

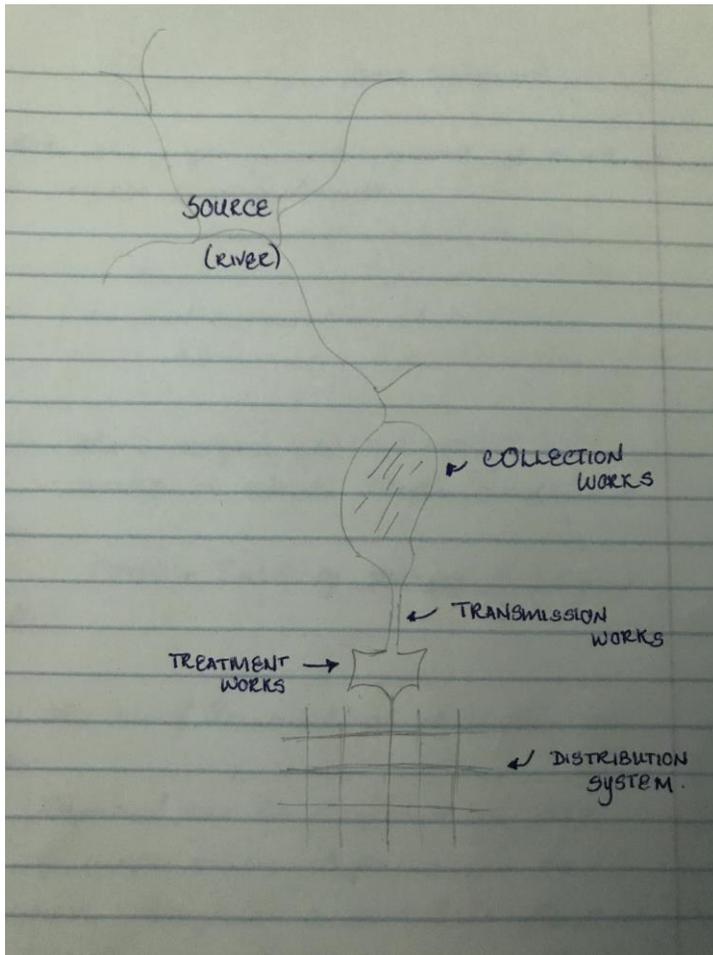
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Enve 230 Fundamentals

Module Assessment 1.

1. Sketch and label a water resource system including (a) source; (b) collection works; (c) transmission works; (d) treatment works; and (e) distribution works.



3. Define the word “demand” as it applies to water.

Demand can be described as the usage of water when it pertains to consumers. Every time a toilet is flushed, and faucet runs that is seen as a ‘demand’.

5. State the rule-of-thumb water requirement for an average city on a per-person basis and calculate the average daily water requirement for a city of a stated population.

The general rule of thumb for acquiring the water requirement of a city on a per-person basis is to find out how many liters of water are required for the city for one day divide it by how much people are in the city. For example, if a city has 1,000,000 and it accumulates  $1.5 \times 10^8$  liters per day that means that one person uses about 150 liters per day.

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1-2. Estimate the per capita daily water withdrawal for public supply in the United States in 2005 (in Lpcd). Use the following population data (McGeeveran, 2002) and water supply data (Kenny et al., 2009)

The LCPD for the United States is  $y = 4.78 * x + -9106$

$$Y = 4.78 * (2005) + -9106 = \mathbf{447.9 \text{ Lpcd.}}$$

1-4. Repeat Problem 1-3 for 320 houses but assume that low-flush valves reduce water consumption by 14 percent.

$$320 \times 1320 = 4.224 \times 10^5 * 0.14 = 5.9136 \times 10^4$$

$$4.224 \times 10^5 - 5.9136 \times 10^4$$

$$= \mathbf{3.63264 \times 10^5 \text{ L/d}}$$

1-6. If a faucet is dripping at a rate of one drop per second and each drop contains 0.150 milliliters, calculate how much water (in liters) will be lost in 1 year.

$$0.150 / 1000 = 0.00015 \text{ L}$$

$$0.00015 \times 31,559,952 = \mathbf{4.7339928 \times 10^3 \text{ L}}$$