

## **APPENDIX A - PERCOLATION TEST PROCEDURE**

Properly conducted percolation tests may be needed to determine absorption system site suitability and to size the absorption system. If needed, percolation tests must be conducted within the boundary of the proposed absorption system. The percolation test must be completed by a qualified site evaluator approved by the reviewing authority. Some system designs may dictate different test procedures than those outlined below. Please see applicable chapters for further requirements.

Procedures outlined in ASTM D5093-02, Field Measurement of Infiltration Rate Using a Double-Ring Infiltrometer with a Sealed-Inner Ring, may be required in addition to those listed below.

### **Test Hole Preparation**

1. Dig or bore holes 6 to 10 inches in diameter with vertical sides. The depth of the holes must be at the approximate depth of the proposed absorption trenches, typically 24 inches below ground. If the hole is larger than 6 to 8 inches, place a piece of 4-inch diameter, perforated pipe inside the hole, and fill the space between the pipe and the walls of the hole with drain rock. It is recommended that a sketch or photograph of the hole be provided to the reviewing authority.
2. Roughen or scratch the bottoms and sides of the holes to provide natural unsmoothed surfaces. Remove loose material. Place about 2 inches of 3/4-inch washed gravel in the bottom of holes to prevent scouring during water addition.
3. Establish a reference point for measurements in or above each hole.

### **Soaking**

1. Fill holes with clear water to a level of at least 12 inches above the gravel.
2. If the soil is coarser than sandy clay loam and the first 12 inches of water seeps away in 60 minutes or less, add 12 inches of water a second time. If the second filling seeps away in 60 minutes or less, the percolation test should be run immediately in accordance with the sandy soil test. If both the first and second fillings have percolation rates faster than 3 mpi, the test may be stopped.
3. If either the soil is sandy clay loam or finer, or the first 12 inches or the second 12 inches does not seep away in 60 minutes, the percolation test must be run in accordance with the test for other soils. In these other soils, maintain at least 12 inches of water in the hole for at least 4 hours to presoak the hole.

### **Sandy Soils Test (percolation rate of 10 mpi or faster)**

This test is applicable to sandy soils only (percolation rate of 10 mpi or faster). Add water to provide a depth of 6 inches above gravel. Measure water level drop at least four times, in equally spaced intervals, in a 1-hour time period. Measure to

nearest 1/4 inch. Refill to 6-inch depth after each measurement. Do not exceed 6-inch depth of water. Use final water-level drop to calculate rate.

### **Other Soils Test (percolation rate slower than 10 mpi)**

This test is applicable to other soils (percolation rate slower than 10 mpi). Remove loose material on top of gravel. Add water to provide a depth of 6 inches above gravel. Measure water levels for a minimum of 1 hour. A minimum of 4 measurements must be taken. The test must continue until 2 successive readings yield percolation rates that do not vary by more than 15 percent, or until measurements have been taken for 4 hours. Do not exceed 6-inch depth of water. Use final water-level drop to calculate rate.

### **Records**

Record the following information on the attached form and include as part of the application:

- Date(s) of test(s)
- Location, diameter, and depth of each test hole,
- Time of day that each soak period began and ended
- Time of day for beginning and end of each water-level drop interval
- Each water-level drop measurement
- Calculated percolation rate
- Name and signature of person performing test
- Name of owner or project name.

### **Rate Calculation**

Percolation Rate = Time interval in minutes/water-level drop in inches.

**MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY  
PERCOLATION TEST FORM**

Owner Name \_\_\_\_\_

Project Name \_\_\_\_\_

Lot of Tract Number \_\_\_\_\_ Test Number \_\_\_\_\_

Diameter of Test Hole \_\_\_\_\_ Depth of Test Hole \_\_\_\_\_

Date and Time Soak Period Began \_\_\_\_\_ Ended \_\_\_\_\_

Date Test Began \_\_\_\_\_

Distance of the reference point above the bottom of the hole \_\_\_\_\_

**Test Results**

Start Time of Day	End Time of Day	Time Interval (minutes)	Initial Distance Below Reference Point	Final Distance Below Reference Point	Drop in Water Level (inches)	Percolation Rate (mpi)

I certify that this percolation test was done by a qualified site evaluator in accordance with DEQ-4 Section 1.2.68 and Appendix A.

\_\_\_\_\_  
Name (printed)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Company