**Investigation groundwater quality in relation to Sulphates and Nitrates in Pepel-Northern Sierra Leone**

Yaguba JALLOH1, Mustapha Olajiday THOMAS2, Yusuf Alhaji. LAHAI3

1,2&3Dept. Geology, Faculty of Pure and Applied Sciences, Fourah Bay College, Freetown, Sierra Leone

Email: yjalloh2010@gmail.com,lahaialhajiyusuf@yahoo.com

**Abstract:**

Sierra Leone experiences a high amount of rainfall, which goes into storage in the subsurface to build up the groundwater potential in the country. In Pepel, in the northern region of Sierra Leone, the majority of the population depends on groundwater for domestic and other purposes. Even though there is a high potential for groundwater, there is still a serious problem with adequate availability and quality of groundwater. The objective of this research is to determine how the presences of NO3- and SO-4 influence the lowering of pH of the water. Analyses of water quality showed low pH values in all the boreholes due to the presence of NO3- and SO-4. As sulphates and Nitrates increase, the pH lowers, the water becomes acidic and more Mn2+ and Fe2+ are dissolved. As the acid water interact with the iron and manganese on the surface, Fe2+ and Mn2+ are dissolved because of low pH. This may leach through the ground slowly to contaminate the underground water resources. Faecal coliform showed no correlation with pH. The presence of faecal coliforms in the wells may be due to the movement of pollutants from closely located pit latrines and leaking septic tanks, as well as indiscriminate defecation by people living around the wells.