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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

Open Calculator

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

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

Open Calculator

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

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

Open Calculator

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

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

Open Calculator

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

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

5) Average Daily Sewage Flow given Peak Sewage Flow

Open Calculator

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

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

Open Calculator

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

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

7) Maximum Daily Flow given Maximum Hourly Flow

Open Calculator

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

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

8) Maximum Hourly Flow given Average Daily Flow

Open Calculator

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

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

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

Open Calculator

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

ex $$18\text{m}^3/\text{s} = (1.5 \cdot 12\text{m}^3/\text{s})$$

10) Minimum Daily Flow for Areas of Moderate Sizes

Open Calculator

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

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

11) Minimum Daily Sewage Flow given Minimum Hourly Flow

Open Calculator

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

ex $$4m^3/s = (2 \cdot 2m^3/s)$$

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

Open Calculator

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

ex $$2m^3/s = (0.5 \cdot 4m^3/s)$$

13) Minimum Hourly Sewage Flow given Average Daily Flow

Open Calculator

fx $$Q_{minh} = \left(\frac{1}{3}\right) \cdot Q_{av}$$

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

14) Peak Sewage Flow given Population in Thousands

Open Calculator

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

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

15) Population in Thousands given Peak Sewage Flow

Open Calculator

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

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**
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