GUIDE FOR USING THE
USDA's WEB SOIL SURVEY

by

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and

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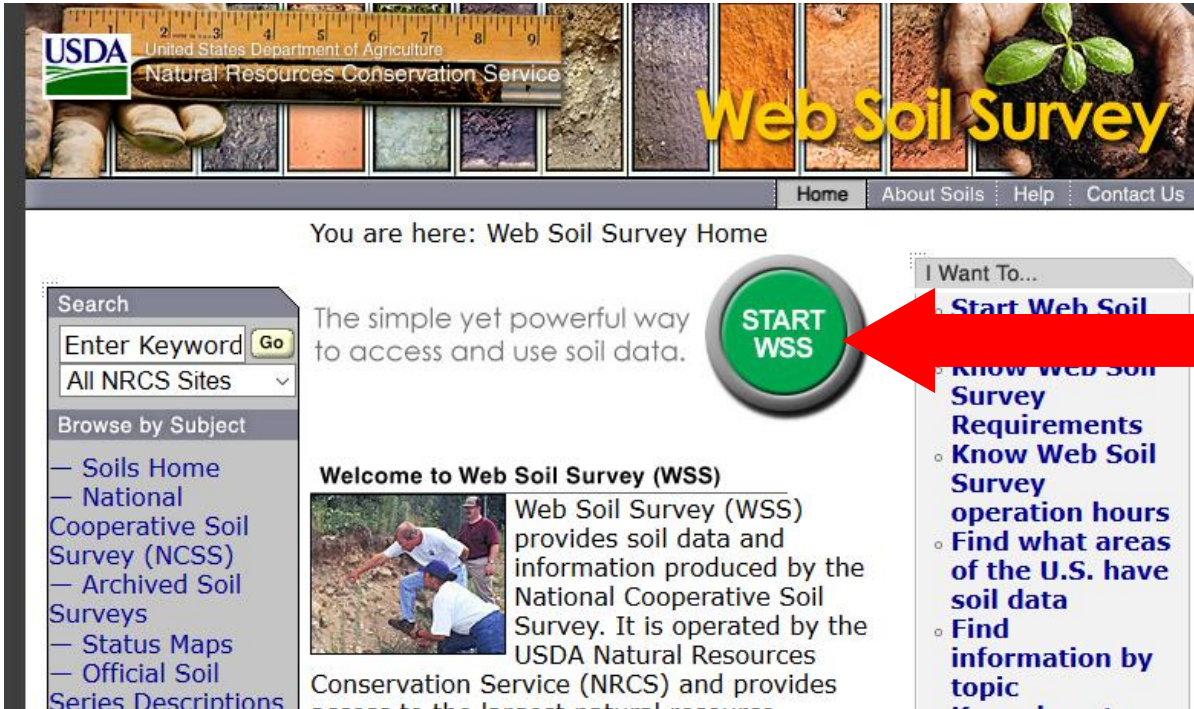## Boundary County Extension Educator
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A program called Web Soil Survey can be accessed over the internet and used to determine what type of soil you have on your property. All the soils which have been mapped by either the Natural Resources Conservation Service or the Forest Service are available through the web soil survey.

The URL for the web soil survey is:
https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

Once the program loads click on the green button (START WSS) to begin. A new page will come up.

New Page:

The first step is to locate your property and define an "area of interest" (AOI). This can be done in several ways but perhaps the easiest is to enter a physical address for the property. Entering the latitude and longitude for the property also works well. For the first part of this guide I am using an address in Naples, ID. This is done by expanding the "address" bar under quick navigation on the lefthand side of the page (see above). This action produces a satellite image of that location (see below). This image can be zoomed in or out using the tools on the top of the image.
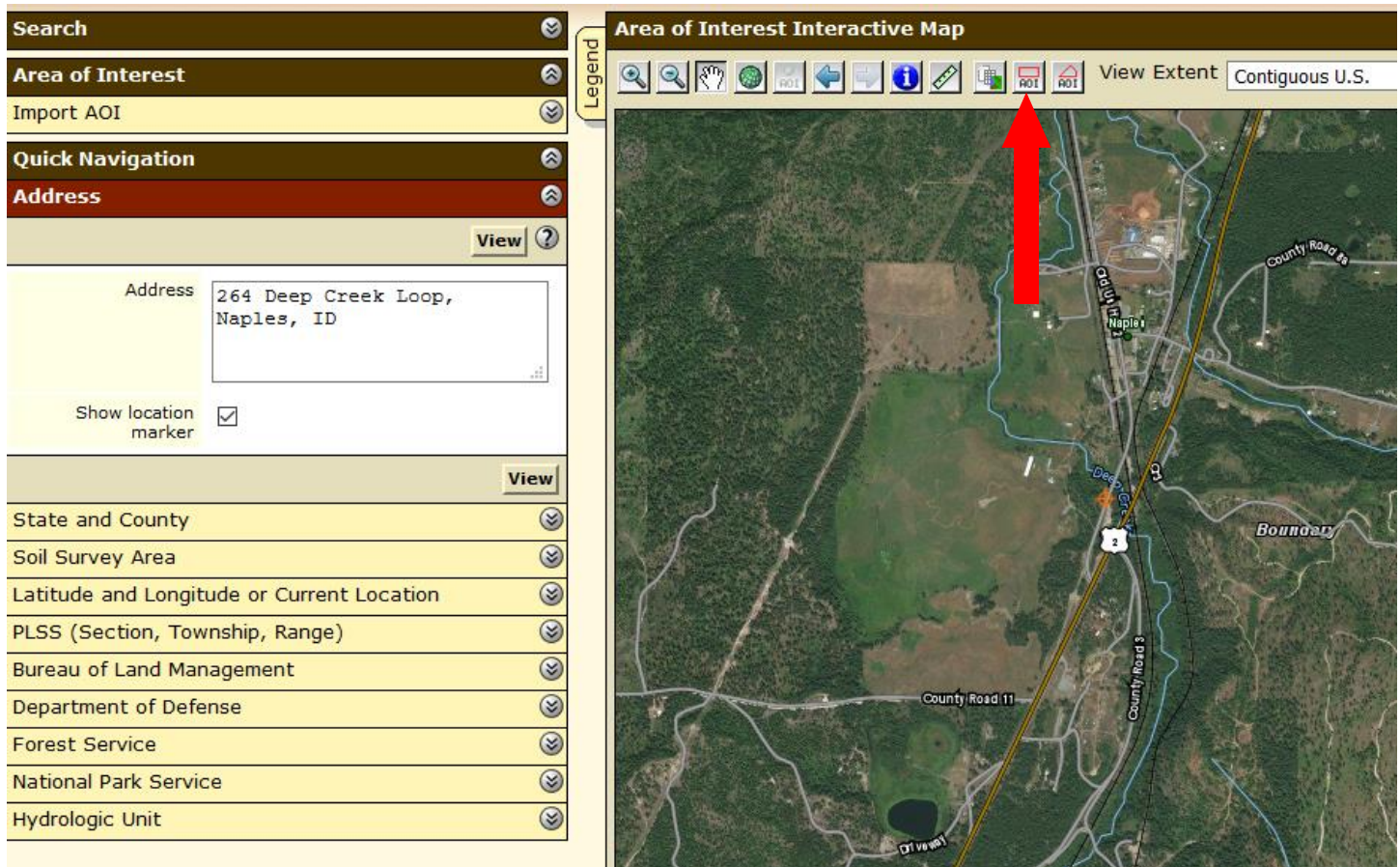
The next step is to outline the area of interest (AOI). This is done by clicking on the AOI tool on the top of the image (I use the one with the red rectangle as indicated where the red arrow above). A cursor with a cross hair will appear. Place this in the upper left of the area you want to delineate and hold the left mouse button down while dragging the box to the right and down so that the entire area you want to map is inside the box. It is best to actually overlap the area a bit. A new box will be created with blue diagonal lines that delineate the AOI (see image below). Your property should be within this area.

Area of Interest Interactive Map

Legend

View Extent Contiguous U.S. Scale (not to sca
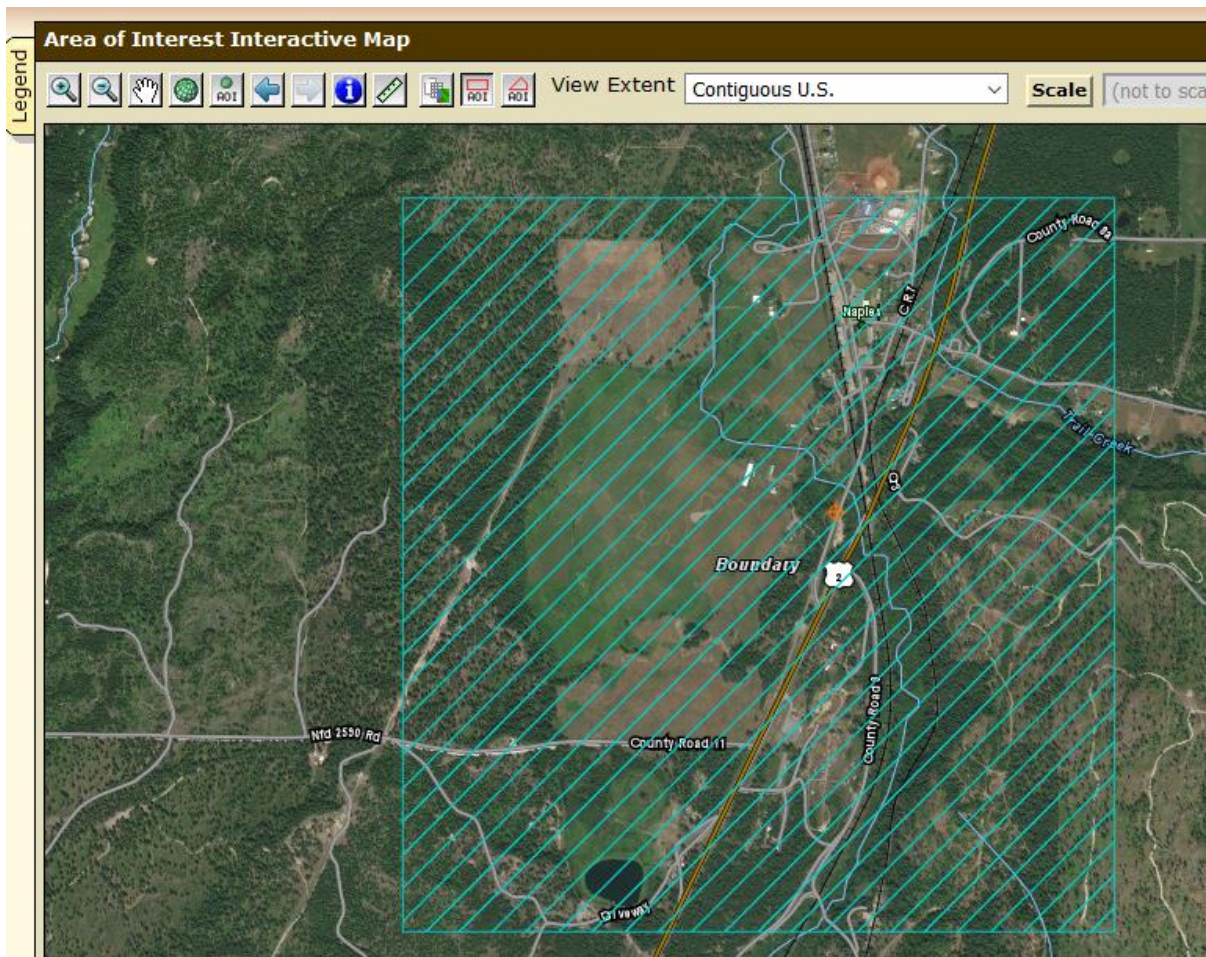
Now go to the "Soil Map" tab (see red arrow in the picture below) and click on it. The AOI will now contain orange/red numbers and lines that show how the AOI has been mapped by the NRCS or USFS. The numbers are called "map units" and on the left of the screen they are defined in terms of soil type names, soil surface texture and slope. The acreage within the AOI is also given.

| Area of Interest (AOI) | Soil Map | Soil Data Explorer | Download Soils Data | Shopping Cart (Free) |

Printable Ve

Search

Map Unit Legend

167	Rubson ashy silt loam, 8 to 15 percent slopes	83.3	6.3%
172	Seelovers silt loam, drained, 0 to 2 percent slopes	77.7	5.9%
174	Selle ashy fine sandy loam, 0 to 7 percent slopes	106.0	8.0%
175	Selle-Elmira complex, 0 to 20 percent slopes	265.4	20.0%
190	Wishbone-Caboose	58.6	4.4%

Soil Map

Legend

Scale (not to scale)

If you click on the blue soil name (on the left) a box will pop up that gives the map unit description including a typical profile description, some soil properties, land classification and capability units as well as other descriptive data.

167—Rubson ashy silt loam, 8 to 15 percent slopes
Map Unit Setting
National map unit symbol: 5421
Elevation: 2,100 to 2,700 feet
Mean annual precipitation: 25 to 30 inches
Mean annual air temperature: 42 to 45 degrees F
Frost-free period: 100 to 135 days
Farmland classification: Not prime farmland
Map Unit Composition
Rubson and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.
Description of Rubson
Setting
Landform: Terraces
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Volcanic ash and/or loess over glaciolacustrine deposits
Typical profile
Oi - 0 to 2 inches: slightly decomposed plant material
Oe - 2 to 3 inches: moderately decomposed plant material
A - 3 to 5 inches: ashy silt loam
Bw1 - 5 to 11 inches: ashy silt loam
Bw2 - 11 to 17 inches: ashy silt loam
Bt1 - 17 to 26 inches: silt loam
Bt2 - 26 to 32 inches: silt loam
Bt3 - 32 to 35 inches: silt loam
Bt4 - 35 to 53 inches: very fine sandy loam
Bt5 - 53 to 58 inches: very fine sandy loam
C - 58 to 68 inches: loamy very fine sand
Properties and qualities
Slope: 8 to 15 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 (0.57 to 1.98 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

Determining properties and capabilities of the mapped soils

If you open the "soil data explorer" tab (red arrow below) a number of "subtabs" will come up including "suitabilities and limitations" (blue arrow) and "soil properties and qualities" (green arrow). Opening these tabs will present a list on the left of various attributes. You can click on any of these and then determine how the specific soils in the AOI are rated, by clicking on the "view rating" box.
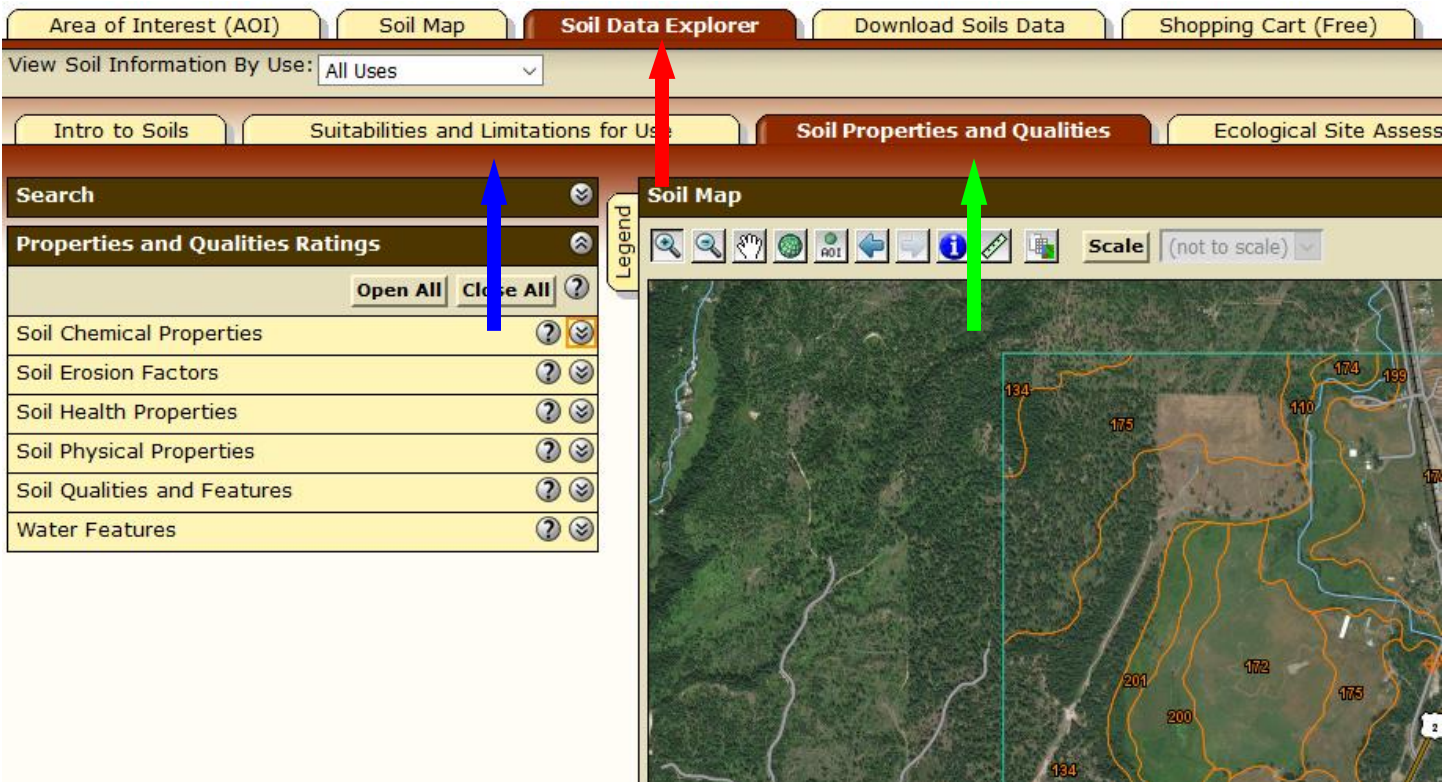
For example, under the soil properties and qualities tab, if you click on the "soil chemical properties" caret (orange box in image above) a number of soil properties for which there are data will be displayed (see below).

Choosing the pH (1 to 1 Water) caret further opens the pH box, allowing you to select how you want data for soil pH to be calculated and displayed. In the example below, for instance, I have chosen the data to be displayed as a map, in a table, and to give a

description of the rating (these are the default viewing options). Under advanced options (AND THIS IS IMPORTANT), I have chosen the data to be a weighted average based on horizon depth and have specified a depth range of from 0 to 12 and have selected "inches" (important because the default is centimeters). You make select any depth interval you like or have a weighted average for the whole described soil profile (typically at least 60 inches). I have chosen 0-12 inches because this would be a typical rooting depth for vegetable crops. Once you have selected the desired parameters, click on "View Rating" (red arrow below).

The result will be a map and a table (displayed below). The table is the most important because it gives the weighted average values for the specific soil types, in this case for the 0-12 inch depth interval. The map displays the distribution of these values in "classes".

Scale 1:12,000 ± 1 %
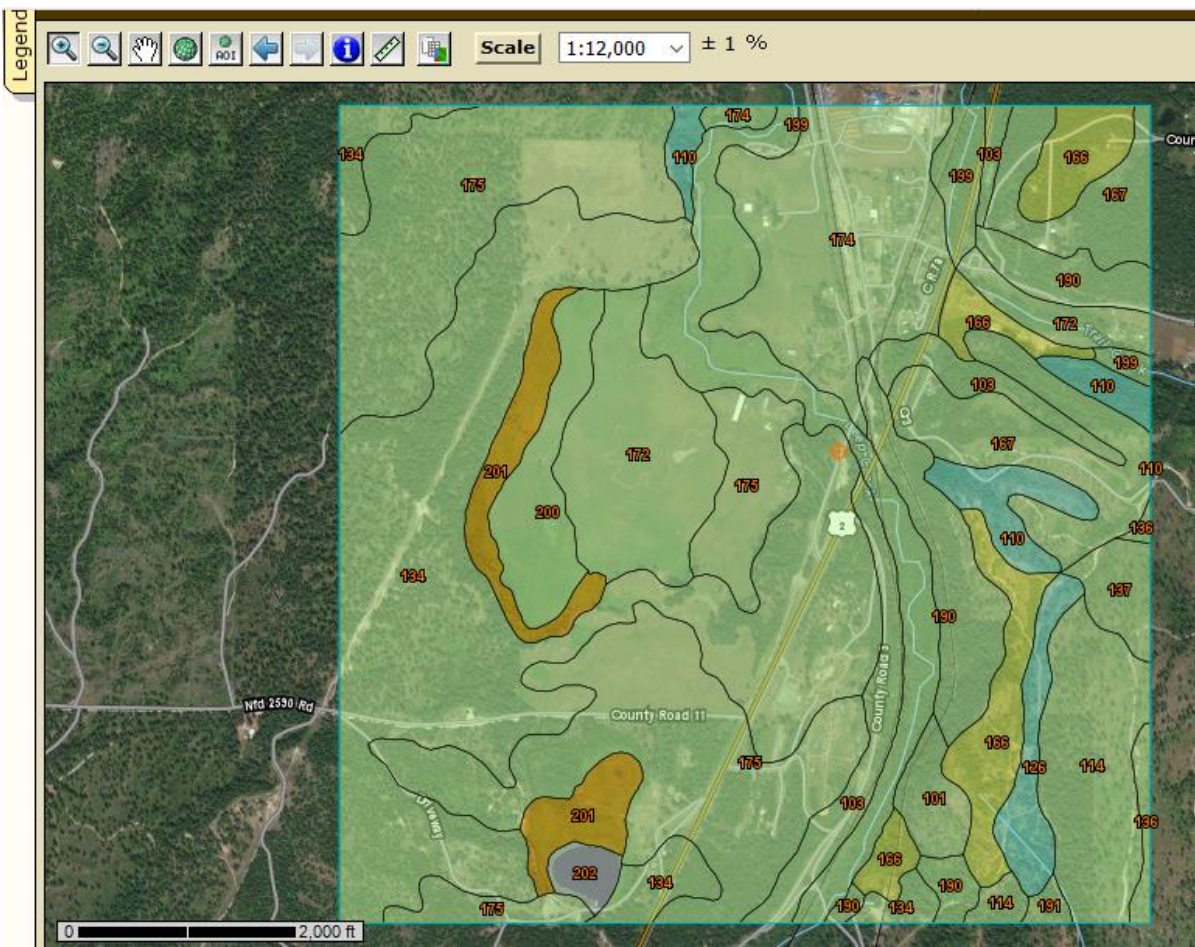
Summary by Map Unit — Boundary County Area, Idaho (ID601)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
101	Dufort-Rock outcrop-Kriest complex, 35 to 65 percent slopes	6.4	12.8	1.0%
103	Artnoc silt loam, 35 to 75 percent slopes	6.1	43.0	3.3%
110	Crash silt loam, 35 to 75 percent slopes	6.8	28.9	2.2%
114	Dufort ashy silt loam, 35 to 65 percent slopes	6.4	57.1	4.4%
126	Idamont ashy silt loam, 15 to 35 percent slopes	6.6	18.3	1.4%
134	Elmira loamy fine sand, 15 to 35 percent slopes	6.5	310.4	24.0%
136	Pend Oreille ashy silt loam, 15 to 35 percent slopes	6.5	6.4	0.5%
137	Pend Oreille ashy silt loam, 35 to 65 percent slopes	6.5	12.8	1.0%
166	Rubson ashy silt loam, 2 to 8 percent slopes	5.9	59.5	4.6%
167	Rubson ashy silt loam, 8 to 15 percent slopes	6.2	79.6	6.2%
172	Seelovers silt loam, drained, 0 to 2 percent slopes	6.2	77.1	6.0%
174	Selle ashy fine sandy loam, 0 to 7 percent slopes	6.1	100.7	7.8%
175	Selle-Elmira complex, 0 to 20 percent slopes	6.4	258.8	20.1%
190	Wishbone-Caboose complex, 35 to 75 percent slopes	6.5	57.3	4.4%
191	Dufort-Rock outcrop-Kriest complex, 15 to 35 percent slopes	6.4	2.8	0.2%
199	Seelovers-Typic Fluvaquents-Aquic Udifluvents complex, 0 to 4 percent slopes	6.2	86.9	6.7%
200	Pywell-DeVoignes complex, partially drained, 0 to 2 percent slopes	6.5	32.8	2.5%
201	Pywell muck, unprotected, undrained, 0 to 1 percent slopes	5.0	38.4	3.0%

Next, let's look at the soil physical property bulk density as another example. A "high" bulk density in the lower horizons of a soil can restrict water movement in the soil (drainage) and can also serve as a barrier to deeper root penetration. This discussion is provided in the description following the table (below). In this case for the advanced options I have chosen an aggregation method of "minimum or maximum" and have further chosen "higher" to display the greatest value for bulk density. I have also selected a depth range of 12 to 30 inches because I am interested in the subsoil values (lower soil horizons). Again, I clicked on "view rating".

Bulk Density, One-Third Bar	
View Description **View Rating**	
View Options	? ⊗
Advanced Options	? ⊗
Aggregation Method	Minimum or Maximum ▾
Component Percent Cutoff	[ ]
Tie-break Rule	○ Lower ◉ Higher
Interpret Nulls as Zero	○ Yes ◉ No
Layer Options (Horizon Aggregation Method)	○ Surface Layer (Not applicable) ◉ Depth Range (Weighted Average)
	Top Depth [12]
	Bottom Depth [30]
	◉ Inches ○ Centimeters
	○ All Layers (Weighted Average)
View Description **View Rating**	

Linear Extensibility

The results are displayed in the table below. As the description below the table indicates, a value greater than 1.40 grams/cubic centimeter (that is how bulk density is measured) presents the possibility of restricted rooting or drainage. If a soil has a value in the range of 1.70 to 1.90 this indicates a very dense layer and roots and water have a very difficult time passing through this layer. These soils are described as having a "fragipan" and there are soils in Bonner County Idaho that have these properties. It is common for these soils to have standing water on the surface during the spring and therefore these soils are very slow to warm up early in the growing season.

Map unit symbol	Map unit name	Rating (grams per cubic centimeter)	Acres in AOI	Percent of AOI
101	Dufort-Rock outcrop-Kriest complex, 35 to 65 percent slopes	1.38	14.3	1.1%
103	Artnoc silt loam, 35 to 75 percent slopes	1.40	45.0	3.5%
110	Crash silt loam, 35 to 75 percent slopes	1.55	28.7	2.2%
114	Dufort ashy silt loam, 35 to 65 percent slopes	1.25	66.4	5.1%
126	Idamont ashy silt loam, 15 to 35 percent slopes	1.10	18.3	1.4%
134	Elmira loamy fine sand, 15 to 35 percent slopes	1.40	299.2	23.1%
136	Pend Oreille ashy silt loam, 15 to 35 percent slopes	1.17	11.5	0.9%
137	Pend Oreille ashy silt loam, 35 to 65 percent slopes	1.17	14.3	1.1%
166	Rubson ashy silt loam, 2 to 8 percent slopes	1.35	56.7	4.4%
167	Rubson ashy silt loam, 8 to 15 percent slopes	1.35	79.1	6.1%
172	Seelovers silt loam, drained, 0 to 2 percent slopes	1.50	77.7	6.0%
174	Selle ashy fine sandy loam, 0 to 7 percent slopes	1.37	92.1	7.1%
175	Selle-Elmira complex, 0 to 20 percent slopes	1.45	260.9	20.1%
190	Wishbone-Caboose complex, 35 to 75 percent slopes	1.42	60.3	4.6%
191	Dufort-Rock outcrop-Kriest complex, 15 to 35 percent slopes	1.38	6.3	0.5%
199	Seelovers-Typic Fluvaquents-Aquic Udifluvents complex, 0 to 4 percent slopes	1.50	87.4	6.7%
200	Pywell-DeVoignes complex, partially drained, 0 to 2	1.50	32.8	2.5%

Description — Bulk Density, One-Third Bar

Bulk density, one-third bar, is the ovendry weight of the soil material less than 2 millimeters in size per unit volume of soil at water tension of 1/3 bar, expressed in grams per cubic centimeter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options — Bulk Density, One-Third Bar

Units of Measure: grams per cubic centimeter

Aggregation Method: Minimum or Maximum

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 12

Bottom Depth: 30

Units of Measure: Inches

An area in Bonner County was selected to illustrate this process which allows us to evaluate the limitations and capabilities of mapped soils for various uses. It is shown in the image below along with some of the associated soil types. The dominant soil in the AOI is the Mission soil series, which has a fragipan as mentioned previously.

31	Mission silt loam, 0 to 2 percent slopes	281.2	18.3%
32	Mission silt loam, 2 to 12 percent slopes	779.3	50.8%
35	Pend Oreille silt loam, 5 to 45 percent slopes	18.6	1.2%
37	Pend Oreille-Rock outcrop complex, 5 to 45 percent slopes	11.5	0.7%
42	Pywell-Hoodoo complex, 0 to 1 percent slopes	94.1	6.1%
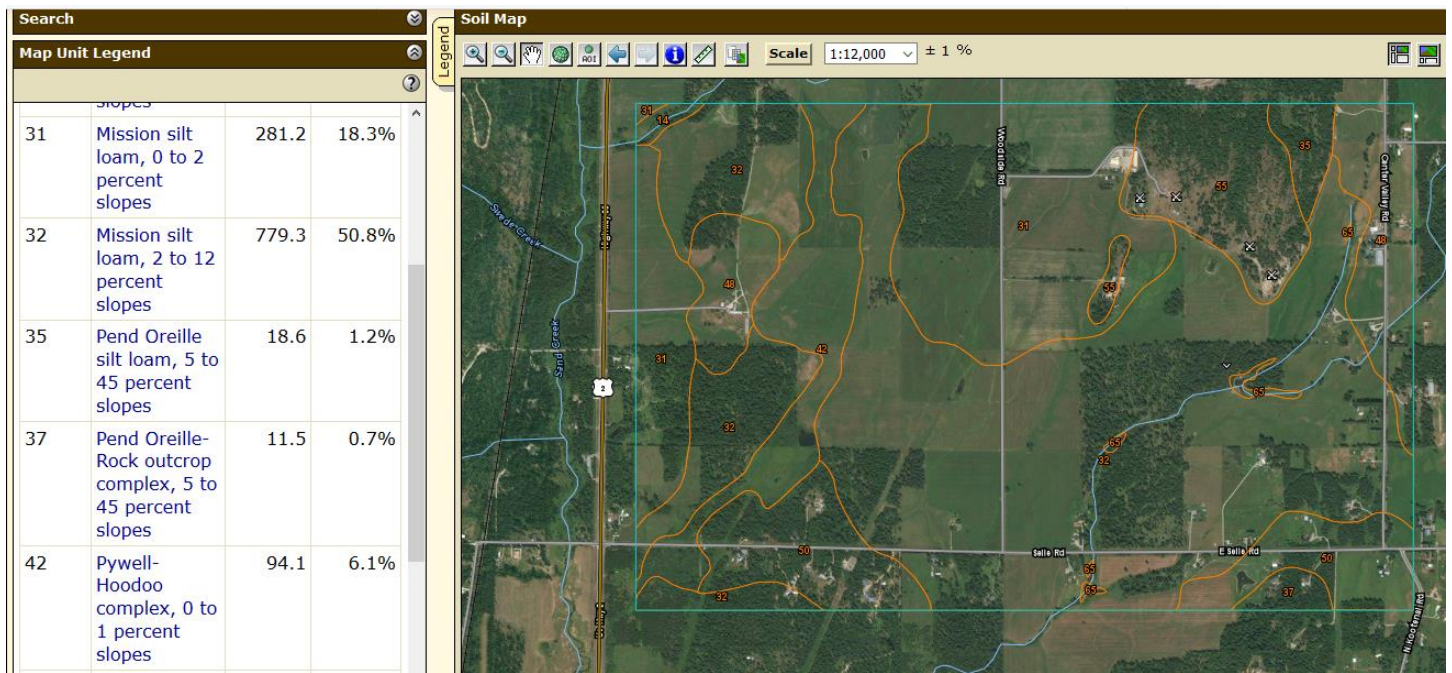
When the subtab "Suitabilities and Limitations for Use" is opened, a number of categories are displayed down the left side. For examples of how these are used, the categories "Vegetative Productivity" and "Land Classifications" will be explored. (arrows below)

Opening the "Vegetative Productivity" caret produces a number of options. One that is very useful is the "Yields of non-irrigated crops". After opening this category, the following choices will appear. The menu under "basic options" will display a number of choices for "crops". In this example I have chosen pasture and after doing so clicked on "view rating".
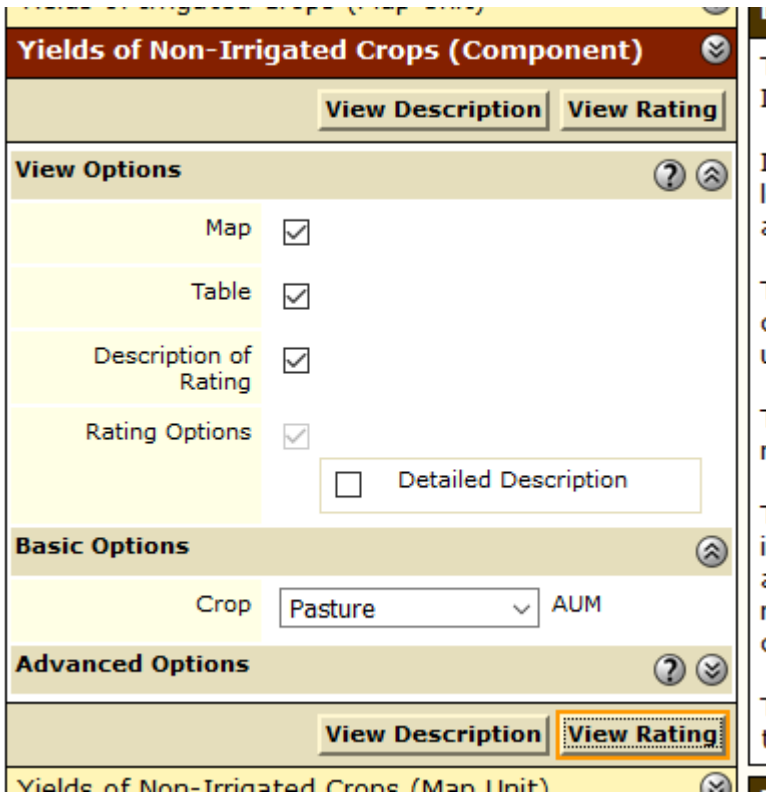
The number of months each soil type will support an animal unit (AUM) is given in the following table and classes shown in the map below the table.

Tables — Yields of Non-Irrigated Crops (Component): Pasture (AUM) — Summary By Map Unit

Summary by Map Unit — Bonner County Area, Idaho, Parts of Bonner and Boundary Counties (ID604)

Summary by Map Unit — Bonner County Area, Idaho, Parts of Bonner and Boundary Counties (ID604)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
14	Haploxeralfs and Xerochrepts, 30 to 55 percent slopes		5.2	0.3%
31	Mission silt loam, 0 to 2 percent slopes	6.25	281.2	18.3%
32	Mission silt loam, 2 to 12 percent slopes	6.44	779.3	50.8%
35	Pend Oreille silt loam, 5 to 45 percent slopes	5.33	18.6	1.2%
37	Pend Oreille-Rock outcrop complex, 5 to 45 percent slopes	3.67	11.5	0.7%
42	Pywell-Hoodoo complex, 0 to 1 percent slopes	10.47	94.1	6.1%
48	Selle fine sandy loam, 0 to 8 percent slopes	5.75	110.6	7.2%
50	Selle-Mission complex, 0 to 12 percent slopes	5.89	129.4	8.4%
55	Treble-Rock outcrop association, 20 to 65 percent slopes		99.6	6.5%
65	Water		5.4	0.4%
Totals for Area of Interest			**1,534.8**	**100.0%**

For any of the "yield" estimates under this category of non-irrigated crops the following description applies. In other words they are estimated yields under normal climate conditions and with a high level of management and they are based on records and experiences of farmers, etc.

Description — Yields of Non-Irrigated Crops (Component)

These are the estimated average yields per acre that can be expected of selected nonirrigated crops under a high level of management. In any given year, yields may be higher or lower than those indicated because of variations in rainfall and other climatic factors.

In the database, some state; maintain crop yield data by individual map unit component and others maintain the data at the map unit level. Attributes are included in this application for both, although only one or the other is likely to contain data for any given geographic area. This attribute uses data maintained at the map unit component level.

The yields are actually recorded as three separate values in the database. A low value and a high value indicate the range for the soil component. A "representative" value indicates the expected value for the component. For these yields, only the representative value is used.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby areas and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for the selected crop. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Another example of yields of non-irrigated crops is for grass-legume hay (below) and the results are shown in the table in units of tons/acre.

Yields of Non-Irrigated Crops (Component)

View Description | View Rating

View Options

Map ☑
Table ☑
Description of Rating ☑
Rating Options ☑
☐ Detailed Description

Basic Options

Crop | Grass-legume hay ▾ | Tons

Advanced Options

View Description | View Rating

Tables — Yields of Non-Irrigated Crops (Component): Grass-legume hay (Tons) — Summary By Map Unit

Summary by Map Unit — Bonner County Area, Idaho, Parts of Bonner and Boundary Counties (ID604)

Summary by Map Unit — Bonner County Area, Idaho, Parts of Bonner and Boundary Counties (ID604)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
14	Haploxeralfs and Xerochrepts, 30 to 55 percent slopes		5.2	0.3%
31	Mission silt loam, 0 to 2 percent slopes	2.59	281.2	18.3%
32	Mission silt loam, 2 to 12 percent slopes	2.66	779.3	50.8%
35	Pend Oreille silt loam, 5 to 45 percent slopes	2.13	18.6	1.2%
37	Pend Oreille-Rock outcrop complex, 5 to 45 percent slopes	1.47	11.5	0.7%
42	Pywell-Hoodoo complex, 0 to 1 percent slopes	4.29	94.1	6.1%
48	Selle fine sandy loam, 0 to 8 percent slopes	2.31	110.6	7.2%
50	Selle-Mission complex, 0 to 12 percent slopes	2.39	129.4	8.4%
55	Treble-Rock outcrop association, 20 to 65 percent slopes		99.6	6.5%
65	Water		5.4	0.4%
Totals for Area of Interest			**1,534.8**	**100.0%**

Description — Yields of Non-Irrigated Crops (Component)

And, another example is for bushels of oat yield per acre (set up panel, table and map below). Not that soils that are not suitable for cultivation of oats are left blank.

Yields of Non-Irrigated Crops (Component)

View Description   View Rating ?

View Options ? ⊗

Map	☑
Table	☑
Description of Rating	☑
Rating Options	☑
	☐ Detailed Description

Basic Options ⊗

Crop	Oats ⌄	Bu

Advanced Options ? ⊗

View Description   View Rating

Tables — Yields of Non-Irrigated Crops (Component): Oats (Bu) — Summary By Map Unit ⊗

Summary by Map Unit — Bonner County Area, Idaho, Parts of Bonner and Boundary Counties (ID604)

Summary by Map Unit — Bonner County Area, Idaho, Parts of Bonner and Boundary Counties (ID604) ⊗

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
14	Haploxeralfs and Xerochrepts, 30 to 55 percent slopes		5.2	0.3%
31	Mission silt loam, 0 to 2 percent slopes	75.00	281.2	18.3%
32	Mission silt loam, 2 to 12 percent slopes	70.31	779.3	50.8%
35	Pend Oreille silt loam, 5 to 45 percent slopes	5.00	18.6	1.2%
37	Pend Oreille-Rock outcrop complex, 5 to 45 percent slopes	5.00	11.5	0.7%
42	Pywell-Hoodoo complex, 0 to 1 percent slopes	70.88	94.1	6.1%
48	Selle fine sandy loam, 0 to 8 percent slopes	49.38	110.6	7.2%
50	Selle-Mission complex, 0 to 12 percent slopes	54.17	129.4	8.4%
55	Treble-Rock outcrop association, 20 to 65 percent slopes		99.6	6.5%
65	Water		5.4	0.4%
Totals for Area of Interest			**1,534.8**	**100.0%**
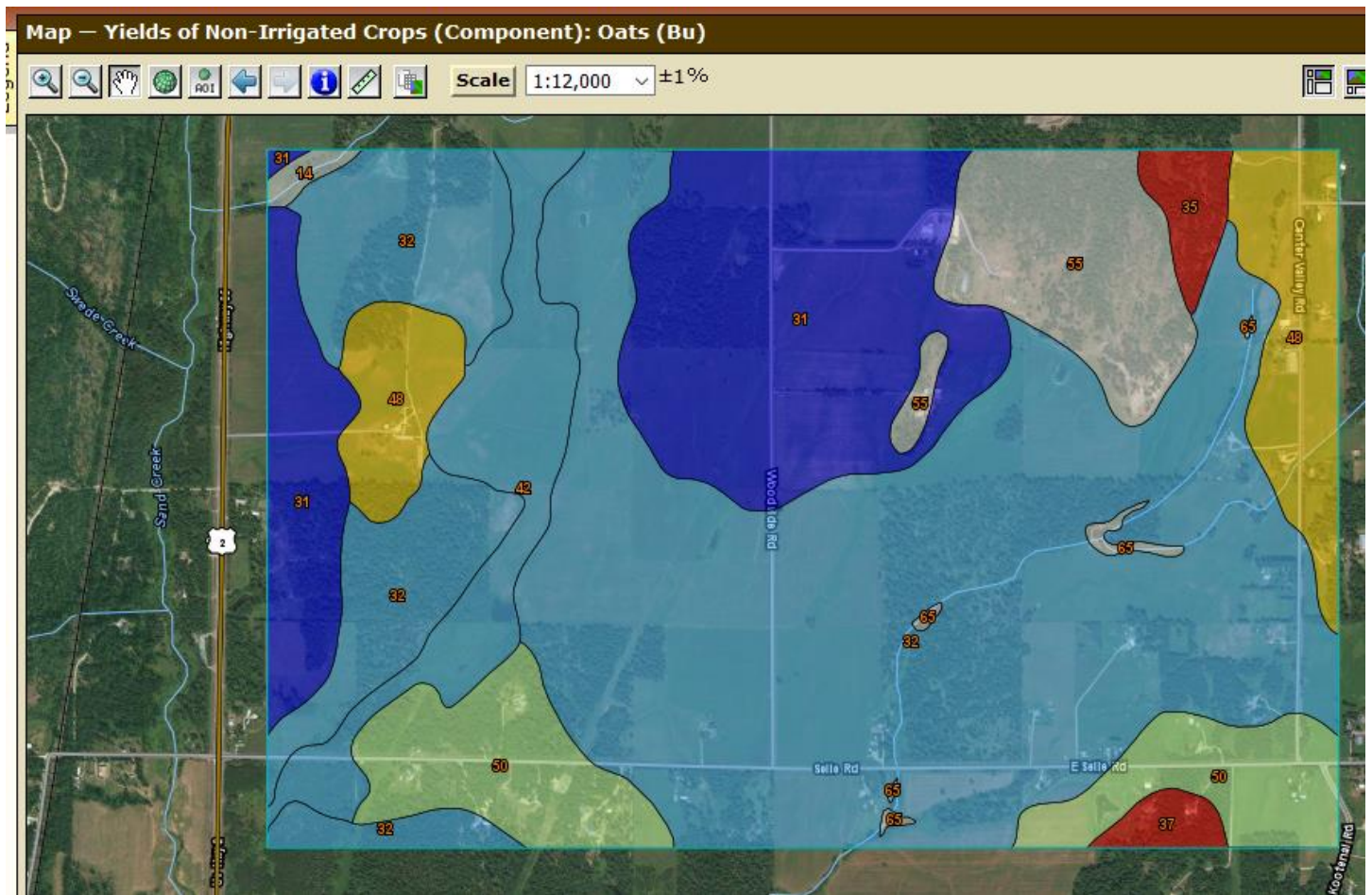
Other categories under "Vegetative Productivity" deal with potential for soils to support growth of various tree species. One such measure is site index. An example for ponderosa pine follows (setup panel, table, map below). Again, note that soils that are not recommended for planting ponderosa pine are not listed but they may be suitable for planting other species contained in the drop-down menu.

Summary by Map Unit — Bonner County Area, Idaho, Parts of Bonner and Boundary Counties (ID604)

Summary by Map Unit — Bonner County Area, Idaho, Parts of Bonner and Boundary Counties (ID604)

Map unit symbol	Map unit name	Rating (feet)	Acres in AOI	Percent of AOI
14	Haploxeralfs and Xerochrepts, 30 to 55 percent slopes		5.2	0.3%
31	Mission silt loam, 0 to 2 percent slopes		281.2	18.3%
32	Mission silt loam, 2 to 12 percent slopes		779.3	50.8%
35	Pend Oreille silt loam, 5 to 45 percent slopes		18.6	1.2%
37	Pend Oreille-Rock outcrop complex, 5 to 45 percent slopes		11.5	0.7%
42	Pywell-Hoodoo complex, 0 to 1 percent slopes		94.1	6.1%
48	Selle fine sandy loam, 0 to 8 percent slopes	104	110.6	7.2%
50	Selle-Mission complex, 0 to 12 percent slopes	104	129.4	8.4%
55	Treble-Rock outcrop association, 20 to 65 percent slopes	105	99.6	6.5%
65	Water		5.4	0.4%
Totals for Area of Interest			**1,534.8**	**100.0%**

Description — Forest Productivity (Tree Site Index)

The "site index" is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this attribute, only the representative value is used.

Map — Forest Productivity (Tree Site Index): ponderosa pine (Meyer 1961 (600))

Scale 1:12,000 ±1%
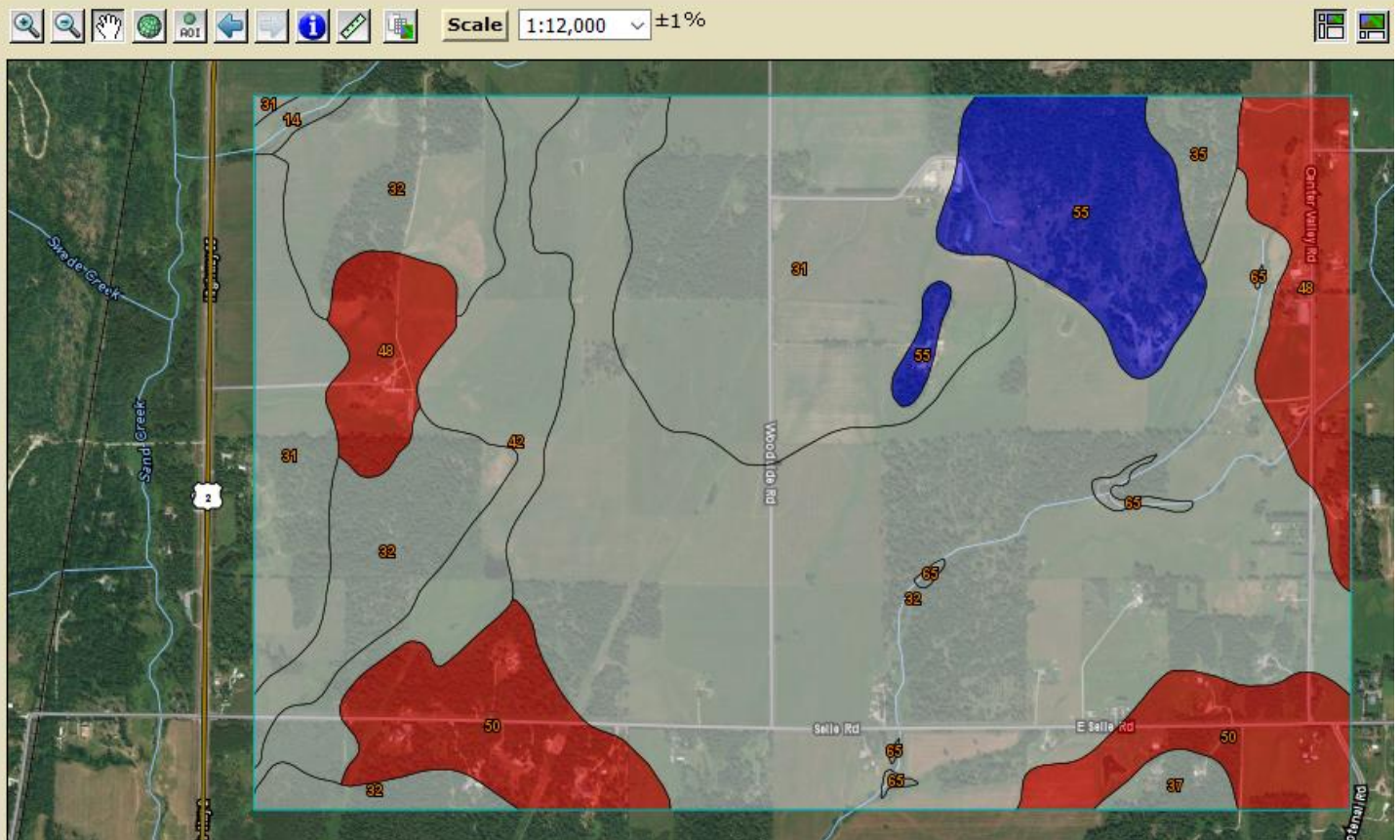
Also under the under the Suitabilities and Limitations for Use subtab under Soil Data Explorer is information on "Land Classifications". An example follows for Nonirrigated Capability Class. These classes define the limitations and suitabilities for the different soil properties. These limitations are explained in the description panel below. The usual table and map appear when "View Rating" is clicked.

Nonirrigated Capability Class

View Description | **View Rating**

View Options   ⑦ ⊗

Map	☑
Table	☑
Description of Rating	☑
Rating Options	☑
	☐ Detailed Description

Advanced Options   ⑦ ⊗

View Description | View Rating

Tables — Nonirrigated Capability Class — Summary By Map Unit

Summary by Map Unit — Bonner County Area, Idaho, Parts of Bonner and Boundary Counties (ID604)

Summary by Map Unit — Bonner County Area, Idaho, Parts of Bonner and Boundary Counties (ID604)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
14	Haploxeralfs and Xerochrepts, 30 to 55 percent slopes	7	5.2	0.3%
31	Mission silt loam, 0 to 2 percent slopes	6	281.2	18.3%
32	Mission silt loam, 2 to 12 percent slopes	6	779.3	50.8%
35	Pend Oreille silt loam, 5 to 45 percent slopes	6	18.6	1.2%
37	Pend Oreille-Rock outcrop complex, 5 to 45 percent slopes	6	11.5	0.7%
42	Pywell-Hoodoo complex, 0 to 1 percent slopes	5	94.1	6.1%
48	Selle fine sandy loam, 0 to 8 percent slopes	4	110.6	7.2%
50	Selle-Mission complex, 0 to 12 percent slopes	4	129.4	8.4%
55	Treble-Rock outcrop association, 20 to 65 percent slopes	4	99.6	6.5%
65	Water		5.4	0.4%
Totals for Area of Interest			**1,534.8**	**100.0%**

Description — Nonirrigated Capability Class

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 that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Only class and subclass are included in this data set.

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 few limitations that restrict their use.

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

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

Class 4 soils have very severe limitations that reduce 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.

Map — Nonirrigated Capability Class
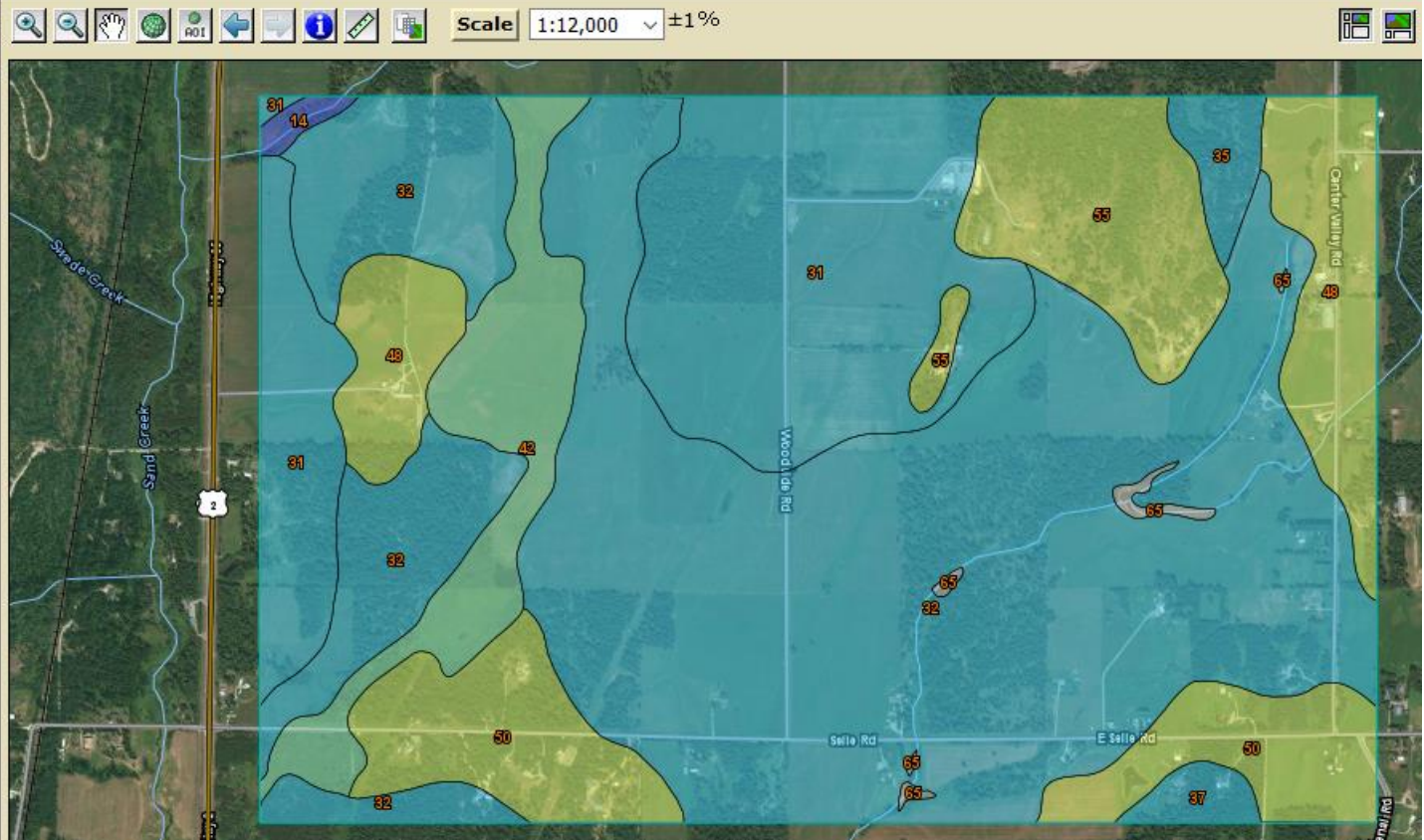
Finally, for those few who are interested in the technical terminology used by the Natural Resources Conservation Service of the USDA (and some other world organizations) to classify soils, it too can be found in the Web Soil Survey data base. This classification system is roughly analogous in its structure to the classification system used for plants and animals. A brief explanation of the various classification levels is given in the description below. The soils in the last example from Bonner County Idaho are classified, described and mapped below. Interestingly, soils from four orders are represented in this approximately 1500 acre parcel.

Soil Taxonomy Classification

View Description | View Rating

View Options

- Map ☑
- Table ☑
- Description of Rating ☑
- Rating Options ☑
  - ☐ Detailed Description

Advanced Options

View Description | View Rating

and Management

Tables — Soil Taxonomy Classification — Summary By Map Unit

Summary by Map Unit — Bonner County Area, Idaho, Parts of Bonner and Boundary Counties (ID604)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
14	Haploxeralfs and Xerochrepts, 30 to 55 percent slopes	Haploxeralfs	5.2	0.3%
31	Mission silt loam, 0 to 2 percent slopes	Medial, frigid Ochreptic Fragixeralfs	281.2	18.3%
32	Mission silt loam, 2 to 12 percent slopes	Ashy, glassy, frigid Andic Fragiudalfs	779.3	50.8%
35	Pend Oreille silt loam, 5 to 45 percent slopes	Ashy over loamy, glassy over mixed, superactive, frigid Alfic Udivitrands	18.6	1.2%
37	Pend Oreille-Rock outcrop complex, 5 to 45 percent slopes	Ashy over loamy, glassy over mixed, superactive, frigid Alfic Udivitrands	11.5	0.7%
42	Pywell-Hoodoo complex, 0 to 1 percent slopes	Euic Typic Borosaprists	94.1	6.1%
48	Selle fine sandy loam, 0 to 8 percent slopes	Sandy, mixed, frigid Vitrandic Dystrudepts	110.6	7.2%
50	Selle-Mission complex, 0 to 12 percent slopes	Sandy, mixed, frigid Vitrandic Dystrudepts	129.4	8.4%
55	Treble-Rock outcrop association, 20 to 65 percent slopes	Loamy-skeletal, mixed, active, frigid Vitrandic Haploxerepts	99.6	6.5%
65	Water		5.4	0.4%

Description — Soil Taxonomy Classification

This rating presents the taxonomic classification based on Soil Taxonomy.

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.

Map — Soil Taxonomy Classification
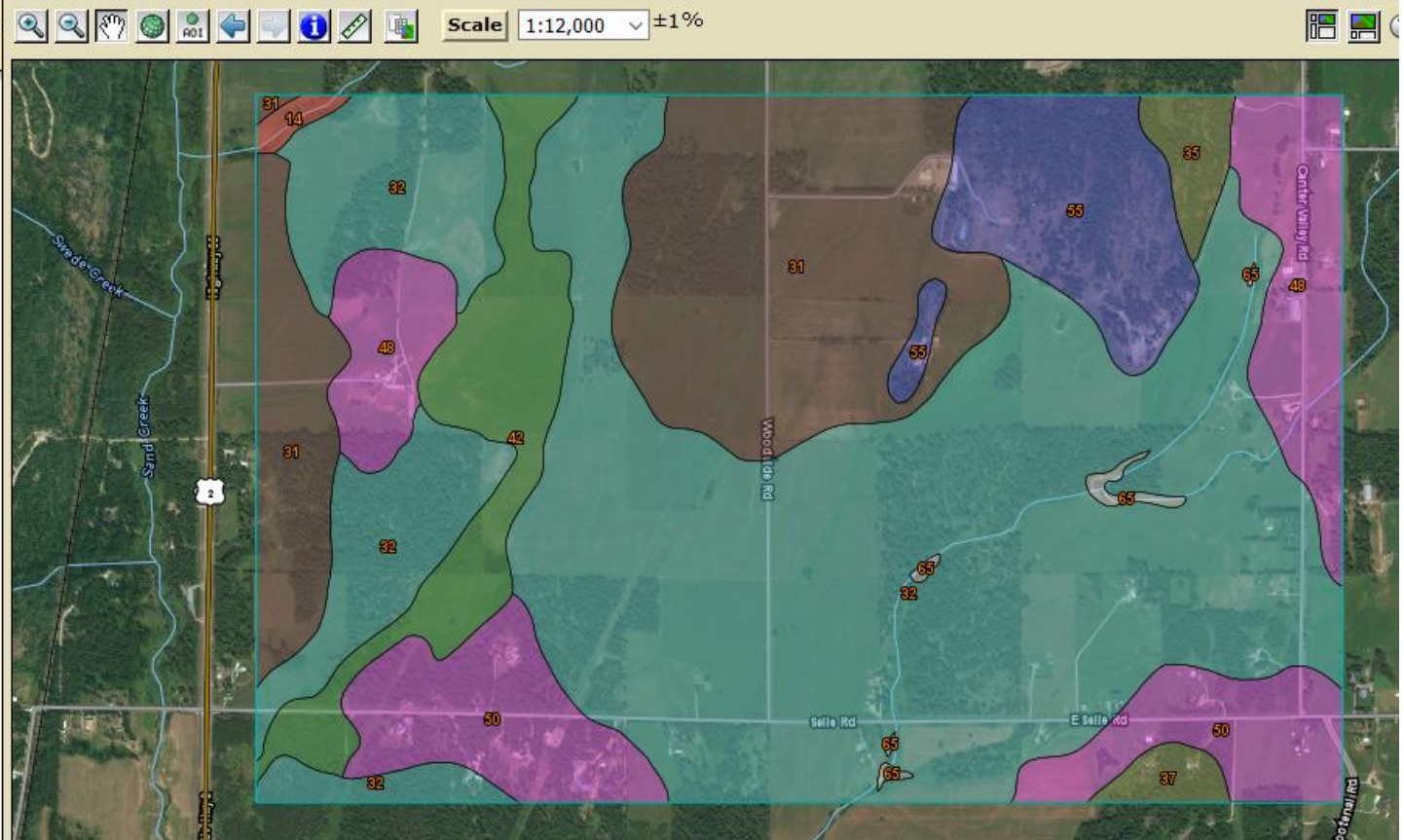
A final word: This guide is just a beginning. There are many things to explore in the data base on which the Web Soil Survey is based. We doubt that any one person has explored them all. You might want to be the first. Have Fun.