

EFFECT OF POINT-SOURCE POLLUTION ON GROUNDWATER QUALITY IN A SMALL AGRICULTURAL CATCHMENT

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Abstract

Agricultural nutrients and intensive livestock farms can be a significant source of groundwater contamination. The main groundwater pollutants associated with inappropriate farming operations include nitrogen, pesticides and pathogens. The results of a survey is presented in this paper on the effects of a sewage pond - used for the disposal of liquid manure from an adjacent intensive pig farm - on groundwater nitrate content in the surrounding farm area. The connection between electric conductivity and nitrate content of groundwater was also investigated. Geographic Information System (GIS) tools were used to incorporate spatial variations and to assess groundwater flow directions and the impact area of the sewage pond. Nitrate-N concentrations ranged from 3 to 780 mg l⁻¹ in the sampling boreholes. The results suggest that the aquifer is heavily contaminated with infiltrated livestock wastewater, which consequently must be adequately treated to minimize groundwater pollution.

Key words: *groundwater, nitrogen, pesticides and pathogens wastewater,*