

ADVANCED ENVIRO-SEPTIC® DESIGN WORKSHEET FOR OKLAHOMA

Project: Design example #4 (not in manual) Date: Jan 2022

Design Criteria: 6 bedrooms, 464 GPD, group 3a soils, level site

1. Calculate the minimum System Sand Bed Area (SSBA):

- a. 4 Bedrooms = 1,160 ft²
- b. 2 Additional Bedrooms x 240 ft² / bedroom = 480 ft²
- c. Total area required = 1,160 ft² from 1a above + 480 ft² from 1b above = 1,640 ft²

Soil Group	Minimum Required Bed Area (square feet) by Number of Bedrooms			
	Two or Fewer	Three	Four	Each Additional Bedroom
1	230	300	370	80
2	230	300	370	80
2a	350	460	580	120
3	480	630	770	150
3a	700	930	1,160	240
4	920	1,240	1,540	320
5	1,400	1,880	2,340	500

Note: Table B AES loading rates already reflect a 33% reduction in conventional bed sizing.

2. Advanced Enviro-Septic® pipe required:

6 bedrooms x 70 ft / bedroom = 420 ft minimum

3. Calculate the number of serial sections required (skip if using Parallel distribution):

6 bedrooms ÷ 5 = 1.2 > 2 serial sections minimum (round up to nearest whole number)

4. Number of AES rows required:

Pipe required (from Step #2) = 420 ft ÷ 85 row length ft

= 4.9 > 5 rows (round up to nearest whole number) ÷ 2 serial sections (from Step #3)

= 2.5 > 3 rows per section (round up to whole number) x 2 serial sections

= 6 rows minimum, 70' updated row length

5. Find Pipe Layout Width (PLW):

(6 # of rows - 1) = 5 x 1.5 ft center-to-center spacing = 7.5 ft + 1 ft = 8.5 ft

Note: the PLW is the distance from the outermost edge of the first to the outermost edge of the last rows.

6. System Sand Bed Length & Width (SSBL & SSBW):

- a. SSBL = 70 row length + 1 = 71 ft
- b. SSBW = 1,640 SSBA from step #1c ÷ (71 SSBL from step 6a above) = 23.1 > 23.5 ft min.
- c. (8.5 PLW + 1) = 9.5 ft (sand needed to cover all AES rows)

7. Verify final sand bed width requirements:

Verify the minimum SSBW from Step #6 will cover all the rows in the bed.

a. Level beds & beds sloping 5% or less: If the minimum SSBW is less than the (PLW + 1 ft), use (PLW + 1 ft) as the new minimum SSBW.

Use the larger of 6b or 6c = 23.5 ft sand bed width minimum

b. Beds sloping > 5%: If the minimum SSBW is less than the (PLW + 3.5 ft), use (PLW + 3.5 ft) as the new minimum SSBW. Adding 3.5 ft to the pipe layout width accounts for a 2.5 ft system sand extension on the down slope side of the field.

1. n/a PLW from step #5 + 3.5 ft = n/a ft

2. n/a SSBW from step #6b

3. n/a ft minimum sand bed width (choose the larger of 1 or 2 above)

8. Calculate System Sand extensions (SSE):

For level beds, the sand extensions are placed on each side of AES pipes. If the value from step #6c is equal to or greater than the value from step #7a above, there will be no extensions.

a. Sand extensions = (23.5 value from step #7a – 9.5 value from step #6c) ÷ 2 = 7 ft

b. Sloping Beds >5%: extension placed entirely on the down slope side of the bed.

Extension = n/a value from step #7b3 - n/a value from step #6c = n/a ft

Notes: Combination distribution layout with 6 rows (3 rows per section). Dbox required.
