1. A wastewater treatment plant receives, at an average, 90 % of water supply during dry weather conditions. Average municipal water demand expected is 200 Lpcd. Calculate the average, maximum dry weather and max wet weather flows. The population of the town is 200000, and the maximum expected infiltration/inflow is 450 Lpcd.
2. For problem 1, if the average BOD5 loading rate is 54 g/cap.d, the average total N loading rate is 18 g/cap.d, the average total P loading rate is 4 g/cap.d and the TSS loading rate is 70 d/cap.d, estimate the BOD5, total P, total N and TSS concentrations in terms of mg/L.
3. A city of 70000 residents has an average water demand of 250 Lpcd. The institutional and commercial, and industrial average areas in the city are 250 and 350 Ha, and water demand expected is 20 and 23 m3 /Ha.d. The public water use and water unaccounted for are 10 and 6 % of total municipal water demand, respectively. Calculate total municipal demand and each component quantity as a % of total municipal demand.
4. A municipal service area is 1650 Ha. Average estimated infiltration/inflow allowance is 3500 L per Ha per day. Calculate the I/I quantity per capita per day. Assume the population density of the service area is 30 persons per Ha.
5. An industry is discharging 2500 m3/d wastewater into a sanitary sewer. The concentrations of BOD5, TSS, TN, and TP are 200, 280, 35 and 10 mg/L, respectively. Calculate the population equivalent of the industry based on flow, BOD5, TSS, TN, and TP (g/cap.d).