



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
DIVISION OF SOIL AND WATER CONSERVATION
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OFFICE OF THE
DIRECTOR

TELEPHONE: (302) 739 - 4411

Memorandum

DATE: May 29, 1996

TO: Delegated Agencies

FROM: Randy Greer, Environmental Engineer
DNREC, Sediment & Stormwater Program *RKG*

RE: Approved Testing for Stormwater Management
Infiltration Practices

CC: John Hughes, Director, DSWC
Robert Baldwin, Program Manager

Dear Delegated Agent;

As most of you are aware, applicants who propose using infiltration as a means of managing stormwater for their projects must provide the delegated agency with field measured data to determine the design infiltration rate of the *in situ* soils, per Section 10.3.O (4) of the Delaware Sediment and Stormwater Regulations. To date, the recommended test has been based on the use of the "double-ring infiltrometer". We have recently been asked to evaluate alternative methods which may be more cost effective while still providing valid results for the design of stormwater infiltration practices.

DNREC/DWR's Underground Discharges Branch has recently observed side-by-side tests using a double-ring infiltrometer and a single-ring infiltrometer under field conditions. In the opinion of the Underground Discharges Branch, the differences in the results between the two tests are insignificant for most practical applications.

Therefore, effective this date, the Sediment & Stormwater Program will be allowing the use of either the double-ring infiltrometer or the single-ring infiltrometer for conducting field infiltration tests. The following conditions apply for both tests:

1. The testing shall be done in accordance with ASTM D5126-90 "Comparison of Field Methods for Determining Hydraulic Conductivity in the Vadose Zone".
2. The individual conducting the test shall demonstrate to the delegated agency's satisfaction that he/she can perform the test in accordance with the above referenced ASTM specification and is qualified to interpret the results.

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3. An adequate number of borings, observation pits or other means, as necessary, shall be done within the footprint of the proposed infiltration structure to verify that there is no seasonal high water table, soil mottling, hydraulically more restrictive layer, or any other condition which might invalidate the test results and/or otherwise prevent the proposed infiltration structure from performing in accordance with the Sediment & Stormwater Regulations.
4. A minimum of one (1) field-run infiltration test shall be conducted for each proposed structure. Additional tests may be required if, in either the tester's professional judgement or the review agency's opinion, one test can not adequately characterize the infiltration rate due to soil variability or other factors.
5. The test(s) shall be run at the hydraulically most restrictive zone from 0-3' below the proposed bottom elevation of the infiltration structure.
6. The design infiltration rate (DIR) for the proposed infiltration structure shall have a factor of safety of 2.0 based on the measured infiltration rate (MIR). The appropriate mathematical relationship would therefore be:

$$DIR = \frac{MIR}{2}$$

Questions or comments concerning this memorandum should be directed to the Sediment & Stormwater Program at (302)-739-4411.