



**AMERICAN SAMOA ENVIRONMENTAL PROTECTION AGENCY**

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**GUIDANCE FOR WASH DOWN PIGGERIES:  
SEPTIC TANKS, DRAINFIELDS AND  
SOIL PERCOLATION TESTS**

**Table 1: Septic Tank Sizing For Wash Down Piggeries**

<b>Number of 8'x 8' Pens</b>	<b>Liquid Capacity of Septic Tank (gallons)</b>
1-8	1,000
9-12	1,250
13-14	1,500
More than 14	For every two additional pens, add 200

**Table 2: Percolation Rates vs Soil Application Rates**

<b>Percolation Rate from Test Results (min/inch)</b>	<b>Application Rate for Soil (gal/day/ft<sup>2</sup>)</b>
Faster than 1	Not Suitable (Must add fill soil during drainfield construction to slow to 1 min/inch)
1-5	1.2
6-15	0.8
16-30	0.6
31-60	0.45
Above 60	Not Suitable

**Table 3: Estimated Water Usage for Wash Down Piggeries**

<b>Number of 8'x 8' Pens</b>	<b>Water Usage Rate (gal/day)</b>
1-4	250
5-6	350
7-8	450
9-10	550
11-12	650
13-14	750
More than 14	For every two additional pens, add 100

## **PERCOLATION TEST INSTRUCTIONS**

- (1) Prepare a test hole located within the proposed disposal area which, in the judgment of the Soil Evaluator and AS-EPA, is the most limiting. The test hole shall have a diameter of 12 inches, as precisely as possible, with vertical sides 18 inches deep not including any allowable liners or filter layers on either the bottom or sides.
- (2) Establish a fixed point at the top or bottom of the test hole from which all measurements will be taken.
- (3) Scratch the bottom and sides of the test hole to remove any smeared soil surfaces, taking care not to significantly change the hole dimensions. Add two inches of cinders, gravel or coarse sand to protect the bottom from scouring, or insert a board or other impervious object in the hole so that water may be poured down or on it during the filling operation. A mesh or perforated liner designed to maintain the test hole dimensions in extremely loose soils without restricting the flow of water may be used with permission of AS-EPA.
- (4) Carefully fill the hole with clear water to a minimum depth of 12 inches from the bottom of the hole. Maintain this minimum 12 inch or greater water level by adding water as necessary in order to saturate surrounding soils for a period of no less than 10 minutes after first filling the hole.
- (5) After saturation, let the water level drop to a depth of nine inches and then measure the length of time in minutes for it to drop from a depth of nine inches to a depth of six inches. If the rate is erratic in the opinion of the Soil Evaluator, the hole shall be refilled and soaked until the drop per increment of time is steady. The time for the level to drop from a depth of nine inches to a depth of six inches, divided by three, is the percolation rate in minutes per inch.
- (6) In certain soils, particularly coarse sands, the soil may be so pervious as to make a percolation test difficult, impractical, and meaningless. At the discretion of the Soil Evaluator and with the concurrence of AS-EPA, the percolation test may be discontinued and a rate of less than 1 minute per inch can be assumed provided that at least 24 gallons of water has been added to the percolation hole within 10 minutes and it is impossible to obtain a liquid depth of nine inches.

**AS-EPA Percolation Test Data Sheet**

**SOAKING PERIOD**

**Date/Time:**

**Location:**

**Test Hole #:**

**Performed By:**

**Depth of Hole:**

**Diameter of Hole:**

<b>Depth (inches)</b>	<b>Soil Texture/Description</b>

**Soaking Period End Date/Time:** \_\_\_\_\_

**PERCOLATION TEST**

**Date/Time:**

<b>A.</b>	<b>B.</b>	<b>C.</b>	<b>D.</b>	<b>E.</b>	<b>F.</b>
<b>Interval Start Time</b>	<b>Interval (minutes)</b>	<b>Beginning Measurement (inches)</b>	<b>End Measurement (inches)</b>	<b>Drop in Water Level (=C-D) (inches)</b>	<b>Percolation Rate (=B/E) (minutes/inch)</b>

**Percolation Rate for this Test Hole:**

**Suggested Equipment:**

- Watch
- Yard Sticks
- Buckets
- Gravel
- Calculator
- Narrow shovel, post hole digger, or iron digging bar
- Instructions
- Data Sheets
- Water Source

## **EXAMPLE 1: Percolation Test**

### **SOAKING PERIOD**

**Date/Time:** 9/24/07, 8:00 am

**Location:** East side of AS-EPA Office Building

**Test Hole #:** 1

**Performed By:** Matt Vojik

**Depth of Hole:** 18 inches

**Diameter of Hole:** 12 inches

<b>Depth (inches)</b>	<b>Soil Texture/Description</b>
0-5	Red top soil with gravel
5-16	Brown sandy soil
16-18	Grey & brown sandy soil with sandstone

**Soaking Period End Date/Time:** 8:00 - 8:10

### **PERCOLATION TEST**

**Date/Time:** 9/24/07, 10:30 pm

<b>A.</b>	<b>B.</b>	<b>C.</b>	<b>D.</b>	<b>E.</b>	<b>F.</b>
<b>Interval Start Time</b>	<b>Interval (minutes)</b>	<b>Beginning Measurement (inches)</b>	<b>End Measurement (inches)</b>	<b>Drop in Water Level (=C-D) (inches)</b>	<b>Percolation Rate (=B/E) (minutes/inch)</b>
8:20	35	9	6	3	11.7
11:00	40	9	6	3	13.3
11:35	42	9	6	3	14
12:00	42	9	6	3	14

**Percolation Rate for this Test Hole:** 14 min/inch

#### **Suggested Equipment:**

- Watch
- Yard Sticks
- Buckets
- Gravel
- Calculator
- Narrow shovel, post hole digger, or iron digging bar
- Instructions
- Data Sheets
- Water Source

## **EXAMPLE 2: Sizing a Drainfield**

Per AS-EPA guidelines, every approved Wash Down piggery must include an adequately designed drainfield in accordance with a soil Percolation Test. See the Percolation Test Instructions on the previous page.

As an Example, let's say the Percolation Test reveals a percolation rate of 45 minutes/inch:

1. See Table 2. The percolation rate would be in the 31-60 range, which corresponds to a 0.45 gal/day/ft<sup>2</sup> application rate.
2. How many 8 ft x 8 ft pens will your piggery have? As an example, let's say you plan to build a piggery with 6 pens.
3. See Table 3. For 6 pens, you would estimate a water usage rate of 350 gal/day.
4. Estimate the width of your drainfield trenches. Most backhoes have a 2-foot wide bucket, so let's estimate that the trenches would have a width of 2 feet plus an additional 1-foot of effective sidewall area giving a total trench width of 3 feet.
5. Determine the area for a 1 foot length of drainfield: 1 ft long x 3 ft wide = 3ft<sup>2</sup>
6. Multiply this area by the recommended application rate (step 1). In this case it would be: 3ft<sup>2</sup> x 0.45 gal/day/ft<sup>2</sup> = 1.35 gal/day. That's how much water can be absorbed by 1 ft of your drainfield, or 1.35 gal/day/ft.
7. Now the question is, what is the total length of drainfield required? Divide your usage rate (Step 3) by your absorption rate per foot (step 6). In this case it's:

$$\frac{350 \text{ gal/day}}{1.35 \text{ gal/day/ft}} = 259 \text{ ft, which rounds to 260 ft.}$$

8. So your drainfield would need a total length of 260 ft. You could have 4 lengths of 65 ft, or 5 lengths of 52 ft, or 6 lengths of 44 ft, or 8 lengths of 37 ft and so on. The total length of drainfield could be more than 260 ft, but it could not be less. Drainfield trenches shall be at least 5 ft apart and cannot exceed 100 ft in length.