



Updated **Hydrologic Soils Group (HSG)**

Questions & Answers

What is a Hydrologic Soil Group?

- **HSG** is a group of soils having similar runoff potential under similar storm and cover conditions.
- **HSGs** determine a soil's associated runoff curve number. The runoff curve numbers are used to estimate direct runoff from rainfall.
- Soil scientists assign **HSGs** to soil map unit components.
- Soil properties are used to calculate **HSGs**. The slope of the soil surface is not considered when assigning **HSG**.

Why are Updates Needed?

- Updates are needed to reflect the latest research findings. As new soil property data is collected and soils are mapped in greater detail, more accurate **HSG** calculations can be made.

What is Changing?

- **HSGs** have been updated county-by-county over many years. The current plan is to update all **HSGs** nationwide, to reflect the latest research and science and to provide nationwide consistency.
- Some **HSGs** are changing now because the technical criteria used to calculate the **HSGs** have been updated. Some **HSGs** will be dual groups.
- Connecticut's updated **HSGs** are expected to be released Fall 2014.

What is the Impact?

- The Soil Survey of the State of Connecticut will now contain three dual groups, A/D, B/D, and C/D.

How are Hydrologic Soil Groups Calculated?

- The criteria for determining **HSG** is found in the National Engineering Handbook, Chapter 7 issued May 2007.

- Soil properties used to calculate **HSGs** are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate.
- There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas while the second is for un-drained areas

What are the Four Hydrologic Soil Groups?

- *Group A.* Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.
- *Group B.* Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.
- *Group C.* Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.
- *Group D.* Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

What are the Three Dual Hydrologic Soil Groups?

- Certain wet soils are placed in Group D based solely on the presence of a water table within 60 centimeters [24 inches] of the surface, even though the saturated hydraulic conductivity may be favorable for water transmission. If these soils can be adequately drained, they are assigned to dual hydrologic soil groups (A/D, B/D, and C/D) based on their saturated hydraulic conductivity and the water table depth when drained.
- The first letter applies to the drained condition and the second to the undrained condition. For the purpose of hydrologic soil group, adequately drained means that the seasonal high water table is kept at least 60 centimeters [24 inches] below the surface in a soil where it would be higher in a natural state.

How are Hydrologic Soil Groups Calculated for Disturbed Soils?

- As a result of construction and other disturbances, the soil profile can be altered from its natural state and the listed group assignments generally no longer apply; nor can any supposition based on the natural soil be made that will accurately describe the hydrologic properties of the disturbed soil.
- An onsite investigation should be made to determine the hydrologic soil group of a disturbed soil. A general set of guidelines for estimating saturated hydraulic conductivity from field observable characteristics is presented in the Soil Survey Manual (Soil Survey Staff, 1993).

What Actions are Being Taken to Facilitate the Transition to Updated Factors?

- Connecticut's updated **HSGs** are expected Fall 2014.
- The Web Soil Survey will have updated **HSGs** in the soil survey reports in the *Soil Physical Properties – Engineering Properties* table.

- The electronic Field Office Technical Guide (eFOTG) will have the updated **HSGs** in Section II under Soils Information, Soil Tables and Interpretations, Statewide CT.

Why Did the Hydrologic Soil Groups (Sometimes) Change on the State Line?

- **HSGs** are calculated from the representative values for key soil properties. Different representative values for soil properties in adjacent counties to Connecticut sometimes resulted in different **HSGs**.

What are Soil Scientists Doing Now to Improve the Data?

- In Connecticut, NRCS soil scientists and Cooperative Soil Survey partners are working to improve the soil mapping and property data to better meet user needs.
- Current soil survey work characterizes soil properties across broad natural landforms. Soil scientists identify patterns and natural breaks in soil property values without concern for political boundaries. This process eliminates *no-joins* across state and county boundaries.
- Soil investigations concentrate on more fully and accurately characterizing soil properties to meet current needs.

For More Information:

Contact your local USDA, NRCS Service Center or visit the Connecticut NRCS website at

www.ct.nrcs.usda.gov