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## **CLARIFICATION OF WETLAND SOIL CRITERIA FOR CONNECTICUT DISTURBED SOILS**

The Connecticut General Statutes Section 22a-38 defines inland wetlands as:

"land, including submerged land, not regulated pursuant to sections 22a-28 to 22a-35, inclusive, which consists of any of the soil types designated as poorly drained, very poorly drained, alluvial, and floodplain by the National Cooperative Soil Survey, as may be amended from time to time, of the Natural Resources Conservation Service of the United States Department of Agriculture"

The National Cooperative Soil Survey, led by the Natural Resources Conservation Service [formerly known as the Soil Conservation Service], has identified and mapped over 20,000 different kinds of soil in the United States. Most soils are given a name, which generally comes from the locale where the soil was first mapped. Named soils are referred to as soil series.

Soils are named and classified on the basis of physical and chemical properties in their horizons (layers). Soils and their horizons differ from one another, depending on how and when they formed. "Soil Taxonomy" uses color, texture, structure, and other properties of the surface two meters deep to key the soil into a classification system to help people use soil information. This system also provides a common language for scientists.

Soil taxonomy at the highest hierarchical level identifies 12 soil orders. The names for the orders and taxonomic soil properties relate to Greek, Latin, or other root words that reveal something about the soil. Sixty-four suborders are recognized at the next level of classification. There are about 300 great groups and more than 2,400 subgroups. Soils within a subgroup that have similar physical and chemical properties that affect their responses to management and manipulation are families. The soil series is the lowest category in the soil classification system.

Soil drainage class, or moisture regime, is one of the factors used in classifying soils. The soils that form in an aquic moisture regime are wet. That is, they have a reducing environment virtually free of oxygen resulting from saturation with water. This lack of oxygen over an extended period allows the soils to develop wetness features. Such features include dull or gray colors [not due to inherent parent material color], intense mottling known as redoximorphic features, presence of sulfur compounds and other chemical, physical and biological properties common to a reducing environment.

Based on Soil Taxonomy, the soils of Connecticut with aquic moisture regimes are considered to be poorly drained and very poorly drained by the National Cooperative Soil Survey. Thus, for purposes of Connecticut General Statute section 22a-38, these soils are wetland soils. At the Suborder level of classification, soils included would be:

1. Aquents (wet Entisols) - recent
2. Aquepts (wet Inceptisols) - inception
3. Aquolls (wet Mollisols) - mollify
4. Aquods (wet Spodosols) - rare in Connecticut
5. Fibrists, Hemists, Saprists (Histosols) - organic soils

The determination of whether a specific area qualifies as a regulated inland wetland under Connecticut law can be a complex issue when the soils in question have been disturbed as is the case for cut and fill land. In these instances a number of questions are raised. Does the destruction of the surface layers by grading, stripping, or grubbing remove wetlands soils from regulation? How much fill placed over a wetland effectively removes the area from wetland status? Soil Taxonomy and the interpretation of soil moisture regimes can resolve these difficult questions.

Disturbed soils with aquic moisture regimes qualify as wetland soils. Areas of these soils would therefore be considered wetlands and regulated under the Connecticut Inland Wetlands and Watercourses Act. Again, at the Suborder level of classification, these soils are Aquents and Aquepts. At the Subgroup level, the disturbed soils could include Aquic Udorthents and Aquic Udipsamments.

For example, sandy fill that exhibits saturation and an aquic moisture regime could be classified Aquic Udipsamments (a wet, sandy, recent soil). Graded, smoothed, cut, borrow or filled land which is wet enough to exhibit an aquic moisture regime could be classified Aquic Udorthents. So classified, the disturbed soils of these areas would be regulated under the Connecticut Inland Wetlands and Watercourses Act.

Due to the variability of filled and graded areas, it is difficult to determine without detailed site analyses what fill thickness would remove a particular area from consideration as an inland wetlands under Connecticut law. However, as a GENERAL RULE OF THUMB, areas with more than two (2) feet of earthy fill placed over wet mineral soils and more than three (3) feet of earthy fill placed over wet organic or tidal marsh soils would be excluded from the wetlands category. In most cases, the soils of these areas will no longer exhibit the aquic moisture regime. A qualified soil scientist in those cases should NOT substitute this general rule for on-site inspections where questions or disputes arise.