ABSTRACT

Study of Hydrogeochemical Facies and Groundwater Quality Assessment in Debos and Surroundings Areas, Suai, Covalima Municipality, Timor-Leste, 2019

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There are three (3) main objectives of the study of hydrogeochemical facies and groundwater quality assessment in Debos and surroundings areas, Suai, Covalima Municipality, Timor-Leste, 2019 i.e. to identify the distribution of water resources in order to provide the solutions towards the lack of water supply for human consumption, to assess the quality of groundwater for drinking water purposes based on the international standard guideline and also to define groundwater characterization or hydrogeochemical facies by analyzing major cations and anions in terms of chemical groundwater by natural influences.

The principal methods which used in this study are literature studies, field observations and laboratory analysis. The literature study method is to collect all pertinent secondary data, while the method of field observation is the collection of primary data through field activities such as collecting hydrogeological data from groundwater measurements through dug wells, boreholes and springs afterwards collecting some certain groundwater samples to analyze in the laboratory. The laboratory analysis of groundwater samples were analyze based on three (3) parameters i.e. physical, chemical and biological parameters. At last, all these database are used for data processing (data entry, data analysis and data interpretation) through descriptive and analytical methods as well as computer software operation to result groundwater distribution map, water table map, aquifer system typology, groundwater quality and groundwater facies.

There are several point of results of this study i.e. the rainfall classification are all classify as moderate rainfall, the watersheds and rivers are all intermittent types in general, it identified one hundred sixty five (165) groundwater distribution throughout the Covalima Municipality which several of those are potential for water supply for human consumption, groundwater generally flows from the North with a high topography towards the South (coastal) with a lower topography, it determined 2 (two) aquifer system typologies of alluvial deposits and sedimentary deposits, it found three (3) kind of contamination of groundwater quality both saltwater, chemical and bacteria contamination from thirty (30) water samples and also the types of groundwater dominances or the groundwater chemical properties in the study area and its surroundings are dominated by bicarbonate type for major anions and no dominant type for major cations. It has reached the conclusion that the people in study area and its surroundings are relying on groundwater and surface water for their daily need, however most of them are highly need the water supply during the long dry season, the groundwater distribution in study area and surroundings are suitable to consume in general and the hydrogeochemical facies in the study area and its surroundings is dominated by $HCO_3^- > Ca^{2+}$ $Cl^- > SO_4^{2-} > Mg^{2+}$ type of water.

Keywords: *Groundwater Quality Assessment, Hydrogeochemical Facies, Water Resources Distribution, Groundwater Flow, Aquifer System Typology.*