

Important Estimation of Watershed Erosion and Sediment Delivery Ratio Formulas PDF



Formulas
Examples
with Units

List of 10

Important Estimation of Watershed Erosion and Sediment Delivery Ratio Formulas

1) Area of Catchment given Annual Sediment Yield Rate Formula

Formula

$$A = \left(\frac{0.00323}{q_{sv}} \right)^{\frac{1}{0.28}}$$

Example with Units

$$0.5304 \text{ km}^2 = \left(\frac{0.00323}{0.0038575} \right)^{\frac{1}{0.28}}$$

Evaluate Formula

2) Area of Catchment given Volume of Sediment Yield per Year Formula

Formula

$$A = \left(\frac{Q_{sv}}{0.00323} \right)^{\frac{1}{0.72}}$$

Example with Units

$$3.3511 \text{ km}^2 = \left(\frac{0.007715}{0.00323} \right)^{\frac{1}{0.72}}$$

Evaluate Formula

3) Catchment Area given Annual Sediment Yield Rate Formula

Formula

$$A = \left(\frac{0.00597}{q_{sv}} \right)^{\frac{1}{0.24}}$$

Example with Units

$$6.17 \text{ km}^2 = \left(\frac{0.00597}{0.0038575} \right)^{\frac{1}{0.24}}$$

Evaluate Formula

4) Catchment Area given Volume of Sediment Yield per Year Formula

Formula

$$A = \left(\frac{Q_{sv}}{0.00597} \right)^{\frac{1}{0.76}}$$

Example with Units

$$1.4013 \text{ km}^2 = \left(\frac{0.007715}{0.00597} \right)^{\frac{1}{0.76}}$$

Evaluate Formula

5) Dhruv Narayan Et Al's Equation for Annual Runoff Volume Formula

Formula

$$Q_v = \frac{Q_s - 5.5}{11.1}$$

Example with Units

$$19.5 \text{ m}^3 = \frac{221.95 - 5.5}{11.1}$$

Evaluate Formula



6) Dhruv Narayan Et Al's Equation for Annual Sediment Yield Rate Formula

Formula

$$Q_s = \left(5.5 + \left(11.1 \cdot Q_V \right) \right)$$

Example with Units

$$221.95 = \left(5.5 + \left(11.1 \cdot 19.5 \text{m}^3 \right) \right)$$

Evaluate Formula 

7) Joglekar's Equation for Annual Sediment Yield Rate Formula

Formula

$$q_{sv} = \left(\frac{0.00597}{A^{0.24}} \right)$$

Example with Units

$$0.0051 = \left(\frac{0.00597}{2.0 \text{km}^2^{0.24}} \right)$$

Evaluate Formula 

8) Joglekar's Equation for Volume of Sediment Yield per Year from Catchment Area Formula

Formula

$$Q_{sv} = \left(0.00597 \cdot A^{0.76} \right)$$

Example with Units

$$0.0101 = \left(0.00597 \cdot 2.0 \text{km}^2^{0.76} \right)$$

Evaluate Formula 

9) Khosla's Equation for Annual Sediment Yield Rate Formula

Formula

$$q_{sv} = \frac{0.00323}{A^{0.28}}$$

Example with Units

$$0.0027 = \frac{0.00323}{2.0 \text{km}^2^{0.28}}$$

Evaluate Formula 

10) Khosla's Equation for Volume of Sediment Yield per Year from Catchment Area Formula

Formula

$$Q_{sv} = 0.00323 \cdot \left(A^{0.72} \right)$$

Example with Units

$$0.0053 = 0.00323 \cdot \left(2.0 \text{km}^2^{0.72} \right)$$



Evaluate Formula 



Variables used in list of Estimation of Watershed Erosion and Sediment Delivery Ratio Formulas above

- **A** Area of Catchment (*Square Kilometer*)
- **Q_S** Annual Sediment Yield Rate from Watershed
- **q_{SV}** Annual Sediment Yield Rate
- **Q_{SV}** Volume of Sediment Yield per Year
- **Q_V** Runoff Volume (*Cubic Meter*)

Constants, Functions, Measurements used in list of Estimation of Watershed Erosion and Sediment Delivery Ratio Formulas above

- **Measurement: Volume** in Cubic Meter (m³)
Volume Unit Conversion 
- **Measurement: Area** in Square Kilometer (km²)
Area Unit Conversion 



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