Using Web Soil Survey – the Four Steps

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Access digital soils data in four easy steps

1. Define.
   Use the **Area of Interest** tab to define your area of interest. You can navigate to an area by zooming in on a map or by selecting from a Quick Navigation choice list. After you find the area, define it as the Area of Interest (AOI) by drawing a rectangle or a polygon around it using a map tool. You must complete this step before you can go on to the next three steps.

2. View.
   Click the **Soil Map** tab to view or print a map of the soils in your area and view a description of the soils.

3. Explore.
   Click the **Soil Data Explorer** tab to access soil data for your area and determine the suitability of the soils for a particular use. The items you want saved in a report can be added to your shopping cart.

4. Check Out.
   Use the **Shopping Cart (Free)** tab to get your custom report immediately or download it later.

[https://websoilsurvey.sc.egov.usda.gov/](https://websoilsurvey.sc.egov.usda.gov/)
1. **DEFINE an Area of Interest (AOI)**

There are many ways to **define your AOI** in WSS.

You can also **import multipart areas** from a **shapefile**!
1. DEFINE an Area of Interest (SoilWeb)

1. Navigate to UCDavis CA Soil Resource Lab Google Maps App
   https://casoilresource.lawr.ucdavis.edu/gmap/

2. Open the Menu to Zoom To Location

3. Click ‘Link to WSS’

4. View SoilWeb AOI in Web Soil Survey

Alternately, you can find your AOI using the SoilWeb Google Maps App - just click “Link to WSS” in the top-right corner to import the map panel as your AOI.
2. VIEW the Soil Map

1. CLICK "Soil Map" to see your AOI

2. Map is published at 1:24,000 scale (you need to specify monitor # of pixels-per-inch)

3. Click **Legend** to toggle non-soil layers displayed on map (included in final report)

4. CLICK on links in the **Map Unit Legend** to view individual **Map Unit Descriptions**
3. EXPLORE the Data (Map Unit Descriptions)

Where is the map unit used? What it is called?

What soils occur in the map unit?

Major (named) components:
- Setting (landform, parent material)
- Typical profile (horizons, depths, texture)
- Properties and restrictions
- Interpretive classes and groups

Minor components: emphasize landform and ecological site differences
3. EXPLORE the Data (Suitability / Limitations)

EXAMPLE 1. VIEWING A RATING - California (Revised) Storie Index

View Rating colors polygons with rating classes

View Description describes the factors considered in the rating

The Revised Storie Index assesses the productivity of a soil from the following four characteristics:

- Factor A: degree of soil profile development
- Factor B: texture of the surface layer
- Factor C: steepness of slope
- Factor X: drainage class, landform, erosion class, flooding and ponding frequency and duration, soil pH, soluble salt content as measured by electrical conductivity, and sodium adsorption ratio

Revised Storie Index numerical ratings have been combined into six classes as follows:

- Grade 1: Excellent (81 to 100)
- Grade 2: Good (61 to 80)
- Grade 3: Fair (41 to 60)
- Grade 4: Poor (21 to 40)
- Grade 5: Very poor (11 to 20)
- Grade 6: Nonagricultural (10 or less)
3. EXPLORE the Data (Suitability / Limitations)

### Tables — California Revised Storie Index (CA) — Summary By Map Unit

<table>
<thead>
<tr>
<th>Map unit symbol</th>
<th>Map unit name</th>
<th>Grade</th>
<th>Component name (percent)</th>
<th>Acres in AOT</th>
<th>Percent of AOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>3020</td>
<td>Iron Mountain-Rock outcrop complex, 3 to 15 percent slopes</td>
<td>Grade 5 - Very Poor</td>
<td>Iron Mountain (75%)</td>
<td>5.7</td>
<td>0.0%</td>
</tr>
<tr>
<td>3021</td>
<td>Iron Mountain-Crozier-Rock outcrop complex, 15 to 60 percent slopes</td>
<td>Grade 6 - Nonagricultural</td>
<td>Iron Mountain (40%)</td>
<td>34.4</td>
<td>0.2%</td>
</tr>
<tr>
<td>6070</td>
<td>Sierra-Verjeles-Aquic Haploxerafs complex, 0 to 8 percent slopes</td>
<td>Grade 3 - Fair</td>
<td>Verjeles (36%), Aquic Haploxerafs (15%)</td>
<td>2,728.4</td>
<td>14.7%</td>
</tr>
<tr>
<td>6071</td>
<td>Sierra-Flanly complex, 3 to 15 percent slopes</td>
<td>Grade 3 - Fair</td>
<td>Flanly (40%), Hurlton (10%)</td>
<td>438.2</td>
<td>2.4%</td>
</tr>
<tr>
<td>6074</td>
<td>Sierra-Orose complex, 8 to 30 percent slopes</td>
<td>Grade 2 - Good</td>
<td>Sierra (70%)</td>
<td>4,796.7</td>
<td>25.8%</td>
</tr>
<tr>
<td>6075</td>
<td>Sierra-Flanly complex, 30 to 60 percent slopes</td>
<td>Grade 3 - Fair</td>
<td>Sierra (50%), Flanly (30%)</td>
<td>1,194.5</td>
<td>6.4%</td>
</tr>
<tr>
<td>6076</td>
<td>Auberry-Hurlton-Rock outcrop complex, 20 to 60 percent slopes</td>
<td>Grade 3 - Fair</td>
<td>Auberry (45%)</td>
<td>902.2</td>
<td>4.8%</td>
</tr>
<tr>
<td>6202</td>
<td>Musick-Ultic Haploxerafs, moderately well drained, 1 to 8 percent slopes</td>
<td>Grade 1 - Excellent</td>
<td>Musick (60%)</td>
<td>202.6</td>
<td>1.1%</td>
</tr>
<tr>
<td>6205</td>
<td>Musick fine sandy loam, 3 to 8 percent slopes</td>
<td>Grade 1 - Excellent</td>
<td>Musick (88%), Wukusick (5%)</td>
<td>116.2</td>
<td>0.6%</td>
</tr>
<tr>
<td>6206</td>
<td>Musick-Hotaw complex, 8 to 30 percent slopes</td>
<td>Grade 2 - Good</td>
<td>Musick (64%), Wukusick (5%)</td>
<td>1,569.2</td>
<td>8.4%</td>
</tr>
<tr>
<td>6207</td>
<td>Musick-Hotaw-Chawanakee complex, 30 to 60 percent slopes</td>
<td>Grade 3 - Fair</td>
<td>Musick (55%), Hotaw (20%), Wukusick (5%)</td>
<td>964.0</td>
<td>5.2%</td>
</tr>
</tbody>
</table>

**Storie Grade**: lower grade is “better” (more suited to irrigated ag.)

- **Grades 5 and 6**: Very shallow soils on wide range of slopes
- **Grade 3**: Moderately deep soils on low slopes (<15%)
- **Grades 2 and 3**: Deep or moderately deep soils (on steeper slopes)
- **Grade 1**: Very deep soils on low slopes

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**EXAMPLE 1. VIEWING A RATING - California (Revised) Storie Index**
3. EXPLORE the Data (Soil Properties)

Using **Advanced Options**, you can change the way ratings are generated for Map Units that have several soil components.

**COMPONENT AGGREGATION METHODS**

- **Dominant Condition**: apply rating to all components; add percentages in each rating class; returns rating for most prevalent rating class
- **Dominant Component**: returns rating of component with highest percentage
- **Weighted-average**: apply rating to all components; returns the component-percentage-weighted-average rating
- **Minimum or Maximum**: apply rating to all components; returns the most/least limiting/suitable rating

**EXAMPLE 2. ADVANCED COMPONENT AGGREGATION**
3. EXPLORE the Data (Soil Properties)

Also, in Advanced Options you can set rules for excluding data/components, as well as averaging horizon data (across depth) within components.

**ADVANCED OPTIONS**
- **Component Percent Cutoff**: ignore all components with percentage less than this number.
- **Tie-break Rule**: In case of a tie when determining dominance, return the lower or higher rating?
- **Interpret Nulls as Zero**: Fill in empty values with zero? (be careful)

**HORIZON AGGREGATION**
- **Surface layer**: only use surface horizon?
- **All Layers**: rate by depth-weighted-average of all layers in each component
- **Depth range**: Calculate depth-weighted average of the layers in range specified
3. EXPLORE the Data (Soil Properties)

Want to return the most acidic (minimum) component that is less than 15% of mapunit.

Ignore components that are less than 15% of mapunit.

Be “conservative” for ties; lower pH is more acidic; in CA630, most soils tend to be at least slightly acidic and the lower values will generally be “more limiting”.

Calculate the depth weighted-average pH for each component for soil layers within 0-10cm depth interval.

**GOAL**: Show the “most limiting” soil pH in upper 10 cm (4 inches).
In addition to suitability/limitation/property ratings, the **Soil Data Explorer** tab allows you to review basic soil science definitions and Ecological Site information.

Also, you can generate independent **Soil Reports** to summarize various classifications, interpretations and soil properties in a tabular format.
4. CHECK OUT (make custom resource report)

1. Set report subtitle and output size

2. Check Table of Contents (note items added under Soil Data Explorer section)

3. Check Out (top right corner of WSS window)!

4. View or print PDF output

- Custom Soil Resource Report for Central Sierra Foothills Area, California, Parts of Calaveras and Tuolumne Counties: Sonora, CA Area
  - Cover
  - Preface
  - Contents
  - How Soil Surveys Are Made
  - Soil Map
    - Soil Map
    - Map Unit Legend
    - Map Unit Description
  - Soil Data Explorer
    - All Uses
      - Suitabilities and Limitations for Use
        - Land Classifications
          - California Revised Storie Index (CA): Sonora, CA Area
        - Soil Properties and Qualities
          - Soil Chemical Properties
            - pH (1 to 1 Water): Sonora, CA Area
          - Soil Reports
            - Land Management
              - Damage by Fire and Seedling Mortality on Forestland: Sonora, CA Area
Optional: Skipping the AOI

For GIS/external use -- directly download SSURGO data in .ZIP format via ‘Download Soils Data’ tab

- No need to specify AOI
- Search soil surveys by State/County
- Tabular data delivered as MS Access database
- Spatial layers delivered as shapefile