

Name: \_\_\_\_\_

**Problem Set 4**

**Hydrogeology (ERS 580)**

As a Royal Engineer within the court of King Reeve, you have been ordered to determine the water removal rate required to keep the dungeon in King Reeve's new castle dry. The castle foundation has been excavated to a depth of 99. ft above sea level. The water in the moat and currently in the foundation is 101 ft above sea level. The surface of the ground is at 110 ft above sea level. Exploratory drilling reveal that the top of a confining layer is located 20 ft below the base of the foundation. What assumptions did you make in your calculations? If the elevation of the water in the moat increases by 0.5 ft, what water removal rate will be required?

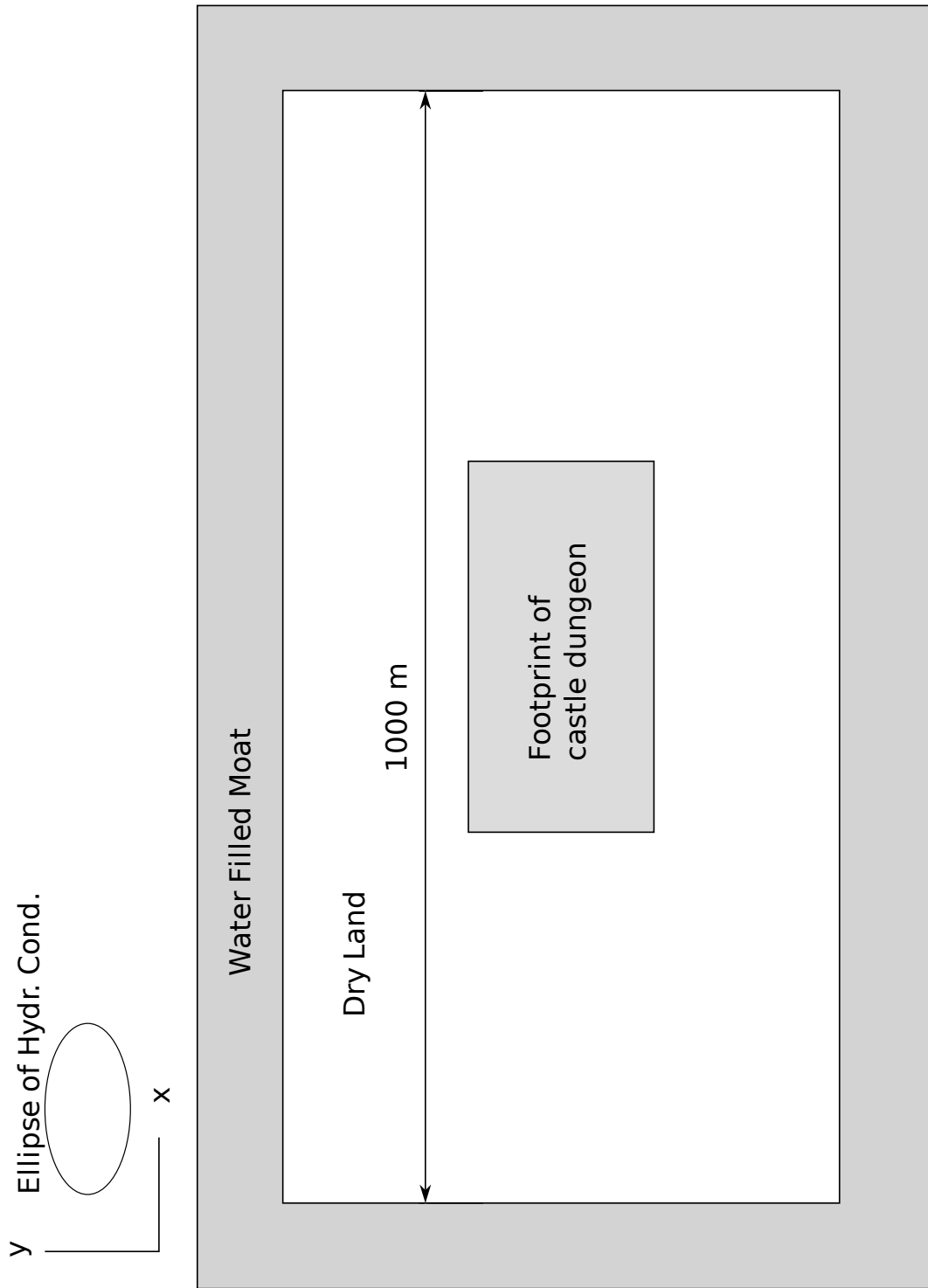


Figure 1: Map view of King Reeve's Castle.  $K_x = 10^{-4} m \cdot sec^{-1}$ . Image is drawn to scale.