MOUND SYSTEM DESIGN WORKSHEETS

1 DETERMINE THE DAILY WASTEWATER FLOW

The daily wastewater flow is equal to the number of bedrooms x 150 gal per bedroom.

Daily Wastewater Flow_____

2 DETERMINE THE HYDRAULIC (DESIGN) LINEAR, SAND FILL, AND BASAL (SOIL) LOADING RATES

a. Hydraulic (Design) Linear Loading Rate

The hydraulic (design) linear loading rate is based on the soil percolation rate and the direction of effluent movement away from the mound system.

Where the soils indicate effluent movement will be predominately vertical, a higher linear loading rate may be selected. Typically 6 to 8 gpd/linear ft.

Where the soils indicate effluent movement will be predominately horizontal, a lower linear loading rate should be selected. Typically 2 to 4 gpd/linear ft.

Where the soils indicate a mixture of horizontal and vertical movement, the linear loading rate should be moderate. Typically 4 to 6 gpd/linear ft.

Linear Loading Rate_____

b. Basal (Soil) Loading Rate

Calculate the basal loading rate using Table 5 or Table 6 of R317-4-13.

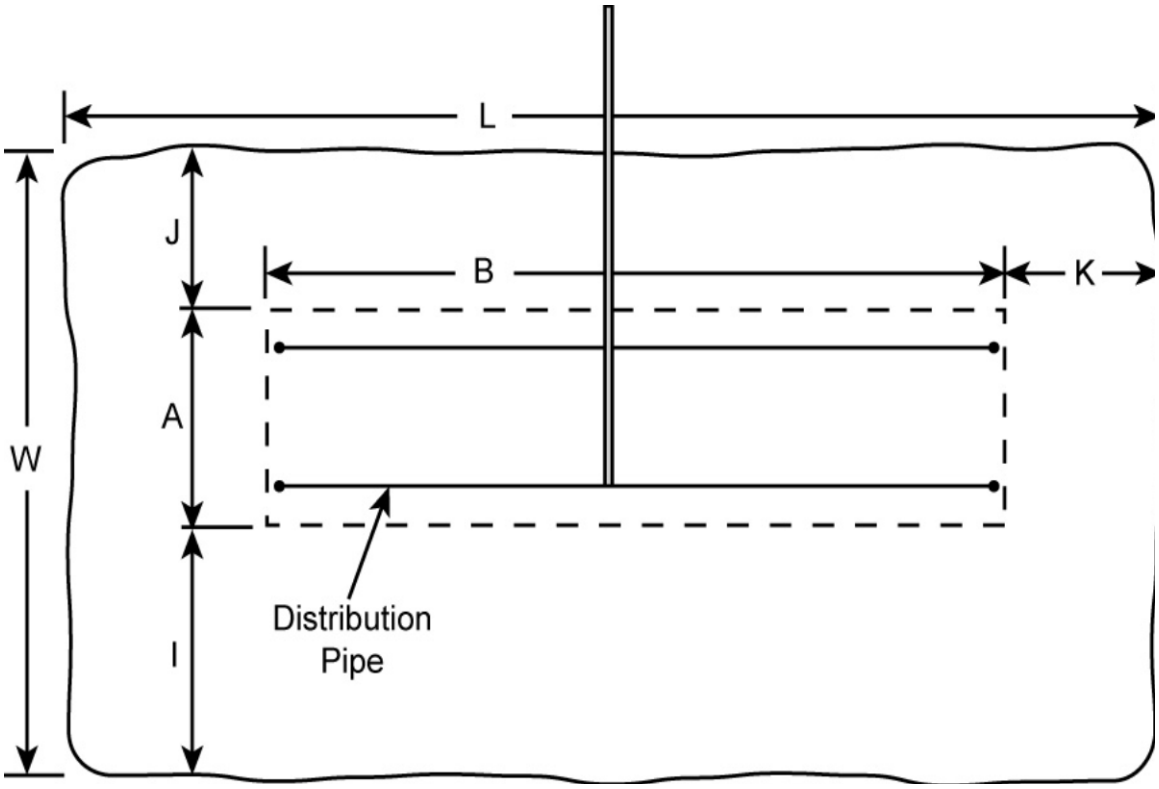
Effluent Loading Rate from Sand Fill to the Natural Soil Surface.

Basal (Soil) Loading Rate_____

c. Sand Fill Loading Rate

The design effluent loading rate through the absorption system bottom to sand fill interface shall be 1.0 gpd/sq ft. (Use 0.8 gpd/sq ft. for a more conservative design)

Sand Loading Rate_____



3 DETERMINE THE BASAL ABSORPTION AREA

The basal area is the area enclosed by B(A+I) for sloping sites and B(A+I+J) for level sites. It is a function of the long-term infiltration rate for the soil at the sand/soil interface.

a. Determine Width of Absorption Area (A) **A**_____

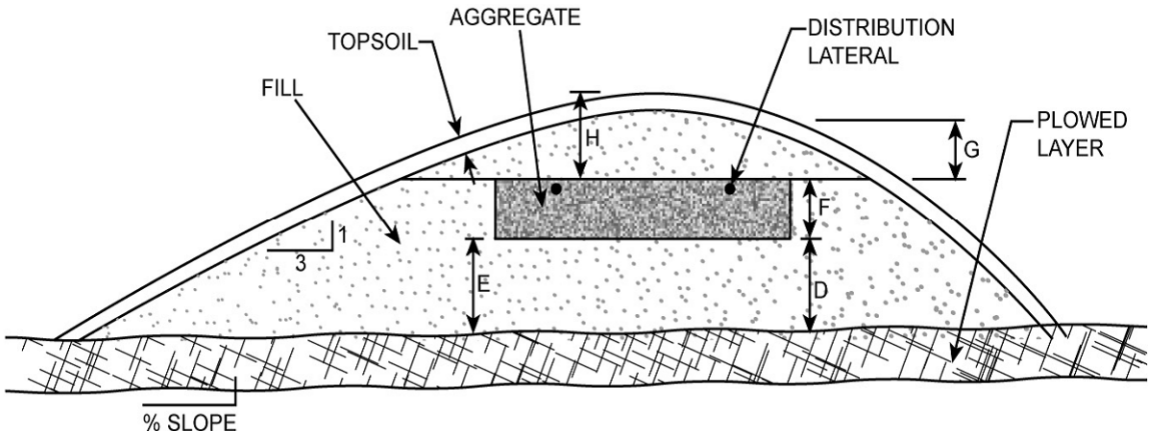
A = Linear loading rate ÷ Sand fill loading rate

b. Determine Length of Absorption Area (B) **B**_____

B = Daily wastewater flow ÷ Linear loading rate

4 DETERMINE THE MOUND HEIGHT

The mound height consists of the fill depth, trench depth, and the cap and topsoil cover depth.



a. Determine the Upslope Fill Depth (D) **D**_____

R317-4-6.15.C.2.a.iii states that the minimum depth of sand media over natural soil is 12 inches.

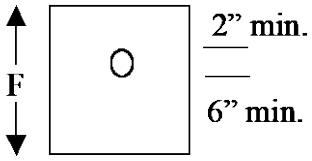
b. Determine the Downslope Fill Depth (E) **E**_____

On sloping sites, the fill depth below the absorption area must be greater downslope to keep the bottom at the same elevation.

E = D + (slope (decimal) x A)

c. Determine Bed Depth (F) **F**_____

The minimum thickness of aggregate media around the distribution pipes of the absorption system shall be the sum of six inches below the distribution pipe, the diameter of the distribution pipe, and two inches above the distribution pipe, or ten inches, whichever is larger



d. Determine Cap and Topsoil Depth (G and H)

The cap and topsoil layers provide frost protection, a medium for a vegetative cover, and promote runoff. The cap is usually a finer textured material that promotes more precipitation runoff and holds more moisture during dry periods. The topsoil is usually a silt loam.

The minimum cap depth (G) is 6 inches: **G**_____

The recommended topsoil depth is 6 inches (H = 6" + 6" = 12"): **H**_____

5 DETERMINE THE TOTAL MOUND AREA WIDTH AND LENGTH

a. Determine Downslope Width of Absorption Area (I) **I**_____

For sloping sites, A + I = Linear loading rate ÷ Soil hydraulic loading rate

For sites with no slope, A + 2I = Linear loading rate ÷ Soil hydraulic loading rate

b. Downslope width (I) **I**_____

It is also necessary to solve for I using the following equation. The greater value must be used.

I = (3 (E + F + G)/12)*(downslope correction factor)

c. Upslope width (J) **J**_____

J is a function of the 3:1 recommended side slope and is dependent upon the depth of the mound and the slope of the site. For level sites, J and I are equal.

J = (3(D + F + G)/12)*(upslope correction factor)

d. Endslope length (K) **K**_____

K is a function of the mound depth and the desired mound end slope. The recommended end slope is 3:1. Steeper mound side slopes are not recommended because they can become a safety hazard if the mound is to be mowed.

K = mound depth at the center x 3 = 3[(D + E)/2 + F + H]/12 (mound height dimensions in inches)

e. Total mound length (L) **L**_____

L = B + 2K

f. Total mound width (W) **W**_____

W = J + A + I