PSDS Design - Worksheet "M"

Treatment Mound: Area Sizing

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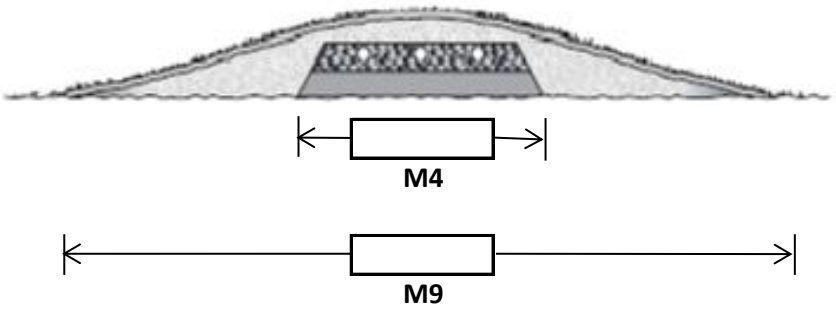
Use only Imperial units of measurement throughout (feet, inches, Imperial gallons, etc…)

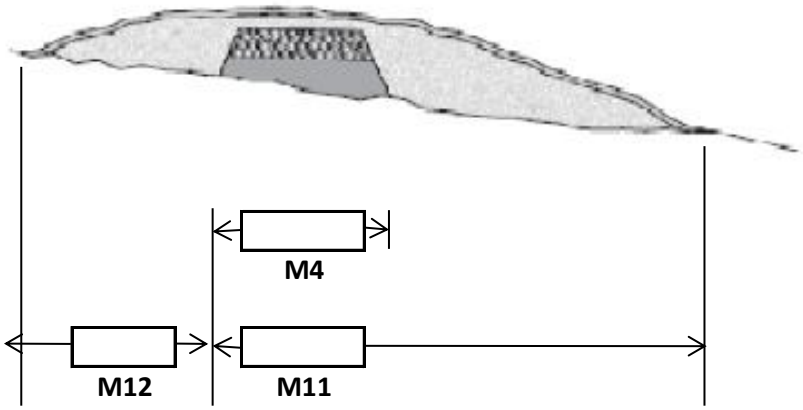
Level Site



Sand Layer Length (ft.) ____

Overall Length of Mound (ft.) ____

Sloping Site



Slope ____ **M8**

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Step 1) Determine the expected volume of sewage per day:

Volume of sewage per day. Provide allowance for additional load factors as detailed in Table 2.2.2.3 - (p. 25)

Assure that the sewage strength does not exceed the requirements of 2.2.2.1 (1) - (p.21)

Expected Volume of Sewage per Day: _____ gal. / day **M1**

Step 2) Calculate the treatment area of the sand layer:

Expected Volume of Sewage per Day		Sand Layer Loading Rate		Area Required for Sand Layer	
_____ gal. / day	÷	0.83 gal. / sq.ft. per day	=	_____ sq.ft.	**M2**
From **M1** (this worksheet)		Note: Reduction required by 8.4.1.4 (1)(b) or 8.4.1.5 (1)(d)			

Step 3) Calculate the length of the sand layer:

Expected Volume of Sewage per Day		Hydraulic Linear Loading Rate (if applicable)		Length of Sand Layer	
_____ gal. / day	÷	_____ gal./day/lin.ft.	=	_____ ft.	**M3**
M3a		**M3b**			
From **M1** (this worksheet)		Table A.1.E.1 - (p. 129)			

Step 4) Calculate the minimum width of the sand layer:

Area of the Sand Layer		Length of the Sand Layer		Width of the Sand Layer	
_____ sq.ft.	÷	_____ ft.	=	_____ ft.	**M4**
From **M2**		From **M3**			

Step 5) Determine the infiltration soil effluent loading rate:

Note: Effluent loading rate can be determined from soil texture classification according to 8.4.1.7 (1)(a & b) - (p. 94) and Table A.1.E.1 (pp. 129-130) with consideration for Article 8.1.2.2 - (p. 81)

Soil Effluent Loading Rate: _____ gal./sq.ft./day **M5**

Step 6) Calculate the in situ soil infiltration area required:

Expected Volume of Sewage per Day		Soil Effluent Loading Rate		Required Soil Infiltration Area	
_____ gal./day	÷	_____ gal./sq.ft./day	=	_____ sq.ft.	**M6**
From **M1** (this worksheet)		From **M5** (this worksheet)			

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Step 7) Calculate the required width of the infiltration area:

Required Infiltration Area		Length of Sand Layer		Width of Required Soil Infiltration Area	
sq.ft.	÷	ft.	=	ft.	**M7**
From **M6** (this worksheet)		From **M3** (this worksheet)			

Step 8) Determine the slope criteria of the installation site:

If the slope of the installation site exceeds 1%, proceed to Step 11. If the slope is 1% or less, proceed to Step 9.

Slope of Installation Site: ____ % **M8**

Note: The following calculations apply ONLY to the minimum height configuration of a mound. If it is necessary to raise the sand layer, (for example to provide vertical seperation from restrictive layer to the water table) the following calculations are NOT adequate for the design.

For Slopes of 1% or Less, Use Steps 9 to 10.

Step 9) Determine the toe to toe width of the mound:

Toe to Toe Width Based on 3:1 Slope Requirement		**Width of Area Required Infiltration Area Within Berm**		**Toe to Toe Width of Mound**	
ft.	**or**	ft.	=	ft.	**M9**
M9a		**M9b**		The greater of **M9a** or **M9b**	
3:1 Slope Requirement - 8.4.2.9. Refer to Berm Dimensions Diagram (this worksheet or determine by calculation)		From **M7** (this worksheet)			

Step 10) Proceed to Step 14:

Steps 11 to 13 are used only for installations where the slope exceeds 1%.

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For Slopes Exceeding 1%, Use Steps 11 to 14.

Step 11) Determine the width of the sand layer plus downslope berm:

The width of the mound is based on the greater of:

- the width as determined by the 1:3 slope requirement, **or**
- the width required to provide adequate infiltration area

Downslope Berm Width Based on 3:1 Slope Requirements

_____ ft.

M11a

Refer to Berm Dimensions Diagram (this worksheet)

+

Width of Sand Layer

_____ ft.

M11b

From **M4** (this worksheet)

		Width of Required Infiltration Area Under Sand Layer and Downslope Berm		**Width of Sand Layer and Downslope Berm**	
_____ ft.	**or**	_____ ft.	=	_____ ft.	**M11**
M11c		**M11d** From **M7** (this worksheet)		3:1 Slope Requirement is the greater of **M11c** or **M11d**	

Step 12) Determine the width of the upslope berm:

Width based on 3:1 Slope Requirement (refer to 8.4.2.9)

Refer to Berm Dimensions Diagram (this worksheet) or determine by calculation.

Width of Upslope Berm

_____ ft. **M12**

Step 13) Determine the toe to toe width of the mound:

Width of Sand Layer and Downslope Berm		**Width of Upslope Berm**		**Toe to Toe Width of Mound**	
_____ ft.	**+**	_____ ft.	=	_____ ft.	**M13**

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Summary

Step 14) Summarize the information:

Width of Sand Layer (From **M4** this worksheet)		ft.
Length of Sand Layer (From **M3** this worksheet)		ft.
Slope of Installation Site (From **M8** this worksheet)		%
Toe to Toe Width of Mound <1% slope (From **M9** this worksheet)		ft.
Toe to Toe Width of Mound>1% slope (From **M13** this worksheet)		ft.

Step 15) Complete the berm diagram dimensions on the first page:

Fill the appropriate diagram on the first page with the numbers calculated in this worksheet.

Step 16) Confirm the design complies with the Standard of Practice:

This worksheet does NOT consider all the requirements of the mandatory Standard. Please work safely and follow safe practices near trenches and open excavations.

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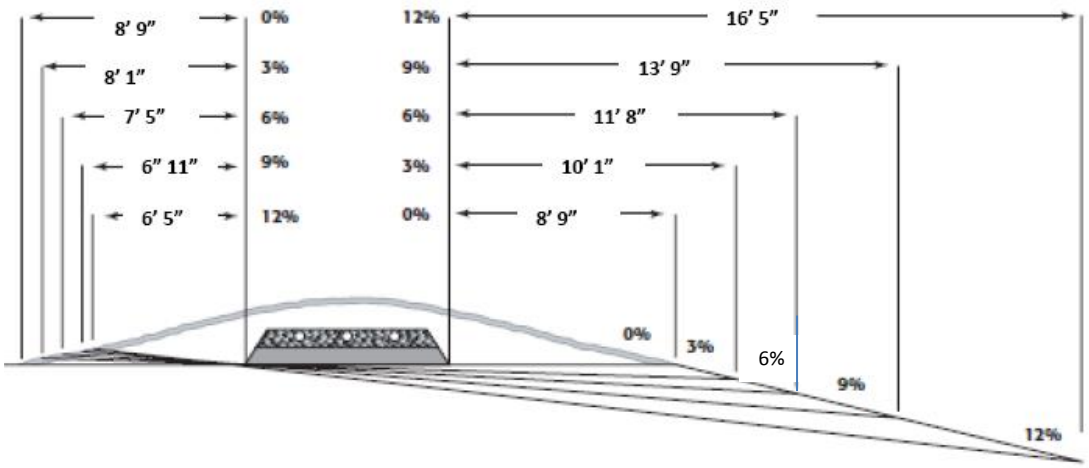
Treatment Mound Berm Dimensions on Slopes



This Diagram is Based on a Minimum Mound Height and a Minimum Berm Slope of 3:1

Based on:3 inches top soil
6 inches fill material
12 inches of chamber height
2 inches of washed rock
12 inches of sand media
35 inches of height

Based on minimum height requirements from 2015 SOP

Revised November 14, 2016