# New Hampshire Soil Attribute Data Dictionary

*4 June, 2002*

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## INTRODUCTION

The following document is comprised of introductory information and two tables. Table 1 contains the attribute name, attribute label, precision, minimum and maximum values, unit of measure, and the attribute descriptions. Table 1 will answer most questions about the attribute data. Table 2 contains more information about the selected attributes that are flagged with an asterisk (*) in Table 1. Further information can be obtained from the NRCS Soil Data Set Manager, Katherine Swain at kswain@nh.nrcs.usda.gov or the NRCS State Soil Scientist, Steve Hundley at shundley@nh.nrcs.usda.gov.

This data dictionary provides essential information about the soil attributes contained in the spreadsheet tables located on the NH NRCS web site http://www.nh.nrcs.usda.gov/Soil_Data/Soil_Data or the attribute table accompanying the NRCS soil spatial data distributed through GRANIT. The description, units of measure and labeling of soil attributes conforms to the standards of the USDA National Cooperative Soil Survey (NCSS) and the National Soil Information System (NASIS). The data contained within the tables is consistent with, and is derived from the NRCS National Soil Information System. The tables located on the NH NRCS web site reflect the official soil dataset for New Hampshire. They take precedence over any other source of soil information.

The attribute information is specific for each survey area and reflects the most current level of understanding of soil properties and their behavioral characteristics. This data may not agree with previously published soil survey reports that represent historical records of our level of knowledge at the time of publication. Likewise, the attribute data that is provided in these tables are subject to change as the soil survey program continues to refine our ability to measure and interpret soil physical and chemical properties. It is the responsibility of the users of this information to adequately document when these attributes were retrieved for a specific purpose and that any land use decision made based on these attributes reflect the NCSS standards at that time. Because this data is subject to change, it is the user's responsibility to update their records as appropriate and not to rely on data previously downloaded from the NH NRCS web site or from the GRANIT web site. The spreadsheet table represents only a small fraction of the complete soil dataset for New Hampshire. The protocols required for presenting this data in spreadsheet format results in the grouping of some soil properties that otherwise could be separated out with more sophisticated programs. More soil data is available in a MSACCESS database format and can be found on the NH NRCS web site. Users in need of more information should contact the NRCS Soil Data Set Manager, Katherine Swain at kswain@nh.nrcs.usda.gov.

Although soil series are used to name soil map units, soil series and soil map units are not the same. A soil map unit is a collection of areas on the landscape having properties similar to the series used to name the map unit. In other words, a soil series is a specific taxonomic grouping while a map unit is a more flexible concept based on that taxonomic grouping. For example, a map unit named Becket indicates a collection of areas that have soil properties that fall within the defined range of the Becket Series. However, inclusions of soil properties that fall outside the range of the Becket series are allowed in the Becket map unit as long as they are similar soils that will not affect the use and management of the areas mapped (called similar inclusions). There will be some areas that have properties that are outside the concept of the Becket map unit. If these areas are different enough from the concept of the Becket map unit to affect use and management (e.g. a pocket of poorly drained soil, Pillsbury, in a well drained map unit), they are called contrasting inclusions. In this example, Becket is the major component and Pillsbury is a minor component. The NRCS maintains attribute data for all the components in its database making the soil data quite complex. While most of these attributes have more than one value in NASIS (National Soil Information System), the attribute description defines only one value for each mapunit. Therefore, the attribute data contained in the spreadsheet is appropriate for use in a GIS.

**County-wide soil surveys produced by the USDA Natural Resources Conservation Service have been typically produced at a scale of 1:20,000 or 1:24,000 and should not be altered or "blown-up" to larger scales. The smallest soil area that can be shown on the county-wide soil surveys is 3 to 5 acres in size. These maps are intended for general land use planning purposes only and are accurate for this purpose. They do not display sufficient precision to be used for site-specific applications.**

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## Soil Correlation

All NRCS soil surveys undergo a quality control process called correlation. Soil correlation requires that data entered into the soil survey database meet standards. For example, it requires that soil taxonomy is properly used, that each map unit in a soil survey is distinguished from all others, and that the proper interpretations are assigned to each map unit. Correlation facilitates the effective transfer of technology and ensures that adjacent soil surveys are joined.

**Soil Survey**

| Area ID | Survey Area Name | Correlation Date | Ammendment Dates |
|---|---|---|---|
| NH003 | Carroll County | Jan. 1974 | Nov. 1, 1974 |
| NH005 | Cheshire County | Sept. 1985 | - |
| NH607 | Coos County | Dec. 1999 | - |
| NH009 | Grafton County | Oct. 1986 | - |
| NH601 | Hillsboro County, Eastern Part | Feb. 1980 | - |
| NH602 | Hillsboro County, Western Part | May 1983 | - |
| NH015 | Rockingham County | April, 1986 | - |
| NH017 | Strafford County | July, 1968 | Jan. 2000 |
| NH019 | Sullivan County | March, 1981 | July 11, 1997; July 5, 2000 |

## References


Soil Survey Staff, Natural Resources Conservation Service, National Soil Survey Handbook, title 430-VI (Washington, D.C., U.S. Government Printing Office, November 1996).

US Department of Agriculture, Soil Survey Division Staff. 1993. Soil Survey Manual. USDA Agricultural Handbook 18 (revised). US Government Printing Office, Washington, DC.

Schoeneberger, P.J., Wysocki, D.A., Benham, E.C., and Broderson, W.D. 1998. Field book for describing and sampling soils. Natural Resources Conservation Service, USDA, National Soil Survey Center, Lincoln, NE.

New England Hydric Soils Technical Committee. 1998, 2nd ed., Field Indicators for Identifying Hydric Soils In New England, New England Interstate Water Pollution Control Commission. Wilmington, MA. p. 76

U. S. Dept. of Agriculture, NRCS. 1998, version 4.0, Field Indicators of Hydric Soils in the United States.


## References with web addresses:

Field Book for Describing and Sampling Soils: http://www.statlab.iastate.edu/soils/nssc/field_gd/field_gd.htm
Soil Survey Manual: http://www.statlab.iastate.edu/soils/ssm/gen_cont.html
NRCS National Soil Survey Handbook: http://www.statlab.iastate.edu/soils/nssh/
Soil Survey Geographic Database (SSURGO): http://www.ftw.nrcs.usda.gov/ssur_data.html
Field Indicators of Hydric Soils in the U.S.: http://www.statlab.iastate.edu/soils/hydric/fieldind/fieldind.html
NRCS NH Soils: http://www.nh.nrcs.usda.gov/Soil_Data/

- NH State-Wide Numerical Soil Legend
- Soil Survey Data
- Site Specific Soil Mapping Standards for NH and VT (Adobe Acrobat)
- Availability of Soil Survey Publications in NH
- Key to the Soils of NH
- Status Map of Soil Surveys in NH

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## Table 1 - Descriptions for Data in Spreadsheet

| Attribute Name | Attribute Label | Precision | Minimum | Maximum | Unit of Measure | Attribute Description |
|---|---|---|---|---|---|---|
| areaname | Area Name | | | | | The name given to the specified geographic area. |
| areasymbol | Area Symbol | | | | | A symbol that uniquely identifies a single occurrence of a particular type of area (e.g. Rockingham Co., New Hampshire is NH015). |
| bedrock_deep | Bottom Depth | | 0 | 9999 | centimeters | The distance from the soil surface to the deepest depth to bedrock for any of the major components. |
| bedrock_shallow | Top Depth | | 0 | 9999 | centimeters | The distance from the soil surface to the shallowest depth to bedrock for any of the major components. |
| bulk_density | Bulk Density 0.33 bar H2O | 2 | 0.02 | 2.6 | grams per cubic centimeter | The oven-dry weight of the fine earth fraction (< 2 mm) of the soil per unit volume of soil at a water tension of 1/3 bar. This is the average value of the layer with the highest bulk density from any one of the major components in the mapunit; the value may be from any horizon. |
| date_download | Date of Download | | | | month/day/year | The date that the data was downloaded from NASIS (National Soil Information System). |
| drainclass * | Drainage Class* | | | | | An estimate of the natural drainage class (i.e., the prevailing wetness conditions) of a soil. The drainage class for the major components are listed, separated by a ";" if there is more than one major component.* |
| farmclass * | Farm Class * | | | | | Identification of map units as prime farmland, farmland of statewide importance, or farmland of local importance. The criteria in Table 2 define farmland in New Hampshire for the purpose of carrying out the provisions of the Farmland Protection Policy Act of 1981, P.L. 97-98, December 22, 1981.* |
| flooding * | Flooding Frequency | | | | | The annual probability of a flood event expressed as a class. (Soil Survey Manual). Flooding is defined as the temporary covering of the soil surface by flowing water from any source, such as streams overflowing their banks, runoff from adjacent or surrounding slopes, inflow from high tides, or any combinations of sources. This value represents any one or all of the major components in the mapunit. |
| forsoilgrp * | NH Forest Soil Group | | | | | Interpretative class for the map unit, based on NH developed interpretations. * |
| gravel | Source of Gravel Interpretation | | | | | The likelihood that this soil is a viable source of gravel. The rating for the first major component in the mapunit is given. |
| hel | HEL | | | | | The overall Highly Erodible Lands (HEL) classification for the mapunit based on the rating of its components for wind and water HEL classification. The ratings are highly erodible, potentially highly erodible, and not highly erodible. |
| hydpct | Percentage of Mapunit that is Hydric | | 0 | 100 | percent | The total percentage of hydric components in the mapunit (includes minor components also known as inclusions). |

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| Attribute Name | Attribute Label | Precision | Minimum | Maximum | Unit of Measure | Attribute Description |
|---|---|---|---|---|---|---|
| hydric * | Hydric Soil Rating | | | | | The symbol, Y or N, (yes or no) identifying hydric soils. A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. In NH, hydric soils along with hydrophytic vegetation and wetland hydrology are used to define wetlands. The value for the first major component in the mapunit is given. * |
| hydrogrp * | Hydrologic Group | | | | | A group of soils having similar runoff potential under similar storm and cover conditions. Examples are A and A/D. (National Soil Survey Handbook). The hydrologic group for the major components are listed, separated by a ";" if there is more than one major component. * |
| kfactor | Kw | | | | | An erodibility factor which quantifies the susceptibility of soil particles to detachment and movement by water. This factor is adjusted for the effect of rock fragments. This value is from the surface horizon of the first major component in the mapunit. |
| landcapclass * | Nonirrigated Capability Class and Subclass | | | | | This code is the concatenation of the nonirrigated capability class and subclass. Land capability classification is a system of grouping soils primarily on the basis of their capability to produce common cultivated crops and pasture plants without deteriorating over a long period of time. The Class is a rating of the soil for nonirrigated agricultural use, which indicates progressively greater limitations, and narrower choices for use. The number ranges from 1 to 8. The subclass is the second category in the land capability classification system. Subclass codes are e, w, s, and c. The codes for the major components are listed separated by a ";" if there is more than 1 major component.* |
| mukind * | Mapunit Kind | | | | | Code identifying the kind of mapunit: Consociation (C); Association (A); Undifferentiated Group (U); Complex (X).* |
| mulink | Alternate Mapunit Key | | | | | Use this column to link the spatial data with attribute data. This attribute stores the concatenation of legend_database_sid_ref and mapunit_iid, separated by a colon. The combination of legend_database_sid_ref and mapunit_iid uniquely identifies a mapunit in the NASIS database. This concatenated column was added to facilitate use in GIS systems that do not support joining tables on multiple columns. |
| muname | Mapunit Name | | | | | Correlated name of the mapunit (recommended name or field name for surveys in progress). |
| musym | Mapunit Symbol | | | | | The symbol used to uniquely identify the soil mapunit in the soil survey. |
| parent_material * | Parent Material | | | | | The Parent Material for the first major component in the mapunit.* |

# New Hampshire Soil Attribute Data Dictionary

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| Attribute Name | Attribute Label | Precision | Minimum | Maximum | Unit of Measure | Attribute Description |
|---|---|---|---|---|---|---|
| perm_max | Ksat | 4 | 0 | 705 | micrometers per second | Permeability is also known as Saturated Hydraulic Conductivity which is the amount of water that would move vertically through a unit area of saturated soil in unit time under unit hydraulic gradient. This is the average value of the layer with the highest permeabilities from any horizon from any of the major components in the mapunit. |
| perm_min | Ksat | 4 | 0 | 705 | micrometers per second | Permeability is also known as Saturated Hydraulic Conductivity which is the amount of water that would move vertically through a unit area of saturated soil in unit time under unit hydraulic gradient. This is the average value of the layer with the lowest permeabilities from any horizon from any of the major components in the mapunit. |
| ponding * | Ponding Frequency | | | | | Ponding frequency class is the number of times ponding occurs over a period of time. This value represents any one or all of the major components in the mapunit.* |
| sand | Source of Sand Interpretation | | | | | The likelihood that this soil is a viable source of sand. The rating for the first major component in the mapunit is given. |
| shwt_deep | Bottom Depth | | 0 | 9999 | centimeters | The deepest depth to the seasonal high water table for any of the major components in the mapunit. |
| shwt_shallow | Top Depth | | 0 | 9999 | centimeters | The shallowest depth to the seasonal high water table for any of the major components in the mapunit. |
| slope_high | Slope Gradient | 1 | 0 | 999 | percent | The difference in elevation between two points, expressed as a percentage of the distance between those points. (*Soil Survey Manual).* The highest value in the range is expressed for this attribute. |
| slope_low | Slope Gradient | 1 | 0 | 999 | percent | The difference in elevation between two points, expressed as a percentage of the distance between those points. (*Soil Survey Manual).* The lowest value in the range is expressed for this attribute. |
| statelegnum | NH State Legend Number | | | | | The NH State-Wide Numerical Legend Number and slope designator. This symbol will be the same as the musym for those soil surveys that used the NH State Legend Numbers otherwise it serves as a conversion of the alpha mapunit symbol to the NH State-Wide Numerical Legend. |
| Tfactor | T | | 1 | 5 | tons per acre per year | T factor is a soil loss tolerance factor. The maximum amount of erosion at which the quality of a soil as a medium for plant growth can be maintained. This value is from the first major component in the mapunit. |
| wt_kind | Water Table Kind | | | | | The kind of water table if a seasonal high water table exists in the soil. Entries are either apparent or perched. A perched water table is where free water is restricted from moving downward in the soil by a restrictive feature, in most cases a hard pan. Therefore, there is a dry layer of soil underneath a wet layer. An apparent water table is one where there is free water present in all horizons from its upper boundary to below 2 meters or to the depth of observation. The water table kind listed is for the first major component in the mapunit. |

* More information can be found in Table 2

# Table 2 - Selected Definitions (attributes with *)

## Drainage Class

Drainage classes are inferred through observations of landscape position and soil morphology. In many soils, the depth and duration of wetness are related to the quantity, nature, and pattern of redoximorphic features. *(National Soil Survey Handbook)* Natural drainage class refers to the frequency and duration of wet periods under conditions similar to those under which the soil developed. Alteration of the water regime by people, either through drainage or irrigation, is not a consideration unless the alterations have significantly changed the morphology of the soil. The following definitions from the *Field Book for Describing and Sampling Soils* are the traditional, national criteria for Natural Soil Drainage Classes.

### National Criteria

excessively

Water moves through the soil very rapidly. Internal free water commonly is very rare or very deep. The soils are commonly coarse-textured, have very high saturated hydraulic conductivity, and lack redoximorphic features.

somewhat excessively

Water moves through the soil rapidly. Internal free water commonly is very rare or very deep. The soils are commonly coarse-textured, have high saturated hydraulic conductivity, and lack redoximorphic features.

well

Water moves through the soil readily, but not rapidly. Internal free-water commonly is deep or very deep; annual duration is not specified. Water is available to plants in humid regions during much of the growing season. Wetness does not inhibit growth of roots for significant periods during most growing seasons. The soil is deep to, or lacks redoximorphic features.

moderately well

Water moves through the soil slowly during some periods of the year. Internal free water commonly is moderately deep and may be transitory or permanent. The soil is wet for only a short time within the rooting depth during the growing season. The soil commonly has a moderately low, or lower, saturated hydraulic conductivity class within 1 meter of the surface, or periodically receives high rainfall, or both.

somewhat poorly

The soil is wet at a shallow depth for significant periods during the growing season. Internal free-water is commonly shallow to moderately deep and transitory to permanent. Unless the soil is artificially drained, the growth of most mesophytic plants is markedly restricted. The soil commonly has a low or very low saturated hydraulic conductivity class, or a high water table, or receives water from lateral flow, or persistent rainfall, or some combination of these factors.

poorly

The soil is wet at shallow depths periodically during the growing season or remains wet for long periods. Internal free-water is shallow or very shallow and common or persistent. Unless the soil is artificially drained, most mesophytic crops cannot be grown. The soil, however, is not continuously wet directly below plow depth. The water table is commonly the result of low or very low saturated hydraulic conductivity class or persistent rainfall, or a combination of both factors.

very poorly

Water is at or near the soil surface during much of the growing season. Internal free-water is shallow and persistent or permanent. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Commonly, the soil occupies a depression or is level. If rainfall is persistent or high, the soil can be sloping.

*Continued on Next Page*

## drainclass cont.

Drainage class interpretive limits have been developed in New Hampshire to be used as a tool in documenting observable soil properties that meet the definition of each drainage class for use in complying with state and town land use regulations and administrative rules. These interpretive limits are abridged from the *Field Indicators for Identifying Hydric Soils in New England*. For full definitions and clarification, one must refer to this document. They are as follows:

### New Hampshire Drainage Class interpretative Limits

Excessively Drained Soils:
Soils with textures of very fine sand or coarser in all horizons within the control section.

Somewhat Excessively Drained Soils:
Soils that have textures in any horizon within the particle size control section of loamy very fine sand or finer; and have moderately rapid to rapid permeability in some portion of the control section or are shallow to bedrock.

Well Drained Soils:
Soils that have textures in any horizon within the particle size control section of loamy very fine sand or finer, and have moderate permeability.

Moderately Well Drained Soils:
Soils that have distinct or prominent redoximorphic features that are not relict features, between a depth of 15 inches and 40 inches below the soil surface.

Somewhat Poorly Drained Soils:
Soils that have common distinct or prominent redoximorphic features, that are not relict features, at a depth less than 15 inches below the soil surface.

Poorly Drained Soils:

III. Soils that have aquic conditions within the upper part and one or more of the following:
   - D. Within 10" and directly underlying an A or Ap, is a depleted or gleyed matrix.
   - E. Within 20" and directly underlying a thick or very thick dark A or Ap, a depleted or gleyed matrix 4" or more thick.
   - F. Have a spodic horizon **and**
     1. within 6" an E horizon with 5% or more redox features and directly underlain by a spodic horizon with
        a) redox features, **or**
        b) redox features directly underlying a dark Bh or Bhs **or**
     2. within 10" and directly underlying a dark A or shallow E horizon, a dark Bh or Bhs, greater than 2" thick, directly underlain with 5% or more redox features **or**
     3. within 10" and directly underlying a dark Ap horizon is
        a) an E horizon with 5% or more redox features directly underlain by a horizon with redox features in the upper part, **or**
        b) a dark Bh or Bhs directly underlain by 5% or more redox features, **or**
        c) a Bs horizon with 5% or more redox features in the upper part.
   - G. Do not have a spodic horizon; dominant texture in upper 20" is loamy fine sand or coarser **and**
     2. within 10" and directly underlying a dark A or Ap, a horizon with matrix color chroma 3 or less, value 4 or more with 5% or more redox features **or**
     3. within 15" and directly underlying a thick, very dark Ap, a horizon with matrix color chroma 3 or less, value 4 or more with 5% redox features.

Continues on Next Page

## drainclass cont.

H. Do not have a spodic horizon; dominant texture in upper 20" is finer than loamy fine sand **and**
   1. within 10" and directly underlying a dark A or Ap, a horizon with 10% or more redox depletions and within 20", a horizon with a depleted or gleyed matrix **or**
   2. within 15" and directly underlying a thick, very dark Ap
      a) a horizon with 20% or more redox depletions and within 20" a horizon with a depleted or gleyed matrix **or**
      b) 10% or more redox depletions and within 20" a horizon with a depleted or gleyed matrix and within 6" there is 5% or more redox features.

I. Any soil with a very dark A or Ap less than 10" thick and directly underlain by horizon with color matrix chroma 3 or less with 10% or more redox features and within 24" has redox features, **and**
   1. within 6" has 5% or more redox features, **and/or**
   2. within 6" has 2% or more Fe/Mn nodules and/or concretions.

Very Poorly Drained Soils:

II. Soils that are flooded daily by tides

III. Soils that have aquic conditions within the upper part **and**
   A. Have an organic surface layer greater than 16 " thick, **or**
   B. Have an organic surface layer 8 to 16" thick and is directly underlain by a depleted or gleyed matrix **or**
   C. Have an organic surface layer 4 to 8" thick, or a mucky A or Ap horizon and is directly underlain by a depleted or gleyed matrix **or**
   G. Do not have a spodic horizon; dominant texture in upper 20" is loamy fine sand or coarser **and**
      1. have an organic surface layer 4 to 8 thick, or mucky A or Ap directly underlain with 5% or more redox features.

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*4 June, 2002*

## Farm Class

April 2001

The Farmland Protection Policy Act of 1981 was established to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses, and to assure that Federal programs are administered in a manner that, to the extent practicable, will be compatible with state, unit of local government, and private programs and policies to protect farmland. The following criteria define farmland in New Hampshire for the purpose of carrying out the provisions of the Farmland Protection Policy Act of 1981, P.L. 97-98, December 22, 1981.

**Prime Farmland**

- Soils that have an aquic or udic moisture regime and sufficient available water capacity within a depth of 40 inches to produce the commonly grown cultivated crops adapted to New Hampshire in 7 or more years out of 10.
- Soils that are in the frigid or mesic temperature regime.
- Soils that have a pH between 4.5 and 8.4 in all horizons within a depth of 40 inches.
- Soils that have either no water table or have a water table that is maintained at a sufficient depth during the cropping season to allow cultivated crops common to New Hampshire to be grown.
- Soils that have a saturation extract less than 4 mmhoc/cm and the exchangeable sodium percentage is less than 15 in all horizons within a depth of 40 inches.
- Soils that are not frequently flooded during the growing season (less than a 50% chance in any year or the soil floods less than 50 years out of 100.)
- The product of the erodibility factor times the percent slope is less than 2.0 and the product of soil erodibility and the climate factor does not exceed 60.
- Soils that have a permeability rate of at least 0.06 inches per hour in the upper 20 inches.
- Soils, that have less than 10 percent of the upper 6 inches consisting of, rock fragments larger than 3 inches in diameter.

**Unique Farmland**

This is farmland other than prime that is used for the production of specific high-value food and fiber crops in New Hampshire. Sites represent a special combination of soil quality, location, growing season and moisture supply needed to economically produce sustained high quality and/or high yields of a specific crop when treated and managed according to acceptable farming methods. In order to qualify as unique farmland, a high-value food or fiber crop must be actively grown. In New Hampshire, unique farmland crops include, but are not necessarily limited to apples, peaches, pears, plums, strawberries, raspberries, cranberries, blueberries, pumpkins, squash, and tomatoes.

Areas of unique farmland are site specific and not can not be related to soil map units, therefore they are not identified in the NASIS database.

**Farmland of Statewide Importance**

Land that is not prime or unique but is considered farmland of statewide importance for the production of food, feed, fiber, forage and oilseed crops. Criteria for defining and delineating farmland of statewide importance are determined by a state committee chaired by the Commissioner, New Hampshire Department of Agriculture, Markets and Food, with members representing the University of New Hampshire Cooperative Extension, New Hampshire Association of Conservation Districts and the New Hampshire Office of State Planning. The NRCS State Soil Scientist serves on this committee in an advisory capacity. The original criteria were established on June 20, 1983. It was updated on December 7, 2000.

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**Farmland of Statewide Importance continued**

Soils of statewide importance are soils that are not prime or unique and:

- Have slopes of less than 15 percent
- Are not stony, very stony or bouldery
- Are not somewhat poorly, poorly or very poorly drained
- Includes soil complexes comprised of less than 30 percent shallow soils and rock outcrop and slopes do not exceed 8 percent.
- Are not excessively drained soils developed in stratified glacial drift, generally having low available water holding capacity.

**Farmland of Local Importance**

Farmland of local importance is farmland that is not prime, unique or of statewide importance, but has local significance for the production of food, feed, fiber and forage. Criteria for the identification and delineation of local farmland is determined on a county-wide basis by the individual County Conservation District Boards. The original criteria were established on June 20, 1983. Updates are noted according to the county initiating the update. The criteria for soils of local importance is as follows:

*Belknap County*

Soils that are not prime or unique farmland or soils of statewide importance and meet the following criteria:

- Have slopes less than 25%
- Are not extremely stony or bouldery
- Are not poorly or very poorly drained
- Complexes consisting of less than 40 percent shallow soils and rock outcrop and slopes do not exceed 25 percent.
- Includes excessively drained soils developed in stratified glacial drift.

*Carroll County*

- Soils that are poorly drained, have artificial drainage established and are being farmed.
- Specific soil map units identified from the NRCS county soil survey legend, as determined by the Conservation District Board.

*Cheshire County*

- Soils that are poorly drained, have artificial drainage established and are being farmed.
- Specific soil map units identified from the NRCS county soil survey legend, as determined by the Conservation District Board.

*Coos County*

- Soils that are poorly drained, have artificial drainage established and are being farmed.
- Specific soil map units identified from the NRCS county soil survey legend, as determined by the Conservation District Board.
- All land that is in active farm use.

*Grafton County*

- Specific soil map units identified from the NRCS county soil survey legend, as determined by the Conservation District Board.

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**Farmland of Local Importance continued**

*Hillsborough County*

- Soils that are poorly drained, have artificial drainage established and are being farmed.
- Specific soil map units identified from the NRCS county soil survey legend, as determined by the Conservation District Board.

*Merrimack County*

Soils that are not prime or unique farmland or soils of statewide importance and meet the following criteria:

- Have slopes less than 25%
- Are not extremely stony or bouldery
- Are not poorly or very poorly drained
- Complexes consisting of less than 40 percent shallow soils and rock outcrop and slopes do not exceed 25 percent.
- Includes excessively drained soils developed in stratified glacial drift.

*Rockingham County*

- Soils that are poorly drained, have artificial drainage established and are being farmed.
- Specific soil map units identified from the NRCS county soil survey legend, as determined by the Conservation District Board.

*Strafford County*

- Soils that are poorly drained, have artificial drainage established and are being farmed.
- Specific soil map units identified from the NRCS county soil survey legend, as determined by the Conservation District Board.

*Sullivan County*

- Soils that are poorly drained, have artificial drainage established and are being farmed.
- Specific soil map units identified from the NRCS county soil survey legend, as determined by the Conservation District Board.

## Flooding

Descriptive term used to describe the number of times flooding occurs over a period of time and expressed as a class. Frequencies used to define classes are generally estimated from evidence related to the soil and vegetation. They are expressed in wide ranges that do not indicate a high degree of accuracy. From the *National Soil Survey Handbook.*

| | |
|---|---|
| none | No reasonable possibility of flooding; near 0 percent chance of flooding in any year or less than 1 time in 500 years. |
| very rare | Flooding is very unlikely but possible under extremely unusual weather conditions; less than 1 percent chance of flooding in any year or less than 1 time in 100 years but more than 1 time in 500 years. |
| rare | Flooding unlikely but possible under unusual weather conditions; 1 to 5 percent chance of flooding in any year or nearly 1 to 5 times in 100 years. |
| occasional | Flooding is expected infrequently under usual weather conditions; 5 to 50 percent chance of flooding in any year or 5 to 50 times in 100 years. |
| frequent | Flooding is likely to occur often under usual weather conditions; more than a 50 percent chance of flooding in any year or more than 50 times in 100 years, but less than a 50 percent chance of flooding in all months in any year. |
| very frequent | Flooding is more likely to occur very often under usual weather conditions; more than a 50 percent chance of flooding in all months of any year. |

# New Hampshire Soil Attribute Data Dictionary

*4 June, 2002*

## NH Forest Soil Group

The description for each group varies for each soil survey area. The groups are IA, IB, IC, IIA, IIB, and NC.

### Belknap County

IA This group consists of the deeper, loamy textured, moderately well, and well-drained soils. Generally, these soils are more fertile and have the most favorable soil moisture relationships. The successional trends on these soils are toward stands of shade tolerant hardwoods, i.e., beech and sugar maple. Successional stands frequently contain a variety of hardwoods such as beech, sugar maple, red maple, white birch, yellow birch, aspen, white ash, and northern red oak in varying combinations with red and white spruce, balsam fir, hemlock, and occasionally white pine. Hardwood competition is severe on these soils. Softwood regeneration is usually dependent upon persistent hardwood control efforts.

IB The soils in this group are generally sandy or loamy over sandy textures and slightly less fertile than those in group IA. These soils are moderately well and well drained. Soil moisture is adequate for good tree growth, but may not be quite as abundant as in group IA soils. Soils in this group have successional trends toward a climax of tolerant hardwoods, predominantly beech. Successional stands, especially those which are heavily cutover, are commonly composed of a variety of hardwood species such as red maple, aspen, paper birch, yellow birch, sugar maple, and beech, in combinations with red spruce, balsam, fir, and hemlock. Hardwood competition is moderate to severe on these soils. Successful softwood regeneration is dependent upon hardwood control.

IC The soils in this group are outwash sands and gravels. Soil drainage is somewhat excessively to excessively drained and moderately well drained. Soil moisture is adequate for good softwood growth, but is limited for hardwoods. Successional trends on these coarse textured, somewhat droughty and less fertile soils are toward stands of shade tolerant softwoods, i.e., red spruce and hemlock. Balsam fir is a persistent component in many stands, but is shorter lived than red spruce and hemlock. White pine, red maple, aspen, and paper birch are common in early and mid-successional stands. Hardwood competition is moderate to slight on these soils. Due to less hardwood competition, these soils are ideally suited for softwood production. With modest levels of management, white pine can be maintained and reproduced on these soils. Because these soils are highly responsive to softwood production, especially white pine, they are ideally suited for forest management.

IIA This diverse group includes many of the same soils as in groups IA and IB. However, these mapping units have been separated because of physical limitations which make forest management more difficult and costly, i.e., steep slopes, bedrock outcrops, erosive textures, surface boulders, and extreme rockiness. Usually, productivity of these soils is not greatly affected by their physical limitations. However, management activities such as tree planting, thinning, and harvesting are more difficult and more costly. Due to the diverse nature of this group, it is not possible to generalize about successional trends or to identify special management opportunities.

IIB The soils in this group are poorly drained. The seasonal high water table is generally within 12 inches of the surface. Productivity of these poorly drained soils is generally less than soils in other groups. Successional trends are toward climax stands of shade tolerant softwoods, i.e., spruce in the north and hemlock further south. Balsam fir is a persistent component in stands in northern New Hampshire and red maple is common on these soils further south. Due to abundant natural reproduction in northern New Hampshire, these soils are generally desirable for production of spruce and balsam fir, especially pulpwood. Red maple cordwood stands or slow-growing hemlock sawtimber are

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**Belknap County cont.**

common in more southerly areas. However, due to poor soil drainage, forest management is somewhat limited. Severe windthrow hazard limits partial cutting, frost action threatens survival of planted seedlings, and harvesting is generally restricted to periods when the ground is frozen.

NC Several mapping units in the survey are either so variable or have such a limited potential for commercial production of forest products they have not been considered. Often an on-site visit would be required to evaluate the situation.

**Carroll County**

IA This group consists of the deeper, loamy textured, moderately well, and well-drained soils. Generally, these soils are more fertile and have the most favorable soil moisture relationships. The successional trends on these soils are toward stands of shade tolerant hardwoods, i.e., beech and sugar maple. Successional stands frequently contain a variety of hardwoods such as beech, sugar maple, red maple, white birch, yellow birch, aspen, white ash, and northern red oak in varying combinations with red and white spruce, balsam fir, hemlock, and occasionally white pine. Hardwood competition is severe on these soils. Softwood regeneration is usually dependent upon persistent hardwood control efforts.

IB The soils in this group are generally sandy or loamy over sandy textures and slightly less fertile than those in group IA. These soils are moderately well and well drained. Soil moisture is adequate for good tree growth, but may not be quite as abundant as in group IA soils. Soils in this group have successional trends toward a climax of tolerant hardwoods, predominantly beech. Successional stands, especially those which are heavily cutover, are commonly composed of a variety of hardwood species such as red maple, aspen, paper birch, yellow birch, sugar maple, and beech, in combinations with red spruce, balsam fir, and hemlock. Hardwood competition is moderate to severe on these soils. Successional softwood regeneration is dependent upon hardwood control.

IC The soils in this group are outwash sands and gravels. Soil drainage is somewhat excessively to excessively drained and moderately well drained. Soil moisture is adequate for good softwood growth, but is limited for hardwoods. Successional trends on these coarse textured, somewhat droughty and less fertile soils are toward stands of shade tolerant softwoods, i.e., red spruce and hemlock. Balsam fir is a persistent component in many stands, but is shorter lived than red spruce and hemlock. White pine, red maple, aspen, and paper birch are common in early and mid-successional stands. Hardwood competition is moderate to slight on these soils. Due to less hardwood competition, these soils are ideally suited for softwood production. With modest levels of management, white pine can be maintained and reproduced on these soils. Because these soils are highly responsive to softwood production, especially white pine, they are ideally suited for forest management.

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### Carroll County cont.

IIB The soils in this group are poorly drained. The seasonal high water table is generally within 12 inches of the surface. Productivity of these poorly drained soils is generally less than soils in other groups. Successional trends are toward climax stands of shade tolerant softwoods, i.e., spruce in the north and hemlock further south. Balsam fir is a persistent component in stands in northern New Hampshire and red maple is common on these soils further south. Due to abundant natural reproduction in northern New Hampshire, these soils are generally desirable for production of spruce and balsam fir, especially pulpwood. Red maple cordwood stands or slow-growing hemlock sawtimber are common in more southerly areas. However, due to poor soil drainage, forest management is somewhat limited. Severe windthrow hazard limits partial cutting, frost action threatens survival of planted seedlings, and harvesting is generally restricted to periods when the ground is frozen.

NC Several mapping units in the survey are either so variable or have such a limited potential for commercial production of forest products they have not been considered. Often an on-site visit would be required to evaluate the situation.

### Cheshire County

IA This group consists of the deeper, loamy textured, moderately well, and well-drained soils. Generally, these soils are more fertile and have the most favorable soil moisture relationships. The successional trends on these soils are toward stands of shade tolerant hardwoods, i.e., beech and sugar maple. Successional stands frequently contain a variety of hardwoods such as red oak, beech, sugar maple, red maple, white birch, yellow birch, aspen, and white ash in varying combinations with red spruce, hemlock, and white pine. Hardwood competition is severe on these soils. Softwood regeneration is usually dependent upon persistent hardwood control efforts.

IB The soils in this group are generally sandy or loamy over sandy textures and slightly less fertile than those in group IA. These soils are moderately well and well drained. Soil moisture is adequate for good tree growth, but may not be quite as abundant as in group IA soils. Soils in this group have successional trends toward a climax of tolerant hardwoods, predominantly beech. Successional stands, especially those which are heavily cutover, are commonly composed of a variety of hardwood species such as red oak, red maple, aspen, paper birch, yellow birch, sugar maple, and beech, in combinations with white pine, red spruce, balsam fir, and hemlock. Hardwood competition is moderate to severe on these soils. Successful softwood regeneration is dependent upon hardwood control.

IC The soils in this group are outwash sands and gravels. Soil drainage is somewhat excessively to excessively drained and moderately well drained. Soil moisture is adequate for good softwood growth, but is limited for hardwoods. White pine, red maple, aspen, and paper birch are common in early and mid-successional stands. Successional trends on these coarse textured, somewhat droughty and less fertile soils are toward stands of shade tolerant softwoods, i.e., hemlock and red spruce. Hardwood competition is moderate to slight on these soils. Due to less hardwood competition, these soils are ideally suited for softwood production. With modest levels of management, white pine can be maintained and reproduced on these soils. Because these soils are highly responsive to softwood production, especially white pine, they are ideally suited for forest management.

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### Cheshire County continued

IIA This diverse group includes many of the same soils as in groups IA and IB. However, these mapping units have been separated because of physical limitations which make forest management more difficult and costly, i.e., steep slopes, bedrock outcrops, erosive textures, surface boulders, and extreme rockiness. Usually, productivity of these soils is not greatly affected by their physical limitations. However, management activities such as tree planting, thinning, and harvesting are more difficult and more costly. Due to the diverse nature of this group, it is not possible to generalize about successional trends or to identify special management opportunities.

IIB The soils in this group are poorly drained. The seasonal high water table is generally within 12 inches of the surface. Productivity of these poorly drained soils is generally less than soils in other groups. Successional trends are toward climax stands of shade tolerant softwoods, i.e., red spruce and hemlock. Red maple is common and a persistent component in many stands with balsam fir. These soils generally support stands of hemlock, red spruce, and balsam fir. Red maple cordwood stands or slow-growing hemlock sawtimber are common. However, due to poor soil drainage, forest management is somewhat limited. Severe windthrow hazard limits partial cutting, frost action threatens survival of planted seedlings, and harvesting is generally restricted to periods when the ground is frozen.

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### Coos County

IA This group consists of the deeper, loamy textured, moderately well, and well-drained soils. Generally, these soils are more fertile and have the most favorable moisture relationships. The successional trends on these soils are toward stands of shade tolerant hardwoods, i.e., beech and sugar maple. Successional stands frequently contain a variety of hardwoods such as beech, sugar maple, red maple, white birch, yellow birch, aspen, white ash, and northern red oak in varying combinations with red and white spruce, balsam fir, and occasionally white pine and hemlock. Hardwood competition is severe on these soils. Softwood regeneration is usually dependent upon persistent hardwood control efforts.

IB The soils in this group are generally sandy or loamy over sandy textures and slightly less fertile than those in group IA. Soil moisture is adequate for good tree growth, but may not be quite as abundant as in group IA soils. Soils in this group have successional trends toward a climax of tolerant hardwoods, predominantly beech. Successional stands, especially those which are heavily cutover, are commonly composed of a variety of hardwood species such as red maple, aspen, paper birch, yellow birch, sugar maple, and beech, in combinations with red spruce, balsam fir, and hemlock. Hardwood competition is moderate to severe on these soils. Successful softwood regeneration is dependent upon hardwood control.

IC The soils in this group are outwash sands and gravels. Soil drainage is excessively drained to moderately well drained. Soil moisture is adequate for good softwood growth, but is limited for hardwoods. Successional trends on these coarse textured, somewhat droughty and less fertile soils are toward stands of shade tolerant softwoods, i.e., red spruce and balsam fir. Balsam fir is a persistent component in many stands, but is shorter lived than red spruce. White pine, red maple, aspen, and paper birch are common in early and mid-successional stands. Hardwood competition is moderate to slight on these soils. Due to less hardwood competition, these soils are ideally suited for softwood production. With

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### Coos County cont.

modest levels of management, white pine can be maintained and reproduced on these soils. Because these soils are highly responsive to softwood production, especially white pine, they are ideally suited for forest management.

IIA This diverse group includes many of the same soils as in groups IA and IB. However, these map units have been separated because of physical limitations which make forest management more difficult and costly, i.e., steep slopes, bedrock outcrops, erosive textures, surface boulders, and extreme rockiness. Usually productivity of these soils is not greatly affected by their physical limitations. However, management activities such as tree planting, thinning, and harvesting are more difficult and more costly. Due to the diverse nature of this group, it is not possible to generalize about successional trends or to identify special management opportunities.

IIB The soils in this group are poorly drained. The seasonal high water table is generally within 12 inches of the surface. Productivity of these poorly drained soils is generally less than soils in other groups. Successional trends are toward climax stands of shade tolerant softwoods, i.e., spruce and balsam fir. Balsam fir is a persistent component in stands in northern New Hampshire. Due to abundant natural reproduction in northern New Hampshire, these soils are generally desirable for production of spruce and balsam fir, especially pulpwood. However, due to poor soil drainage, forest management is somewhat limited. Severe windthrow hazard limits partial cutting, frost action threatens survival of planted seedlings, and harvesting is generally restricted to periods when the ground is frozen.

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### Grafton County

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IB The soils in this group are generally sandy or loamy over sandy textures and slightly less fertile than those in group IA. These soils are moderately well and well drained. Soil moisture is adequate for good tree growth, but may not be quite as abundant as in group IA soils. Soils in this group have successional trends toward a climax of tolerant hardwoods, predominantly beech. Successional stands, especially those which are heavily cutover, are commonly composed of a variety of hardwood species such as red maple, aspen, paper birch, yellow birch, sugar maple, and beech, in combinations with red spruce, balsam fir, and hemlock. Hardwood competition is moderate to severe on these soils. Successful softwood regeneration is dependent upon hardwood control.

IC The soils in this group are outwash sands and gravels. Soil drainage is somewhat excessively to excessively drained and moderately well drained. Soil moisture is adequate for good softwood growth, but is limited for hardwoods. Successional trends on these coarse textured, somewhat droughty and less fertile soils are toward stands of shade tolerant softwoods, i.e., red spruce and hemlock. Balsam fir is a persistent component in

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**Grafton County cont.**

many stands, but is shorter lived than red spruce and hemlock. White pine, red maple, aspen, and paper birch are common in early and mid-successional stands. Hardwood competition is moderate to slight on these soils. Due to less hardwood competition, these soils are ideally suited for softwood production. With modest levels of management, white pine can be maintained and reproduced on these soils. Because these soils are highly responsive to softwood production, especially white pine, they are ideally suited for forest management.

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**Hillsborough County, Eastern Part**

IA This group consists of the deeper, loamy textured, moderately well, and well-drained soils. Generally, these soils are more fertile and have the most favorable soil moisture relationships. The successional trends on these soils are toward stands of shade tolerant hardwoods, i.e., beech and sugar maple. Successional stands frequently contain a variety of hardwoods such as beech, sugar maple, red maple, white birch, yellow birch, aspen, white ash, and northern red oak in varying combinations with red and white spruce, balsam fir, hemlock, and occasionally white pine. Hardwood competition is severe on these soils. Softwood regeneration is usually dependent upon hardwood control efforts.

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### Hillsborough County, Eastern Part cont.

IC The soils in this group are outwash sands and gravels. Soil drainage is somewhat excessively to excessively drained and moderately well drained. Soil moisture is adequate for good softwood growth, but is limited for hardwoods. Successional trends on these coarse textured, somewhat droughty and less fertile soils are toward stands of shade tolerant softwoods, i.e., red spruce and hemlock. Balsam fir is a persistent component in many stands, but is shorter lived than red spruce and hemlock. White pine, red maple, aspen, and paper birch are common in early and mid-successional stands. Hardwood competition is moderate to slight on these soils. Due to less hardwood competition, these soils are ideally suited for softwood production. With modest levels of management, white pine can be maintained and reproduced on these soils. Because these soils are highly responsive to softwood production, especially white pine, they are ideally suited for forest management.

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IIB The soils in this group are poorly drained. The seasonal high water table is generally within 12 inches of the surface. Productivity of these poorly drained soils is generally less than soils in other groups. Successional trends are toward climax stands of shade tolerant softwoods, i.e., spruce in the north and hemlock further south. Balsam fir is a persistent component in stands in northern New Hampshire and red maple is common on these soils further south. Due to abundant natural reproduction in northern New Hampshire, these soils are generally desirable for production of spruce and balsam fir, especially pulpwood. Red maple cordwood stands or slow-growing hemlock sawtimber are common in more southerly areas. However, due to poor soil drainage, forest management is somewhat limited. Severe windthrow hazard limits partial cutting, frost action threatens survival of planted seedlings, and harvesting is generally restricted to periods when the ground is frozen.

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### Hillsborough County, Western Part

IA This group consists of the deeper, loamy textured, moderately well, and well-drained soils. Generally, these soils are more fertile and have the most favorable soil moisture relationships. The successional trends on these soils are toward stands of shade tolerant hardwoods, i.e., beech and sugar maple. Successional stands frequently contain a variety of hardwoods such as beech, sugar maple, red maple, white birch, yellow birch, aspen, white ash, and northern red oak in varying combinations with red and white spruce, balsam fir, hemlock, and occasionally white pine. Hardwood competition is severe on these soils. Softwood regeneration is usually dependent upon persistent hardwood control efforts.

IB The soils in this group are generally sandy or loamy over sandy textures and slightly less fertile than those in group IA. These soils are moderately well and well drained. Soil moisture is adequate for good tree growth, but may not be quite as abundant as in group

Continued on Next Page

### Hillsborough County, Western Part cont.

IA soils. Soils in this group have successional trends toward a climax of tolerant hardwoods, predominantly beech. Successional stands, especially those which are heavily cutover, are commonly composed of a variety of hardwood species such as red maple, aspen, paper birch, yellow birch, sugar maple, and beech, in combinations with red spruce, balsam fir, and hemlock. Hardwood competition is moderate to severe on these soils. Successful softwood regeneration is dependent upon hardwood control.

IC The soils in this group are outwash sands and gravels. Soil drainage is somewhat excessively to excessively drained and moderately well drained. Soil moisture is adequate for good softwood growth, but is limited for hardwoods. Successional trends on these coarse textured, somewhat droughty and less fertile soils are toward stands of shade tolerant softwoods, i.e., red spruces and hemlock. Balsam fir is a persistent component in many stands, but is shorter lived than red spruce and hemlock. White pine, red maple, aspen, and paper birch are common in early and mid-successional stands. Hardwood competition is moderate to slight on these soils. Due to less hardwood competition, these soils are ideally suited for softwood production. With modest levels of management, white pine can be maintained and reproduced on these soils. Because these soils are highly responsive to softwood production, especially white pine, they are ideally suited for forest management.

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### Merrimack County

IA This group consists of the deeper, loamy textured, moderately well, and well-drained soils. Generally, these soils are more fertile and have the most favorable soil moisture relationships. The successional trends on these soils are toward stands of shade tolerant hardwood, i.e., beech and sugar maple. Successional stands frequently contain a variety of hardwoods such as beech, sugar maple, red maple, white birch, yellow birch, aspen, white ash, and northern red oak in varying combinations with red and white spruce,

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**Merrimack County cont.**

balsam fir, hemlock, and occasionally white pine. Hardwood competition is severe on these soils. Softwood regeneration is usually dependent upon persistent hardwood control efforts.

IB The soils in this group are generally sandy or loamy over sandy textures and slightly less fertile than those in group IA. These soils are moderately well and well drained. Soil moisture is adequate for good tree growth, but may not be quite as abundant as in group IA soils. Soils in this group have successional trends toward a climax of tolerant hardwoods, predominantly beech. Successional stands, especially those which are heavily cutover, are commonly composed of a variety of hardwood species such as red maple, aspen, paper birch, yellow birch, sugar maple, and beech, in combinations with red spruce, balsam fir, and hemlock. Hardwood competition is moderate to severe on these soils. Successful softwood regeneration is dependent upon hardwood control.

IC The soils in this group are outwash sands and gravels. Soil drainage is somewhat excessively to excessively drained and moderately well drained. Soil moisture is adequate for good softwood growth, but is limited for hardwoods. Successional trends on these coarse textured, somewhat droughty and less fertile soils are toward stands of shade tolerant softwoods, i.e., red spruce and hemlock. Balsam fir is a persistent component in many stands, but is shorter lived than red spruce and hemlock. White pine, red maple, aspen, and paper birch are common in early and mid-successional stands. Hardwood competition is moderate to slight on these soils. Due to less hardwood competition, these soils are ideally suited for softwood production. With modest levels of management, white pine can be maintained and reproduced on these soils. Because these soils are highly responsive to softwood production, especially white pine, they are ideally suited for forest management.

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**Merrimack-Belknap Soil Survey Update**

IA The successional trends on these soils are toward stands of shade tolerant hardwood, i.e., beech and sugar maple. Successional stands frequently contain a variety of hardwoods such as beech, sugar maple, red maple, white birch, yellow birch, aspen, white ash, and northern red oak in varying combinations with red and white spruce, balsam fir, hemlock, and occasionally white pine. Hardwood competition is severe on these soils. Softwood regeneration is usually dependent upon persistent hardwood control efforts. This group consists of the deeper, loamy textured, moderately well, and well-drained soils. Generally, these soils are more fertile and have the most favorable soil moisture relationships.

IB Soils in this group have successional trends toward a climax of tolerant hardwoods, predominantly beech. Successional stands, especially those which are heavily cutover, are commonly composed of a variety of hardwood species such as red maple, aspen, paper birch, yellow birch, sugar maple, and beech, in combinations with red spruce, balsam fir, and hemlock. The soils in this group are generally sandy or loamy over sandy textures and slightly less fertile than those in group IA. These soils are moderately well and well drained. Soil moisture is adequate for good tree growth, but may not be quite as abundant as in group IA soils. Hardwood competition is moderate to severe on these soils. Successful softwood regeneration is dependent upon hardwood control.

IC Because these soils are highly responsive to softwood production, especially white pine, they are ideally suited for forest management. The soils in this group are outwash sands and gravels. Soil drainage is somewhat excessively to excessively drained and moderately well drained. Soil moisture is adequate for good softwood growth, but is limited for hardwoods. Hardwood competition is moderate to slight on these soils. Due to less hardwood competition, these soils are ideally suited for softwood production. With modest levels of management, white pine can be maintained and reproduced on these soils. Successional trends on these coarse textured, somewhat droughty and less fertile soils are toward stands of shade tolerant softwoods, i.e., red spruce and hemlock. Balsam fir is a persistent component in many stands, but is shorter lived than red spruce and hemlock. White pine, red maple, aspen, and paper birch are common in early and mid-successional stands.

IIA This diverse group includes many of the same soils as in groups IA and IB. However, these mapping units have been separated because of physical limitations which make forest management more difficult and costly, i.e., steep slopes, bedrock outcrops, erosive textures, surface boulders, and extreme rockiness. Due to the diverse nature of this group, it is not possible to generalize about successional trends or to identify special management opportunities. Usually, productivity of these soils is not greatly affected by their physical limitations. However, management activities such as tree planting, thinning, and harvesting are more difficult and more costly.

IIB Productivity of these poorly drained soils is generally less than soils in other groups. Due to abundant natural reproduction in northern New Hampshire, these soils are generally desirable for production of spruce and balsam fir, especially pulpwood. Red maple cordwood stands or slow-growing hemlock sawtimber are common in more southerly areas. However, due to poor soil drainage, forest management is somewhat limited. Severe windthrow hazard limits partial cutting, frost action threatens survival of planted seedlings, and harvesting is generally restricted to periods when the ground is frozen. Successional trends are toward climax stands of shade tolerant softwoods, i.e., spruce in the north and hemlock further south. Balsam fir is a persistent component in stands in northern New Hampshire and red maple is common on these soils further south. The soils in this group are poorly drained. The seasonal high water table is generally within 12 inches of the surface.

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### Merrimack-Belknap Soil Survey Update cont.

NC Several mapping units in the survey are either so variable or have such a limited potential for commercial production of forest products they have not been considered. Often an on-site visit would be required to evaluate the situation.

### Rockingham County

IA This group consists of the deeper, loamy textured, moderately well, and well-drained soils. Generally, these soils are more fertile and have the most favorable soil moisture relationships. The successional trends on these soils are toward stands of shade tolerant hardwoods, beech and sugar maple, and the less tolerant northern red oak. Due to higher moisture holding capacity and fertility of these soils, sugar maple, white ash, and yellow birch re more abundant on these soils. Successional stands frequently contain a variety of hardwoods such as northern red oak, beech, sugar maple, red maple, white birch, gray birch, black birch, yellow birch, aspen, white ash, and black cherry in varying combinations with white pine and hemlock. At higher elevations, some red spruce and balsam fir may be found. Due to severe hardwood competition, white pine is difficult to establish on these soils. However, once established, white pine grows well on these soils. The soils in this group are well suited for production of high quality hardwood sawtimber and veneer. Many stands will contain a variety of valuable hardwood species with sugar maple and northern red oak being the most common.

IB The soils in this group are generally sandy or loamy over sandy textures and slightly less fertile than those in group IA. These soils are moderately well and well drained. Soil moisture is adequate for good tree growth, but usually not as abundant as in group IA soils. Forests growing on these soils generally have successional trends toward climax hardwood forests of beech and/or oak. Beech and oak (predominantly northern red oak) are less demanding of soil moisture and fertility and are tolerant of shade (beech is very tolerant and oak is intermediate in tolerance). Oak and white pine are very common on these soils. Successional stands, especially those which are heavily cutover, frequently contain a variety of hardwood species such as northern red oak, black oak, white oak, red maple, aspen, paper birch, gray birch, sugar maple, and beech in various combinations with white pine and hemlock. At higher elevations, some red spruce and balsam fir may be present. Hardwood competition on these soils varies from moderate to severe. The coarser textured, well drained soils in this group (moderate hardwood competition) are well suited for production of white pine under intensive management. Soils in this group are well suited for the production of oak, predominantly northern red oak, in nearly pure stands or in combination with white pine. Most other valuable hardwoods, i.e., sugar maple, white ash, yellow birch, and black birch are less abundant on these soils.

IC The soils in this group are derived from coarse textured, infertile glacial deposits of outwash sands and gravels. The soils are somewhat excessively to excessively drained and moderately well drained. On the somewhat excessively to excessively drained soils in this group, soil moisture is adequate for good softwood growth, but limited for hardwoods. Moderately well drained soils in this group have adequate moisture for hardwood growth, but are limited by low fertility. The successional trends on these coarse textured, less fertile soils are toward stands of shade tolerant hemlock. However, white pine is very common on these soils and most stands are successional stands of white pine in various combinations with northern red oak, black oak, white oak, red maple, gray birch, white birch, and aspen. Hardwood competition is moderate to slight on these soils. Due to less hardwood competition, these soils are well suited for softwood production, especially white pine. White pine can be maintained and reproduced on these soils with moderate levels of hardwood control.

Continued on Next Page

**Rockingham County cont.**

IIA This diverse group includes many of the same soils as in groups IA and IB. However, these mapping units have been separated because of physical limitations which make forest management more difficult and costly, i.e., steep slopes, bedrock outcrops, erosive textures, surface boulders, and extreme rockiness. Usually, productivity of these soils is not greatly affected by their physical limitations. However, management activities such as tree planting, thinning, and harvesting are more difficult and more costly. Due to the diverse nature of this group, it is not possible to generalize about successional trends or to identify special management opportunities.

IIB The soils in this group are poorly drained. The seasonal high water table is generally within 12 inches of the surface. This high water table greatly restricts rooting depth, but provides virtually unlimited moisture for tree growth. Productivity of these poorly drained soils is generally less than soils in the other groups. Successional trends are toward climax stands of shade tolerant hemlock. Hemlock, red maple and white maple are common on these soils. Due to poor soil drainage, forest management activities are limited. Severe windthrow hazard limits partial cutting, frost action threatens survival of planted seedlings and harvesting is usually restricted to dry periods or when the ground is frozen.

NC Several mapping units in the survey are either so variable or have such a limited potential for commercial production of forest products they have not been considered. Often an on-site visit would be required to evaluate the situation.

**Strafford County**

IA This group consists of the deeper, loamy textured, moderately well, and well-drained soils. Generally, these soils are more fertile and have the most favorable soil moisture relationships. The successional trends on these soils are toward stands of shade tolerant hardwoods, i.e., beech and sugar maple, less tolerant northern red oak. Due to higher moisture holding capacity and fertility of these soils, sugar maple, white ash, and yellow birch are more abundant on these soils. Successional stands frequently contain a variety of hardwoods such as northern red oak, beech, sugar maple, red maple, white birch, gray birch, black birch, yellow birch, aspen, white ash, and black cherry in varying combinations with white pine and hemlock. At higher elevations, some red spruce and balsam fir may be found.

IB The soils in this group are generally sandy or loamy over sandy textures and slightly less fertile than those in group IA. These soils are moderately well and well drained. Soil moisture is adequate for good tree growth, but may not be quite as abundant as in group IA soils. Soils in this group have successional trends toward a climax of tolerant hardwoods, predominantly beech. Successional stands, especially those which are heavily cutover, are commonly composed of a variety of hardwood species such as red maple, aspen, paper birch, yellow birch, sugar maple, and beech, in combinations with red spruce, balsam fir, hemlock, and white pine. Hardwood competition is moderate to severe on these soils. Successful softwood regeneration is dependent upon hardwood control.

IC The soils in this group are outwash sands and gravels. Soil drainage is somewhat excessively to excessively drained and moderately well drained. Soil moisture is adequate for good softwood growth, but is limited for hardwoods. Successional trends on these coarse textured, somewhat droughty and less fertile soils are toward stands of shade tolerant softwoods, i.e., red spruce and hemlock. White pine, red maple, aspen, paper birch, and grey birch are common in early and mid-successional stands. Hardwood competition is moderate to slight on these soils. Due to less hardwood competition, these

Continued on Next Page

**Strafford County cont.**

soils are ideally suited for softwood production. With modest levels of management, white pine can be maintained and reproduced on these soils. Because these soils are highly responsive to softwood production, especially white pine, they are ideally suited for forest management.

IIA This diverse group includes many of the same soils as in groups IA and IB. However, these mapping units have been separated because of physical limitations which make forest management more difficult and costly, i.e., steep slopes, bedrock outcrops, erosive textures, surface boulders, and extreme rockiness. Usually, productivity of these soils is not greatly affected by their physical limitations. However, management activities such as tree planting, thinning, and harvesting are more difficult and more costly. Due to the diverse nature of this group, it is not possible to generalize about successional trends or to identify special management opportunities.

IIB The soils in this group are poorly drained. The seasonal high water table is generally within 12 inches of the surface. Productivity of these poorly drained soils is generally less than soils in other groups. Successional trends are toward climax stands of shade tolerant softwoods such as hemlock. Red maple is common on these soils. Red maple cordwood stands or slow-growing hemlock sawtimber are common. However, due to poor soil drainage, forest management is somewhat limited. Severe windthrow hazard limits partial cutting, frost action threatens survival of planted seedlings, and harvesting is generally restricted to periods when the ground is frozen.

NC Several mapping units in the survey are either so variable or have such a limited potential for commercial production of forest products they have not been considered. Often an on-site visit would be required to evaluate the situation.

**Sullivan County**

IA This group consists of the deeper, loamy textured, moderately well, and well-drained soils. Generally, these soils are more fertile and have the most favorable soil moisture relationships. The successional trends on these soils are toward stands of shade tolerant hardwoods, i.e., beech and sugar maple. Successional stands frequently contain a variety of hardwoods such as beech, sugar maple, red maple, white birch, yellow birch, aspen, white ash, and northern red oak in varying combinations with red and white spruce, balsam fir, hemlock, and occasionally white pine. Hardwood competition is severe on these soils. Softwood regeneration is usually dependent upon persistent hardwood control efforts.

IB The soils in this group are generally sandy or loamy over sandy textures and slightly less fertile than those in group IA. These soils are moderately well and well drained. Soil moisture is adequate for good tree growth, but may not be quite as abundant as in group IA soils. Soils in this group have successional trends toward a climax of tolerant hardwoods, predominantly beech. Successional stands, especially those which are heavily cutover, are commonly composed of a variety of hardwood species such as red maple, aspen, paper birch, yellow birch, sugar maple, and beech, in combinations with red spruce, balsam fir, and hemlock. Hardwood competition is moderate to severe on these soils. Successful softwood regeneration is dependent upon hardwood control.

IC The soils in this group are outwash sands and gravels. Soil drainage is somewhat excessively to excessively drained and moderately well drained. Soil moisture is adequate for good softwood growth, but is limited for hardwoods. Successional trends on these coarse textured, somewhat droughty and less fertile soils are toward stands of shade tolerant softwoods, i.e., red spruce and hemlock. Balsam fir is a persistent component in many stands, but is shorter lived than red spruce and hemlock. White pine, red maple,

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**Sullivan County cont.**

aspen, and paper birch are common in early and mid-successional stands. Hardwood competition is moderate to slight on these soils. Due to less hardwood competition, these soils are ideally suited for softwood production. With modest levels of management, white pine can be maintained and reproduced on these soils. Because these soils are highly responsive to softwood production, especially white pine, they are ideally suited for forest management.

IIA This diverse group includes many of the same soils as in groups IA and IB. However, these mapping units have been separated because of physical limitations which make forest management more difficult and costly, i.e., steep slopes, bedrock outcrops, erosive textures, surface boulders, and extreme rockiness. Usually, productivity of these soils is not greatly affected by their physical limitations. However, management activities such as tree planting, thinning, and harvesting are more difficult and more costly. Due to the diverse nature of this group, it is not possible to generalize about successional trends or to identify special management opportunities.

IIB The soils in this group are poorly drained. The seasonal high water table is generally within 12 inches of the surface. Productivity of these poorly drained soils is generally less than soils in other groups. Successional trends are toward climax stands of shade tolerant softwoods, i.e., spruce in the north and hemlock further south. Balsam fir is a persistent component in stands in northern New Hampshire and red maple is common on these soils further south. Due to abundant natural reproduction in northern New Hampshire, these soils are generally desirable for production of spruce and balsam fir, especially pulpwood. Red maple cordwood stands or slow-growing hemlock sawtimber are common in more southerly areas. However, due to poor soil drainage, forest management is somewhat limited. Severe windthrow hazard limits partial cutting, frost action threatens survival of planted seedlings, and harvesting is generally restricted to periods when the ground is frozen.

NC Several mapping units in the survey are either so variable or have such a limited potential for commercial production of forest products they have not been considered. Often an on-site visit would be required to evaluate the situation.

## Hydric Soil Ratings

### Excerpts from National Field Indicators of Hydric Soils

The following are the indicators that are used in New Hampshire excerpted from the *Field Indicators of Hydric Soils in the United States*. The indicators are structured as follows:

1. Alpha-numeric Listing
2. Short Name
3. Applicable Land Resource Regions (LRRs)
4. Description of the Field Indicator
5. User Notes (not included in this excerpted version)

For example, A1 indicates the first indicator for all soils; Histosol is the short name; the indicator is for use in all LRRs; classifies as a Histosol, except Folists is the indicator description; helpful User Notes are added.

ALL SOILS:

All soils refers to soils with any USDA soil texture. Unless otherwise indicated, all mineral layers above any of the Indicators have dominant chroma 2 or less, or the layer(s) with dominant chroma of more than 2 is less than 15 cm (6 in.) thick. Also, unless otherwise indicated, nodules and concretions are not considered to be redox concentrations. Use the following Indicators regardless of texture.

A1. Histosol. For use in all LRRs. Classifies as a Histosol, except Folists.

A4. Hydrogen Sulfide. For use in all LRRs. A hydrogen sulfide odor within 30 cm (12 in.) of the soil surface.

A5. Stratified Layers. For use in LRRs F, K, L, M, N, O, P, R, S, T, and U; for testing in LRRs V and Z. Several stratified layers starting within the upper 15 cm (6 in.) of the soil surface. One or more of the layers has 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 have value 4 or more and chroma 2 or less.

A10. 2 cm Muck. For use in LRR M and N; for testing in LRRs A, B, C, E, K, L, R, S, U, W, X, Y, and Z. A layer of muck 2 cm (0.75 in.) or more thick with value 3 or less and chroma 1 or less starting within 15 cm (6 in.) of the soil surface.

SANDY:

Sandy soils refers to those soils with a USDA texture of loamy fine sand and coarser. Unless otherwise indicated, all mineral layers above any of the Indicators have dominant chroma 2 or less, or the layer(s) with dominant chroma of more than 2 is less than 15 cm (6 in.) thick. In addition, unless otherwise indicated, nodules and concretions are not considered to be redox concentrations. Use the following sandy Indicators for sandy mineral soil materials:

S1. Sandy Mucky Mineral. For use in all LRRs except W, X, and Y. A mucky modified mineral layer 5 cm (2 in.) or more thick starting within 15 cm (6 in.) of the soil surface.

S3. 5 cm Mucky Peat or Peat. For use in LRRs F and M; for testing in LRR R. A layer of mucky peat or peat 5 cm (2 in.) or more thick with value 3 or less and chroma 2 or less starting within 15 cm (6 in.) of the soil surface.

Continued on Next Page

## hydric cont.

S4. Sandy Gleyed Matrix. For use in all LRRs except W, X, and Y. A gleyed matrix which occupies 60% or more of a layer starting within 15 cm (6 in.) of the soil surface.

S5. Sandy Redox. For use in all LRRs except V, W, X, and Y. A layer starting within 15 cm (6 in.) of the soil surface that is at least 10 cm (4 in.) 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.

S7. Dark Surface. For use in LRRs N, P, R, S, T, U, V, and Z. A layer 10 cm (4 in.) or more thick starting within the upper 15 cm (6 in.) of the soil surface with a matrix value 3 or less and chroma 1 or less. At least 70% of the visible soil particles must be covered, coated, or similarly masked with organic material. The matrix color of the layer immediately below the dark layer must have chroma 2 or less.

S8. Polyvalue Below Surface. For use in LRRs R, S, and T; for testing in LRRs K and L. A layer with value 3 or less and chroma 1 or less starting within 15 cm (6 in.) of the soil surface underlain by a layer(s) where translocated organic matter unevenly covers the soil material forming a diffuse splotchy pattern. At least 70% of the visible soil particles in the upper layer must be covered, coated, or masked with organic material. Immediately below this layer, the organic coating occupies 5% or more of the soil volume and has value 3 or less and chroma 1 or less. The remainder of the soil volume has value 4 or more and chroma 1 or less.

S9. Thin Dark Surface. For use in LRRs R, S, and T; for testing in LRRs K and L. A layer 5 cm (2 in.) or more thick within the upper 15 cm (6 in.) of the surface, with value 3 or less and chroma 1 or less. At least 70% of the visible soil particles in this layer must be covered, coated, or masked with organic material. This layer is underlain by a layer(s) with value 4 or less and chroma 1 or less to a depth of 30 cm (12 in.) or to the spodic horizon, whichever is less.

LOAMY AND CLAYEY SOILS:

Loamy and clayey soils refers to those soils with USDA textures of loamy very fine sand and finer. Unless otherwise indicated, all mineral layers above any of the Indicators have dominant chroma 2 or less, or the layer(s) with dominant chroma of more than 2 is less than 15 cm (6 in.) thick. In addition, unless otherwise indicated, nodules and concretions are not considered to be redox concentrations. Use the following loamy and clayey Indicators for loamy or clayey mineral soil materials:

F1. Loamy Mucky Mineral. For use in all LRRs except V, W, X, and Y. A mucky modified mineral layer 10 cm (4 in.) or more thick starting within 15 cm (6 in.) of the soil surface.

F2. Loamy Gleyed Matrix. For use in all LRRs except W, X, and Y. A gleyed matrix that occupies 60% or more of a layer starting within 30 cm (12 in.) of the soil surface.

F3. Depleted Matrix. For use in all LRRs except W, X, and Y. A layer at least 15 cm (6 in.) thick with a depleted matrix that has 60% or more chroma 2 or less starting within 25 cm (10 in.) of the surface.

F4. Depleted Below Dark Surface. For use in all LRRs except LRRs W, X, and Y; for testing in LRRs W, X, and Y. A layer at least 15 cm (6 in.) thick with a depleted matrix that has 60% or more chroma 2 or less starting within 30 cm (12 in.) of the surface. The layer(s) above the depleted matrix have value 3 or less and chroma 2 or less.

Continued on Next Page

## hydric cont.

F5. Thick Dark Surface. For use in all LRRs except LRRs W, X, and, Y; for testing in LRRs W, X, and Y. A layer at least 15 cm (6 in.) thick with a depleted matrix that has 60% or more chroma 2 or less (or a gleyed matrix) starting below 30 cm (12 in.) of the surface. The layer(s) above the depleted or gleyed matrix have hue N and value 3 or less to a depth of 30 cm (12 in.) and value 3 or less and chroma 1 or less in the remainder of the epipedon.

F6. Redox Dark Surface. For use in all LRRs except LRRs W, X, and Y; for testing in LRRs W, X, and Y. A layer at least 10 cm (4 in.) thick entirely within the upper 30 cm (12 in.) of the mineral soil that has:

a. 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

b. 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.

F7. Depleted Dark Surface. For use in all LRRs except LRRs W, X, and Y; for testing in LRRs W, X, and Y. Redox depletions, with value 5 or more and chroma 2 or less, in a layer at least 10 cm (4 in.) thick entirely within the upper 30 cm (12 in.) of the mineral soil that has:

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

F8. Redox Depressions. For use in all LRRs except LRRs W, X, and Y; for testing in LRRs W, X, and Y. In closed depressions subject to ponding, 5% or more distinct or prominent redox concentrations as soft masses or pore linings in a layer 5 cm (2 in.) or more thick entirely within the upper 15 cm (6 in.) of the soil surface.

### National Test Indicators of Hydric Soils

The Indicators listed above should be tested for use in LRRs other than those listed. Other Indicators for testing are listed below. This list of Test Indicators is not extensive. Users of the Indicators are encouraged to submit descriptions of other soil morphologies they think indicative of hydric soils along with supporting data for inclusion in subsequent editions of Field Indicators of Hydric Soils in the United States.

TA2. Structureless Muck. For testing in MLRAs 141, 143, 144b, 145, and 146 of LRR R. Starting within 15 cm (6 in.) of the soils surface on concave positions or in depressions, a layer of muck 2 cm (0.75 in.) or more thick that has no soil structure.

TF2. Red Parent Material. For testing in LRRs with red parent material. In parent material with a hue of 7.5YR or redder, a layer at least 10 cm (4 in.) thick with a matrix value 4 or less and chroma 4 or less and 2% or more redox depletions and/or redox concentrations as soft masses and/or pore linings. The layer is entirely within 30 cm (12 in.) of the soil surface. The minimum thickness requirement is 5 cm (2 in.) if the layer is the mineral surface layer.

Continued on Next Page

## hydric cont.

### New England Field Indicators for Identifying Hydric Soils

The following is the key to hydric soil indicators from the *Field Indicators for Identifying Hydric Soils in New England*.

I. Any soil that is frequently ponded or flooded for a long or very long duration during the growing season; or

II. Soils that are flooded daily by tides and/or have sulfidic materials within 12 inches of the soil surface; or

III. Soils that have aquic conditions within the upper part of the soil for some period of time in most years, and

A. Have organic soil materials at or near the soil surface that are greater than 16 inches thick (i.e. Histosols); or

B. Have a layer of organic soil materials at or near the soil surface that is 8 to 16 inches thick (i.e., histic epipedon); and directly underlying the O horizon or, if present, the A horizon, have a depleted or gleyed matrix and/or other redoximorphic features; or

C. Have a layer 4 to 8 inches thick of partially to well decomposed (hemic and/or sapric) organic soil material and/or a mucky A or Ap horizon, and are directly underlain by a horizon with a depleted or gleyed matrix; or

D. Within 10 inches of the top of the mineral soil material and directly underlying an A or Ap horizon (or, if they are not present, an O horizon), is a horizon with a depleted or gleyed matrix (for soils with moderate to strong structure, the matrix color is recorded for ped interiors); or

E. Beginning within 20 inches of the top of the mineral soil material and directly underlying a thick or very thick, dark A or Ap horizon is a horizon with a depleted or gleyed matrix that is 4 inches or more thick (for soils with moderate to strong structure, the matrix color is recorded for ped interiors); or

F. Have a spodic horizon and one of the following morphologies:

1. within 6 inches of the top of the mineral soil material have an E horizon (eluvial horizon) with 5 percent or more redoximorphic features and/or organic streaking, that is directly underlain by a spodic horizon with either:
   a) a Bs horizon with redoximorphic features in the upper part; or
   c) a dark Bh and/or Bhs horizon that is directly underlain by a horizon with redoximorphic features in the upper part; or
2. beginning within 10 inches of the top of the mineral soil material and directly underlying a dark A horizon and/or a shallow E horizon (or if neither is present, an O horizon), there is a dark Bh and/or Bhs horizon that is greater than 2 inches thick that is directly underlain by a horizon with 5 percent or more redoximorphic features in the upper part; or
3. within 10 inches of the top of the mineral soil material and directly underlying a dark Ap horizon, is either:
   a) an E horizon with 5 percent or more redoximorphic features and/or organic streaking directly underlain by a horizon with redoximorphic features in the upper part; or
   b) a dark Bh and/or Bhs horizon that is directly underlain by a horizon with 5 percent or more redoximorphic features in the upper part; or
   c) a Bs horizon with 5 percent or more redoximorphic features in the upper part.

G. Do not have a spodic horizon and the dominant textures in the upper 20 inches of the soil are loamy fine sand or coarser and:

1. have a layer 4 to 8 inches thick of partially to well-decomposed (hemic and/or sapric) organic soil material and/or a mucky A or Ap horizon; and are directly underlain by a horizon with 5 percent or more redoximorphic features; or

Continued on Next Page

## hydric cont.

2. within 10 inches of the top of the mineral soil material and directly underlying a dark A or Ap horizon (or, if they are not present, an O horizon) is a horizon with a matrix color due to wetness of chroma 3 or less, value 4 or more, with 5 percent or more redoximorphic features; or
3. within 15 inches of the top of the mineral soil material and directly underlying a thick, very dark Ap horizon there is a horizon with a matrix color due to wetness of chroma 3 or less, value 4 or more, with 5 percent or more redoximorphic features.

H. Do not have a spodic horizon and the dominant textures in the upper 20 inches of soil are finer than loamy fine sand, and

1. within 10 inches of the top of the mineral soil material and directly underlying a dark A or Ap horizon (or, if they are not present, an O horizon) is a horizon with 10 percent or more redox depletions, and within 20 inches of the mineral soil surface there is a horizon with a depleted or gleyed matrix (for soils with moderate to strong structure, the matrix color and percent redox depletions are recorded for ped interiors); or
2. within 15 inches of the top of the mineral soil material and directly underlying a thick, very dark Ap horizon, is a horizon with either:
   a) 20 percent or more redox depletions and within 20 inches of the mineral soil surface there is a horizon with a depleted or gleyed matrix (for soils with moderate to strong structure, the matrix color and percent redox depletions are recorded for ped interiors); or
   b) 10 percent or more redox depletions and within 20 inches of the mineral soil surface there is a horizon with a depleted or gleyed matrix, and there are 5 percent or more redoximorphic features within 6 inches of the top of the mineral soil material (for soils with moderate to strong structure, the matrix color and percent redox depletions are recorded for ped interiors).

I. Any soil that has a very dark A or Ap horizon less than 10 inches thick (or, if they are not present, an O horizon) that is directly underlain by a horizon with a matrix color due to wetness of chroma 3 or less, with 10 percent or more redoximorphic features; and within 24 inches of the mineral soil surface has redox depletions; and within 6 inches of the mineral soil surface has:

1. 5 percent or more redox concentrations and/or depletions, and/or
2. 2 percent or more Fe/Mn nodules and/or concretions

IV. Problem soil areas, disturbed and/or altered sites: Not all hydric soils are identified using the morphological indicators contained within this manual. Some soils within the New England Region have developed within mineral parent materials that mask or inhibit the development of soil morphologies. In other soils, the parent materials have been deposited recently, disturbed and/or altered and there has not been sufficient time for morphologies to develop. Problem soil areas recognized in New England include, but are not limited to: soils developed in Triassic red sandstones, carboniferous schists, strongly calcareous sediments, recently deposited alluvial sediments, some soils adjacent to brackish and salt water bodies, and soils within the cryic temperature regime of northern New England. We recognize the need to identify the general locations of these unique soils and to develop reliable field indicators for identifying hydric soils within them.

# New Hampshire Soil Attribute Data Dictionary

*4 June, 2002*

## Hydrologic Group

A The soils have a high infiltration rate even when thoroughly wetted and have a high rate of water transmission,

B The soils have a moderate infiltration rate when thoroughly wetted and have a moderate rate of water transmission,

C The soils have a slow infiltration rate when thoroughly wetted and have a slow rate of water transmission,

D The soils have a very slow infiltration rate when thoroughly wetted and have a very slow rate of water transmission.

A/D, B/D, and C/D are given for certain wet soils that can be adequately drained. The first letter applies to the drained condition, the second to the undrained condition.

## Nonirrigated Capability Class and Subclass

(*National Soil Survey Handbook)*:

Capability Class

1 soils have slight limitations that restrict their use,

2 soils have moderate limitations that reduce the choice of plants or require moderate conservation practices,

3 soils have severe limitations that reduce the choice of plants or require special conservation practices, or both,

4 soils have very severe limitations that restrict the choice of plants or require very careful management, or both,

5 soils have little or no hazard of erosion but have other limitations, impractical to remove, that limit their use mainly to pasture, range, forestland, or wildlife food and cover,

6 soils have severe limitations that make them generally unsuited to cultivation and that limit their use mainly to pasture, range, forestland, or wildlife food and cover,

7 soils have very severe limitations that make them unsuited to cultivation and that restrict their use mainly to grazing, forestland, or wildlife,

8 soils and miscellaneous areas have limitations that preclude their use for commercial plant production and limit their use to recreation, wildlife, or water supply or for esthetic purposes.

Capability subclass:

e soils for which the susceptibility to erosion is the dominant problem or hazard affecting their use,

w soils for which excess water is the dominant hazard or limitation affecting their use,

s soils that have soil limitations within the rooting zone, such as shallowness of the rooting zone,

c soils for which the climate (temperature or lack of moisture) is the major hazard or limitation affecting their use.

## Mapunit Kind

| | |
|---|---|
| Consociation | A soil map unit in which a single soil type (or similar soil types) dominates the delineated area. |
| Complex | A soil map unit consisting of two or more types of soil in an intricate pattern that is not practical to map separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas. |
| Association | A soil map unit of two or more types of soil that are geographically associated in a repeating pattern. Soil types could be mapped as consociations at a scale of 1:24,000 or less. |
| Undifferentiated Group | Two or more soil types that are mapped as one map unit because they are not consistent in their pattern or soil-landscape relationship and their differences are not significant to the purpose of the survey or to soil management. |

# New Hampshire Soil Attribute Data Dictionary

*4 June, 2002*

## Parent Material

(*National Soil Survey Manual)*

| | |
|---|---|
| Alluvial Deposits | Parent material is unconsolidated clastic material subaerially deposited by running water, including gravel, sand, silt, clay, and various mixtures of these. |
| Outwash | Parent material is stratified material (chiefly sand and gravel) removed or "washed out" from a glacier by melt-water streams and deposited in front of or beyond the end moraine or the margin of an active glacier. The coarser material is deposited nearer to the ice. |
| Till | Parent material is dominantly unsorted and unstratified drift, generally unconsolidated deposited directly by and underneath a glacier without subsequent reworking by meltwater, and consisting of a heterogeneous mixture of clay, silt, sand, gravel, stones, and boulders. |
| Marine or Lacustrine | Parent material that is made up of generally fine-textured materials such as silt, clay and fine sand. If deposited in extinct lakes the material commonly contains stratified deposits and varves. |
| Anthropogenic | Parent material is human influenced. |
| Not Classified | The parent material has not been classified. |
| Organic Material | Parent material is organic material. Organic soils have a minimum of from 12 to 20 percent organic carbon depending on the amount of clay and the duration of saturation with water. |

## Ponding Frequency

(National Soil Survey Handbook)

| | |
|---|---|
| none | no reasonable possibility of ponding, near 0 percent chance of ponding in any year, |
| rare | ponding unlikely but possible under unusual weather conditions; from nearly 0 to 5 percent chance of ponding in any year or nearly 0 to 5 times in 100 years, |
| occasional | ponding is expected infrequently under usual weather conditions; 5 to 50 percent chance of ponding in any year or nearly 5 to 50 times in 100 years, |
| frequent | ponding is likely to occur under usual weather conditions; more than 50 percent chance in any year or more than 50 times in 100 years. |