SAN BERNARDINO COUNTY

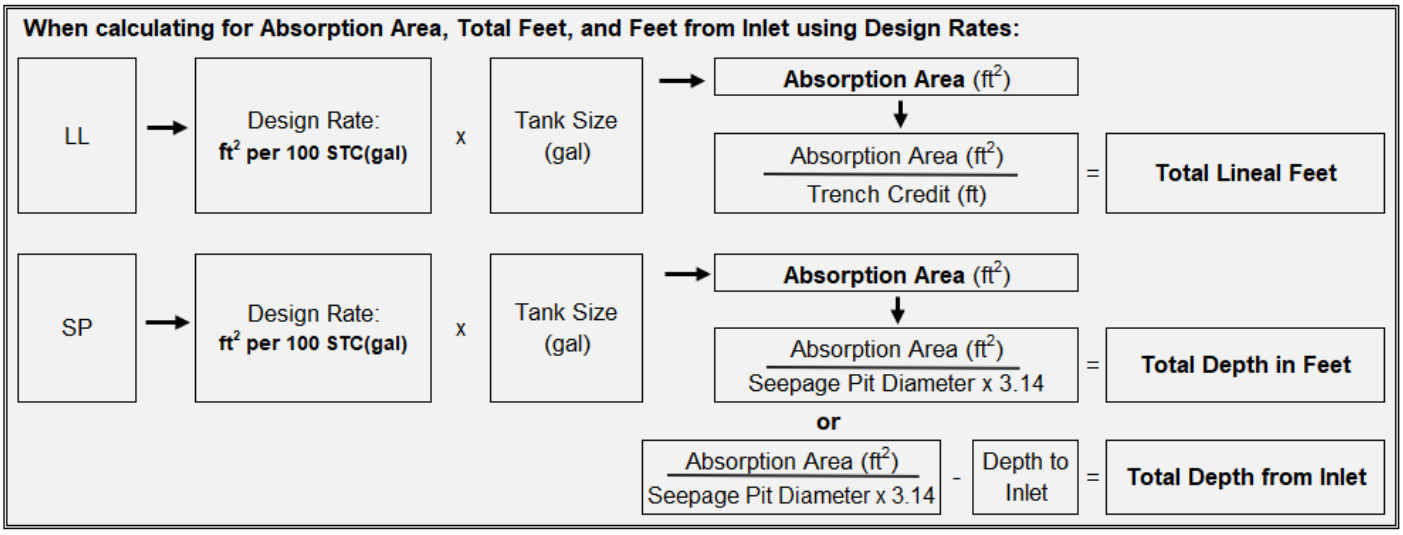
Public Health
Environmental Health Services

How to Calculate Design Rates and Absorption Area

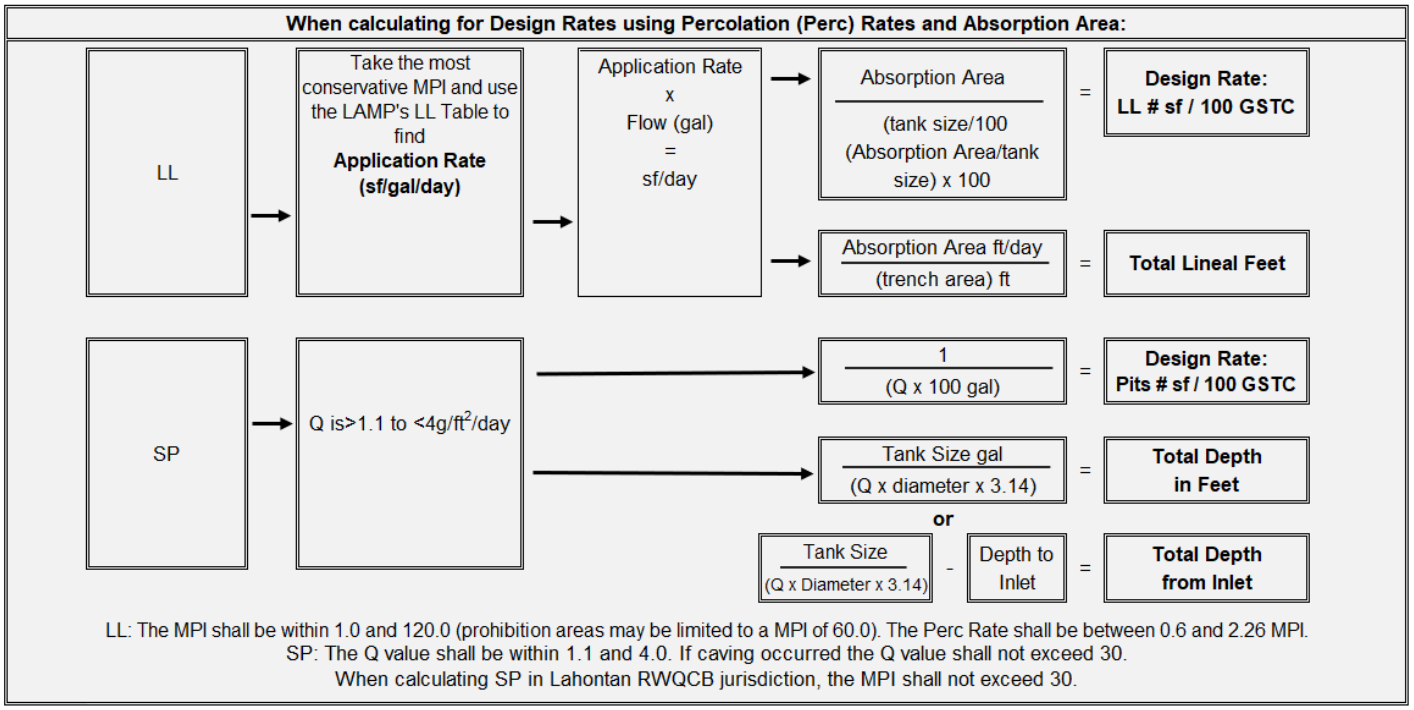
Written and Visual Sizing Equations

References			
MPI	Minutes per inch = Perc Rate	***Q***	Gallons of Sewage or Septic tank capacity, (whichever is greater) per square foot per day (g/sf/d)
ft²	Square Feet	***Trench Credit***	A mathematical credit applied in the calculation of leach lines required length which considers engineering allowances in efficient dispersal systems (e.g. expanded bundled polystyrene leaching chambers.
LAMP	Local Agency Management Program	***Leach Lines***	LLs cannot exceed 100ft in length. If length exceeds 100ft, split the length evenly between two or more trenches (e.g. a system requiring 240ft of trench should have three 80ft long lines).
STC(gal)	Septic Tank Capacity (gallons)	***SP Depth***	SPs should be no deeper than 30ft due to construction complexities. If the system needs more than 30ft of pit depth, split the depth evenly between two or more SPs (e.g. a system needing 75ft of SP should have three 25ft deep pits). The minimum separation between SPs is 12ft measured from edge to edge.
Gal/day	Gallons per day	***Design Rates***	San Bernardino County design rates are expressed in units of ft^2 per 100 STC(gal)

Formulas	
Absorption area (A):	$A(ft)^2 = \text{Tank Size (gal)} \times \text{DesignRate } (ft^2 \text{per 100 gal})$
Leach Lines (LL):	$\text{Total Trench Length} = A \div \text{Trench Credit}$
Leaching Chambers – IAPMO PS 63:	$\text{Total Trench Length} = (A * 0.7)/\text{Trench Credit (3ft)}$
Bundled Expanded Polystyrene – IAPMO IGC 276:	Total Trench Length= (A×0.7)÷Trench Credit (Dependent on bundle configuration)
Seepage Pit (SP):	Total Pit Depth from Inlet = A ÷ (Pit Diameter ÷ 3.14)-Depth to Inlet



Design Rate and Absorption Area Calculations (continued)



Trench Credit

(W x D):

- 3ft x 3ft.: 7ft² Trench Credit
- 3ft x 2ft.: 5ft² Trench Credit
- 3ft x 1ft.: 3ft² Trench Credit

Minimum separation between multiple leach lines based on trench dimensions:

- 3ft x 3ft.: 8ft² of separation
- 3ft x 2ft.: 6ft² of separation
- 3ft x 1ft.: 4ft² of separation

Trench Area Sizing Credit – For leach lines, the maximum creditable depth below the line is 3ft. When calculating usable area of trench, the first foot below the inlet will not be credited.