Using SSURGO to Find Ecological Site Information

This guide shows how the SSURGO geodatabase can be used to find ecological site information, based on the user's location, and to show where specific sites are mapped in the spatial data. It explains how to find tabular data from a spatial location as well as how to find the spatial location of tabular data.

Finding Tabular Data from a Spatial Location

This section provides a short overview of using the Identify tool to find and display tabular data, based on the spatial location or the specific map unit polygon. It assumes that you are working in ArcMap, with the *Mapunit Polygon* soils layer loaded. The relevant subtables may be loaded as well, but this is not necessary. The example in this guide shows how to find the ecological sites within a particular map unit.

Clicking on a polygon with the Identify tool brings up the Identify window (pictured below). From here, it is a good idea to set the data layer from which the Identify tool will pull its results. Click the drop-down arrow next to the right of "Identify from" and select the soils polygon layer you are using. Now, if you click on one of the polygons in the soils polygon layer, the Identify window will appear (similar to the example below).

The layer that the Identify tool queried when clicked.

The primary field from the selected attribute.

The attributes of the selected polygon.

If you are interested in more information on how the Identify tool works in general, you can open the ArcMap Desktop Help (**Help →
ArcGIS Desktop Help**). In the Help's Table of Contents, navigate to **Mapping → Working
with layers → Interacting with layer
contents → Identifying features.**

The Identify window also can be used to drill down through the related SSURGO tables that were exported from NASIS. Expanding the headings under the spatial data polygon shows the related Mapunit Table, then the specific Mapunit Table records that are related to the selected soil polygon.

The name of the related table. *(Note: This name will be the raw name, as in the example, if the table is loaded into ArcMap. Otherwise, the more descriptive alias will be displayed.)*

The primary field attribute for the selected Mapunit Table record. In this case, it is the map unit name.

This shows the fields and their attributes for the selected Mapunit Table record.

Expanding the Mapunit Table record shows the related child tables. Table names with a plus sign (+) next to them have related records available for viewing. Expanding those tables and selecting the records under them will display those fields and their attributes in the lower window of the Identify tool.
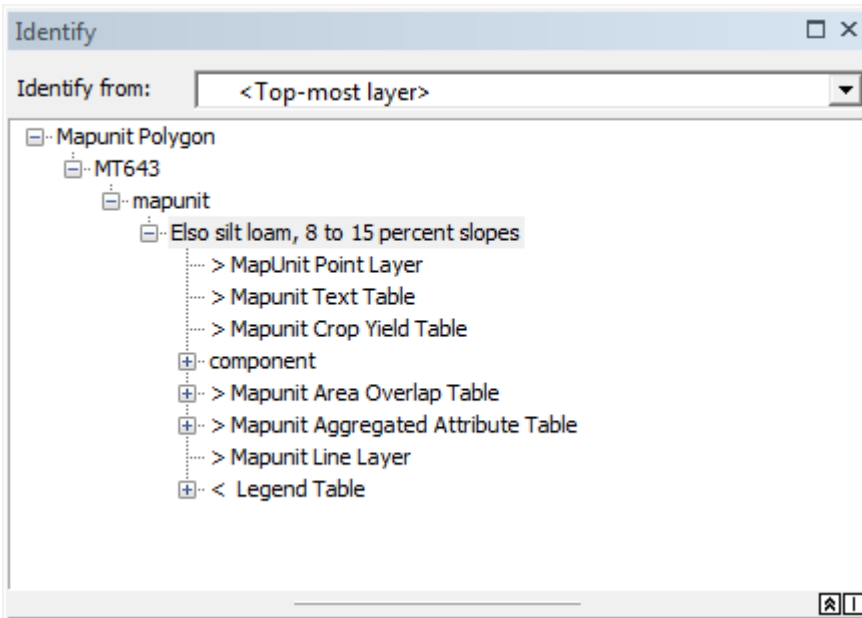
Since this example is aimed at finding the ecological site, the next step is to expand the Component Table. This will show the individual components that are associated with the currently selected map unit. Highlighting an individual component will display that component's attributes in the Component Table.
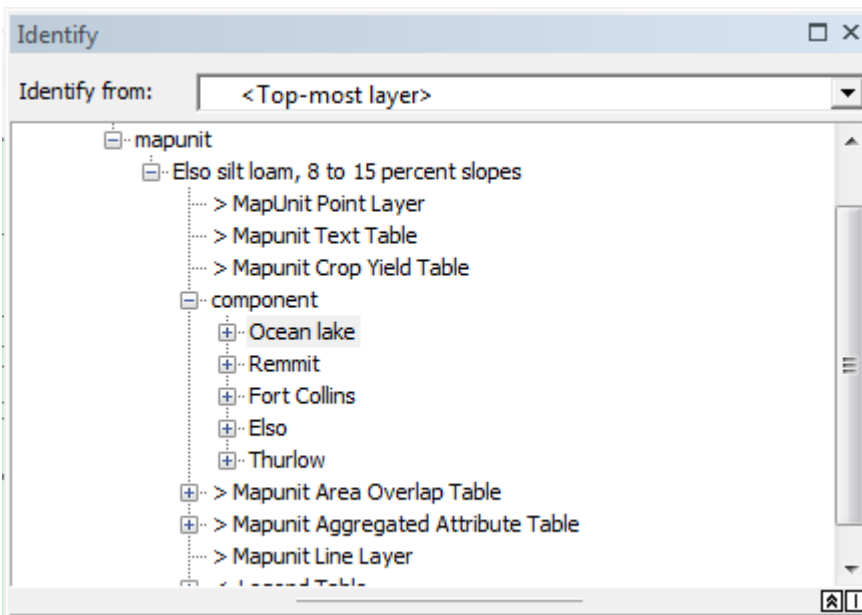
To get to the ecological classification table, select a component (in this example, Ocean Lake) and expand the subheadings under it. The child tables linked to the component are available to select. For the ecological site information, expand the Component Ecological Classification Table and highlight "NRCS Rangeland Site."

Once selected, the NRCS Rangeland Site entry will display the Component Ecological Classification Table. If the table is loaded into the current ArcMap project, "coecoclass" is displayed.

Finding the Spatial Location of Tabular Data

For this section, the Soil Data Mart Snapshot dataset is necessary. It has the SSURGO data, both spatial and tabular, as they currently exist on the Soil Data Mart and Web Soil Survey.

This guide provides an example of how to find where particular tabular features are mapped in the spatial data. For this example, you will look for a specific ecological site and create a polygon feature class showing where that site is mapped. You will restrict the output to those polygons where the site is mapped to a major component.

To start, load the Component Ecological Classification Table (coecoclass) into ArcMap. The other tables also can be loaded if you prefer, but the process of opening them through the Related Tables link will load them as needed. Below is the coecoclass table.

The table above can be created in the Select by Attributes window by either:

> **A search by the ecological site ID: ecoclassid = 'R079XY012KS'**

> **A search for the ecological site name: ecoclassname = Limy Upland (PE 21-28)**

You can use either option for selecting ecological sites according to your individual needs. Selecting by the **ecological site ID** is more precise and less prone to errors in the data. However, this may not get all the occurrences of a particular ecological site if it crosses State or MLRA boundaries. Selecting by the **ecological site name** (in this case, Limy Upland (PE 21-28)) will get the sites across State and MLRA boundaries, but only the sites with the exact name. To get sites that have Limy Upland in the name, regardless of precipitation zone, etc., you can use a search query like:

> **"ecoclassid" LIKE "%Limy Upland%"**

This will get the sites that have "Limy Upland" somewhere in the name. Once you are assured that you have the sites you want, and only the sites you want, you can move to the next step.


Using the Related Tables

(Related Tables button on the Table menu)

One of the main useful abilities of this SSURGO geodatabase is the ability to follow relationship connections to get from one related table to another and then to the spatial data. The tables involved in this process are the Spatial Data Attribute Table and three tables from the NASIS export, i.e., Mapunit, Component, and Component Ecological Classification. In the hierarchy, from top to bottom, the tables proceed as Spatial Data Attribute Table → Mapunit Table → Component Table → Component Ecological Classification Table.

In this exercise, however, you are starting at the Component Ecological Classification Table and navigating up the path to the spatial polygons. At this point you should already have the ecological sites you want selected (Limy Upland in this case). When you click on the Related Tables button (circled in the image above), you will get a drop-down menu showing the tables that are related to the current table. In this case, there is only one table related to the Component Ecological Classification Table. Select the Component Table option (as indicated below).
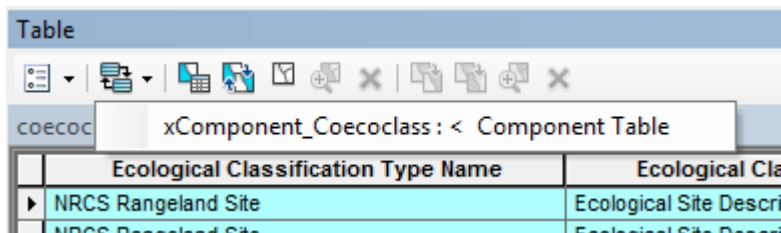
This will open the Component Table from the SSURGO geodatabase, loading it into ArcMap if it is not already there. The Component Table will have the components selected that have the chosen ecological sites assigned to them. At this point, there is the option to select the specific components. In particular, the Major Component Flag (majcompflag) identifies the components that are major components in their particular map units. Once the components are chosen, the next step is to select the map units that contain the chosen components.

As before, moving from the Component Table to the Mapunit Table requires the Related Tables button:
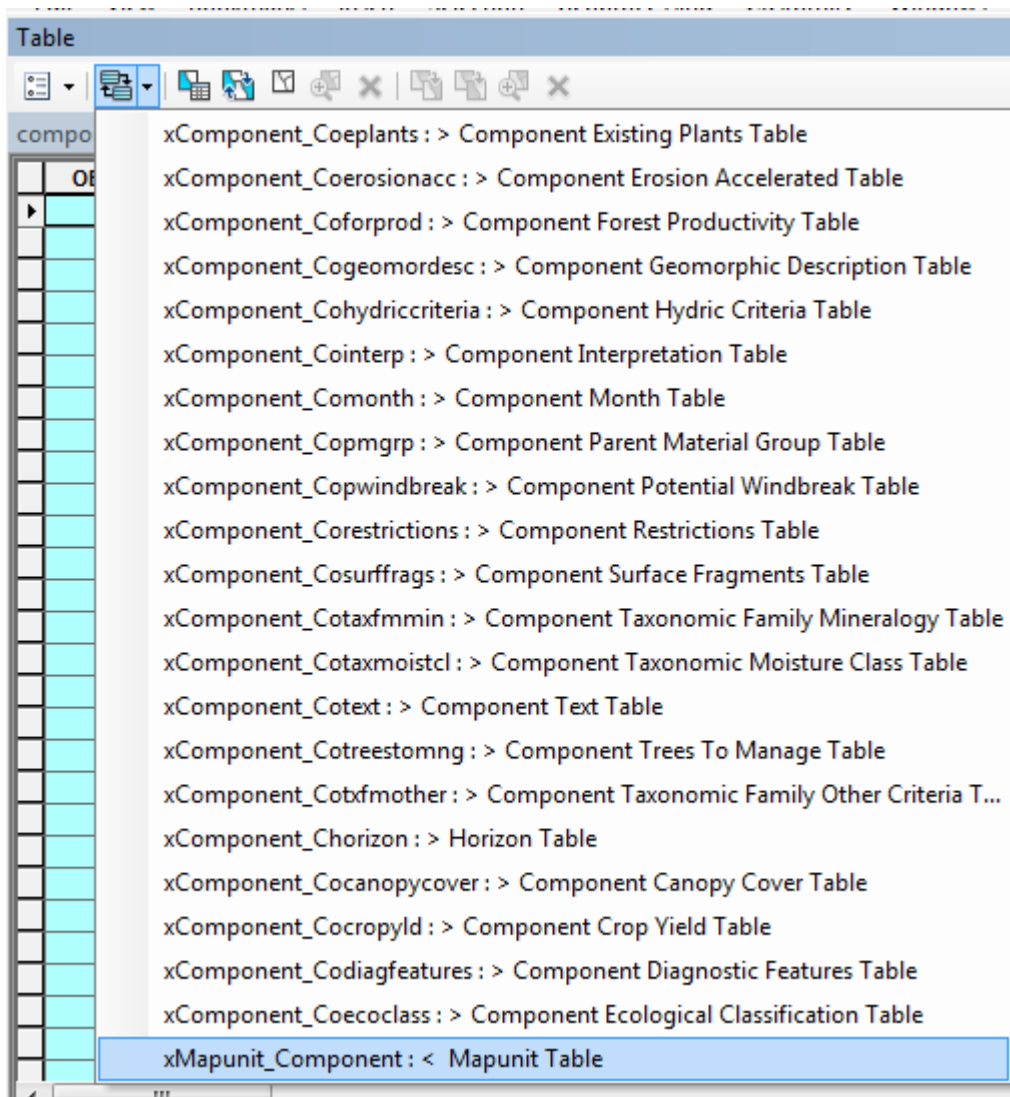
This step has many more choices, as the Component Table connects to a much larger number of tables. Note that the list above shows connections to tables under the Component Table (indicated with the ">" symbol) and one connection to a table above the Component Table (indicated with a "<" symbol). Since you are moving upward in the hierarchy, you are interested in the Mapunit Table above the Component Table.

When you open the Mapunit Table (from the SSURGO geodatabase), it is loaded into ArcMap if it is not already present. Note that this is the NASIS Mapunit Table, not the Spatial Data Attribute Table. It will have the map unit name, acres, etc. that are in the NASIS Mapunit Table. Typically, there is not much selecting at this step. You can choose specific map units or remove map units from the selected set.

From here, use the Related Tables button again to move from the Mapunit Table to the Polygon Attribute Table (thus selecting the polygons).
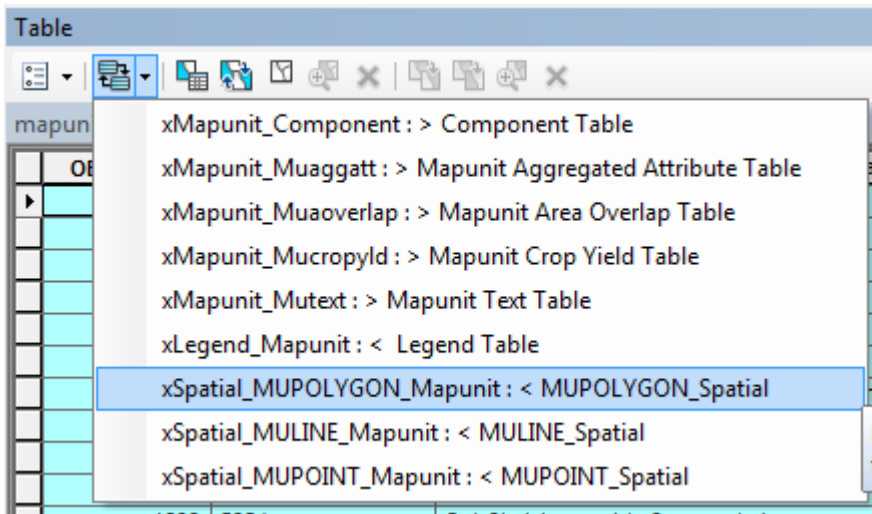
As indicated, you are looking for the MUPOLYGON_Spatial Table. Open the Polygon Attribute Table and select the polygons that are related to the map units you selected in the previous step. When looking at the results, keep in mind the choices you made through the process. If you did not add or remove anything from your selections (after selecting the ecological sites in the coecoclass table), then the results are the polygons that have your selected sites mapped somewhere within them.

If you removed the components that were not flagged as major components at the Component Table step, then your results will be only those polygons with ecological site(s) mapped to a major component.

Exporting Selected Polygons

To make a separate shapefile containing your selected polygons, right-click on the polygon layer in the ArcMap Table Of Contents. In that context menu, select Data → Export Data…
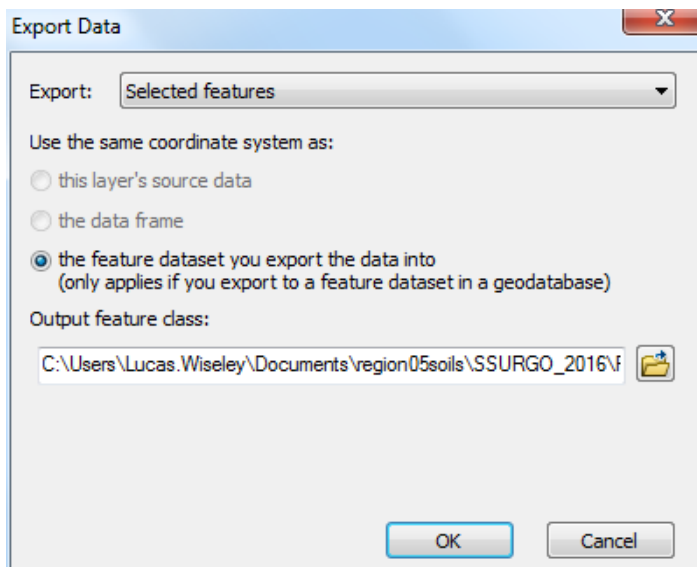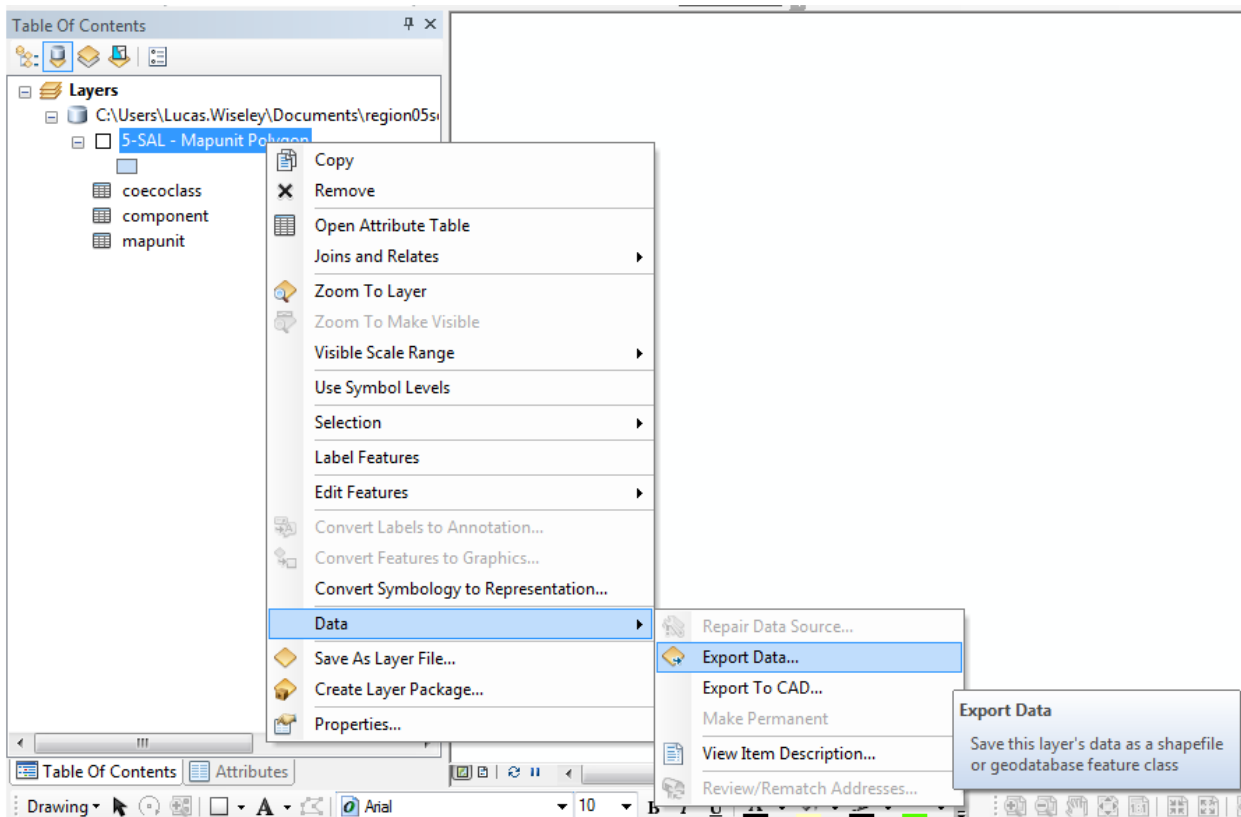
With the polygons selected, the Export Data dialog box will default to something similar to the image at left. Make sure that "Export" shows "Selected features." Specify the output feature class, identifying where you want the shapefile to be and creating an appropriate name.