

THE INFLUENCE OF BRITTLE CENOZOIC TECTONICS ON VULNERABILITY MAPPING OF FRACTURED PRECAMBRIAN TERRAINS

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The primary goal of this project is to generate a method of mapping the natural vulnerability of fractured aquifers. The case study area encompasses mainly gneisses and granites, and takes part of the Great Campinas, São Paulo State, which has experienced an accelerated urban and industrial growth. The research is concerned with the role of fractures, which are present in the unsaturated zone, on the natural vulnerability of fractured aquifers. This parameter, along with others, is being taken into account in order to elaborate a natural vulnerability map. Regarding the characterization of essential fracture parameters, such as density, connectivity and aperture, which are of great relevance to the circulation of groundwater, the method is based on a thorough study of the brittle tectonics, mainly the Cenozoic one, and on the interpretation of image extracted lineaments. It is assumed that fractures with larger apertures constitute pathways through which water can percolate, during precipitation events, and reach the water table. The area was affected by five Cenozoic events, from which the third one, which seems to have been transtensional, probably generated a greater amount of extensional fractures, that would presumably present larger apertures. By means of a lineament pattern interpretation, areas where this transtensional event predominates were mapped. These areas, in opposition to others where other Cenozoic events predominate, are considered to be more vulnerable.