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DERIVATION OF RATING EQUATIONS FOR GAUGED RIVERS IN OSUN DRAINAGE BASIN, SOUTH WESTERN NIGERIA

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ABSTRACT

This paper represents the stage and discharge of seven gauged rivers with rating tables in Osun Basin with derived equations that perfectly fit the measured data for all the stations. The power equation derived for stations 5, 25, 35 and 52 while the second degree polynomial equations within the limit or range shown in Table 4. The result of the analysis for Station 35 showed that both power and polynomial equations gave a perfect fit with coefficients of determination (r^2; 0.9988 and 0.9995) respectively. The derived equation will be useful for engineers at gauged and un-gauged sites and it will ease the computation of flood discharges required for the economic design of hydraulic structures and economic feasibility analysis of water projects. Although graphical and rating table may be acceptable for hand calculations; the rating equations will be well suited to computer analyses. The coefficient of determination of unity (1) confirmed a perfect fit for resets that can be approximated to unity at two significant figures.

Keywords: derivation, rating equation, gauged and ungauged rivers, drainages basin and power equations.