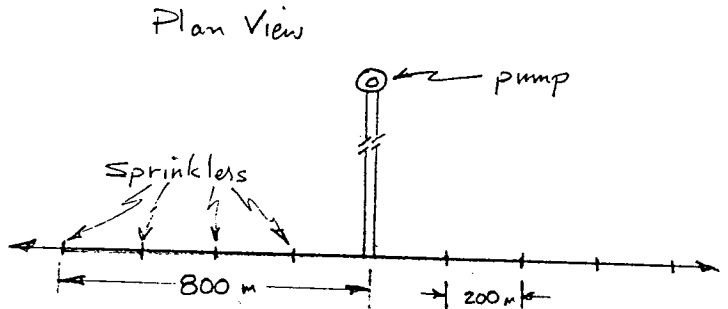


4. As a means of disposal of the treated wastewater an irrigation system was designed with the following characteristics. A mainline pump provides 50 psi water at a flowrate of 20 l/sec to the center of a 1,600 long sprinkler lateral having four "big gun" sprinklers on each side as shown below. The graph and the table below summarize the changes in water pressure along the 10 cm diameter lateral pipe and the discharge of each sprinkler. What is the head loss (m) in the pipe system between the pump and the lateral "T" where the first pressure is recorded? The sprinkler orifice is 1 cm in diameter. Estimate the headloss coefficient, K, (dimensionless) for the "big gun" sprinklers. (Note that 1 psi = 0.70 m of H<sub>2</sub>O and assume  $\epsilon = 0.04$  mm for the lateral pipe.)

Distance from Mainline (m)	Sprinkler Flowrate (l/sec)
800	1.00
600	1.05
400	1.12
200	1.26
0	-
200	1.26
400	1.12
600	1.05
800	1.00



Pressure of sprinkler heads divided over field

