ALL SOILS "All soils" refers to soils with any USDA soil texture. All mineral layers above any of the A Indicators, except for Indicator A16, have a dominant chroma of 2 or less, or the layer(s) with a dominant chroma of more than 2 is less than 15 cm (6 inches) thick.

A1. Histosol Classifies as a Histosol (except Folist).

A2. Histic Epipedon. A histic epipedon underlain by mineral soil material with chroma of 2 or less.

A3. Black Histic. A layer of peat, mucky peat, or muck 20 cm (8 inches) or more thick that starts within the upper 15 cm (6 inches) of the soil surface; has hue of 10YR or yellower, value of 3 or less, and chroma of 1 or less; and is underlain by mineral soil material with chroma of 2 or less.

A4. Hydrogen Sulfide. A hydrogen sulfide odor within 30 cm (12 inches) of the soil surface.

A5. Stratified Layers. Several stratified layers starting within the upper 15 cm (6 inches) of the soil surface. One or more of the layers has value of 3 or less with chroma of 1 or less, and/or it is muck, mucky peat, or peat or has a mucky modified mineral texture. The remaining layers have chroma of 2 or less.

A11. Depleted Below Dark Surface. A layer with a depleted or gleyed matrix that has 60 or more percent chroma of 2 or less, starting within 30 cm (12 inches) of the soil surface, and having a minimum thickness of either:
a. 15 cm (6 inches), or
b. 5 cm (2 inches) if the 5 cm consists of fragmental soil material.

Loamy or clayey layer(s) above the depleted or gleyed matrix must have value of 3 or less and chroma of 2 or less. Any sandy material above the depleted or gleyed matrix must have value of 3 or less and chroma of 1 or less, and at least 70 percent of the visible soil particles must be covered, coated, or similarly masked with organic material.

A12. Thick Dark Surface. A layer at least 15 cm (6 inches) thick with a depleted or gleyed matrix that has 60 percent or more chroma of 2 or less and starting below 30 cm (12 inches) of the surface. The layer(s) above the depleted or gleyed matrix must have value of 2.5 or less and chroma of 1 or less to a depth of at least 30 cm (12 inches) and value of 3 or less and chroma of 1 or less in any remaining layers above the depleted or gleyed matrix. Any sandy material above the depleted or gleyed matrix must have at least 70 percent of the visible soil particles covered, coated, or similarly masked with organic material

SANDY SOILS -- *Sandy soils have a USDA texture of loamy fine sand and coarser. All mineral layers above any of the S Indicators, except for Indicator S6, have a dominant chroma of 2 or less, or the layer(s) with a dominant chroma of more than 2 is less than 15 cm (6 inches) thick.*

S1. Sandy Mucky Mineral. A layer of mucky modified sandy soil material 5 cm (2 inches) or more thick starting within 15 cm (6 inches) of the soil surface.

S4. Sandy Gleyed Matrix. A gleyed matrix that occupies 60 percent or more of a layer starting within 15 cm (6 inches) of the soil surface.

S5. Sandy Redox. A layer starting within 15 cm (6 inches) of the soil surface that is at least 10 cm (4 inches) thick and has a matrix with 60 percent or more chroma of 2 or less with 2 percent or more distinct or prominent redox concentrations occurring as soft masses and/or pore linings.

S6. Stripped Matrix. A layer starting within 15 cm (6 inches) of the soil surface in which iron-manganese oxides and/or organic matter have been stripped from the matrix and the primary base color of the soil material has been exposed. The stripped areas and translocated oxides and/or organic matter form a faint, diffuse splotchy pattern of two or more colors. The stripped zones are 10 percent or more of the volume; they are rounded and approximately 1 to 3 cm (0.5 to1 inch) in diameter.

S7. Dark Surface. A layer 10 cm (4 inches) or more thick starting within the upper 15 cm (6 inches) of the soil surface and with a matrix value of 3 or less and chroma of 1 or less. At least 70 percent of the visible soil particles must be covered, coated, or similarly masked with organic material. The matrix color of the layer directly below the dark layer must have chroma of 2 or less.

S8. Polyvalue Below Surface. A layer with value of 3 or less and chroma of 1 or less, starting within 15 cm (6 inches) of the soil surface, and underlain by a layer(s) in which translocated organic matter unevenly covers the soil material, forming a diffuse splotchy pattern. At least 70 percent of the visible soil particles in the upper layer must be covered, coated, or masked with organic material. Directly below this layer, the organic coating occupies.

S9. Thin Dark Surface. A layer 5 cm (2 inches) or more thick within the upper 15 cm (6 inches) of the soil, with value of 3 or less and chroma of 1 or less. At least 70 percent of the visible soil particles in this layer must be covered, coated, or masked with organic material. This layer is underlain by a layer(s) with a value of 4 or less and chroma of 1 or less to a depth of 12 in. (30 cm) or to the spodic horizon, whichever is less.

LOAMY & CLAYEY SOILS -- *These soils have USDA textures of loamy very fine sand and finer. All mineral layers above any of the F Indicators, except for Indicators F8, have a dominant chroma of 2 or less, or the layer(s) with a dominant chroma of more than 2 is less than 15 cm (6 inches) thick.*

F2. Loamy Gleyed Matrix. A gleyed matrix that occupies 60 percent or more of a layer starting within 30 cm (12 inches) of the soil surface.

F3. Depleted Matrix. A layer that has a depleted matrix with 60 percent or more chroma of 2 or less and that has a minimum thickness of either:
a. 5 cm (2 inches) if the 5 cm is entirely within the upper 15 cm (6 inches) of the soil, or
b. 15 cm (6 inches), starting within 25 cm (10 inches) of the soil surface.

F6. Redox Dark Surface. A layer that is at least 10 cm (4 inches) thick, is entirely within the upper 30 cm (12 inches) of the mineral soil, and has:
a. Matrix value of 3 or less and chroma of 1 or less and 2 percent or more distinct or prominent redox concentrations occurring as soft masses or pore linings, or
b. Matrix value of 3 or less and chroma of 2 or less and 5 percent or more distinct or prominent redox concentrations occurring as soft masses or pore linings.

F7. Depleted Dark Surface. Redox depletions with value of 5 or more and chroma of 2 or less in a layer that is at least 10 cm (4 inches) thick, is entirely within the upper 30 cm (12 inches) of the mineral soil, and has:
a. Matrix value of 3 or less and chroma 1 or less and 10 percent or more redox depletions, or
b. Matrix value of 3 or less and chroma of 2 or less and 20 percent or more redox depletions.

F8. Redox Depressions. In closed depressions subject to ponding, 5 percent or more distinct or prominent redox concentrations occurring as soft masses or pore linings in a layer that is 5 cm (2 inches) or more thick and is entirely within the upper 15 cm (6 inches) of the soil.

POTENTIAL INDICATORS FOR PROBLEMATIC SOILS
(See Chapter 5 of Regional Supplement)

"*In general, wetland determinations on difficult or problematic sites must be based on the best information available to the field inspector. Interpreted in light of his or her professional experience and knowledge of the ecology of wetlands in the region*" – Regional Supplement

A10. 2cm Muck. (for use in MLRA 149B, Long Island/Cape Cod subregion). A layer of muck 2 cm. (0.75 inch) or more thick with value of 3 or less and chroma of 1 or less and starting within 15 cm. (6 inches) of the soil surface.

A16. Coast Prairie Redox. (NOT for use in MLRA 149B, Long Island/Cape Cod subregion) a layer starting within 15 cm (6 inches) of the soil surface that is at least 10 cm. (4 inches) thick and has a matrix chroma of 3 or less and 2 percent or more distinct or prominent redox concentrations occurring as soft masses and/pr pore linings.

S3. 5 cm Mucky Peat or Peat. (NOT for use in MLRA 149B, Long Island/Cape Cod subregion). **(***Primarily in Interdunal Swales).* A layer of mucky peat or peat 5 cm (2 inches) or more thick with value 3 of or less and chroma of 2 or less, starting within 15 cm (6 inches) of the soil surface, and underlain by sandy soil material.

F12. Iron-Manganese Masses. (NOT for use in MLRA 149B, Long Island/Cape Cod subregion). On floodplains, a layer 4 in. (10 cm) or more thick with 40 percent or more chroma of 2 or less and 2 percent or more distinct or prominent redox concentrations occurring as soft iron/manganese masses with diffuse boundaries. The layer occurs entirely within 12 in. (30 cm) of the soil surface. Iron-manganese masses have value and chroma of 3 or less. Most commonly, they are black. The thickness requirement is waived if the layer is the mineral surface layer.

F19. Piedmont Floodplain Soils. (for use in MLRA 149B, Long Island/Cape Cod subregion). On active floodplains, a mineral layer at least 6 in. (15 cm) thick starting within 10 in. (25 cm) of the soil surface with a matrix (60 percent or more of the volume) chroma of less than 4 and 20 percent or more distinct or prominent redox concentrations occurring as soft masses or pore linings.

TF2. Red Parent Material. In parent material with hue of 7.5YR or redder, a layer at least 10 cm (4 inches) thick with a matrix value and chroma of 4 or less and 2 percent or more redox depletions and/or redox concentrations occurring as soft masses and/or pore linings. The layer is entirely within 30 cm (12 inches) of the soil surface. The minimum thickness requirement is 5 cm (2 inches) if the layer is the mineral surface layer.

TA6. Mesic Spodic. For test *in MLRA 144A and 145 of LRR R and MLRA 149B of LRR S*. A layer 5 cm (2 inches) or more thick starting within 15 cm (6 inches) of the mineral soil surface that has value of 3 or less and chroma 2 or less that is underlain by either:
1. a layer(s) 8cm (3 inches) or more thick occurring within 30 cm (12 inches) of the mineral soil surface that has value and chroma 3 or less that shows evidence of spodic development; or
2. a layer(s) 5 cm (2 inches) or more thick occurring within 30 cm (12 inches) of the mineral soil surface that has value 4 or more and chroma 2 or less that is directly underlain by a layer(s) 8cm (3 inches) or more thick with value and chroma 3 or less that shows evidence spodic development.

User Notes in the supplement have significant additions to address some soil forming factors that may be unique to our formerly glaciated region – those notes are not presented here

HYDRIC SOILS INDICATORS
Used only with Interim Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: North Central & Northeast October 2009

***"To use these indicators properly, a basic knowledge of soil/landscape relationships is necessary"* – Regional Supplement**

The Relevant Surface --** for indicators A1 (Histosol), A2 (Histic Epipedon), A3 (Black Histic), and S3 (5 cm Mucky Peat or Peat) depths are measured from the top of the organic material (peat, mucky peat, or muck); otherwise, in LRR R depths are measured from the top of the mineral surface, and in LRR S depths are measured from the top of the muck, or mineral surface, when muck is absent.
***Note -- this attempts to capture the overriding concepts in NTCHS Indicators V 7.0*

IMPORTANT DEFINITIONS

Layer(s): A horizon, subhorizon, or combination of contiguous horizons or subhorizons sharing at least one property referred to in the indicators.

Depleted matrix. For loamy and clayey material, (and sandy material for the application of Indicators A11 and A12), a depleted matrix refers to the volume of a soil horizon or subhorizon in which the processes of reduction and translocation have removed or transformed iron, creating colors of low chroma and high value. A, E, and calcic horizons may have low chromas and high values and may therefore be mistaken for a depleted matrix; however, they are excluded from the concept of depleted matrix unless the soil has common or many distinct or prominent redox concentrations occurring as soft masses or pore linings. In some areas the depleted matrix may change color upon exposure to air (See Reduced matrix); this phenomenon is included in the concept of depleted matrix.

The following combinations of value and chroma identify a depleted matrix:
1. Matrix value of 5 or more and chroma of 1 or less with or without redox concentrations occurring as soft masses and/or pore linings; or
2. Matrix value of 6 or more and chroma of 2 or less with or without redox concentrations occurring as soft masses and/or pore linings; or
3. Matrix value of 4 or 5 and chroma of 2 and 2 percent or more distinct or prominent redox concentrations occurring as soft masses and/or pore linings; or
4. Matrix value of 4 and chroma of 1 and 2 percent or more distinct or prominent redox concentrations occurring as soft masses and/or pore linings.

Gleyed matrix. Soils with a gleyed matrix have the following combinations of hue, value, and chroma (the soils are not glauconitic):
1. 10Y, 5GY, 10GY, 10G, 5BG, 10BG, 5B, 10B, or 5PB with value of 4 or more and chroma of 1; or
2. 5G with value of 4 or more and chroma of 1 or 2; or
3. N with value of 4 or more; or In some places the gleyed matrix may change color upon exposure to air. (See Reduced matrix). This phenomenon is included in the concept of gleyed matrix.

***Hydric soil definition* (1994).** A soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.

Mucky modified mineral soil material. A USDA soil texture modifier, e.g., mucky sand. Mucky modified mineral soil material that has 0 percent clay has between 5 and 12 percent organic carbon. Mucky modified mineral soil material that has 60 percent clay has between 12 and 18 percent organic carbon. Soils with an intermediate amount of clay have intermediate amounts of organic carbon. Where the organic component is peat (fibric material) or mucky peat (hemic material), mucky mineral soil material does not occur.

Reduced matrix. A soil matrix that has low chroma and high value, but in which the color changes in hue or chroma when the soil is exposed to air. See Vepraskas (1994) for a complete discussion.
