

MPT 651
MUNICIPAL ENGINEERING SYSTEMS
Assignment #8 – Fire Flow, Storage

$$h_f = \frac{10.675 \cdot L \cdot Q^{1.85}}{C^{1.85} \cdot D^{4.8655}}$$

Name: _____

Please show all your work, including the diagram!

- A town has a population of 6500 people
 - Consumption rate is 310 L/c/d.
 - The population is expected to grow by 20% within the next 10 years.
 - The town is 4 km from a water source and 22 m below it.
 - The supply main has an allowable head loss of 12 m.
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- a) Determine the expected future population.
 - b) Determine the future demand (L/s).
 - c) Determine the size of the watermain required for the expected future population (C=110). Roundup to the nearest pipe size.
 - d) What is the starting pressure at the source if the residual pressure at the town is 360 kPa? (Note: 1 m = 9.81 kpa)
 - e) What is the required projected fire flow?
Assume fire flow demand (L/s) is calculated as: $F.F. = 65\sqrt{P} * (1 - 0.01 \sqrt{P})$
 - f) How much storage (m³) for fire protection is required for 10 hours of protection?