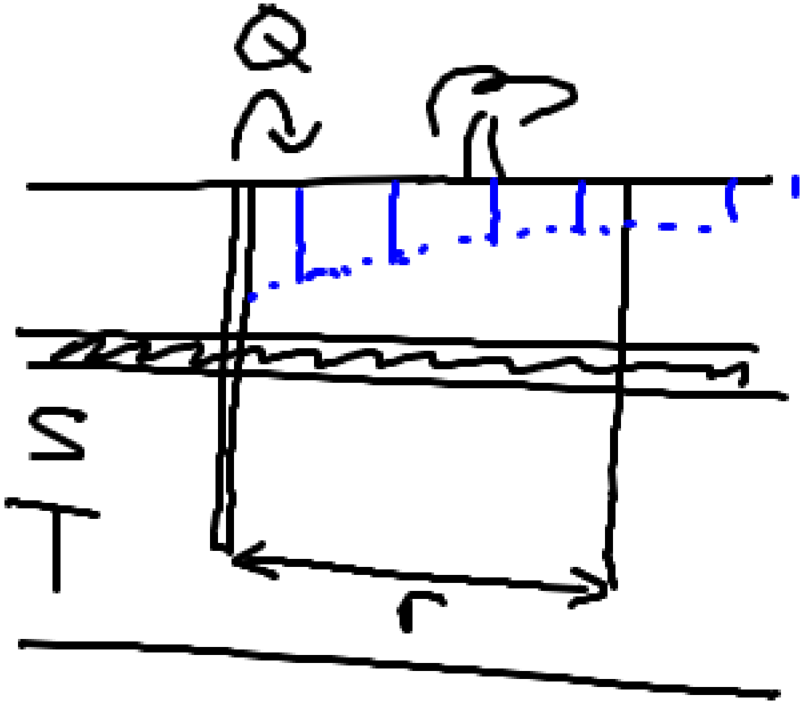
Completely Confined Aquifer

Theis Equation



$$u = \frac{r^2 \cdot S}{4 \cdot T \cdot t_{days}}$$

$\rightarrow W(u)$ = well function

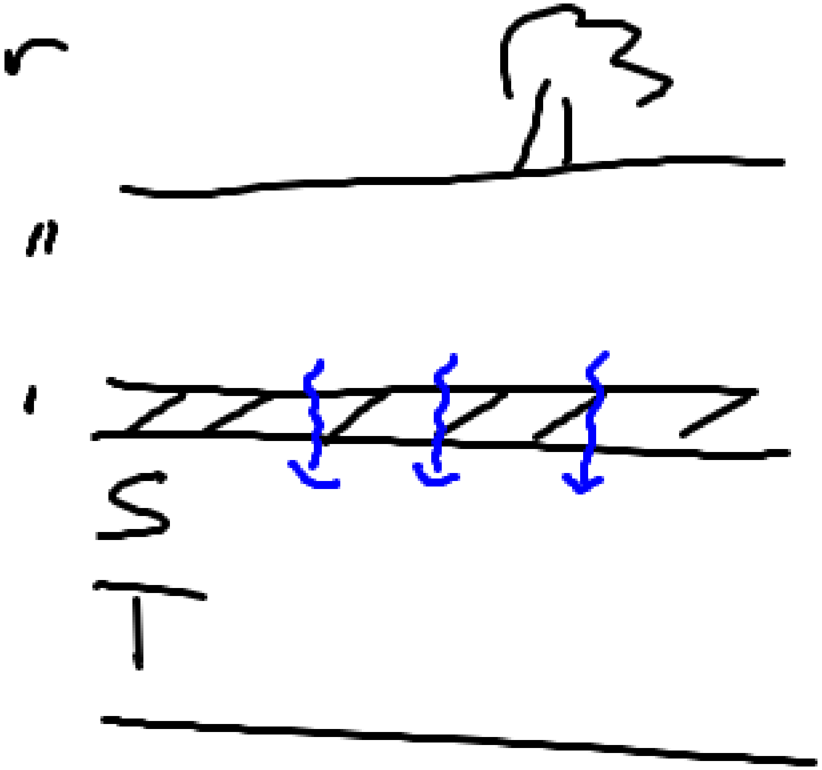
$$h_0 - h = \frac{Q}{4 \cdot \pi \cdot T} \cdot W(u)$$

Drawdown

Leaky Confined Aquifer

Hantush-Jacob

$$u = \frac{r^2 \cdot S}{4 \cdot T \cdot t}$$



$$B = \left(T b' / K'\right)^{\frac{1}{2}}$$

leakage Factor

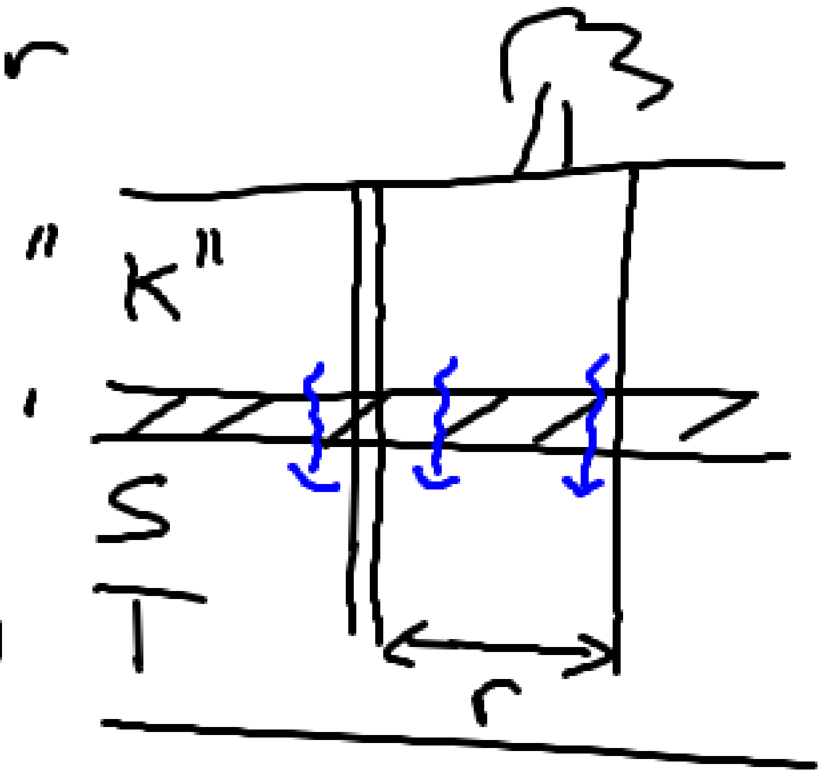
b' ← thickness of confining unit

K' ← Hydraulic Conductivity of c.u.

Leaky Confined Aquifer

Hantush - Jacob

$$h_0 - h = \frac{Q}{4 \cdot \pi \cdot T} W\left(u, \frac{r}{B}\right)$$



Testing assumptions => water Table in source bed does not fall

$$b' \cdot K'' > 100 \cdot b \cdot K$$

Unconfined Aquifer

Neuman Solution

$$S = S_y + S_s$$

$$h_0 - h = \frac{Q}{4 \cdot \pi \cdot T} W(u_a, u_b, \Gamma)$$

$$u_a = \frac{r^2 \cdot S_s}{4 \cdot T \cdot t}$$

$$\Gamma = \frac{r^2 \cdot K_v}{b^2 \cdot K_h}$$

$$u_b = \frac{r^2 \cdot S_y}{4 \cdot T \cdot t}$$

Fully Confined

Theis Equation

$$h_0 - h = \frac{Q}{4 \cdot \pi \cdot T} \cdot W(u)$$

$$u = \frac{r^2 \cdot S}{4 \cdot T \cdot t}$$

$$T = \frac{Q}{4 \cdot \pi \cdot (h_0 - h)} \cdot W(u)$$

$$S = \frac{4 \cdot T \cdot u \cdot t}{r^2}$$

Need:
- $W(u)$
- $h_0 - h$
- u
- t