



# Soil Survey Geographic Database (SSURGO) Portal User Guide

August 2023



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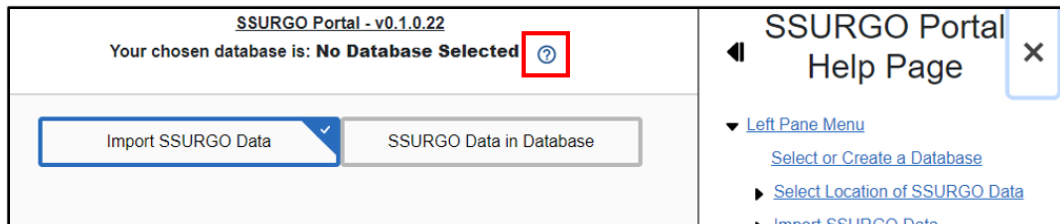
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## 1. Overview

This document provides step by step instructions for:

1. Downloading SSURGO data from Web Soil Survey
2. Using SSURGO Portal to populate SQLite SSURGO Template databases
3. Opening databases in DB Browser and ArcGIS Pro

While this document contains clear process steps, additional details about the SSURGO Portal tool are available in the **SSURGO Portal Help Page**. Click on the help menu question mark icon within SSURGO Portal.



This guide assumes the following:

- Your operating system is Windows 10 or greater.<sup>1</sup>
- You have installed SSURGO Portal according to the *SSURGO Portal Installation Guide* or *Quick Start Guide*.
- You have installed DB Browser according to the *SSURGO Portal Installation Guide*.
- You have ArcGIS Pro installed on your computer.

## 2. Acquire SSURGO Data

**You can skip this section and proceed to section 3, “Open SSURGO Portal” if you have already acquired SSURGO data.**

Before using SSURGO Portal, you will need to acquire SSURGO data from Web Soil Survey (WSS) so you can import it into the SQLite SSURGO Template. There are two methods for downloading SSURGO data packages from WSS. The tabular data you download in both methods is identical, but the naming schema of the spatial data is slightly different. SSURGO Portal will work with both versions, and you can import both into the same SQLite SSURGO Template database.

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<sup>1</sup> While SSURGO Portal is designed to work with Windows 10, it should also work with Windows 11 and Ubuntu.

1. Standard SSURGO
  - a. SSURGO for an entire Soil Survey Area (SSA)
  - b. Can only contain one SSA
2. Custom Areas of Interest (AOI) SSURGO
  - a. SSURGO for a custom area of interest set by the WSS user
  - b. Can contain subsets of one or more SSAs

## 2.1. Standard SSURGO

Standard SSURGO data packages are available for all SSAs in the United States and Island Territories, although soils for some SSAs have not been mapped or have only partially been mapped. The unmapped areas will not contain any soil properties or interpretations. The “NOTCOM - Not Completed Areas” map unit will represent these unmapped areas. Refer to the **Soil Survey Status** section of WSS for an up-to-date map showing the status of soil mapping in SSURGO.

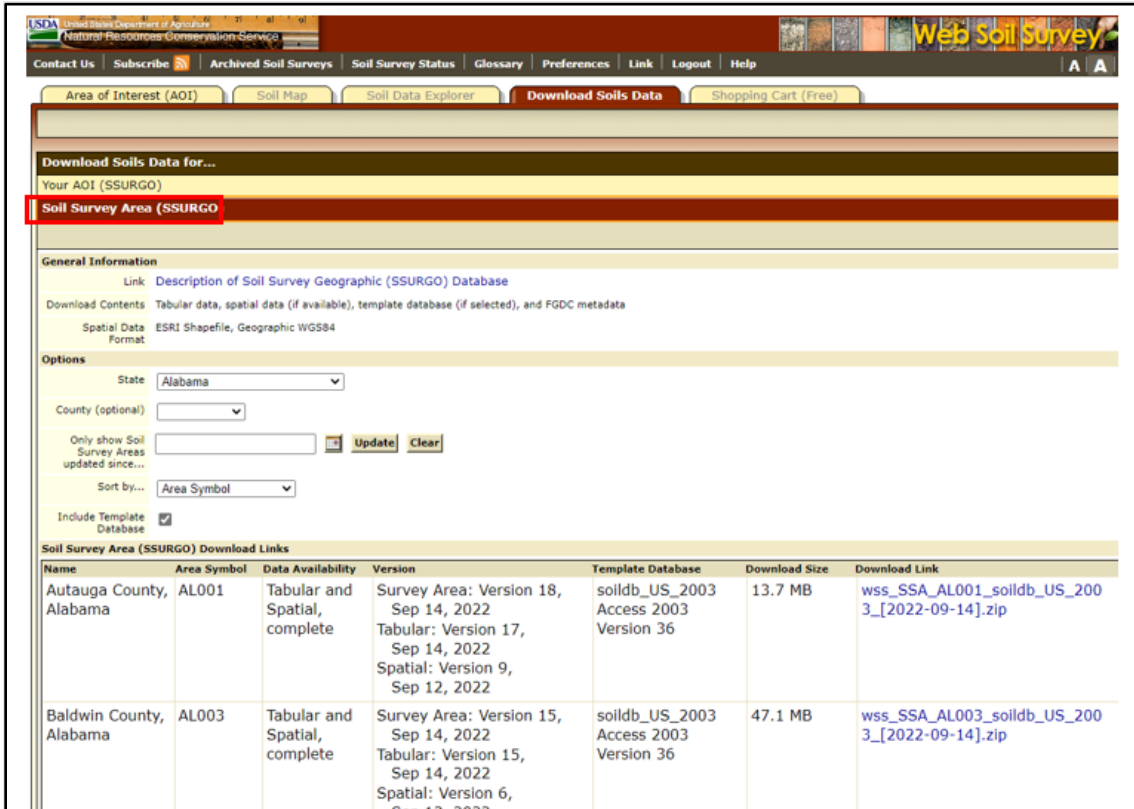


An SSA is roughly the same scale as a county boundary. The SSA is often identical to a county, but in some areas the SSA conforms to other political units such as federal lands or tribal lands.

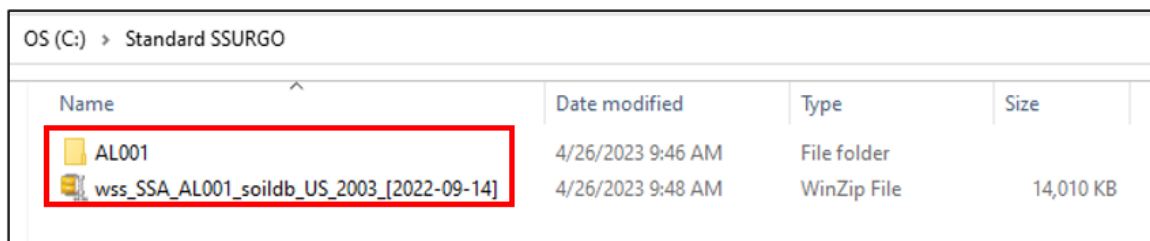
You can download standard SSURGO data directly from WSS or download it indirectly from WSS with the SSURGO Bulk Downloader GIS tool. WSS only allows you to download one SSA at a time, but it is a simple way to acquire SSURGO. The Bulk SSURGO Downloader GIS tool allows you to download many SSAs at a time from WSS, but it does require you to install a GIS tool and run it from GIS software.

### 2.1.1 Download directly from Web Soil Survey

1. Navigate to [Web Soil Survey](#) and click the **Download Soils Data** tab. Then click **Soil Survey Area (SSURGO)**.



2. Use **Soil Survey Area (SSURGO)** to download SSURGO data to a local folder of your choice. A browser will typically default to your Downloads folder, but you should be able to change the location. In this page, you can sort and filter soil data by **State** and **County** (county is optional).
3. Unzip the zip file to the folder. You should see both the zip file and a folder after unzipping.



4. The zip file is no longer required after unzipping; you can delete it.
5. The folder is named after the 5-character area symbol for the SSA.

### 2.1.2. Bulk SSURGO Downloader

Refer to the [SSURGO Portal webpage](#) to acquire the SSURGO Bulk Downloader GIS tool and user instructions.

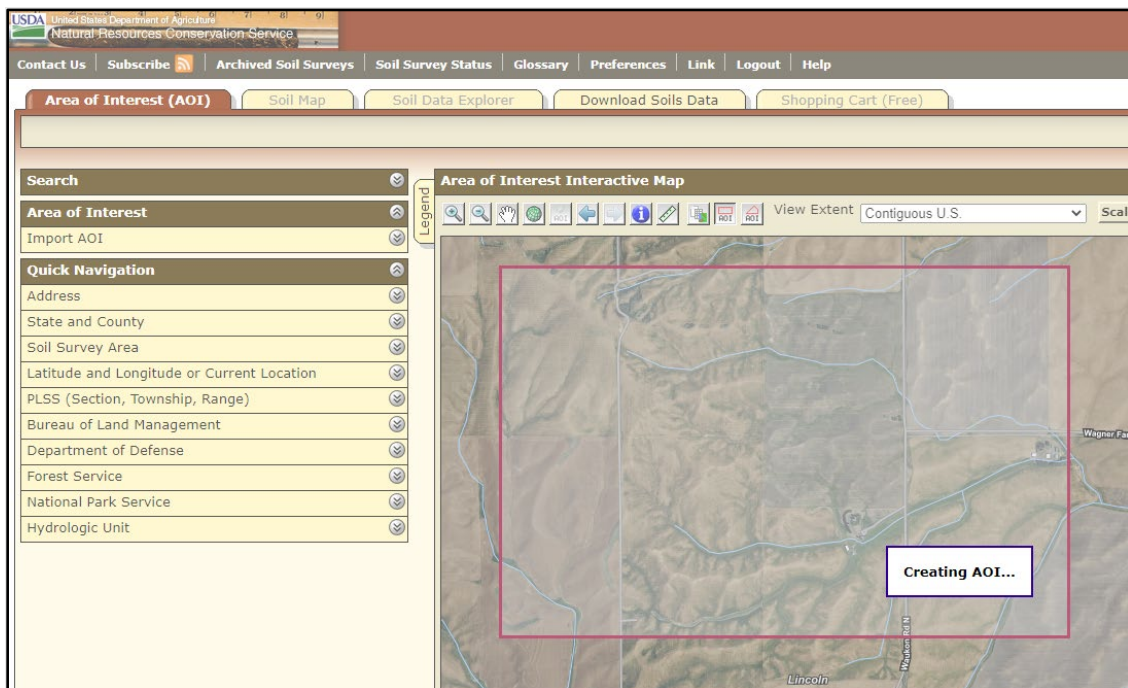
## 2.2. AOI SSURGO

AOI SSURGO is available when you create a custom AOI (area of interest) in WSS. These are areas that do not conform to an SSA boundary. You can create them by either hand drawing the AOI within WSS or importing a shapefile. They cannot be larger than 100,000 acres, but they can contain sections of more than one SSA.

After creating the AOI, you can only download AOI SSURGO directly from WSS. AOI SSURGO data files are **NOT** available when using the Bulk SSURGO Downloader GIS tool.

To acquire AOI SSURGO:

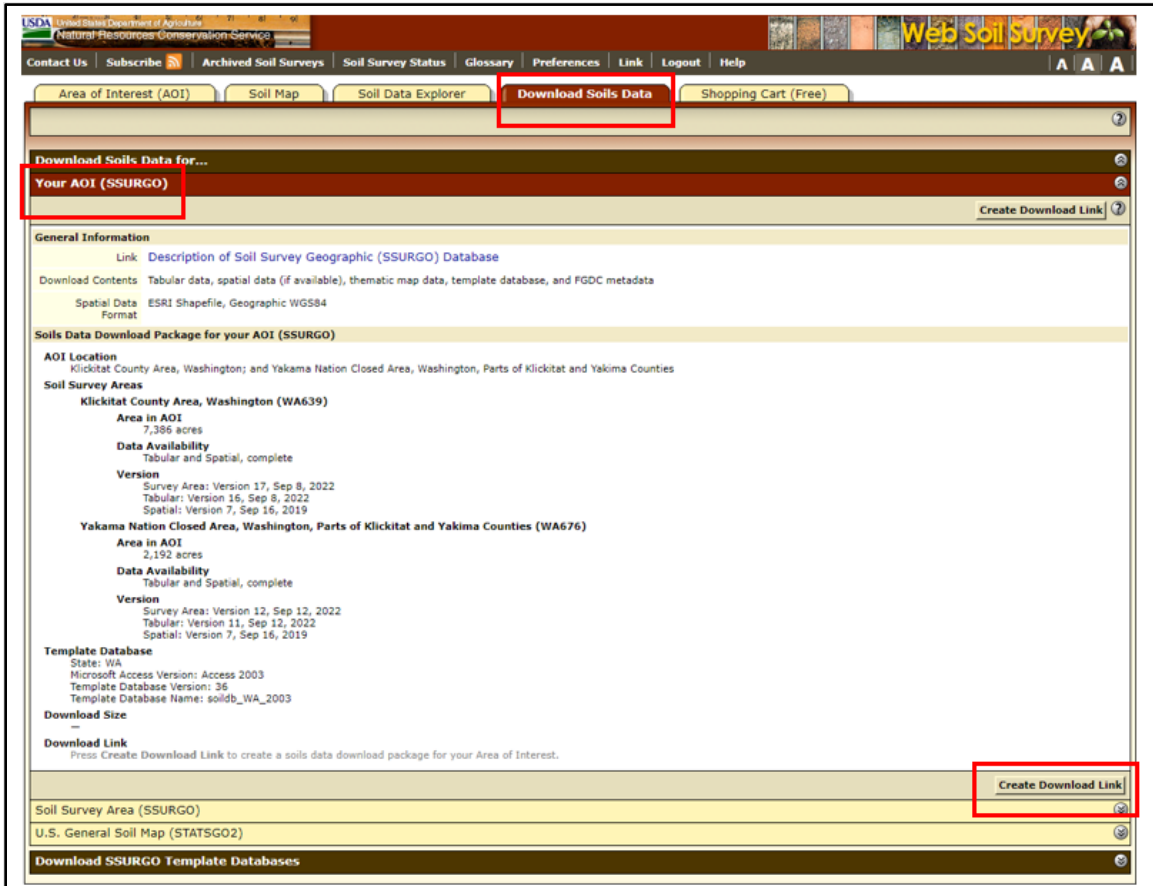
1. First navigate to **Web Soil Survey**, and then navigate to the **Area of Interest Interactive Map**. Click on either **Define AOI by Rectangle** or **Define AOI by Polygon**. Create the AOI by clicking on the map and making a shape.



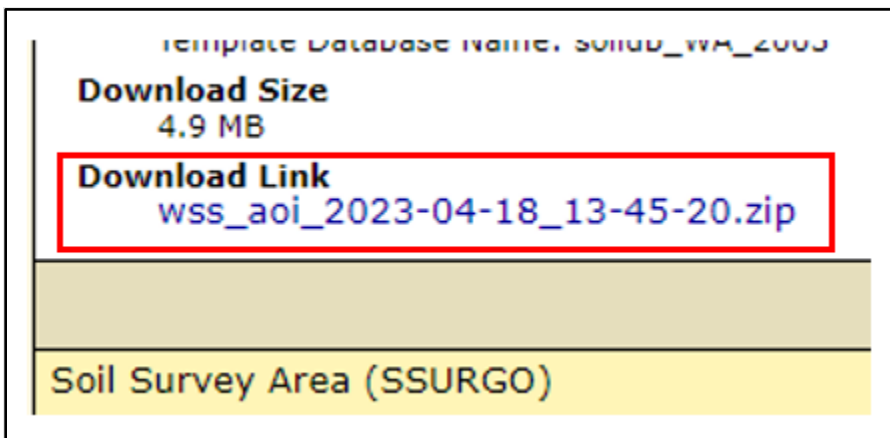
**Note:** You can also set the AOI by importing a shapefile. Click “Import AOI” on the left menu for this option.



2. Click the **Download Soils Data** tab, and then click **Create Download Link** in the **Your AOI (SSURGO)** section.

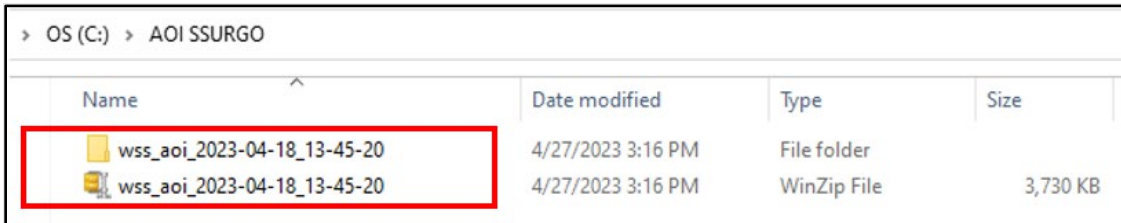


3. A link will appear under **Download Link**. Download the AOI SSURGO data to a local folder of your choice.





- Unzip the zip file to the folder. You should see both the zip file and a folder after unzipping.



- The zip file is no longer required after unzipping; you can delete it.
- Unlike standard SSURGO, a SSA area symbol will not appear in the folder name. Instead, the folder will start with **wss\_aoi\_**.

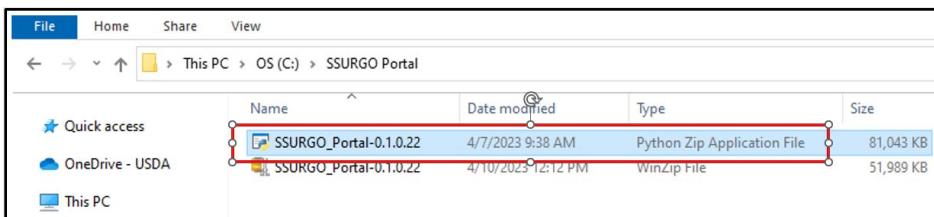
### 3. Open SSURGO Portal

*This section assumes you have installed SSURGO Portal according to either the SSURGO Portal Quick Start Guide or the SSURGO Portal Installation Guide.*

SSURGO Portal will open in your default web browser; no internet connection is required. A CMD window will also appear; it must remain open or SSURGO Portal will stop working.

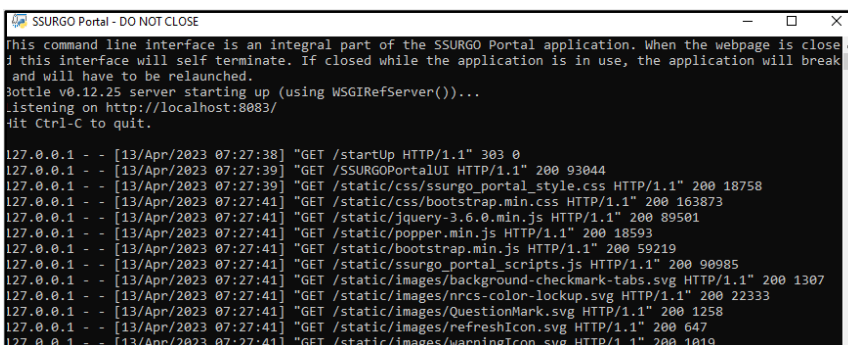
To open SSURGO Portal, complete the following steps:

- Using **Windows File Explorer**, navigate to the location of the SSURGO Portal.pyz file. Double click on the file to open **SSURGO Portal**.



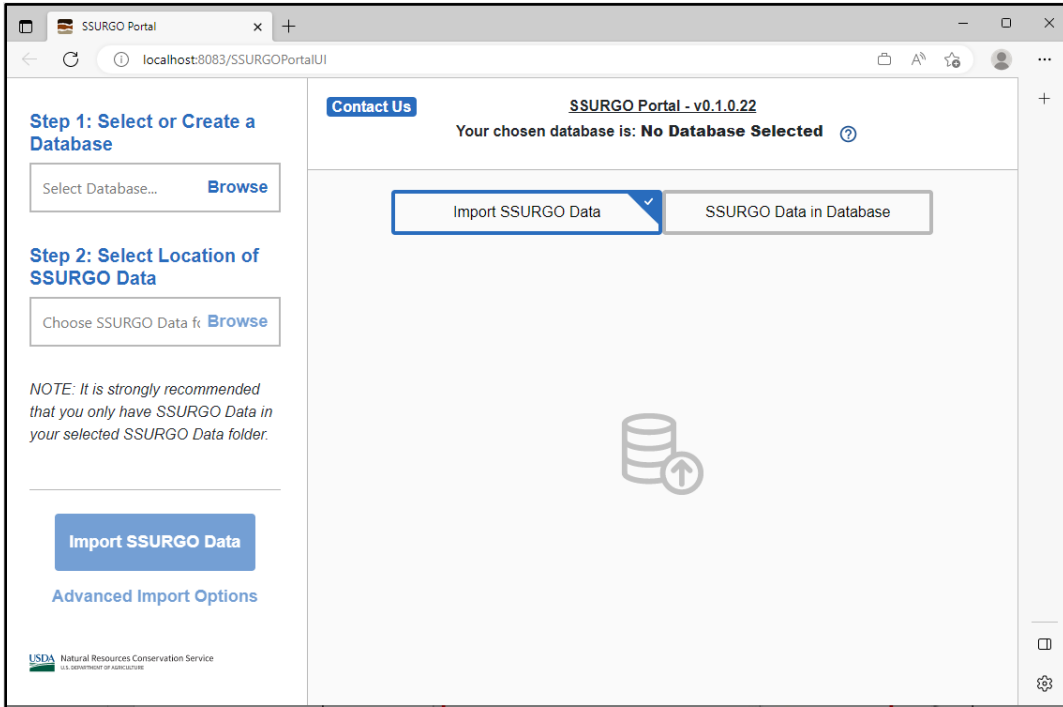
**Note:** SSURGO Portal may be identified as either a .pyz file or Python Zip Application File in Windows Explorer

- A CMD window will appear. Do not close this window, but you can minimize it.





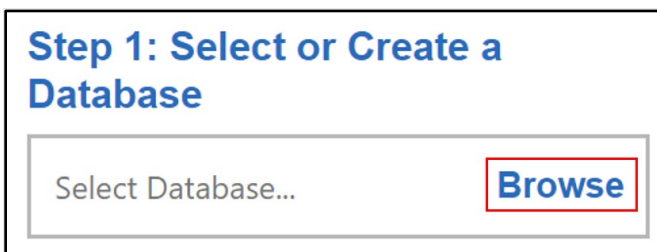
3. Your default internet browser will open, and you will see the **SSURGO Portal** main page. You can begin using SSURGO Portal.



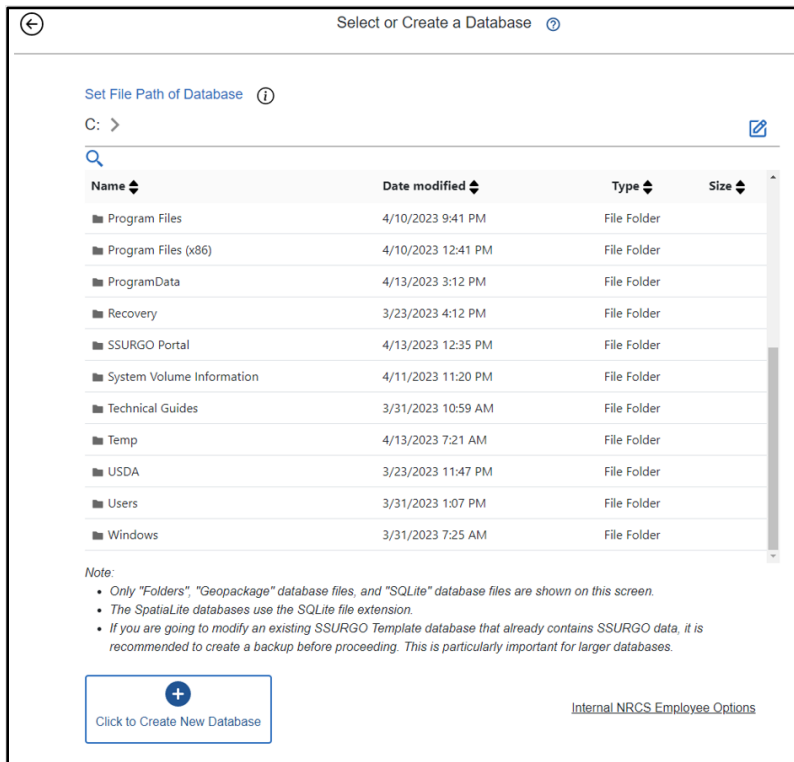
## 4. Select or Create a Database

The first step when using SSURGO Portal is to create a new SQLite SSURGO Template database or select an existing database. First time users typically need to create a new database. SSURGO Portal requires the location of this database before any other action can occur.

1. Below **Step 1: Select or Create a Database**, click the **Browse** button.



2. The following new window will appear, although the contents of the table will be different because it defaults to your C drive.

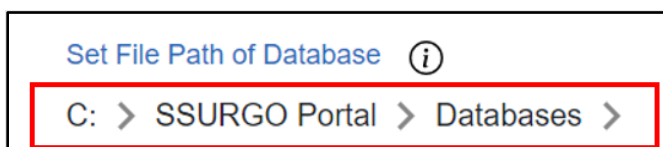


**Note:** Upon first use of SSURGO Portal, the file path defaults to your C drive. Following initial use, SSURGO Portal will default to the file path last used unless you cleared your cookies.

3. There are two options on this window.
  - a. You can create a new SQLite SSURGO Template database.
  - b. You can select an existing SQLite Template database.

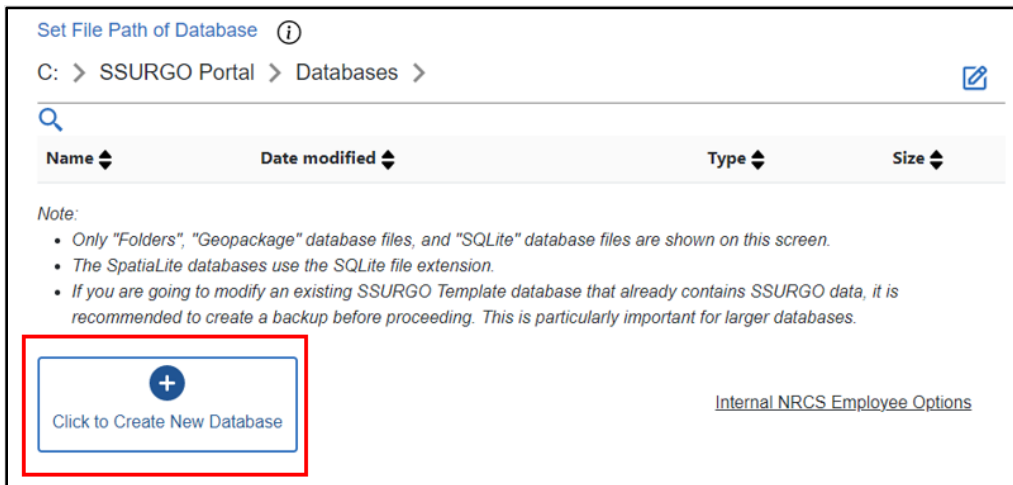
## 4.1. Creating a New SQLite SSURGO Template Database

1. Under **Set File Path of Database**, navigate to the folder where the database will be created.



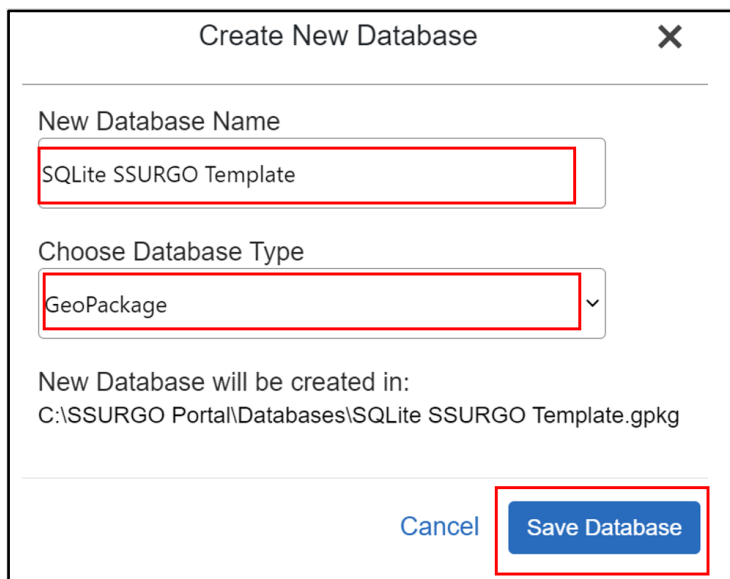
**Note:** Navigating to a folder in SSURGO Portal is slightly different than when using Windows Explorer. For additional guidance, refer to the SSURGO Portal help menu on this page.

3. Click on **Click to Create New Database**.



4. You will see a small window appear. Within this window, name the database and select the database type. You can accept the default name of NewSSURGODatabase or rename the database.

5. After naming your database and selecting the type, click **Save Database**. This will return you to the main page.

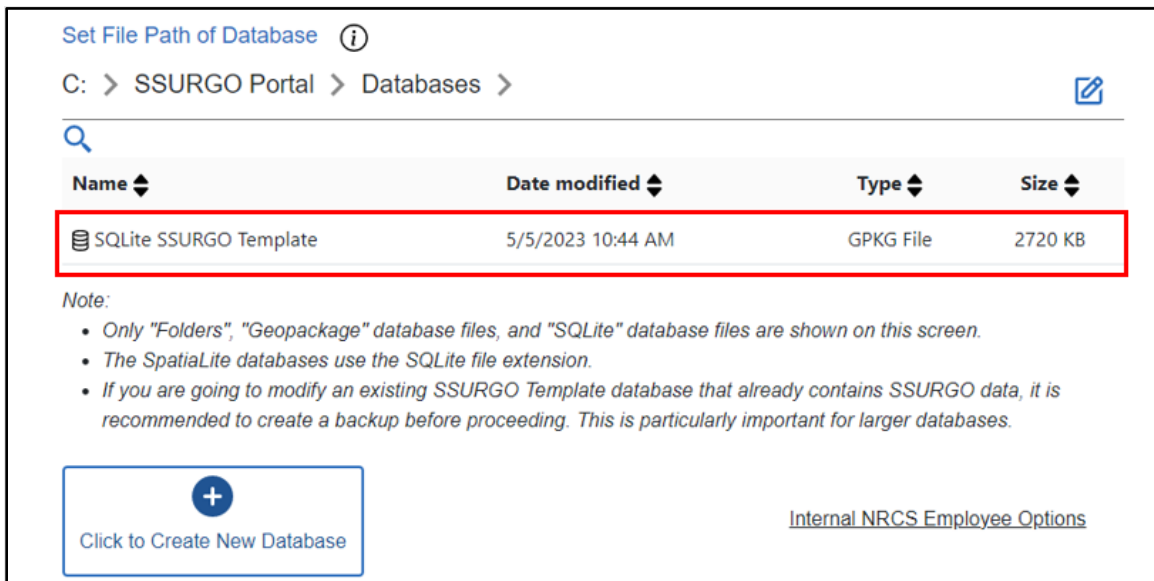


**Note:** Two options are presented for database type: 1) Geopackage and 2) SpatiaLite. Both template types are valid options, and you will not notice much difference in the resultant database. However, SpatiaLite and GeoPackage contain different schemas designed for storing spatial data in a template database. This means they have different sets of tables and

*columns required for storing spatial information. Currently, SSURGO Portal includes both schemas for those familiar with SQLite files. SpatiaLite is the older schema, and GeoPackage is the newer schema. **If you are unsure about which database type to choose, accept the default GeoPackage type.***

## 4.2. Select an Existing SQLite SSURGO Template Database

1. Navigate to the folder where the existing data is located.
2. Click on the existing database, and you will return to the main window.



## 4.3. Internal NRCS Employee Databases

**Most SSURGO Portal users do not need these options.**

These options are only for employees of the USDA, Natural Resource Conservation Service (NRCS) who occasionally work with non-traditional SSURGO from the NASIS database or from the Staging Server database. The SSURGO data from these sources require special SQLite SSURGO Templates.

These templates can accept SSURGO from WSS, NASIS, and Staging, but the table record IDs are text data type. This may cause some minor performance issues in GIS software.

To enable these special templates:

1. Click **Internal NRCS Employee Options**.



Internal NRCS Employee Options

2. Check the box next to **Click to enable database options for SSURGO from NASIS or Staging Server before creating a new database.**

Internal NRCS Employee Options

Click to enable database options for SSURGO from NASIS or Staging Server before creating a new database

*NOTE: This option is rarely selected and is only designed for Internal NASIS or Staging Server users. It creates special databases that define most table keys as TEXT instead of INTEGER. Users of SSURGO data downloaded from Web Soil Survey do not need these TEXT key templates.*

3. Click on **Click to Create New Database.**

Set File Path of Database ⓘ

C: > SSURGO Portal > Databases >

Name	Date modified	Type	Size
------	---------------	------	------

Note:

- Only "Folders", "Geopackage" database files, and "SQLite" database files are shown on this screen.
- The SpatiaLite databases use the SQLite file extension.
- If you are going to modify an existing SSURGO Template database that already contains SSURGO data, it is recommended to create a backup before proceeding. This is particularly important for larger databases.

Click to Create New Database

Internal NRCS Employee Options

Click to enable database options for SSURGO from NASIS or Staging Server before creating a new database

*NOTE: This option is rarely selected and is only designed for Internal NASIS or Staging Server users. It creates special databases that define most table keys as TEXT instead of INTEGER. Users of SSURGO data downloaded from Web Soil Survey do not need these TEXT key templates.*

- When the small **Create New Database** window opens, you will see database types that have the words **for SSURGO from NASIS or Staging** in parenthesis. Name the database and select the database type. You can accept the default name of NewSSURGODatabase or rename the database.

- After naming your database and selecting the type, click **Save Database**. This will return you to the main page.

**Note:** *If you are unsure about which database type to choose, accept the default GeoPackage type. Both GeoPackage and SpatiaLite versions of SQL SSURGO Template database are available. These are both spatially enabled SQLite database files, and both will work in GIS.*

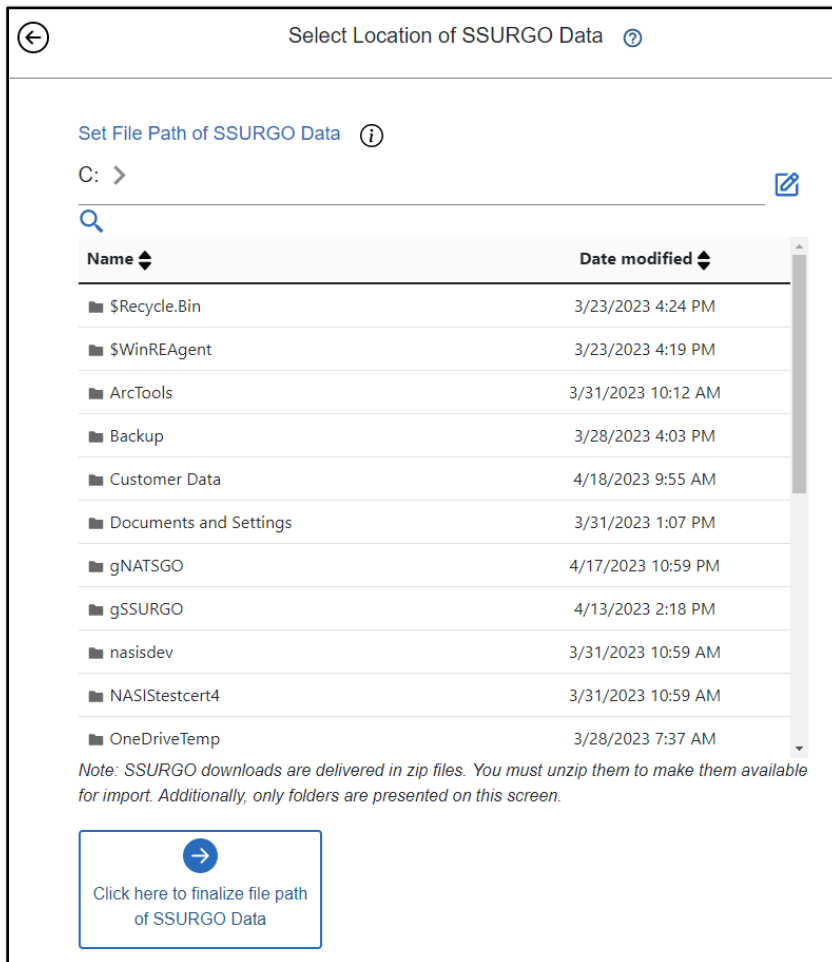
## 5. Select Location of SSURGO Data

***This section assumes you have already downloaded and unzipped SSURGO data. If you have not, refer to section 2 “Acquire SSURGO Data.”***

The second step in SSURGO Portal is to identify the location of SSURGO data that will be imported into the SQLite SSURGO Template database.

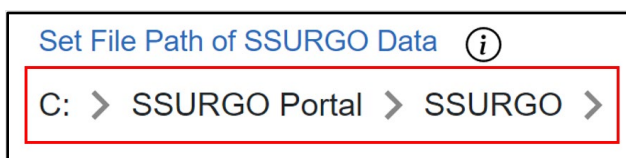
- Click the **Browse** button below **Step 2: Select Location of SSURGO Data**.

- The following new window will appear, although the contents of the table will be different because it defaults to your C drive.



**Note:** Upon first use of SSURGO Portal, the file path defaults to your C drive. Following initial use, SSURGO Portal will default to the file path last used, unless you cleared your cookies.

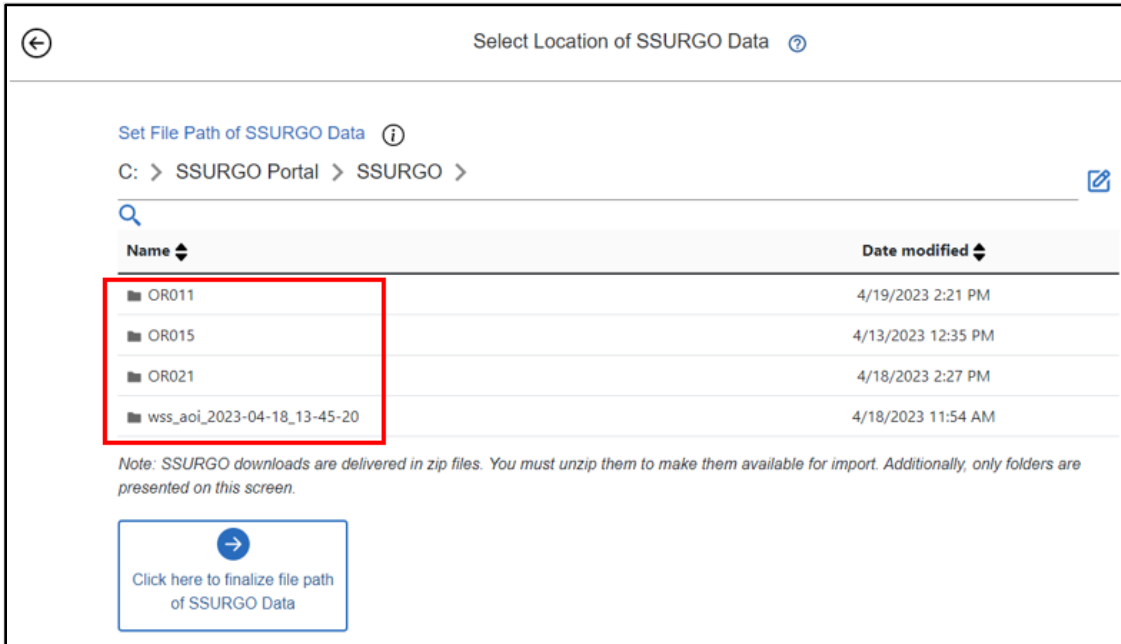
- Set the File Path (i.e., navigate to the folder) where you stored your unzipped SSURGO data files.



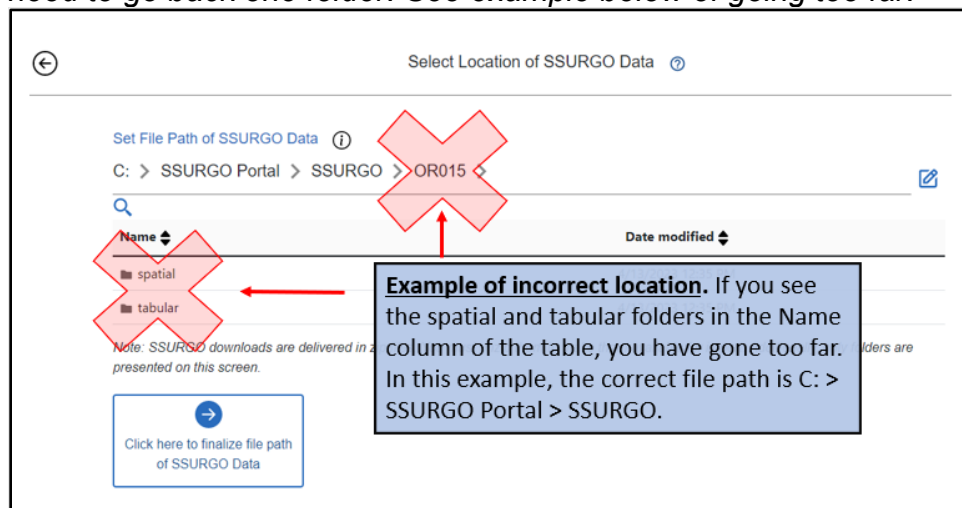
**Note:** Navigating to a folder in SSURGO Portal is slightly different than when using Windows Explorer. For additional guidance, refer to the SSURGO Portal help menu within SSURGO Portal.



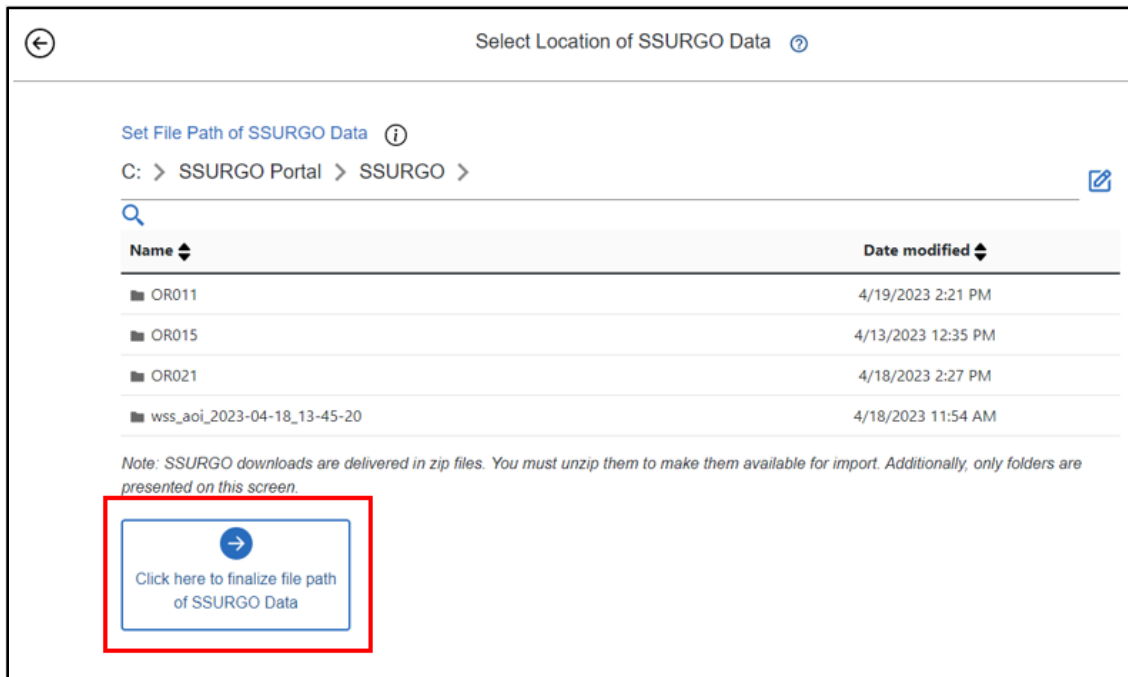
- The table below the path should display folders from the location you just set. While any folder in that location will appear in the table, you should see at least some standard SSURGO or AOI SSURGO folders. Standard SSURGO folders have a 5-character name. AOI SSURGO folders will start with wss\_aoi\_.



**Note:** Standard SSURGO will always have a five character folder name, such as OR011, OR015, and OR021. The first two characters will always be letters and the last three numbers. These are the area symbols for the soil survey area. Folders containing AOI SSURGO will always start with wss\_aoi. When you set the file path, you should see folders with the five character or wss\_aoi in the **Name** column of the table in the center of the page. If you see folders titled spatial and tabular, you have gone too far and you need to go back one folder. See example below of going too far.



- Click on **Click here to finalize file path of SSURGO Data**. This will return you to the main page.



## 6. Import SSURGO Data

*This section assumes you have created or selected an SQLite SSURGO Template database and have set the location of the SSURGO data to be imported. If not, please refer to sections 4 and 5 above.*

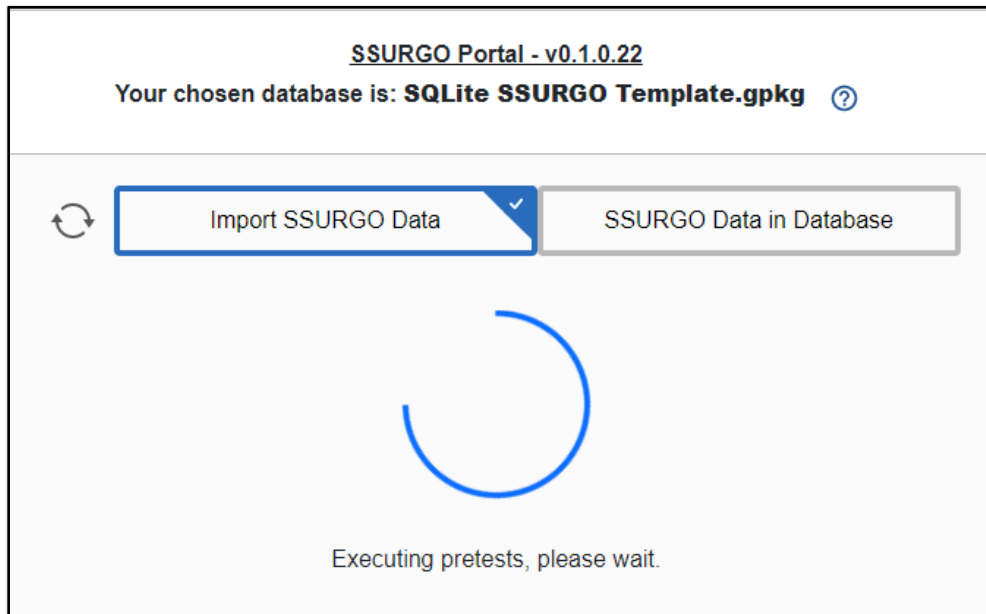
After completing **Step 2**, you will return to the main page. A series of pretests and duplicate area symbol checks will run, and the **Import SSURGO Data** table will populate. You can select folders and begin importing SSURGO data files into the SQLite SSURGO Template.

Refer to the help menu on the main page of the SSURGO Portal for more information about the table.

### 6.1. Pretests

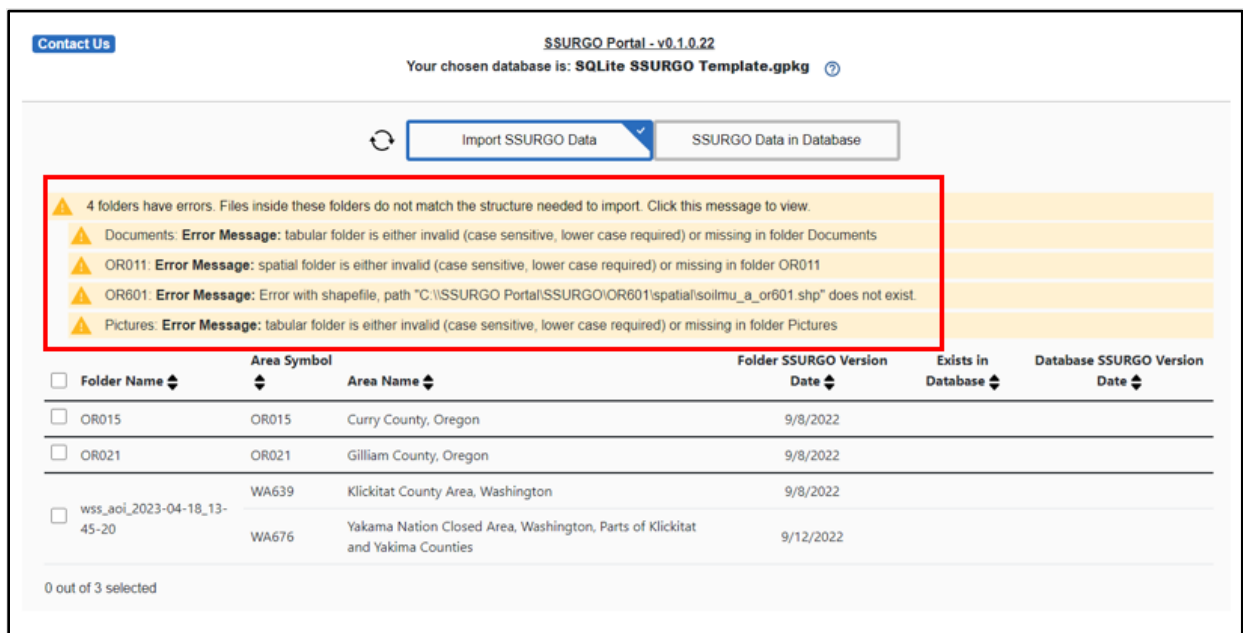
After you return to the main page, a series of pretests will run against the folder you selected in the second step. You can learn more about the pretests in the main page help menu.

Often the pretests run extremely fast. If you are trying to import a large volume of SSURGO data, they may run for a little while. A spinning blue circle, like the one shown below, indicates pretests are being run.



The tests are designed to identify data that won't import into an SQLite SSURGO Template database. This is helpful in case you stored your SSURGO data in a location with other non-SSURGO data or if you altered the SSURGO data prior to import.

Folders that fail a pretest will be listed at the top of the **Import SSURGO Data** table and they will not be available for import. The screen shot below shows a series of folders with error messages.





If you need to import any of the data in the list of errors, you will need to fix the areas and refresh the **Import SSURGO Data** table. The refresh button is located to the left of the **Import SSURGO Data** button.



## 6.2. Duplicate Area Symbol Precheck Warnings

The duplicate area symbol prechecks are similar to the pretests, but they only produce warnings. SSURGO is categorized by soil survey areas, and each area has a unique area symbol. An area symbol cannot occur more than once in an SQLite SSURGO Template database. These warnings alert you when the precheck detects duplicate area symbols in the SSURGO files you are trying to import. You can read more about these warnings in the help menu of the SSURGO Portal.

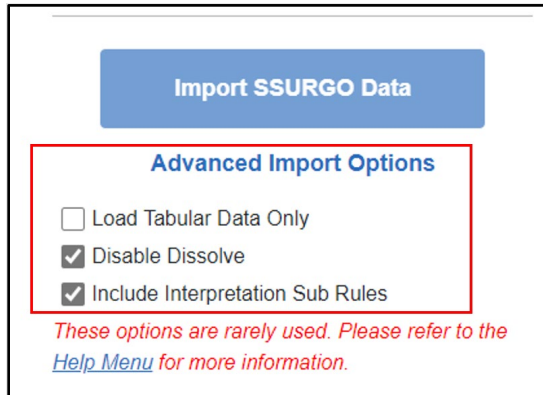
If the precheck detects a duplicate area symbol in the SSURGO data you selected in the second step, a blue warning message appears at the top of the **Import SSURGO Data** table. SSURGO Portal flags the folders that have a duplicate area symbol with a special icon. The screen shot below shows an example of two folders with the OR021 area symbol.

Folder Name	Area Symbol	Area Name	Folder SSURGO Version Date	Exists in Database	Database SSURGO Version Date
<input type="checkbox"/> OR015	OR015	Curry County, Oregon	9/8/2022		
<input checked="" type="checkbox"/>  OR021	OR021	Gilliam County, Oregon	9/8/2022		
<input type="checkbox"/> wss_aoi_2023-04-18_13-45-20	WA639	Klickitat County Area, Washington	9/8/2022		
<input type="checkbox"/> wss_aoi_2023-04-23_13-45-21	WA676	Yakama Nation Closed Area, Washington, Parts of Klickitat and Yakima Counties	9/12/2022		
<input checked="" type="checkbox"/>  wss_aoi_2023-04-23_13-45-21	OR021	Gilliam County, Oregon	9/8/2022		

You can still select at least one of the flagged folders with this warning, but if you select more than one folder that is part of the warning and attempt to import SSURGO data, you will receive an error message and will not be able to proceed.

### 6.3. Advanced Options

You can read more about advanced options in the SSURGO Portal help menu. Advanced options are rarely used, but if you do need to select one, click to choose the option before starting an import. You can select more than one advanced option.

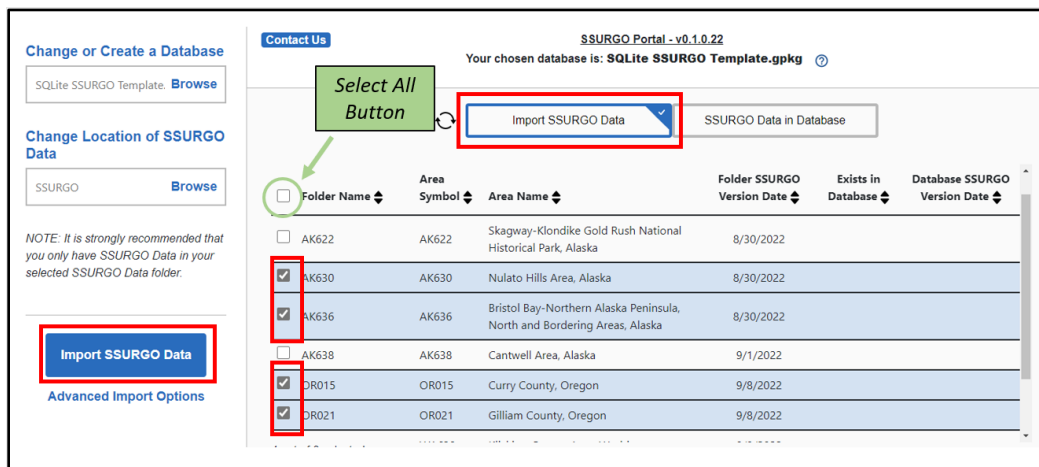


If you select the **Load Tabular Data Only** advanced option, it will refresh the contents of the **Import SSURGO Data** window because a different set of pretests are executed.

### 6.4. Import SSURGO Data into the SQLite SSURGO Template Database

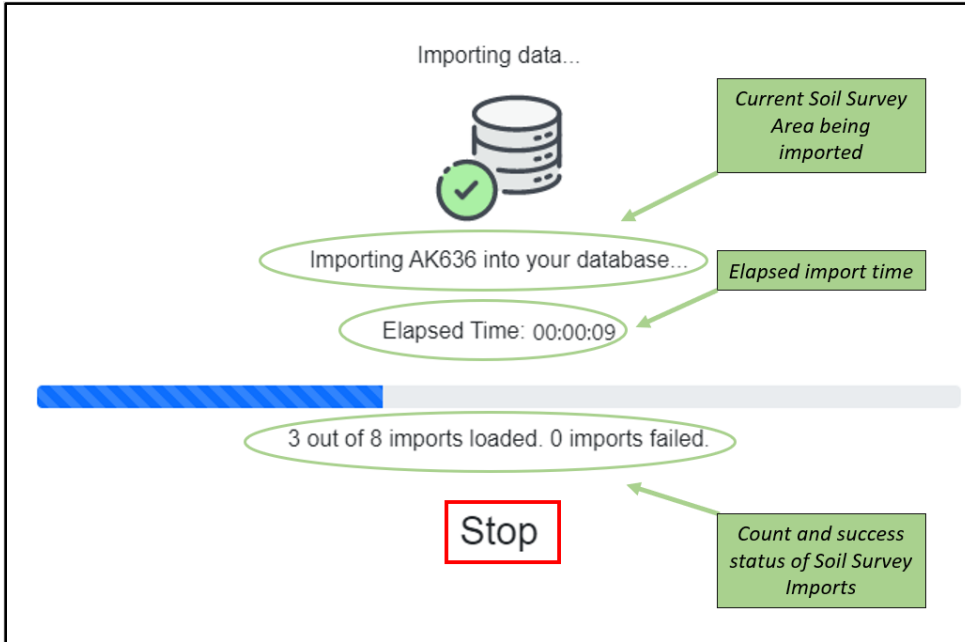
The last step is to import SSURGO Data into the SQLite SSURGO Template database.

1. To import SSURGO data, make sure the **Import SSURGO Data** table is active. Then select folders in the table and click the **Import SSURGO Data** button on the left pane menu.



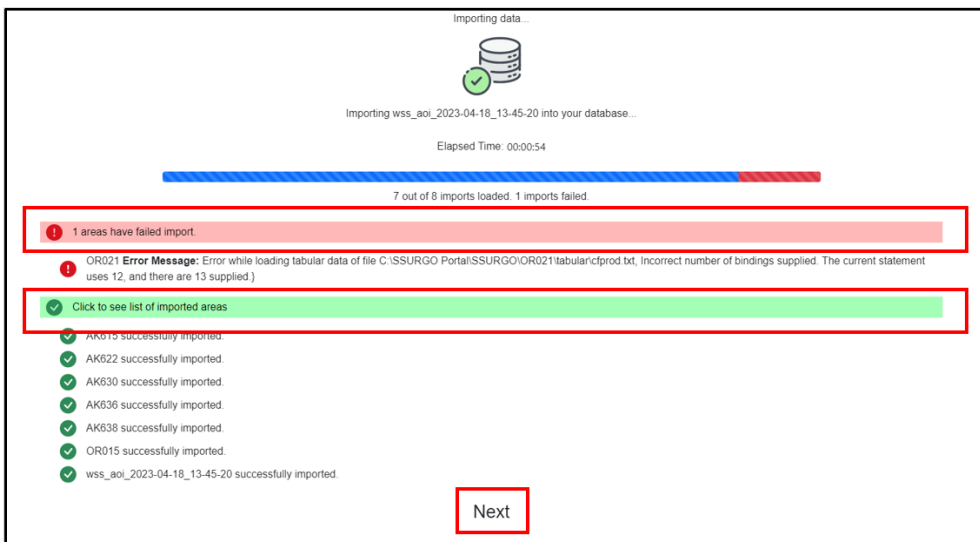
**Note:** You can select as many folders as needed. You can **select all** by clicking the button at the top left of the table. When you are done, click the **Import SSURGO Data** button on the left pane menu.

After clicking **Import SSURGO Data**, a new window appears. It shows the status of the active import process and presents the option to stop the import process. Clicking **Stop** will halt the import process, but the current soil survey area import finishes before the process stops.



When the import process is completed or you have stopped the process, a summary status will appear. It will list all soil survey areas successfully imported and it will list any that failed, along with any error messages. Clicking on the green and red banners will expand the section and present the list of specific soil surveys imported and any error messages.

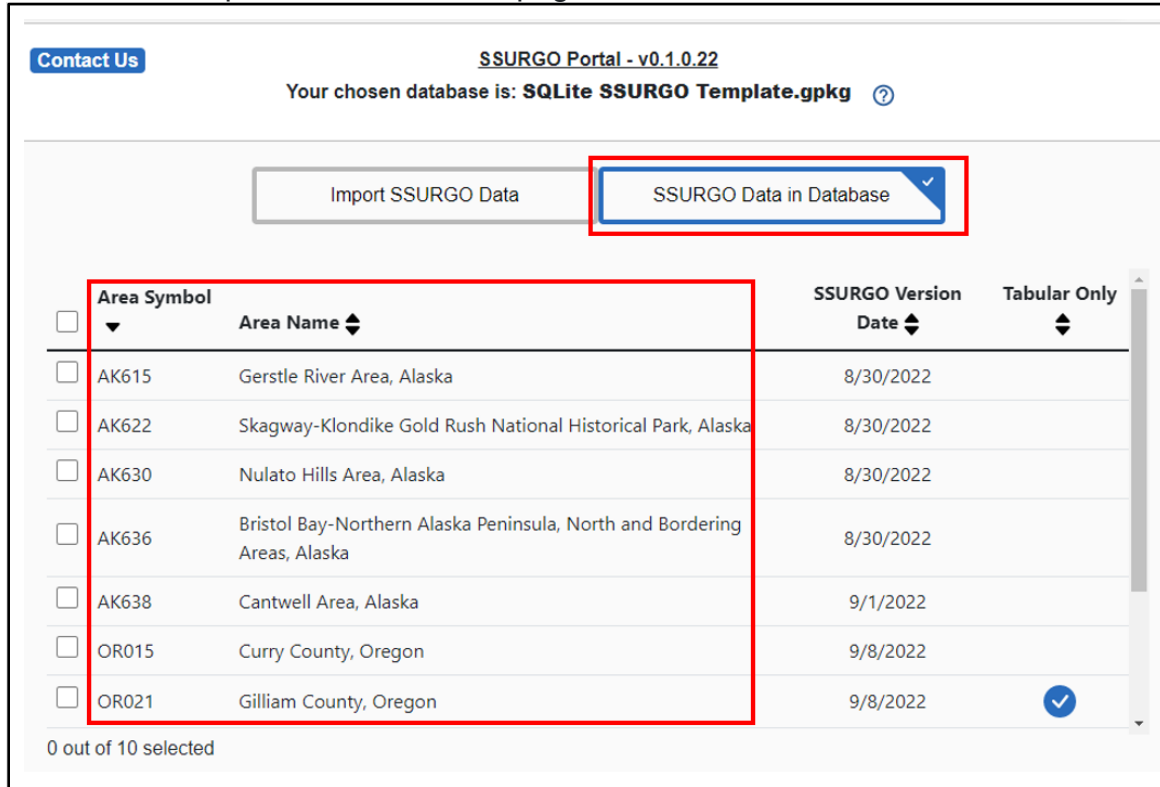
2. Click **Next** at the bottom to close this screen and return to the main menu.



## 7. View and Delete SSURGO Data from Database

After completing the import, you will return to the main page, but the system will default to the **SSURGO Data in Database** table. This table will show you all soil survey areas that are now in your SQLite SSURGO Template database.

Refer to the help menu on the main page for more information about the table.



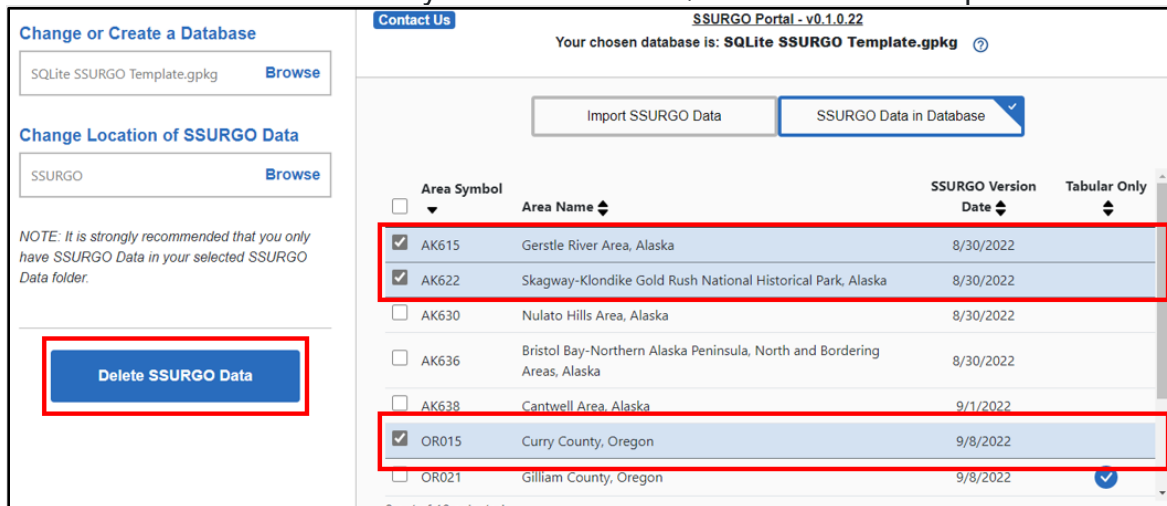
Contact Us SSURGO Portal - v0.1.0.22  
 Your chosen database is: **SQLite SSURGO Template.gpkg** ⓘ

Import SSURGO Data SSURGO Data in Database ✓

<input type="checkbox"/>	Area Symbol	Area Name	SSURGO Version Date	Tabular Only
<input type="checkbox"/>	AK615	Gerstle River Area, Alaska	8/30/2022	
<input type="checkbox"/>	AK622	Skagway-Klondike Gold Rush National Historical Park, Alaska	8/30/2022	
<input type="checkbox"/>	AK630	Nulato Hills Area, Alaska	8/30/2022	
<input type="checkbox"/>	AK636	Bristol Bay-Northern Alaska Peninsula, North and Bordering Areas, Alaska	8/30/2022	
<input type="checkbox"/>	AK638	Cantwell Area, Alaska	9/1/2022	
<input type="checkbox"/>	OR015	Curry County, Oregon	9/8/2022	
<input type="checkbox"/>	OR021	Gilliam County, Oregon	9/8/2022	<input checked="" type="checkbox"/>

0 out of 10 selected

You can delete a soil survey area by selecting it in the table and clicking the **Delete SSURGO Data** button on the left pane menu. This will completely remove all data associated with the soil survey area from the SQLite SSURGO Template.



Change or Create a Database Contact Us  
 Your chosen database is: **SQLite SSURGO Template.gpkg** ⓘ

Change Location of SSURGO Data  
 SSURGO Browse

NOTE: It is strongly recommended that you only have SSURGO Data in your selected SSURGO Data folder.

Delete SSURGO Data

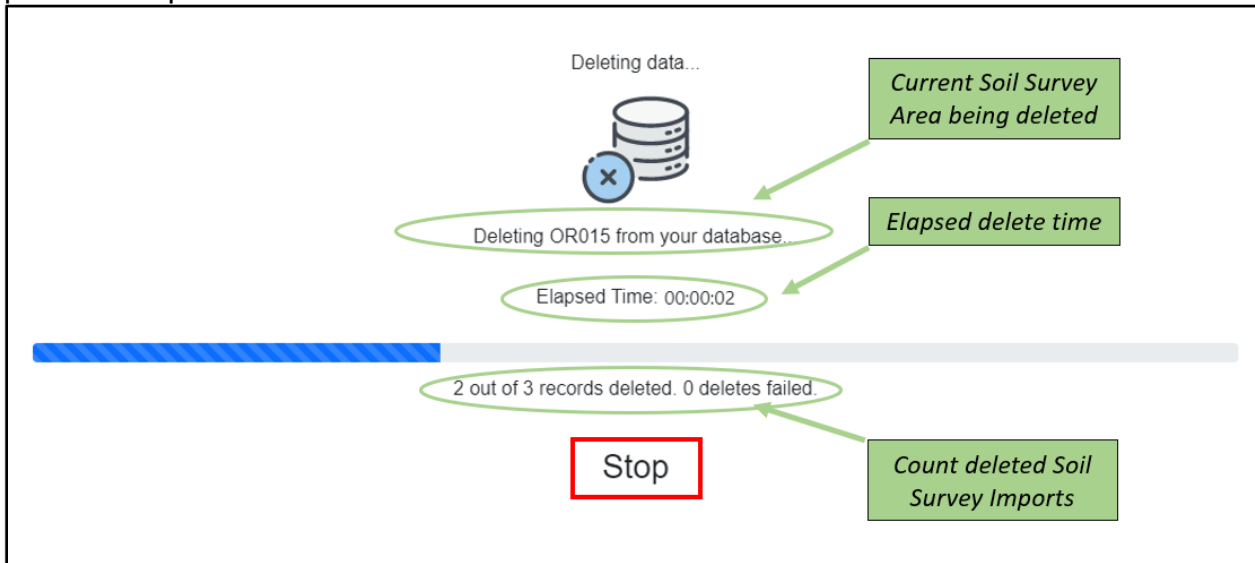
Import SSURGO Data SSURGO Data in Database ✓

<input type="checkbox"/>	Area Symbol	Area Name	SSURGO Version Date	Tabular Only
<input checked="" type="checkbox"/>	AK615	Gerstle River Area, Alaska	8/30/2022	
<input checked="" type="checkbox"/>	AK622	Skagway-Klondike Gold Rush National Historical Park, Alaska	8/30/2022	
<input type="checkbox"/>	AK630	Nulato Hills Area, Alaska	8/30/2022	
<input type="checkbox"/>	AK636	Bristol Bay-Northern Alaska Peninsula, North and Bordering Areas, Alaska	8/30/2022	
<input type="checkbox"/>	AK638	Cantwell Area, Alaska	9/1/2022	
<input checked="" type="checkbox"/>	OR015	Curry County, Oregon	9/8/2022	
<input type="checkbox"/>	OR021	Gilliam County, Oregon	9/8/2022	<input checked="" type="checkbox"/>

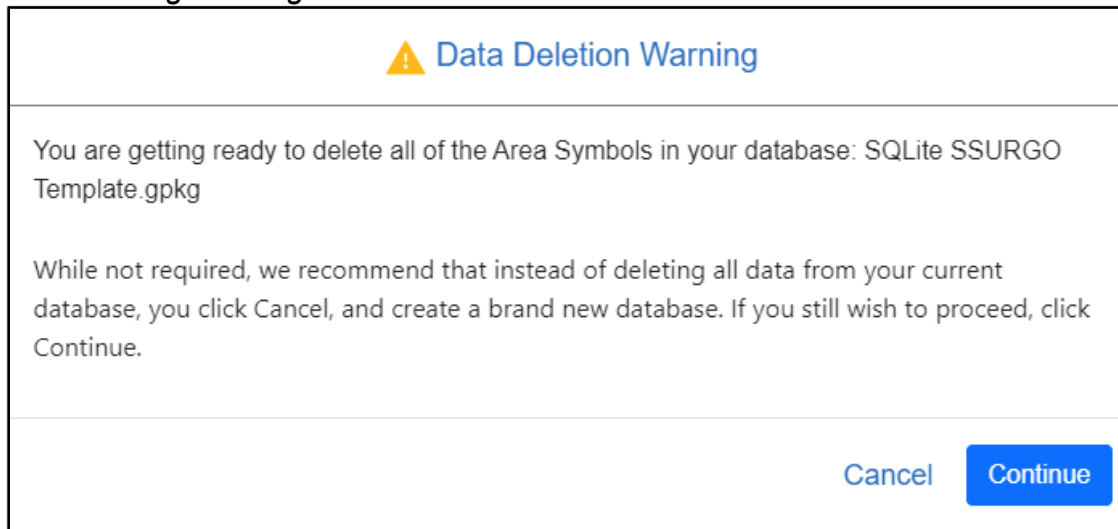
2 out of 10 selected



A new window opens after you start the delete process. It shows you the status of the deletion process and presents the option to **Stop** the delete process. Clicking **Stop** will halt the delete process, but the current soil survey area deletion will finish before the process stops.



**Note:** While you can delete all soil survey areas from an SQLite SSURGO Template database, consider deleting the entire database using Windows Explorer and creating a new one. If you do try to delete all soil survey areas, you will see the following warning.



## 8. How to use the SQLite SSURGO Template Database

*This section assumes you have installed DB Browser according to the SSURGO Portal Installation Guide and you have ArcGIS Pro installed on your computer.*

Both the GeoPackage and SpatialLite versions of the SQLite SSURGO Template database are SQLite files, and they can be accessed by anything that can read an SQLite file. This includes DB Browser, ArcGIS Pro, QGIS, and R.

This section will reference the SSURGO On Demand tool and provide some basic instructions for opening and querying the SQLite SSURGO Template database in DB Browser and ArcGIS Pro. It will also reference the SSURGO Metadata documents, which are helpful for understanding the contents of the SSURGO Portal database.

### 8.1. SSURGO On Demand

Historically, one used a product called Soil Data Viewer (SDV) to work with SSURGO Template databases. A new version of SDV is under development and will eventually be added to the SSURGO Portal tool. In the interim, you can use a tool called SSURGO On Demand (SOD) to provide many of the same functions as SDV.

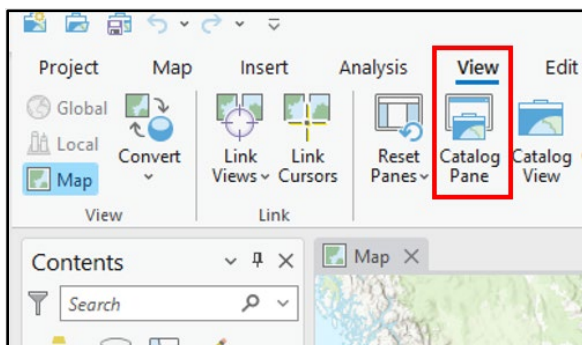
Refer to the [SSURGO Portal webpage](#) to acquire the SSURGO On Demand tool. The webpage includes an installation and user guide.

### 8.2. ArcGIS Pro

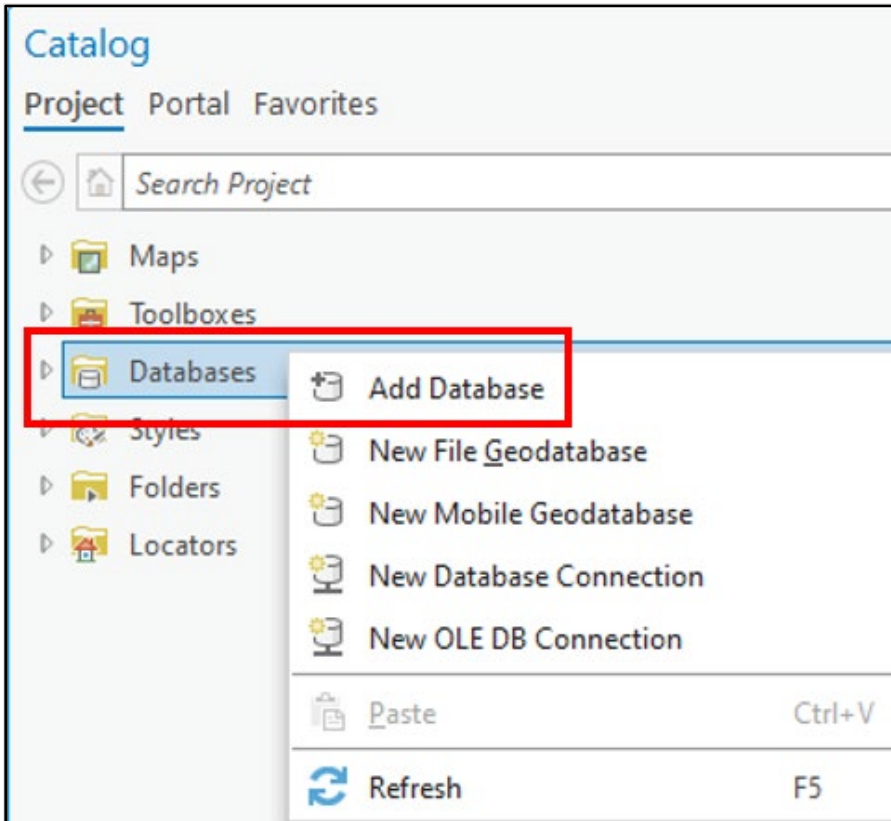
The SQLite SSURGO Templates should have roughly the same functionality as an ESRI File Geodatabase. You should be able to load tabular and spatial data to the table of contents, view spatial data, create joins and relates, query data, symbolize data, and conduct numerous other geoprocessing functions.

This section will provide some basic guidance for accessing the database through ArcGIS Pro, making a join, and creating a thematic map.

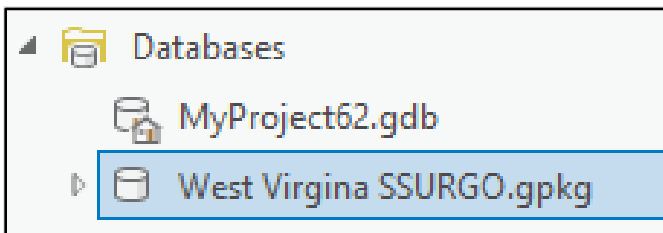
1. Open ArcGIS Pro and create a new project or open an existing one.
2. Click **View** and click **Catalog Pane**.



- The **Catalog** pane will open, often docked on the right. Right click on **Databases** and click **Add Database**.

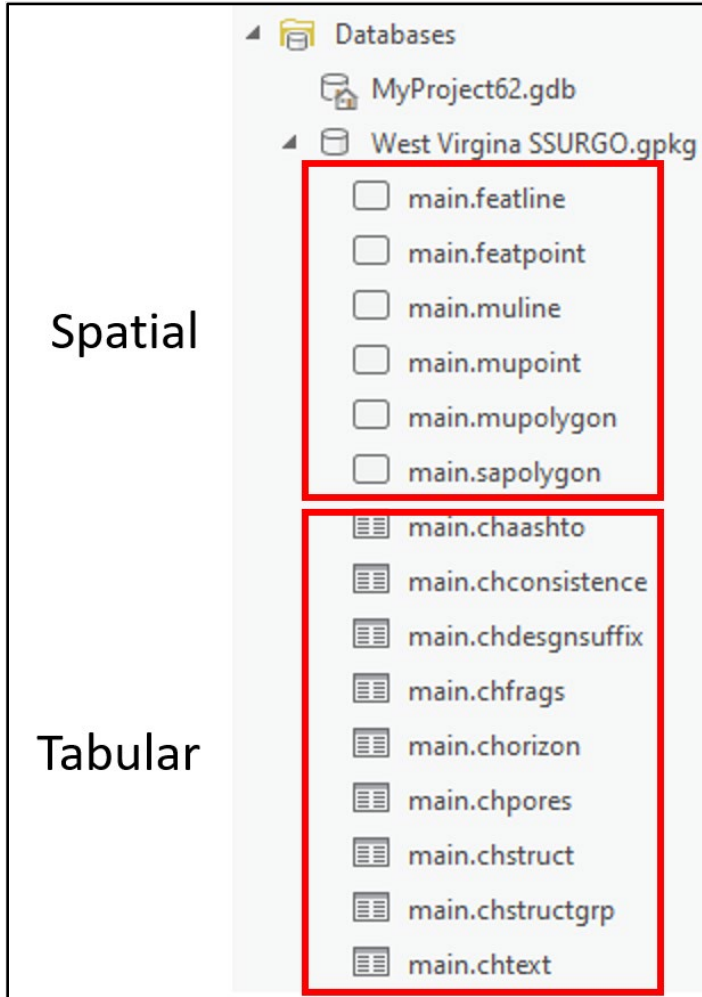


- Navigate to the location of an SQLite SSURGO Template database.

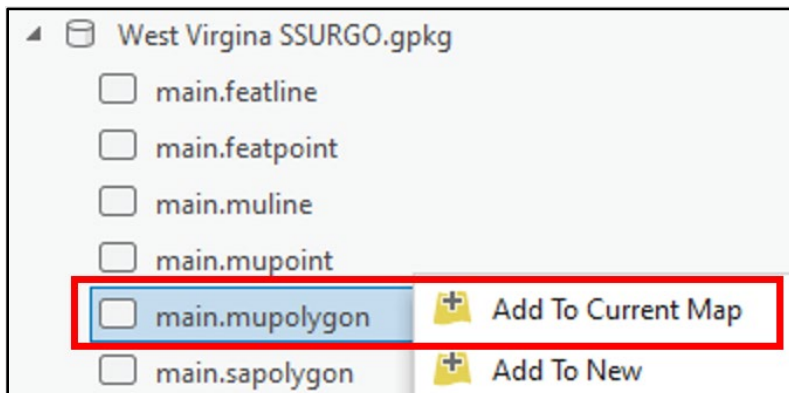


**Note:** Both GeoPackage and SpatiaLite versions are recognized by ArcGIS Pro. The GeoPackage will have the .gpkg extension and the SpatiaLite version will have .sqlite. The contents are essentially the same; however, the tables may be arranged differently, and the SpatiaLite will have some extra system tables.

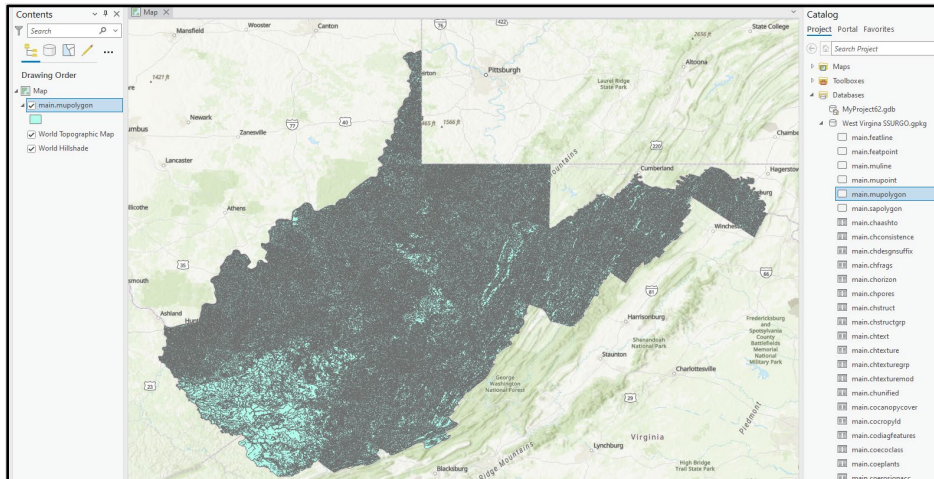
- Expand the database and you will see a long list of spatial layers and tables with the spatial layers listed at the top.



6. Right click on **main.mupolygon** and click **Add to Current Map**.



- The soil polygons appear in the map. If you created an AOI polygon in WSS, then the AOI polygon appears in the map below.

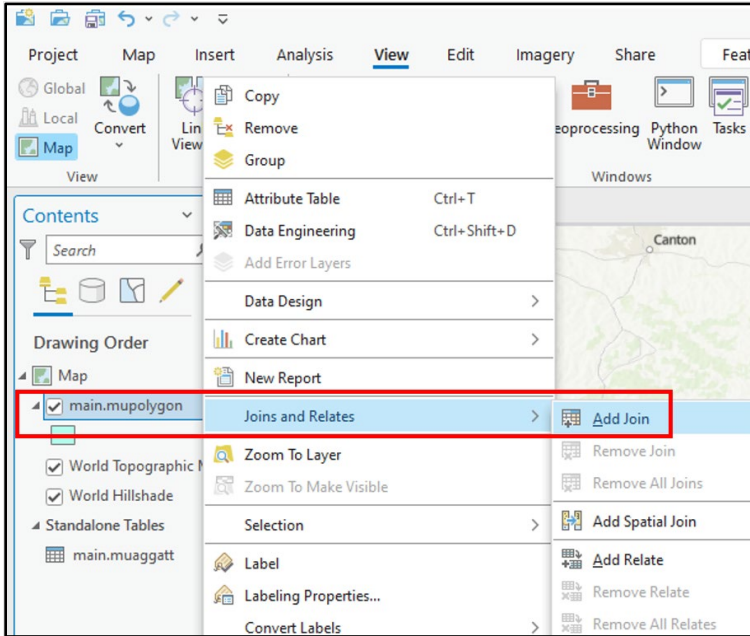


- In the **Catalog** pane, locate the **main.muaggatt** table and right click. Click **Add to Current Map**.

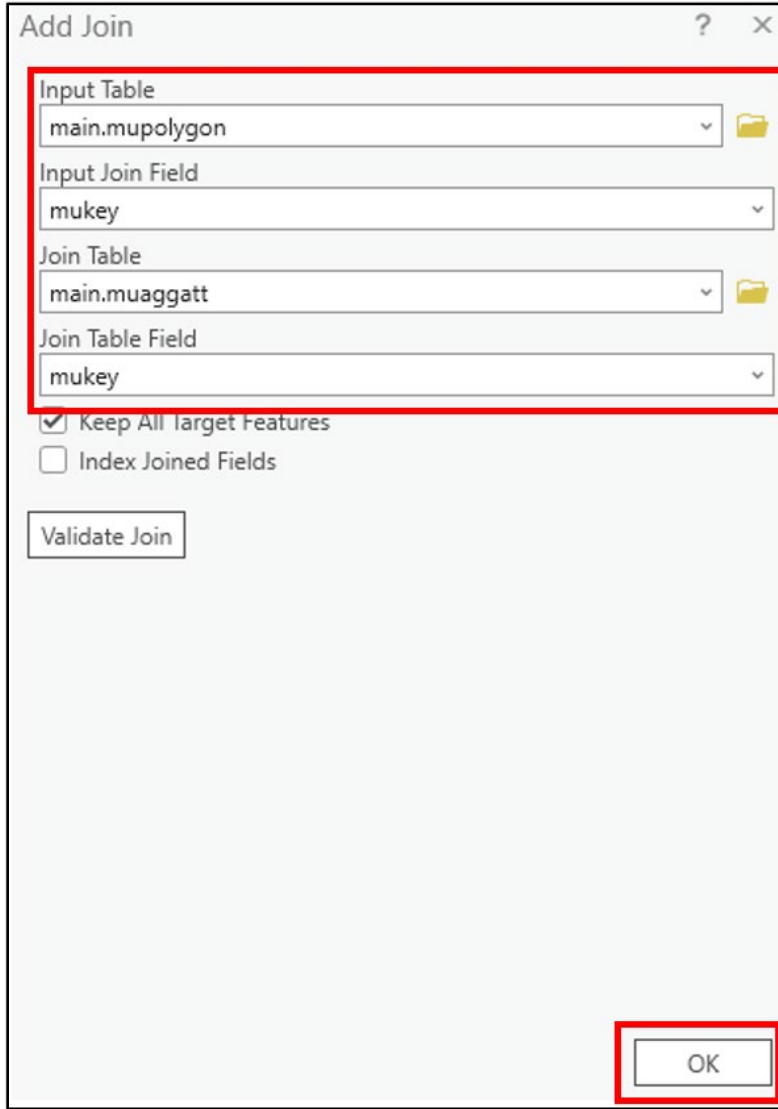


**Note:** A bug was identified in the ArcGIS Pro 3.1.X versions. The join will not work if you add the table to the Current Map (i.e. to the Contents pane). You can still join, just don't add the table to the Map (i.e. Contents pane) first.

- In the **Contents** pane (usually located on the left), locate the **main.mupolygon** layer. Right click on the layer and then scroll to **Joins and Relates**. Click **Add Join**.

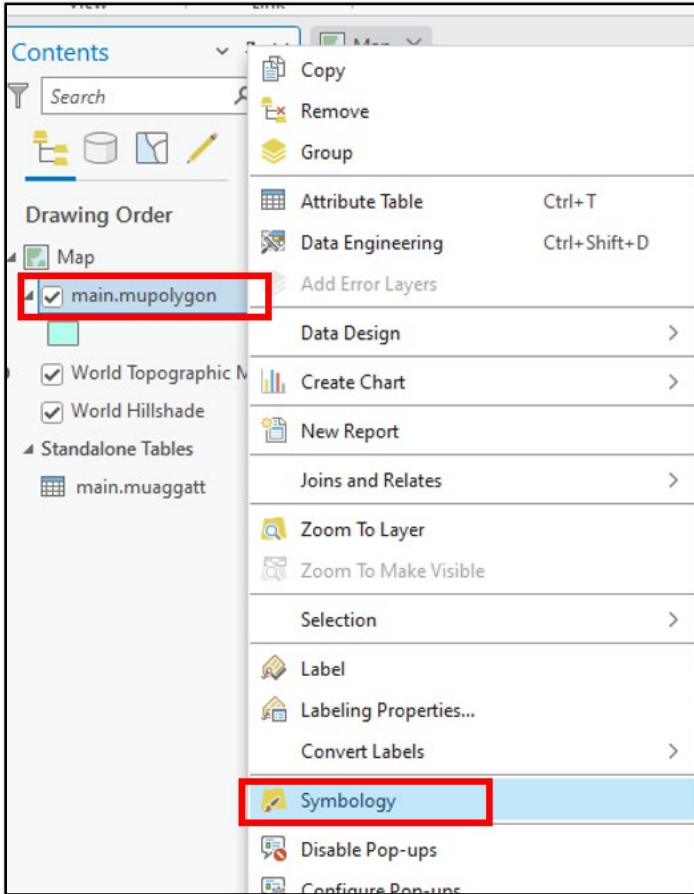


10. A new window will open. Select **main.mupolygon** as the **Input Table**, **mukey** as the **Input Join Field**, **main.muaggatt** as the **Join Table**, and **mukey** as the **Join Table Field**. Accept other default settings. Click **OK**.

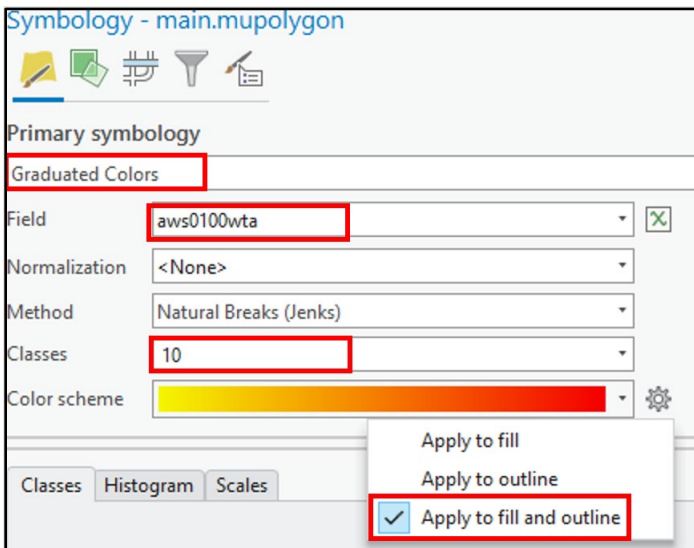


11. You have joined the main.muaggatt table to the main.mupolygon attribute table. You can verify the join by right clicking on the **main.mupolygon** layer and opening the **Attribute Table**.
12. Right click on the **main.mupolygon** layer and choose **Symbology**.

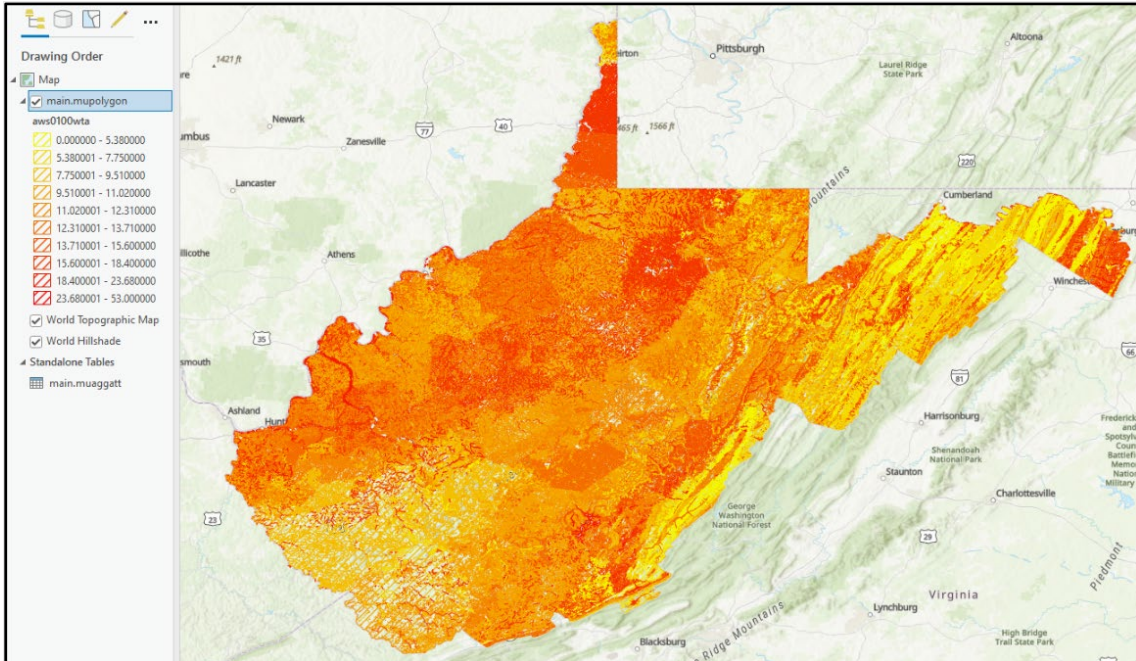




13. The **Symbology** pane will open, most likely on the right. Select **Graduated Colors** under **Primary symbology** and select **aws0100wta** in **Field**. Select the **10** under **Classes**, and then click the settings button next to the **Color Scheme** and select **Apply to fill and outline**.



14. You should now see a thematic map showing the distribution of available water storage values for 0 to 100 cm.

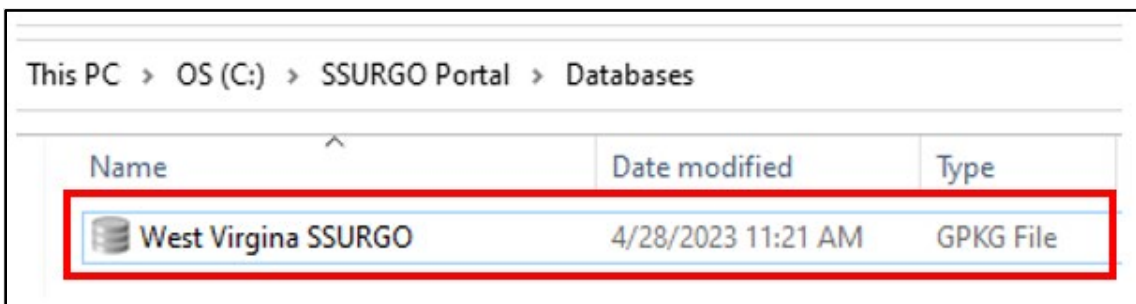


### 8.3. QGIS

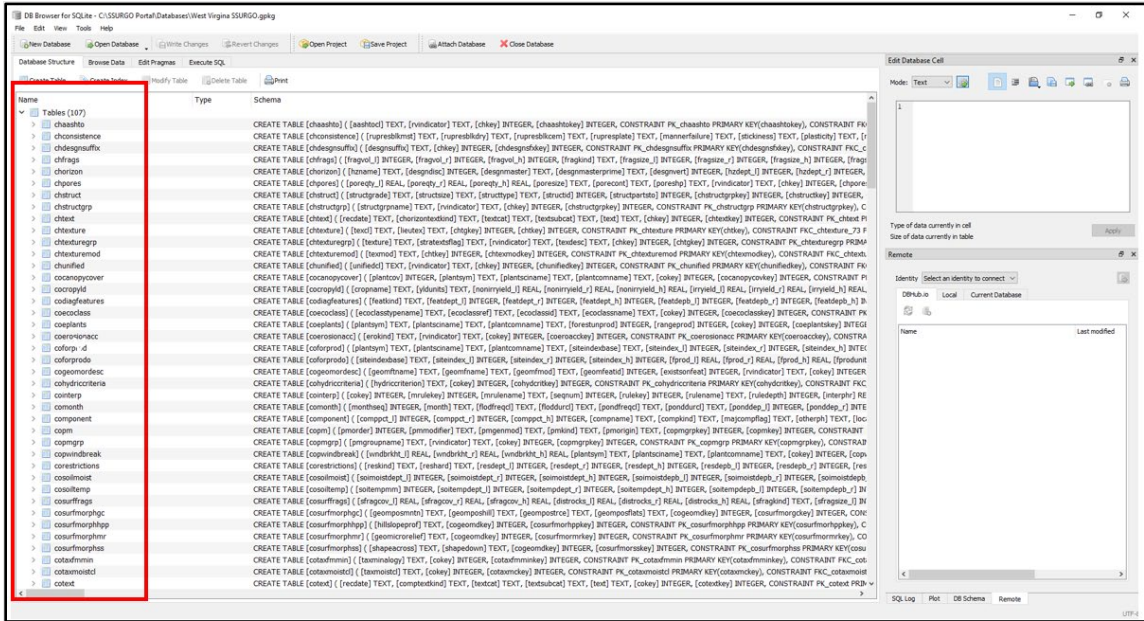
The SQLite SSURGO Templates will work in QGIS. You can join tables to the mupolygon layer, similar to the process described for ArcGIS Pro.

### 8.4. DB Browser

1. In Windows Explorer, navigate to the SQLite SSURGO Template database and double click to open it in DB Browser.

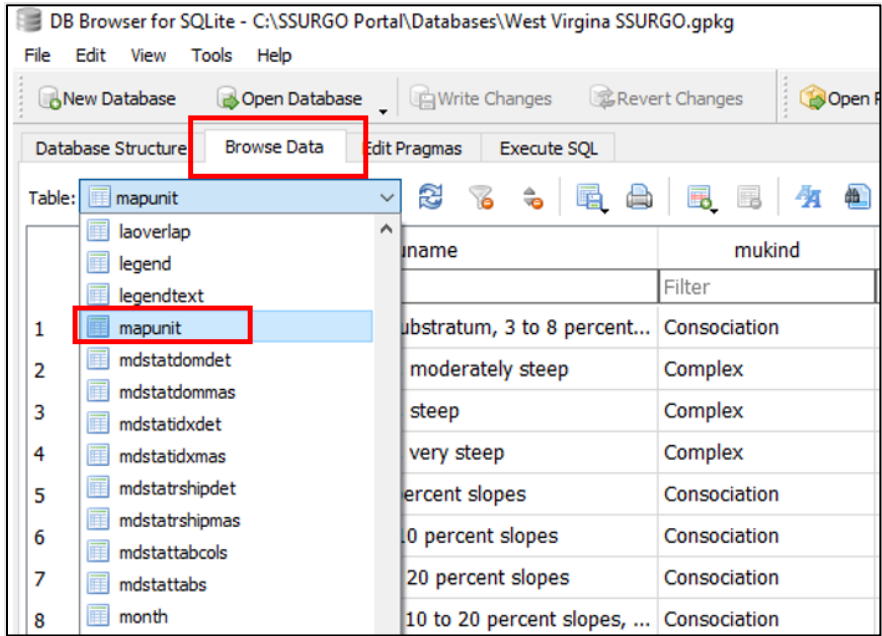


2. DB Browser should open and display a list of tables similar to the image below.



**Note:** If your database file does not open with DB Browser by default, refer to the SSURGO Portal Installation Instructions for instructions about how to set DB Browser to open SQLite files by default.

3. Click the **Browse Data** tab and select a table from the drop-down menu. The contents of the table will appear.



- Click the **Execute SQL** tab and run a SQL query. You can copy and paste the SQL code provided below into the DB Browser SQLite query window. It will produce a table showing horizon names, clay content, sand content, and silt content for all soils in the database.

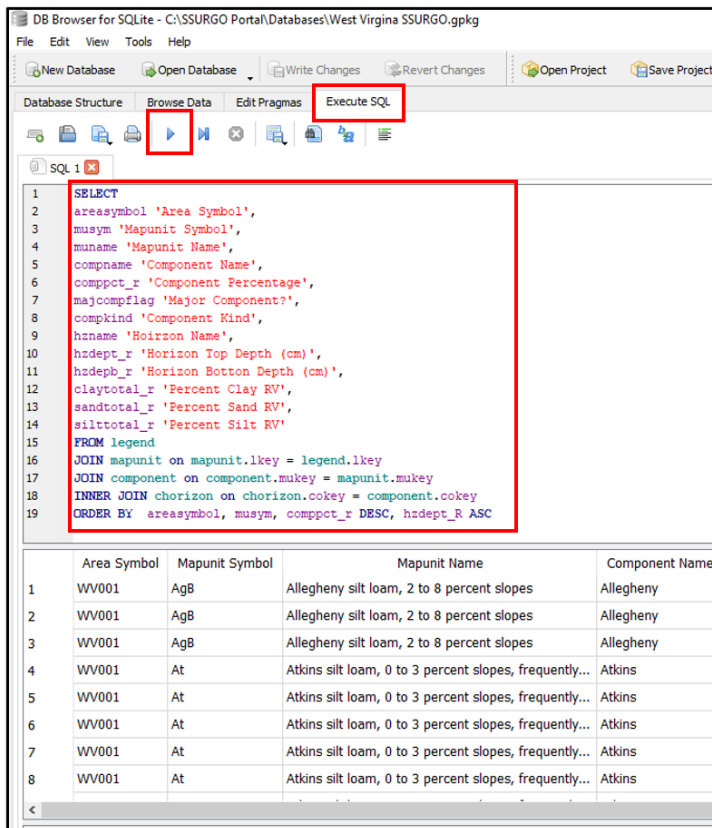
```

SELECT
areasymbol 'Area Symbol',
musym 'Mapunit Symbol',
muname 'Mapunit Name',
compname 'Component Name',
compct_r 'Component Percentage',
majcompflag 'Major Component?',
compkind 'Component Kind',
hzname 'Horizon Name',
hzdept_r 'Horizon Top Depth (cm)',
hzdepb_r 'Horizon Botton Depth (cm)',
claytotal_r 'Percent Clay RV',
sandtotal_r 'Percent Sand RV',
silttotal_r 'Percent Silt RV'

FROM legend
JOIN mapunit on mapunit.lkey = legend.lkey
JOIN component on component.mukey = mapunit.mukey
INNER JOIN chorizon on chorizon.cokey = component.cokey

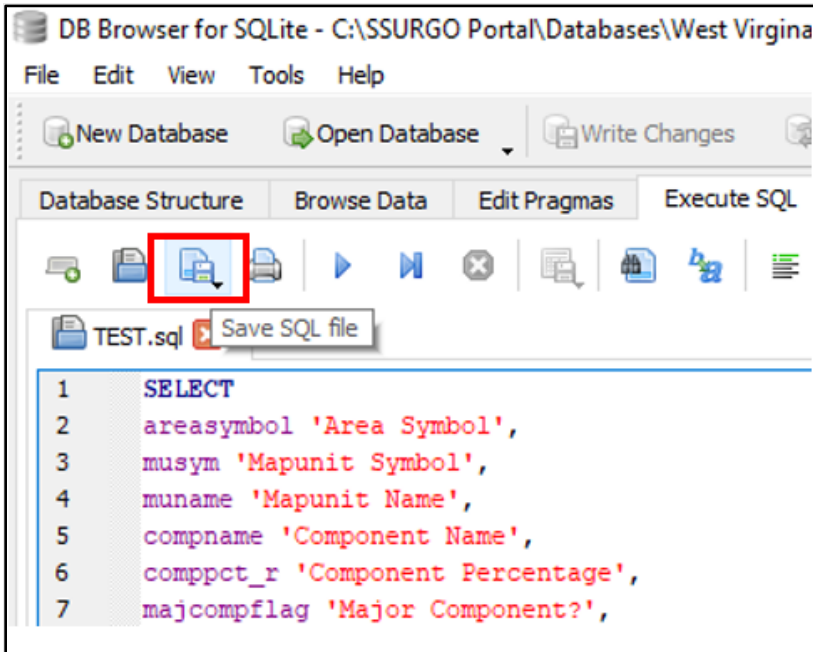
ORDER BY areasymbol, musym, compct_r DESC, hzdept_R ASC

```

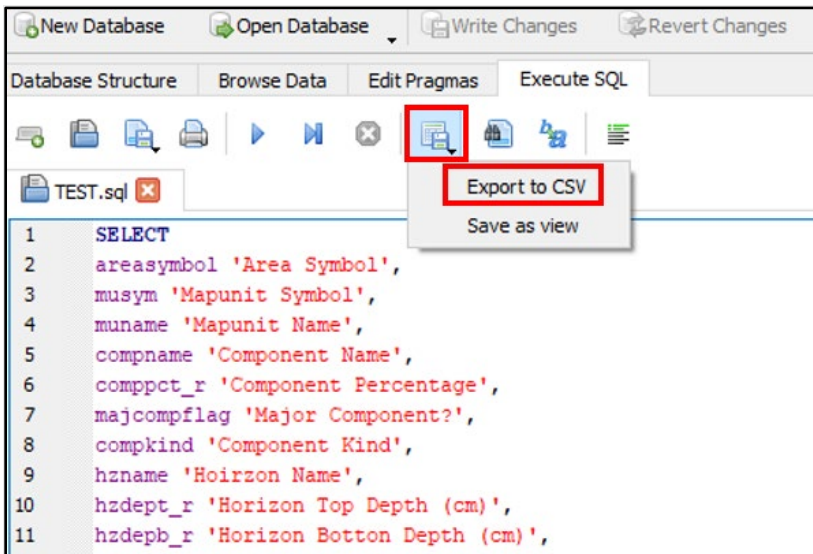




5. You can save a query for future use by clicking **Save SQL file**. The query can also be shared with others and used with other SQLite SSURGO Template databases.



6. You can export the query results to a csv file after running the query. You can open the csv file in Excel.











Please note that DB Browser offers additional capabilities that are not covered in this document.

## 8.5. SSURGO Metadata

***If users wish to explore the metadata, this section will cover that topic. This section is for SSURGO Portal users who want more information on the database schema.***

You can access pdf SSURGO Metadata documents [here](#). While all the documents are helpful, the SSURGO Metadata tables and columns report is a good starting point, especially if you need to create custom queries. These metadata documents define tables, columns, domains (choice lists), unique constraints, and relationships. The documents also include schematic diagrams showing table connections.

Additionally, there are metadata tables within the database. These provide the same information as the pdfs. The pdf metadata documents also define the metadata tables.

 mdstatdomdet
 mdstatdommas
 mdstatidxdet
 mdstatidxmas
 mdstatrshipdet
 mdstatrshipmas
 mdstattabcols
 mdstattabs