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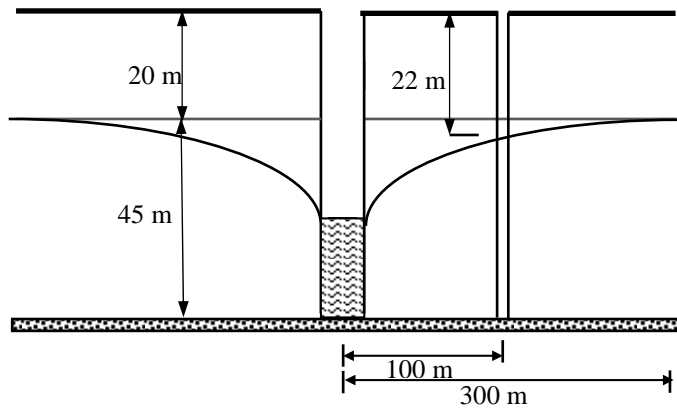
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$$r_w = 40 \text{ cm}$$
$$T = 360 \text{ m}^3/\text{day}$$

$$h_e = 45 \text{ m} \quad r_e = 300 \text{ m}$$
$$h_1 = 65 - 22 = 43 \text{ m} \quad r_1 = 100 \text{ m}$$

$$\therefore D = h_e = 45 \text{ m}$$

$$\therefore K = \frac{T}{D} = \frac{360}{45} = 8 \text{ m/day}$$

$$Q = \frac{\pi \times 8 \times (45^2 - 43^2)}{\ln \frac{300}{100}} = \frac{4423.4}{1.1} = 4026 \text{ m}^3/\text{day}$$

دصرف بئر الارتناج:

$$4026 = \frac{\pi \times 8 \times (45^2 - h_w^2)}{\ln \frac{300}{0.40}}$$

$$\therefore 45^2 - h_w^2 = 1060.5$$

ارتفاع الماء في بئر الارتناج:

$$\therefore h_w = 31 \text{ m}$$

$$Q_{\max} = \frac{\pi \times 8 \times (45^2 - 0)}{\ln \frac{300}{0.4}} = 7687.8 \text{ m}^3/\text{day}$$

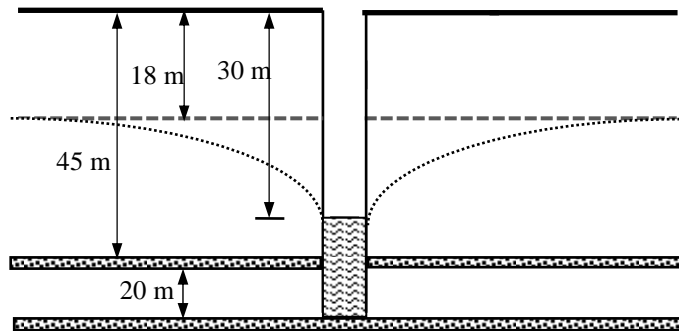
انصباف بئر الارتناج:

$$R = \frac{4 \text{ mm}}{\text{hr}} = \frac{4}{1000} \times 24 = 0.096 \text{ m/day}$$

الزيادة السوية في البئر لتدعيم الارتناج:

$$Q_R = \frac{\pi \times 8}{\ln \frac{300}{0.4}} \left[(45^2 - 31^2) + \frac{0.096}{2 \times 8} (300^2 - 0.4^2) \right] = 3.638 [1064 + 540] = 5835.3 \text{ m}^3/\text{day}$$

$$\% \Delta Q = \frac{5835.3 - 4026}{4026} \times 100 = 44.9 \%$$



$$r_w = 300 \text{ m}$$

$$K = 10 \text{ m/day}$$

$$r_e = 250 \text{ m}$$

$$h_e = 20 + 45 - 18 = 47 \text{ m}$$

$$h_w = 20 + 45 - 30 = 35 \text{ m}$$

$$D = 20 \text{ m}$$

$$Q = \frac{2\pi \times 10 \times 20 (47 - 35)}{\ln \frac{250}{0.30}} = \frac{15079.6}{6.725} = 2242.3 \text{ m}^3/\text{day}$$

دصرف من بتا الة نتاج

$$h_w = D = 20 \text{ m}$$

أقصى دصرف ممكن صخره من البئر

$$Q_{\text{max}} = \frac{2\pi \times 10 \times 20 (47 - 20)}{\ln \frac{250}{0.30}} = \frac{33929}{6.725} = 5045.2 \text{ m}^3/\text{day}$$

التصرف الميزان (اختلاف بين الطبقة المائية)

$$\therefore h_s = 10 \text{ m}$$

$$Q_p = \left[\frac{2\pi \times 10 \times 20 (47 - 35)}{\ln \frac{250}{0.30}} \right] \times \left[1 + 7 \times \sqrt{\frac{0.30}{2 \times 10}} \cdot (0) \frac{\pi \times 10}{2 \times 20} \right]$$

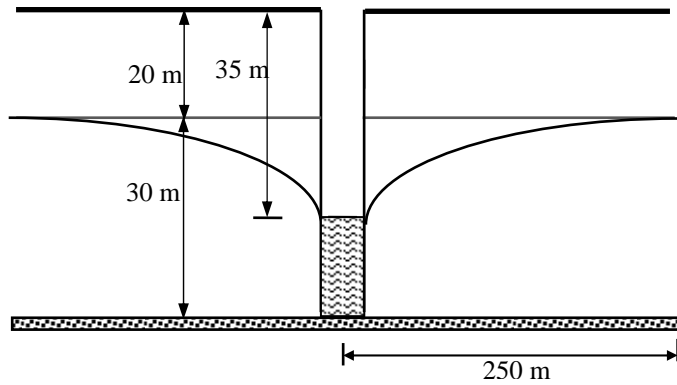
$$= 1121.16 [1 + 7 \times 0.1225 \times 0.707]$$

$$= 1800.9 \text{ m}^3/\text{day}$$

التصرف الكروي (اعتراضه الطبقة السامد العليا فقط)

$$Q_s = 2\pi \times 10 \times 0.30 (47 - 35)$$

$$= 226.2 \text{ m}^3/\text{day}$$



$$r_w = 40 \text{ cm}$$

$$K = 10 \text{ m/day}$$

$$B = 100 \text{ m}$$

$$h_c = 30 \text{ m}$$

$$h_w = 50 - 35 = 15 \text{ m}$$

$$r_c = 250 \text{ m}$$

$$Q = \frac{\pi \times 10 \times (30^2 - 15^2)}{\ln \frac{250}{0.40}} = 3294 \text{ m}^3/\text{day}$$

تصرف البئر منفرد

$$Q_1 = Q_3 = \frac{\pi \times 10 \times (30^2 - 15^2) \ln \frac{100}{0.40}}{2 \ln \frac{250}{100} \cdot \ln \frac{100}{0.40} + \ln \frac{100}{0.40} \cdot \ln \frac{250}{0.40}} = 2841.3 \text{ m}^3/\text{day}$$

التبار الثلاثة على استقامة واحدة

$$Q_2 = \frac{\pi \times 10 \times (30^2 - 15^2) \ln \frac{100}{2 \times 0.40}}{2 \ln \frac{250}{100} \cdot \ln \frac{100}{0.40} + \ln \frac{100}{2 \times 0.40} \cdot \ln \frac{250}{0.40}} = 2485.1 \text{ m}^3/\text{day}$$

التبار الثلاثة على شكل متساوية الاضلاع

$$Q_1 = Q_2 = Q_3 = \frac{\pi \times 10 \times (30^2 - 15^2)}{\ln \frac{250^3}{0.40 \times 100^2}} = \frac{21205.75}{8.27} = 2564 \text{ m}^3/\text{day}$$

$$V_s = 0.4 \sqrt{K} \text{ (m/day)}$$

(/)

./ P

./ C

$$Q = 475 \text{ m}^3/\text{hr} = 0.1319 \text{ m}^3/\text{s}$$

$$v = 2 \text{ m/s}$$

بمجرد سرعة سريان الماء في الأنبوب المثلث

$$A = \frac{Q}{v} = \frac{0.1319}{2} = 0.066 \text{ m}^2 = \frac{\pi d^2}{4}$$

$$\therefore d = 0.29 \text{ m}$$

$$\therefore d_{act} = 30 \text{ cm} = 0.30 \text{ m}$$

$$\therefore d_s = 30 \text{ cm}$$

قطر القناة = قطر الأنبوب المثلث

$$V_s = 0.4 \sqrt{16} = 1.6 \text{ cm/s}$$

سرعة التدفق خلال فتحة القناة

$$\therefore Q_s = \pi d_s \cdot L_s \cdot P \cdot (1-C) \cdot V_s$$

$$0.1319 = \pi \times 0.30 \times L_s \times \frac{30}{100} \times (1-0.4) \times \frac{1.6}{100}$$

$$L_s = 48.6 \text{ m}$$

طول القناة

حيث عدد الفتحات في المتر الطول للقناة = 125

$$\therefore 125 = \frac{1 \text{ m} \times 30}{L_{one}}$$

$$\therefore L_{one} = 2.4 \times 10^{-3} \text{ m} = 2.4 \text{ mm}$$

$$W_{one} = \frac{1}{2} L_{one} = \frac{2.4}{2} = 1.2$$

$$1.2 \times 2.4 \text{ mm}$$

أبعاد الفتحة