Sludge Drying Bed Area

Area of sludge drying beds from the daily sludge volume, the drying cycle and the depth of sludge applied, and the number of beds of a given size.

Method: Volume-per-cycle sizing of sludge drying beds

Input parameters

Unit system: SI

Parameter	Value	Unit
Wet sludge volume to dry per day	2.0000	m^3/d
Drying cycle (fill to removal)	15.000	d
Depth of sludge applied	250.00	mm
Area of one bed	40.000	m^2

Calculated results

Parameter	Value	Unit
Sludge applied per cycle	30.000	m^3
Total bed area	120.00	m^2
Number of beds	3.0000	

Notes for this case

- Each bed is filled, drains and dries for a cycle of one to four weeks depending on climate, so the beds must hold all the sludge produced during one cycle at the chosen depth (20–30 cm). Dividing by the area of one bed gives the number of beds, which also lets one be filled each day or few days. Allow extra area for the monsoon, or cover the beds.

Formula and method

$$V_c = \dot{V}_s t_c, \quad A = \frac{V_c}{d}, \quad n = \left\lceil \frac{A}{A_b} \right\rceil$$

Variables

$\dot{V}_s$	Wet sludge volume to dry per day	m^3/s
t_c	Drying cycle (fill to removal)	s
d	Depth of sludge applied	m
A_b	Area of one bed	m^2
V_c	Sludge applied per cycle	m^3
A	Total bed area	m^2
n	Number of beds	-

Method and standards

Drying beds.

Assumptions and limits

- Uniform sludge production.

References

Volume-per-cycle sizing of sludge drying beds

Report details

Report reference	FCC-38Y7-5NAW (the same inputs always give the same reference)
Generated	23 November 2026, 17:50 UTC
Calculator	Sludge Drying Bed Area
Method last reviewed	17 November 2026
Software release	FireCAD Calc, release of 22 November 2026
Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/environmental/wastewater/sludge-drying-bed-area

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.