to pollution is a procedure required by FEEMA, the environmental protection agency of the State of Rio de Janeiro, and others environmental entities around the world to license the installation of such facilities. The present sustainable management of activities that can present a threat to vital resources, such as water, should mean the assurance of sustainability of life for the next generations.