

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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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
Ac: AKSARBEN SILTY CLAY LOAM, 0 TO 2 PERCENT SLOPES	AKSARBEN	No	divide	---	---	---	---
	MARSHALL	No	interfluv	---	---	---	---
Ad: AKSARBEN SILTY CLAY LOAM, 2 TO 5 PERCENT SLOPES	AKSARBEN	No	interfluv	---	---	---	---
	MARSHALL	No	interfluv	---	---	---	---
	WYMORE	No	interfluv	---	---	---	---
	KENNEBEC	No	flood plain	---	---	---	---
	JUDSON	No	fan remnant	---	---	---	---
Ae: AKSARBEN SILTY CLAY LOAM, 5 TO 11 PERCENT SLOPES	JUDSON	No	fan remnant	---	---	---	---
	KENNEBEC	No	flood plain	---	---	---	---
	MARSHALL	No	hillslope	---	---	---	---
	MORRILL	No	hillslope	---	---	---	---
	WYMORE	No	hillslope	---	---	---	---
	AKSARBEN	No	hillslope	---	---	---	---
Bs: BURCHARD CLAY LOAM, 6 TO 12 PERCENT SLOPES	BURCHARD	No	hillslope	---	---	---	---
	PAWNEE	No	hillslope	---	---	---	---
	STEINAUER	No	hillslope	---	---	---	---
Bx: BURCHARD-STEINAUER CLAY LOAMS, 12 TO 18 PERCENT SLOPES	BURCHARD	No	hillslope	---	---	---	---
	STEINAUER	No	hillslope	---	---	---	---
	PADONIA	No	hillslope	---	---	---	---
Ch: CHASE SILTY CLAY LOAM, 0 TO 2 PERCENT SLOPES, RARELY FLOODED	CHASE	No	flood plain	---	---	---	---
	KENNEBEC	No	flood plain	---	---	---	---
	MUSCOTAH	No	flood plain	---	---	---	---
Co: CONTRARY SILTY CLAY LOAM, 5 TO 9 PERCENT SLOPES	CONTRARY	No	hillslope	---	---	---	---
	MORRILL	No	hillslope	---	---	---	---
	KENNEBEC	No	flood plain	---	---	---	---
Ga: GRUNDY SILT LOAM, 0 TO 2 PERCENT SLOPES	GRUNDY	No	divide	---	---	---	---
	HAIG	Yes	divide	3,2B3	YES	NO	YES
Ju: JUDSON SILT LOAM, 2 TO 6 PERCENT SLOPES	JUDSON	No	fan remnant	---	---	---	---
	KENNEBEC	No	flood plain	---	---	---	---
Kd: KENNEBEC SILT LOAM, CHANNELED, FREQUENTLY FLOODED	KENNEBEC	No	flood plain	---	---	---	---
	NODAWAY	No	flood plain	---	---	---	---
	KENRIDGE	No	flood plain	---	---	---	---
	MUSCOTAH	No	flood plain	---	---	---	---
	ZOOK	Yes	flood plain	2B3	YES	NO	NO
Ke: KENNEBEC SILT LOAM, 0 TO 2 PERCENT SLOPES, OCCASIONALLY FLOODED	KENNEBEC	No	flood plain	---	---	---	---
	MUSCOTAH	No	flood plain	---	---	---	---
	KENRIDGE	No	flood plain	---	---	---	---
	ZOOK	Yes	flood plain	2B3	YES	NO	NO
Kp: KIPSON-SOGN SILTY CLAY LOAMS, 5 TO 30 PERCENT SLOPES	KIPSON	No	hillslope	---	---	---	---
	SOGN	No	hillslope	---	---	---	---
	KENNEBEC	No	flood plain	---	---	---	---
M-W: MISCELLANEOUS WATER	MISCELLANEOUS WATER	Unranked	---	---	---	---	---
Ma: MARSHALL SILT LOAM, 2 TO 5 PERCENT SLOPES	MARSHALL	No	interfluv	---	---	---	---
	AKSARBEN	No	interfluv	---	---	---	---

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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
Mb: MARSHALL SILTY CLAY LOAM, 5 TO 11 PERCENT SLOPES	MARSHALL	No	hillslope	---	---	---	---
	CONTRARY	No	hillslope	---	---	---	---
	MORRILL	No	hillslope	---	---	---	---
	JUDSON	No	fan remnant	---	---	---	---
	KENNEBEC	No	flood plain	---	---	---	---
Md: MARTIN SILTY CLAY LOAM, 1 TO 4 PERCENT SLOPES	MARTIN	No	hillslope	---	---	---	---
	CHASE	No	flood plain	---	---	---	---
	PAWNEE	No	hillslope	---	---	---	---
Mf: MARTIN SILTY CLAY LOAM, 4 TO 9 PERCENT SLOPES	MARTIN	No	hillslope	---	---	---	---
	PADONIA	No	hillslope	---	---	---	---
	VINLAND	No	hillslope	---	---	---	---
Mh: MAYBERRY CLAY LOAM, 2 TO 6 PERCENT SLOPES	MAYBERRY	No	hillslope	---	---	---	---
	MORRILL	No	hillslope	---	---	---	---
	WYMORE	No	interfluve	---	---	---	---
Mk: MONONA SILT LOAM, 2 TO 5 PERCENT SLOPES	MONONA	No	interfluve	---	---	---	---
	POHOCCO	No	hillslope	---	---	---	---
Mn: MONONA SILT LOAM, 5 TO 11 PERCENT SLOPES, MODERATELY ERODED	MONONA	No	hillslope	---	---	---	---
	NETAWAKA	No	hillslope	---	---	---	---
	POHOCCO	No	hillslope	---	---	---	---
	KENNEBEC	No	flood plain	---	---	---	---
Mt: MORRILL LOAM, 6 TO 12 PERCENT SLOPES	MORRILL	No	hillslope	---	---	---	---
	KENNEBEC	No	flood plain	---	---	---	---
	PAWNEE	No	hillslope	---	---	---	---
	OLMITZ	No	fan terrace	---	---	---	---
Mw: MUSCOTAH SILT LOAM, 0 TO 2 PERCENT SLOPES, OCCASIONALLY FLOODED, OVERWASH	MUSCOTAH	No	flood plain	---	---	---	---
	KENNEBEC	No	flood plain	---	---	---	---
	ZOOK	Yes	flood plain	2B3	YES	NO	NO
	CHASE	No	flood plain	---	---	---	---
My: MUSCOTAH SILTY CLAY LOAM, 0 TO 2 PERCENT SLOPES, OCCASIONALLY FLOODED	MUSCOTAH	No	flood plain	---	---	---	---
	KENNEBEC	No	flood plain	---	---	---	---
	WABASH	Yes	flood plain	2B3	YES	NO	NO
	CHASE	No	flood plain	---	---	---	---
No: NODAWAY SILT LOAM, 0 TO 2 PERCENT SLOPES, OCCASIONALLY FLOODED	NODAWAY	No	flood plain	---	---	---	---
	CHASE	No	flood plain	---	---	---	---
	KENNEBEC	No	flood plain	---	---	---	---
	ZOOK	Yes	flood plain	2B3	YES	NO	NO
Om: OLMITZ LOAM, 2 TO 5 PERCENT SLOPES	OLMITZ	No	fan terrace	---	---	---	---
	CHASE	No	flood plain	---	---	---	---
	PAWNEE	No	hillslope	---	---	---	---
Or: ORTHENTS, EARTHEN DAM	ORTHENTS, EARTHEN DAM	---	---	---	---	---	---
Pd: PADONIA-MARTIN SILTY CLAY LOAMS, 5 TO 9 PERCENT SLOPES	PADONIA	No	hillslope	---	---	---	---
	MARTIN	No	hillslope	---	---	---	---
	KIPSON	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
Pe: PADONIA-MARTIN SILTY CLAY LOAMS, 9 TO 25 PERCENT SLOPES	PADONIA	No	hillslope	---	---	---	---
	MARTIN KIPSON	No No	hillslope hillslope	---	---	---	---
Pf: PADONIA-OSKA SILTY CLAY LOAMS, 5 TO 9 PERCENT SLOPES	PADONIA	No	hillslope	---	---	---	---
	OSKA KIPSON	No No	hillslope hillslope	---	---	---	---
Pm: PAWNEE CLAY LOAM, 2 TO 6 PERCENT SLOPES	PAWNEE	No	hillslope	---	---	---	---
	MORRILL SHELBY	No No	hillslope hillslope	---	---	---	---
Pn: PAWNEE CLAY LOAM, 6 TO 12 PERCENT SLOPES	PAWNEE	No	hillslope	---	---	---	---
	MORRILL KENNEBEC OLMITZ	No No No	hillslope flood plain fan terrace	---	---	---	---
Po: PAWNEE CLAY, 6 TO 12 PERCENT SLOPES, MODERATELY ERODED	PAWNEE	No	hillslope	---	---	---	---
	MAYBERRY KENNEBEC OLMITZ	No No No	hillslope flood plain fan terrace	---	---	---	---
Pt: PITS, QUARRIES	Pits, quarries	Unranked	---	---	---	---	---
Pw: POHOCCO-NETAWAKA SILT LOAMS, 11 TO 17 PERCENT SLOPES	POHOCCO	No	hillslope	---	---	---	---
	NETAWAKA JUDSON	No No	hillslope fan remnant	---	---	---	---
Px: POHOCCO-NETAWAKA SILT LOAMS, 17 TO 30 PERCENT SLOPES	POHOCCO	No	hillslope	---	---	---	---
	NETAWAKA JUDSON	No No	hillslope fan remnant	---	---	---	---
Re: READING SILT LOAM, 0 TO 2 PERCENT SLOPES, MODERATELY WET, RARELY FLOODED	READING	No	flood plain	---	---	---	---
	CHASE ZOOK	No Yes	flood plain flood plain	---	---	---	---
Sg: SHELBY CLAY LOAM, 6 TO 12 PERCENT SLOPES	SHELBY	No	hillslope	---	---	---	---
	PAWNEE KENNEBEC OLMITZ	No No No	hillslope flood plain fan terrace	---	---	---	---
Sm: SHELBY CLAY LOAM, 12 TO 18 PERCENT SLOPES, MODERATELY ERODED	SHELBY	No	hillslope	---	---	---	---
	PAWNEE PADONIA KENNEBEC OLMITZ	No No No No	hillslope hillslope flood plain fan terrace	---	---	---	---
W: WATER	WATER	Yes	---	4,3	NO	YES	YES
Wa: WABASH SILTY CLAY, 0 TO 2 PERCENT SLOPES, OCCASIONALLY FLOODED	WABASH	Yes	flood plain	2B3	YES	NO	NO
	MUSCOTAH KENNEBEC	No No	flood plain flood plain	---	---	---	---
We: WAMEGO SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES	WAMEGO	No	hillslope	---	---	---	---
	OLMITZ PAWNEE	No No	fan terrace 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
Wg: WAMEGO-VINLAND SILTY CLAY LOAMS, 3 TO 15 PERCENT SLOPES Wm: WYMORE SILTY CLAY LOAM, 2 TO 5 PERCENT SLOPES Wn: WYMORE SILTY CLAY LOAM, 5 TO 9 PERCENT SLOPES	WAMEGO	No	hillslope	---	---	---	---
	VINLAND	No	hillslope	---	---	---	---
	PAWNEE	No	hillslope	---	---	---	---
	WYMORE	No	interfluve	---	---	---	---
	PAWNEE	No	hillslope	---	---	---	---
	WYMORE	No	hillslope	---	---	---	---
	PAWNEE	No	hillslope	---	---	---	---
	MAYBERRY	No	hillslope	---	---	---	---
	KENNEBEC	No	flood plain	---	---	---	---

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.

