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Flood Discharge Formulae Formulas

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List of 22 Flood Discharge Formulae Formulas

Flood Discharge Formulae

Creager's Formula

1) Constant used in FPS Unit when Flood Discharge by Creager's Formula

Open Calculator

fx $$C_c = \frac{Q_c}{46 \cdot (A_1)^{0.894 \cdot A_1^{-0.084}}}$$

ex $$60.66868 = \frac{4.2E6ft^3/s}{46 \cdot (2.6mi^2)^{0.894 \cdot (2.6mi^2)^{-0.084}}}$$

2) Flood Discharge by Creager

Open Calculator

fx $$Q_c = 46 \cdot C_c \cdot (A_1)^{0.894 \cdot A_1^{-0.084}}$$

ex $$4.2E\hat{}6ft^3/s = 46 \cdot 60 \cdot (2.6mi^2)^{0.894 \cdot (2.6mi^2)^{-0.084}}$$

Dicken's Formula

3) Area of Basin given Flood Discharge by Dicken's Formula

Open Calculator

fx $$A_{km} = \left(\frac{Q_D}{C_D}\right)^{\frac{4}{3}}$$

ex $$2.4km^2 = \left(\frac{695125.6m^3/s}{11.4}\right)^{\frac{4}{3}}$$

4) Constant used in Flood Discharge by Dicken's Formula

Open Calculator

fx $$C_D = \left(\frac{Q_D}{(A_{km})^{\frac{3}{4}}} \right)$$

ex $$11.4 = \left(\frac{695125.6 m^3/s}{(2.4 km^2)^{\frac{3}{4}}} \right)$$

5) Flood Discharge by Dicken's Formula

Open Calculator

fx $$Q_D = C_D \cdot (A_{km})^{\frac{3}{4}}$$

ex $$695125.6 m^3/s = 11.4 \cdot (2.4 km^2)^{\frac{3}{4}}$$

6) Flood Discharge by Dicken's Formula for Northern India

Open Calculator

fx $$Q_D = 11.4 \cdot (A_{km})^{\frac{3}{4}}$$

ex $$695125.6 m^3/s = 11.4 \cdot (2.4 km^2)^{\frac{3}{4}}$$

Fannning's Formula

7) Catchment Area given Flood Discharge by Fanning's Formula

Open Calculator

fx $$A_{km} = \left(\frac{Q_F}{C_F} \right)^{\frac{6}{5}}$$

ex $$2.4 km^2 = \left(\frac{526837.2 m^3/s}{2.54} \right)^{\frac{6}{5}}$$

8) Constant used in Flood Discharge by Fanning's Formula

Open Calculator

fx $$C_F = \left(\frac{Q_F}{(A_{km})^{\frac{5}{6}}} \right)$$

ex $$2.54 = \left(\frac{526837.2 m^3/s}{(2.4 km^2)^{\frac{5}{6}}} \right)$$

9) Flood Discharge by Fanning's Formula

Open Calculator

fx $$Q_F = C_F \cdot (A_{km})^{\frac{5}{6}}$$

ex $$526837.2 m^3/s = 2.54 \cdot (2.4 km^2)^{\frac{5}{6}}$$

Fuller's Formula

10) Constant used in Flood Discharge by Fuller's Formula

fx

Open Calculator

$$C_{FL} = \left(\frac{Q_{FL}}{\left((A_{km})^{0.8}\right) \cdot (1 + 0.8 \cdot \log(T_m, e)) \cdot \left(1 + 2.67 \cdot (A_{km})^{-0.3}\right)} \right)$$

ex $$0.185 = \left(\frac{25355.77 m^3/s}{\left((2.4 km^2)^{0.8}\right) \cdot (1 + 0.8 \cdot \log(2.2 Year, e)) \cdot \left(1 + 2.67 \cdot (2.4 km^2)^{-0.3}\right)} \right)$$

11) Constant used in FPS Unit given Flood Discharge by Fuller's Formula

Open Calculator

$$C_{FLF} = \left(\frac{Q_{FLF}}{\left((A_1)^{0.8}\right) \cdot (1 + 0.8 \cdot \log(T_m, e)) \cdot \left(1 + 2 \cdot (A_1)^{-0.2}\right)} \right)$$

ex $$27.99927 = \left(\frac{321.30 ft^3/s}{\left((2.6 mi^2)^{0.8}\right) \cdot (1 + 0.8 \cdot \log(2.2 Year, e)) \cdot \left(1 + 2 \cdot (2.6 mi^2)^{-0.2}\right)} \right)$$

12) Flood Discharge by Fuller's Formula

Open Calculator

$$Q_{FL} = C_{FL} \cdot \left((A_{km})^{0.8}\right) \cdot (1 + 0.8 \cdot \log(T_m, e)) \cdot \left(1 + 2.67 \cdot (A_{km})^{-0.3}\right)$$

ex $$25355.77 m^3/s = 0.185 \cdot \left((2.4 km^2)^{0.8}\right) \cdot (1 + 0.8 \cdot \log(2.2 Year, e)) \cdot \left(1 + 2.67 \cdot (2.4 km^2)^{-0.3}\right)$$

13) Flood Discharge in FPS Unit by Fuller's Formula

Open Calculator

$$Q_{FLF} = C_{FLF} \cdot \left((A_1)^{0.8}\right) \cdot (1 + 0.8 \cdot \log(T_m, e)) \cdot \left(1 + 2 \cdot (A_1)^{-0.2}\right)$$

ex $$321.3084 ft^3/s = 28 \cdot \left((2.6 mi^2)^{0.8}\right) \cdot (1 + 0.8 \cdot \log(2.2 Year, e)) \cdot \left(1 + 2 \cdot (2.6 mi^2)^{-0.2}\right)$$

Inglis Formula

14) Flood Discharge by Inglis Formula

Open Calculator

$$Q_I = \frac{123 \cdot A_{km}}{\sqrt{A_{km} + 10.4}}$$

ex $$190550.4 m^3/s = \frac{123 \cdot 2.4 km^2}{\sqrt{2.4 km^2 + 10.4}}$$

15) Flood Discharge in FPS Unit by Inglis Formula

Open Calculator

fx $$Q_{IF} = \frac{7000 \cdot A_1}{\sqrt{A_1 + 4}}$$

ex $$7084.317\text{ft}^3/\text{s} = \frac{7000 \cdot 2.6\text{mi}^2}{\sqrt{2.6\text{mi}^2 + 4}}$$

Nawab Jang Bahadur Formula

16) Constant used in Flood Discharge by Nawab Jang Bahadur Formula

Open Calculator

fx $$C_N = \frac{Q_N}{(A_{km})^{0.993-(\frac{1}{14})\cdot\log 10(A_{km})}}$$

ex $$48 = \frac{128570.5\text{m}^3/\text{s}}{(2.4\text{km}^2)^{0.993-(\frac{1}{14})\cdot\log 10(2.4\text{km}^2)}}$$

17) Constant used in FPS Unit given Flood Discharge by Nawab Jang Bahadur Formula

Open Calculator

fx $$C_{NF} = \left(\frac{Q_{NF}}{(A_1)^{0.92-(\frac{1}{14})\cdot\log 10(A_1)}}\right)$$

ex $$1600 = \left(\frac{3746.224\text{ft}^3/\text{s}}{(2.6\text{mi}^2)^{0.92-(\frac{1}{14})\cdot\log 10(2.6\text{mi}^2)}}\right)$$

18) Flood Discharge by Nawab Jang Bahadur Formula

Open Calculator

fx $$Q_N = C_N \cdot (A_{km})^{0.993-(\frac{1}{14})\cdot\log 10(A_{km})}$$

ex $$128570.5\text{m}^3/\text{s} = 48 \cdot (2.4\text{km}^2)^{0.993-(\frac{1}{14})\cdot\log 10(2.4\text{km}^2)}$$

19) Flood Discharge in FPS Unit by Nawab Jang Bahadur Formula

Open Calculator

fx $$Q_{NF} = C_{NF} \cdot (A_1)^{0.92-(\frac{1}{14})\cdot\log 10(A_1)}$$

ex $$3746.224\text{ft}^3/\text{s} = 1600 \cdot (2.6\text{mi}^2)^{0.92-(\frac{1}{14})\cdot\log 10(2.6\text{mi}^2)}$$

Ryve's Formula

20) Catchment Area for Flood Discharge by Ryve's Formula

Open Calculator

fx $$A_{km} = \left(\frac{Q_R}{C_R}\right)^{\frac{3}{2}}$$

ex $$2.399999\text{km}^2 = \left(\frac{120997.9\text{m}^3/\text{s}}{6.75}\right)^{\frac{3}{2}}$$

21) Constant used in Flood Discharge by Ryve's Formula

Open Calculator

fx $$C_R = \left(\frac{Q_R}{(A_{km})^{\frac{2}{3}}}\right)$$

ex $$6.749998 = \left(\frac{120997.9\text{m}^3/\text{s}}{(2.4\text{km}^2)^{\frac{2}{3}}}\right)$$

22) Flood Discharge by Ryve's Formula

Open Calculator

fx $$Q_R = C_R \cdot (A_{km})^{\frac{2}{3}}$$

ex $$120997.9\text{m}^3/\text{s} = 6.75 \cdot (2.4\text{km}^2)^{\frac{2}{3}}$$

Variables Used

- A_1 Area of Basin *(Square Mile)*
- A_{km} Catchment Area for Flood Discharge *(Square Kilometer)*
- C_c Creager Constant
- C_D Dicken's Constant
- C_F Fanning's Constant
- C_{FL} Fuller's Constant
- C_{FLF} Fuller's Constant for FPS
- C_N Nawab Jang Bahadur Constant
- C_{NF} Nawab Jang Bahadur Constant for FPS
- C_R Ryve's Constant
- Q_c Flood Discharge by Creager's Formula *(Cubic Foot per Second)*
- Q_D Flood Discharge by Dicken's Formula *(Cubic Meter per Second)*
- Q_F Flood Discharge by Fanning's Formula *(Cubic Meter per Second)*
- Q_{FL} Flood Discharge by Fuller's Formula *(Cubic Meter per Second)*
- Q_{FLF} Flood Discharge by Fuller's Formula in FPS *(Cubic Foot per Second)*
- Q_I Flood Discharge by Inglish Formula *(Cubic Meter per Second)*
- Q_{IF} Flood Discharge by Inglish Formula in FPS *(Cubic Foot per Second)*
- Q_N Flood Discharge by Nawab Jung Bahadur's Formula *(Cubic Meter per Second)*
- Q_{NF} Flood Discharge by Nawab J Bahadur Formula for FPS *(Cubic Foot per Second)*
- Q_R Flood Discharge by Ryve's Formula *(Cubic Meter per Second)*
- T_m Time Period for a Flood Discharge *(Year)*

Constants, Functions, Measurements used

- Constant: **e**, 2.71828182845904523536028747135266249
  Napier's constant
- Function: **log**, log(Base, Number)
  Logarithmic function is an inverse function to exponentiation.
- Function: **log10**, log10(Number)
  The common logarithm, also known as the base-10 logarithm or the decimal logarithm, is a mathematical function that is the inverse of the exponential function.
- Function: **sqrt**, sqrt(Number)
  A square root function is a function that takes a non-negative number as an input and returns the square root of the given input number.
- Measurement: **Time** in Year (Year)
  Time Unit Conversion
- Measurement: **Area** in Square Mile (mi²), Square Kilometer (km²)
  Area Unit Conversion
- Measurement: **Volumetric Flow Rate** in Cubic Foot per Second (ft³/s), Cubic Meter per Second (m³/s)
  Volumetric Flow Rate Unit Conversion

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- **Evaporation and Transpiration Formulas**
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