

In this section, hydric soils are defined and described and the hydric soils in the survey area are listed. The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for each of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 1995). These criteria are used to identify a phase of a soil series that normally is associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (USDA, 1999) and "Keys to Soil Taxonomy" (USDA, 1998) and in the "Soil Survey Manual" (USDA, 1993).

If soils are wet enough for a long enough period to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils in this survey area are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and others, 1996).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units in the Hydric Soil Interpretations table meet the definition of hydric soils and, in addition, have at least one of the hydric soil indicators. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 1996).

Map units that are made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

These map units, in general, do not meet the definition of hydric soils because they do not have one of the hydric soil indicators. A portion of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

HYDRIC SOIL INTERPRETATIONS
HYDRIC SOILS LIST
Coffey County, Kansas

PAGE 2 of 5

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
003CC: CLARESON COMPLEX, 1 TO 4 PERCENT SLOPES	CLARESON	No	hillslope	---	---	---	---
	ROCK OUTCROP	---	hillslope	---	---	---	---
	CATOOSA	No	hillslope	---	---	---	---
	TALIHINA	No	hillslope	---	---	---	---
003EK: ERAM-CLARESON COMPLEX, 1 TO 15 PERCENT SLOPES	ERAM	No	hillslope	---	---	---	---
	CLARESON	No	hillslope	---	---	---	---
	ROCK OUTCROP	---	hillslope	---	---	---	---
	SUMMIT	No	hillslope	---	---	---	---
	CATOOSA	No	hillslope	---	---	---	---
	DENNIS	No	hillslope	---	---	---	---
	TALIHINA	No	hillslope	---	---	---	---
003WF: WOODSON SILT LOAM, 1 TO 3 PERCENT SLOPES	WOODSON	Unranked	paleoterrace	---	---	---	---
	KENOMA	Unranked	hillslope	---	---	---	---
	SUMMIT	Unranked	hillslope	---	---	---	---
059CM: CLARESON-ERAM SILTY CLAY LOAMS, 3 TO 15 PERCENT SLOPES	CLARESON	No	hillslope	---	---	---	---
	ERAM	No	hillslope	---	---	---	---
	BATES	No	hillslope	---	---	---	---
	ROCK OUTCROP	Unranked	hillslope	---	---	---	---
111CA: CHASE SILTY CLAY LOAM, OCCASIONALLY FLOODED	CHASE	No	flood plain	---	---	---	---
	OSAGE	Yes	flood plain	2B3	YES	NO	NO
111EC: ELMONT SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES, ERODED	ELMONT	No	hillslope	---	---	---	---
111KC: KENOMA SILT LOAM, 3 TO 6 PERCENT SLOPES	KENOMA	No	divide, terrace	---	---	---	---
111LA: LABETTE SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	LABETTE	No	hillslope	---	---	---	---
111LB: LABETTE SILTY CLAY LOAM, 3 TO 6 PERCENT SLOPES	LABETTE	No	hillslope	---	---	---	---
111OA: OLPE-KENOMA COMPLEX, 3 TO 15 PERCENT SLOPES	OLPE	No	paleoterrace	---	---	---	---
	KENOMA	No	divide	---	---	---	---
139CM: CLARESON-ERAM COMPLEX, 3 TO 15 PERCENT SLOPES	CLARESON	No	hillslope	---	---	---	---
	ERAM	No	hillslope	---	---	---	---
	ROCK OUTCROP	Unranked	---	---	---	---	---
	BATES	No	hillslope	---	---	---	---
139DN: DENNIS SILT LOAM, 2 TO 6 PERCENT SLOPES	DENNIS	No	hillslope	---	---	---	---
	BATES	No	hillslope	---	---	---	---
	ERAM	No	hillslope	---	---	---	---
139LU: LULA SILT LOAM, 1 TO 3 PERCENT SLOPES	LULA	No	hillslope	---	---	---	---
	DWIGHT	No	hillslope	---	---	---	---
	ERAM	No	hillslope	---	---	---	---
	KENOMA	No	divide	---	---	---	---
Ae: APPERSON-ERAM SILTY CLAY LOAMS, 1 TO 4 PERCENT SLOPES	APPERSON	No	hillslope	---	---	---	---
	ERAM	No	hillslope	---	---	---	---
	SHIDLER	No	rim	---	---	---	---
	LULA	No	hillslope	---	---	---	---
	ROCK OUTCROP	---	---	---	---	---	---
AED: ARENTS, EARTHEN DAM	ARENTS, EARTHEN DAM	Unranked	---	---	---	---	---

HYDRIC SOIL INTERPRETATIONS
HYDRIC SOILS LIST
Coffey County, Kansas

PAGE 3 of 5

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
Bb: BATES LOAM, 1 TO 4 PERCENT SLOPES	BATES	Unranked	hillslope	---	---	---	---
	DENNIS	Unranked	hillslope	---	---	---	---
	ERAM	Unranked	hillslope	---	---	---	---
	SANDSTONE OUTCROP	---	hillslope	---	---	---	---
Bc: BATES LOAM, 4 TO 7 PERCENT SLOPES	BATES	No	hillslope	---	---	---	---
	DENNIS	No	hillslope	---	---	---	---
Cs: CLARESON-SHIDLER SILTY CLAY LOAMS, 1 TO 8 PERCENT SLOPES	CLARESON	No	ridge	---	---	---	---
	SHIDLER	No	rim	---	---	---	---
	ERAM	No	hillslope	---	---	---	---
	SUMMIT	No	hillslope	---	---	---	---
Db: DENNIS SILT LOAM, 1 TO 4 PERCENT SLOPES	DENNIS	No	hillslope	---	---	---	---
	BATES OLPE	No	hillslope paleoterrace	---	---	---	---
De: DENNIS SILTY CLAY LOAM, 2 TO 5 PERCENT SLOPES, ERODED	DENNIS	No	hillslope	---	---	---	---
	BATES OLPE	No	hillslope paleoterrace	---	---	---	---
Eb: ERAM SILT LOAM, 1 TO 3 PERCENT SLOPES	ERAM	No	hillslope	---	---	---	---
	COLLINSVILLE DWIGHT	No	hillslope hillslope	---	---	---	---
Ec: ERAM SILT LOAM, 3 TO 7 PERCENT SLOPES	ERAM	No	hillslope	---	---	---	---
	BATES RINGO	No	hillslope hillslope	---	---	---	---
Eh: ERAM SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES, ERODED	ERAM	No	hillslope	---	---	---	---
	SHIDLER COLLINSVILLE	No	rim hillslope	---	---	---	---
EN: ERAM SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES	ERAM	No	hillslope	---	---	---	---
	CLARESON	No	hillslope	---	---	---	---
	DENNIS	No	hillslope	---	---	---	---
	ELMONT	No	hillslope	---	---	---	---
Ep: ERAM-APPERSON SILTY CLAY LOAMS, 4 TO 7 PERCENT SLOPES	ERAM	No	hillslope	---	---	---	---
	APPERSON	No	hillslope	---	---	---	---
	CLARESON	No	ridge	---	---	---	---
	ROCK OUTCROP SHIDLER	---	hillslope rim	---	---	---	---
Er: ERAM-COLLINSVILLE COMPLEX, 4 TO 15 PERCENT SLOPES	ERAM	No	hillslope	---	---	---	---
	COLLINSVILLE	No	hillslope	---	---	---	---
	APPERSON	No	hillslope	---	---	---	---
	BATES SUMMIT	No	hillslope hillslope	---	---	---	---
Es: ERAM-SHIDLER SILTY CLAY LOAMS, 4 TO 15 PERCENT SLOPES	ERAM	No	hillslope	---	---	---	---
	SHIDLER OLPE	No	rim hillslope	---	---	---	---
INT: AQUOLLS	AQUOLLS	Yes	depression, terrace	3,2B3	YES	NO	YES
Kb: KENOMA SILT LOAM, 1 TO 3 PERCENT SLOPES	KENOMA	No	divide, terrace	---	---	---	---
	CATOOSA	No	ridge	---	---	---	---
	ZAAR	No	hillslope	---	---	---	---

HYDRIC SOIL INTERPRETATIONS
HYDRIC SOILS LIST
Coffey County, Kansas

PAGE 4 of 5

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
Ke: KENOMA SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES, ERODED	KENOMA	No	hillslope	---	---	---	---
Ko: KENOMA-OLPE COMPLEX, 2 TO 7 PERCENT SLOPES	DWIGHT	No	hillslope	---	---	---	---
	KENOMA	No	hillslope	---	---	---	---
	OLPE SHIDLER	No No	paleoterrace rim	---	---	---	---
La: LANTON SILTY CLAY LOAM, OCCASIONALLY FLOODED	LANTON	No	flood plain	---	---	---	---
Le: LEANNA SILT LOAM, OCCASIONALLY FLOODED	MASON OSAGE	No Yes	terrace flood plain	---	---	---	---
	LEANNA	No	flood plain	---	---	---	---
	HEPLER OSAGE	No Yes	flood plain flood plain	---	---	---	---
Lu: LULA SILT LOAM, 0 TO 2 PERCENT SLOPES	LULA	No	hillslope	---	---	---	---
	CLARESON	No	hillslope	---	---	---	---
	KENOMA	No	hillslope	---	---	---	---
M-W: MISCELLANEOUS WATER	MISCELLANEOUS WATER	---	---	---	---	---	---
Ma: MASON SILT LOAM, RARELY FLOODED	MASON	No	stream terrace	---	---	---	---
	LANTON	No	flood plain	---	---	---	---
	LEANNA	No	flood plain	---	---	---	---
Ob: OLPE GRAVELLY SILT LOAM, 4 TO 15 PERCENT SLOPES	OLPE	No	paleoterrace	---	---	---	---
	ERAM	No	hillslope	---	---	---	---
	LULA SHIDLER	No No	hillslope rim	---	---	---	---
Oc: ORTHENTS, CLAYEY	ORTHENTS	Unranked	depression	---	---	---	---
Oh: ORTHENTS, HILLY	ORTHENTS	No	hillslope	---	---	---	---
Os: OSAGE SILTY CLAY LOAM, OCCASIONALLY FLOODED	OSAGE	Yes	flood-plain step	2B3	YES	NO	NO
	LANTON	No	flood plain	---	---	---	---
	VERDIGRIS	No	flood plain	---	---	---	---
Ot: OSAGE SILTY CLAY, OCCASIONALLY FLOODED	OSAGE	Yes	flood plain	2B3	YES	NO	NO
	VERDIGRIS	No	flood plain	---	---	---	---
Pt: PITS, QUARRIES	Pits, quarries	Unranked	---	---	---	---	---
Sa: SUMMIT SILTY CLAY LOAM, 1 TO 4 PERCENT SLOPES	SUMMIT	No	hillslope	---	---	---	---
	KENOMA WAGSTAFF	Unranked Unranked	hillslope hillslope	---	---	---	---
Sc: SUMMIT SILTY CLAY LOAM, 4 TO 7 PERCENT SLOPES	SUMMIT	No	hillslope	---	---	---	---
Sd: SUMMIT-DWIGHT COMPLEX, 1 TO 3 PERCENT SLOPES	LULA SHIDLER	No No	hillslope rim	---	---	---	---
	SUMMIT	No	hillslope	---	---	---	---
	DWIGHT	No	hillslope	---	---	---	---
	ERAM	No	hillslope	---	---	---	---
	KENOMA SHIDLER	No No	hillslope rim	---	---	---	---
Vb: VERDIGRIS SILT LOAM, OCCASIONALLY FLOODED	VERDIGRIS	No	flood plain	---	---	---	---
	OSAGE	Yes	flood plain	2B3,3	YES	NO	YES

HYDRIC SOIL INTERPRETATIONS
HYDRIC SOILS LIST
Coffey County, Kansas

PAGE 5 of 5

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				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
Vc: VERDIGRIS SILT LOAM, CHANNELED	VERDIGRIS	No	flood plain	---	---	---	---
	BATES	No	hillside	---	---	---	---
	ERAM	No	hillside	---	---	---	---
	OSAGE	Yes	flood plain	2B3,4	YES	YES	NO
	ROCK OUTCROP	No	---	---	---	---	---
W: WATER	WATER	Yes	---	4,3	NO	YES	YES
Wo: WOODSON SILT LOAM, 0 TO 2 PERCENT SLOPES	WOODSON	No	divide	---	---	---	---
	KENOMA	No	divide	---	---	---	---
	SUMMIT	No	hillslope	---	---	---	---

FOOTNOTE: There may be small areas of included soils or miscellaneous areas that are significant to use and management of the soil; yet are too small to delineate on the soil map at the map's original scale. These may be designated as spot symbols and are defined in the published Soil Survey Report or the USDA-NRCS Technical Guide, Part II.

Areas mapped as water or any map unit that contains one of the following conventional symbols is considered a hydric soil map unit: marshes or swamps; wet spots; depressions; streams, lakes and ponds.

1. All Histosols except Folists, or
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Aquisalids, Pachic subgroups, or Cumulic subgroups that are:
 - a. Somewhat poorly drained with a water table equal to 0.0 foot (ft) from the surface during the growing season, or
 - b. poorly drained or very poorly drained and have either:
 - (1) water table equal to 0.0 ft during the growing season if textures are coarse sand, sand, or fine sand in all layers within 20 inches (in), or for other soils
 - (2) water table at less than or equal to 0.5 ft from the surface during the growing season if permeability is equal to or greater than 6.0 in/hour (h) in all layers within 20 in, or
 - (3) water table at less than or equal to 1.0 ft from the surface during the growing season if permeability is less than 6.0 in/h in any layer within 20 in, or
3. Soils that are frequently ponded for long duration or very long duration during the growing season, or
4. Soils that are frequently flooded for long duration or very long duration during the growing season.

