

FIELD INDICATORS OF HYDRIC SOILS IN LRR K, L, M, N, O, P – ILLINOIS

Adapted* from Version 9.3 6/4/2026 – Can be used in all Illinois LRRs, unless otherwise stated.

A1. Histosol. Classifies as a Histosol. User Notes: A Histosol has 40cm (16") or more of the upper 80cm (32") as organic soil material. These materials include muck (Sapric), mucky peat (Hemic), or peat (Fibric).

A2. Histic Epipedon. A histic epipedon underlain by mineral soil with chroma 2 or less. User Notes: Surface horizon of organic material 20cm (8") or more thick. Aquic conditions or artificial drainage required.

A3. Black Histic. A layer of peat, mucky peat, or muck 20cm (8") or more thick starting within the upper 15cm (6") of the soil surface having hue 10YR or yellower, value 3 or less, chroma 1 or less underlain by mineral soil material with chroma 2 or less. User Notes: Does not require proof of aquic conditions or artificial drainage.

A4. Hydrogen Sulfide. A hydrogen sulfide odor within 30cm (12") of the surface. User Notes: This "rotten egg smell" indicates the sulfate-sulfur in the soil has been reduced to hydrogen sulfide gas, indicating that the soil is anaerobic.

A5. Stratified Layers. Stratified layers starting within 15cm (6") of the surface. At least one layer has a value 3 or less with chroma 1 or less and/or it is muck, mucky peat, peat, or mucky modified mineral texture. The remaining layers in the upper 15cm (6") have chroma 2 or less. User Notes: Many alluvial soils have stratified layers at the required depths but lack chroma 2 or less in the remaining layers. This indicator may occur in any type soil material.

A6. Organic Bodies. *For use in LRR P.* Presence of 2% or more organic bodies of muck or mucky modified mineral texture, approximately 0.5-1 inch in diameter, starting within 15cm (6") of the soil surface, typically on tips of fine roots, commonly 1cm-3cm (0.5"-1") in size. User Notes: The content of organic carbon should be known before this indicator is used. Hemic and fibric material do not meet the requirements, nor does partially decomposed root material.

A7. 5 cm Mucky Mineral. *For use in LRR P.* A layer of mucky modified mineral soil material 5 cm (2") or more thick starting within 15cm (6") of the soil surface. User Notes: "Mucky" is a USDA texture modifier for mineral soils. The organic carbon content ranges from 5% to 12%.

A9. 1 cm Muck. *For use in LRR P. For testing in LRR O.* A layer of muck 1cm (0.5") or more thick with value of 3 or less and chroma of 1 or less starting within 15cm (6") of the soil surface. User Notes: Organic soil material is called muck if the material has sufficiently decomposed to limit the recognition of plant parts. Muck is sapric material with at least 12% organic carbon. Mucky peat and peat do not qualify. The muck layer may occur at any depth in the upper 15cm (6"). Sand grains should not be evident.

A10. 2 cm Muck. *Used in LRR M & N. For testing in LRR K & L.* A layer of muck 2cm (0.75") or more thick with value 3 or less and chroma 1 or less, starting within 15cm (6") of the soil surface. User Notes: See 1 cm Muck User Notes above.

A11. Depleted Below Dark Surface. A layer with a depleted or gleyed matrix that has 60% or more chroma 2 or less starting within 30cm (12") of the soil surface and having a minimum thickness of either: (a) 15cm (6") or (b) 5cm (2") if the 5cm (2") consists of fragmental soils material. Organic, loamy, or clayey layers above the depleted or gleyed matrix must have value 3 or less, chroma 2 or less starting within 15cm (6") of the surface and extend to the depleted or gleyed matrix. Sandy material must be 70% masked with organic material. User Notes: This indicator often occurs in Mollisols but also applies to soils with umbric and dark colored ochric epipedons. See also Depleted Matrix User Notes.

A12. Thick Dark Surface. A layer at least 15cm (6") thick with a depleted or gleyed matrix that has 60% or more chroma 2 or less starting below 30cm (12") of the surface. Layer(s) starting within 15cm (6") from the surface and above the depleted or gleyed matrix must have value 2.5 or less and chroma 1 or less to at least 30cm (12") and a value 3 or less and chroma 1 or less in any remaining layers above the depleted matrix. Loamy fine sand and coarser layers above the depleted matrix must be 70% or more masked with organic material. User Notes: The depleted matrix may occur in sandy or

loamy & clayey soil layers. This indicator has a black surface layer 30cm (12") or more thick and has value 3 or less, chroma 1 or less in any remaining layer above a depleted or gleyed matrix, often associated with soils in concave landscapes. See also Depleted Matrix User Notes.

A16. Coast Prairie Redox *For use in MLRA 150A of LRR T or with the COE Midwest Supplement "problem soils" in LRR M.* A layer starting within 15cm (6") of the surface that is at least 10cm (4") thick with matrix of chroma 3 or less with 2% or more distinct or prominent redox concentrations, occurring mainly on depressional landforms.

A18. Iron Monosulfide. Positive ID of dark-gray or black iron monosulfide concentrations with value 4 or less and chroma 2 or less, starting within 25cm (10") of the surface. User Notes: Positive ID requires 2 separate observations of FeS concentrations as stains, coatings, soft masses, or pore linings. Concentrations can oxidize rapidly, so observe immediately.

S1. Sandy Mucky Mineral. A mucky modified sandy mineral surface layer 5cm (2") or more thick starting within 15cm (6") of the soil surface. User Notes: "Mucky" is a USDA texture modifier for mineral soils. The organic carbon content ranges from 5% to 12% for sandy soils.

S3. 5 cm Mucky Peat or Peat. *For use in LRR M. For testing in K,L.* A layer of mucky peat or peat 5cm (2") or more thick with value 3 or less and chroma 2 or less, starting within 15cm (6") of the soil surface and underlain by sandy material. User Notes: Organic soil material is called peat if almost all of the plant fibers remain. Mucky peat is intermediate in decomposition between peat and muck. Minimum organic carbon of 12%.

S4. Sandy Gleyed Matrix. A gleyed matrix which occupies 60% or more of the layer within 15cm (6") of the soil surface. User Notes: Gley colors are not synonymous with gray colors. Gley colors are those colors that are found on the gley pages of the Munsell color charts.

S5. Sandy Redox. A layer starting within 15cm (6") of the soil surface that is at least 10cm (4") thick and has a matrix with 60% or more chroma 2 or less with 2% or more distinct or prominent redox concentrations as soft masses and/or pore linings. User Notes: Redox concentrations include iron and manganese masses (reddish mottles) and pore linings. Included within this concept of redox concentrations are iron/manganese bodies as soft masses with diffuse boundaries. Concentrations are often more visible as the soil dries. This is a very common indicator for sandy soils.

S6. Stripped Matrix. A layer within 15cm (6") of the surface in which iron/manganese oxides and/or organic matter have been stripped from the matrix exposing the primary base color of soil materials. The stripped areas and the translocated oxides and/or organic matter form a faint, diffuse splotchy pattern of two or more colors. The stripped zones are 10% or more of the volume and rounded and typically 1cm to 3cm (0.5" to 1") in diameter. User Notes: Commonly the splotches of color have value 5 or more and chroma 2 or less (stripped) and chroma 3 and/or 4 (unstripped). The matrix may lack the 3 and/or 4 chroma material. May be more evident on a horizontal slice of soil.

S7. Dark Surface. *For use in LRR K, L, M, N and P.* A layer 10cm (4") thick or more starting within the upper 15cm (6") of the surface with a matrix value of 3 or less and chroma of 1 or less. At least 70% of the particles appear to be masked. The matrix of the layer directly below the dark layer must have the same colors as described above or any color with chroma of 2 or less. User Notes: An undisturbed sample must be observed. A 10X hand lens is a valuable aid.

S8. Polyvalue Below Surface. *For testing in LRRs K and L.* A layer with value of 3 or less and chroma of 1 or less starting within 6 inches of the surface, and underlain by a layer(s) in which translocated organic matter unevenly covers the soil, forming a diffuse splotchy pattern. User Notes: This indicator applies to soils with a very dark gray or black surface or near surface layer that is <4 inches thick and is underlain by a layer in which organic matter has been differentially distributed by water movement.

S9. Thin Dark Surface. *For testing in LRRs K and L.* A layer 5cm (2") or more thick within 15cm (6") of the soil surface with value of 3 or less and chroma of 1 or less. $\geq 70\%$ of the visible soil particles must be masked by organic matter. This layer is underlain by a layer with value of 4 or less and chroma of 1 or less to a depth of 30cm (12") or to a spodic horizon. User Notes: This indicator applies to soils with a very dark gray or black surface or near surface layer that is 5cm (2") or more thick and is underlain by a layer in which organic matter has been leached downward and evenly distributed in the E horizon, commonly in Spodosols, but not required.

S11. High Chroma Sands. *For use along shorelines and near shore regions of the Great Lakes in LRRs K and L.* In coastal zones and dune-swale complexes, a layer 5cm (2") or more thick starting within 10cm (4") of the surface with chroma 4 or less and 2% or more redox concentrations. User Notes: Along shorelines some wetlands have high chroma sands (chroma 3 or 4) at the landward edge of marshes, on interdunal positions, and dune/swale complexes. These soils exhibit redox concentrations within 10cm (4") of the surface.

F1. Loamy Mucky Mineral. *(Not for use in LRR N. In LRR P use A7).* A mucky modified loamy or clayey surface layer 10cm (4") or more thick, starting within 6 inches of the soil surface. User Notes: "Mucky" is a USDA texture modifier for mineral soils. The organic carbon ranges 5% to 12%.

F2. Loamy Gleyed Matrix. A gleyed matrix that occupies 60% or more of a layer within 30cm (12") of the surface. User Notes: Gley colors are those colors that are found on the gley pages. They have hue of N, 10Y, 5GY, 10GY, 5G, 10G, 5BG, 10BG, 5B, 10B, or 5BP with value 4 or more. The gleyed matrix only has to be present within 30cm (12") of the surface.

F3. Depleted Matrix. A layer that has a depleted matrix with 60% or more chroma 2 or less and that has a minimum thickness of either:

- 5cm (2"), if the layer starts within 10cm (4") from the soil surface, OR
- 15cm (6"), if the layer starts within 25cm (10") from the soil surface.

User Notes: A depleted matrix requires a value of 4 or more and chroma of 2 or less. Redox concentrations, including soft iron-manganese masses and/or pore linings, are required in soils with matrix value 4/1, 4/2, and 5/2. A, E, and calcic horizons may have low chromas and high values and may be mistaken for a depleted matrix; however, they are excluded unless the soil has 2% or more distinct or prominent redox concentrations. The low chroma matrix must be a result of wetness and not a weathering or parent material feature.

F6. Redox Dark Surface. A layer at least 10cm (4") thick starting within 20cm (8") of the mineral soil surface that has:

- matrix value 3 or less and chroma 1 or less and 2% or more distinct or prominent redox concentrations as soft masses or pore linings, OR
- matrix value 3 or less and chroma 2 or less and 5% or more distinct or prominent redox concentrations as soft masses or pore linings.

User Notes: Redox concentrations in high organic matter mineral soils (Mollisols) are often difficult to see. In some instances, drying of the samples makes the concentrations (if present) easier to see.

F7. Depleted Dark Surface. Redox depletions, with value 5 or more and chroma 2 or less, in a layer at least 10cm (4") thick starting within 20cm (8") of the mineral soil surface and has:

- matrix value 3 or less and chroma 1 or less and 10% or more redox depletions, OR
- matrix value 3 or less and chroma 2 or less and 20% or more redox depletions.

User Notes: Care should be taken not to mistake the mixing of an E or calcic horizon into the surface layer as depletions. Redox concentrations should be within or surrounding the redox depletions.

F8. Redox Depressions. In closed depressions subject to ponding, 5% or more distinct or prominent redox concentrations occurring as soft masses or pore linings in a layer that is 5cm (2") or more thick and starts within 10cm (4") of the soil surface. User Notes: This indicator occurs on depressional landforms, such as potholes and floodplains. It does not occur in micro depressions on convex or planar slope shape positions.

F10. Marl. *For use in LRR K, L.* A layer of marl with value of 5 or more and chroma 2 or less starting within 10cm (4") of the soil surface. User Notes: Marl is a limnic material deposited in water by precipitation of CaCO_3 by algae. It has a value of 5 or more and reacts with diluted HCl. Marl is not the carbonatic substrate material associated with limestone. Some soils have the properties of Marl, except for the required Munsell value. These soils are hydric if the required value is present within 10cm (4") of the surface. Normally this indicator occurs at the surface.

F12. Iron-Manganese Masses. *For use in LRRs N, O, P; for testing in LRR K, L, M.* On flood plains, a layer 10cm (4") or more thick with 40% or more chroma 2 or less and 2% or more distinct or prominent redox concentrations occurring as soft iron/manganese masses with diffuse boundaries. The layer starts within 20cm (8") of the surface. Fe/Mn masses have value and chroma of 3 or less. The thickness requirement is waived if the layer is the mineral surface layer. User Notes: The Fe/Mn masses are generally small (2–5 mm) and black and have value and chroma of 3 or less.

F13. Umbric Surface. *For use in LRRs P and MLRA 122 of N.* A layer 25cm (10") or more thick starting within 15cm (6") of the surface in which the upper 15cm (6") has value of 3 or less and chroma of 1 or less and in which the lower 10cm (4") has the same colors as those described above or any other color that has chroma of 2 or less. User Notes: The thickness requirements may be slightly less than those for an umbric epipedon.

F21. Red Parent Material. *For use in MLRA 127 of LRR N and for testing in all LRRs in soils derived from red parent materials.* A layer derived from red parent materials that is at least 10cm (4") thick starting within 25cm (10") of the soil surface with a hue of 7.5YR or redder. The matrix has value and chroma greater than 2 and less than or equal to 4. The layer must contain 10% or more depletions and/or redox concentrations. User Notes: For use in red parent material. Redox concentrations and depletions must be distinct or prominent and total at least 10%. Developed for Piedmont Lowlands of Appalachian Mtns. and for areas along the AR & LA Red River.

F22. Very Shallow Dark Surface *For testing in all LRRs.* In depressions and floodplains subject to frequent flooding/ponding, one of the following must be observed:

- If bedrock occurs between 15cm and 25cm (6"-10"), a layer at least 15cm (6") thick starting within 10cm (4") inches of the soil surface with value 2.5 or less/chroma 1 or less, and the remaining soil to bedrock must have the same colors as above or any color that has chroma 2 or less, OR
- If bedrock occurs within 15cm (6"), more than half of the soil thickness must have value 2.5 or less and chroma 1 or less and the remaining soil to bedrock must have the same colors or any color with chroma 2 or less.