calculatoratoz.com

unitsconverters.com

Unconfined Aquifers Formulas

Calculators! Examples! Conversions!

Bookmark **calculatoratoz.com**, **unitsconverters.com**

Widest Coverage of Calculators and Growing - **30,000+ Calculators!**
Calculate With a Different Unit for Each Variable - **In built Unit Conversion!**
Widest Collection of Measurements and Units - **250+ Measurements!**

Feel free to SHARE this document with your friends!

Please leave your feedback here...

List of 11 Unconfined Aquifers Formulas

Unconfined Aquifers

Aquifer Constant

1) Aquifer Constant given Difference between Modified Drawdowns

Open Calculator

fx $$T = \frac{Q}{2.72 \cdot \Delta s}$$

ex $$26.52311 = \frac{1.01 m^3/s}{2.72 \cdot 0.014 m}$$

2) Aquifer Constant given Modified Drawdown

Open Calculator

fx $$T = \left(\frac{Q \cdot \log\left(\left(\frac{r_2}{r_1} \right), e \right)}{2.72 \cdot \left(s1' - s2' \right)} \right)$$

ex $$23.73511 = \left(\frac{1.01 m^3/s \cdot \log\left(\left(\frac{10.0 m}{1.07 m} \right), e \right)}{2.72 \cdot (1.721 m - 1.714 m)} \right)$$

3) Difference between Modified Drawdowns given Aquifer Constant

Open Calculator

fx $$\Delta s = \left(\frac{Q}{2.72 \cdot T} \right)$$

ex $$0.014002\text{m} = \left(\frac{1.01\text{m}^3/\text{s}}{2.72 \cdot 26.52} \right)$$

Modified Discharge And Drawdown in Unconfined Aquifers

4) Discharge given Difference between Modified Drawdowns

Open Calculator

fx $$Q = (2.72 \cdot \Delta s \cdot T)$$

ex $$1.009882\text{m}^3/\text{s} = (2.72 \cdot 0.014\text{m} \cdot 26.52)$$

5) Modified Drawdown in Well 1

Open Calculator

fx $$s1' = s_1 - \left(\frac{(s_1)^2}{2 \cdot H_i} \right)$$

ex $$1.240059\text{m} = 2.15\text{m} - \left(\frac{(2.15\text{m})^2}{2 \cdot 2.54\text{m}} \right)$$

6) Modified Drawdown in Well 1 given Aquifer Constant

Open Calculator

fx $$s1^{'} = s2^{'} + \left(\frac{Q \cdot \log\left(\left(\frac{r_2}{r_1} \right), e \right)}{2.72 \cdot T} \right)$$

ex $$1.720265\text{m} = 1.714\text{m} + \left(\frac{1.01\text{m}^3/\text{s} \cdot \log\left(\left(\frac{10.0\text{m}}{1.07\text{m}} \right), e \right)}{2.72 \cdot 26.52} \right)$$

7) Modified Drawdown in Well 2

Open Calculator

fx $$s2^{'} = s_2 - \left(\frac{(s_2)^2}{2 \cdot H_i} \right)$$

ex $$1.237871\text{m} = 2.136\text{m} - \left(\frac{(2.136\text{m})^2}{2 \cdot 2.54\text{m}} \right)$$

8) Modified Drawdown in Well 2 given Aquifer Constant

Open Calculator

fx $$s2^{'} = s1^{'} - \left(\frac{Q \cdot \log\left(\left(\frac{r_2}{r_1} \right), e \right)}{2.72 \cdot T} \right)$$

ex $$1.714735\text{m} = 1.721\text{m} - \left(\frac{1.01\text{m}^3/\text{s} \cdot \log\left(\left(\frac{10.0\text{m}}{1.07\text{m}} \right), e \right)}{2.72 \cdot 26.52} \right)$$

9) Thickness of Aquifer from Impermeable Layer given Modified Drawdown in Well 1

Open Calculator

fx $$H_{ui} = \left(\frac{(s_1)^2}{2 \cdot (s_1 - s1')} \right)$$

ex $$5.387529\text{m} = \left(\frac{(2.15\text{m})^2}{2 \cdot (2.15\text{m} - 1.721\text{m})} \right)$$

10) Thickness of Aquifer from Impermeable Layer given Modified Drawdown in Well 2

Open Calculator

fx $$H_{ui} = \left(\frac{(s_2)^2}{2 \cdot (s_2 - s2')} \right)$$

ex $$5.405801\text{m} = \left(\frac{(2.136\text{m})^2}{2 \cdot (2.136\text{m} - 1.714\text{m})} \right)$$

11) Unconfined Aquifer Discharge given Aquifer Constant

Open Calculator

fx $$Q = \frac{T}{\frac{\log\left(\left(\frac{r_2}{r_1}\right), e\right)}{2.72 \cdot (s1' - s2')}}$$

ex $$1.128506\text{m}^3/\text{s} = \frac{26.52}{\frac{\log\left(\left(\frac{10.0\text{m}}{1.07\text{m}}\right), e\right)}{2.72 \cdot (1.721\text{m} - 1.714\text{m})}}$$

Variables Used

- H_i Initial Aquifer Thickness *(Meter)*
- H_{ui} Unconfined Aquifer Thickness *(Meter)*
- Q Discharge *(Cubic Meter per Second)*
- r_1 Radial Distance at Observation Well 1 *(Meter)*
- r_2 Radial Distance at Observation Well 2 *(Meter)*
- s_1 Drawdown in Well 1 *(Meter)*
- s_2 Drawdown in Well 2 *(Meter)*
- $s1'$ Modified Drawdown 1 *(Meter)*
- $s2'$ Modified Drawdown 2 *(Meter)*
- T Aquifer Constant
- Δs Difference in Drawdowns *(Meter)*

Constants, Functions, Measurements used

- Constant: **e**, 2.71828182845904523536028747135266249
  Napier's constant
- Function: **log**, log(Base, Number)
  Logarithmic function is an inverse function to exponentiation.
- Measurement: **Length** in Meter (m)
  Length Unit Conversion
- Measurement: **Volumetric Flow Rate** in Cubic Meter per Second (m^3/s)
  Volumetric Flow Rate Unit Conversion

Check other formula lists

- **Basic Definitions Formulas**
- **Characteristic Well Losses Formulas**
- **Confined Aquifers Formulas**
- **Unconfined Aquifers Formulas**
- **Unsteady Flow Formulas**

Feel free to SHARE this document with your friends!

PDF Available in

English Spanish French German Russian Italian Portuguese Polish Dutch

9/21/2024 | 10:30:15 AM UTC

Please leave your feedback here...