

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.

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All mapunits are displayed regardless of hydric status and are listed in alpha-numeric order by mapunit symbol. The "Hydric Soils Criteria" columns indicate the conditions that caused the mapunit component to be classified as "Hydric" or "Non-Hydric". These criteria are defined in "Hydric Soils of the United States" (USDA Miscellaneous Publication No. 1491, June, 1991). See the "Criteria for Hydric Soils" endnote to determine the meaning of these columns. Spot symbols are footnoted at the end of the table.

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
Be: BENFIELD-FLORENCE COMPLEX, 5 TO 30 PERCENT SLOPES	BENFIELD	No	hillslope	---	---	---	---
	FLORENCE	No	hillslope	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
	KONZA	No	ridge	---	---	---	---
	LABETTE	No	hillslope	---	---	---	---
	IRWIN	No	hillslope	---	---	---	---
	TULLY	No	hillslope	---	---	---	---
	KAHOLA	No	flood plain	---	---	---	---
	ROCK OUTCROP	---	---	---	---	---	---
	calcareous, fine-loamy, cumulic hapludolls	No	flood plain	---	---	---	---
Cc: CLIME SILTY CLAY LOAM, 20 TO 40 PERCENT SLOPES, VERY STONY	CLIME	No	hillslope	---	---	---	---
	TUTTLE	No	hillslope	---	---	---	---
	TULLY	No	hillslope	---	---	---	---
	ROCK OUTCROP	---	---	---	---	---	---
	KAHOLA	No	flood plain	---	---	---	---
	SOGN	No	hillslope	---	---	---	---
	calcareous, fine-loamy, cumulic hapludolls	No	flood plain	---	---	---	---
Cf: CLIME-SOHN SILTY CLAY LOAMS, 5 TO 20 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
	SOGN	No	hillslope	---	---	---	---
	TULLY	No	hillslope	---	---	---	---
	IRWIN	No	hillslope	---	---	---	---
	TUTTLE	No	hillslope	---	---	---	---
	KAHOLA	No	flood plain	---	---	---	---
	KONZA	No	ridge	---	---	---	---
	UNNAMED HYDRIC SOIL (saturation)	Yes	flood plain, marsh	2B3	YES	NO	NO
	calcareous, fine-loamy, cumulic hapludolls	No	flood plain	---	---	---	---
Cr: CRETE SILTY CLAY LOAM, 0 TO 1 PERCENT SLOPES	CRETE	No	ridge	---	---	---	---
	HASTINGS HOLDER	No No	divide hillslope	---	---	---	---
Cs: CRETE SILTY CLAY LOAM, 1 TO 4 PERCENT SLOPES	CRETE	No	hillslope	---	---	---	---
	HASTINGS HOLDER	No No	divide hillslope	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
Ct: CRETE SILTY CLAY LOAM, 3 TO 8 PERCENT SLOPES	CRETE	No	hillslope	---	---	---	---
	HASTINGS HOLDER	No No	divide hillslope	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
Eu: EUDORA SILT LOAM, OCCASIONALLY FLOODED	EUDORA	No	flood plain	---	---	---	---
	MCCOOK	No	stream terrace	---	---	---	---
	SARPY	No	flood plain	---	---	---	---
	UNNAMED HYDRIC SOIL (ponding)	Yes	depression, flood plain	3	NO	NO	YES
	UNNAMED HYDRIC SOIL (saturation)	Yes	flood plain, marsh	2B3	YES	NO	NO
Ge: GEARY SILT LOAM, 3 TO 8 PERCENT SLOPES	GEARY	No	hillslope	---	---	---	---
	CRETE	No	hillslope	---	---	---	---
	HASTINGS	No	divide	---	---	---	---
	HOLDER	No	hillslope	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
	SOGN	No	hillslope	---	---	---	---

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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
Gf: GEARY SILT LOAM, 7 TO 15 PERCENT SLOPES	GEARY	No	hillslope	---	---	---	---
	HOLDER	No	hillslope	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
	SOGN	No	hillslope	---	---	---	---
	He: HAYNIE SILT LOAM, FREQUENTLY FLOODED	No	flood plain	---	---	---	---
	Unnamed stratified soils (fine- silty)	No	flood plain	---	---	---	---
	Unnamed stratified soils (fine)	No	flood plain	---	---	---	---
	UNNAMED HYDRIC SOIL (ponding)	Yes	depression, flood plain	3	NO	NO	YES
	UNNAMED HYDRIC SOIL (saturation)	Yes	flood plain, marsh	2B3	YES	NO	NO
	Unnamed stratified soils (sandy)	No	flood plain	---	---	---	---
Hf: HOBBS SILT LOAM, CHANNELED	HOBBS	No	flood plain	---	---	---	---
	calcareous, fine-loamy, cumulic hapludolls	No	flood plain	---	---	---	---
	MUIR	No	flood plain	---	---	---	---
	CRETE	No	hillslope	---	---	---	---
	GEARY	No	hillslope	---	---	---	---
	UNNAMED HYDRIC SOIL (ponding)	Yes	depression, flood plain	3	NO	NO	YES
	UNNAMED HYDRIC SOIL (saturation)	Yes	flood plain, marsh	2B3	YES	NO	NO
	Hg: HOBBS SILT LOAM, OCCASIONALLY FLOODED	Unranked	---	---	---	---	---
	calcareous, fine-loamy, cumulic hapludolls	No	flood plain	---	---	---	---
	MUIR	No	flood plain	---	---	---	---
Hm: HOLDER SILT LOAM, 1 TO 3 PERCENT SLOPES	CRETE	No	hillslope	---	---	---	---
	GEARY	No	hillslope	---	---	---	---
	UNNAMED HYDRIC SOIL (ponding)	Yes	depression, flood plain	3	NO	NO	YES
	UNNAMED HYDRIC SOIL (saturation)	Yes	flood plain, marsh	2B3	YES	NO	NO
	Ho: HOLDER SILT LOAM, 3 TO 7 PERCENT SLOPES	No	hillslope	---	---	---	---
	CRETE	No	hillslope	---	---	---	---
	GEARY	No	hillslope	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
	Id: IRWIN SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES	No	hillslope	---	---	---	---
	KONZA	No	ridge	---	---	---	---
Id: IRWIN SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
	FLORENCE	No	hillslope	---	---	---	---
	UNNAMED HYDRIC SOIL (saturation)	Yes	flood plain, marsh	2B3	YES	NO	NO

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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
Ka: KAHOLA SILT LOAM, CHANNELED	KAHOLA	No	flood plain	---	---	---	---
	TULLY	No	hillslope	---	---	---	---
	calcareous, fine-loamy, cumulic hapludolls	No	flood plain	---	---	---	---
	UNNAMED HYDRIC SOIL (ponding)	Yes	depression, flood plain	3	NO	NO	YES
	UNNAMED HYDRIC SOIL (saturation)	Yes	flood plain, marsh	2B3	YES	NO	NO
Kb: KAHOLA SILT LOAM, OCCASIONALLY FLOODED	KAHOLA	No	flood plain	---	---	---	---
	calcareous, fine-loamy, cumulic hapludolls	No	flood plain	---	---	---	---
	TULLY	No	hillslope	---	---	---	---
	READING	No	flood plain	---	---	---	---
	UNNAMED HYDRIC SOIL (ponding)	Yes	depression, flood plain	3	NO	NO	YES
	UNNAMED HYDRIC SOIL (saturation)	Yes	flood plain, marsh	2B3	YES	NO	NO
Ko: KONZA SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	KONZA	No	ridge	---	---	---	---
	IRWIN	No	hillslope	---	---	---	---
	LABETTE	No	hillslope	---	---	---	---
	LADYSMITH	No	ridge	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
	FLORENCE	No	hillslope	---	---	---	---
Lm: LADYSMITH SILTY CLAY LOAM, 0 TO 2 PERCENT SLOPES	LADYSMITH	No	ridge	---	---	---	---
	KONZA	No	ridge	---	---	---	---
Lo: LONGFORD LOAM, 1 TO 3 PERCENT SLOPES	LONGFORD	No	hillslope	---	---	---	---
	CRETE	No	hillslope	---	---	---	---
	ORTELO	No	hillslope	---	---	---	---
	WELLS	No	hillslope	---	---	---	---
M-W: MISCELLANEOUS WATER	MISCELLANEOUS WATER	Unranked	---	---	---	---	---
Mb: MCCOOK SILT LOAM, OCCASIONALLY FLOODED	MCCOOK	No	stream terrace	---	---	---	---
	EUDORA	No	flood plain	---	---	---	---
	SMOKYHILL	No	depression, flood plain	---	---	---	---
	SOLOMON	Yes	ephemeral oxbow lake, flood plain	3	NO	NO	YES
	UNNAMED HYDRIC SOIL (saturation)	Yes	flood plain, marsh	2B3	YES	NO	NO
Mc: MCCOOK SILT LOAM, RARELY FLOODED	MCCOOK	No	stream terrace	---	---	---	---
	EUDORA	No	flood plain	---	---	---	---
	SMOKYHILL	No	depression, flood plain	---	---	---	---
	UNNAMED HYDRIC SOIL (ponding)	Yes	depression, flood plain	3	NO	NO	YES
	UNNAMED HYDRIC SOIL (saturation)	Yes	flood plain, marsh	2B3	YES	NO	NO

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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
Mk: MCCOOK-SMOKYHILL SILT LOAMS, OCCASIONALLY FLOODED	MCCOOK	No	stream terrace	---	---	---	---
	SMOKYHILL	No	depression, flood plain	---	---	---	---
	MCCOOK sandy substratum	No	flood plain	---	---	---	---
	SUTPHEN	No	flood plain	---	---	---	---
	UNNAMED HYDRIC SOIL (ponding)	Yes	depression, flood plain	3	NO	NO	YES
	UNNAMED HYDRIC SOIL (saturation)	Yes	flood plain, marsh	2B3	YES	NO	NO
Mu: MUIR SILT LOAM, RARELY FLOODED	MUIR	No	flood plain	---	---	---	---
	SUTPHEN UNNAMED HYDRIC SOIL (ponding)	No Yes	flood plain depression, flood plain	---	---	---	---
Oc: ORTHENTS	ORTHENTS	Unranked	---	---	---	---	---
Or: ORTHENTS, EARTHEN DAM	ORTHENTS, EARTHEN DAM	Unranked	---	---	---	---	---
Pt: PITS, QUARRIES	Pits, quarries	Unranked	---	---	---	---	---
Ra: READING SILT LOAM, 0 TO 1 PERCENT SLOPES	READING	No	flood plain	---	---	---	---
	TULLY KAHOLA	No No	hillslope flood plain	---	---	---	---
Re: READING SILTY CLAY LOAM, 0 TO 2 PERCENT SLOPES	READING	No	flood plain	---	---	---	---
	TULLY KAHOLA	No No	hillslope flood plain	---	---	---	---
Sa: SARPY LOAMY FINE SAND, 0 TO 4 PERCENT SLOPES	SARPY	No	flood plain	---	---	---	---
	EUDORA	No	flood plain	---	---	---	---
Sc: SARPY GRAVELLY LOAMY SAND, 0 TO 4 PERCENT SLOPES, OCCASIONALLY FLOODED	SARPY	No	flood plain	---	---	---	---
	EUDORA	No	flood plain	---	---	---	---
Sh: SOLOMON SILTY CLAY, OCCASIONALLY FLOODED	SOLOMON	Yes	ephemeral oxbow lake, flood plain	3	NO	NO	YES
	SUTPHEN MCCOOK	No No	flood plain stream terrace	---	---	---	---
St: SUTPHEN SILTY CLAY, OCCASIONALLY FLOODED	SUTPHEN	No	flood plain	---	---	---	---
	MUIR	No	flood plain	---	---	---	---
	MCCOOK	No	stream terrace	---	---	---	---
	SOLOMON	Yes	ephemeral oxbow lake, flood plain	3	NO	NO	YES
Tn: TULLY SILTY CLAY LOAM, 1 TO 4 PERCENT SLOPES	UNNAMED HYDRIC SOIL (saturation)	Yes	flood plain, marsh	2B3	YES	NO	NO
	TULLY	No	hillslope	---	---	---	---
	KAHOLA	No	flood plain	---	---	---	---
	READING	No	flood plain	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
	FLORENCE	No	hillslope	---	---	---	---

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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
To: TULLY SILTY CLAY LOAM, 3 TO 8 PERCENT SLOPES	TULLY	No	hillslope	---	---	---	---
	KAHOLA	No	flood plain	---	---	---	---
	READING	No	flood plain	---	---	---	---
	BENFIELD	No	hillslope	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
	FLORENCE	No	hillslope	---	---	---	---
	calcareous, fine-loamy, cumulic hapludolls	No	flood plain	---	---	---	---
Vc: VALENTINE LOAMY FINE SAND, 5 TO 15 PERCENT SLOPES	VALENTINE	No	dune	---	---	---	---
	ORTELLO	No	hillslope	---	---	---	---
	WELLS	No	hillslope	---	---	---	---
	LONGFORD	No	hillslope	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
	UNNAMED HYDRIC SOIL (ponding)	Yes	depression, flood plain	3	NO	NO	YES
	UNNAMED HYDRIC SOIL (saturation)	Yes	flood plain, marsh	2B3	YES	NO	NO
W: WATER	WATER	Yes	---	4,3	NO	YES	YES
We: WELLS-ORTELLO COMPLEX, 1 TO 4 PERCENT SLOPES	WELLS	No	hillslope	---	---	---	---
	ORTELLO	No	hillslope	---	---	---	---
	LONGFORD	No	hillslope	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
	CRETE	No	hillslope	---	---	---	---
	VALENTINE	No	dune	---	---	---	---
Wf: WELLS-ORTELLO COMPLEX, 4 TO 8 PERCENT SLOPES	WELLS	No	hillslope	---	---	---	---
	ORTELLO	No	hillslope	---	---	---	---
	LONGFORD	No	hillslope	---	---	---	---
	CLIME	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.

