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A software model to calculate groundwater level

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Quantitative information concerning recharge rates of aquifers and ground water in storage is needed to manage the development of groundwater resources due to the rapid increase of the global population and to meet their needs of freshwater. If new technology could be applied to calculate the recharge level, it would be much easier for the user to save his time and maintain accuracy. The main objective of this research was to develop a software model to estimate the height of recharge and the present level of the groundwater table with the capability of data storage and data display ability. Using this model, groundwater recharge was calculated either by an equation that is specified by the user or the equation in-built within the model. Groundwater balance Equation is used as the in-built equation for the new system. According to the equation provided, the final result (recharge height) is calculated. All the results are stored inside the system for further analysis and the data could be obtained in a report form. The performance of this application was tested using meteorological data and field data of the selected site at the Faculty of Agriculture, Mapalana. Six trials were conducted at the site using the developed model.

After commencing the study, the monthly rainfall values at the end of first, second, third, fourth, fifth, sixth months were 120 mm, 247.85 mm, 219 mm, 46.1 mm, 234.6 mm, 288.7 mm, respectively. The average output from the well was 60 mm per month. On the depth to the groundwater table was 183 cm from the surface. At the end of the six months, the values were recorded as 183 cm, 185 cm, 184 cm, 178 cm, 175 cm and 177cm respectively. The depth to the groundwater table estimated using the developed software application were recorded from the surface as 176.49 cm, 176.67 cm, 176.58 cm, 171.34 cm, 169.24 cm and 171.86 cm. According to the t-test analysis no significant difference between actual values and calculated values was It is concluded that the developed software using Groundwater balance Equation is acceptable for the site of Mapalana.

Keywords: groundwater, software model, calculation, recharge level