SEBAGO TECHNICS

CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

Town of Windham
Sketch Plan – Major Site Plan

For:

State of Maine Correctional Center:
Maintenance & Control Plant Building
17 Mallison Falls Road
Windham, Maine

Prepared for:

State of Maine, Department of Corrections
17 Mallison Falls Road
Windham, Maine

Prepared by:

Sebago Technics, Inc.
75 John Roberts Road, Suite 4A
South Portland, Maine 04106

October 2018

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October 11, 2018
16405

Town of Windham Planning Board
8 School Road
Windham ME, 04062

Sketch Plan Site Review
State of Maine Correctional Center : Maintenance and Central Plant Building

Dear Chair Douglass and Planning Board members:

On behalf of the State of Maine Department of Corrections, we have prepared the following Planning Board Site Plan-Sketch application for a new Maintenance and Central Plant Building at the Maine Correctional Facility located off of Mallision Falls Road in Windham, Maine. The State of Maine, Maine Department of Corrections owns and operates the Windham Correctional Facility. The facility is located on 265 acres of land and was originally developed prior to 1970. The facility received a Maine DEP (MDEP) Site Location of Development Act Permit in 1989 (L-015483-26-A-N) for numerous site and building construction projects since the original pre-1970's facility construction. More recently, the facility received local approval and a MDEP permit amendment for the construction of a 72 bed Women's Reentry Center completed in 2017. A Maine DEP was submitted in late September is being reviewed concurrently with the local application.

In 2016, the State of Maine authorized funding (S.P. 547- L.D. 1447) an act to authorize the Maine governmental facilities authority to issue securities to pay for capital improvements at the Maine Correctional Facility in Windham. This funding provides the State with capital investment money to rehabilitate and modernize the antiquated Windham Correctional Facility.

The first phase of this facility improvement project and the basis of this permit application is a 20,017 square foot Maintenance and Central Plant Building with supporting paved circulation and parking area. The construction of this new building is the first critical piece of infrastructure to accommodate not only operational needs but will also serve as point of beginning to eventually support the entire modernization project.

As depicted on the development plans, the new building will be located on the westerly side of the existing facility just outside the security fence and next to an existing parking lot. Site access will be gained through the existing perimeter access road. The new building will be a single-story building with garage access doors, office entry doors and a sloped metal roof.

Part of the project will include a 1,000 gallon above ground fuel storage tank for the purposes of fueling operational vehicles. The fuel tank will be double walled with monitoring and will also be set inside a precast concrete chamber with a shed roof. Since the project involves less than 1320 gallons of fuel storage, a SPCC plan is not required (40 CFR 112).

75 John Roberts Road – Suite 4A, South Portland, ME 04106-6963 • 207-200-2100 • Fax: 207-856-2206

Utilities

The existing facility is served by public water and Sewer from the Portland Water District. The new building will also be served by public water and sewer. Natural Gas is available and will provide the fuel for the heating system. Three phase power currently services the project and will also serve the new building.

Stormwater

The new building and site improvements will include stormwater collection and management system including catch-basins, underground conveyance piping, underdrained soil filter and buffers for the treatment and management of runoff.

Schedule:

Site construction is expected to commence in late November 2018 upon receipt of state and local approvals for the Site Plan. The Maine Department of Corrections is hopeful to complete the permitting process through the Town in November to allow for a late fall/ early winter start and completion of the facility by October 2019.

Future Development:

Future redevelopment of the overall facility is not under consideration at this time.

Closure:

On behalf of the Maine Department of Corrections, we look forward to working with the Planning Board to permit this project. I look forward to meeting with the Board to discuss both Sketch Plan applications at your next scheduled Planning Board meeting.

SEBAGO TECHNICS, INC.

Sincerely,

SEBAGO TECHNICS, INC.

Owens A. McCullough, P.E., LEED-AP
Vice President, Engineering/Project Development

Exhibit 1

Application Form

TOWN OF WINDHAM
MAJOR & MINOR SITE PLAN APPLICATION

Sketch Plan

(Section 811 – Site Plan Review, Submission Requirements)

The original signed copy of this application must be accompanied by:

- The required application and review escrow fees,
- Five (5) collated submission packets, which must include
  - Full size paper copies of each plan, map, or drawing, and
  - A bound copy of the required information found in Section 811 of the Land Use Ordinance.
    - The checklist below offers a brief description of these requirements for the purpose of determining the completeness of a submission. Please use the Ordinance for assembling the submission packets.
- Electronic submission in PDF format of:
  - All plans, maps, and drawings.
    - These may be submitted as a single PDF file or a PDF for each sheet in the plan set.
  - A PDF of the required information found in Section 811 of the Land Use Ordinance

The submission deadline for Sketch plans is three (3) weeks before the Planning Board or Staff Review Committee meeting for which it will be scheduled.

Applicants are strongly encouraged to schedule a brief submission meeting with Planning Staff, to walk through the application checklist at the time a Planning Board submission is made. This will allow applicants to receive a determination of completeness, or a punch list of outstanding items, at the time a submission is made.

If you have questions about the submission requirements, please contact:

Windham Planning Department	(207) 894-5960, ext. 2
Amanda Lessard, Planner	allessard@windhammaine.us
Ben Smith, Planning Director	bwsmith@windhammaine.us

Revised 12/27/17

Sketch Plan - Minor & Major Site Plan

Project Name: State of Maine Correctional Center: Maintenance & Control Plant Building

Tax Map: 3 **Lot:** 5

Estimated square footage of building(s): 20,017 s.f.

If no buildings proposed, estimated square footage of total development: __________

Is the total disturbance proposed > 1 acre? ☒ **Yes** ☐ **No**

Contact Information

1. Applicant

Name: State of Maine, Department of Correction

Mailing Address: 17 Mallison Falls Road, Windham, ME

Telephone: 207-287-4389 Fax: __________ E-mail: Gary.LaPlante@maine.gov

2. Record owner of property

X (Check here if same as applicant)

Name: __________

Mailing Address: __________

Telephone: __________ Fax: __________ E-mail: __________

3. Contact Person/Agent (if completed and signed by applicant's agent, provide written documentation of authority to act on behalf of applicant)

Name: Owens McCullough, P.E.

Company Name: Sebago Technics, Inc

Mailing Address: 75 John Roberts Road, Suite 4A, South Portland, Maine 04106

Telephone: 207-200-2073 Fax: __________ E-mail: omccullough@sebagotechnics.com

I certify all the information in this application form and accompanying materials is true and accurate to the best of my knowledge.

[signature] 10/11/2018

Signature Date

Revised 12/27/17

	Sketch Plan - Minor & Major Site Plan: Submission Requirements	Applicant	Staff
a.	Complete Sketch Plan Application form	X	
b.	Project Narrative	X	
	conditions of the site	X	
	proposed use	X	
	constraints/opportunities of site	X	
	identify if any of the following will be completed as part of the Final Plan		
	traffic study		
	utility study		
	market study		
c.	Name, address, phone for record owner and applicant	X	
d.	Names and addresses of all consultants working on the project	X	
e.	Evidence of right, title, or interest in the property	X	
f.	Evidence of payment of Sketch Plan fees and escrow deposit		
g.	Any anticipated waiver requests (Section 808)		
	Waivers from Submission Criteria in Section 811 of the Land Use Ordinance.		
	If yes, submit letter with the waivers being requested, along with reasons for each waiver request.		
	Waivers from Subdivision Performance Standards in Section 812 of the Land Use Ordinance.		
	If yes, submit letter with the waivers being requested, along with a completed "Performance and Design Standards Waiver Request" form.		
h.	**Plan Requirements**		
	Please note: the Sketch Plan does not need to be surveyed. However, if it is surveyed, please refer to the GIS requirements for Final Plan review. It may be in the applicant's interest to obtain the required GIS data while the surveyor is on site.	X	
1	Name of subdivision, north arrow, date and scale (not more than 100 ft: 1in)	X	
2	Boundary of the parcel	X	
3	Relationship of the site to the surrounding area	X	
4	Topography of the site at an appropriate contour interval (10' contours generally adequate)	X	
5	Approximate size and location of natural features of the site, including wetlands, streams, ponds, floodplains, groundwater aquifers, significant wildlife habitats and fisheries, or other important natural features. If none, so state.	X	
6	Existing buildings, structures, or other improvements on the site	X	
7	Existing restrictions or easements on the site. If none, so state.	X	
8	Approximate location and size of existing utilities or improvements servicing the site. If none, so state.	X	
9	Class D medium intensity soil survey	X	
10	Location and size of proposed building, structures, access drives, parking areas, and other development features.		
	Electronic Submission		

Exhibit 2

Consultant List

Exhibit 2: Consultant List

Architectural

SMRT
144 Fore Street
Portland, ME 04101
Contact: Dennis Morin
877.700.7678
DMorin@SMRTInc.com

Construction Manager

Cianbro Corporation
101 Cianbro Square
P.O. Box 1000
Pittsfield, ME 04967
(207) 773-5852

Civil, Survey, Soils, Traffic, Environmental

Sebago Technics, Inc.
75 John Roberts Road, Suite 4A
South Portland, ME 04106
Contact: Owens McCullough
(207) 200-2073
omcculloughs@sebagotechnics.com

Exhibit 3

Waiver Requests

Exhibit 3: Waivers

No waivers from performance or design standards are proposed or anticipated as part the State of Maine Correctional Center, Maintenance & Control Plant Building Site Plan Review.

Exhibit 4

Abutter List

Exhibit 4: Abutters List

Richard R & Norma L Boulanger

13 Trestle Way

Windham, ME 04062

Sicklestroke, LLC

3 Mallison Falls Rd

Windham, ME 04062

Buker Enterprises, LLC

430 Northeast Road

Standish, ME 04084

Maine State Society for the Protection of Animals

279 River Road

Windham, ME 0402

Michael R & Pamela Allen Pattee

157 River Road

Windham, ME 04062

Exhibit 5

Right, Title, Interest

Co.of Cumb. to State of Me. Warranty

KNOW ALL MEN BY THESE PRESENTS: That the County of Cumberland, a body corporate and politic, existing by law and located in the State of Maine, In consideration of one dollar and other valuable considerations paid by the State of Maine, a body corporate and politic, and duly existing under the law, the receipt whereof it does hereby acknowledge,does hereby give, grant, bargain, sell and convey unto the said State of Maine, its successors and assigns forever, the following described real estate.

A certain lot or parcel of land with the buildings thereon situated in the town of Windham, County of Cumberland and State of Maine, bounded and described as follows, viz:- Beginning at an iron hub set in the ground at the southeasterly corner of the land of Frank W. Bryant on the Southwesterly side of the River Road, so called, running through said Windham; thence southeasterly by said River Road to Dole's Brook, so called; thence westerly by said Brook to a large willow tree on the northerly side of said brook; thence westerly in a straight line and by the northerly side line of the land now or formerly belonging to the heirs of Jonathan Sanborn to an iron hub set in the ground; thence southerly by said land now or formerly of said Sanborn heirs to an iron hub and spruce tree on the northerly bank of said brook; thence southwesterly by said brook to the eastern boundary of the present location of the Portland & Ogdensburg Railroad Company now leased to the Maine Central Railway and known as the Mountain Division thereof; thence northwesterly by said railroad location to the so-called tank lot; thence easterly by said tank lot and land of J. L. Brackett to the southerly side of the Mallison Falls road, so called; thence easterly by said southerly side of said Mallison Falls road to an iron hub set in the ground on the southerly side line of said Mallison Falls Road at the westerly corner of said land of said Frank W. Bryant; thence southerly by said Frank W. Bryant's land to the southerly corner thereof; thence easterly by said Frank W. Bryant's land to the point of beginning.

Subject to whatever rights the Maine Central Railway may have upon or over the premises.

Meaning and intending hereby to convey the same premises conveyed to Joseph L. Robinson by Fred C. Phinney by his deed dated July 11, A. D. 1895, and recorded in the Registry of Deeds for Cumberland County, Book 629, Page 14; by Charles W. Caswell by his deed dated Feb. 17, A. D. 1898, and recorded in said Registry, Book 660, page 182; by Nielsina Madsen by deed dated Feb. 17, 1898, and recorded in said Registry in Book 660, Page 183; and by Jonathan Sanborn by his deed dated Feb. 23, A. D. 1898, and recorded in said Registry in Book 668, Page 178, except a small irregular shaped piece of land on the southerly side of Dole's Brook, which the said Joseph L. Robinson conveyed to Jonathan Sanborn by deed dated March 1, A. D. 1898, and recorded in said Registry, Book 666, Page 494.

Also another certain lot or parcel of land with the buildings thereon situated in said Windham, bounded and described as follows, viz:- Commencing on the northeasterly side of the River Road, so called, running through said Windham at the southwesterly corner of land of Rebecca Johnson; thence running southeasterly by said River Road to the Cross Road leading northeasterly to the schoolhouse lot; thence northeasterly by said last named road to said schoolhouse lot; thence northwesterly and northeasterly by said schoolhouse lot to the road running to the northeasterly side of said schoolhouse lot and past the house of Ann Moore; thence northwesterly by said last named road and the westerly side line of land now or formerly belonging to the heirs of Nathan Wood to the southorly side line of land of said Rebecca Johnson; thence southwesterly by said southerly side line of said Rebecca Johnson land to the point of beginning.

Meaning andintending hereby to convey the same premises conveyed to the said Joseph L. Robinson by Clara L. Webb by her deed dated Oct. 30, A. D. 1906, and recorded in the Cumberland County Registry of Deeds, Book 798, Page 27; by Maud E. Hubbard by deed dated Oct. 30, A. D. 1906, said deed recorded in said Registry in Book 796, Page 199; and by Lindley M. Webb, guardian of Fred L. Webb and Roy F. Webb, by deed dated Nov. 20, A. D. 1906, said deed being recorded in said Registry in Book 777, Page 397;

Also another certain lot or parcel of land with the buildings thereon situated in said Windham on the westerly side of the 'New Road", so called, leading from the Mallison Falls Road to the Depot Road, so called, near the Railroad Station at South Windham, and bounded northerly by land now or formerly of S. D. Warren Company; easterly by said New Road; southerly by land of the heirs of Joseph L. Robinson and westerly by land of the Maine Central Railway; containing about fourteen (14) acres. Being the same premises conveyed to the said Joseph L. Robinson by Hannah N. Frink by her deed dated April 26, A. D. 1895, recorded in said Registry, Book 626, Page 68. Subject, however, to a lease given by the said Joseph L. Robinson to the Maine Central Railway for location of a semaphore upon said land, which lease and rights thereunder the said Joseph L. Robinson assigned to The Aspenhurst Farm, and which lease and rights thereunder the said The Aspenhurst Farm assigned to the County of Cumberland, and which lease and rights thereunder the said County of Cumberland assigns to the State of Maine as a part of this conveyance.

All of the hereinbefore described lots or parcels of land being a part of the same premises which were conveyed by Joseph L. [illegible] and Mary E. Robinson to the said The Aspenhurst Farm by their warranty deed dated January 22, A. D. 1907, said deed being recorded in said Registry of Deeds, Book 802, Page 145; and by deed of The Aspenhurst Farm to the County of Cumberland dated January 22, 1913 and recorded in said Registry of Deeds, Book 907, Page 161.

The last above described lot or parcel is subject to a reservation and exception in favor of The Aspenhurst Farm, its successors and assigns forever, of a certain spring located upon the southerly side of said lot or parcel of land and being the same now furnishing or supplying water for the dwelling house and premised of the late Joseph L. Robinson. And for the purpose of taking, drawing and conducting the waters of said spring across said lot to the said premises formerly of said Joseph L. Robinson, the said The Aspenhurst Farm has further reserved and excepted unto itself, its successors and assigns forever, the right to enter upon said premises at all reasonable times to dig and excavate the soil thereof and to lay, repair and maintain pipes below the surface of the same, said pipes to be forever laid and maintained in a course substantially the same as that of the present pipe line, viz: in a southerly direction and straight line from said spring to said premises formerly of said Joseph L. Robinson. For further description of said reservations and exceptions reference is hereby made to said deed from said The Aspenhurst Farm to The County of Cumberland.

Also another certain lot or parcel of land situated in the town of Windham, in said County and State, and bounded and described as follows, viz:- Commencing at the intersection of the South side of the Mallison Falls Road, so called, with the West side of the River Road, so called, leading from Gambo past the Squire Webb Homestead to the Cumberland Mills, and from thence running Westerly by said Mallison Falls Road fifty-three and one-half (53 1/2) rods to an iron hub driven in the ground; thence Southerly to land now or formerly of Charles J. Larry thirty and one-third (30 1/3) rods to an iron hub driven in the ground and land now or formerly of Fred C. Phinney; thence Easterly parallel with the first bound of fifty-three and one-half (53 1/2) rods to said River Road to a point thirty and one-third rods Southerly from the point of beginning and measured on said River Road and to an iron hub driven in the ground; thence Northerly by said River Road thirty and one-third rods to the point of beginning, containing ten (10) acres, more or less. Meaning and intending hereby to convey the same property conveyed to said County of Cumberland by deed of John C. Nichols, Administrator of the estate of Frank W. Bryant, dated April 3, 1913 and recorded in the Cumberland Registry of Deeds, Book 904, Page 493.

Also a certain lot or parcel of land located on the Northeasterly side of High Street, so called, in the town of Windham and bounded and described as follows, to wit, beginning at an iron hub on the Northeasterly side of said High Street on the line between land of William H. Bickford and land of J. W. C. Roberts; thence Northeasterly along the line of said Robert's land to an iron hub set in the line between said Bickford's land and land of George Long; thence Southerly by said Long's land to an iron hub set in the Northerly side line of the Mallison Falls Road; thence Westerly along said Mallison Falls Road to a standing post set in the Northeasterly side line of said High Street; thence along the Northeasterly side line of said High Street to the point of beginning, containing seventeen (17) acres, more or less.

Hereby conveying a portion of the real estate which was bequeathed to William H. Bickford by his late father William Bickford, by his last will and testament, which was duly proved and allowed by the Judge of Probate for said County.

Being the same property conveyed the said County of Cumberland by William H. Bickford by his Warranty Deed dated July 14, 1913 and recorded in the Cumberland Registry of Deeds, Book 916, Page 201.

Also a certain lot or parcel of land in said Windham on the westerly side of the "New Road" so called, which leads from Depot Street in said Windham to the Mallison Falls Road, so called, said lot or parcel of land being bounded and described as follows, viz;- Beginning at a point on said westerly side of said road, which point is distant on a course South 6° 30' West, five hundred and thirty-one and three tenths (531.3) feet from the southeast corner of land of the S. D. Warren Company; thence North 86° 50' West a distance of five hundred and forty-five (545) feet more or less to an iron hub set in the ground; thence North 4° 17' East one hundred fifty-two and twenty-five hundredths (152.25) feet to the southerly side of the so-called Frink lot, which on Jan. 22, 1913 was conveyed by The Aspenhurst Farm to the County of Cumberland; thence in an easterly direction along said southerly side of said Frink lot a distance of five hundred and forty-five (545) feet more or less to said westerly side of said New Road; thence South 6° 30' West along said westerly side of said New Road to the point of beginning.

Hereby conveying the same premises that were conveyed to this Grantor by two deeds, one from Mary E. Robinson et als dated February 18, 1913, and recorded in said Registry in Book 909, Page 203, and the other from Mary E. Robinson, Guardian of Albert L. Robinson and Mary Elizabeth Robinson dated February 27, 1913, and recorded in said Registry, Book 904, Page 483, said two deeds conveying the interests of the widow and only heirs at law of Joseph L. Robinson, late of said Windham, deceased.

TO HAVE AND TO HOLD the aforegranted and bargained premises, with all the privileges and appurtenances thereof to the State of Maine, its successors and assigns, to its and their use and behoof forever.

AND the said County of Cumberland does covenant with the said Grantee, its successors and assigns, that it is lawfully seized in fee of the premises; that they are free of all incumbrances; that it has good right to sell and convey the same to the said Grantee to hold as aforesaid; and that it and its successors and assigns shall and will WARRANT AND DEFEND the same to the said Grantee, its successors and assigns, against the lawful claims and demands of all persons.

IN WITNESS WHEREOF the said County of Cumberland by its Board of County Commissioners thereunto duly authorized in accordance with the provisions of the Private and Special Laws of Maine for the year 1919, chapter 85, section 2, and in pursuance of a vote of said Board taken on the eighth day of April, A. D. 1920, has hereunto caused its name to be signed and its seal to be affixed this eighth day of May, A. D. 1920.

IN WITNESSWHEREOF the said County of Cumberland also by its agent Norman True duly appointed in complinace with the provisions of the 1916 revision of the Statutes of Maine, chapter 83, section 10, by vote duly passed by its board of County Commissioners in regular session on the fourth day of May, 1920 which said vote is duly recorded in the record of its proceedings duly kept by said board of County Commissioners, has hereunto caused his name to be signed and his seal to be affixed this eighth day of May, 1920.

Signed, Sealed and Delivered in the presence of:-

Thomas J. Kennon to all   County of Cumberland (County Seal)

By Charles A. Maxwell Seal

Clarence L. Bucknam Chairman Seal

Frank M. Hawkes Commissioners Seal

Norman True Agent Seal

U.S.I.R. $16.00 C.L.B. May 8 1920 N.T.

State of Maine Cumberland, ss. Portland, May 8, 1920.

Personally appeared the above named Charles A. Maxwell, Clarence L. Bucknam and Frank M. Hawkes, to me personally known, who took oath that they are the duly elected Commissioners of said County of Cumberland, and that the foregoing is their free act and deed in their said capacity, and the free act and deed of said County of Cumberland.

And personally appeared the above named Norman True to me personally known, who took oath that he was the duly appointed agent of the Commissioners of said County of Cumberland in pursuance of the provisions of the 1916 revision of the Statutes of Maine, Chapter 83, Section 10, and that the foregoing is his free act and deed in his said capacity, and the free act and deed of said County of Cumberland.

Before me, Franz U. Burkett, Justice of the Peace.

Received May 18, 1920, at 1h, 45m, P. M., and recorded according to the original.

HOLDEN to Ash Discharge

KNOW ALL MEN BY THESE PRESENTS, That I, Jesse Holden of Harrison County of Cumberland State of Maine being the owner of a certain mortgage given by William L. Ash of Otisfield County and State aforesaid to Jesse Holden dated June 4th, A. D. 1917, and recorded in Cumberland Registry of Deeds, Book 994, Page 16, do hereby acknowledge that I have received full payment and satisfaction of the same, and of the debt thereby secured, and in consideration thereof I do hereby cancel and discharge said mortgage, and release unto the said William L. Ash, his heirs and assigns forever the premises therein described.

IN WITNESS WHEREOF, I the said Jesse Holden have hereunto set my hand and seal this fourth day of May, A. D. 1920.

Signed, Sealed and Delivered in presence of

----------   Jesse Holden, SEAL.

State of Maine. County of Cumberland, ss. May 4th, 1920.

Then personally appeared the above named Jesse Holden and acknowledged the foregoing instrument to be his free act and deed, before me,

Notarial Seal.   A. F. Chute, Notary Public.

Received May 18, 1920, at 2h, P. M., and recorded according to the original.

Norton to Haney &

State of Maine. Cumberland, ss. Portland, May 18, A. D. 1920.

I, Harry H. Cannell, attorney of record for Edward M. Norton, plaintiff in

Exhibit 6

Evidence of Fee Payment

Exhibit 6: Evidence of Fee Payment

Please see this Exhibit for a copy of check # 80312 for the application fee of $500.00

80312

SEBAGO TECHNICS, INC.

DATE	INVOICE NO.	COMMENT	AMOUNT	NET AMOUNT
10/11/2018		STI 16405 Sketch Plan Review		500.00
DATE 10/11/18		**VENDOR** Town of Windham	**TOTAL**	500.00

80312

SEBAGO TECHNICS

SEBAGO TECHNICS, INC.
75 JOHN ROBERTS ROAD, SUITE 1A
SOUTH PORTLAND, ME 04106-6963
(207) 200-2100

Gorham Savings Bank
52-7457/2112

EZShield™ Check Fraud Protection for Business

Five Hundred and no/100

DATE		AMOUNT
10/11/18	80312	$500.00

PAY TO THE ORDER OF **TOWN OF WINDHAM**

SEBAGO TECHNICS, INC. BY

Mark A. Adams
AUTHORIZED SIGNATURE

Security features. Details on back.

080312 211274573 607 0013674

Exhibit 7

USDA Web Soil Survey Map

United States Department of Agriculture

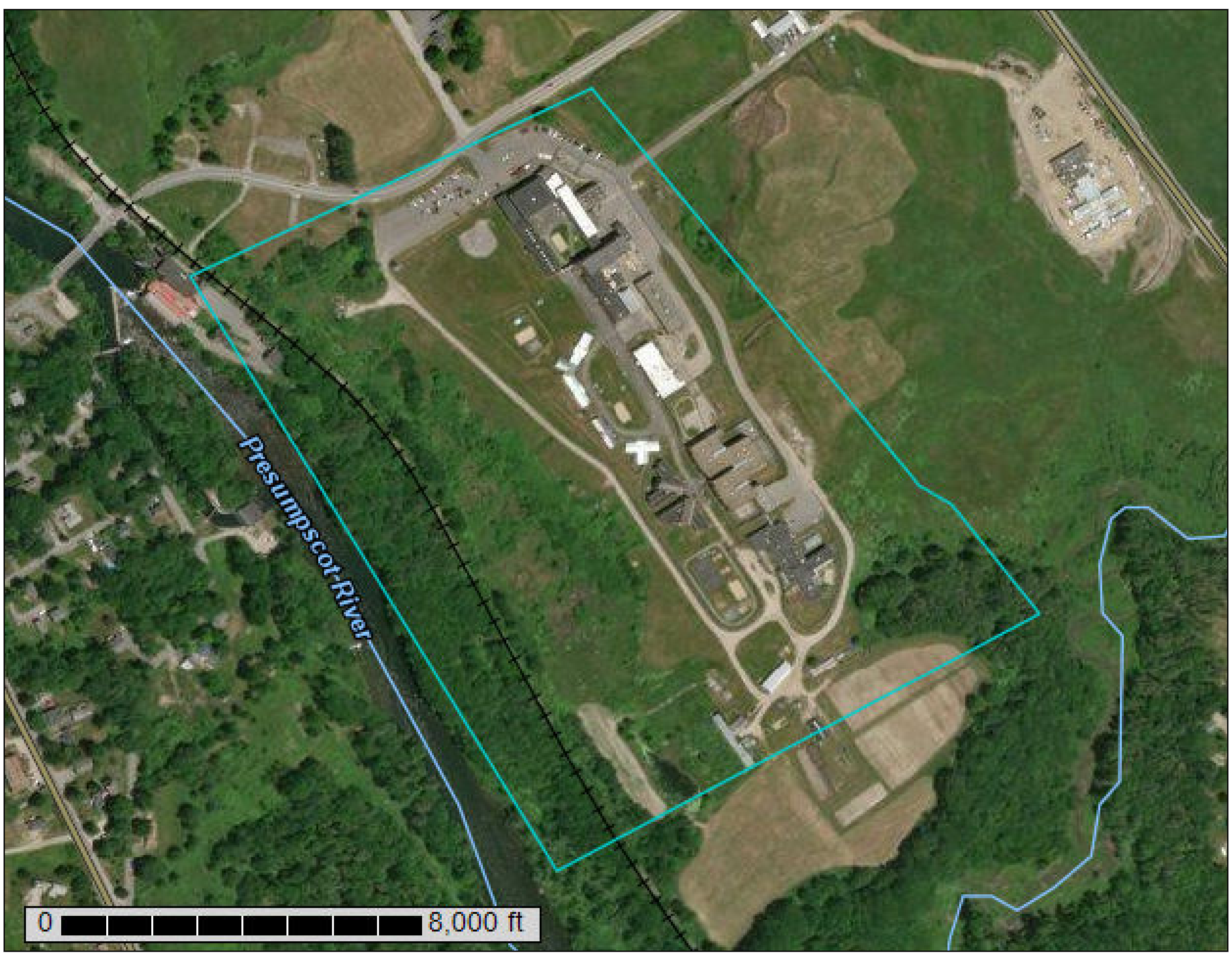
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Cumberland County and Part of Oxford County, Maine



September 19, 2018

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

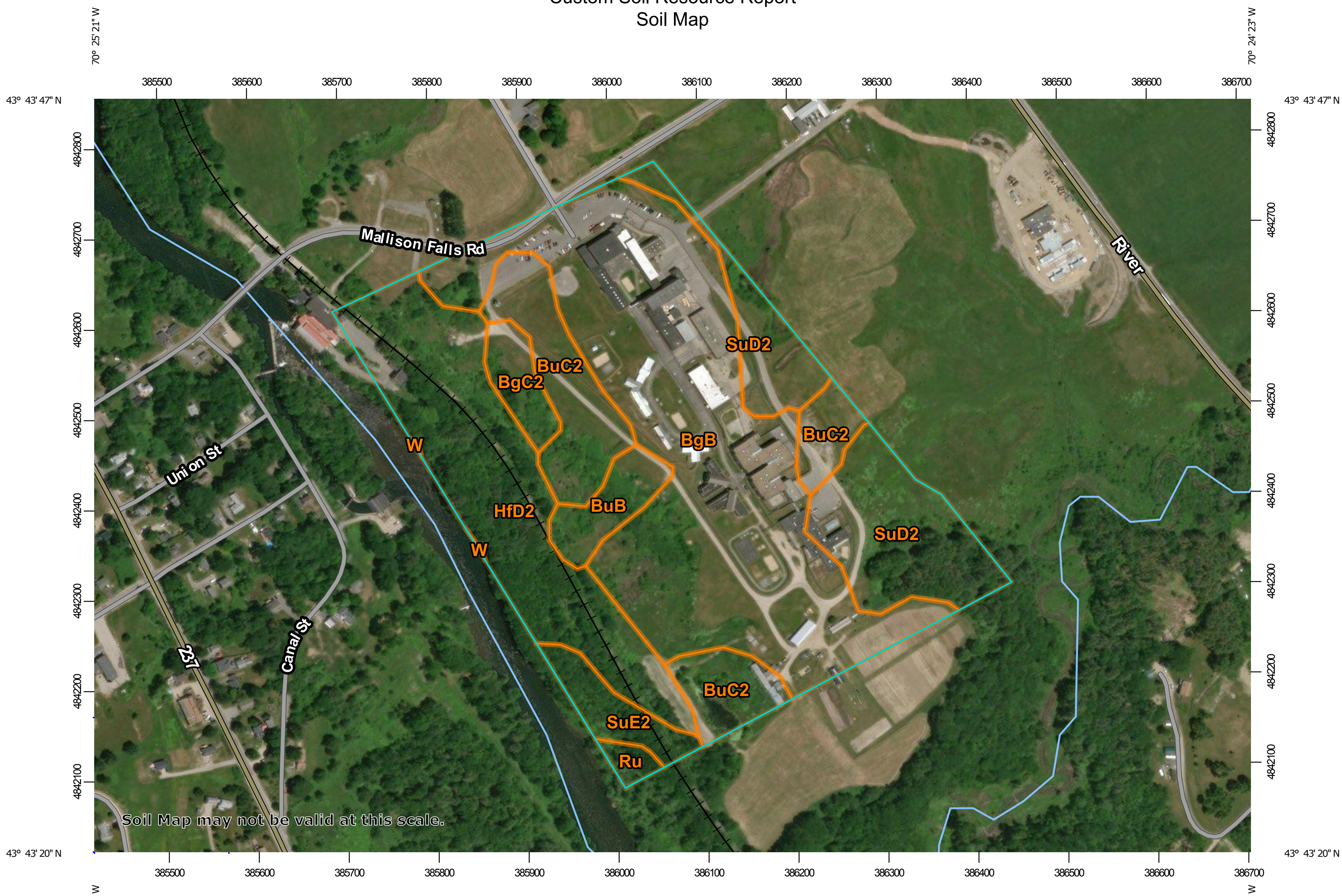
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:5,880 if printed on A landscape (11" x 8.5") sheet.

Meters: 0, 50, 100, 200, 300

Feet: 0, 250, 500, 1000, 1500

N

Map projection: Web Mercator   Corner coordinates: WGS84   Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 13, Sep 11, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 29, 2012—Jun 26, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND	MAP INFORMATION
	imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BgB	Belgrade very fine sandy loam, 0 to 8 percent slopes	28.3	43.0%
BgC2	Belgrade very fine sandy loam, 8 to 15 percent slopes, eroded	1.6	2.4%
BuB	Lamoine silt loam, 3 to 8 percent slopes	2.0	3.1%
BuC2	Buxton silt loam, 8 to 15 percent slopes	8.3	12.6%
HfD2	Hartland very fine sandy loam, 15 to 25 percent slopes, eroded	13.5	20.5%
Ru	Rumney fine sandy loam, 0 to 3 percent slopes, frequently flooded	0.5	0.8%
SuD2	Suffield silt loam, 15 to 25 percent slopes, eroded	9.5	14.4%
SuE2	Suffield silt loam, 25 to 45 percent slopes, eroded	2.0	3.1%
W	Water	0.0	0.0%
Totals for Area of Interest		**65.8**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Cumberland County and Part of Oxford County, Maine

BgB—Belgrade very fine sandy loam, 0 to 8 percent slopes

Map Unit Composition

Belgrade and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Belgrade

Setting

Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty glaciolacustrine deposits

Typical profile

H1 - 0 to 9 inches: very fine sandy loam
H2 - 9 to 18 inches: very fine sandy loam
H3 - 18 to 28 inches: silt loam
H4 - 28 to 65 inches: silt loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Hydric soil rating: No

BgC2—Belgrade very fine sandy loam, 8 to 15 percent slopes, eroded

Map Unit Composition

Belgrade and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Belgrade

Setting

Landform: Lakebeds
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser

Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty glaciolacustrine deposits

Typical profile

H1 - 0 to 9 inches: very fine sandy loam
H2 - 9 to 18 inches: very fine sandy loam
H3 - 18 to 28 inches: silt loam
H4 - 28 to 65 inches: silt loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

BuB—Lamoine silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t0kc
Elevation: 10 to 490 feet
Mean annual precipitation: 33 to 60 inches
Mean annual air temperature: 36 to 52 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Lamoine and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lamoine

Setting

Landform: Marine terraces, river valleys
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine glaciomarine deposits

Typical profile

Ap - 0 to 7 inches: silt loam
Bw - 7 to 13 inches: silt loam

Bg - 13 to 24 inches: silty clay loam
Cg - 24 to 65 inches: silty clay

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 17 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Hydric soil rating: No

BuC2—Buxton silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2x1by
Elevation: 10 to 490 feet
Mean annual precipitation: 33 to 60 inches
Mean annual air temperature: 36 to 52 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Buxton and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Buxton

Setting

Landform: Marine terraces, river valleys
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Fine glaciomarine deposits

Typical profile

Ap - 0 to 7 inches: silt loam
Bw1 - 7 to 18 inches: silt loam
Bw2 - 18 to 23 inches: silty clay loam
BC - 23 to 35 inches: silty clay loam
C - 35 to 65 inches: silty clay

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 17 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Hydric soil rating: No

HfD2—Hartland very fine sandy loam, 15 to 25 percent slopes, eroded

Map Unit Composition

Hartland and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hartland

Setting

Landform: Lakebeds
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty glaciolacustrine deposits

Typical profile

H1 - 0 to 9 inches: very fine sandy loam
H2 - 9 to 29 inches: silt loam
H3 - 29 to 65 inches: silt loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 11.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Hydric soil rating: No

Ru—Rumney fine sandy loam, 0 to 3 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2qgvs
Elevation: 0 to 2,440 feet
Mean annual precipitation: 31 to 95 inches
Mean annual air temperature: 27 to 54 degrees F
Frost-free period: 80 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Rumney and similar soils: 84 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rumney

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-loamy alluvium derived from schist and/or coarse-loamy alluvium derived from quartzite and/or coarse-loamy alluvium derived from granite and gneiss

Typical profile

Ap - 0 to 9 inches: fine sandy loam
Bg1 - 9 to 20 inches: fine sandy loam
Bg2 - 20 to 30 inches: sandy loam
Cg - 30 to 65 inches: loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

SuD2—Suffield silt loam, 15 to 25 percent slopes, eroded

Map Unit Setting

National map unit symbol: blk2
Elevation: 10 to 900 feet
Mean annual precipitation: 34 to 48 inches
Mean annual air temperature: 43 to 46 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Suffield and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Suffield

Setting

Landform: Coastal plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine glaciolacustrine deposits

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 23 inches: silt loam
H3 - 23 to 33 inches: silty clay
H4 - 33 to 65 inches: silty clay

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

SuE2—Suffield silt loam, 25 to 45 percent slopes, eroded

Map Unit Setting

National map unit symbol: blk3
Elevation: 10 to 900 feet
Mean annual precipitation: 34 to 48 inches
Mean annual air temperature: 43 to 46 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Suffield and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Suffield

Setting

Landform: Coastal plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine glaciolacustrine deposits

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 23 inches: silt loam
H3 - 23 to 33 inches: silty clay
H4 - 33 to 65 inches: silty clay

Properties and qualities

Slope: 25 to 45 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Hydric soil rating: No

W—Water

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Setting

Landform: Lakes

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Land Classifications

This folder contains a collection of tabular reports that present a variety of soil groupings. The reports (tables) include all selected map units and components for each map unit. Land classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Hydric Soils

This table lists the map unit components that are rated as hydric soils in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

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

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

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

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

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

The criteria for hydric soils are represented by codes in the table (for example, 2). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
    A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    B. Show evidence that the soil meets the definition of a hydric soil;
3. Soils that are frequently ponded for long or very long duration during the growing season.
    A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    B. Show evidence that the soil meets the definition of a hydric soil;
4. Map unit components that are frequently flooded for long duration or very long duration during the growing season that:
    A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or

B. Show evidence that the soil meets the definition of a hydric soil;

Hydric Condition: Food Security Act information regarding the ability to grow a commodity crop without removing woody vegetation or manipulating hydrology.

References:

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
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Report—Hydric Soils

Hydric Soils–Cumberland County and Part of Oxford County, Maine				
Map symbol and map unit name	**Component**	**Percent of map unit**	**Landform**	**Hydric criteria**
Ru—Rumney fine sandy loam, 0 to 3 percent slopes, frequently flooded				
	Rumney	84	Flood plains	2

Taxonomic Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1999 and 2003). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. This table shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol.* An example is Alfisols.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalfs (*Ud*, meaning humid, plus *alfs*, from Alfisols).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludalfs (*Hapl*, meaning minimal horizonation, plus *udalfs*, the suborder of the Alfisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludalfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, active, mesic Typic Hapludalfs.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

References:
Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.
Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. (The soils in a given survey area may have been classified according to earlier editions of this publication.)

Report—Taxonomic Classification of the Soils

[An asterisk by the soil name indicates a taxadjunct to the series]

Taxonomic Classification of the Soils–Cumberland County and Part of Oxford County, Maine	
Soil name	**Family or higher taxonomic classification**
Belgrade	Coarse-silty, mixed, frigid Aquic Haplorthods
Buxton	Fine, illitic, frigid Aquic Dystric Eutrudepts
Hartland	Coarse-silty, mixed, frigid Entic Haplorthods
Lamoine	Fine, illitic, nonacid, frigid Aeric Epiaquepts

Taxonomic Classification of the Soils–Cumberland County and Part of Oxford County, Maine	
Soil name	Family or higher taxonomic classification
Rumney	Coarse-loamy, mixed, active, nonacid, frigid Fluvaquentic Endoaquepts
Suffield	Fine, illitic, mesic Entic Haplorthods
Water	

Soil Chemical Properties

This folder contains a collection of tabular reports that present soil chemical properties. The reports (tables) include all selected map units and components for each map unit. Soil chemical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil chemical properties include pH, cation exchange capacity, calcium carbonate, gypsum, and electrical conductivity.

Chemical Soil Properties

This table shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Effective cation-exchange capacity refers to the sum of extractable cations plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

Soil reaction is a measure of acidity or alkalinity. It is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil.

Gypsum is expressed as a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water. Soils that have a high content of gypsum may collapse if the gypsum is removed by percolating water.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Sodium adsorption ratio (SAR) is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced saturated hydraulic conductivity and aeration, and a general degradation of soil structure.

Chemical Soil Properties–Cumberland County and Part of Oxford County, Maine								
Map symbol and soil name	**Depth**	**Cation-exchange capacity**	**Effective cation-exchange capacity**	**Soil reaction**	**Calcium carbonate**	**Gypsum**	**Salinity**	**Sodium adsorption ratio**
	In	*meq/100g*	*meq/100g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
BgB—Belgrade very fine sandy loam, 0 to 8 percent slopes								
Belgrade	0-9	—	2.1-4.0	3.6-6.0	0	0	0	0
	9-18	—	1.1-2.6	4.5-6.0	0	0	0	0
	18-28	1.1-13	—	4.5-6.5	0	0	0	0
	28-65	1.1-13	—	4.5-6.5	0	0	0	0
BgC2—Belgrade very fine sandy loam, 8 to 15 percent slopes, eroded								
Belgrade	0-9	—	2.1-4.0	3.6-6.0	0	0	0	0
	9-18	—	1.1-2.6	4.5-6.0	0	0	0	0
	18-28	1.1-13	—	4.5-6.5	0	0	0	0
	28-65	1.1-13	—	4.5-6.5	0	0	0	0
BuB—Lamoine silt loam, 3 to 8 percent slopes								
Lamoine	0-7	15-25	—	5.1-6.1	0	0	0.0-1.9	0
	7-13	14-26	—	5.1-6.3	0	0	0.0-1.9	0
	13-24	13-23	—	5.6-6.8	0	0	0.0-1.9	0
	24-65	11-26	—	5.8-7.3	0	0	0.0-1.9	0
BuC2—Buxton silt loam, 8 to 15 percent slopes								
Buxton	0-7	14-25	—	5.1-6.1	0	0	0.0-1.9	0
	7-18	12-33	—	4.5-6.5	0	0	0.0-1.9	0
	18-23	11-28	—	5.1-7.3	0	0	0.0-1.9	0
	23-35	12-30	—	5.1-7.3	0	0	0.0-1.9	0
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	In	*meq/100g*	*meq/100g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
HfD2—Hartland very fine sandy loam, 15 to 25 percent slopes, eroded								
Hartland	0-9	—	4.1-7.7	3.6-6.0	0	0	0	0
	9-29	—	3.9-7.5	3.6-6.0	0	0	0	0
	29-65	1.8-7.0	—	5.1-6.5	0	0	0	0
Ru—Rumney fine sandy loam, 0 to 3 percent slopes, frequently flooded								
Rumney	0-9	—	0.1-2.5	4.5-7.3	0	0	0	0
	9-20	—	0.2-4.3	4.5-7.3	0	0	0	0
	20-30	0.5-5.5	—	4.5-7.3	0	0	0	0
	30-65	0.1-1.7	—	4.5-7.3	0	0	0	0
SuD2—Suffield silt loam, 15 to 25 percent slopes, eroded								
Suffield	0-6	17-23	—	4.5-6.5	0	0	0	0
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SuE2—Suffield silt loam, 25 to 45 percent slopes, eroded								
Suffield	0-6	17-23	—	4.5-6.5	0	0	0	0
	6-23	15-29	—	5.1-7.3	0	0	0	0
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	33-65	3.0-17	—	5.6-7.3	0	0	0	0
W—Water								
Water	—	—	—	—	—	—	—	—

Chemical Soil Properties

This table shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

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Map symbol and soil name	**Depth**	**Cation-exchange capacity**	**Effective cation-exchange capacity**	**Soil reaction**	**Calcium carbonate**	**Gypsum**	**Salinity**	**Sodium adsorption ratio**
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Soil reaction is a measure of acidity or alkalinity. It is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil.

Gypsum is expressed as a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water. Soils that have a high content of gypsum may collapse if the gypsum is removed by percolating water.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Sodium adsorption ratio (SAR) is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced saturated hydraulic conductivity and aeration, and a general degradation of soil structure.

Chemical Soil Properties–Cumberland County and Part of Oxford County, Maine								
Map symbol and soil name	**Depth**	**Cation-exchange capacity**	**Effective cation-exchange capacity**	**Soil reaction**	**Calcium carbonate**	**Gypsum**	**Salinity**	**Sodium adsorption ratio**
	In	*meq/100g*	*meq/100g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
BgB—Belgrade very fine sandy loam, 0 to 8 percent slopes								
Belgrade	0-9	—	2.1-4.0	3.6-6.0	0	0	0	0
	9-18	—	1.1-2.6	4.5-6.0	0	0	0	0
	18-28	1.1-13	—	4.5-6.5	0	0	0	0
	28-65	1.1-13	—	4.5-6.5	0	0	0	0
BgC2—Belgrade very fine sandy loam, 8 to 15 percent slopes, eroded								
Belgrade	0-9	—	2.1-4.0	3.6-6.0	0	0	0	0
	9-18	—	1.1-2.6	4.5-6.0	0	0	0	0
	18-28	1.1-13	—	4.5-6.5	0	0	0	0
	28-65	1.1-13	—	4.5-6.5	0	0	0	0
BuB—Lamoine silt loam, 3 to 8 percent slopes								
Lamoine	0-7	15-25	—	5.1-6.1	0	0	0.0-1.9	0
	7-13	14-26	—	5.1-6.3	0	0	0.0-1.9	0
	13-24	13-23	—	5.6-6.8	0	0	0.0-1.9	0
	24-65	11-26	—	5.8-7.3	0	0	0.0-1.9	0
BuC2—Buxton silt loam, 8 to 15 percent slopes								
Buxton	0-7	14-25	—	5.1-6.1	0	0	0.0-1.9	0
	7-18	12-33	—	4.5-6.5	0	0	0.0-1.9	0
	18-23	11-28	—	5.1-7.3	0	0	0.0-1.9	0
	23-35	12-30	—	5.1-7.3	0	0	0.0-1.9	0
	35-65	10-26	—	5.6-7.3	0	0	0.0-1.9	0

Chemical Soil Properties–Cumberland County and Part of Oxford County, Maine								
Map symbol and soil name	**Depth**	**Cation-exchange capacity**	**Effective cation-exchange capacity**	**Soil reaction**	**Calcium carbonate**	**Gypsum**	**Salinity**	**Sodium adsorption ratio**
	In	*meq/100g*	*meq/100g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
HfD2—Hartland very fine sandy loam, 15 to 25 percent slopes, eroded								
Hartland	0-9	—	4.1-7.7	3.6-6.0	0	0	0	0
	9-29	—	3.9-7.5	3.6-6.0	0	0	0	0
	29-65	1.8-7.0	—	5.1-6.5	0	0	0	0
Ru—Rumney fine sandy loam, 0 to 3 percent slopes, frequently flooded								
Rumney	0-9	—	0.1-2.5	4.5-7.3	0	0	0	0
	9-20	—	0.2-4.3	4.5-7.3	0	0	0	0
	20-30	0.5-5.5	—	4.5-7.3	0	0	0	0
	30-65	0.1-1.7	—	4.5-7.3	0	0	0	0
SuD2—Suffield silt loam, 15 to 25 percent slopes, eroded								
Suffield	0-6	17-23	—	4.5-6.5	0	0	0	0
	6-23	15-29	—	5.1-7.3	0	0	0	0
	23-33	11-20	—	5.1-7.3	0	0	0	0
	33-65	3.0-17	—	5.6-7.3	0	0	0	0
SuE2—Suffield silt loam, 25 to 45 percent slopes, eroded								
Suffield	0-6	17-23	—	4.5-6.5	0	0	0	0
	6-23	15-29	—	5.1-7.3	0	0	0	0
	23-33	11-20	—	5.1-7.3	0	0	0	0
	33-65	3.0-17	—	5.6-7.3	0	0	0	0
W—Water								
Water	—	—	—	—	—	—	—	—

Soil Qualities and Features

This folder contains tabular reports that present various soil qualities and features. The reports (tables) include all selected map units and components for each map unit. Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Soil Features

This table gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage, or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, saturated hydraulic conductivity (Ksat), content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low*, *moderate*, or *high.* It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Soil Features–Cumberland County and Part of Oxford County, Maine									
Map symbol and soil name	Restrictive Layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		Low-RV-High	*Range*		*Low-High*	*Low-High*			
		In	*In*		*In*	*In*			
BgB—Belgrade very fine sandy loam, 0 to 8 percent slopes									
Belgrade		—	—		0	—	High	High	High
BgC2—Belgrade very fine sandy loam, 8 to 15 percent slopes, eroded									
Belgrade		—	—		0	—	High	High	High
BuB—Lamoine silt loam, 3 to 8 percent slopes									
Lamoine		—	—		0	0	High	High	Moderate
BuC2—Buxton silt loam, 8 to 15 percent slopes									
Buxton		—	—		0	0	Moderate	High	Moderate
HfD2—Hartland very fine sandy loam, 15 to 25 percent slopes, eroded									
Hartland		—	—		0	—	High	Moderate	High

Soil Features–Cumberland County and Part of Oxford County, Maine									
Map symbol and soil name	Restrictive Layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		Low-RV-High	*Range*		*Low-High*	*Low-High*			
Ru—Rumney fine sandy loam, 0 to 3 percent slopes, frequently flooded									
Rumney		—	—		0	0	High	High	High
SuD2—Suffield silt loam, 15 to 25 percent slopes, eroded									
Suffield		—	—		0	—	High	High	Moderate
SuE2—Suffield silt loam, 25 to 45 percent slopes, eroded									
Suffield		—	—		0	—	High	High	Moderate
W—Water									
Water		—	—		—	—			

Soil Features

This table gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

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Map symbol and soil name	Restrictive Layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		Low-RV-High	*Range*		*Low-High*	*Low-High*			
		In	*In*		*In*	*In*			
BgB—Belgrade very fine sandy loam, 0 to 8 percent slopes									
Belgrade		—	—		0	—	High	High	High
BgC2—Belgrade very fine sandy loam, 8 to 15 percent slopes, eroded									
Belgrade		—	—		0	—	High	High	High
BuB—Lamoine silt loam, 3 to 8 percent slopes									
Lamoine		—	—		0	0	High	High	Moderate
BuC2—Buxton silt loam, 8 to 15 percent slopes									
Buxton		—	—		0	0	Moderate	High	Moderate
HfD2—Hartland very fine sandy loam, 15 to 25 percent slopes, eroded									
Hartland		—	—		0	—	High	Moderate	High

Soil Features–Cumberland County and Part of Oxford County, Maine									
Map symbol and soil name	Restrictive Layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		Low-RV-High	*Range*		*Low-High*	*Low-High*			
Ru—Rumney fine sandy loam, 0 to 3 percent slopes, frequently flooded									
Rumney		—	—		0	0	High	High	High
SuD2—Suffield silt loam, 15 to 25 percent slopes, eroded									
Suffield		—	—		0	—	High	High	Moderate
SuE2—Suffield silt loam, 25 to 45 percent slopes, eroded									
Suffield		—	—		0	—	High	High	Moderate
W—Water									
Water		—	—		—	—			

Soil Features

This table gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

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Soil Features–Cumberland County and Part of Oxford County, Maine									
Map symbol and soil name	**Restrictive Layer**				**Subsidence**		**Potential for frost action**	**Risk of corrosion**	
	Kind	**Depth to top**	**Thickness**	**Hardness**	**Initial**	**Total**		**Uncoated steel**	**Concrete**
		Low-RV-High	*Range*		*Low-High*	*Low-High*			
		In	*In*		*In*	*In*			
BgB—Belgrade very fine sandy loam, 0 to 8 percent slopes									
Belgrade		—	—		0	—	High	High	High
BgC2—Belgrade very fine sandy loam, 8 to 15 percent slopes, eroded									
Belgrade		—	—		0	—	High	High	High
BuB—Lamoine silt loam, 3 to 8 percent slopes									
Lamoine		—	—		0	0	High	High	Moderate
BuC2—Buxton silt loam, 8 to 15 percent slopes									
Buxton		—	—		0	0	Moderate	High	Moderate
HfD2—Hartland very fine sandy loam, 15 to 25 percent slopes, eroded									
Hartland		—	—		0	—	High	Moderate	High

Soil Features–Cumberland County and Part of Oxford County, Maine									
Map symbol and soil name	**Restrictive Layer**				**Subsidence**		**Potential for frost action**	**Risk of corrosion**	
	Kind	**Depth to top**	**Thickness**	**Hardness**	**Initial**	**Total**		**Uncoated steel**	**Concrete**
		Low-RV-High	*Range*		*Low-High*	*Low-High*			
Ru—Rumney fine sandy loam, 0 to 3 percent slopes, frequently flooded									
Rumney		—	—		0	0	High	High	High
SuD2—Suffield silt loam, 15 to 25 percent slopes, eroded									
Suffield		—	—		0	—	High	High	Moderate
SuE2—Suffield silt loam, 25 to 45 percent slopes, eroded									
Suffield		—	—		0	—	High	High	Moderate
W—Water									
Water		—	—		—	—			

Water Features

This folder contains tabular reports that present soil hydrology information. The reports (tables) include all selected map units and components for each map unit. Water Features include ponding frequency, flooding frequency, and depth to water table.

Hydrologic Soil Group and Surface Runoff

This table gives estimates of various soil water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. The concept indicates relative runoff for very specific conditions. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

Report—Hydrologic Soil Group and Surface Runoff

Absence of an entry indicates that the data were not estimated. The dash indicates no documented presence.

Hydrologic Soil Group and Surface Runoff–Cumberland County and Part of Oxford County, Maine			
Map symbol and soil name	**Pct. of map unit**	**Surface Runoff**	**Hydrologic Soil Group**
BgB—Belgrade very fine sandy loam, 0 to 8 percent slopes			
Belgrade	85	—	B
BgC2—Belgrade very fine sandy loam, 8 to 15 percent slopes, eroded			
Belgrade	85	—	B
BuB—Lamoine silt loam, 3 to 8 percent slopes			
Lamoine	85	—	C/D
BuC2—Buxton silt loam, 8 to 15 percent slopes			
Buxton	85	—	C/D
HfD2—Hartland very fine sandy loam, 15 to 25 percent slopes, eroded			
Hartland	85	—	B
Ru—Rumney fine sandy loam, 0 to 3 percent slopes, frequently flooded			
Rumney	84	—	B/D
SuD2—Suffield silt loam, 15 to 25 percent slopes, eroded			
Suffield	85	—	C
SuE2—Suffield silt loam, 25 to 45 percent slopes, eroded			
Suffield	85	—	C
W—Water			
Water	100	—	—

Hydrologic Soil Group and Surface Runoff

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Map symbol and soil name	**Pct. of map unit**	**Surface Runoff**	**Hydrologic Soil Group**
BgB—Belgrade very fine sandy loam, 0 to 8 percent slopes			
Belgrade	85	—	B
BgC2—Belgrade very fine sandy loam, 8 to 15 percent slopes, eroded			
Belgrade	85	—	B
BuB—Lamoine silt loam, 3 to 8 percent slopes			
Lamoine	85	—	C/D
BuC2—Buxton silt loam, 8 to 15 percent slopes			
Buxton	85	—	C/D
HfD2—Hartland very fine sandy loam, 15 to 25 percent slopes, eroded			
Hartland	85	—	B
Ru—Rumney fine sandy loam, 0 to 3 percent slopes, frequently flooded			
Rumney	84	—	B/D
SuD2—Suffield silt loam, 15 to 25 percent slopes, eroded			
Suffield	85	—	C
SuE2—Suffield silt loam, 25 to 45 percent slopes, eroded			
Suffield	85	—	C

Hydrologic Soil Group and Surface Runoff–Cumberland County and Part of Oxford County, Maine			
Map symbol and soil name	**Pct. of map unit**	**Surface Runoff**	**Hydrologic Soil Group**
W—Water			
Water	100	—	—

Hydrologic Soil Group and Surface Runoff

This table gives estimates of various soil water features. The estimates are used in land use planning that involves engineering considerations.

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Map symbol and soil name	**Pct. of map unit**	**Surface Runoff**	**Hydrologic Soil Group**
BgB—Belgrade very fine sandy loam, 0 to 8 percent slopes			
Belgrade	85	—	B
BgC2—Belgrade very fine sandy loam, 8 to 15 percent slopes, eroded			
Belgrade	85	—	B
BuB—Lamoine silt loam, 3 to 8 percent slopes			
Lamoine	85	—	C/D
BuC2—Buxton silt loam, 8 to 15 percent slopes			
Buxton	85	—	C/D
HfD2—Hartland very fine sandy loam, 15 to 25 percent slopes, eroded			
Hartland	85	—	B
Ru—Rumney fine sandy loam, 0 to 3 percent slopes, frequently flooded			
Rumney	84	—	B/D
SuD2—Suffield silt loam, 15 to 25 percent slopes, eroded			
Suffield	85	—	C
SuE2—Suffield silt loam, 25 to 45 percent slopes, eroded			
Suffield	85	—	C
W—Water			
Water	100	—	—

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