Working with ArcPro

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Contents

Requirements

1. ArcGIS Online Account – based on organization (could use floating license pool if organization has this)
2. Install Pro on desktop

Data

Data used in this document originate through publicly available data layers found by using **ArcGIS Online** (more specifically, the City of Sacramento's Open Data portion of ArcGIS Online) or from a **Sacramento_Data** folder that contains a file geodatabase of different kinds of publicly available data sets so that some of the different ArcGIS Pro functions can be illustrated (e.g. connecting to data folder vs an online web service via ArcGIS Online). Users of this document can substitute their own data sources or request the data folder from the author.

Overview of ArcGIS Pro

Working with ArcPro requires the creating of a "project." Several templates exist to work with data, maps, etc. When creating a "new" project, a map template is used, a project name is provided, and a folder to manage data, maps, connections, etc are created. Once a "new" project is created, a user can browse and find the ArcPro project to continue working on it.

ArcPro differs from ArcDesktop by allowing for multiple "map documents" (e.g. page sizes, map data frames) as well as common geoprocesses and editing and or web publishing/sharing methods).

Start ArcPro

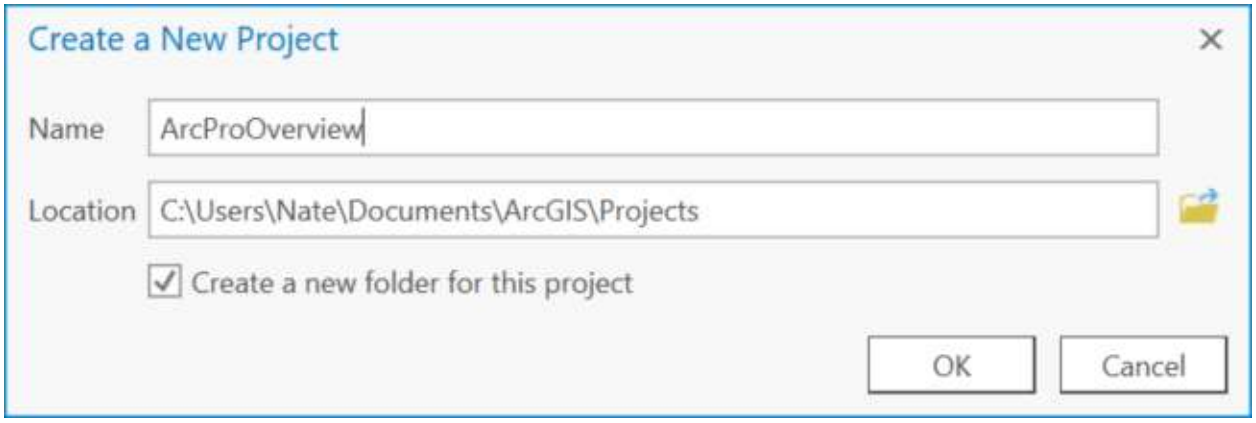
Click on ArcPro from the Windows Start menu. Alternately, type in ArcPro in the Search box and then select ArcPro.

If prompted, sign in with an ArcGIS Online account (username and password). Access will be granted by the organization that has a relationship with ESRI and has a staff to administer ArcGIS Online accounts.

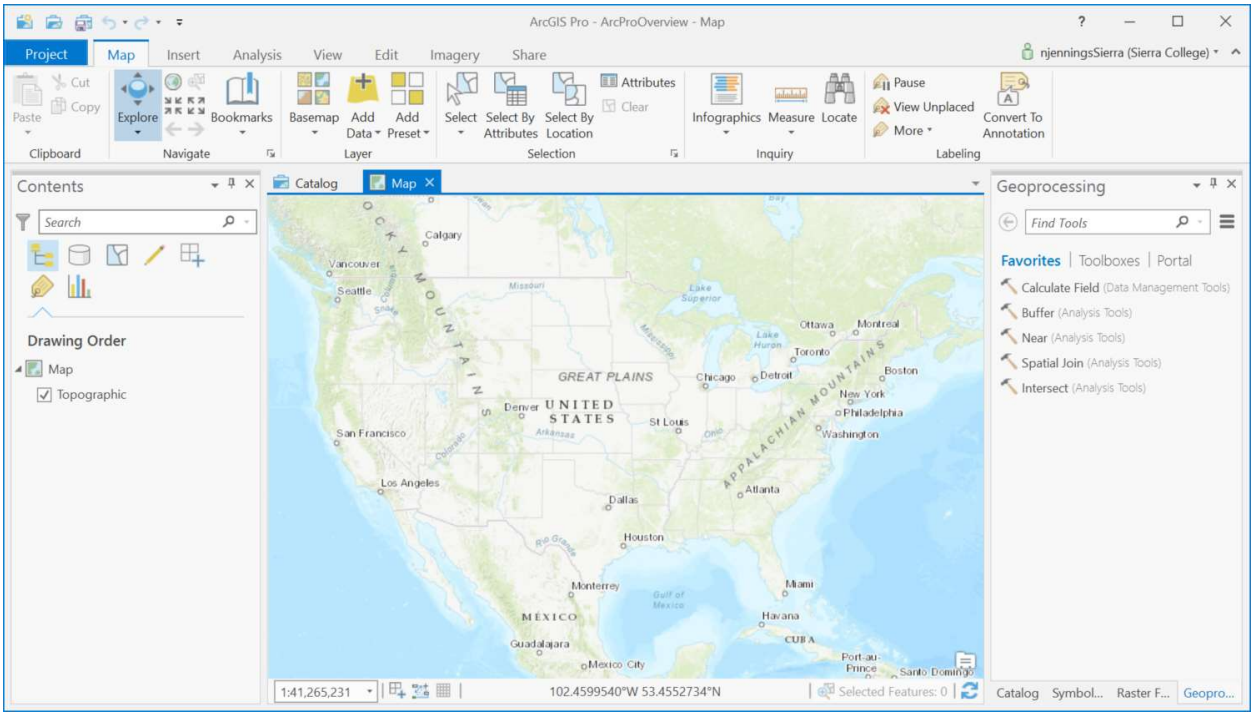
A user can sign on later, but a user account will be required to use the tools and access online data.

Create a New "Map" Project

1. Select the **Map.aptx** template
2. Assign a unique project name
3. Change the folder as needed
4. Check the box for **Create a new folder for this project**
5. Click **OK**.

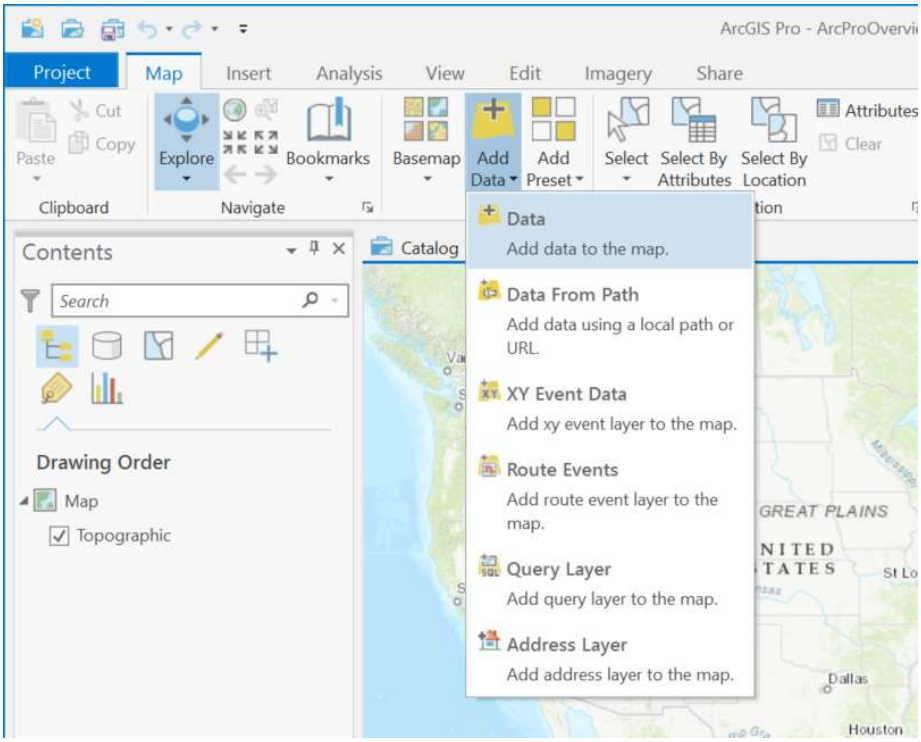


An empty base map is provided in the map viewer. The ArcPro environment may look like the following.

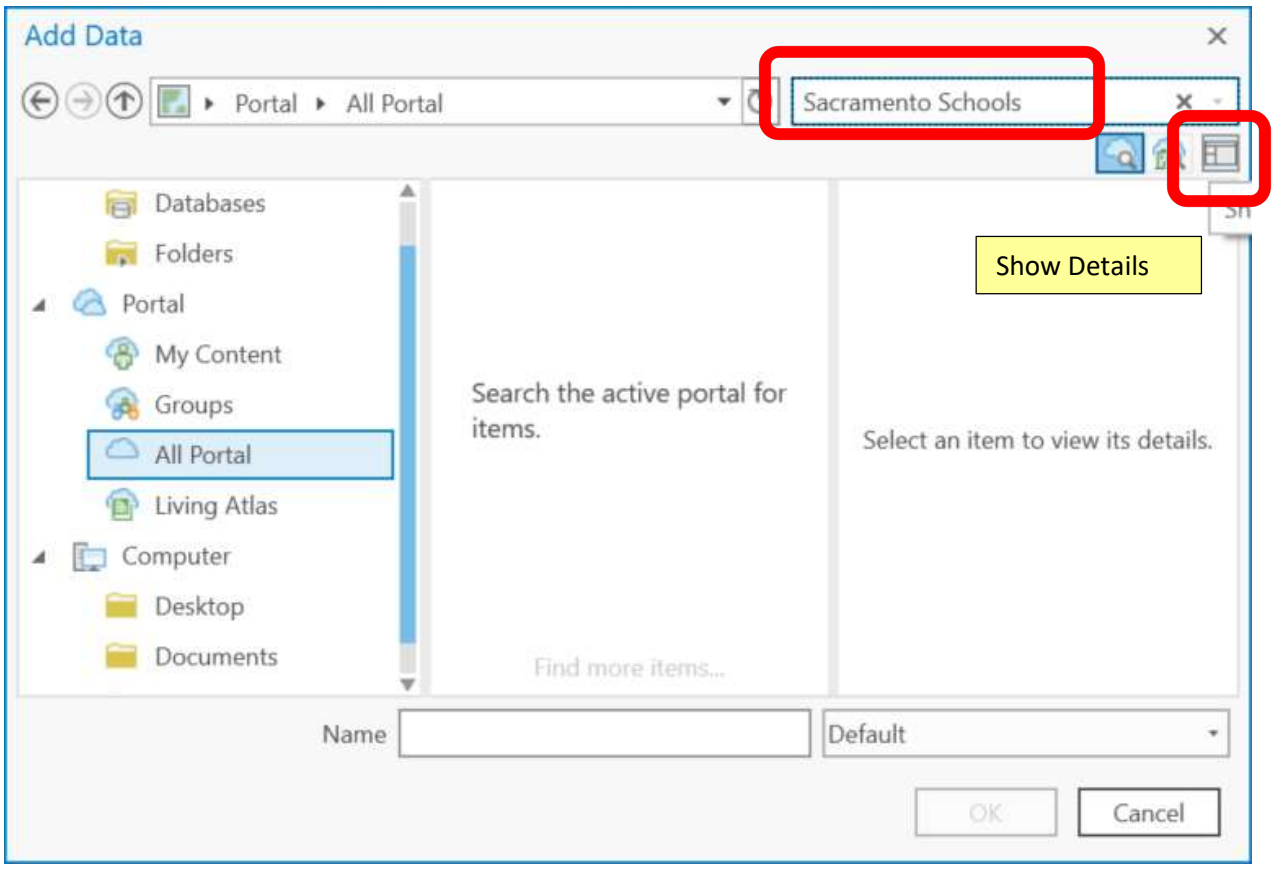


Load Data (Map Layers) from Public Web Map Services

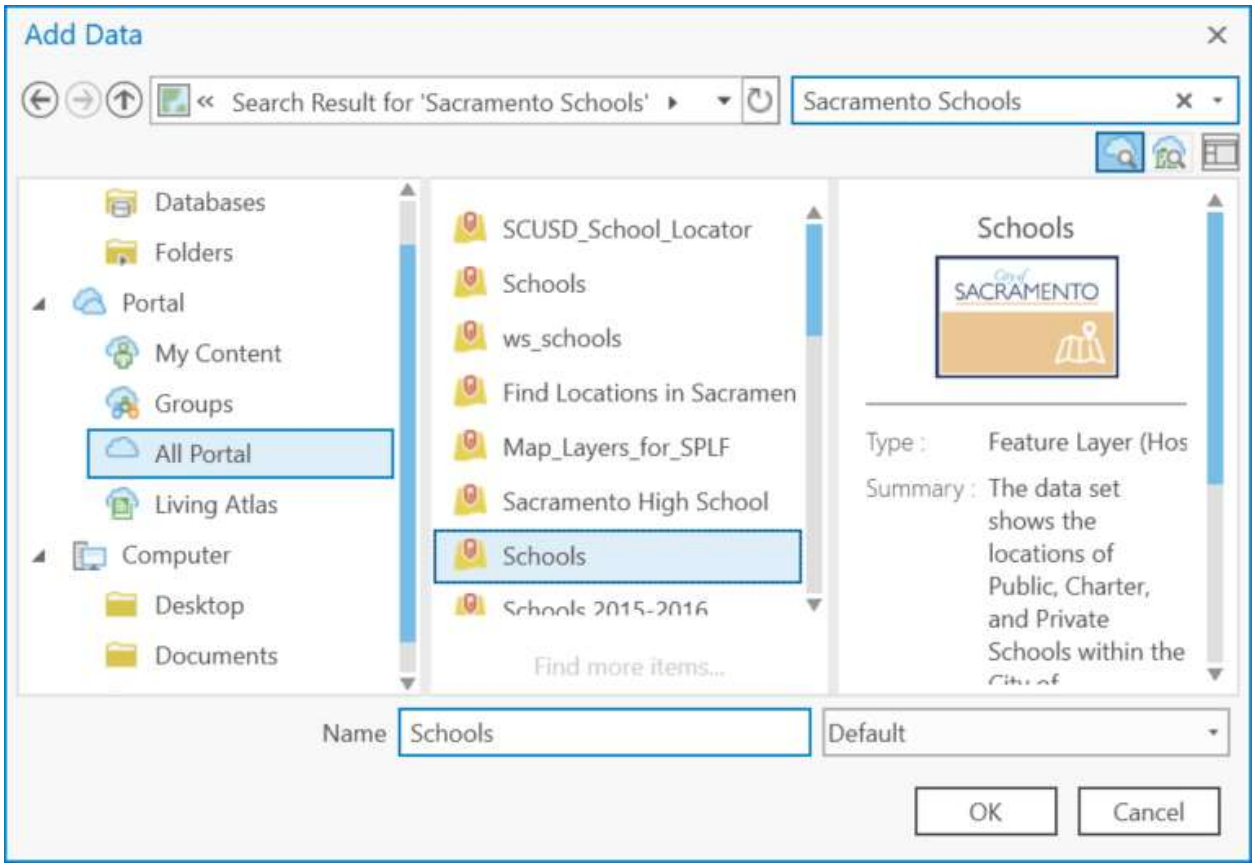
1. Click on the black triangle on the Add Data Tool.
2. Click Data



3. Click on **Portal -- All Portals**
4. In the **Search** box, type in ***Sacramento Schools***
5. Make sure to click on the **Show Details** icon in the **upper right of the Add Data dialog box**. The details of the data set need to be viewed so the user can validate the correct data set to add from the web.

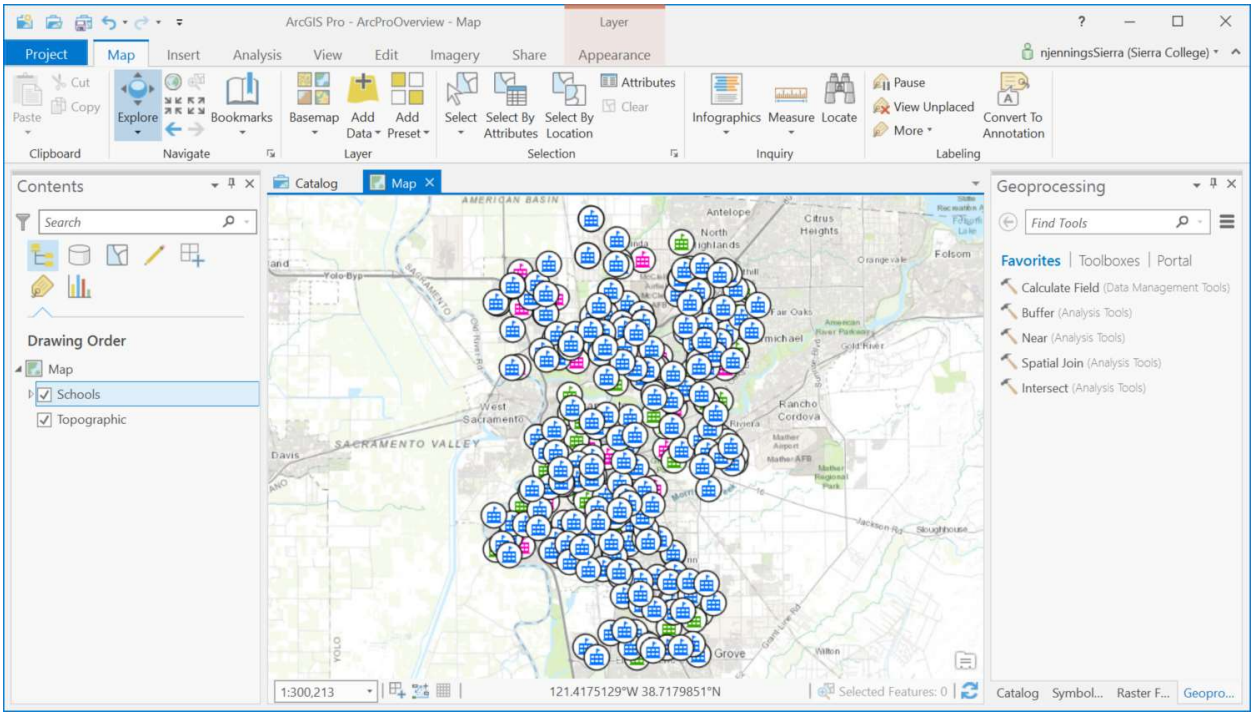

Add Data
Portal
All Portal
Sacramento Schools
Show Details
Databases
Folders
Portal
My Content
Groups
All Portal
Living Atlas
Computer
Desktop
Documents
Search the active portal for items.
Find more items...
Select an item to view its details.
Name
Default
OK
Cancel

6. After clicking enter on the search box, click on the **Schools** layer. Validate that the details pane shows the **City of Sacramento** as the owner of the data.

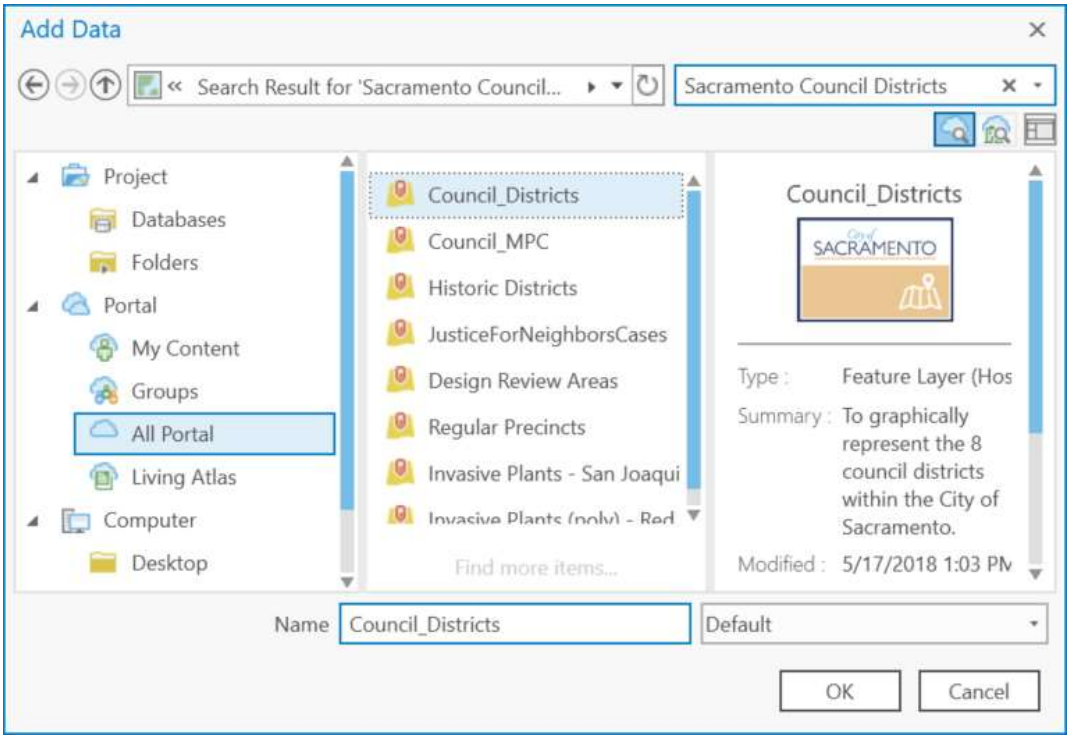


7. Click OK.

ArcPro should look similar to this. The map automatically zooms to the geographic extent of the data layer.

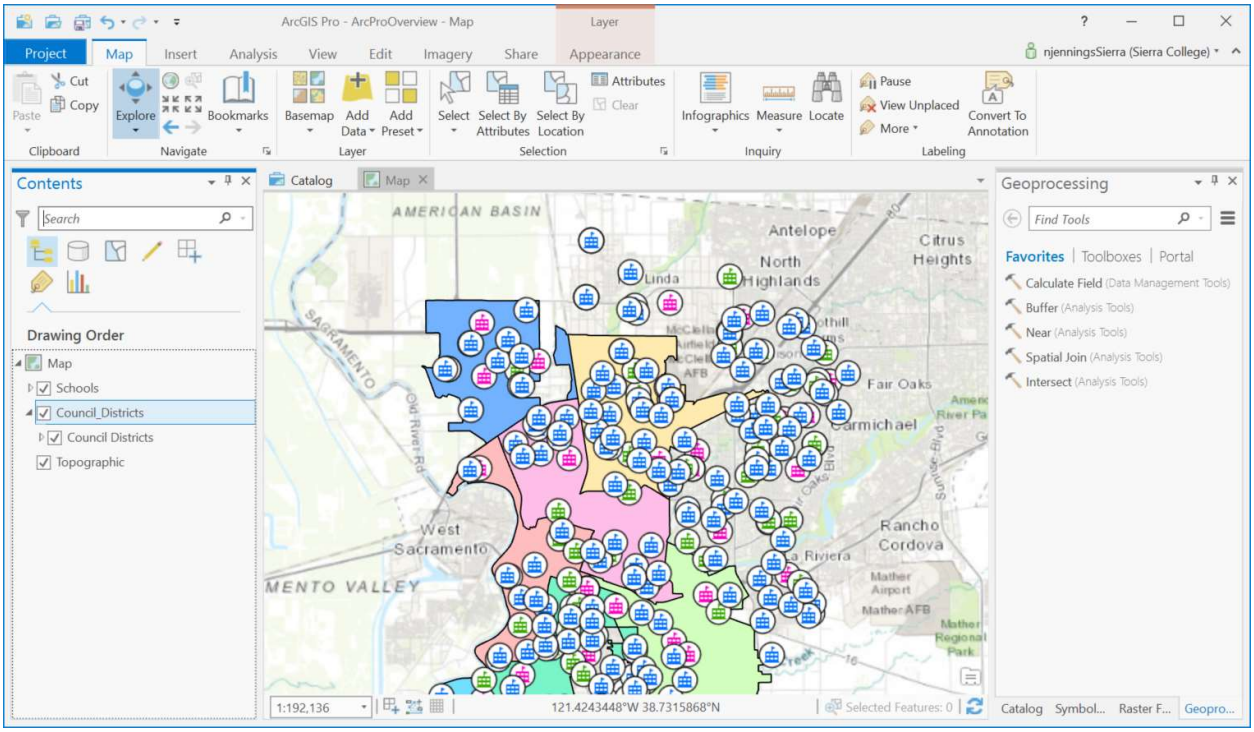


8. Do the same steps to add the Council Districts. Search for **Sacramento Council Districts**.



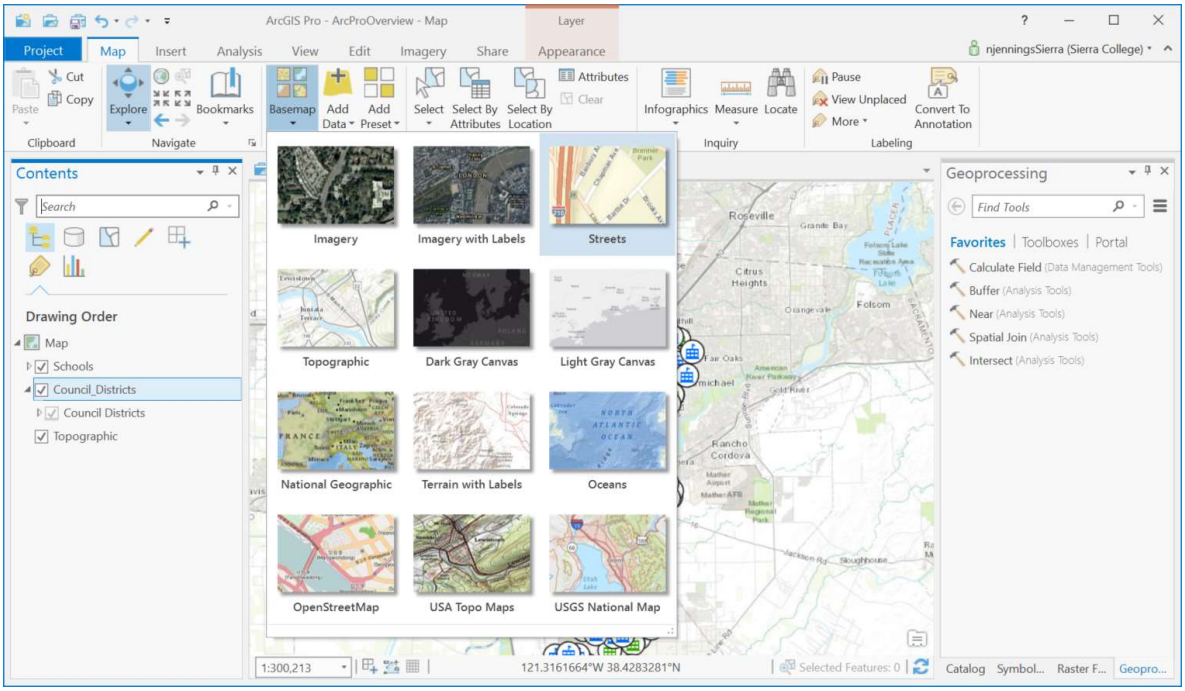
After adding the council districts, the map should look like this.

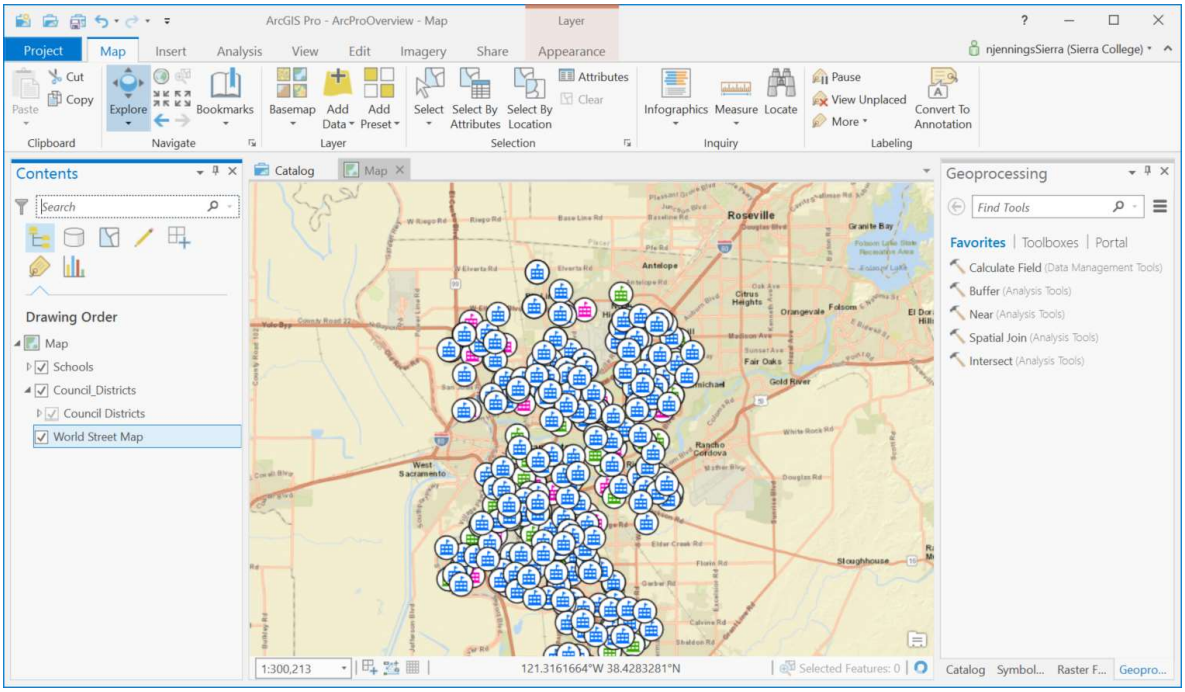
NOTE: If the council districts don't appear, use the scroll wheel on the mouse to scroll "up." This changes the zoom level (to make the map appear more "zoomed in" (closer)). The council district boundaries and colors should appear.



Change the Base Map

Since ArcPro typically adds a “default” base map, the base map can change by clicking on the Base Map tool and choose a different base map (e.g. Streets).



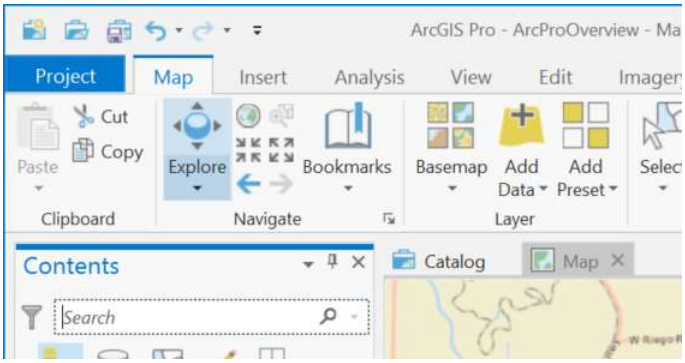


Interacting with ArcPro

Since Pro uses the “ribbon” technology for “look and feel” in the user interface, there are not “toolbars” to add.

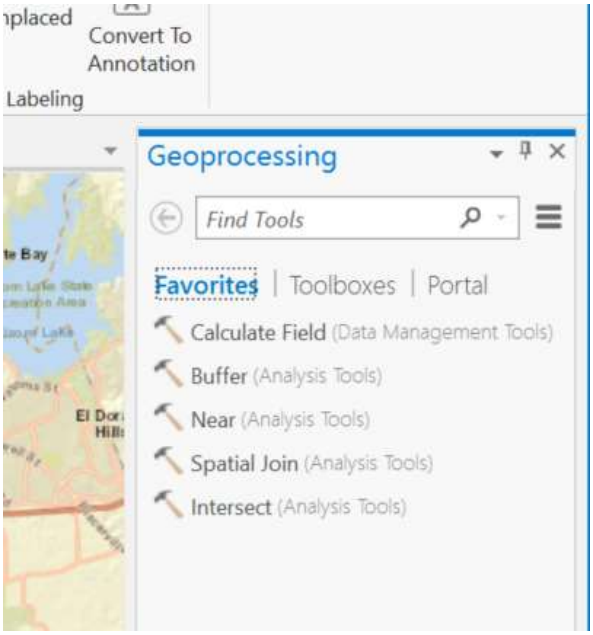
Navigation is performed by using the scroll wheel (zoom in/out) and using the left mouse button to “pan” (slide the map in any direction at the same scale).

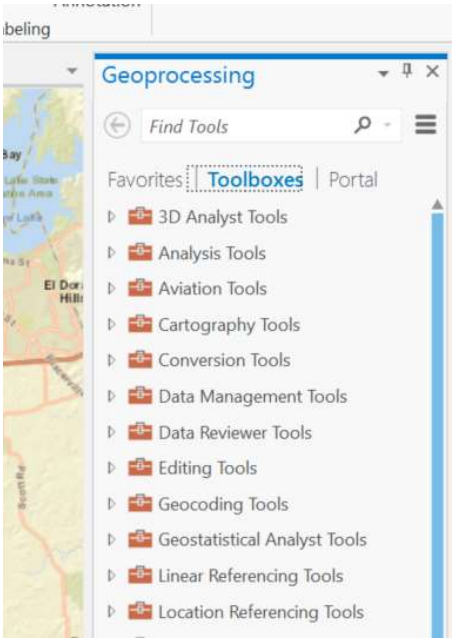
The user can also use the Explore button in the Map Navigation ribbon.



Geoprocessing and Analysis

Pro also doesn't have a "toolbox" like Desktop but has an Analysis ribbon that contains a number of common analysis tools. In addition, Pro has some "common" (favorites) Geoprocessing tools that may appear on the right side of the interface. Users can pick from this list or choose Toolboxes to see a full list and/or search for various geoprocessing analytical tools. This list and organization is similar to the ArcToolbox found in Desktop.

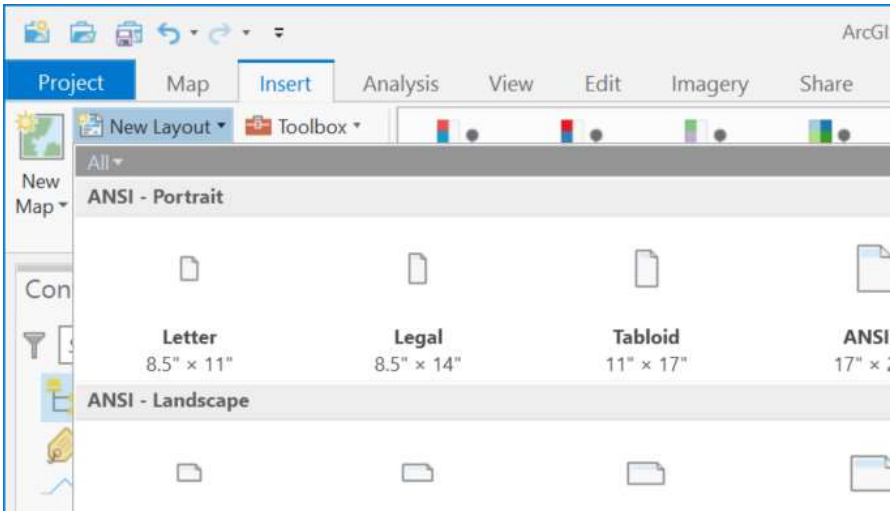




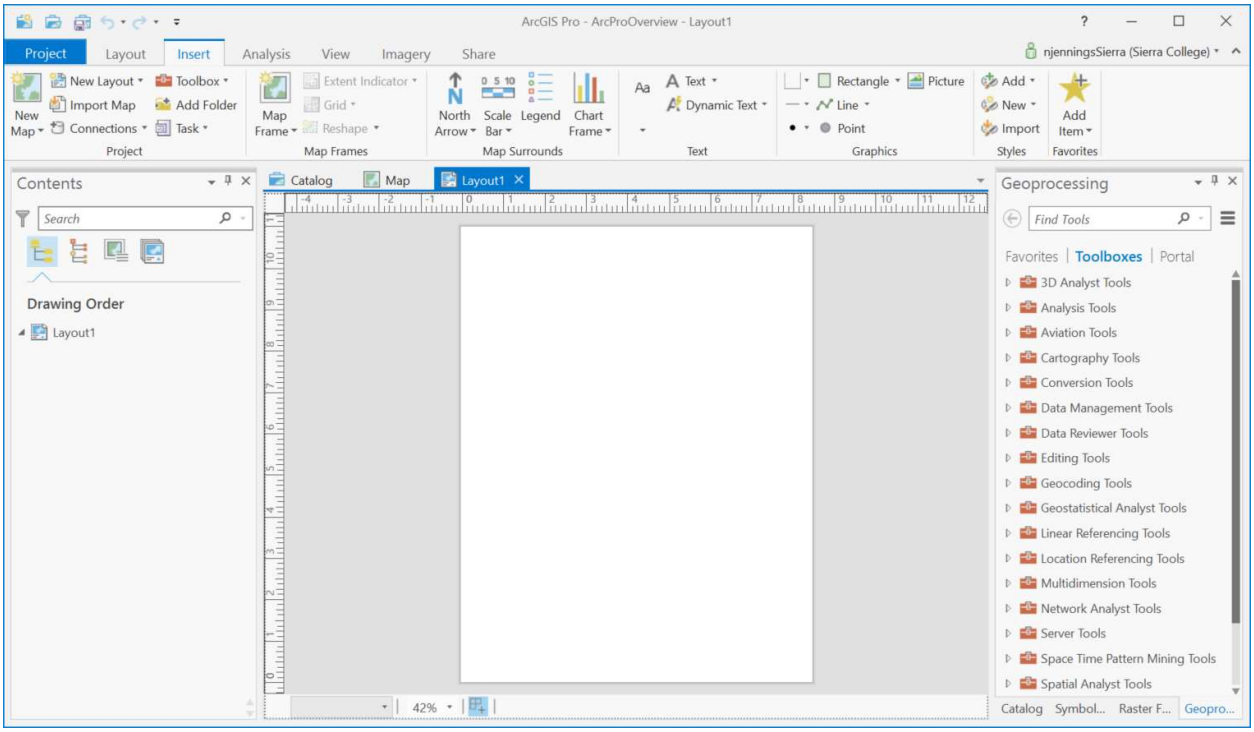
Create a Map Layout

Since ArcPro is “project-based” where an ArcPro project can contain references to data, web services, and can publish and work with data on the web, in addition to making one or more different map layouts, the user must create a new map layout for printing or creating a PDF.

To do this, a new map layout must be “inserted” using the **Insert—New Layout** ribbon option.



A new layout is created with a blank “page.” Map data needs to be added to the map.



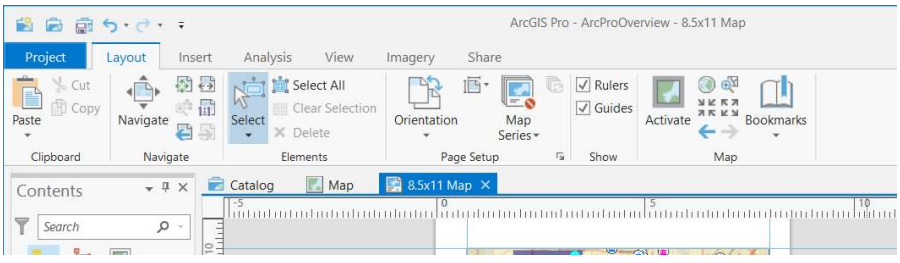
Change the Map Name

On the **Layout tab**, **double click** or **right click--Properties** to change the map name. Remember, several different kinds of maps can be created for a single set of data, so having unique names for a map may be a good idea.

Once a map layout is created, the user can use the layout space to continue manipulating the map for production (printing, saving to PDF, etc).

Layout Ribbon and Tools

The primary layout options are found on the Layout Ribbon



Navigate – use this to “pan” around the map. The mouse scroll wheel is used to zoom in/out of the layout page.

The small icons next to the Navigate button are to zoom to full layout page, zoom to the width of the page, or zoom to 1:1 to observe what a map looks like if it was to be printed.

Select – this tool is use to “select” map elements (map frame, graphics, text, legend, scale bar, etc).

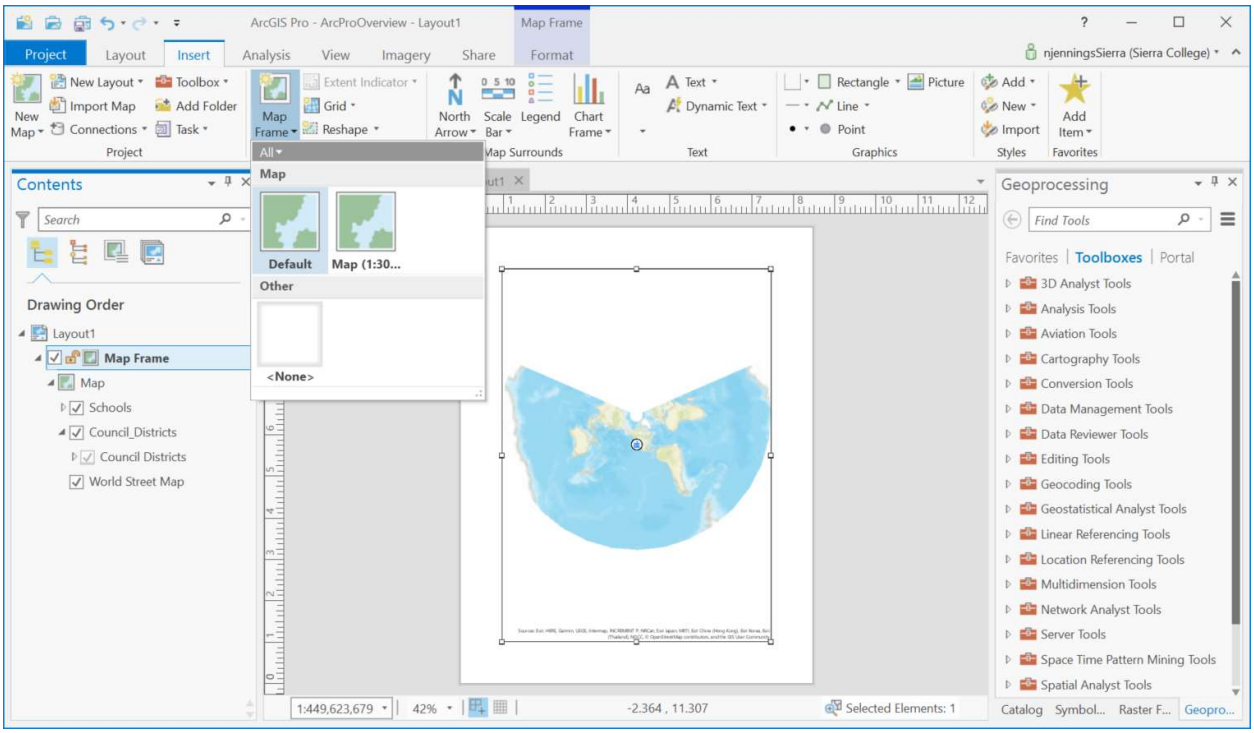
Orientation – change page orientation (portrait, landscape)

Activate – this tool is used to “activate” the map frame so the map itself can be adjusted (pan, zoom, etc). This is similar to using the “Tools” tool bar in ArcMap vs the “Layout” tools that manipulate the layout page.

Add a Map Frame

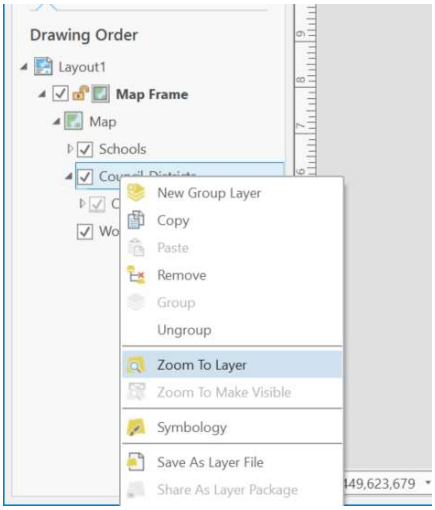
After the layout tab is created, a data frame must be added to the map. This is the “window” where the map will be created on the “piece of paper.”

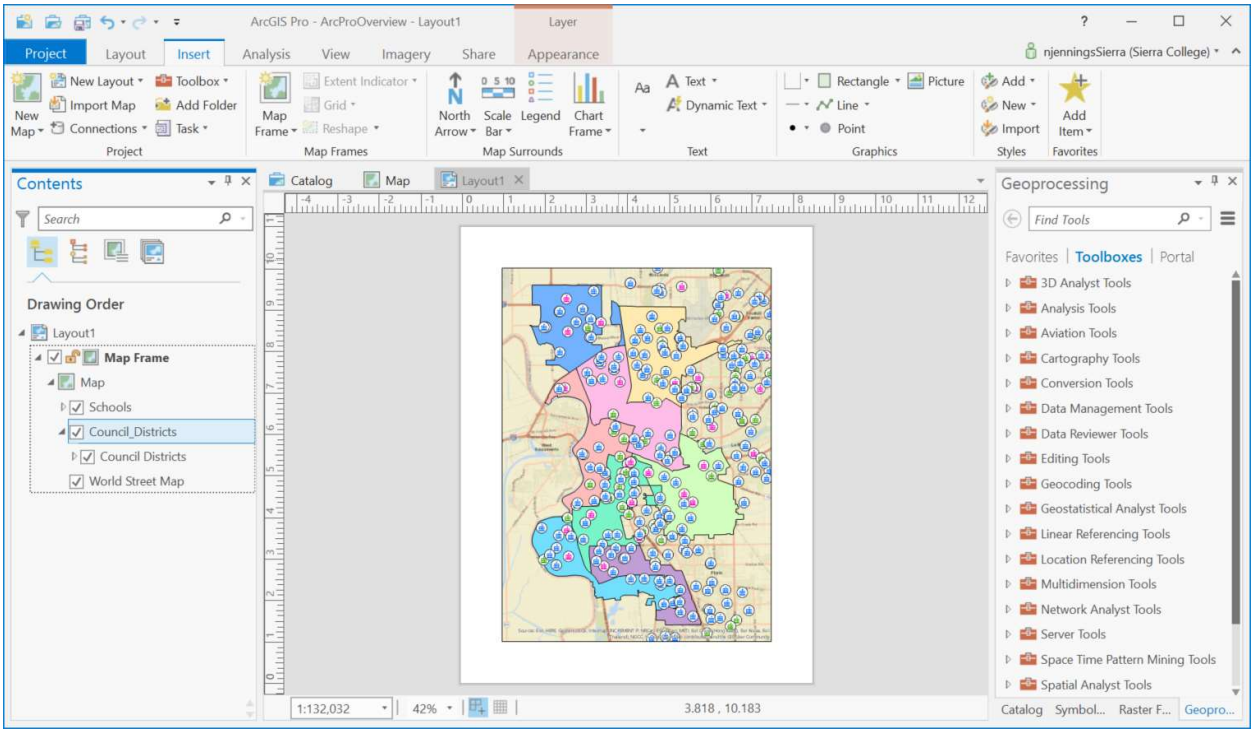
Choose **Insert—Map Frame—Default** from the **Insert Map Frame** ribbon.



Since the map zooms to the entire extent of the world, the map needs to focus on the City of Sacramento area.

1. **Expand** the **Map Frame** by click on the **little black triangle**.
2. Right click on the **Council Districts** and choose **Zoom to Layer**. The map will center on the geographic extent of the Council District layer.



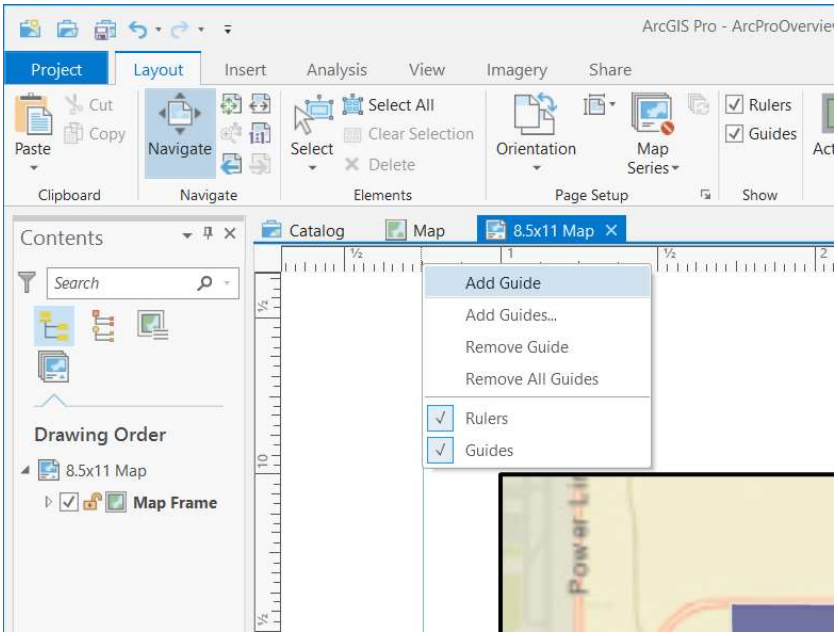


Create Guides

One useful item to add to a map layout is adding guides. These show up at light blue lines on the map page to "snap" a map frame, graphics, legends, etc to specific areas on the map page.

To create a guide do the following:

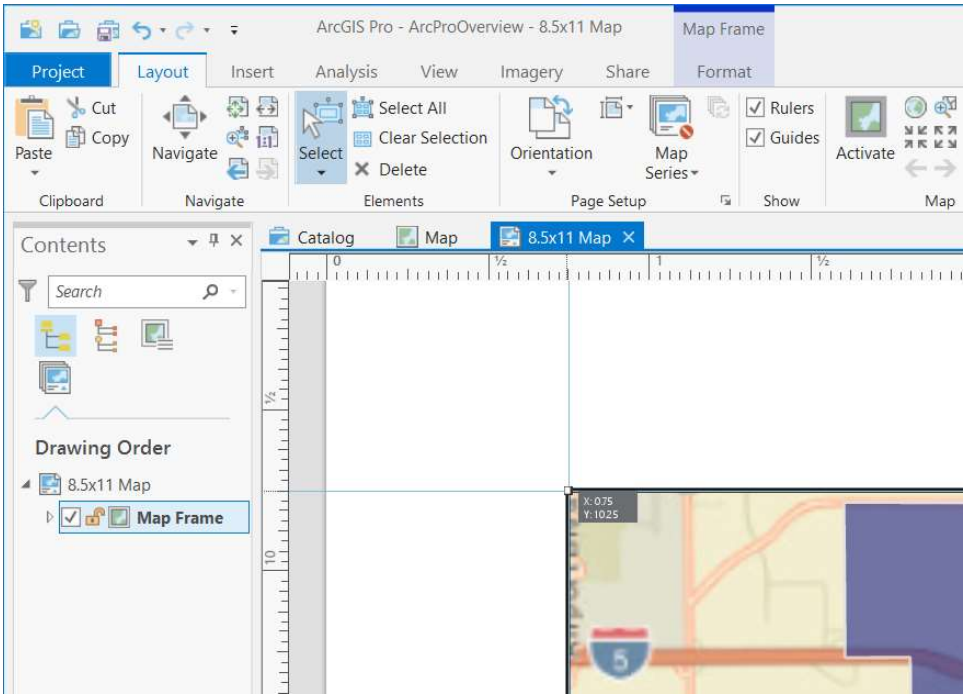
1. Zoom into one of the corners of the layout (make sure the Layout tab is being used)
2. Right click on the specific location in the ruler and choose Add Guide



3. Do the same for each of the 4 corners (upper left, upper right, lower left, lower right) and any other locations that are desired.

Snap Map Frame to Guide

To snap the map frame to the guide, click on the Select tool in the Layout ribbon and click on the map fame. Left click and drag a corner of the map frame to the corner of the intersecting page guides. Follow this same procedure for each corner of the map.



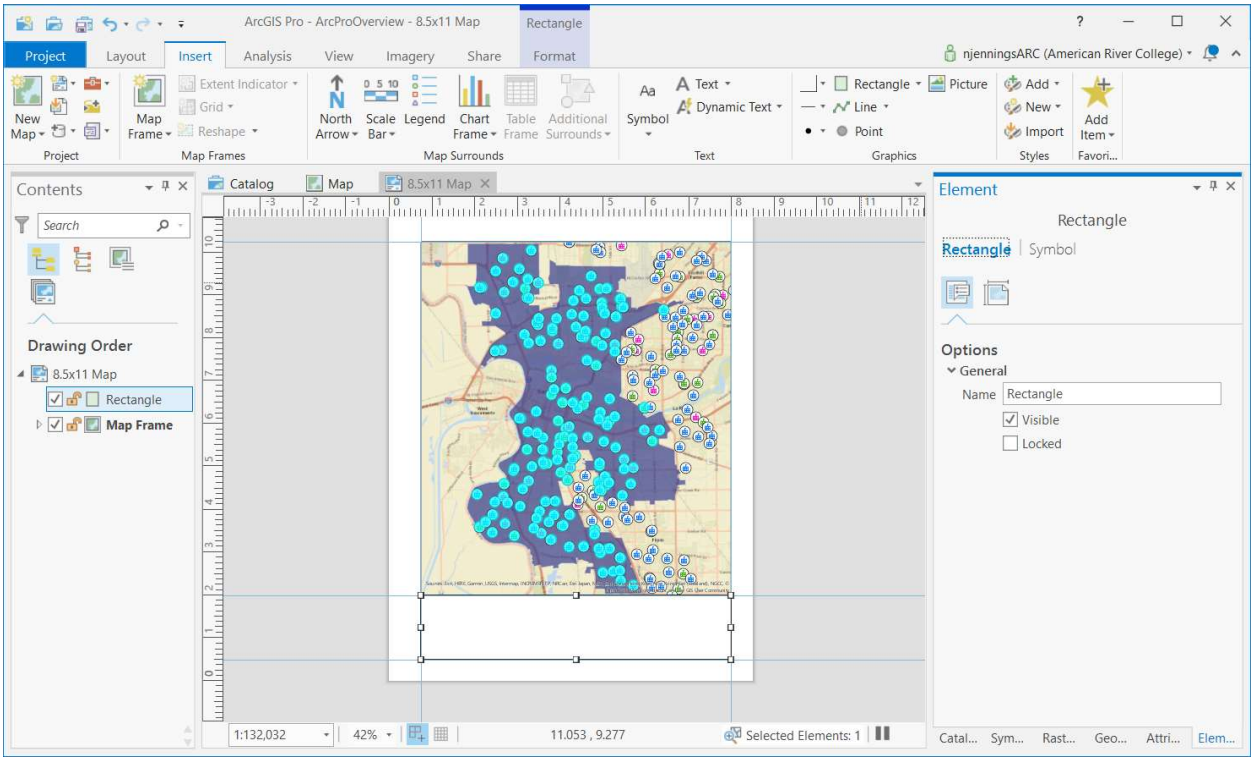
Insert Map Elements

Use the Insert ribbon to insert a legend, scale bar, graphics, text boxes.

Inserted map elements show up on the left side of the layout page as “layers.” The draw order of the map features can be changed by left clicking and dragging the selected map element to the new draw order location.

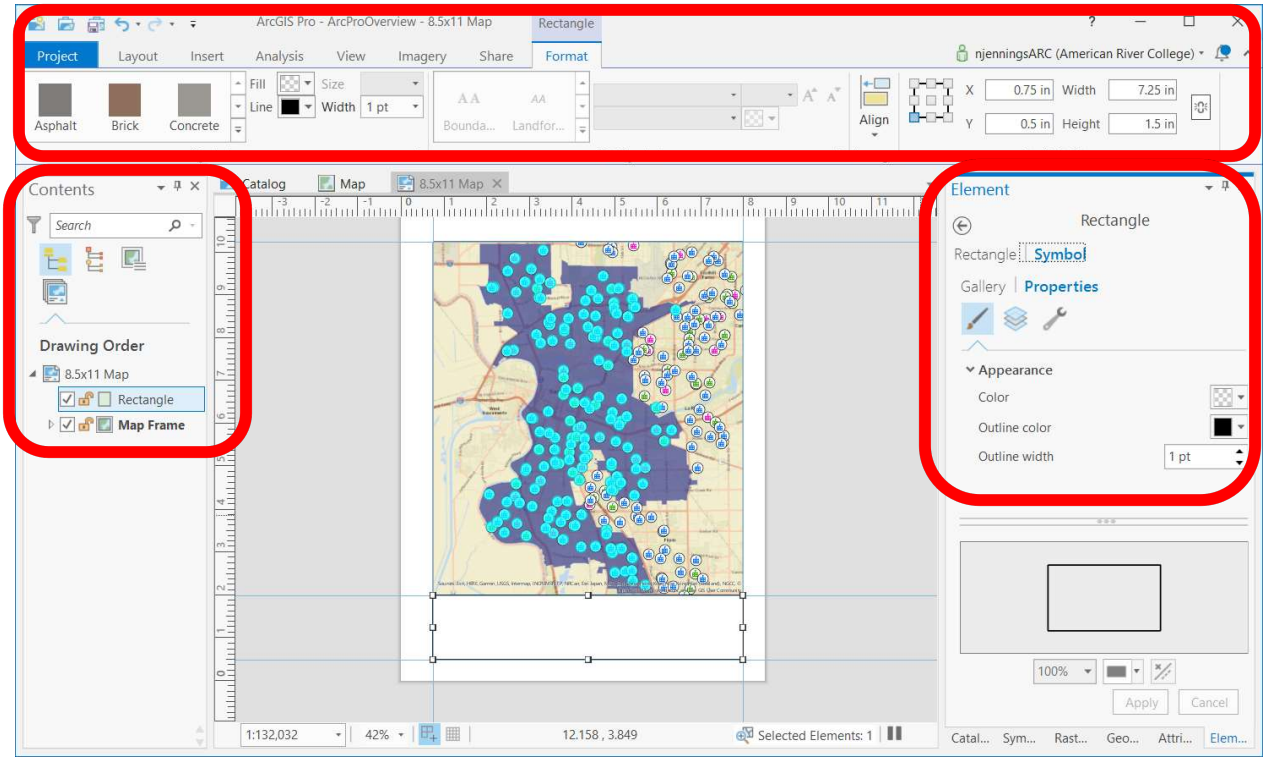
Add a Graphic

To add a graphic, click on one of the graphic options in the Insert ribbon. For example, to add a rectangle to the map, choose the rectangle, then drag a box to create a rectangle.



In the illustration above, an empty rectangle shape was added to the bottom of the map layout just beneath the map frame. Notice that the rectangle is added above the map frame on the left side under the Drawing Order option in the Contents pane. The drawing order is where the drawing order options are modified.

The Format tab at the top of the ribbon allows the user to make changes to the graphic (such as color, line width. Some options can be manipulated on the Symbol option on the Element pane on the right side.



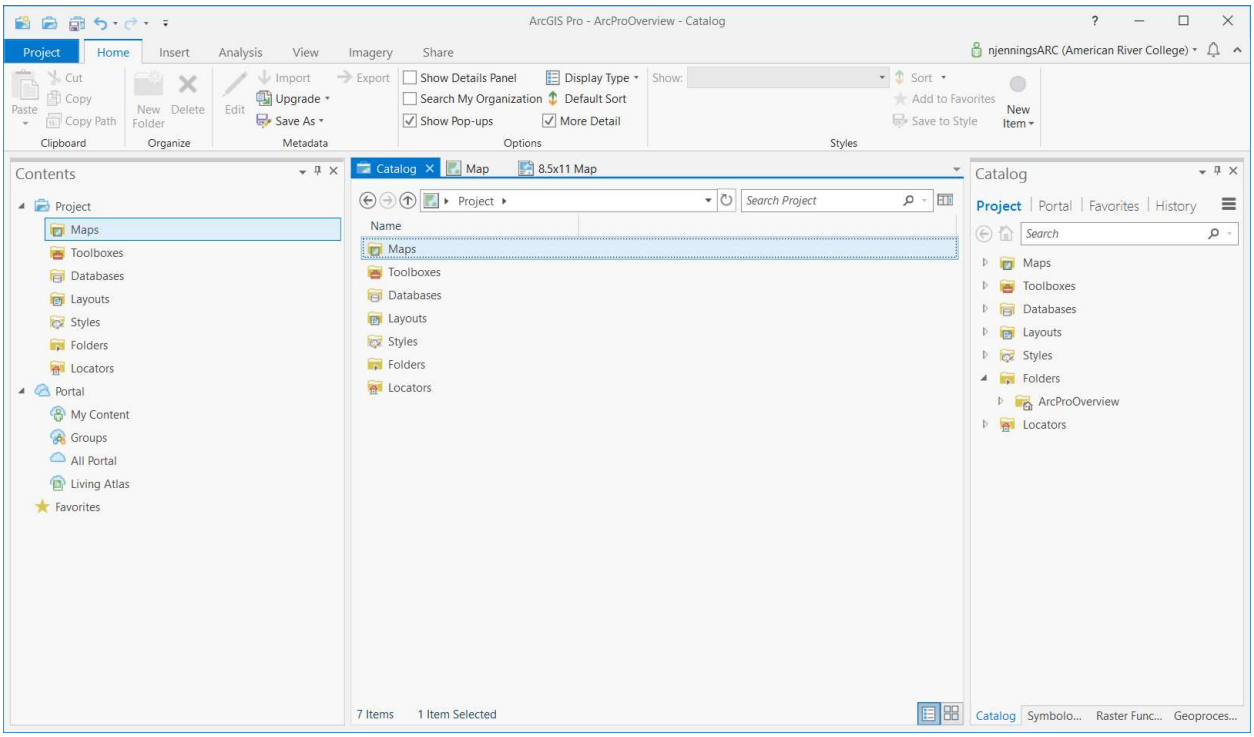
Add and Configure a Legend

Print or Export a Map

Click on the View, then Print to print the map layout or Export to save the map layout to a PDF.

Catalog

When a Pro project is created, a **Catalog tab** is present. The **Catalog** pane is where a user can view data connections connected to a specific project, access data online (i.e. ArcGIS Online or Portal or other web service locations), through enterprise geodatabase connections, and/or network or local folder structures.

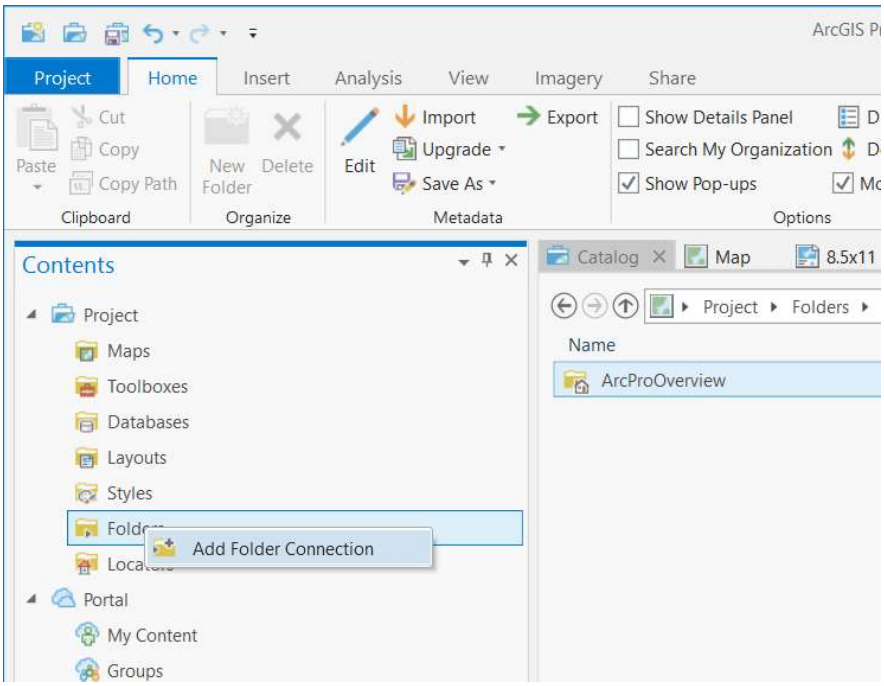


Connect a Folder

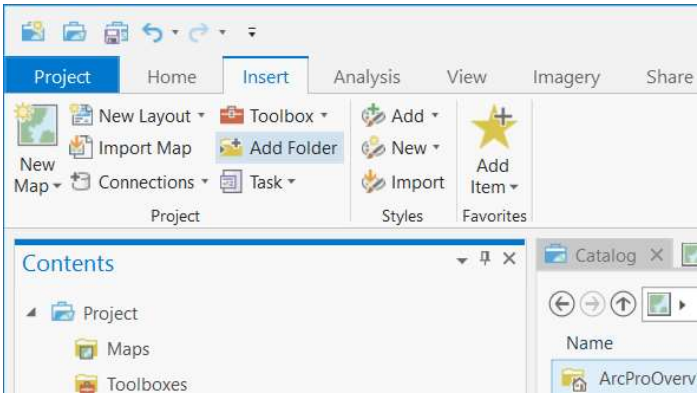
A common practice when using Pro is to connect to one or more network (preferably) folders. To do this do the following.

This example uses a folder called **Sacramento_Data** which contains a number of data layers.

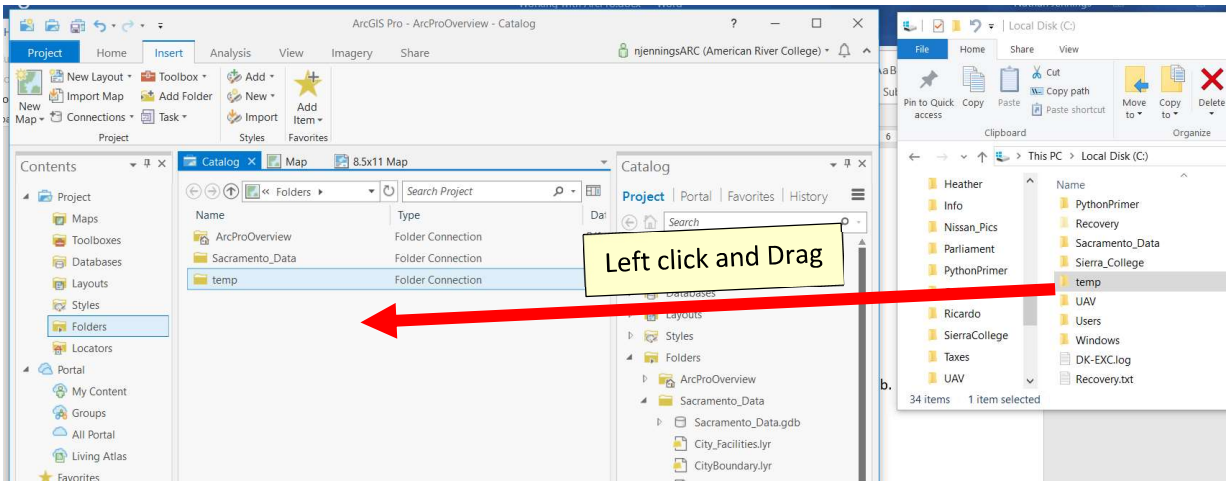
1. Right click on **Folder**, choose **Add Folder Connection**.



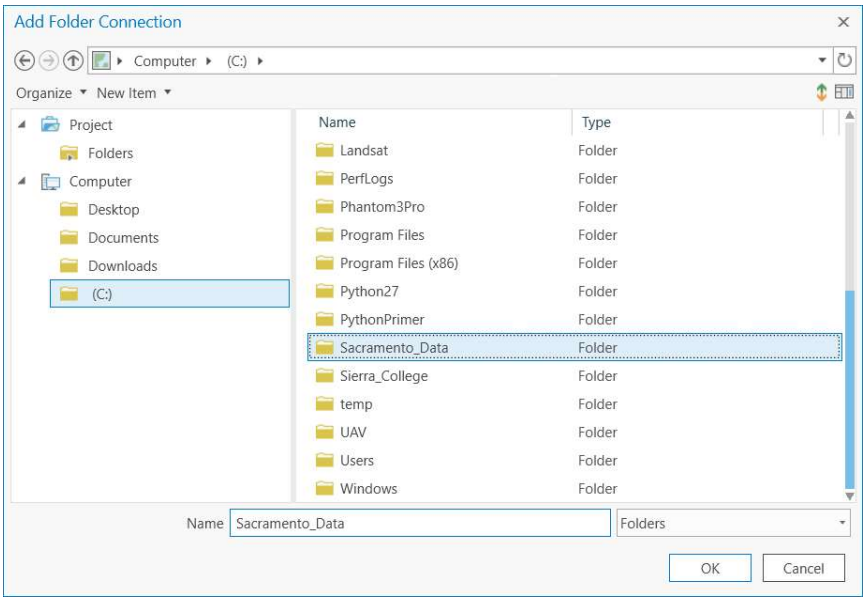
As a second alternative to add a folder, click **Insert—Add Folder**



As a third alternative, open **Windows Explorer**, browse to a folder, and drag it to the **Content** tab.

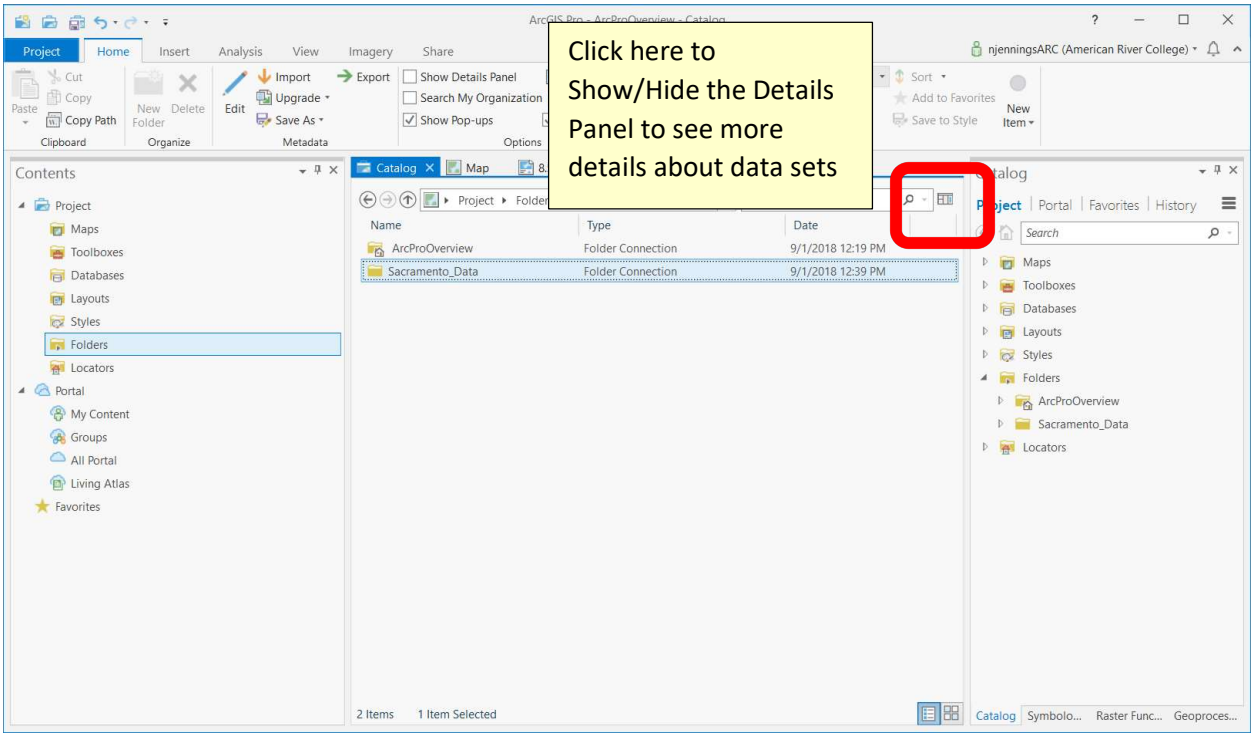


2. Navigate to the folder location where the **Sacramento_Data** folder exists.



3. Click one time on **Sacramento_Data**
4. Click **OK**

The **C:\Sacramento_Data** folder connection now appears in the **Catalog** tab



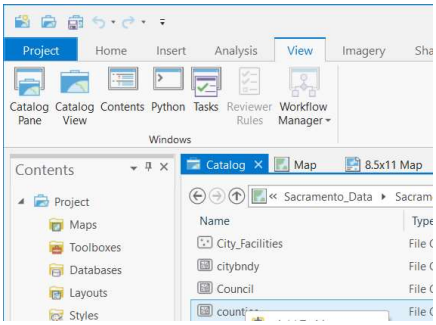
Explore Folder Contents

Catalog for Pro functions differently than in ArcCatalog. The Pro Catalog shows the contents in a folder or database. To see the "Preview" of the data, the **Show/Hide Details** pane in the upper right corner of the Catalog pane must be expanded.

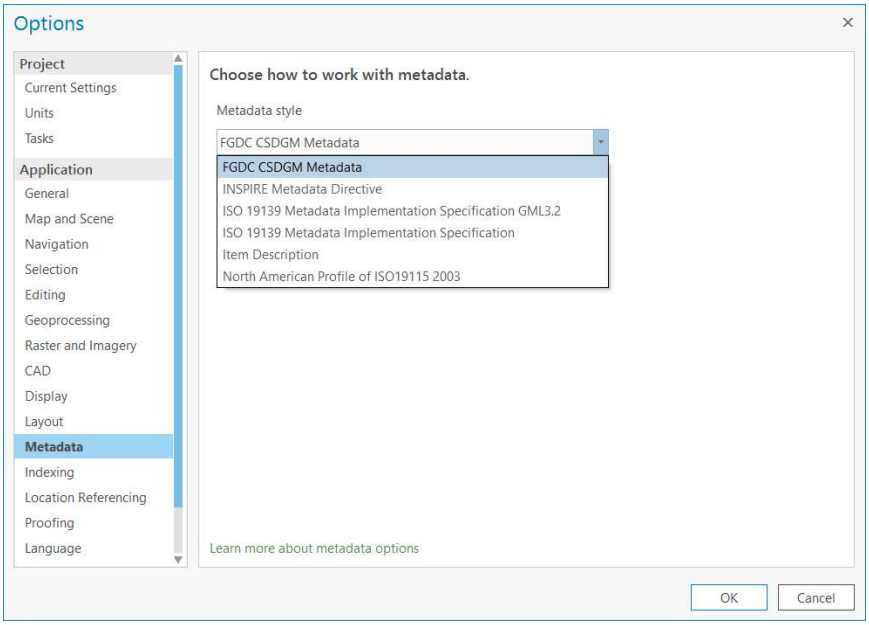
Change Metadata Options

Another significant change between Pro and ArcCatalog is the ability to view and interact with the attribute table and other data properties (metadata), such as source, description, field definitions, etc. To get the most out of Pro, it is good practice to change the **Metadata Options** for a given project.

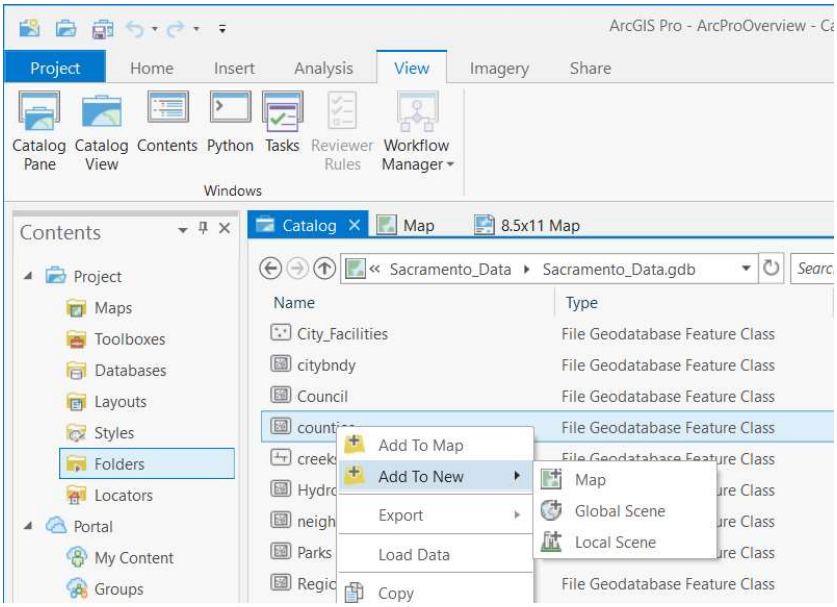
To do this, click on the **Project** ribbon item.



Click on **Options—Metadata**. The default is **Item Description**, which provides minimal data details. Choose **FGDC** which provides more details (provided they exist). In addition to source and coordinate system, field definitions do appear, which can be helpful when exploring data within Catalog.

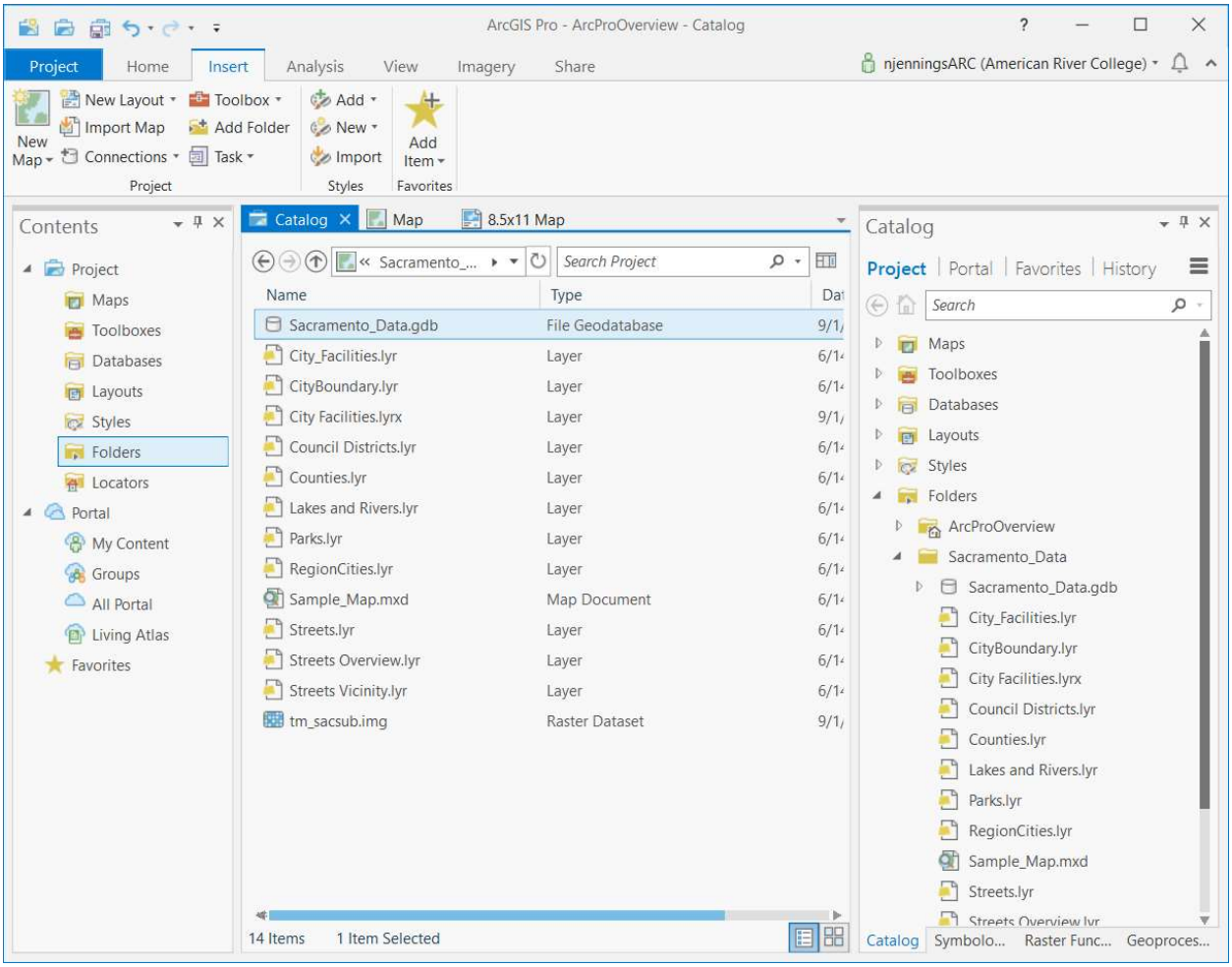


NOTE: To really get a good feel for the data table characteristics, add the specific layer to an existing Map by right clicking on the data set and then choose Add to Map (or use Add to New Map, one a map does not already exist).

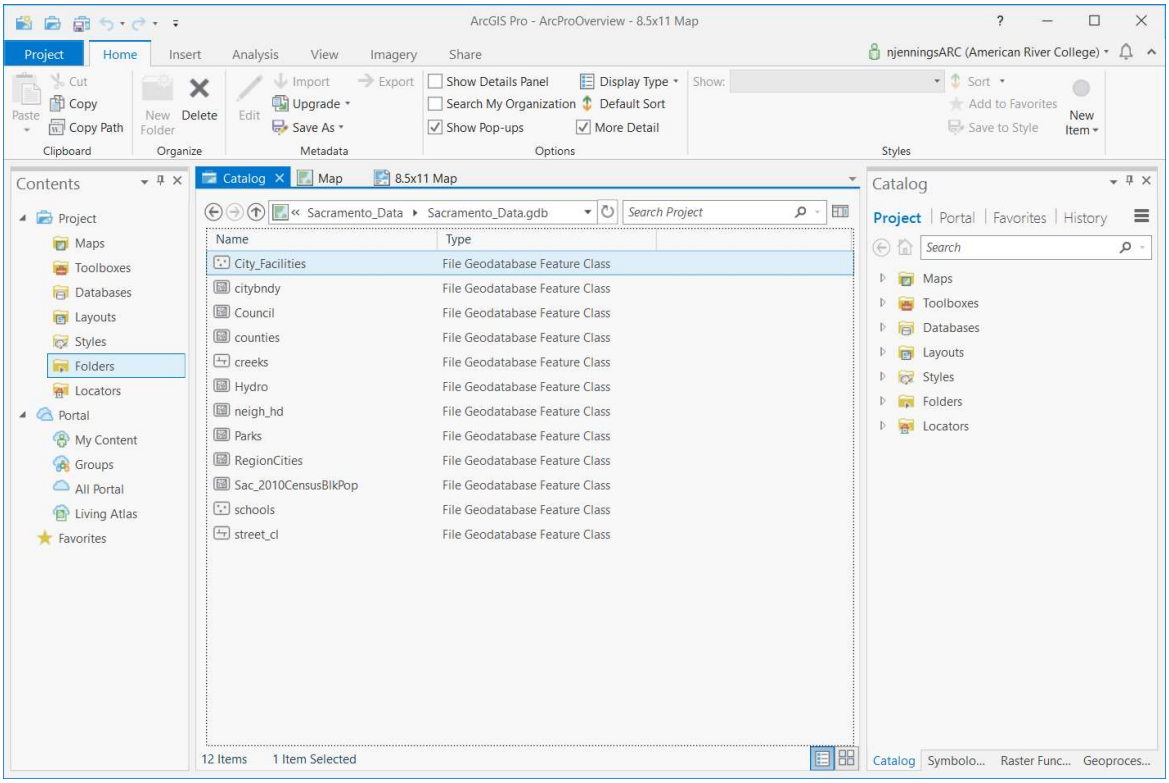


To further explore the data in the **Catalog** pane, double click on the **Sacramento_Data** folder to expand the contents of the folder.

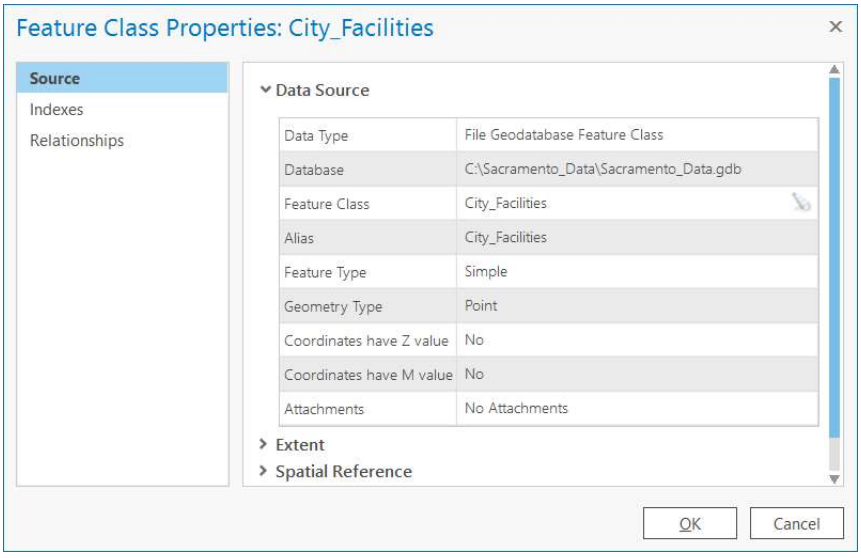
The folder shows a number of different data types (a file geodatabase, layer files, an ArcMap document, and a raster image).



Left double click on the **Sacramento_Data.gdb** to expand the contents of the file geodatabase. A file geodatabase is a common ESRI data structure to store different kinds of data including feature classes (point, line, and polygon), raster images (non-file based), TIN, LAS Datasets, and stand alone tables, among others). The different icons indicate the type of feature class, image, TIN, LAS, etc.



For feature classes, left-clicking on the data set will show data properties. At this time, the properties are a little different than those in ArcCatalog for Desktop. For example, the data fields do not appear.



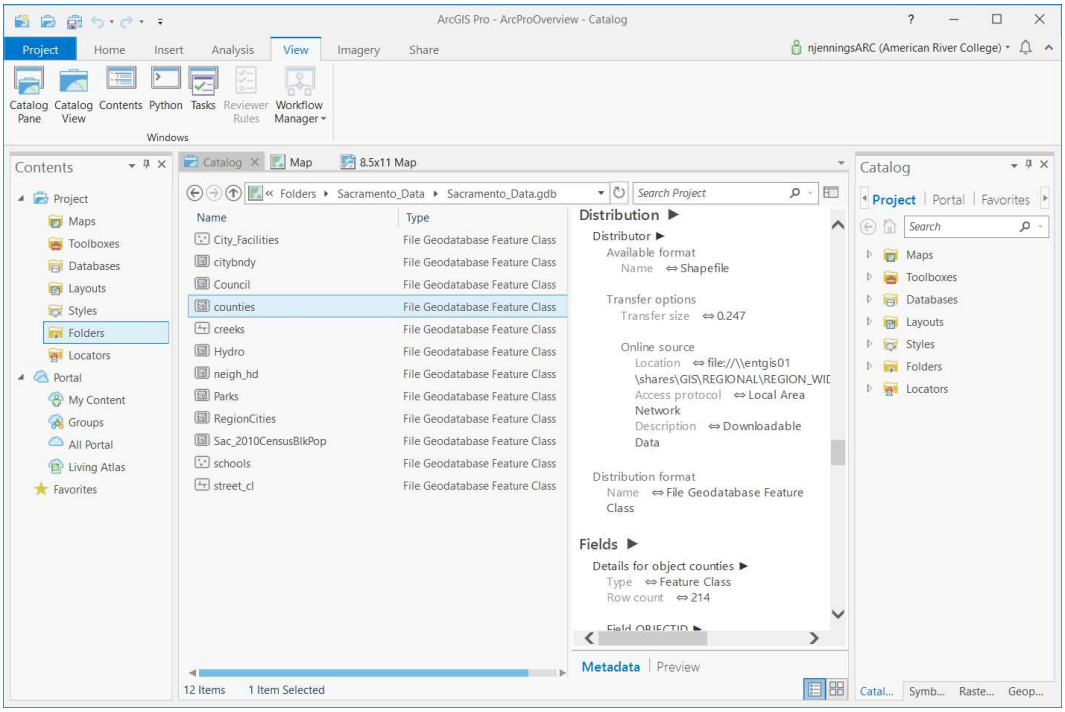
Show/Hide Details

Click on the icon in the upper right of the **Contents** pane (see above).

Metadata

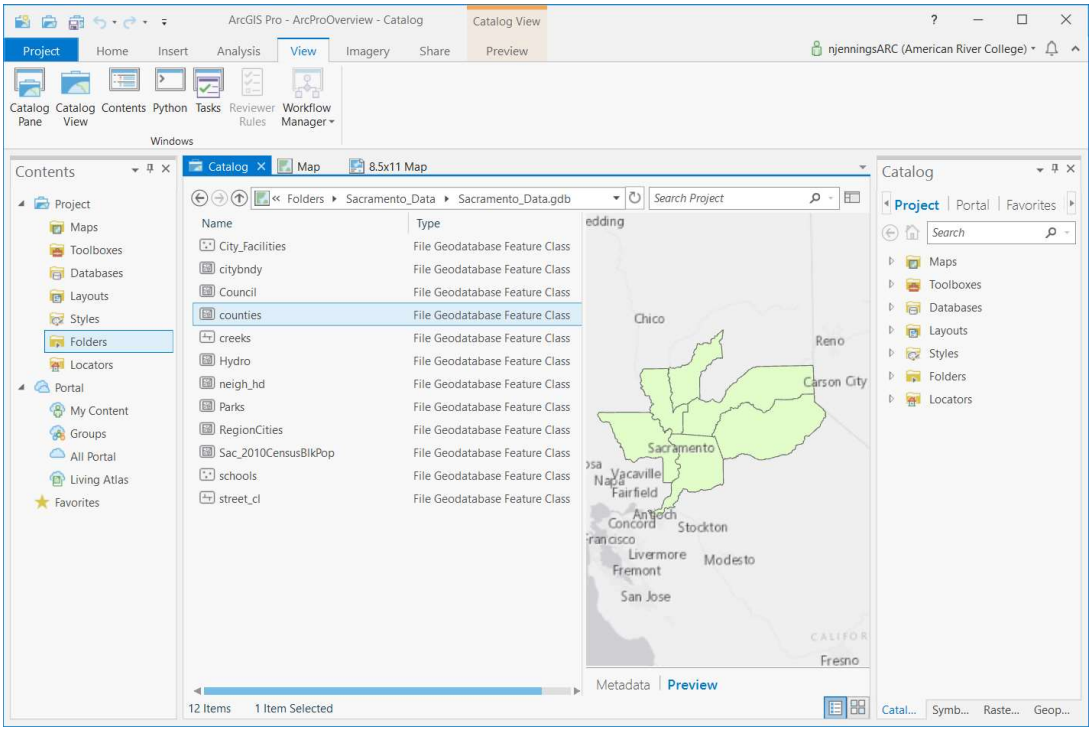
The **Metadata** option shows many data details (provided they exist). Field definitions and field types can be viewed.

*NOTE: To **Add New Fields** to the existing data table, right click on the data layer and click **Design**. The general data structure will appear, and new fields can be added. Be careful, since new fields or changes to existing fields may cause irreparable problems in Projects, models, or scripts.*



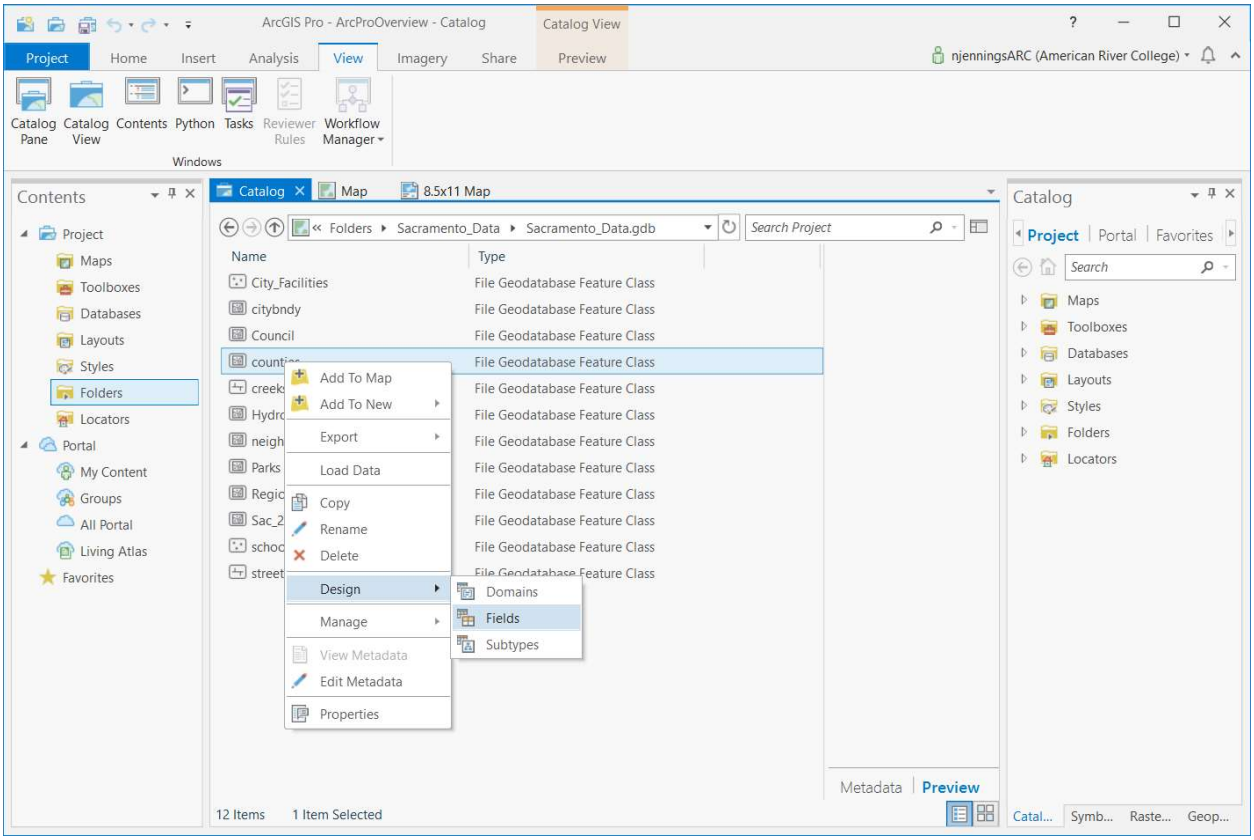
Preview

Preview shows an interactive overview in the **Show/Hide Details** pane. The user can pan and zoom in within the window, ***but no Identify activity exists***. Add the data layer to a map to provide a full interactive experience with the data layer.



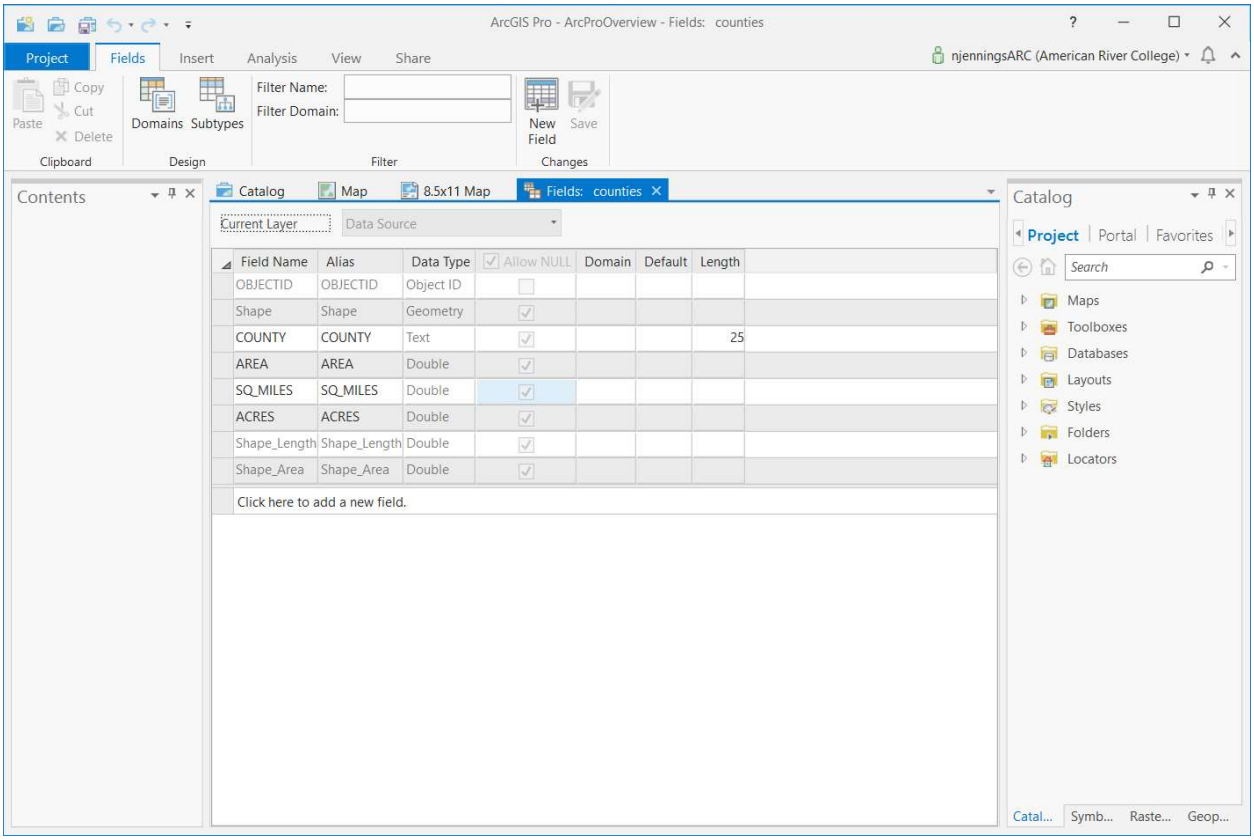
View Data Fields

To view data fields for a given data layer, right click on the data layer name in the **Catalog** pane and then click **Design—Fields**.



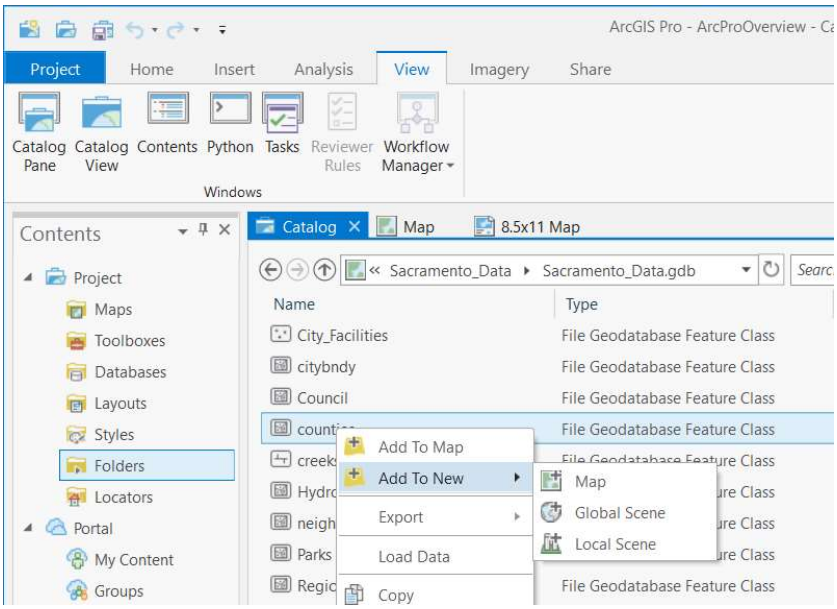
The existing field definitions appear. An option is provided to add new fields.

NOTE: To Add New Fields to the existing data table, right click on the data layer and click Design. The general data structure will appear, and new fields can be added. Be careful, since new fields or changes to existing fields may cause irreparable problems in Projects, models, or scripts.

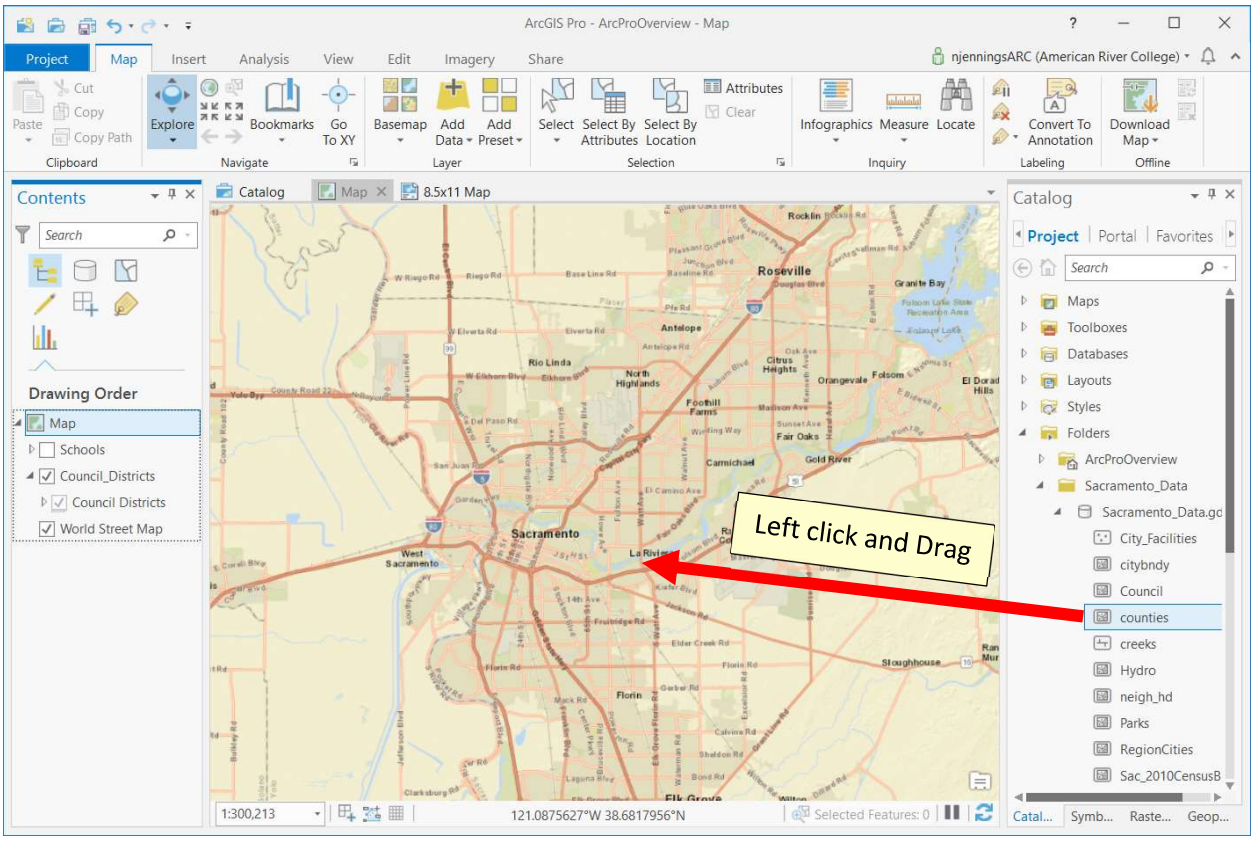


Explore the Data Layer in a Map

To more fully experience all of the details about the data (e.g. total number of records, view the full attribute table, perform queries, data sorting by columns, etc), add the data layer to a map.



Alternatively, if the **Catalog pane** is shown on the right, and the **Map** pane is active, then the user can drag and drop the data layer into the map.



Finding and Using Web-based GIS Data

Using data from web-based GIS services are becoming more common, especially with many organizations adopting the ESRI Open Data platform. Organizations that use this platform essentially make their data available on the ESRI cloud and users of GIS software (ArcGIS Desktop, ArcGIS Pro, or other GIS software) can search and use data directly from the ESRI cloud. NOTE:

A user does not need to have an ArcGIS Online user name to search, find, and use data that is "open" on the ESRI cloud (aka the organizational Open Data platform).

Search for Data Online

1. Open up Pro and use an existing Pro file or create a new Pro project.
2. Click on the Catalog tab
3. Click on the All Portals option under Portals
4. Type in key words to "search" for prospective data sets. After hitting enter, a list of layers appears on the left side of the catalog pane.

Exploring Data

Most of the data exploration (map features or attributes) occurs in the Map pane.

The "Identify" tool does not exist in Pro. The user simply "clicks" on a feature to display a pop up window of the data attributes.

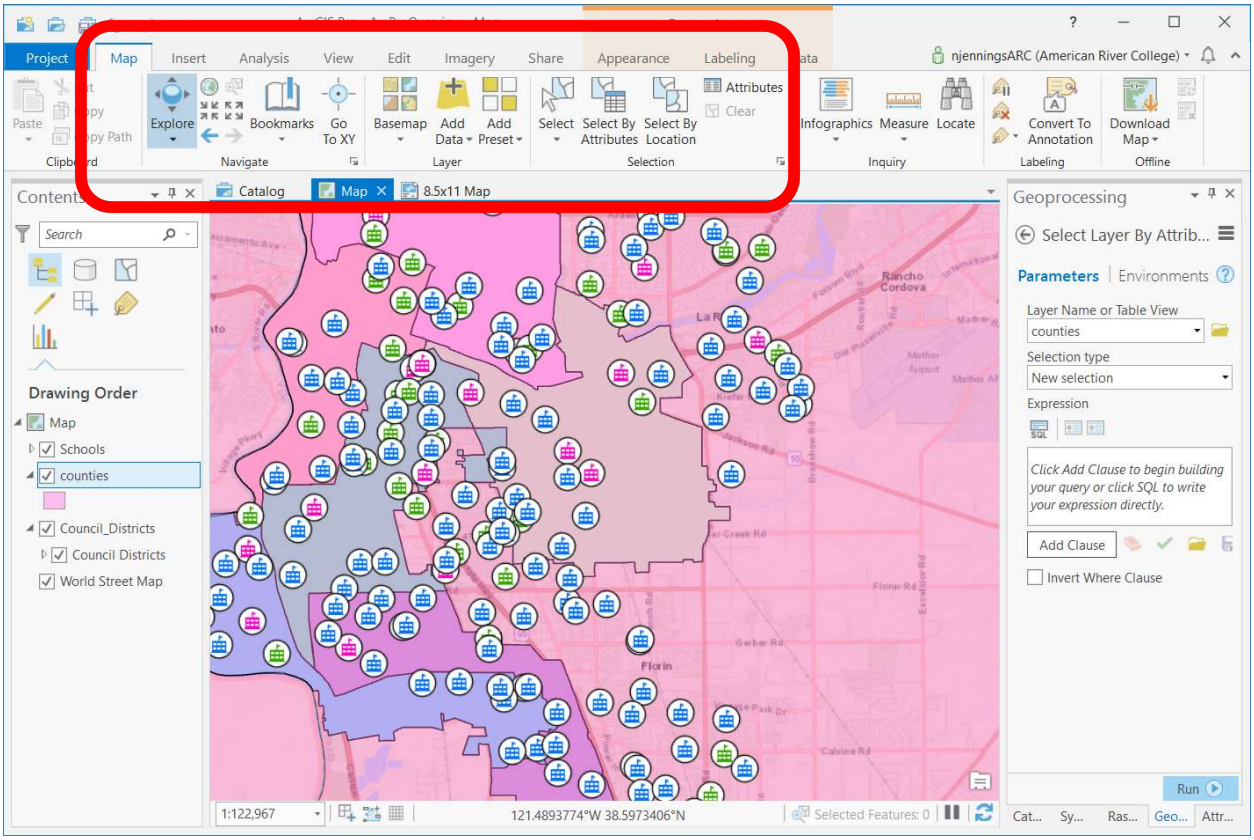
The **Map** ribbon contains several options to explore data.

Explore – similar to Identify in ArcGIS Desktop. Options can be changed to "identify" the top most layer, selectable layers, visible layers, etc.

Select – use this tool to highlight (aka select) features

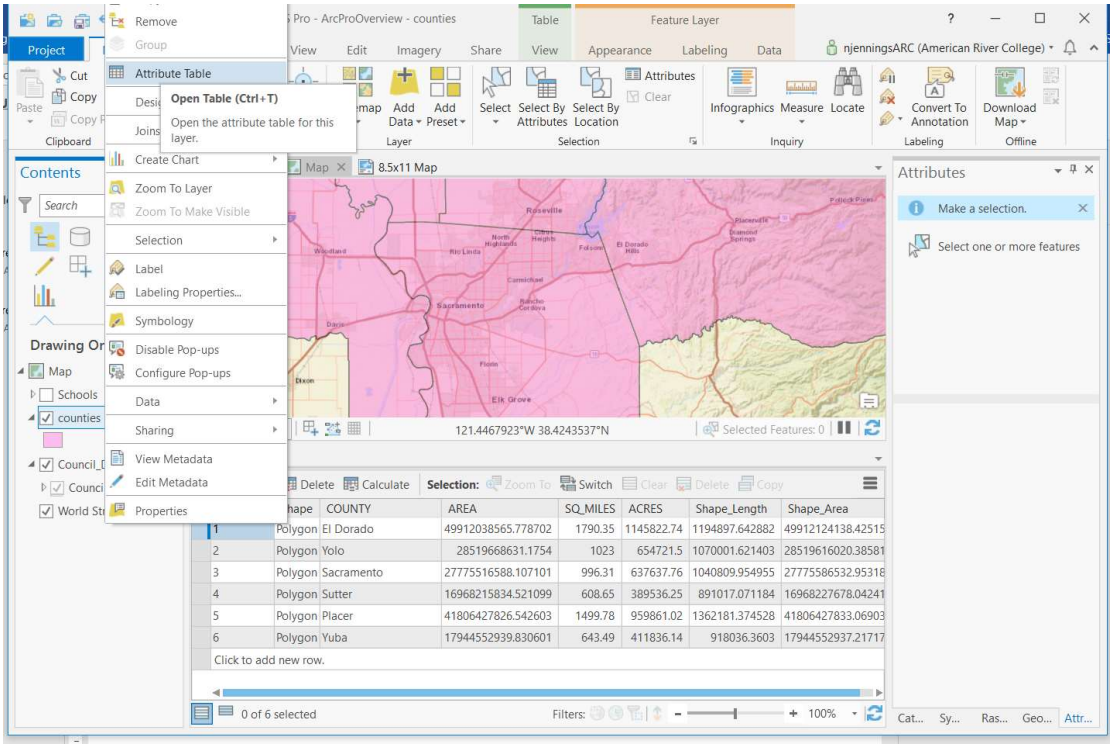
Select By Attribute – perform attribute selections

Select By Location – perform data selections based on spatial coincidence or proximity

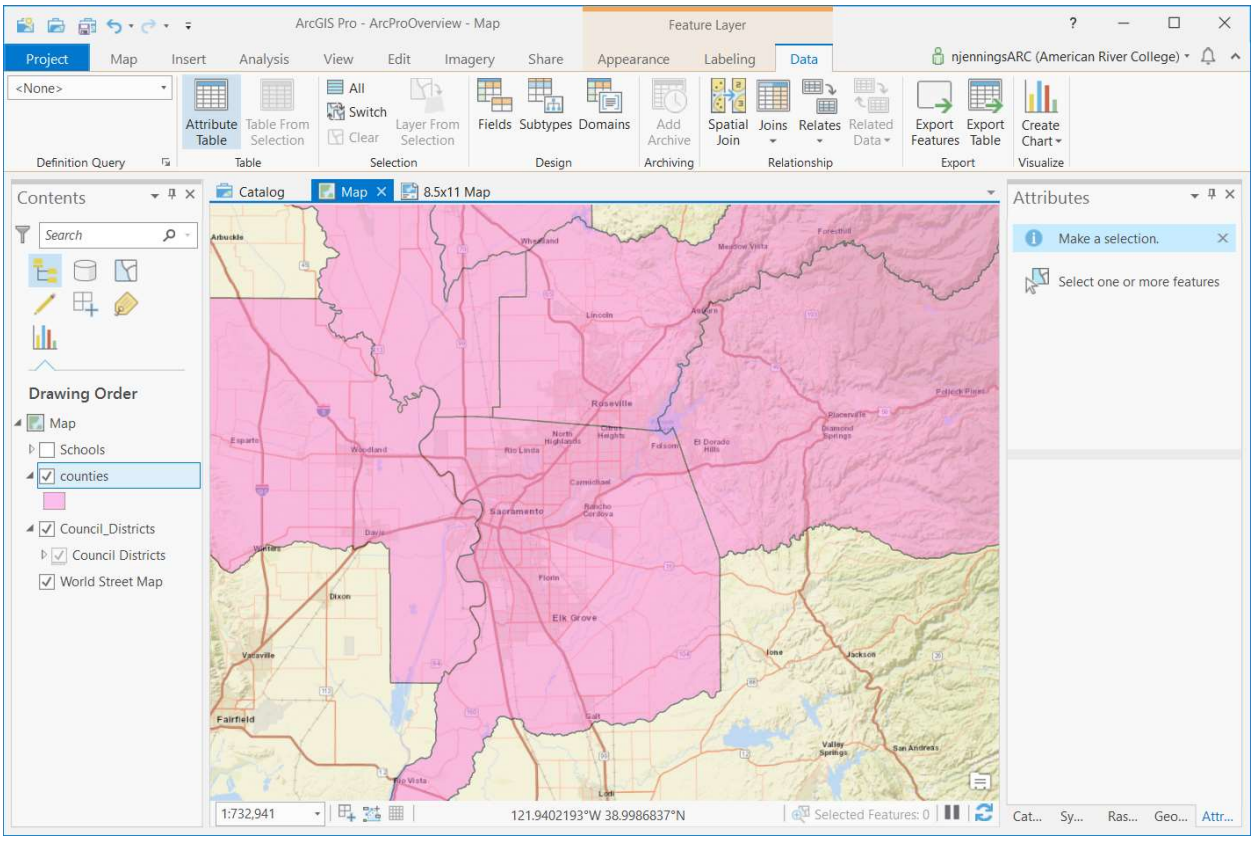


Exploring the Data Attribute Table

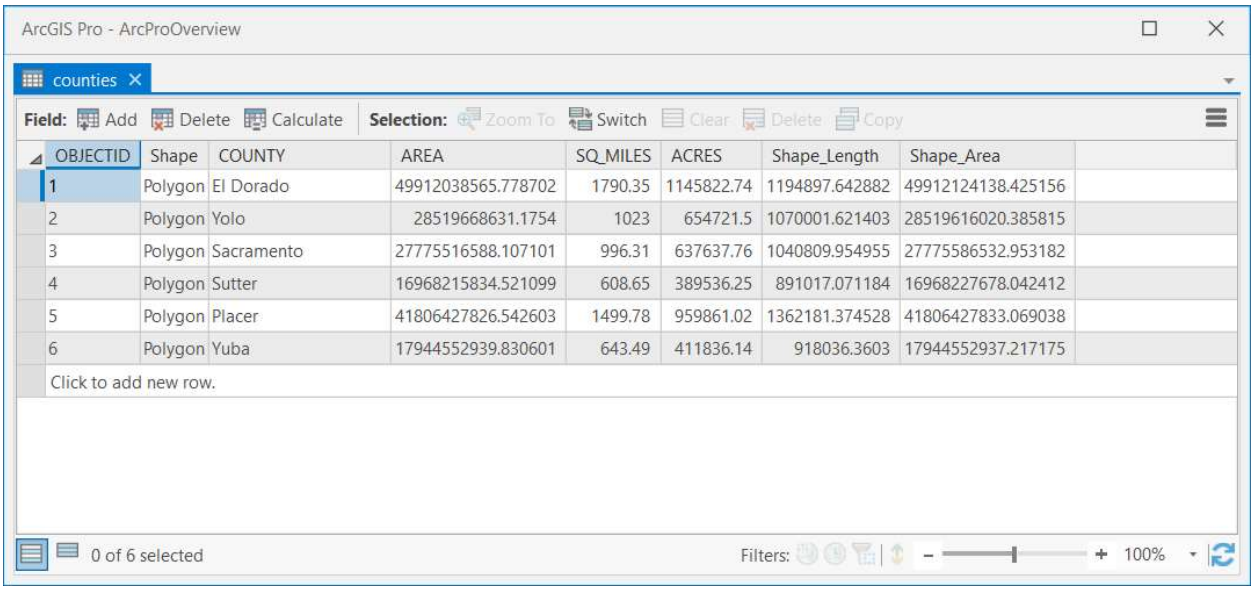
Once a data layer is in the **Map**, right click on the data layer in the **Contents** pane and choose **Attribute Table**.



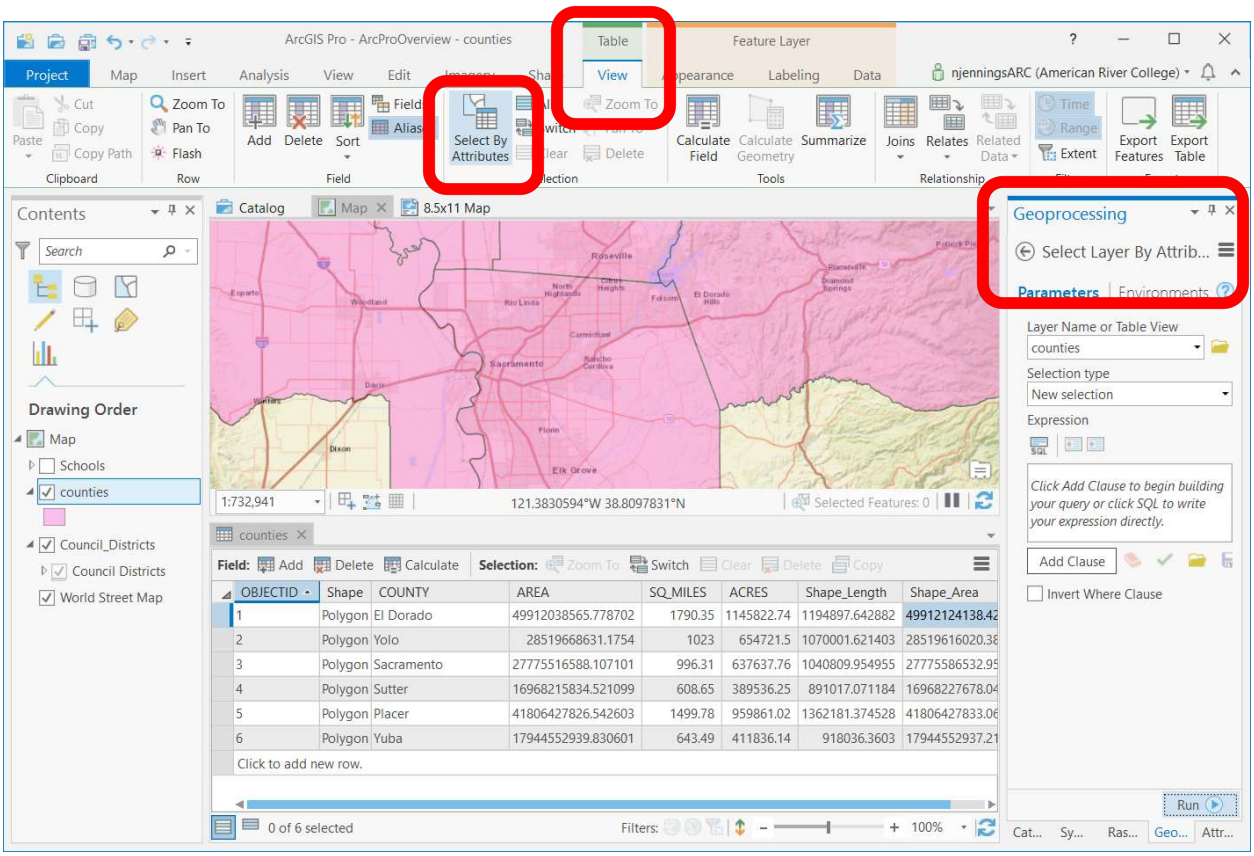
Alternatively, click on the **Data** ribbon and then click **Attribute Table**.



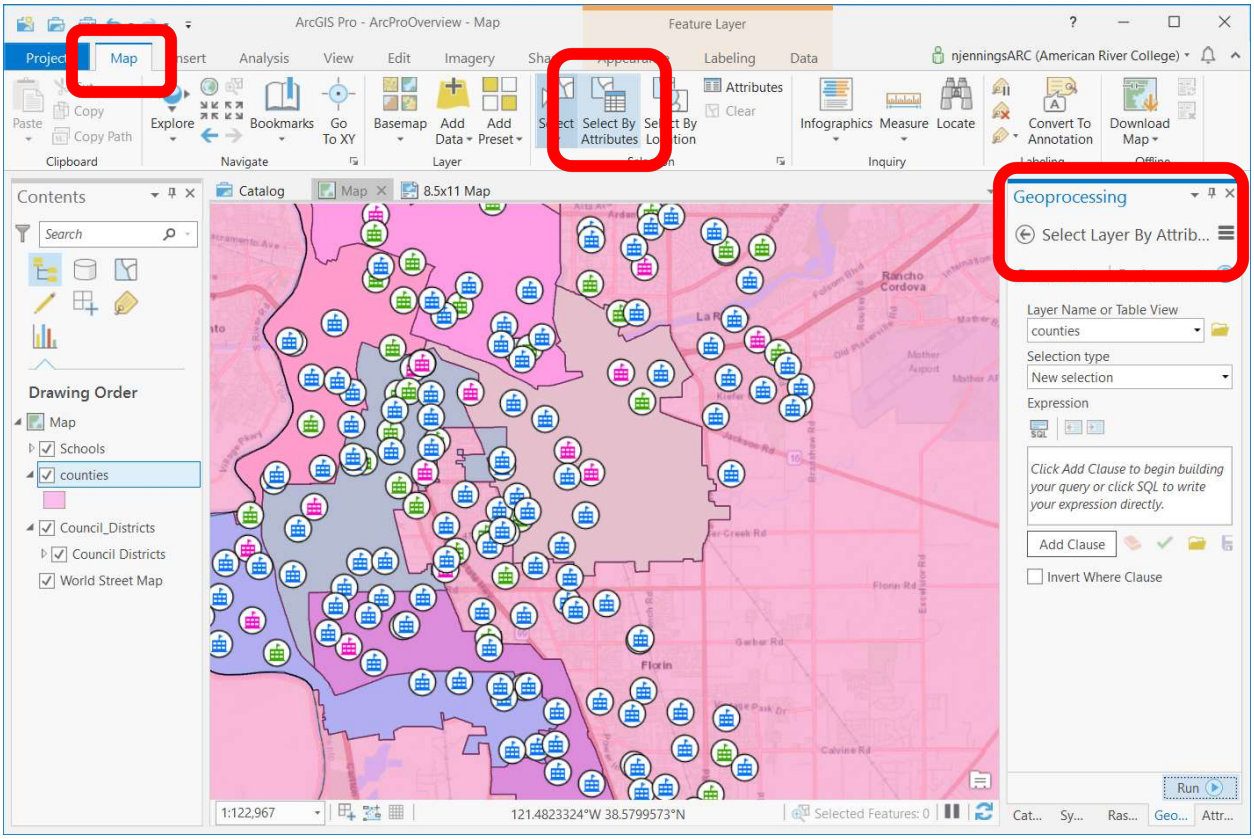
The data table “docks” at the bottom of the map. To “undock” the table, click on the table name and drag it slightly up from the bottom. Expand the attribute table to view more columns and data.



Attribute Selections (aka queries) are performed by using the **Select By Attribute** option in the Table View ribbon when the attribute table is displayed.



If the attribute table is not displayed, **Select By Attribute** is performed through the **Map** ribbon.



Select Data By Attribute

To perform an attribute selection, choose **Select By Attribute** (from the **Map** ribbon, if the attribute table is not visible) or from the Data ribbon, if the attribute table is visible).

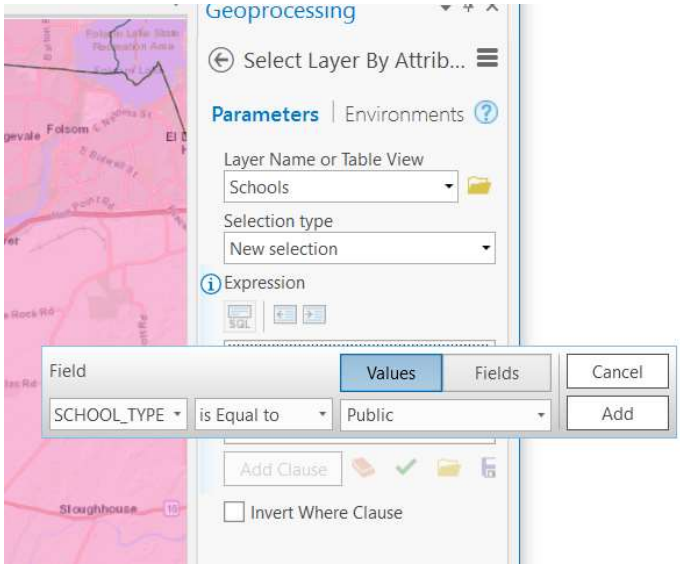
On the right side of Pro, the **Geoprocessing** pane is activated and the **Select Layer by Attribute** geoprocessing tool is loaded. The tool "parameters" (i.e. the different fields in the tool) are filled in and then the Run button is clicked to execute (run) the tool.

Attribute queries are performed by choosing a data layer and creating a "query" statement using one or more fields and a number of different operators.

1. Add the **Schools** layer (shown above from **ArcGIS Online**) or from the **Sacramento_Data.gdb** (file geodatabase) by using the methods describe above.
2. Choose the **Select By Attribute** tool (the method illustrated here is using the **Select By Attribute** tool from the **Map** ribbon).
3. In the **Select Layer by Attribute** geoprocessing tool, fill in the following parameters.
    a. **Layer** – *schools*
    b. **Selection Type** – *New*

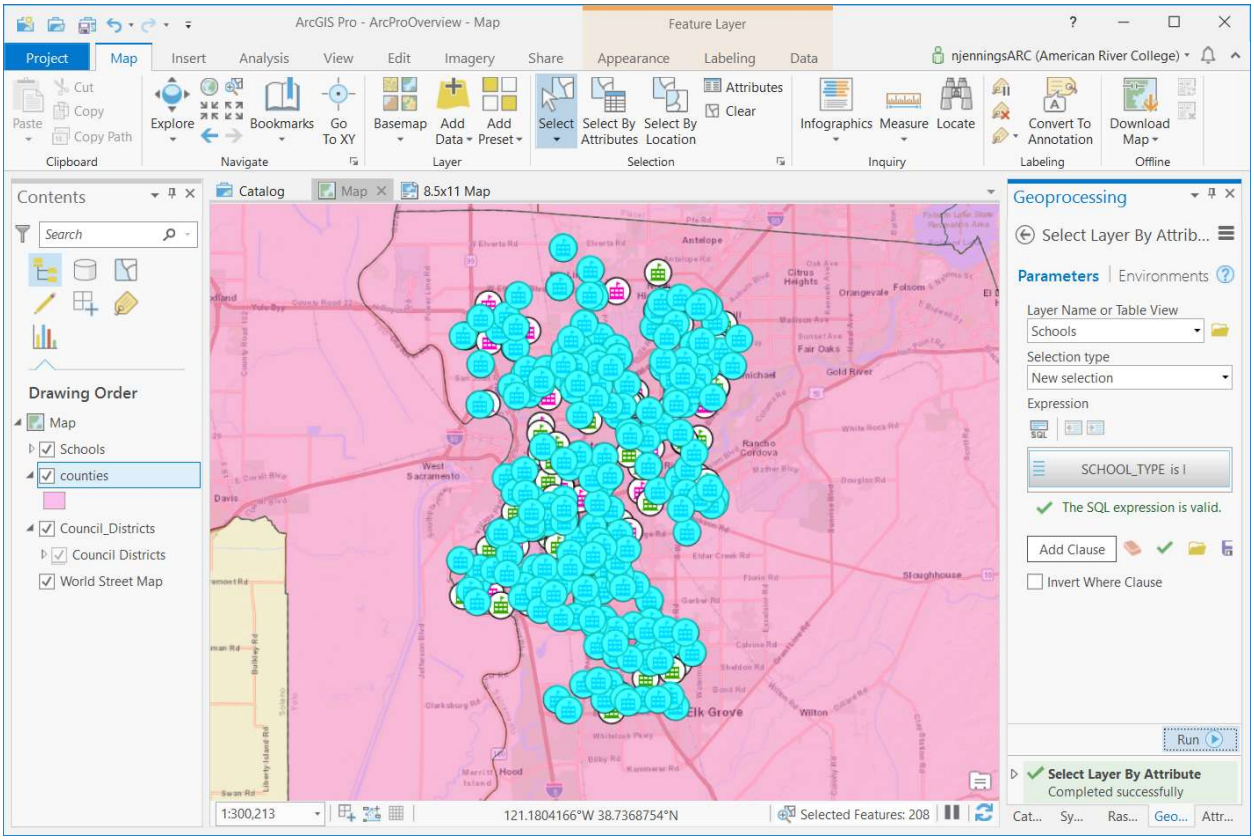
c. **Expression** - use this syntax to select public schools. Click the **Add Clause** button to start creating the query syntax. Set the different data entry boxes to create the following syntax. Click the **Add** button when completed.

SCHOOL_TYPE is Equal To Public



d. Check the **"green check mark"** to make sure the syntax is correct. If it is not, then redo creating the query expression.
e. Click the **Run** button to execute the query.

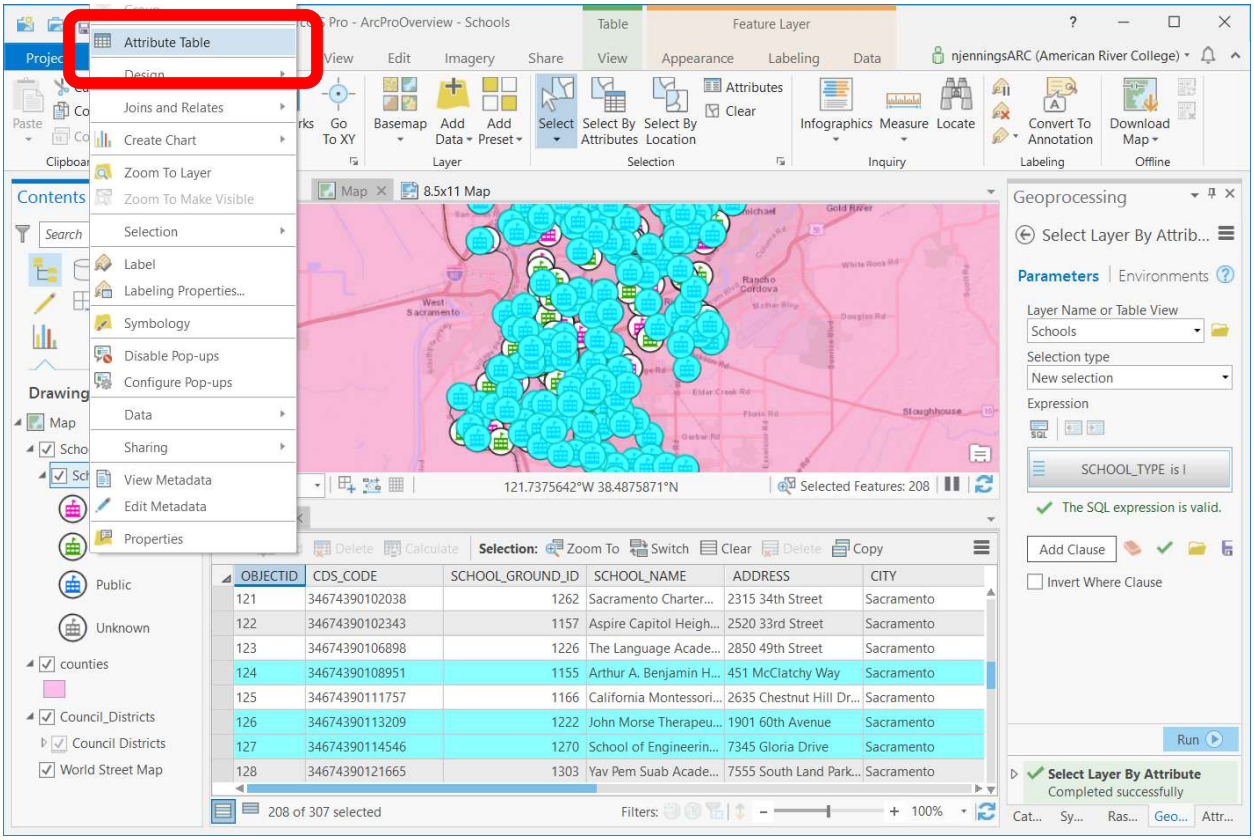
The results should show the following "highlighted" (selected) "Public" schools from the schools layer.



Notice 208 schools are “selected” in the lower right of the **Map** pane.

To view the “selected” school attributes, expand **Schools** to show the schools layer with the different symbols, then right click on the schools layer and choose **Attribute Table**.

The attribute table appears. Use the vertical scroll bar to scroll down the different school attributes. The “selected” schools will show as highlighted.



To “Clear” the selection, click on the **Clear** option in the **Map** ribbon.

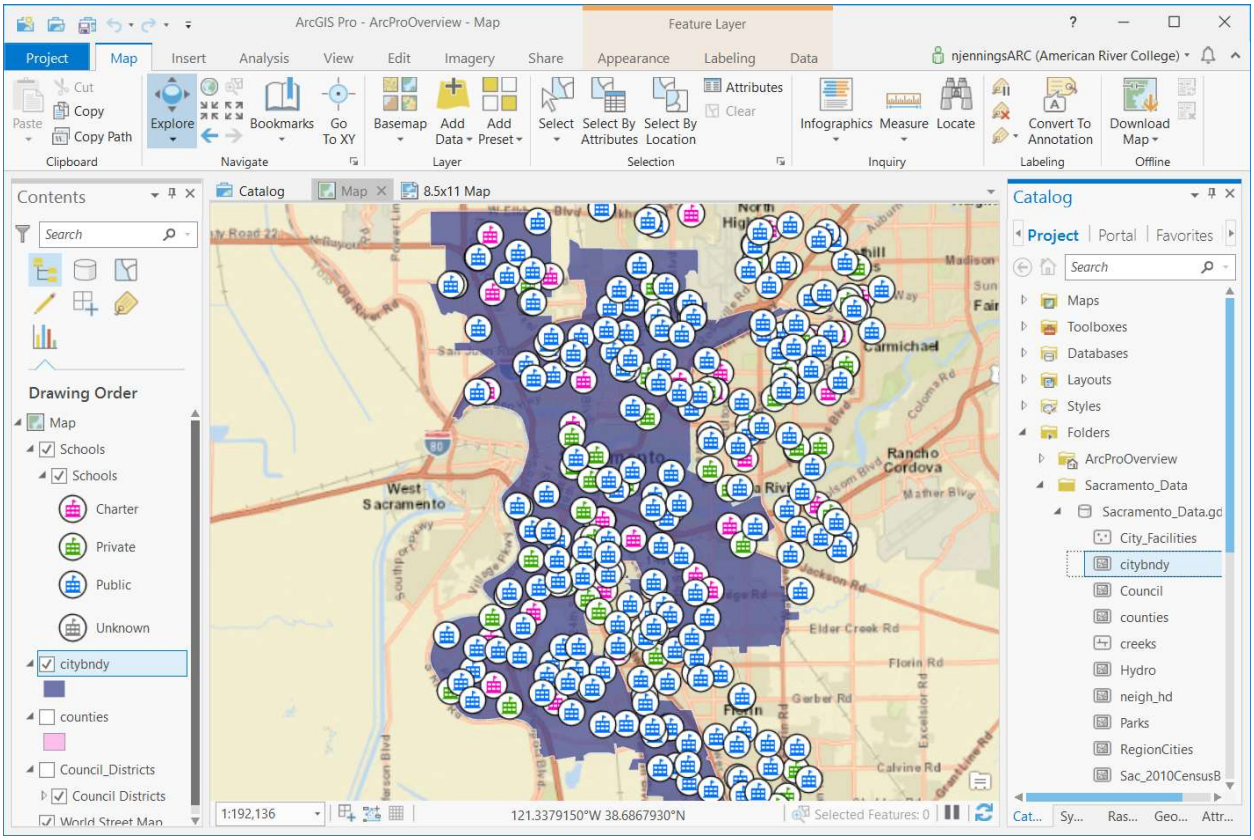
Select Data By Location

Another way to explore data is to select data based on spatial coincidence or proximity. For example, a “spatial query” can be performed to find all schools within the city limit of Sacramento. “Within” defines a spatial relationship between the geographic extent of the schools layer and a cities layer.

Make sure to “clear” the schools if the steps above were followed.

1. With the **Map** pane visible, on the right side of Pro, click on the **Catalog pane**
2. Browse and expand the **Sacramento_Data.gdb** file geodatabase
3. Left click and drag the **citybndy** layer to the Map pane. Add the schools layer if it is not already added to the map. Schools can be found in the same geodatabase or by adding the Sacramento Schools from ArcGIS online from the steps above.

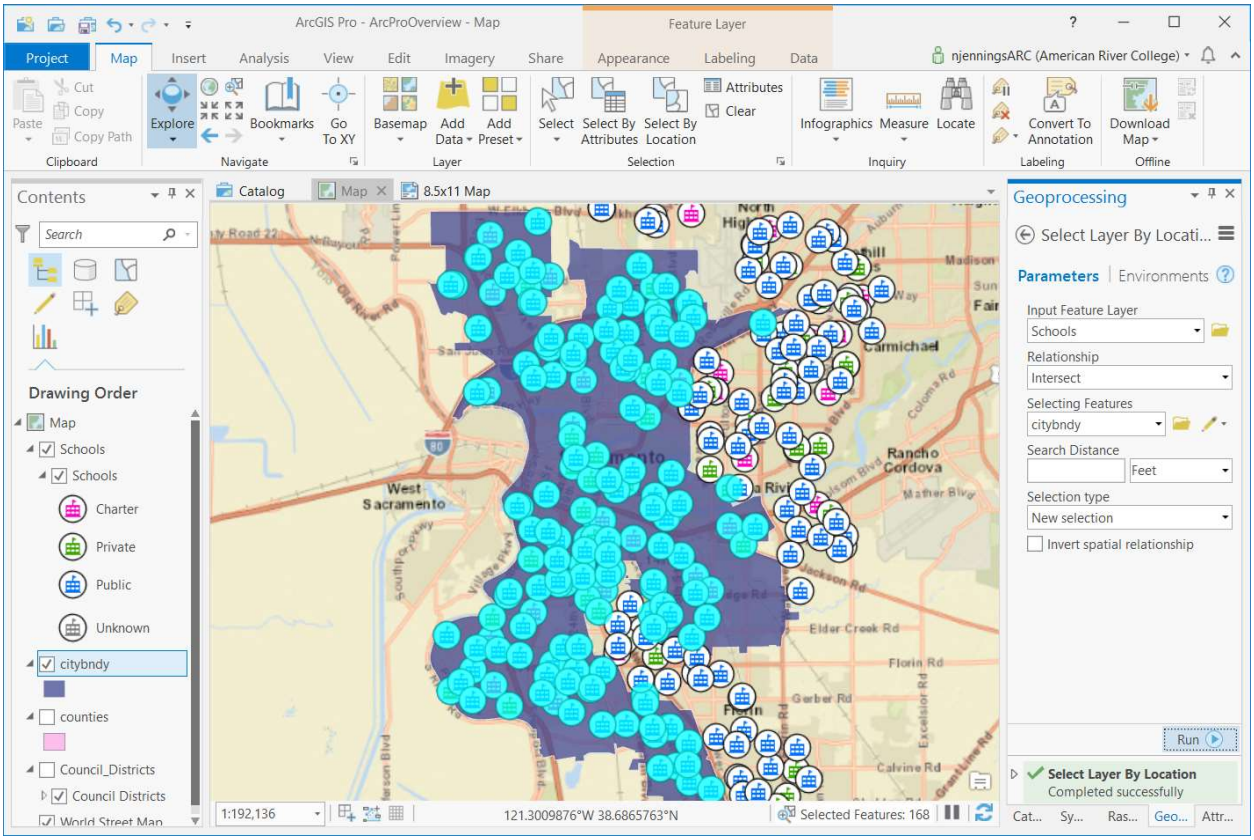
The map should look similar to the following. The City boundary has been styled to show the base map for more clarity in this example.



To perform a selection by location (i.e. spatial selection), click on the **Select By Location** option in the **Map** ribbon. The geoprocessing tool appears on the right side.

Fill in the following tool parameters.

1. **Input Feature Layer** – *schools*
2. **Relationship** – *Intersect* (this is the default and is similar to within or completely within)
3. **Selecting Features** – *citybndy*
4. **Search Distance** – leave empty for this example, but a "radius" outside of the city boundary could also be applied
5. **Selection Type** – *New*
6. Click **Run**



Notice 168 schools “Intersect” (fall completely within) the city limit.

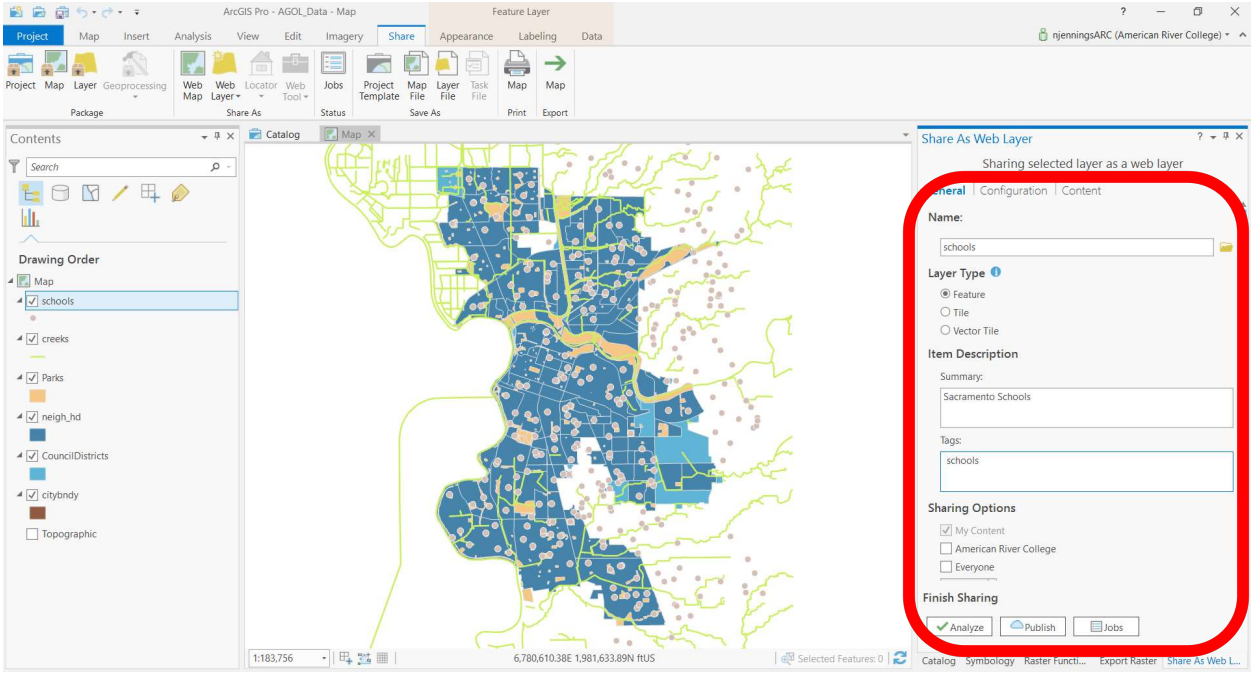
The attribute table can be viewed in a similar manner as above by **right clicking on the schools layer** (may need to expand the layer in the **Contents** pane) and then choosing **Attribute Table**.

Upload (Share Web Layer) Feature Class to ArcGIS Online

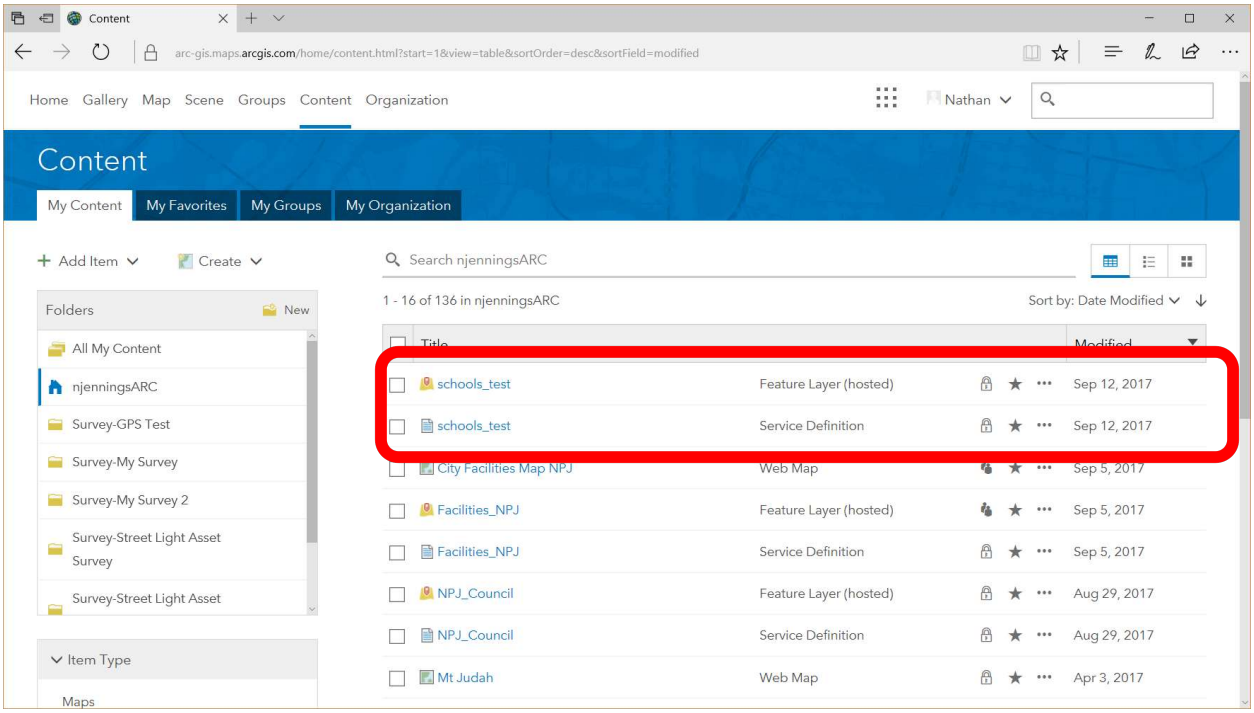
Publishing a feature class from within Pro works a little different from ArcGIS Desktop. Since ArcGIS Pro requires an ArcGIS Online account to actually use the software, the user typically will already have a connection to an organizational ArcGIS Online account.

If a feature class is listed in the Table of Contents (Contents) section of the Map tab in Pro, the user can simply right-click on the feature class and choose Sharing--Share Web Layer.

1. Open **ArcGIS Pro**
2. **Activate Pro** with your **ArcGIS Online** account
3. Choose the **Map.aptx** template (or choose an existing Pro project file)
4. **Add Data** to the map. You may have to create a connection to a folder or geodatabase
5. Right click on the layer of interest, choose **Share as Web Layer**
6. Fill in **Summary** and **Tags**. These must be filled in to continue.



7. Click **Analyze**. If no errors occur, then click **Publish**. This may take a minute or two, depending on the feature class size, number of features, and geographic extent. If errors occur, review the messages and make the required changes.
8. **Login to ArcGIS Online** and click on **Content** to see the uploaded feature service


Content
arc-gis.maps.arcgis.com/home/content.html?start=1&view=table&sortOrder=desc&sortField=modified
Home Gallery Map Scene Groups Content Organization
Nathan
Content
My Content My Favorites My Groups My Organization
Add Item Create
Search njenningsARC
Folders New
All My Content
njenningsARC
Survey-GPS Test
Survey-My Survey
Survey-My Survey 2
Survey-Street Light Asset Survey
Survey-Street Light Asset
Item Type
Maps
1 - 16 of 136 in njenningsARC
Sort by: Date Modified
Title
Modified
schools_test Feature Layer (hosted) Sep 12, 2017
schools_test Service Definition Sep 12, 2017
City Facilities Map NPJ Web Map Sep 5, 2017
Facilities_NPJ Feature Layer (hosted) Sep 5, 2017
Facilities_NPJ Service Definition Sep 5, 2017
NPJ_Council Feature Layer (hosted) Aug 29, 2017
NPJ_Council Service Definition Aug 29, 2017
Mt Judah Web Map Apr 3, 2017

Appendices

Cloning Python Environment

Using Python for Pro may involve "cloning" the Python environment so that other Python libraries can be used. Users cannot modify the default Python set of libraries, so the Python environment needs to be cloned. This section discusses the methods used to create a "cloned" environment.

This section also describes how to install the Spyder Interactive Development Environment (IDE) so that users can use a different scripting environment from the default IDLE (Python IDE) that has been the standard since Python has been used with ArcGIS (and is a default IDE for Python coders).

NOTE: Spyder is NOT required to write and test Python script. Spyder is one of many alterative IDEs available (and is free). Similar processes can be used to "install" all kinds of Python add-ons for various functionality (e.g. the author creates a second Python clone to install and use the **Deep Learning** image processing tools (i.e. through Deep Learning geoprocessing tools within Pro)).

Overview

Starting with ArcGIS Pro, the Python environment uses the 3.6 version of Python. Python 3.x uses slightly different syntax than 2.x Python versions used in Desktop. At this time (2018) Python 2.7.x and Desktop will be supported through 2023. If all Python programming needs can be met with Desktop, then developers can continue to use Python 2.7.x and Desktop. If there is a need for using ArcGIS Pro (for example, Desktop is not installed) or developers want to take advantage of ArcGIS Pro (e.g. automating custom map creation using the mapping environment found in Pro (i.e. that uses the **Project—multiple map layout** concepts), then Python 3.x will be required).

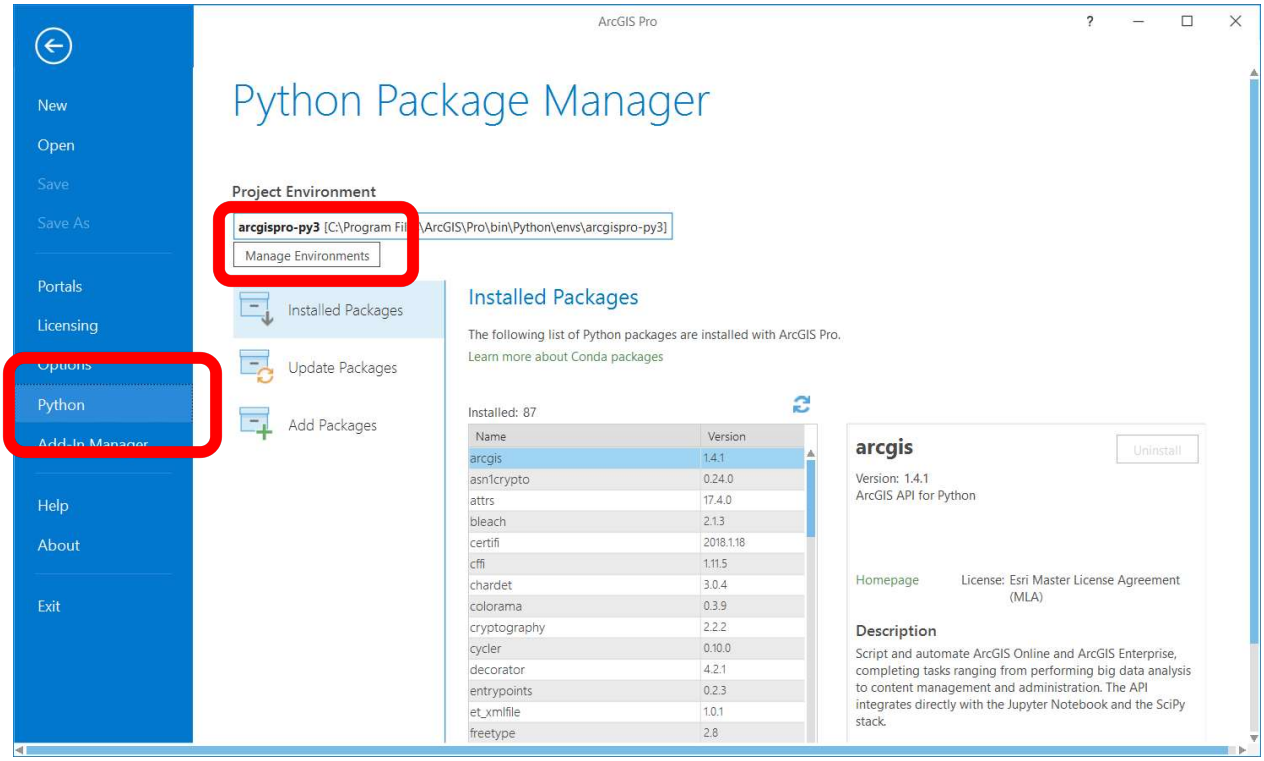
Interactive Development Environments (IDEs) vary in functionality, too. IDLE (is the default IDE installed with Python). This is often sufficient to write code but doesn't offer any easy way to perform code completion or hints).

The **Spyder IDE** has become a good alternative to the default IDLE IDE. To use Spyder with ArcGIS Pro, the Python environment must be "cloned" (i.e. have a copy made), then install Spyder from within Pro.

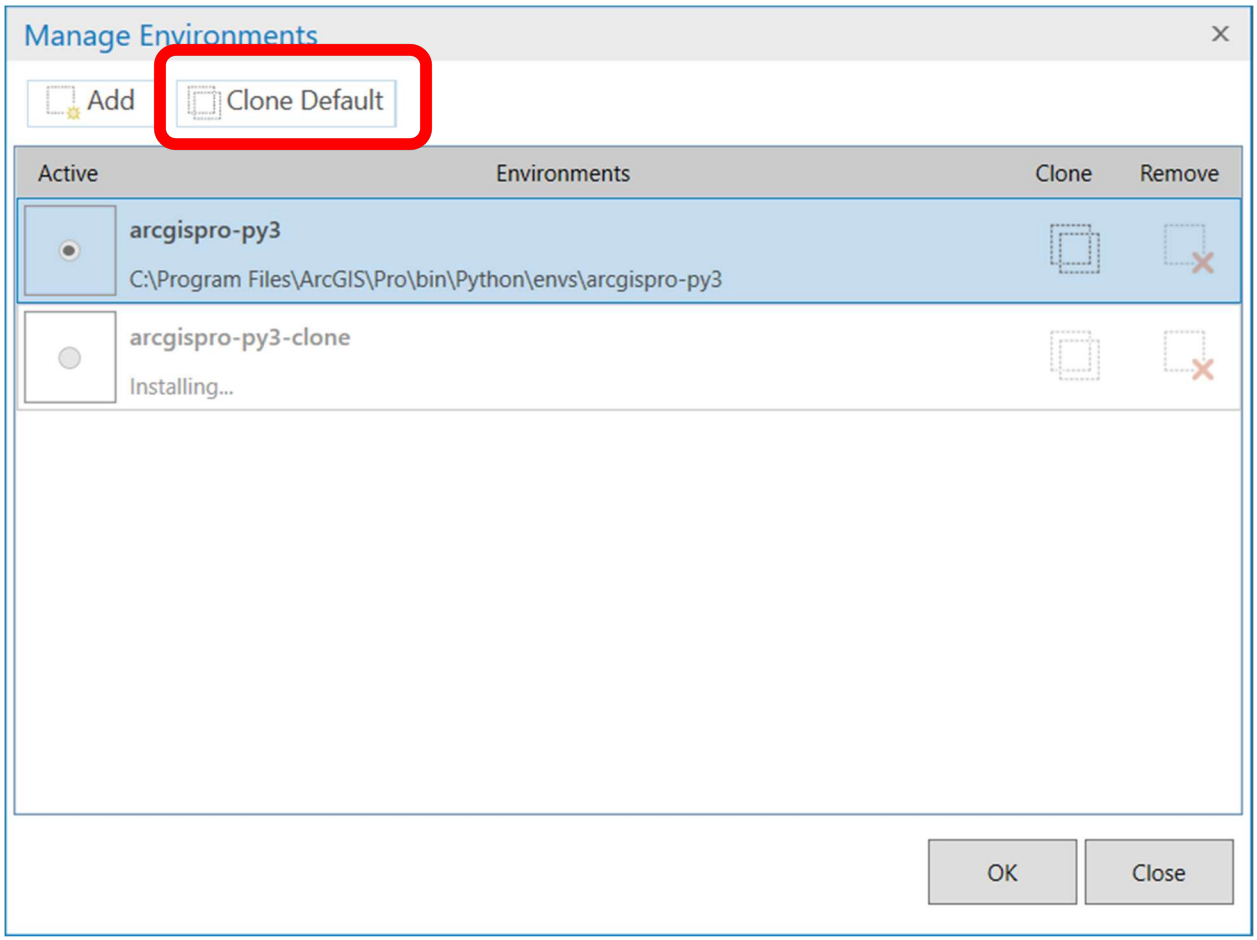
NOTE: Remember, if Spyder will be used, then all code must follow Python 3.x coding requirements. For example, the print routine acts as a "function" in Python 3.x and uses a different syntax than in 2.x.

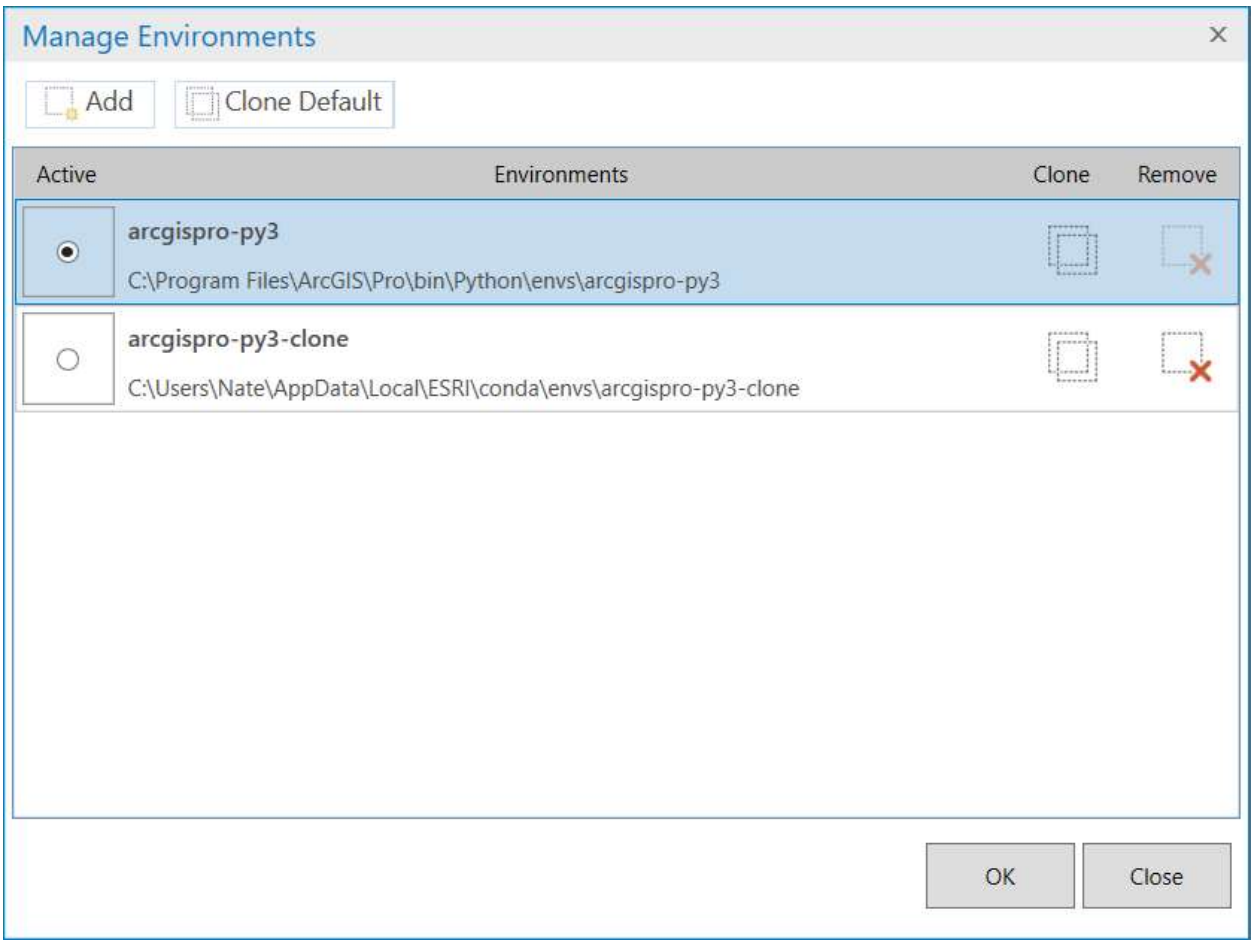
Clone the Current Python *arcgispro-py3* Environment

1. Click on **Python** in the main section of ArcGIS Pro.
2. Click **Manage Environments**

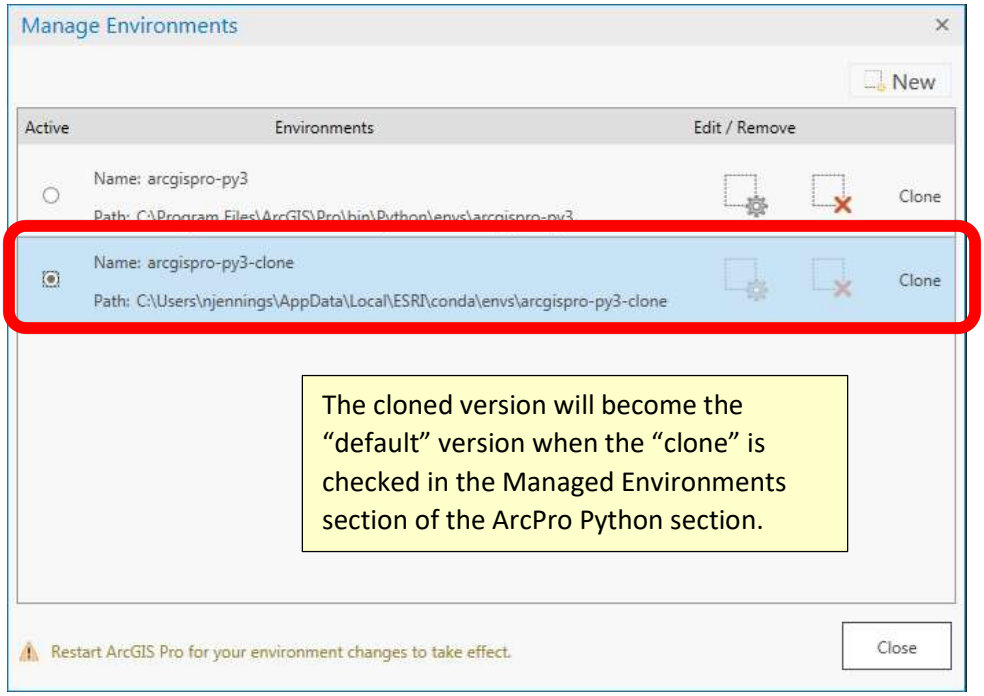

ArcGIS Pro
New
Open
Save
Save As
Portals
Licensing
Options
Python
Add-In Manager
Help
About
Exit
Python Package Manager
Project Environment
arcgispro-py3 [C:\Program Fi \ArcGIS\Pro\bin\Python\envs\arcgispro-py3]
Manage Environments
Installed Packages
Update Packages
Add Packages
Installed Packages
The following list of Python packages are installed with ArcGIS Pro.
Learn more about Conda packages
Installed: 87
Name
Version
arcgis 1.4.1
asn1crypto 0.24.0
attrs 17.4.0
bleach 2.1.3
certifi 2018.1.18
cffi 1.11.5
chardet 3.0.4
colorama 0.3.9
cryptography 2.2.2
cycler 0.10.0
decorator 4.2.1
entrypoints 0.2.3
et_xmlfile 1.0.1
freetype 2.8
arcgis
Uninstall
Version: 1.4.1
ArcGIS API for Python
Homepage
License: Esri Master License Agreement (MLA)
Description
Script and automate ArcGIS Online and ArcGIS Enterprise, completing tasks ranging from performing big data analysis to content management and administration. The API integrates directly with the Jupyter Notebook and the SciPy stack.

3. Click **Clone**. This will take several minutes.





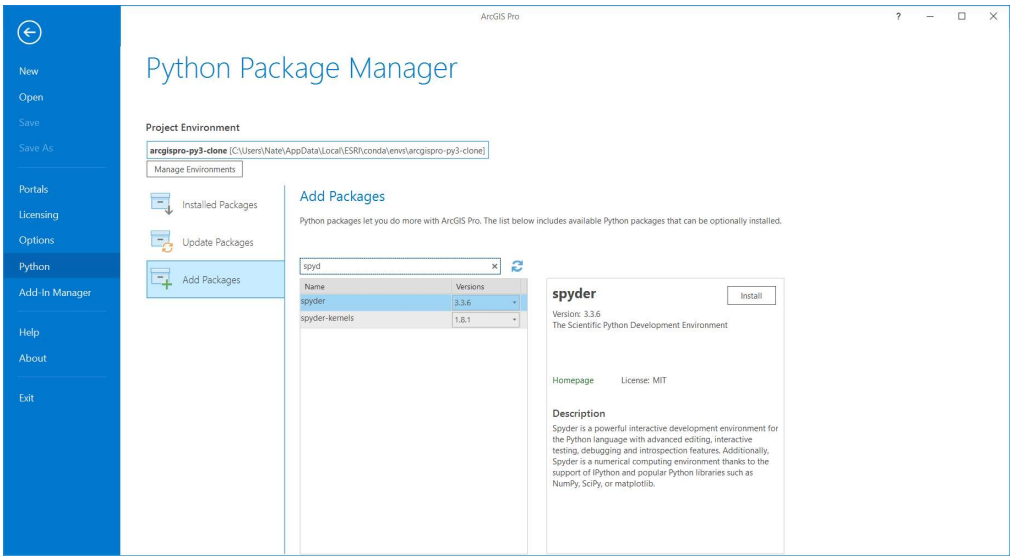
4. Click the **“Cloned”** Python environment as the “default.”



5. Close Pro (Exit), then reopen it.

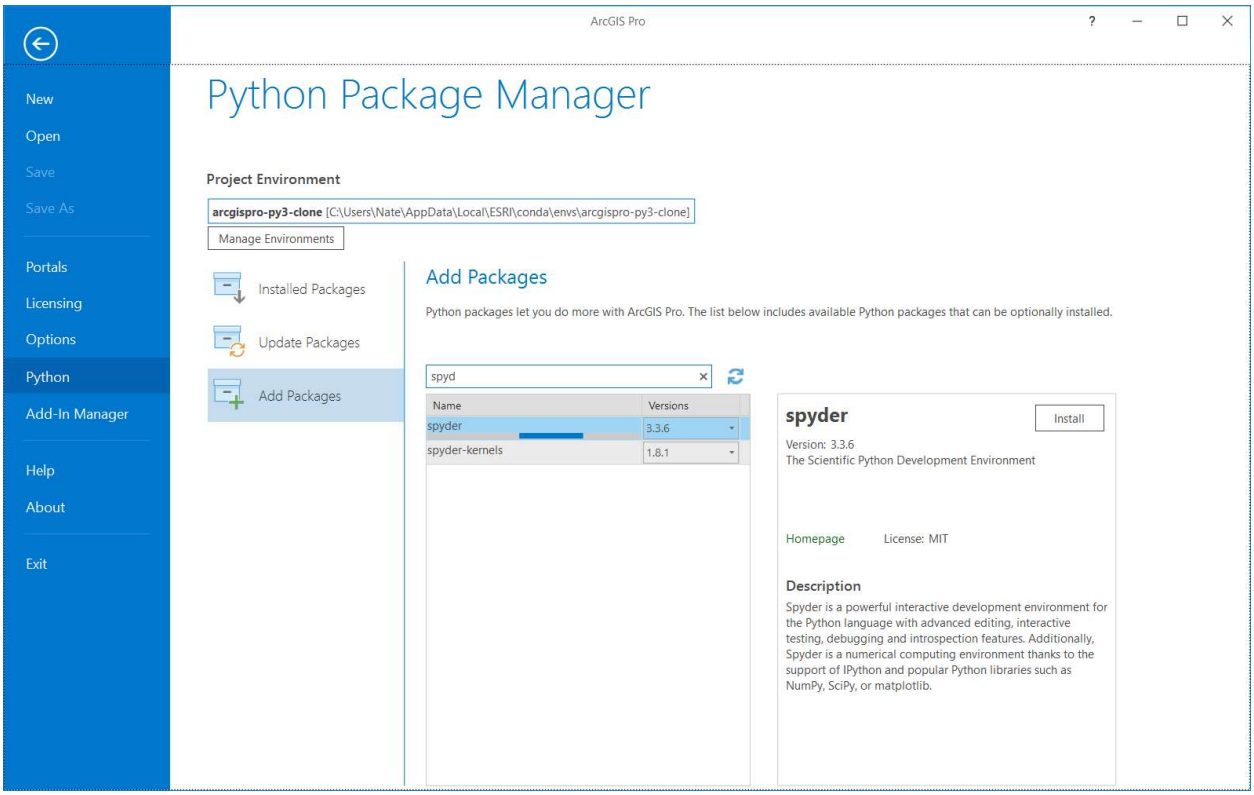
Install Spyder IDE

1. Go to **Settings—Python** and click **Add Packages**.
2. Type in **spyder**.



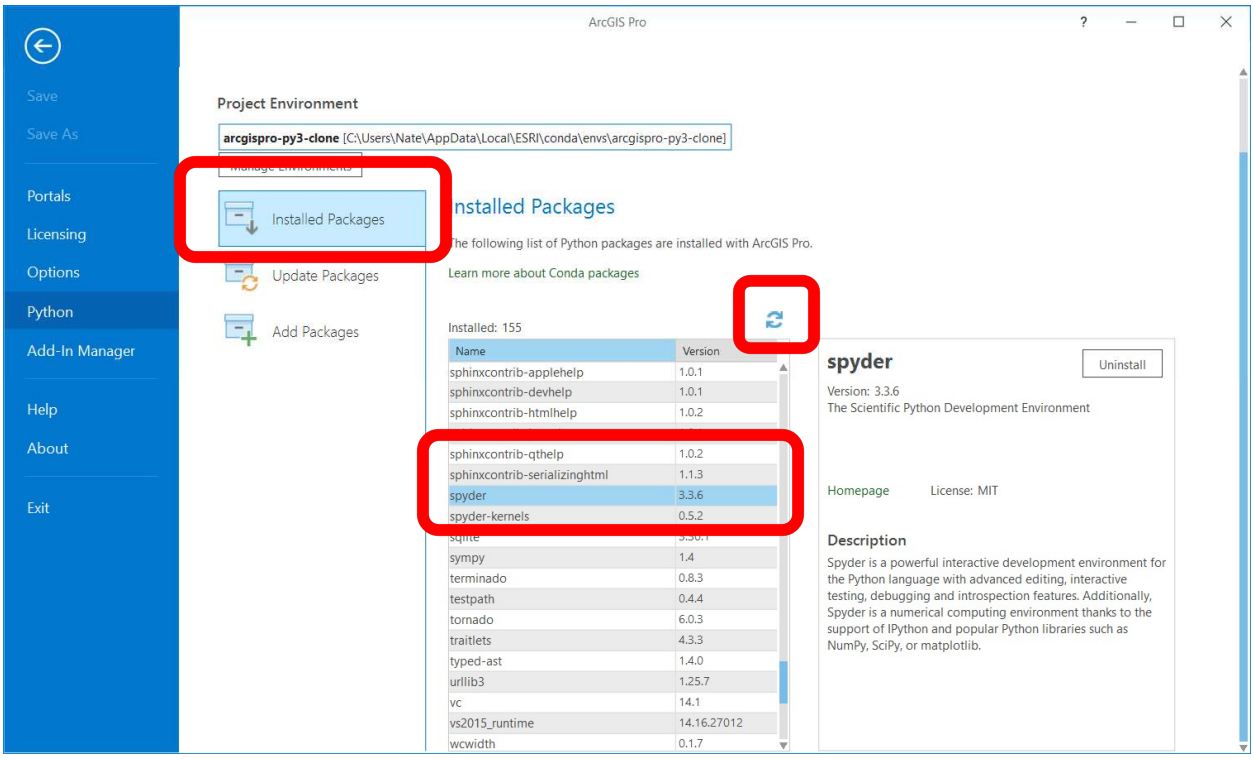
3. Click **Install**. This will install Spyder. This will take a few minutes.

NOTE: The Spyder version appears for the supported version in Pro. The screen shot below is for Pro 2.6 (as of 8/24/2020). Spyder 3.3.6 will be installed. There is no need to install the Spyder-kernel package. A version of this package is installed during the Spyder package install.



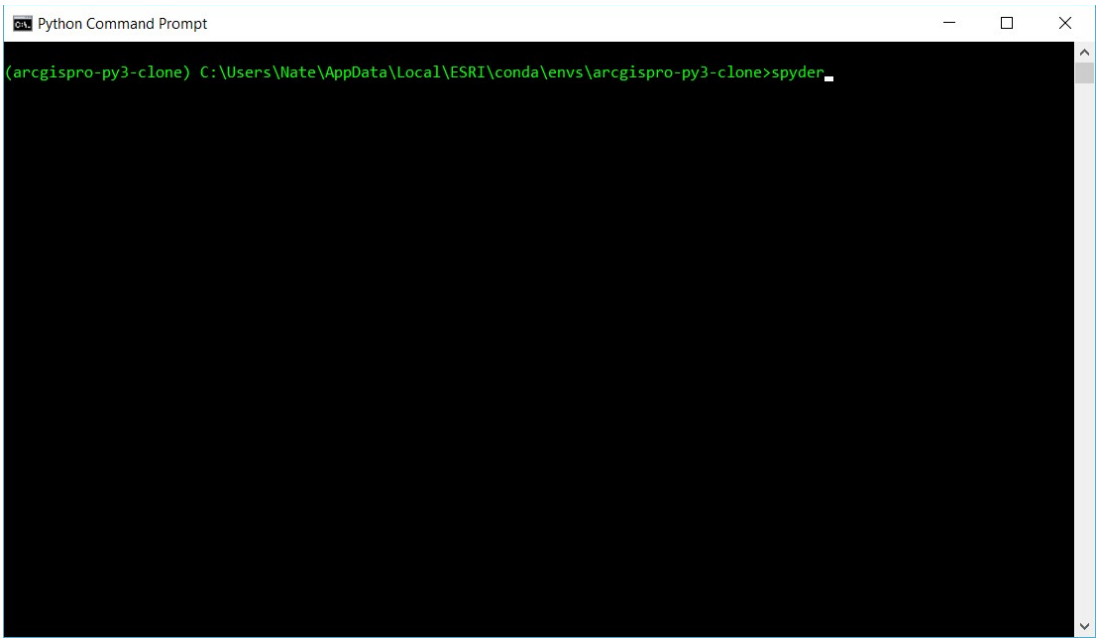
After installing Spyder,

1. Click on **Installed Packages**
2. Click the **refresh** button (to refresh all of the packages installed)
3. Scroll down the list of installed packages. Notice the **Spyder** package is now installed.



Start Spyder IDE

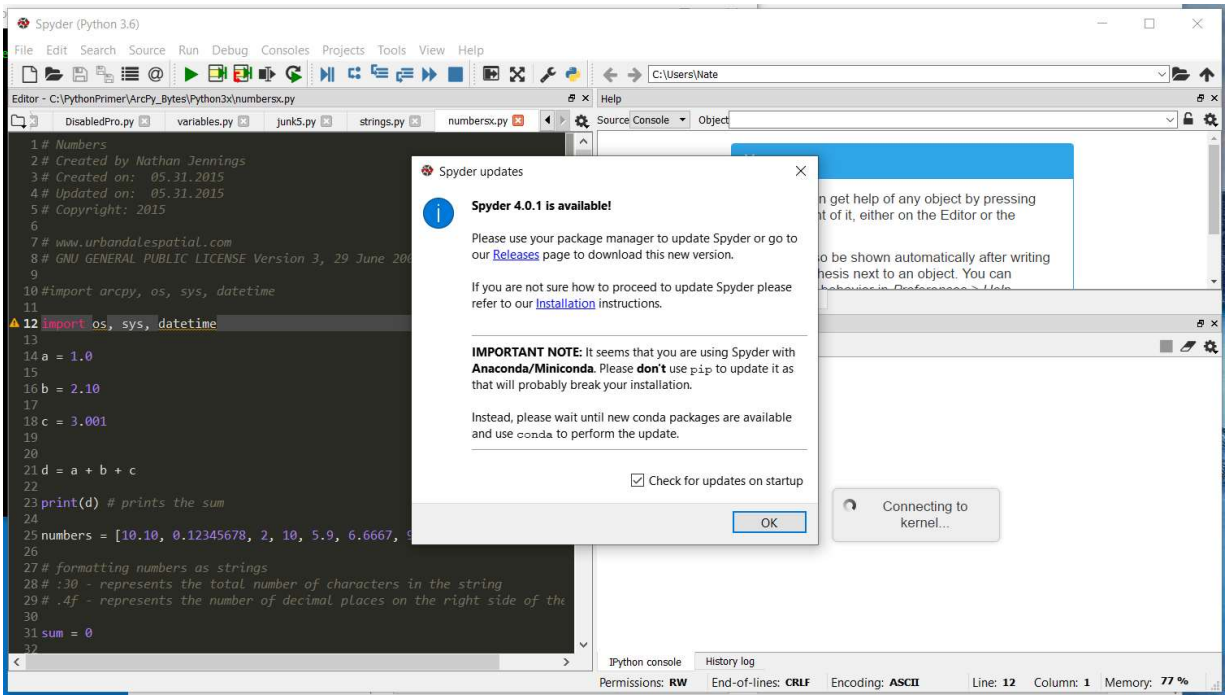
1. Start **Python Command Prompt**.
    a. Option 1 – **Programs list—ArcGIS—Python Command Prompt**
    b. Option 2 – **Type in *Python Command Prompt* in the Search window** of Windows 10 or Windows 7 (usually, lower left of the computer screen)
2. Type in **spyder** when the Python prompt appears



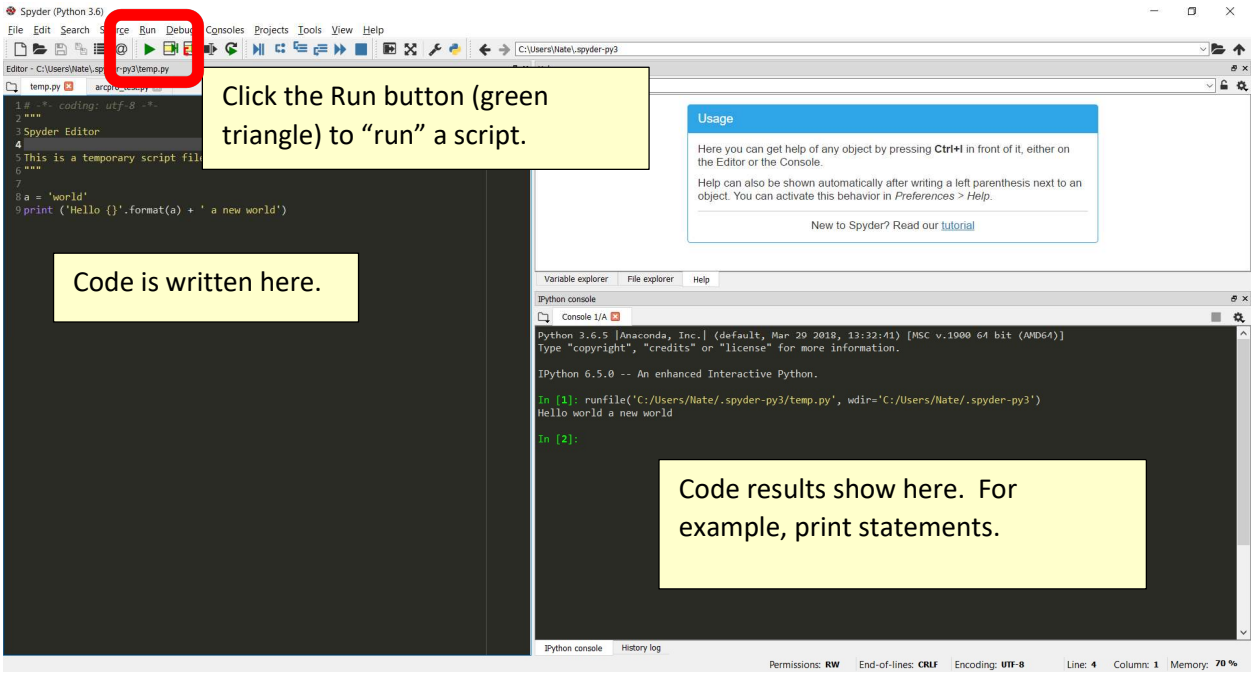
3. Click **Enter**. The **Spyder IDE** will launch.

A message may appear that a Spyder update is available. Click OK to close the window. No update will occur. **There is no need to update Spyder**.

NOTE: The instructor experienced several problems when attempting to "update" Spyder. DO NOT UPDATE to any "prompted" Spyder version. You will likely need to remove the clone, redo the clone, and reinstall the Spyder IDE.

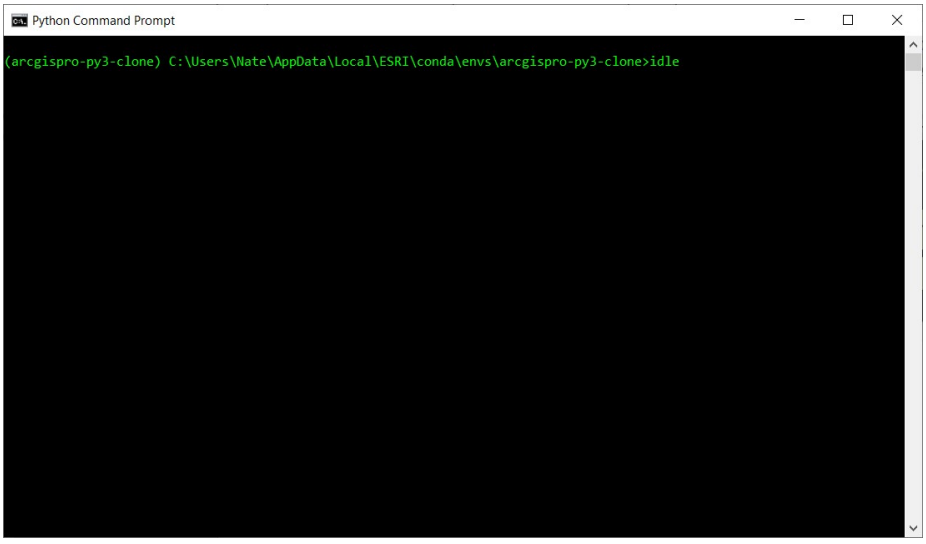


Spyder will look like this.

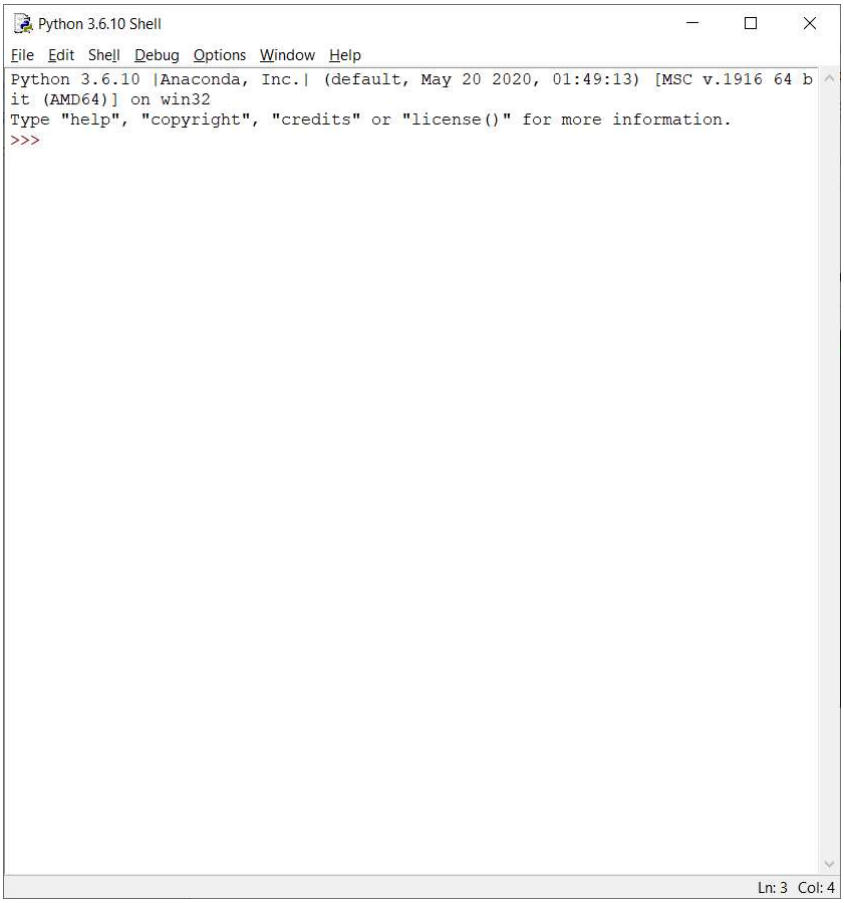


Using IDLE with a Python Clone

Similar to launching Spyder, launch the Python Command Prompt and type in **idle**.

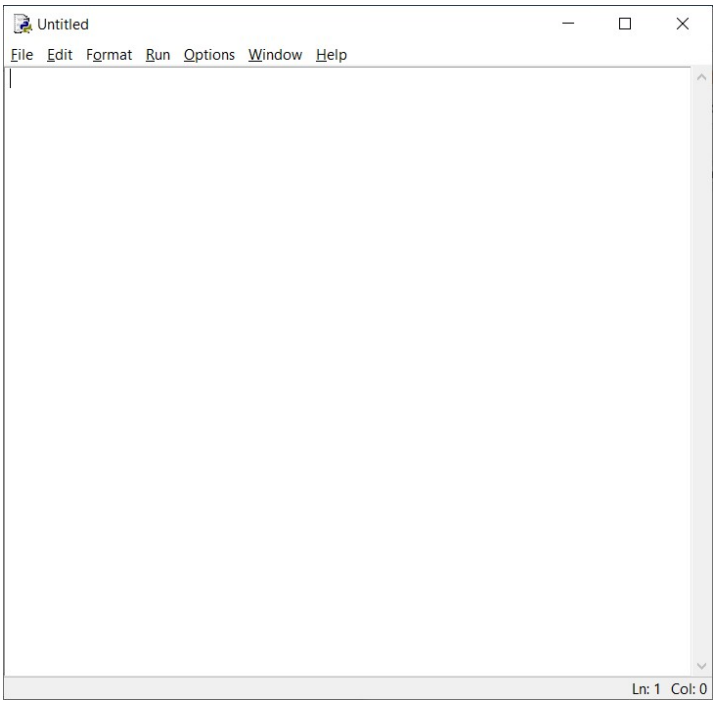


The IDLE “shell” will appear.



To start writing an actual Python script,

1. Go to **File—New**. A new script window appears

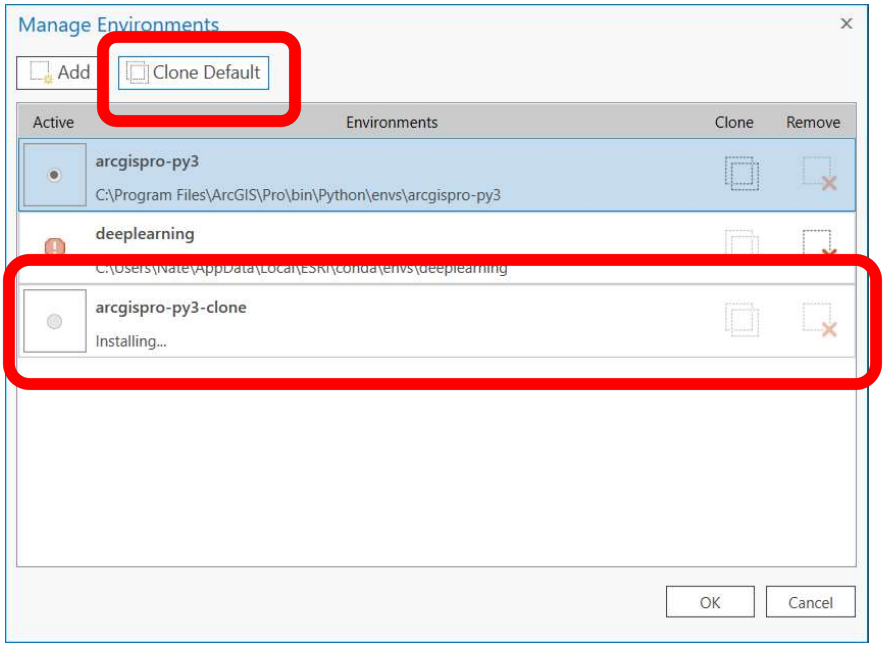


2. Make sure to save the script file somewhere on disk and make sure to use the .**PY** extension, otherwise, the file will be saved as plain text (and not show the color coding and you cannot "run" a Python file without it being named with the **.PY** extension).

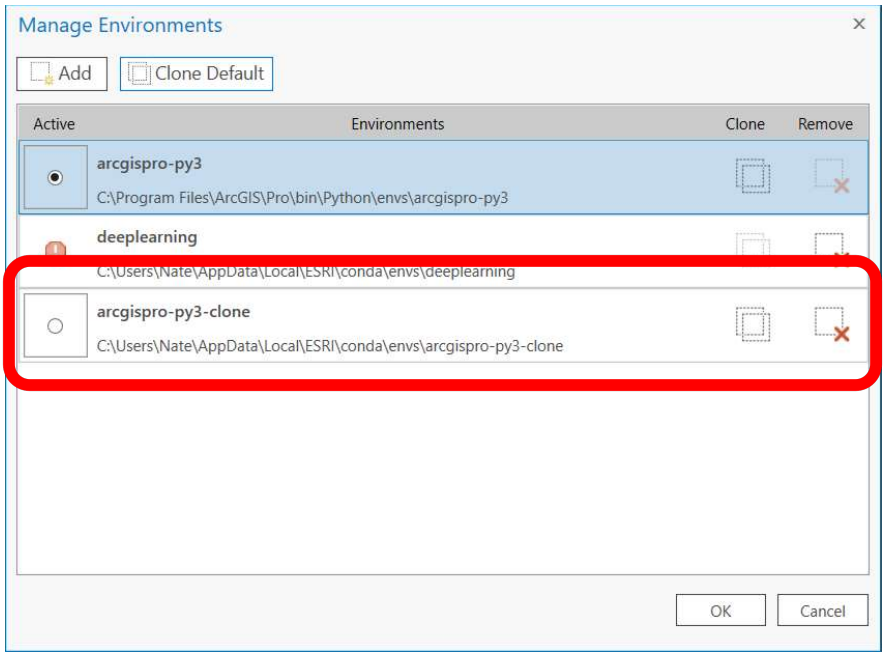
Updating Pro and Python Clones

When updating Pro from one major version to another (e.g. 2.4 to 2.5), the Python clone will likely need to be removed and then reclone the Default Python environment. Updates within a specific version (e.g. 2.5.1, 2.5.2, etc) likely do not need to have the Python clone updated.

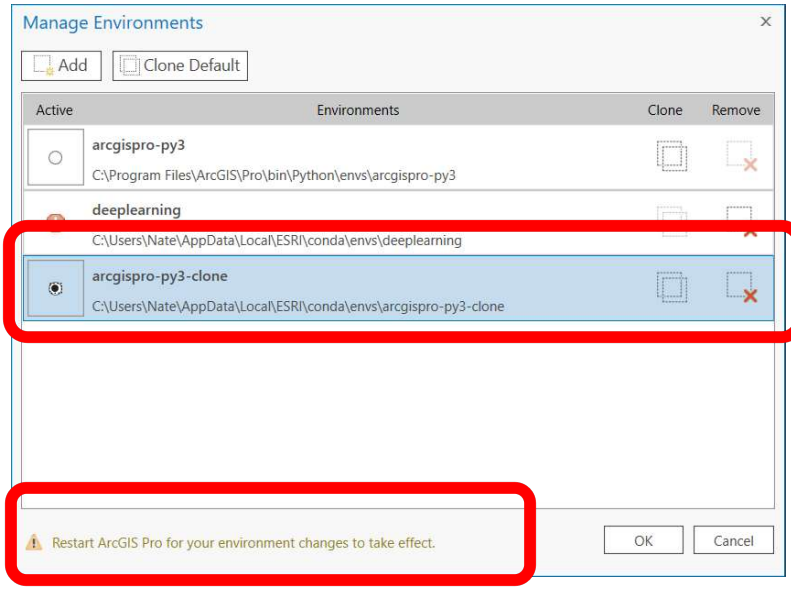
1. Update ArcGIS Pro by using the **Update** link within the About section of ArcGIS Pro.
2. Check the **Python clone** in the **Python section of Pro** (**Settings—Python**).
3. Click on the **Manage Environments**. If a **red X** appears, this indicates the Python clone is "broken."
4. Remove the existing clone. NOTE: This takes approximately 10 minutes. If the gauge keeps recycling after 10 minutes or so, click the upper right X to close the window.
5. Click on the **Manage Environments** button again, the click **Clone Default**. This will take 5-10 minutes.



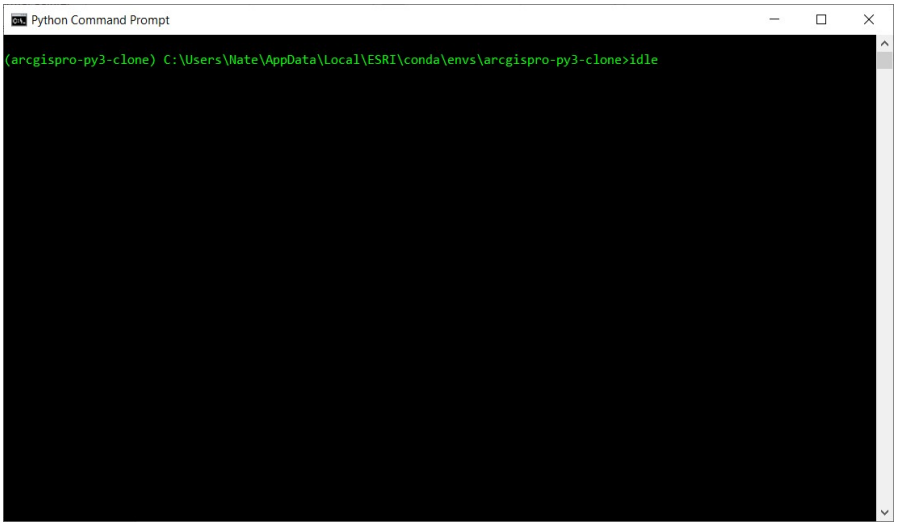
After the clone was created



After the install is complete. Open up **Python--Mange Environments** and choose the "cloned" environment.



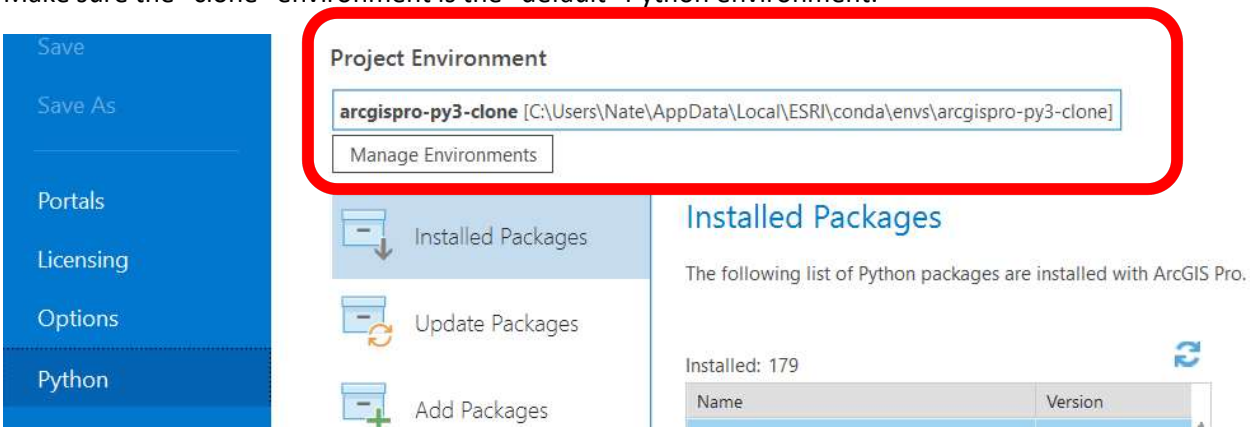
6. You will be prompted to restart Pro
7. Start the **Python Command Prompt** window
8. Type in **idle** (to start the IDLE IDE environment)



Updating the Spyder IDE using the New Clone

Installing the Spyder IDE after recreating the Python clone follows the same steps as above. Installing the Spyder IDE is not required to write and run Python scripts for Pro. Spyder is an option for creating and running Python scripts like the default IDLE IDE.

Make sure the "clone" environment is the "default" Python environment.



1. Click **Add Packages**
2. In the **Search** box, type **Spyder**
3. Click **Install**. This will take approximately 5 minutes
4. After completing, Click on the **Installed Packages** button
5. Click the refresh icon (the two arrows) and scroll down the list to see that Spyder was installed.
6. Start the **Python Command Prompt** window
7. At the command prompt, type **spyder**