

Important Rainfall Infiltration Method Formulas PDF

Formulas
Examples
with Units

List of 43 Important Rainfall Infiltration Method Formulas

1) Catchment Area when Recharge from Rainfall is Considered Formula ↻

Formula

$$A_{cr} = \frac{R_{rfm}}{f \cdot P_{nm}}$$

Example with Units

$$13.2576 \text{ m}^2 = \frac{7 \text{ m}^3/\text{s}}{22 \cdot 0.024 \text{ m}}$$

Evaluate Formula ↻

2) Normal Rainfall in Monsoon Season Formula ↻

Formula

$$P_{nm} = \frac{R_{rfm}}{f \cdot A_{cr}}$$

Example with Units

$$0.0239 \text{ m} = \frac{7 \text{ m}^3/\text{s}}{22 \cdot 13.3 \text{ m}^2}$$

Evaluate Formula ↻

3) Rainfall Infiltration Factor when Recharge from Rainfall is Considered Formula ↻

Formula

$$f = \frac{R_{rfm}}{A_{cr} \cdot P_{nm}}$$

Example with Units

$$21.9298 = \frac{7 \text{ m}^3/\text{s}}{13.3 \text{ m}^2 \cdot 0.024 \text{ m}}$$

Evaluate Formula ↻

4) Recharge from Rainfall in Monsoon Season by Rainfall Infiltration Method Formula ↻

Formula

$$R_{rfm} = f \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$7.0224 \text{ m}^3/\text{s} = 22 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula ↻

5) Maximum value of Rainfall Factor for Various Hydrogeologic Conditions based on the Norms Formulas ↻

5.1) Recharge from Rainfall in Alluvial East Coast Areas for Known Maximum Rainfall Factor Formula ↻

Formula

$$R_{aec} = 18 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$5.7456 \text{ m}^3/\text{s} = 18 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula ↻



5.2) Recharge from Rainfall in Alluvial Indo Gangetic and Inland Areas for Known Max Rainfall Factor Formula

Formula

$$R_{ai} = 25 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$7.98 \text{ m}^3/\text{s} = 25 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

5.3) Recharge from Rainfall in Alluvial West Coast Areas for Known Maximum Rainfall Factor Formula

Formula

$$R_{awc} = 12 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$3.8304 \text{ m}^3/\text{s} = 12 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

5.4) Recharge from Rainfall in Hard Rock Areas with Consolidated Sandstone for Maximum Rainfall Factor Formula

Formula

$$R_{hra} = 8 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$2.5536 \text{ m}^3/\text{s} = 8 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

5.5) Recharge from Rainfall in Hard Rock Areas with Granulite Facies for Known Rainfall Factor Formula

Formula

$$R_{hra} = 6 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$1.9152 \text{ m}^3/\text{s} = 6 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

5.6) Recharge from Rainfall in Hard Rock Areas with Laterite for Known Maximum Rainfall Factor Formula

Formula

$$R_{hrl} = 14 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$4.4688 \text{ m}^3/\text{s} = 14 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

5.7) Recharge from Rainfall in Hard Rock Areas with Low Clay Content for Known Rainfall Factor Formula

Formula

$$R_{hrc} = 12 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$3.8304 \text{ m}^3/\text{s} = 12 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

5.8) Recharge from Rainfall in Hard Rock Areas with Massive Poorly Fractured Rocks Formula

Formula

$$R_{hra} = 7 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$2.2344 \text{ m}^3/\text{s} = 7 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

5.9) Recharge from Rainfall in Hard Rock Areas with Phyllites, Shales for Known Max Rainfall Factor Formula

Formula

$$R_{hrp} = 14 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$4.4688 \text{ m}^3/\text{s} = 14 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 



5.10) Recharge from Rainfall in Hard Rock Areas with Semi Consolidated Sandstone for Max Rainfall Factor Formula

Formula

$$R_{hra} = 8 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$2.5536 \text{ m}^3/\text{s} = 8 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

5.11) Recharge from Rainfall in Hard Rock Areas with Significant Clay Content for Known Rainfall Factor Formula

Formula

$$R_{hra} = 9 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$2.8728 \text{ m}^3/\text{s} = 9 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

5.12) Recharge from Rainfall in Hard Rock Areas with Vesicular and Jointed Basalt for Max Rainfall Factor Formula

Formula

$$R_{hra} = 9 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$2.8728 \text{ m}^3/\text{s} = 9 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

5.13) Recharge from Rainfall in Hard Rock Areas with Weathered Basalt for Known Maximum Rainfall Factor Formula

Formula

$$R_{hra} = 6 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$1.9152 \text{ m}^3/\text{s} = 6 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

6) Minimum Value of Rainfall Factor for Various Hydrogeologic Conditions based on the Norms Formulas

6.1) Recharge from Rainfall in Hard Rock Areas consisting Vesicular and Jointed Basalt Formula

Formula

$$R_{hrv} = 5 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$1.596 \text{ m}^3/\text{s} = 5 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

6.2) Recharge from Rainfall in Hard Rock Areas consisting Weathered Basalt Formula

Formula

$$R_{wb} = 4 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$1.2768 \text{ m}^3/\text{s} = 4 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

6.3) Recharge from Rainfall in Hard Rock Areas of Massive Poorly Fractured Rocks Formula

Formula

$$R_{fr} = 5 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$1.596 \text{ m}^3/\text{s} = 5 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 



6.4) Recharge from Rainfall in Hard Rock Areas of Significant Clay content for Known Min Rainfall Factor Formula

Formula

$$R_{hra} = 8 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$2.5536 \text{ m}^3/\text{s} = 8 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

6.5) Recharge from Rainfall in Hard Rock Areas with Consolidated Sandstone Formula

Formula

$$R_{ss} = 6 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$1.9152 \text{ m}^3/\text{s} = 6 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

6.6) Recharge from Rainfall in Hard Rock Areas with Granulite Facies for Known Minimum Rainfall Factor Formula

Formula

$$R_{gf} = 4 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$1.2768 \text{ m}^3/\text{s} = 4 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

6.7) Recharge from Rainfall in Hard Rock Areas with Laterite for Known Min Rainfall Factor Formula

Formula

$$R_{hra} = 12 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$3.8304 \text{ m}^3/\text{s} = 12 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

6.8) Recharge from Rainfall in Hard Rock Areas with Low Clay content for Known Minimum Rainfall Factor Formula

Formula

$$R_{hra} = 10 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$3.192 \text{ m}^3/\text{s} = 10 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

6.9) Recharge from Rainfall in Hard Rock Areas with Phyllites, Shales given Min Rainfall Factor Formula

Formula

$$R_{hra} = 10 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$3.192 \text{ m}^3/\text{s} = 10 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

6.10) Recharge from Rainfall in Hard Rock Areas with Semi Consolidated Sandstone for Min Rainfall Factor Formula

Formula

$$R_{ss} = 6 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$1.9152 \text{ m}^3/\text{s} = 6 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

6.11) Recharge from Rainfall in Indo Gangetic and Inland Alluvial Areas for Known Minimum Rainfall Factor Formula

Formula

$$R_{rf} = 20 \cdot A_{cr} \cdot P_{nm}$$


Example with Units

$$6.384 \text{ m}^3/\text{s} = 20 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 



6.12) Recharge from Rainfall in Silty Alluvial Areas for Known Minimum Rainfall Factor

Formula 

Formula


$$R_{rf} = 20 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$6.384 \text{ m}^3/\text{s} = 20 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

6.13) Recharge from Rainfall in West Coast Alluvial Areas for Known Minimum Rainfall Factor

Formula 

Formula

$$R_{awc} = 8 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$2.5536 \text{ m}^3/\text{s} = 8 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

7) Recommended Value for Rainfall Factor for Various Hydrogeologic Conditions based on Norms Formulas

7.1) Recharge from Rainfall in Alluvial Indo Gangetic and Inland Areas Formula

Formula

$$R_{ai} = 22 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$7.0224 \text{ m}^3/\text{s} = 22 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

7.2) Recharge from Rainfall in East Coast Alluvial Areas Formula

Formula

$$R_{aec} = 16 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$5.1072 \text{ m}^3/\text{s} = 16 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

7.3) Recharge from Rainfall in Hard Rock Areas consisting Massive Poorly Fractured Rocks Formula

Formula

$$R_{fr} = 6 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$1.9152 \text{ m}^3/\text{s} = 6 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

7.4) Recharge from Rainfall in Hard Rock Areas of Consolidated Sandstone Formula

Formula

$$R_{ss} = 7 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$2.2344 \text{ m}^3/\text{s} = 7 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

7.5) Recharge from Rainfall in Hard Rock Areas with Granulite Facies Formula

Formula

$$R_{gf} = 5 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$1.596 \text{ m}^3/\text{s} = 5 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

7.6) Recharge from Rainfall in Hard Rock Areas with Laterite Formula

Formula

$$R_{hrl} = 13 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$4.1496 \text{ m}^3/\text{s} = 13 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 



7.7) Recharge from Rainfall in Hard Rock Areas with Low Clay Content Formula

Formula

$$R_{hrc} = 11 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$3.5112 \text{ m}^3/\text{s} = 11 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

7.8) Recharge from Rainfall in Hard Rock Areas with Phyllites, Shales Formula

Formula

$$R_{hrp} = 12 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$3.8304 \text{ m}^3/\text{s} = 12 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

7.9) Recharge from Rainfall in Hard Rock Areas with Semi Consolidated Sandstone Formula

Formula

$$R_{ss} = 7 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$2.2344 \text{ m}^3/\text{s} = 7 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

7.10) Recharge from Rainfall in Hard Rock Areas with Significant Clay Content Formula

Formula

$$R_{hra} = 8 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$2.5536 \text{ m}^3/\text{s} = 8 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

7.11) Recharge from Rainfall in Hard Rock Areas with Vesicular and Jointed Basalt Formula

Formula

$$R_{hra} = 8 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$2.5536 \text{ m}^3/\text{s} = 8 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

7.12) Recharge from Rainfall in Hard Rock Areas with Weathered Basalt Formula

Formula

$$R_{wb} = 5 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$1.596 \text{ m}^3/\text{s} = 5 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$

Evaluate Formula 

7.13) Recharge from Rainfall in West Coast Areas based on Recommended Rainfall Infiltration Factor Formula

Formula

$$R_{awc} = 10 \cdot A_{cr} \cdot P_{nm}$$

Example with Units

$$3.192 \text{ m}^3/\text{s} = 10 \cdot 13.3 \text{ m}^2 \cdot 0.024 \text{ m}$$




Evaluate Formula 



Variables used in list of Rainfall Infiltration Method Formulas above

- **A_{cr}** Area of Computation for Recharge (Square Meter)
- **f** Rainfall Infiltration Factor
- **P_{nm}** Normal Rainfall in Monsoon Season (Meter)
- **R_{aec}** Recharge from Rainfall in Alluvial East Coast (Cubic Meter per Second)
- **R_{ai}** Recharge from Rainfall in Alluvial Indo (Cubic Meter per Second)
- **R_{awc}** Recharge from Rainfall in Alluvial West Coast (Cubic Meter per Second)
- **R_{fr}** Rainfall Recharge in Hard Rock Poorly Fractured (Cubic Meter per Second)
- **R_{gf}** Rainfall Recharge in Hard Rock Granulite Facies (Cubic Meter per Second)
- **R_{hra}** Recharge from Rainfall in Hard Rock Areas (Cubic Meter per Second)
- **R_{hrc}** Recharge from Rainfall in Hard Rock Low Clay (Cubic Meter per Second)
- **R_{hrl}** Recharge from Rainfall in Hard Rock Laterite (Cubic Meter per Second)
- **R_{hrp}** Recharge from Rainfall in Hard Rock Phyllites (Cubic Meter per Second)
- **R_{hrv}** Recharge from Rainfall in Hard Rock Vesicular (Cubic Meter per Second)
- **R_{rf}** Recharge from Rainfall (Cubic Meter per Second)
- **R_{rfm}** Recharge from Rainfall in Monsoon Season (Cubic Meter per Second)
- **R_{ss}** Rainfall Recharge in Hard Rock Sandstone (Cubic Meter per Second)
- **R_{wb}** Rainfall Recharge in Hard Rock Weathered Basalt (Cubic Meter per Second)

Constants, Functions, Measurements used in list of Rainfall Infiltration Method Formulas above







- **Measurement: Length** in Meter (m)
Length Unit Conversion 
- **Measurement: Area** in Square Meter (m²)
Area Unit Conversion 
- **Measurement: Volumetric Flow Rate** in Cubic Meter per Second (m³/s)
Volumetric Flow Rate Unit Conversion 



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