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Aquifer vulnerability in parts of Yenagoa, Southern Niger Delta, Nigeria

Willabo Miepamo¹ and Bisong Andy Etta²

¹Federal Polytechnic Ekowe, Nigeria

²University of Port Harcourt, Nigeria

This study on aquifer vulnerability assessment in certain parts of Yenagoa, Bayelsa State, Southern Niger Delta, Nigeria, adopted the use of DRASTIC method based on geographic information system (GIS) model to delineate areas susceptible to contamination. Seven hydrogeologic parameters were applied for the aquifer vulnerability evaluations, which include depth to water table, net recharge, soil media, impact of vadose zone, aquifer media, topography, and hydraulic conductivity. Data relating to the seven hydrogeologic parameters of the model were obtained and transformed in the model into seven maps by GIS to develop the DRASTIC vulnerability map which shows the three different forms of aquifer vulnerability namely high, moderate, and low zones. The communities within the high vulnerable zones include Swali, Agudama, Ovum, Igbogene, Okutukutu, Onopa and Okolobiri. Those within the moderate vulnerability zones are Kpansia, Etegwe, Yenezue, Azikoro, Opolo, Tombia, Biogbolo and Akenfa and in the low vulnerability zones, we have Amarata, Yenezuegene, Edepie, Azikoro, Akenfa and Okaka. The high vulnerability zones ranking was attributed to very high depth to water table, high net recharge, high hydraulic conductivity and permeability of gravelly sand in the aquifer media. The moderate vulnerability zones were due to high net recharge, low porosity of silt/clay in vadose zone, silty loam in soil media and high hydraulic conductivity. The low vulnerable zones were influenced by impermeability of clayloam in the soil media, low porosity of silty clay in the vadose zone and low topographic slope percent.

Biography

Willabo Miepamo has passion for conservation and preservation of the environment from further deteriorating. He organizes seminars, lectures and workshops to create public awareness on the dangers of groundwater contamination in host communities to multinational oil companies. He has completed his Master's degree in Hydrogeology from the University of Port Harcourt, Nigeria. He teaches in the Federal Polytechnic Ekowe and provides solution to groundwater contamination challenges faced by Southern Niger Delta States of Nigeria.

Sutaria4life@yahoo.com

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