

Farmland Classification Systems for Vermont Soils

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**United States Department of Agriculture
Natural Resources Conservation Service**



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*Cover photo of Addison County, Vermont, from Mt. Defiance, NY, by Steve Gourley,
USDA-NRCS-Vermont, retired.*

INTRODUCTION

This report describes several farmland classification systems in use in Vermont. It provides information that can be used in making USDA Important Farmland inventories and Act 250 Primary Agricultural Soils (criteria 9B) and Productive Forest Soils (criteria 9C) evaluations.

IMPORTANT FARMLANDS

Important Farmland ratings help to identify soil map units that represent the best land for producing food, feed, fiber, forage, and oilseed crops. Important Farmland inventories identify soil map units that are Prime Farmland, Unique Farmland, Additional Farmland of Statewide Importance, and Additional Farmland of Local Importance. The legal descriptions of Important Farmlands can be found in the Code of Federal Regulations (7 CFR 657.5).

Important farmland maps and reports can be downloaded from Web Soil Survey (<http://websoilsurvey.usda.gov>). Ratings based on county soil survey legends are also listed under County-specific Soils Information in the Field Office Technical Guide (FOTG) (<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/fotg/>) under Section II-Soils Information.

Prime Farmland (Prime)

Soil map units are Prime Farmland if they have the best combination of physical and chemical characteristics for producing food, feed fiber, forage, and oilseed crops and are also available for these uses. The present land use may be cropland, pasture, forestland, or other land uses, but not urban built-up land or water. Location, tract size, and accessibility to markets and support industries are not considered when making a Prime Farmland determination. The national definition of Prime Farmland was modified to include information that applies to soils in Vermont, in particular, a reference to moderately deep depth to bedrock.

Prime Farmland has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed according to acceptable farming methods. These soils have an adequate and dependable water supply from precipitation, a favorable temperature and growing season, acceptable acidity or alkalinity, and few or no surface stones or boulders. They are permeable to water and air, are not excessively erodible or saturated with water for a long period of time, and don't flood frequently, or are protected from flooding.

To qualify as a Prime Farmland soil map unit, the dominant soils must meet all the following conditions:

- Soil moisture is adequate to sustain commonly grown cultivated crops throughout the growing season in 7 or more years out of 10.

- Soil temperature and growing season are favorable.
- The soils are neither too acid nor too alkaline, or the soils respond readily to additions of lime
- The soils have no water table, or the water table can be maintained at a sufficient depth during the growing season to allow for the growth of commonly grown cultivated crops.
- The soils are not frequently flooded (less often than once in 2 years) during the growing season.
- Slope is favorable (generally less than 8 percent) and the soils are not subject to serious erosion.
- Water moves readily through the soil and root-restricting layers are absent within 20 inches of the surface.
- Less than 10 percent of the surface layer consists of rock fragments coarser than 3 inches in diameter.
- The soils are typically deep (greater than 40 inches to bedrock), but include moderately deep soils (20 to 40 inches) with adequate available water capacity.

Unique Farmland (Unique)

Unique Farmland is land other than Prime Farmland that is used for the production of specific high value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality and/or high yields of a specific crop when treated and managed according to acceptable farming methods.

Specific characteristics of Unique Farmland are:

- It is used for specific high-value food or fiber crops.
- It has a moisture supply that is adequate for the specific crop. The supply is from stored moisture, precipitation, or a developed irrigation system.
- It combines favorable factors of soil quality, growing season, temperature, humidity, air drainage, elevation, aspect, or other conditions, such as nearness to market, that favor the growth of a specific food or fiber crop.

There is currently no Unique Farmland identified in Vermont. Many crops that could fall under the definition of specific high-value food or fiber crops are currently grown on Prime or Statewide soil map units. Other crops such as maple sugarbushes are commonly grown on soil map units not identified as Important Farmland. For more information about Unique Farmland, refer to the contact information listed below.

Additional Farmland of Statewide Importance (Statewide)

This is land, in addition to Prime and Unique Farmland, that is of statewide importance for the production of food, feed, fiber, forage, and oilseed crops. Criteria for defining and delineating this land are to be determined by the appropriate state agencies. In Vermont, criteria for defining and delineating Farmland of Statewide Importance was determined by various state agencies, working with the Natural Resources Conservation Service and the University of Vermont around the time of the passage of Act 250.

The dominant soils in these soil map units have limitations resulting from one or more of the following conditions:

- Excessive slope and erosion hazard,
- Excessive wetness or slow permeability,
- A flooding hazard,
- Shallow depth (less than 20 inches) to bedrock or to other layers that limit the rooting zone and available water capacity,
- Moderately low to very low available water capacity.

Additional Farmland of Local Importance (Local)

In some areas, there is a concern to identify additional farmlands for the production of food, feed, fiber, forage, and oilseed crops that have not been identified as having national or statewide importance. These lands can be identified as Additional Farmland of Local Importance by the appropriate local agencies. In places, Additional Farmland of Local Importance may include tracts of land that have been designated for agriculture by local ordinance.

Soil map units in a few counties have been identified as Additional Farmland of Local Importance. The local Natural Resources Conservation District made these designations, with assistance from local NRCS personnel and concurrence by the NRCS State Conservationist. Additional soil map units may be added to this list in the future, at the discretion of the local Natural Resources Conservation Districts.

The following soil map units are listed as Additional Farmland of Local Importance:

Addison County

Adams loamy sand, 8 to 15 percent slopes

Colton gravelly sandy loam, 5 to 12 percent slopes

Raynham silt loam, 6 to 12 percent slopes

Franklin County

Missisquoi loamy sand, 8 to 15 percent slopes

Rutland County

Adams loamy sand, 8 to 15 percent slopes

Hinckley gravelly loamy fine sand, 8 to 15 percent slopes

Windsor loamy sand, 8 to 15 percent slopes

Important Farmland Determinations for USDA programs

An Important Farmland classification of *Prime*, *Statewide*, or *Local* is assigned to soil map units based on the characteristics of the dominant soils in the soil map unit. Determinations of *Unique* are based on the specific crop and are not directly related to the soil map unit.

In most cases, Important Farmland determinations for USDA programs are made on a *soil map unit basis*. For example, if the area in question is a delineation of a Prime soil map unit, the whole area is considered Prime regardless of any dissimilar soil inclusions within the delineation. Important Farmland determinations are never made for individual components of a soil map unit delineation.

Prime, Statewide, and Local designations do not apply to urban built-up land within a soil map unit. A delineation of a Prime, Statewide, or Local soil map unit which has been converted to urban built-up land should no longer be considered Important Farmland.

Act 250 - PRIMARY AGRICULTURAL SOILS and PRODUCTIVE FOREST SOILS

Primary Agricultural Soils and Productive Forest Soils are defined in Vermont's Land Use and Development Law, Act 250.

Criteria 9B - Primary Agricultural Soils

The definition of Primary Agricultural Soils can be found in Act 250, 10 V.S.A., chapter 151, section 6001 (15).

“Primary agricultural soils” means each of the following:

- (A) An important farmland soils map unit that the Natural Resources Conservation Service of the U.S. Department of Agriculture (NRCS) has identified and determined to have a rating of prime, statewide, or local importance, unless the District Commission determines that the soils within the unit have lost their agricultural potential. In determining that soils within an important farmland soils map unit have lost their agricultural potential, the Commission shall consider:
- i. Impacts to the soils relevant to the agricultural potential of the soil from previously constructed improvements;
 - ii. The presence on the soils of a Class I or Class II wetland under chapter 37 of this title;

- iii. The existence of topographic or physical barriers that reduce the accessibility of the rated soils so as to cause their isolation and that cannot reasonably be overcome; and
- iv. Other factors relevant to the agricultural potential of the soils, on a site-specific basis, as found by the Commission after considering the recommendation, if any, of the Secretary of Agriculture, Food and Markets.

(B) Soils on the project tract that the District Commission finds to be of agricultural importance, due to their present or recent use for agricultural activities and that have not been identified by the NRCS as important farmland soil map units.

Soil map units with an Important Farmland rating of Prime, Statewide, or Local meet the criteria contained in the definition of Primary Agricultural Soils, subject to a determination of whether such land is of a size capable of supporting or contributing to an economic or commercial agricultural operation. Determination of whether the size criteria is met is not made by NRCS.

Any soil map unit in Agricultural Value Group 1 through 7 and other soil map units that are rated as Local qualify as Primary Agricultural Soils. Land areas that fall under Agricultural Value Group 12 lack soil survey information and require an on-site investigation to determine the presence and extent of Primary Agricultural Soils.

Criteria 9C - Productive Forest Soils

The definition of Productive Forest Soils can be found in Act 250, 10 V.S.A., chapter 151, section 6001 (8).

“Productive forest soils” means those soils which are not primary agricultural soils but which have a reasonable potential for commercial forestry and which have not been developed. In order to qualify as productive forest soils, the land containing such soils shall be of a size and location, relative to adjoining land uses, natural condition, and ownership patterns so that those soils will be capable of supporting or contributing to a commercial forestry operation. Land use on those soils may include commercial timber harvesting and specialized forest uses, such as maple sugar or Christmas tree production.

Reasonable potential for commercial forestry is not defined in Act 250. Because it is not defined, criteria for the determination of *reasonable potential* of the soil map units is not included in this document.

Location and ownership patterns are site-specific and are not related to soils. Determination of whether *location* or *ownership patterns* criteria are met is not made by NRCS.

Forestland Management and Productivity Tables and databases, found in soil surveys, can be useful in helping to determine if the *natural condition* of the land has potential for commercial forestry or other specialized forest uses, such as sugarbushes or Christmas trees.

Primary Agricultural Soils and Productive Forest Soils Determinations

1. NRCS soil maps can be used to determine the presence and extent of Primary Agricultural Soils on a plot of land.
2. NRCS soil maps can be useful in determining the presence and extent of Productive Forest Soils on a plot of land but cannot be used as the sole determining factor. Until further guidance on this issue is developed, the landowner should consult with Vermont County Foresters or private foresters.

AGRICULTURAL VALUE GROUPS

In October 1985, the Soil Conservation Service (or SCS, prior name of USDA agency now known as the Natural Resources Conservation Service, or NRCS) published “Agricultural Value Groups for Vermont Soils.” This publication was revised in March 1995, August 1999, and November 2002.

This report replaces all previous editions of statewide and county reports.

Agricultural value groups are a land classification system that can be used to compare the "relative value" for crop production of one soil map unit to another. They can be a useful tool in administering national, state, and local land use programs and regulations.

Agricultural Value Group rankings can be downloaded from Web Soil Survey (<http://websoilsurvey.usda.gov>). They are also listed under County-specific Soils Information in the Field Office Technical Guide (FOTG) (<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/fotg/>) under Section II- Soils Information.

Preparation of Agricultural Value Groups

Agricultural Value Groups were derived by integrating three land classification systems: land capability classification, Important Farmland classification, and soil potential ratings. Other factors were also considered, including slope, parent material, and general knowledge of the use and management of specific soils. Soil map unit acreage was used to help derive the relative value of each group.

Relative Values

The Relative Value assigned to each Agricultural Value Group is a weighted average for the group and was derived using the soil potential indices (SPI's) (see Soil Potential Study) and the acreage of each soil map unit.

In 1985, all soils identified on lands mapped at that time were evaluated and placed into one of eleven Agricultural Value Groups. Relative values for each group were developed on a scale of 0 to 100, with 100 representing the highest agricultural value.

In 1999, based on updated soil mapping, Agricultural Value Groups were assigned to each soil map unit in Vermont. Soil map units that consisted of a phase of one major soil (for example, *Berkshire* fine sandy loam, 0 to 3 percent slopes) were assigned the Relative Value of that soil phase based on the 1985 report. Soil map units that consisted of phases of 2 or more major soils (for example, *Tunbridge-Lyman* complex, 3 to 8 percent slopes) were assigned one Relative Value based on the individual Relative Values and extent of each soil phase in the 1985 report.

Note that Relative Values are index numbers and do not represent net dollar returns for a given agricultural use. Determinations of absolute profitability of agricultural production on a given soil map unit is not possible from these Relative Values.

- **Soil map units with a Relative Value of 0**

Soil map units considered to have very limited potential for crop production were assigned to Agricultural Value Group 11 and given a Relative Value of 0. These map units include the following:

1. soils with an extremely stony, very bouldery, or extremely bouldery surface
2. very poorly drained organic soils
3. very shallow soils (less than 10 inches to bedrock)
4. soils with slopes greater than 25 percent
5. soils above 2500 feet elevation (soils in the cryic soil temperature regime)
6. miscellaneous land types (beaches, escarpments, gravel pits, urban areas, etc.)
7. areas of Water mapped within soil survey areas

- **Soil map units with no Relative Value assigned**

In two counties, there are land areas that were not mapped because of restricted access or being in urban areas that were outside the focus of the soil survey at the time. These land areas are in a separate Agricultural Value Group – AVG 12, and have not been assigned a Relative Value.

- These map units represent unmapped land areas and are in Agricultural Value Group 12:

- Caledonia County**

- 900 - Area not Surveyed, Access Denied*

- Chittenden County**

- Lss - Limit of detailed soil survey*

Agricultural Value Group Descriptions

An Agricultural Value Group consists of soil map units that have similar characteristics, limitations, management requirements, and potential for crop production. Soil map units in Group 1 have the most potential for crop production and soil map units in Group 11 have the least potential for crop production. Soil map units were placed in their respective Agricultural Value Groups assuming that it is feasible to apply the corrective measures needed to overcome the soil limitations identified in soil potential studies.

A brief description of the Agricultural Value Groups:

1 – These soil map units have an Important Farmland rating of Prime. Most of the soil map units are in Land Capability Class 1 or 2. The Relative Value is 100.

2 – These soil map units have an Important Farmland rating of Statewide. Most of the soil map units are in Land Capability Class 2. The Relative Value is 97.

3 – These soil map units have an Important Farmland rating of Prime. Most of the soil map units are in Land Capability Class 2 or 3. The Relative Value is 84.

4 – These soil map units have an Important Farmland rating of Statewide. Most of the soil map units are in Land Capability Class 2, 3, or 4. The Relative Value is 82.

5- These soil map units have an Important Farmland rating of Statewide. Most of the soil map units are in Land Capability Class 3. The Relative Value is 69.

6- These soil map units have an Important Farmland rating of Statewide. Most of the soil map units are in Land Capability Class 2, 3, or 4. The Relative Value is 63.

7- These soil map units have an Important Farmland rating of Statewide. Most of the soil map units are in Land Capability Class 3. The Relative Value is 57.

8- The major limitations for crop production include low available water capacity, erosion, and slope. This group includes a few soil map units that have an Important Farmland rating of Local. Most of the soil map units are in Land Capability Class 4 or 6. The Relative Value is 52.

9- The major limitations for crop production include slope, wetness, surface stones, and bedrock outcrops. On-site investigations are recommended to determine the feasibility of installing corrective measures and using these soils for crop production. If it is determined that corrective measures can't be installed successfully, then the area in question should be placed in Agricultural Value Group 11. Normally, the cost of overcoming corrective measures and laws governing the installation of corrective measures should not be considered when making this determination. In some situations, if laws prevent the installation of corrective measures, the area in question should be placed in Agricultural Value Group 11. Most of the soil map units are in Land

Capability Class 5, 6, or 7. The Relative Value is 43.

10- The major limitations for crop production include slope, wetness, surface stones, and bedrock outcrops. They can be used as cropland only after intensive and expensive installation of various corrective measures. On-site investigations are strongly recommended to determine feasibility of installing corrective measures and using these soils for crop production. If corrective measures can't be installed, then the area in question should be placed in Agricultural Value Group 11. Normally, the cost of overcoming corrective measures and laws governing the installation of corrective measures should not be considered when making this determination. In some situations, if laws prevent the installation of corrective measures, the area in question should be placed in Agricultural Value Group 11. Most of the soil map units are in Land Capability Class 5, 6, or 7. The Relative Value is 22.

11- These soil map units are considered to have very limited potential for crop production. Most of the soil map units are in Land Capability Class 7 or 8. Only in rare situations, and usually after great expense, are these soil map units converted for crop production. The Relative Value is 0.

12- This category is set aside for land areas that were not mapped because of either restricted access or being in urban areas that were outside the focus of the soil survey at the time. An on-site investigation must be conducted to determine the appropriate Agricultural Value Group ratings for these lands. No Relative Value is assigned.

Some soil map units that are Prime, Statewide, or Local have limitations such as excessive wetness, limited depth to bedrock, flooding, or excessive slope. These soil map units are footnoted in the *Prime and Important Farmland (VT)* reports accessible through Web Soil Survey. It is assumed that delineations of these map units are Prime, Statewide, or Local, unless an on-site determination finds that the delineation should not be Important Farmland. Users of this report are encouraged to consider the footnotes and the need for on-site investigations. See the FOOTNOTES section for more details.

Possible Uses

Agricultural Value Group and Relative Value ratings can be useful in many federal, state and local programs, including:

- implementation of Public Law 97-98, the Farmland Protection Policy Act (FPPA);
- assessment of agricultural soils by federal and state agencies, land trusts, landowners, bankers, realtors;
- design and implementation of Agricultural Land Evaluation and Site Assessment (LESA) systems;
- rating of agricultural soils for appraisal under Vermont's Use Value Program of

Agricultural and Forest Land;

- rating of agricultural soils for appraisal under Town Tax Stabilization Programs;
- broad resource planning by state agencies and town and regional planning commissions.

The user must consider the appropriate footnotes. With the exception of broad planning activities, on-site investigations are recommended when using this report because of the following needs:

- To assess wetness, surface stones and boulders, and bedrock limitations.
- To assess the steepness of soils on slopes ranging from 15 percent to at least 25 percent. The steeper areas may be unsuitable for crop production.
- To assess landscape pattern limitations. Some areas with good potential may be non-farmable because of irregular slope patterns and the presence of small streams and drainage ways. Landscape patterns can result in small inefficient tract sizes, hamper the operation of farm equipment, and make a site unproductive without additional and expensive land shaping activities.

OTHER FARMLAND CLASSIFICATION SYSTEMS

Land Capability Classification

The land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.

Soil map units are grouped at three levels: capability class, subclass, and unit.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

- Class 1 soils have slight limitations that restrict their use.
- Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.
- Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

- Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.
- Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.
- Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, 2*e*. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In Class 1 there are no subclasses because the soils of this Class have few limitations. Class 5 contains only the subclasses indicated by *w*, *s*, or *c* because the soils in Class 5 are subject to little or no erosion.

For more information on Land Capability Classification, refer to Agricultural Handbook 210, issued by the Soil Conservation Service in September, 1961.

Soil Potential Studies

During the early 1980's, a number of soil potential studies were completed in Vermont. These reports ranked the potential of soil map units within a specific county for crop production. The information in these reports was only to be used within the specified county.

The soil potential studies conducted by NRCS (SCS at the time) originally formed the numerical basis for developing Agricultural Value Groups and their Relative Values. A soil potential index (SPI) rating was determined, which is a numerical rating of a soil map unit's relative potential for crop production. The SPI was used to rank soil map units from very high potential to very low potential and was derived from indices of soil performance/yield, cost of corrective measures, and costs of continuing limitations. The SPI indicated a soil's agricultural profitability potential relative to other soils in the study area.

The SPI is expressed by the equation:

$SPI = P - CM - CL$, where:

P = performance index (P was determined by a soil's estimated corn silage yield/acre, converted to dollars)

CM = index of costs of corrective measures needed to overcome or minimize the effects of soil limitations (CM was expressed in dollars/acre/year)

CL = index of costs resulting from continuing limitations (CL was expressed as maintenance costs of reduced yields, converted to dollars)

The soil potential studies and ratings are now considered out-of-date. The soil potential ratings were based on the integration of numerous data derived from literature and the knowledge of technical specialists. Some of the data was estimated, based on the knowledge and judgment of the technical specialists, including some of the crop yields on specific soil map units. Due to changes in cropping systems, climate, seedstock, and other factors, yield values are no longer valid. Monetary benefits and costs associated with crop yields and soil corrective measures have also changed since the time of the studies, due to inflation and technological advances. These changes all affect the calculation of the soil potential ratings and thereby have rendered them out-of-date.

DIGITAL INFORMATION

Agricultural Value Groups and Important Farmland Ratings are available as part of the TOP20 attribute data table. TOP20 is available as data under the Geologic and Soils topic heading through the Vermont Center for Geographic Information (VCGI) (<http://vcgi.vermont.gov/>) or from NRCS (<https://www.nrcs.usda.gov/wps/portal/nrcs/main/vt/soils/>).

This information can also be downloaded from Web Soil Survey (<http://websoilsurvey.usda.gov>). See the Appendix for more information.

FOOTNOTES

Listed below are the footnotes for the Agricultural Value Groups and Important Farmland ratings in the county soil survey legends. These footnotes are assigned only to soil map units in Agricultural Value Groups 1 through 7.

a - The upper slope class limit for this map unit exceeds 15 percent. The areas of the soil map unit that exceeds 15 percent slope do not qualify as Prime or Farmland of Statewide Importance.

b - The soils in this map unit are limited by wetness, which may be difficult or unfeasible to overcome. The map unit qualifies as Prime or Farmland of Statewide Importance only in areas where artificial drainage is feasible. Feasible means it is possible to install artificial drainage. Areas of this soil map unit where artificial drainage is not feasible should be placed in Agricultural Value Group 11. Normally, the cost of installing artificial drainage should not be considered when making this determination. In some situations, if laws curtail the installation of corrective measures, the area in question should be placed in Agricultural Value Group 11.

c - Bedrock outcrops commonly cover more than 2 percent of the surface. The map unit qualifies as Prime or Farmland of Statewide Importance only in areas where the bedrock outcrops are not extensive enough to prohibit efficient farming. Areas of this soil map unit should be placed in Agricultural Value Group 11 if bedrock outcrops are extensive enough to prohibit efficient farming.

d - The soils in this map unit are limited by wetness, which may be difficult or unfeasible to overcome. The map unit qualifies as Prime or Farmland of Statewide Importance only in areas where artificial drainage is feasible. Feasible means it is possible to install artificial drainage. Areas of this soil map unit where artificial drainage is not feasible should be placed in Agricultural Value Group 11. Normally, the cost of installing artificial drainage should not be considered when making this determination. In some situations, if laws curtail the installation of corrective measures, the area in question should be placed in Agricultural Value Group 11.

e - Bedrock outcrops commonly cover more than 2 percent of the surface. The map unit qualifies as Prime or Farmland of Statewide Importance only in areas where the bedrock outcrops are not extensive enough to prohibit efficient farming. Areas of this soil map unit should be placed in Agricultural Value Group 11 if bedrock outcrops are extensive enough to prohibit efficient farming.

f - The soils in this soil map unit are frequently flooded. Flooding is likely to occur often under usual weather conditions, and there is more than a 50 percent chance of flooding in any year. Typically, however, flooding occurs outside of the growing season. During the growing season, flooding is expected infrequently under usual weather conditions, with a 5 to 50 percent chance of flooding in any year.

CONTACT INFORMATION

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Link to the Web Soil Survey website:

- <http://websoilsurvey.nrcs.usda.gov/app/>

Link to the Field Office Technical Guide (FOTG) website:

- <http://www.nrcs.usda.gov/technical/efotg/>

For more information on the FOTG website, see the Technical Resources section of the VT NRCS website:

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/vt/technical/>

Appendix 1. How to get Soil Maps and Site-Specific Information on Prime Farmland, Farmland of Statewide Importance, and Vermont Primary Agricultural Soils using the NRCS Web Soil Survey

- Log on to Web Soil Survey: <https://websoilsurvey.nrcs.usda.gov/app/>
- Click the green **Start WSS** button to open Web Soil Survey, version 3.3.

Tab 1. Area of Interest (AOI)

- **Quick Navigation** >> click on **State and County** – choose Vermont as State and your county of interest in the drop-down menu.
- Click **View** to get the county shown on the Area of Interest Interactive Map on right side of screen. A basic map of the county will appear, with major roads and water bodies shown.
- With the **Zoom In** button active (this button looks like a magnifying glass with a plus sign on it), draw a box around the general part of the county you are interested in by holding down your mouse button and enlarging the boxed area. You can repeat this step several times to get to the point where the property you are interested in appears in the map window. An airphoto background will appear with the map. Note: You can also try the **Quick Navigation** option by typing in a specific address.
- To delineate your Area of Interest, click on one of the two **AOI** buttons on the map toolbar. The **AOI** button showing a red box will delineate a rectangular area. The **AOI** button showing a red multi-sided polygon will delineate an irregularly-shaped area – with this, you must continue clicking at each corner and double-click at the point where you started to close the polygon.
- Once you have delineated your Area of Interest, the interactive map will zoom to show the area, hatched in blue. On the left side of the screen, it will tell you the acreage of the area you have delineated. If your Area of Interest covers more than one county, the acreage will be listed separately by county. You can give your Area of Interest a Name if you desire.
- If you are not happy with the Area of Interest as shown, click the **Clear AOI** button on the right side of the screen and use the **AOI** buttons to re-delineate it. Repeat as many times as needed. When you are satisfied with your Area of Interest, you're ready to produce the Soil Map.

Tab 2. Soil Map

- Click on the **Soil Map** tab on top of the screen, in between the **Area of Interest** tab and the **Soil Data Explorer** tab. This will generate the soil map for the Area of Interest (from here on referred to as AOI) you have delineated. Depending on server traffic, this may take a few minutes. The screen will show the Soil Map on the right and the Map Unit Legend on the left, with soil map unit symbols and names, and their acreage and percentage within the AOI.
- When viewing the soil map on-screen, some soil polygons may not show a map unit symbol. This is due to the scale of the map on-screen. Not to worry – the symbols are there. You can enlarge the scale on-screen, or they will show up when you print a copy of the map.

- At this point, you can print out a copy of the soil map, save it to your computer, save it to the Shopping Cart, or continue on to the Soil Data Explorer section, which is where you'll generate the report and map for Important Farmland soils for your AOI.
- To print a copy of the soil map or to save it to your computer, click the **Printable Version** button. A small window will open – if you wish to give your map a custom name (like your name or your client's name), click the **Custom Subtitle** button and type the name you wish. Then click the **View** button. This will generate a new view of the soil map and associated information as it will appear printed and display it on-screen. This multi-page file is an Adobe® pdf file. Using the toolbar, you can then print the map and/or save it to your computer. This map can also be emailed, but first has to be saved to your computer as a pdf file.
- After printing or saving the soil map file, close that window by clicking on the red X. You will still have the web-based soil map page open.
- This completes the Soil Map generation process. To generate a report on Important Farmland soils for your AOI, continue to the next section.

Tab 3. Soil Data Explorer

- Click on the **Soil Data Explorer** tab on top of the screen to the right of the **Soil Map** tab.
- Under Soil Data Explorer, you'll see 5 new tabs. Feel free to browse them all (however, the Ecological Site Assessment tab is not active at this time).
- To generate a color-coded interpretative map and report of Important Farmland and Primary Agricultural Soils within your AOI, click on the tab, **Suitabilities and Limitations for Use**.
- Under that tab, click on the **Land Classifications** button and then choose **Farmland Classification** from the drop-down menu.
- Under the Farmland Classification View Options: Map, Table, and Description of Rating should be checked.
- Generate the map and report by clicking the **View Rating** button.
- A new color-coded Farmland Classification map will appear on the right side of the screen, with the accompanying table shown below it. To get a quick view of what the different colors mean, click on the **Legend** tab on the left side of the map. This will open up the Legend page. The table below the map will show the status of each soil map unit within your AOI.
- To print a copy of the Farmland Classification map, legend, and table, click on the **Printable Version** button and repeat the process described to print or save the Soil Map.
- **Vermont Primary Agricultural Soils** include all soil map units listed or shown in these reports and maps as either **Prime, Statewide, or Local**.

Appendix 2. How to get a County-wide Report (without a soil map) on Prime Farmland, Farmland of Statewide Importance, and Vermont Primary Agricultural Soils using the NRCS Web Soil Survey

- Log on to Web Soil Survey: <http://websoilsurvey.nrcs.usda.gov/app/>
- Click the green **Start WSS** button to open Web Soil Survey, version 3.3.

Tab 1. Area of Interest (AOI)

- **Quick Navigation** >> click on **Soil Survey Area** – choose Vermont as State and your County of interest in the drop-down menu. **All Vermont counties are accessible through WSS.**
- Click on the **black outlined circle** next to the county name to get the county Soil Survey Area info.
- Click on the **Select Map Units** button to bring up the list of soil map units in the county. If you want a full county-wide report, click on the **Select All** button. Otherwise, scroll down through the map unit legend and click on the boxes next to the map units you want included in the report.

Tab 2. Soil Map

- When you want a report without a soil map, skip this tab - go straight to Soil Data Explorer tab.

Tab 3. Soil Data Explorer

- Click on the **Soil Data Explorer** tab on top of the screen to the right of the **Soil Map** tab.
- Under Soil Data Explorer, you'll see 5 new tabs. To generate a report without a soil map, click on the **Soil Reports** tab on the far right.
- Under that tab, click on the **Land Classifications** button and then choose **Prime and other Important Farmlands (VT)** from the drop-down menu.
- Generate the report by clicking the **View Soil Report** button.
- The report will appear on the right side of the screen. At this point, you can print out a copy of the report, save it to your computer, or save it to the Shopping Cart.
- To print a copy of the report or to save it to your computer, click the **Printable Version** button on the top right of the screen. A small window will open – if you wish to give your report a custom name (like your name or your client's name), click the **Custom Subtitle** button and type the name you wish. Then click the **View** button. This will generate a new view of the report as it will appear printed and display it on-screen. This multi-page file is an Adobe® pdf file. Using the toolbar, you can then print the report and/or save it to your computer. This report can be emailed, but first must be saved to your computer as a pdf file.
- After printing or saving the soil report file, close that window on your computer toolbar. You will still have the web-based Soil Reports page open. If you want data from more than one county, go back to the Area of Interest tab, click on the **Clear AOI** tab and start the process over.
- **Vermont Primary Agricultural Soils include all soil map units that are listed in these reports as either Prime, Statewide, or Local.**

If you have questions about Web Soil Survey, please contact Al Averill, VT/MA State Soil Scientist (al.averill@ma.usda.gov, 413-253-4382).