

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
015LS: LADYSMITH SILTY CLAY LOAM, 0 TO 2 PERCENT SLOPES	LADYSMITH	No	paleoterrace	---	---	---	---
035LG: LINCOLN-TIVOLI COMPLEX, 0 TO 10 PERCENT SLOPES	DWIGHT	No	hillside	---	---	---	---
	IRWIN	No	hillside	---	---	---	---
	LINCOLN	No	flood plain	---	---	---	---
	TIVOLI	No	hillslope	---	---	---	---
035VC: VANOSS SILT LOAM, 3 TO 7 PERCENT SLOPES	CANADIAN	No	flood plain	---	---	---	---
	ATTICA	No	divide	---	---	---	---
035VD: VERDIGRIS SILT LOAM, OCCASIONALLY FLOODED	VANOSS	No	hillslope	---	---	---	---
	MINCO	No	hillslope	---	---	---	---
077AN: KASKI LOAM, FREQUENTLY FLOODED	VERDIGRIS	No	flood plain	---	---	---	---
	BREWER	No	flood plain	---	---	---	---
	KASKI	Unranked	flood plain	---	---	---	---
077BM: LINCOLN LOAMY FINE SAND, OCCASIONALLY FLOODED	Unnamed wet soils	Yes	drainageway	2A,2B3	YES	NO	NO
	LINCOLN	No	flood plain	---	---	---	---
	Unnamed wet soils	Yes	drainageway	2A,2B2	YES	NO	NO
077BP: WOODWARD-PORT COMPLEX, 0 TO 20 PERCENT SLOPES	WOODWARD	No	hillslope	---	---	---	---
	PORT	Unranked	terrace	---	---	---	---
077CE: CORBIN SILT LOAM, 0 TO 1 PERCENT SLOPES	Unnamed wet soils	Yes	depression	3,2B3,2A,4	YES	YES	YES
077CF: CORBIN SILT LOAM, 1 TO 3 PERCENT SLOPES	CORBIN	No	hillslope	---	---	---	---
077GN: GRANT SILT LOAM, 0 TO 1 PERCENT SLOPES	CORBIN	No	hillslope	---	---	---	---
077GS: GRANT SILT LOAM, 3 TO 6 PERCENT SLOPES	GRANT	No	terrace	---	---	---	---
077KR: KIRKLAND-RENFROW CLAY LOAMS, 1 TO 3 PERCENT SLOPES	GRANT	No	terrace	---	---	---	---
	KIRKLAND	No	hillslope	---	---	---	---
077KW: KIRKLAND-RENFROW SOILS, 1 TO 3 PERCENT SLOPES, ERODED	RENFROW	No	hillslope	---	---	---	---
	KIRKLAND	No	hillslope	---	---	---	---
077PH: DALE SILT LOAM, RARELY FLOODED	RENFROW	No	hillslope	---	---	---	---
	DALE	No	terrace	---	---	---	---
	Unnamed wet soils	Yes	depression	2A,3,2B3,4	YES	YES	YES
077PT: PRATT-TIVOLI LOAMY FINE SANDS, 8 TO 15 PERCENT SLOPES	PRATT	No	dune, paleoterrace	---	---	---	---
	TIVOLI	No	dune, paleoterrace	---	---	---	---
	CARWILE	Yes	depression, paleoterrace	2A,3	YES	NO	YES
	Unnamed wet soils	Yes	depression	2A,2B3,2B2	YES	NO	NO
077SO: SHELLABARGER AND ALBION SOILS, 7 TO 15 PERCENT SLOPES	SHELLABARGER	No	paleoterrace	---	---	---	---
	ALBION	No	paleoterrace	---	---	---	---
	Unnamed wet soils	Yes	drainageway	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
077TH: TIVOLI FINE SAND, 8 TO 15 PERCENT SLOPES	TIVOLI	No	dune, paleoterrace	---	---	---	---
095DA: DILLWYN-PLEVNA COMPLEX, OCCASIONALLY FLOODED	DILLWYN	No	interdune, dune, paleoterrace	---	---	---	---
	PLEVNA Unnamed wet soils	Yes Yes	flood plain depression	2B3,4 2A,2B3,3	YES YES	YES NO	NO YES
095OA: WELLSFORD CLAY LOAM, 1 TO 4 PERCENT SLOPES	Wellsford	No	hillslope	---	---	---	---
095RA: RENFROW CLAY LOAM, 1 TO 3 PERCENT SLOPES	RENFROW	No	hillslope	---	---	---	---
173EA: ELANDCO SILT LOAM, RARELY FLOODED	ELANDCO	No	flood plain	---	---	---	---
	UNNAMED HYDRIC SOILS Unnamed wet soils	Yes Yes	drainageway	3,2A 2A,4,2B3	YES YES	NO YES	YES NO
173LA: LESHO LOAM, OCCASIONALLY FLOODED	LESHO	No	flood plain	---	---	---	---
	PLEVNA UNNAMED HYDRIC SOILS	Yes Yes	flood plain depression	2B3 3,2B3,4	YES YES	NO YES	NO YES
173PB: PLEVNA FINE SANDY LOAM, FREQUENTLY FLOODED	PLEVNA	Yes	flood plain	4,2B3	YES	YES	NO
	Unnamed wet soils	Yes	drainageway	2B3,2A,3	YES	NO	YES
173RA: RENFROW SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	RENFROW	No	hillslope	---	---	---	---
1439: CRISFIELD SANDY LOAM, RARELY FLOODED	CRISFIELD	No	terrace	---	---	---	---
	Unnamed wet soils	Yes	depression	2A,2B3	YES	NO	NO
AED: ARENTS, EARTHEN DAM	ARENTS, EARTHEN DAM	---	---	---	---	---	---
Ba: BETHANY SILT LOAM, 0 TO 1 PERCENT SLOPES	BETHANY	No	paleoterrace	---	---	---	---
	Unnamed wet soils	Yes	depression	2A,3,2B3	YES	NO	YES
Bb: BETHANY SILT LOAM, 1 TO 3 PERCENT SLOPES	BETHANY	No	paleoterrace	---	---	---	---
BOA: BORROW AREAS	BORROW AREAS	Unranked	---	---	---	---	---
Br: BREWER SILTY CLAY LOAM, RARELY FLOODED	BREWER	No	flood plain	---	---	---	---
Bs: BREWER-DRUMMOND SILTY CLAY LOAMS, RARELY FLOODED	BREWER	No	flood plain	---	---	---	---
	DRUMMOND Unnamed wet soils	No Yes	terrace depression	---	---	---	---
				2A,3,2B3	YES	NO	YES
Ca: CANADIAN SANDY LOAM, RARELY FLOODED	CANADIAN	No	flood plain	---	---	---	---
CAA: CANADIAN FINE SANDY LOAM, RARELY FLOODED	CANADIAN	No	flood plain	---	---	---	---
	DALE LESHO	No No	stream terrace flood plain	---	---	---	---
Cc: CARWILE SOILS, 0 TO 1 PERCENT SLOPES	CARWILE	Yes	depression, paleoterrace depression	2A,3	YES	NO	YES
	Unnamed wet soils	Yes		2A,3,2B3	YES	NO	YES
Cr: CORBIN SILT LOAM, 0 TO 2 PERCENT SLOPES	CORBIN	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
Da: DALE SILT LOAM, 2 TO 8 PERCENT SLOPES	DALE	No	flood plain	---	---	---	---
Dr: DALE AND REINACH SILT LOAMS, RARELY FLOODED	DALE	No	flood plain	---	---	---	---
	REINACH	No	flood plain	---	---	---	---
Ea: ELANDCO SILTY CLAY LOAM, RARELY FLOODED	ELANDCO	No	flood plain	---	---	---	---
	Unnamed wet soils	Yes	drainageway	2B3,4,3	YES	YES	YES
Ec: ELANDCO SILT LOAM, FREQUENTLY FLOODED	ELANDCO	No	flood plain	---	---	---	---
	Unnamed wet soils	Yes	drainageway	2B3,4,3	YES	YES	YES
Fa: FARNUM LOAM, 0 TO 1 PERCENT SLOPES	FARNUM	No	paleoterrace	---	---	---	---
	Unnamed wet soils	Yes	depression	2A,3,2B3	YES	NO	YES
Fb: FARNUM LOAM, 1 TO 3 PERCENT SLOPES	FARNUM	No	paleoterrace	---	---	---	---
	Unnamed wet soils	Yes	depression	2A,3,2B3	YES	NO	YES
Fc: FARNUM LOAM, 3 TO 6 PERCENT SLOPES	FARNUM	No	paleoterrace	---	---	---	---
Fd: FARNUM LOAM, 2 TO 6 PERCENT SLOPES, ERODED	FARNUM	No	paleoterrace	---	---	---	---
GRP: GRAVEL PITS	GRAVEL PITS	Unranked	---	---	---	---	---
INT: AQUOLLS	AQUOLLS	Yes	depression, terrace	3,2B3	YES	NO	YES
IRR: IRWIN SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	IRWIN	No	hillslope	---	---	---	---
	DWIGHT	No	hillslope	---	---	---	---
	ROSEHILL	No	hillslope	---	---	---	---
	SMOLAN	No	hillslope	---	---	---	---
Ka: KIRKLAND SILT LOAM, 0 TO 1 PERCENT SLOPES	KIRKLAND	No	hillslope	---	---	---	---
Kb: KIRKLAND SILT LOAM, 1 TO 3 PERCENT SLOPES	KIRKLAND	No	hillslope	---	---	---	---
Kc: KIRKLAND SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES, ERODED	KIRKLAND	No	hillslope	---	---	---	---
Lo: LESHO CLAY LOAM, OCCASIONALLY FLOODED	LESHO	No	flood plain	---	---	---	---
	Unnamed wet soils	Yes	drainageway	2A,2B3	YES	NO	NO
Ls: LINCOLN SOILS, FREQUENTLY FLOODED	LINCOLN	No	flood plain	---	---	---	---
	Unnamed wet soils	Yes	drainageway	2A,2B3,2B2	YES	NO	NO
M-W: MISCELLANEOUS WATER	MISCELLANEOUS WATER	---	---	---	---	---	---
Ma: MILAN LOAM, 0 TO 1 PERCENT SLOPES	MILAN	No	paleoterrace	---	---	---	---
Mb: MILAN LOAM, 1 TO 3 PERCENT SLOPES	MILAN	No	paleoterrace	---	---	---	---
Mc: MILAN LOAM, 3 TO 6 PERCENT SLOPES	MILAN	No	paleoterrace	---	---	---	---
Md: MILAN LOAM, 3 TO 6 PERCENT SLOPES, ERODED	MILAN	No	paleoterrace	---	---	---	---
On: WELLSFORD CLAY LOAM, 1 TO 3 PERCENT SLOPES	WELLSFORD	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
Oo: WELLSFORD CLAY LOAM, 3 TO 8 PERCENT SLOPES	WELLSFORD	No	hillslope	---	---	---	---
Op: WELLSFORD-ELANDCO COMPLEX, 0 TO 25 PERCENT SLOPES	WELLSFORD	No	hillslope	---	---	---	---
	ELANDCO	No	flood plain	---	---	---	---
Or: WELLSFORD-RENFROW CLAY LOAMS, 2 TO 6 PERCENT SLOPES, ERODED	WELLSFORD	No	hillslope	---	---	---	---
	RENFROW	No	hillslope	---	---	---	---
Os: WELLSFORD-SHALE OUTCROP COMPLEX, 8 TO 25 PERCENT SLOPES	WELLSFORD	No	hillslope	---	---	---	---
	SHALE OUTCROP	Unranked	hillslope	---	---	---	---
Pa: POND CREEK SILT LOAM, 0 TO 1 PERCENT SLOPES	POND CREEK	No	terrace	---	---	---	---
Pb: POND CREEK SILT LOAM, 1 TO 3 PERCENT SLOPES	POND CREEK	No	terrace	---	---	---	---
Pc: POND CREEK SILT LOAM, 3 TO 6 PERCENT SLOPES	POND CREEK	No	terrace	---	---	---	---
Pd: POND CREEK SILTY CLAY LOAM, 2 TO 6 PERCENT SLOPES, ERODED	POND CREEK	No	terrace	---	---	---	---
Px: PRATT LOAMY FINE SAND, 3 TO 8 PERCENT SLOPES	PRATT	No	dune, paleoterrace	---	---	---	---
	CARWILE	Yes	depression, paleoterrace	2A	YES	NO	NO
	Unnamed wet soils	Yes	depression	2A, 2B3, 3	YES	NO	YES
Ra: RENFROW-GRAINOLA COMPLEX, 1 TO 3 PERCENT SLOPES	RENFROW	No	hillslope	---	---	---	---
	GRAINOLA	No	hillslope	---	---	---	---
Ro: ROSEHILL CLAY LOAM, 1 TO 3 PERCENT SLOPES	ROSEHILL	No	hillslope	---	---	---	---
Rs: ROSEHILL CLAY LOAM, 3 TO 6 PERCENT SLOPES	ROSEHILL	No	hillslope	---	---	---	---
Rx: ROSEHILL CLAY LOAM, 2 TO 6 PERCENT SLOPES, ERODED	ROSEHILL	No	hillslope	---	---	---	---
Sa: SHELLABARGER SANDY LOAM, 1 TO 3 PERCENT SLOPES	SHELLABARGER	No	paleoterrace	---	---	---	---
	CARWILE	Yes	depression, paleoterrace	2A	YES	NO	NO
	Unnamed wet soils	Yes	depression	2A, 3	YES	NO	YES
Sb: SHELLABARGER SANDY LOAM, 3 TO 6 PERCENT SLOPES	SHELLABARGER	No	paleoterrace	---	---	---	---
Sc: SHELLABARGER SANDY LOAM, 3 TO 6 PERCENT SLOPES, ERODED	SHELLABARGER	No	paleoterrace	---	---	---	---
Ta: TABLER SILTY CLAY LOAM, 0 TO 1 PERCENT SLOPES	TABLER	No	paleoterrace	---	---	---	---
Tv: TIVOLI FINE SAND, 8 TO 20 PERCENT SLOPES	TIVOLI	No	dune, paleoterrace	---	---	---	---
Us: USTIFLUVENTS, CHANNELED	USTIFLUVENTS	No	flood plain	---	---	---	---
	Unnamed wet soils	Yes	drainageway	2A, 2B3, 4, 2B 2	YES	YES	NO
Va: VANOSS SILT LOAM, 0 TO 1 PERCENT SLOPES	VANOSS	No	paleoterrace	---	---	---	---

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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
Vb: VANOSS SILT LOAM, 1 TO 3 PERCENT SLOPES	VANOSS	No	paleoterrace	---	---	---	---
Vc: VANOSS SILT LOAM, 3 TO 6 PERCENT SLOPES	VANOSS	No	paleoterrace	---	---	---	---
W: WATER (LESS THAN 40 ACRES)	WATER (< 40 ACRES)	Unranked	---	---	---	---	---
Wa: WAURIKA SILT LOAM, 0 TO 1 PERCENT SLOPES	WAURIKA	No	depression, paleoterrace	---	---	---	---
	Unnamed wet soils	Yes	depression	2A,3,2B3	YES	NO	YES

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.

