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Analysis of Morphological Characteristics of Farm Reservoirs

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This study analyzed the 18, 068 farm reservoirs in Korea with their basic measures. Histograms of seven measures (approval area, beneficial area, watershed area, effective storage, full water area, dam width, and dam height) are made to characterize their distributions and to apply the Pareto analysis with the power law to evaluate their inequalities. As results of the histogram analysis it was found that the measures of basin characteristics to have the exponential-type distributions, and those of dam (channel cross-section) characteristics the log-normal distributions. Pareto analysis was done for the five measures of having exponential distribution. The Pareto exponents estimated are 0.38 for the approval area, 0.42 for the beneficial area, -0.19 for the effective storage, 0.30 for the watershed area, and 0.22 full water area, so the inequality of the beneficial area is the largest and that of the effective storage is the smallest. Analysis of morphology index versus watershed area shows that most reservoirs are categorized into deep and normal ones. Also, the effective storage are found linearly proportional to the multiplication of dam height and watershed area by 34%.