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Open Wells Formulas

Calculators! Examples! Conversions!

List of 12 Open Wells Formulas

Open Wells

1) Depression Head for Flow Discharge into Well

Open Calculator

$$H = \frac{Q_f}{K_0}$$

$$7.001167\text{m} = \frac{30.0\text{m}^3/\text{s}}{4.285}$$

2) Flow Discharge into Well

Open Calculator

$$Q_f = K_0 \cdot H$$

$$29.995\text{m}^3/\text{s} = 4.285 \cdot 7\text{m}$$

3) Proportionality Constant for Flow Discharge into Well

Open Calculator

$$K_0 = \frac{Q_f}{H}$$

$$4.285714 = \frac{30.0\text{m}^3/\text{s}}{7\text{m}}$$

Recuperation Test

4) Area of Well given Specific Capacity per unit Well Area of Aquifer

Open Calculator

fx $$A = \frac{K_0}{K_s}$$

ex $$5.713333\text{m}^2 = \frac{4.285}{0.75}$$

5) Area of Well given Time Interval

Open Calculator

fx $$A = K_0 \cdot \frac{T_r}{\ln\left(\frac{H_1}{H_2}\right)}$$

ex $$21.13622\text{m}^2 = 4.285 \cdot \frac{2\text{s}}{\ln\left(\frac{15.0\text{m}}{10.0\text{m}}\right)}$$

6) Area of Well when Discharged from Open Well is Considered

Open Calculator

fx $$A = \frac{Q_Y}{K_s \cdot H}$$

ex $$20\text{m}^2 = \frac{105\text{m}^3/\text{s}}{0.75 \cdot 7\text{m}}$$

7) Depression Head when Discharge from Open Well is Considered

Open Calculator

fx $$H = \frac{Q_Y}{K_s \cdot A}$$

ex $$7\text{m} = \frac{105\text{m}^3/\text{s}}{0.75 \cdot 20\text{m}^2}$$

8) Discharge from Open Well under Depression Head

Open Calculator

fx $$Q_Y = K_s \cdot A \cdot H$$

ex $$105\text{m}^3/\text{s} = 0.75 \cdot 20\text{m}^2 \cdot 7\text{m}$$

9) Equation for Time Interval

Open Calculator

fx $$T_r = \left(\frac{A}{K_0}\right) \cdot \ln\left(\frac{H_1}{H_2}\right)$$

ex $$1.892486\text{s} = \left(\frac{20\text{m}^2}{4.285}\right) \cdot \ln\left(\frac{15.0\text{m}}{10.0\text{m}}\right)$$

10) Proportionality Constant given Specific Capacity per unit well Area of Aquifer

Open Calculator

fx $$K_0 = A \cdot K_s$$

ex $$15 = 20\text{m}^2 \cdot 0.75$$

11) Proportionality Constant per unit Well Area of Aquifer

Open Calculator

$$K_0 = A \cdot \left(\left(\frac{1}{T_r} \right) \cdot \ln\left(\frac{H_1}{H_2} \right) \right)$$

$$4.054651 = 20\text{m}^2 \cdot \left(\left(\frac{1}{2\text{s}} \right) \cdot \ln\left(\frac{15.0\text{m}}{10.0\text{m}} \right) \right)$$

12) Specific Capacity per unit Well Area for Discharge from Open Well

Open Calculator

$$K_s = \frac{Q_f}{A \cdot H}$$

$$0.214286 = \frac{30.0\text{m}^3/\text{s}}{20\text{m}^2 \cdot 7\text{m}}$$

Variables Used

- **A** Area of the Well *(Square Meter)*
- **H** Depression Head *(Meter)*
- **H_1** Drawdown at the Start of Recuperation *(Meter)*
- **H_2** Drawdown at a Time *(Meter)*
- **K_0** Proportionality Constant
- **K_s** Specific Capacity
- **Q_f** Flow Discharge *(Cubic Meter per Second)*
- **Q_Y** Yield from an Open Well *(Cubic Meter per Second)*
- **T_r** Time Interval *(Second)*

Constants, Functions, Measurements used

- Function: **ln**, ln(Number)
  The natural logarithm, also known as the logarithm to the base e, is the inverse function of the natural exponential function.
- Measurement: **Length** in Meter (m)
  Length Unit Conversion
- Measurement: **Time** in Second (s)
  Time Unit Conversion
- Measurement: **Area** in Square Meter (m^2)
  Area Unit Conversion
- Measurement: **Volumetric Flow Rate** in Cubic Meter per Second (m^3/s)
  Volumetric Flow Rate Unit Conversion

Check other formula lists

- Aquifer Analysis and Properties Formulas
- Coefficient of Permeability Formulas
- Distance-Drawdown Analysis Formulas
- Open Wells Formulas
- Steady Flow into a Well Formulas

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