

7080.1720 FIELD EVALUATION.

Subpart 1. **Scope.** A field evaluation consists of the items described in subparts 2 to 7.

Subp. 2. **Lot lines.** Lot lines shall be established to the satisfaction of the property owner or the property owner's agent. Lot improvements, required setbacks, and easements must be identified.

Subp. 3. **Surface features.** The following surface features must be described:

- A. the percent and direction of the slope at the proposed system location;
- B. vegetation types;
- C. any evidence of cut or filled areas or disturbed or compacted soil;
- D. the flooding or run-on potential; and
- E. a geomorphic description.

Subp. 4. **Soil observations.** A minimum of three soil observations are required for the initial and replacement soil treatment area and at least one soil observation must be performed in the portion of the soil treatment area anticipated to have the most limiting conditions. The total number of soil observations required is based on the judgment of the certified individual or the local unit of government. Soil observations must comply with the following requirements:

A. the soil observations must be conducted within or on the borders of the proposed site;

B. the soil observations must be performed in an exposed pit or by hand augering or probing. The use of flight augers is not allowed;

C. the soil observation method must allow observation of the different soil horizons that constitute the soil profile and, if determining the loading rate by part 7080.2150, subpart 3, item E, Table IX, an undisturbed sample must be observed;

D. underground utilities must be located before soil observations are undertaken;

E. required safety precautions must be taken before entering soil pits;

F. soil observations must be conducted prior to any required percolation tests to determine whether the soils are suitable to warrant percolation tests and, if suitable, at what depth percolation tests shall be conducted; and

G. the minimum depth of the soil observations must be to the periodically saturated layer, to the bedrock, or three feet below the proposed depth of the system, whichever is less.

Subp. 5. **Soil descriptions for determination of limiting layer.** Each soil profile observed at the proposed soil treatment area must be evaluated under adequate light conditions with the soil in a moist unfrozen state for the characteristics in items A to H:

A. the depth of each soil horizon measured from the ground surface. Soil horizons are differentiated by changes in texture, color, redoximorphic features, bedrock, structure, consistence, and any other characteristic that affects water movement or treatment of effluent;

B. a description of all soil colors for each horizon according to the Munsell Soil Color Charts, Revised Edition, Munsell Color Corporation (1992), or equivalent. The color charts are incorporated by reference, are available through the Minitex interlibrary loan system, and are not subject to frequent change;

C. a description of the soil texture, structure, and consistence using the United States Department of Agriculture (USDA) soil classification system as specified in the Field Book for Describing and Sampling Soils, which is incorporated by reference under part 7080.1100, subpart 36;

D. depth to the bedrock;

E. depth to the periodically saturated soil for new construction or replacement as determined by redoximorphic features and other indicators, as determined in subitems (1) to (3):

(1) in subsoil and parent material, redoximorphic features include:

(a) distinct redoximorphic iron accumulations or distinct redoximorphic iron depletions;

(b) a gleyed or depleted soil matrix or redoximorphic mottles having a color chroma of two or less or a depleted matrix or redoximorphic mottles having a color hue of 5Y and a chroma of three or less; or

(c) faint redoximorphic concentrations or faint redoximorphic depletions in subsoil or parent material with a hue of 7.5YR or redder;

(2) in lower topsoil layers that are deeper than 12 inches from the surface and are immediately followed in depth by a periodically saturated horizon, redoximorphic features include:

(a) soil colors with a redoximorphic chroma of two or less; or

(b) redoximorphic accumulations or depletions;

(3) in the upper 12 inches of the topsoil layer, if it is immediately followed by a periodically saturated horizon, the depth of seasonal saturation is determined by one or more of the indicators in units (a) to (f):

- (a) soil colors with a chroma of zero;
- (b) organic soil textures or mineral soil textures with an organic modifier;
- (c) dominance of hydrophytic vegetation;
- (d) the soil treatment area at or near the elevation of the ordinary high water level of a surface water or in a concave hill slope position;
- (e) redoximorphic accumulation or depletions; or
- (f) the soil expressing indicators of seasonal saturation as determined in Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils, USDA Natural Resource Conservation Service (2006 and as subsequently amended). The field indicators are incorporated by reference, are available through the Minitex interlibrary loan system, and are subject to frequent change;

F. depth to the periodically saturated soil for all existing systems, determined by redoximorphic features in item E, except subitems (2), unit (a), and (3), units (a), (c), and (d), as measured outside the area of system influence in an area of similar soil;

G. depth of standing water in the soil observation excavation, measured from the soil surface, if observed; and

H. any other soil characteristic that needs to be described to design a system, such as hardpans or restrictive layers. These other characteristics must be classified according to the Field Book for Describing and Sampling Soils, which is incorporated by reference under part 7080.1100, subpart 36.

Subp. 6. **Determination of loading rate and absorption area size.** The effluent loading and absorption area size must be determined by item A or B, or both, as required by the local unit of government:

A. the loading rate based on an examination of soil texture, undisturbed soil structure, and soil consistence at the depth of either the proposed soil absorption area or the most restrictive layer within three feet of the proposed soil absorption area, using the United States Department of Agriculture (USDA) soil classification system as specified in the Field Book for Describing and Sampling Soils, which is incorporated by reference under part 7080.1100, subpart 36; or

B. the loading rate based on the percolation procedure described in subitems (1) to (8) or other equivalent procedure as approved by the local unit of government:

(1) each test hole must be six to eight inches in diameter and have vertical sides. For mounds and at-grade systems, the bottom of each test hole must be in the upper 12 inches of the original soil. For trenches and seepage beds, the bottom of each test hole must be at the depth of either the proposed absorption area or the most restrictive layer within three feet of the proposed soil absorption layer;

(2) soil texture descriptions for percolation test holes must note the depths from the ground surface where texture changes occur;

(3) the bottom and sides of the hole must be carefully scratched to remove any smearing and to provide a natural soil surface into which water penetrates. The scarification must not result in the hole having a diameter of greater than eight inches;

(4) all loose material must be removed from the bottom of the test hole and two inches of one-fourth to three-fourths inch gravel or clean sand must be added to protect the bottom from scouring;

(5) the hole must be carefully filled with clear water to a minimum depth of 12 inches from the bottom of the test hole and maintained for no less than four hours for saturation to occur. The soil must then be allowed to swell for at least 16, but no more than 30, hours. In sandy soils, the saturation and swelling procedure is not required and the test is allowed to proceed if the initial filling of the hole with 12 inches of water seeps away in less than ten minutes;

(6) in sandy soils, water depth must be adjusted to eight inches over the soil at the bottom of the test hole. From a fixed reference point, the drop in water level must be measured in inches to the nearest 1/16 inch at approximately ten-minute intervals. A measurement is also allowed to be made by determining the time it takes for the water level to drop one inch from an eight-inch reference point. If eight inches of water seeps away in less than ten minutes, a shorter interval between measurements must be used, but water depth must not exceed eight inches. The test must continue until three consecutive percolation rate measurements do not vary by more than ten percent. In other soils, the water depth must be adjusted to eight inches over the soil at the bottom of the test hole. From a fixed reference point, the drop in water level must be measured in inches to the nearest 1/16 inch at approximately 30-minute intervals and refilled between measurements to maintain an eight-inch starting head. If water seeps away in less than 30 minutes, a shorter time interval between measurements must be used, but water depth must not exceed eight inches. The test must continue until three consecutive percolation rate measurements do not vary by more than ten percent. The percolation rate is also allowed to be determined by observing the time it takes the water level to drop one inch from an eight-inch reference

point if a constant water depth of at least eight inches has been maintained for at least four hours prior to the measurement;

(7) the time interval must be divided in minutes by the drop in water level in inches to obtain the percolation rate in minutes per inch. The percolation rates that are within the ten percent provision determined for each test hole must be averaged to determine the final percolation rate for that hole. The slowest final percolation rate for all holes within the soil dispersal area must be used for design; and

(8) a percolation test must not be run where frost exists within 12 inches of the bottom of the percolation test hole.

Subp. 7. **Site protection.** The proposed soil treatment and dispersal area site shall be protected from disturbance, compaction, or other damage by staking, fencing, posting, or other effective method.

Statutory Authority: *MS s 115.03; 115.55*

History: *32 SR 1347; 35 SR 1353*

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