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Estimating the Design Sewage Discharge Formulas

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List of 15 Estimating the Design Sewage Discharge Formulas

Estimating the Design Sewage Discharge

1) Average Daily Flow given Maximum Daily Flow for Areas of Moderate Sizes

$$\text{fx } Q_{\text{av}} = \left(\frac{Q_{\text{d}}}{2} \right)$$

[Open Calculator !\[\]\(a870788d6ed9b8fd294b7654a8c8526b_img.jpg\)](#)

$$\text{ex } 6\text{m}^3/\text{s} = \left(\frac{12\text{m}^3/\text{s}}{2} \right)$$

2) Average Daily Flow given Maximum Hourly Flow

$$\text{fx } Q_{\text{av}} = \left(\frac{Q_{\text{h}}}{3} \right)$$

[Open Calculator !\[\]\(c50c8b7b2cc2cf9ff925edec0ee94c0d_img.jpg\)](#)

$$\text{ex } 6\text{m}^3/\text{s} = \left(\frac{18\text{m}^3/\text{s}}{3} \right)$$



3) Average Daily Flow given Minimum Daily Flow for Areas of Moderate Sizes

$$\text{fx } Q_{\text{av}} = \left(\frac{3}{2}\right) \cdot Q_{\text{min}}$$

[Open Calculator !\[\]\(cbe80b694ebd74fcfe136a095b608235_img.jpg\)](#)

$$\text{ex } 6\text{m}^3/\text{s} = \left(\frac{3}{2}\right) \cdot 4\text{m}^3/\text{s}$$

4) Average Daily Sewage Flow given Minimum Hourly Flow

$$\text{fx } Q_{\text{av}} = 3 \cdot Q_{\text{minh}}$$

[Open Calculator !\[\]\(3e2231b1ad3ca8da8658228c00dd08e0_img.jpg\)](#)

$$\text{ex } 6\text{m}^3/\text{s} = 3 \cdot 2\text{m}^3/\text{s}$$

5) Average Daily Sewage Flow given Peak Sewage Flow

$$\text{fx } Q_{\text{av}} = \frac{Q_{\text{max}}}{\frac{18 + \sqrt{P}}{4 + \sqrt{P}}}$$

[Open Calculator !\[\]\(0d5ec72f61334709c3fc9450209b754f_img.jpg\)](#)

$$\text{ex } 5.999977\text{m}^3/\text{s} = \frac{11.17\text{m}^3/\text{s}}{\frac{18 + \sqrt{150}}{4 + \sqrt{150}}}$$

6) Maximum Daily Flow for Areas of Moderate Sizes

$$\text{fx } Q_{\text{d}} = (2 \cdot Q_{\text{av}})$$

[Open Calculator !\[\]\(b64b40baaee5acddc1eab8538ba84754_img.jpg\)](#)

$$\text{ex } 12\text{m}^3/\text{s} = (2 \cdot 6\text{m}^3/\text{s})$$



7) Maximum Daily Flow given Maximum Hourly Flow

$$fx \quad Q_d = \frac{Q_h}{1.5}$$

[Open Calculator !\[\]\(e78f798d4ea5c530c9db49e7d26e6b95_img.jpg\)](#)

$$ex \quad 12m^3/s = \frac{18m^3/s}{1.5}$$

8) Maximum Hourly Flow given Average Daily Flow

$$fx \quad Q_h = (3 \cdot Q_{av})$$

[Open Calculator !\[\]\(05be7c7a8995decd503647c99211f7c2_img.jpg\)](#)

$$ex \quad 18m^3/s = (3 \cdot 6m^3/s)$$

9) Maximum Hourly Flow given Maximum Daily Flow for Areas of Moderate Sizes

$$fx \quad Q_h = (1.5 \cdot Q_d)$$

[Open Calculator !\[\]\(fe3aebe81acea8d45108cd2768939da7_img.jpg\)](#)

$$ex \quad 18m^3/s = (1.5 \cdot 12m^3/s)$$

10) Minimum Daily Flow for Areas of Moderate Sizes

$$fx \quad Q_{min} = \left(\frac{2}{3}\right) \cdot Q_{av}$$

[Open Calculator !\[\]\(899d8b7697d64725bf017d3296cfcf1b_img.jpg\)](#)

$$ex \quad 4m^3/s = \left(\frac{2}{3}\right) \cdot 6m^3/s$$



11) Minimum Daily Sewage Flow given Minimum Hourly Flow

$$fx \quad Q_{\min} = (2 \cdot Q_{\min h})$$

[Open Calculator !\[\]\(e2376d476d06eb31946dc01a69a4403a_img.jpg\)](#)

$$ex \quad 4\text{m}^3/\text{s} = (2 \cdot 2\text{m}^3/\text{s})$$

12) Minimum Hourly Flow given Minimum Daily Flow for Areas of Moderate Sizes

$$fx \quad Q_{\min h} = (0.5 \cdot Q_{\min})$$

[Open Calculator !\[\]\(0b5e7e25e8775f7e7e80906ada4f0021_img.jpg\)](#)

$$ex \quad 2\text{m}^3/\text{s} = (0.5 \cdot 4\text{m}^3/\text{s})$$

13) Minimum Hourly Sewage Flow given Average Daily Flow

$$fx \quad Q_{\min h} = \left(\frac{1}{3}\right) \cdot Q_{\text{av}}$$

[Open Calculator !\[\]\(bd3b31712ad9bab5a241210fa6925cdd_img.jpg\)](#)

$$ex \quad 2\text{m}^3/\text{s} = \left(\frac{1}{3}\right) \cdot 6\text{m}^3/\text{s}$$

14) Peak Sewage Flow given Population in Thousands

$$fx \quad Q_{\max} = Q_{\text{av}} \cdot \left(\frac{18 + \sqrt{P}}{4 + \sqrt{P}}\right)$$

[Open Calculator !\[\]\(7bc43b319a082987e20f7bf78f4bab80_img.jpg\)](#)

$$ex \quad 11.17004\text{m}^3/\text{s} = 6\text{m}^3/\text{s} \cdot \left(\frac{18 + \sqrt{150}}{4 + \sqrt{150}}\right)$$



15) Population in Thousands given Peak Sewage Flow [Open Calculator](#) 

$$\text{fx } P = \left(\frac{18 \cdot Q_{\text{av}} - 4 \cdot Q_{\text{max}}}{Q_{\text{max}} - Q_{\text{av}}} \right)^2$$

$$\text{ex } 150.0033 = \left(\frac{18 \cdot 6\text{m}^3/\text{s} - 4 \cdot 11.17\text{m}^3/\text{s}}{11.17\text{m}^3/\text{s} - 6\text{m}^3/\text{s}} \right)^2$$




Variables Used

- **P** Population in Thousands
- **Q_{av}** Average Daily Flow (*Cubic Meter per Second*)
- **Q_d** Maximum Daily Flow (*Cubic Meter per Second*)
- **Q_h** Maximum Hourly Flow (*Cubic Meter per Second*)
- **Q_{max}** Peak Sewage Flow (*Cubic Meter per Second*)
- **Q_{min}** Minimum Daily Flow (*Cubic Meter per Second*)
- **Q_{minh}** Minimum Hourly Flow (*Cubic Meter per Second*)



Constants, Functions, Measurements used

- **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:** **Volumetric Flow Rate** in Cubic Meter per Second (m³/s)
Volumetric Flow Rate Unit Conversion 



Check other formula lists

- [Design of a Chlorination System for Wastewater Disinfection Formulas](#) 
- [Estimating the Design Sewage Discharge Formulas](#) 
- [Population Forecast Method Formulas](#) 

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