

Example: You are an intern with the City of Rochester GIS Department. They have asked you to make a map of the El Camino Trail using open-source GIS. How would you do this?

Materials needed: kmz of El Camino trail, QGIS

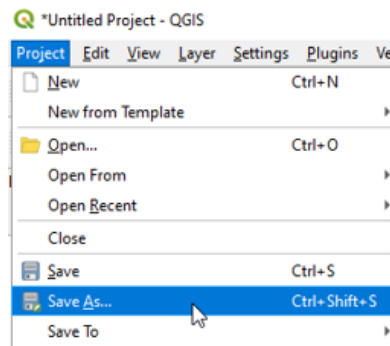
Vocab:

- Open-source – software that you can freely access and modify its source code
- QGIS – a free and open-source cross-platform desktop geographic information system application that supports viewing, editing, and analysis of geospatial data
- OpenStreetMap - a free, editable map of the whole world that is being built by volunteers largely from scratch and released with an open-content license
- Basemap - a reference map to provide context on which you overlay data from layers and visualize geographic information
- KMZ - a Zip-compressed .KML file that stores map locations viewable in various geographic information systems (GIS) applications, most notably Google Earth
- Vector – a type of spatial data structure visualized with points, lines, or polygons



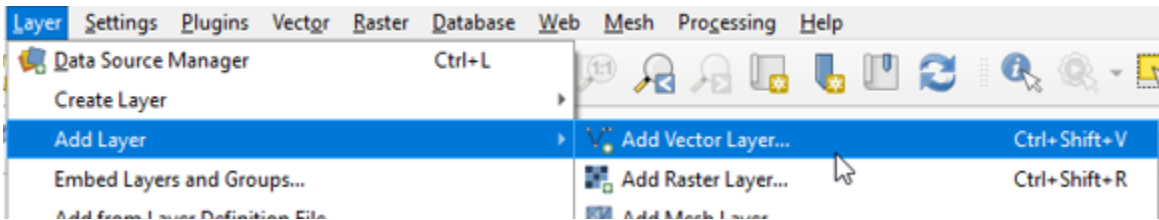
Steps:

1. Open QGIS
2. Open New Empty Project
 - a. Go to Project > Save As and save your map project to a location of your choice

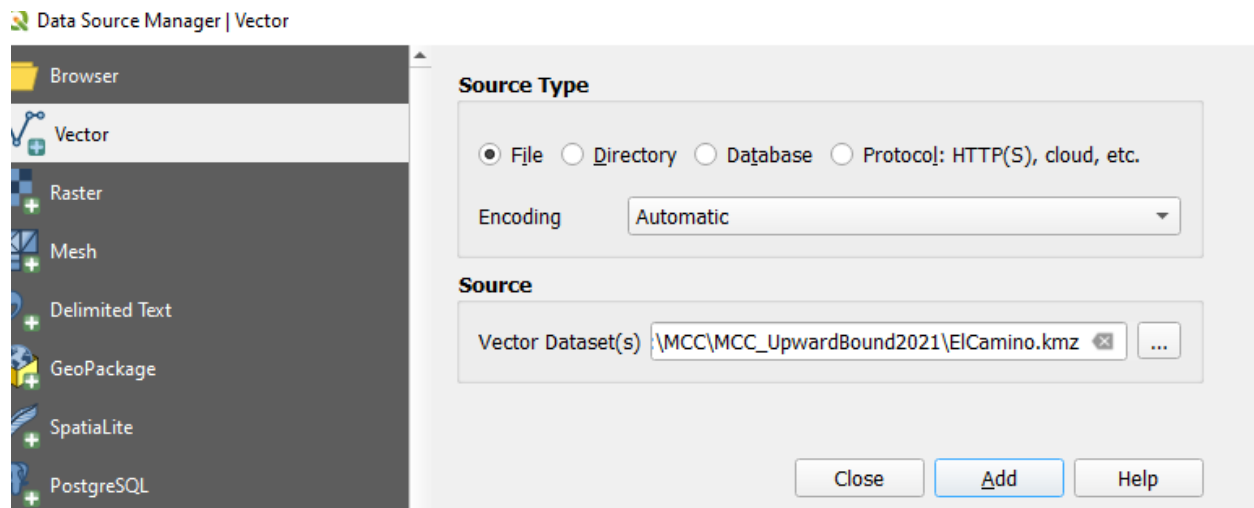


The Meeting Workforce Needs for Skilled Geospatial Technicians through Virtual Geospatial Information Science Technology Education project was funded through the U.S. National Science Foundation (NSF) Office of Advanced Technological Education under Grants Award # 1955256 to Monroe Community College. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

3. Add trail to map
 - a. Layer > Add Layer > Vector layer



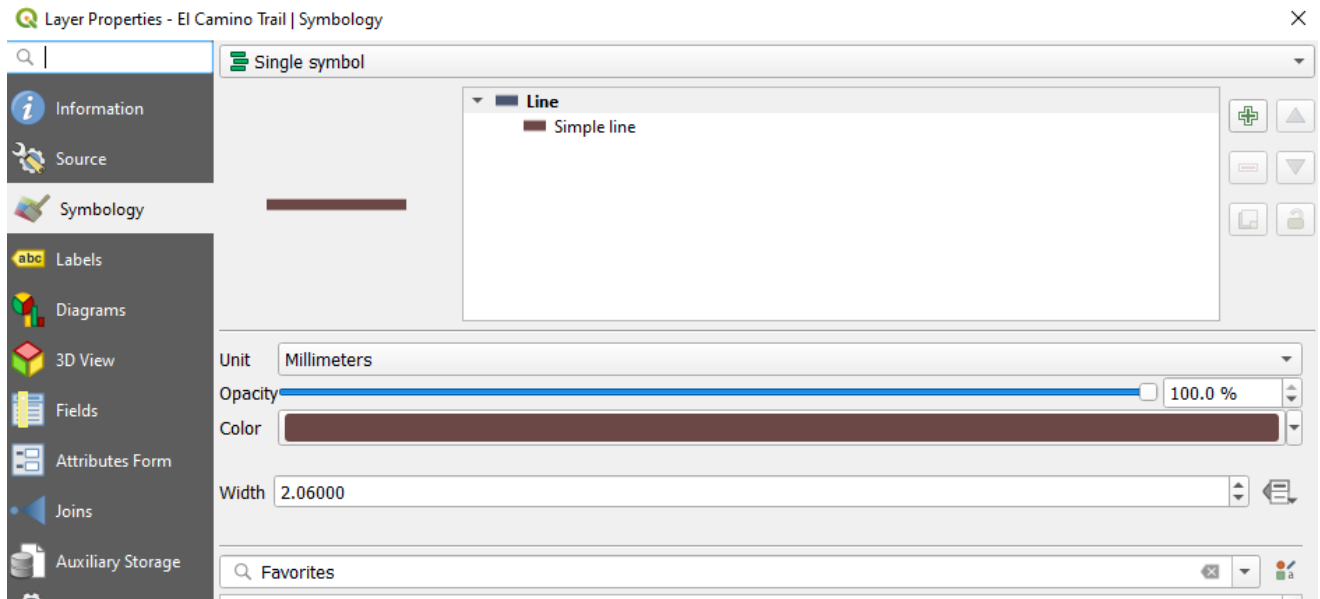
- b. This opens the Data Source Manager window
- c. Click the 3 dots, navigate to where the kmz is
- d. Click on your file, click Open
- e. Click Add
- f. Click Close



4. Rename Layer
 - a. Right click on the KMZ on the left side of the screen, click Rename Layer
 - b. Give your trail a name that is written properly
 - c. Ex. Instead of "ElCamino", make sure it is renamed to "El Camino Trail"

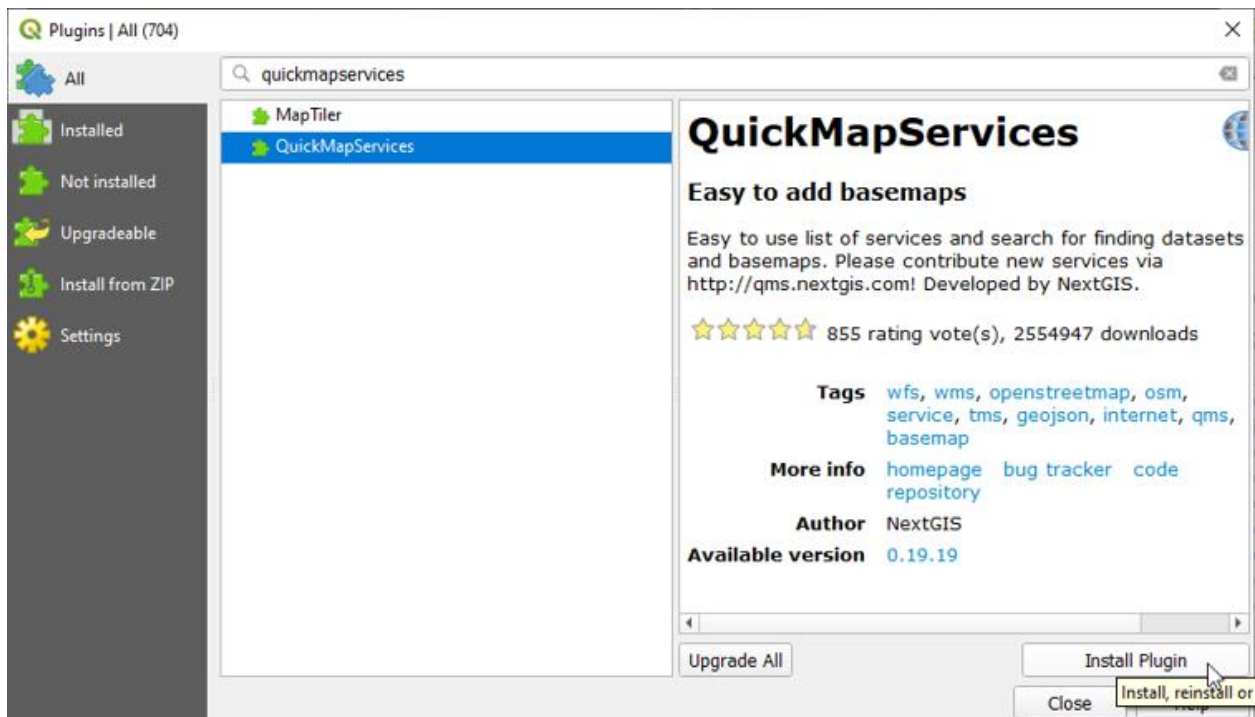
5. Change symbology
 - a. Right click on KMZ again and click Properties
 - b. This should open the Layer Properties Symbology window
 - c. Change the color to a color you like
 - d. Make the width a bit thicker either by typing in the field or by using the up/down arrows
 - e. Click Apply and then OK

The Meeting Workforce Needs for Skilled Geospatial Technicians through Virtual Geospatial Information Science Technology Education project was funded through the U.S. National Science Foundation (NSF) Office of Advanced Technological Education under Grants Award # 1955256 to Monroe Community College. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.



6. Add basemap

- a. Go to Plugins > Manage and Install Plugin
- b. In the Plugins Window, search for QuickMapServices then click Install Plugin button



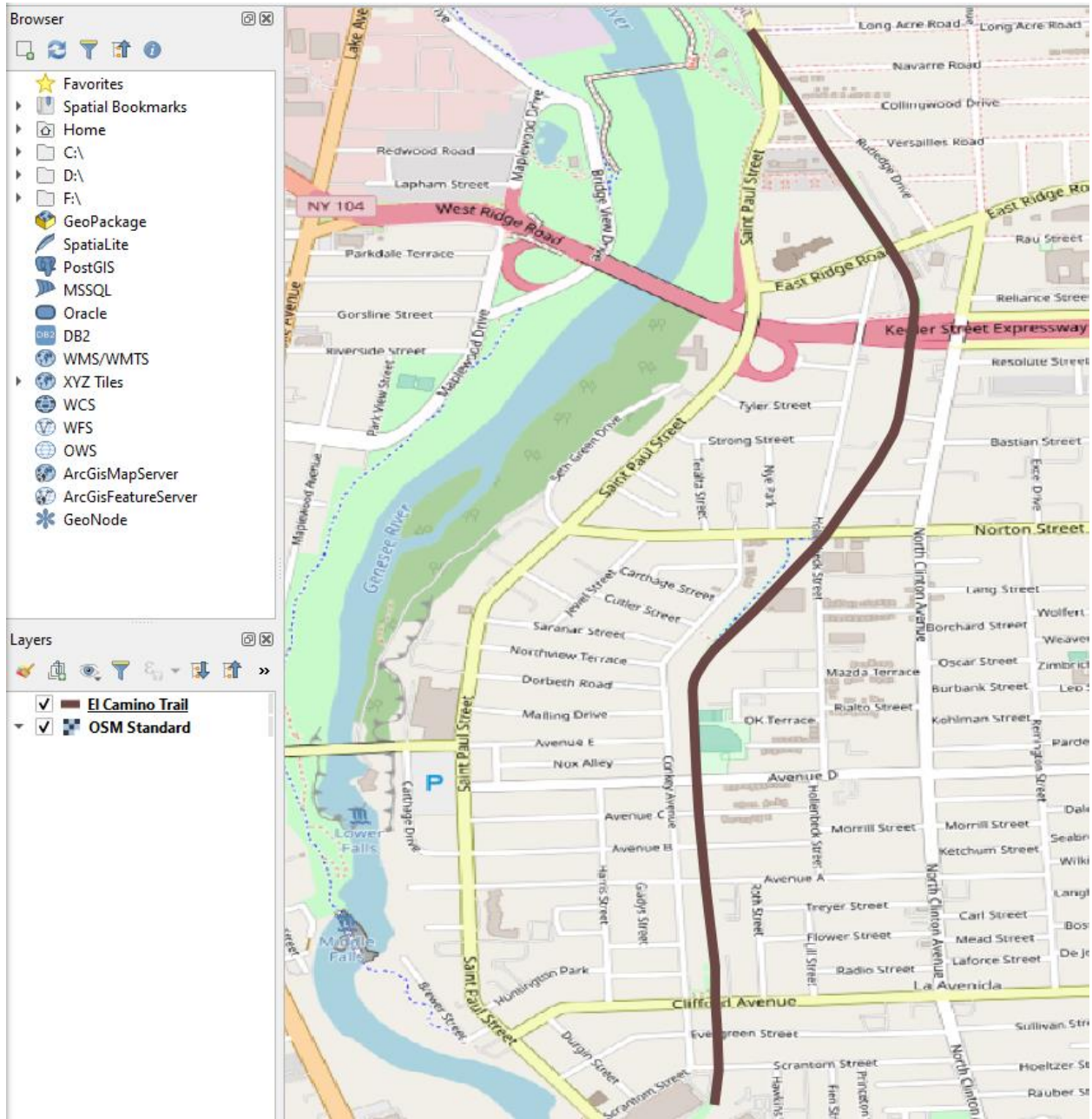
- c. After install, close window

The *Meeting Workforce Needs for Skilled Geospatial Technicians through Virtual Geospatial Information Science Technology Education* project was funded through the U.S. National Science Foundation (NSF) Office of Advanced Technological Education under Grants Award # 1955256 to Monroe Community College. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

d. Go to Web > QuickMapServices > OSM > and click OSM Standard



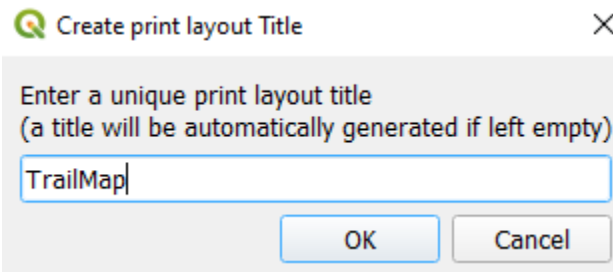
e. This adds an OpenStreetMap basemap to the map project window




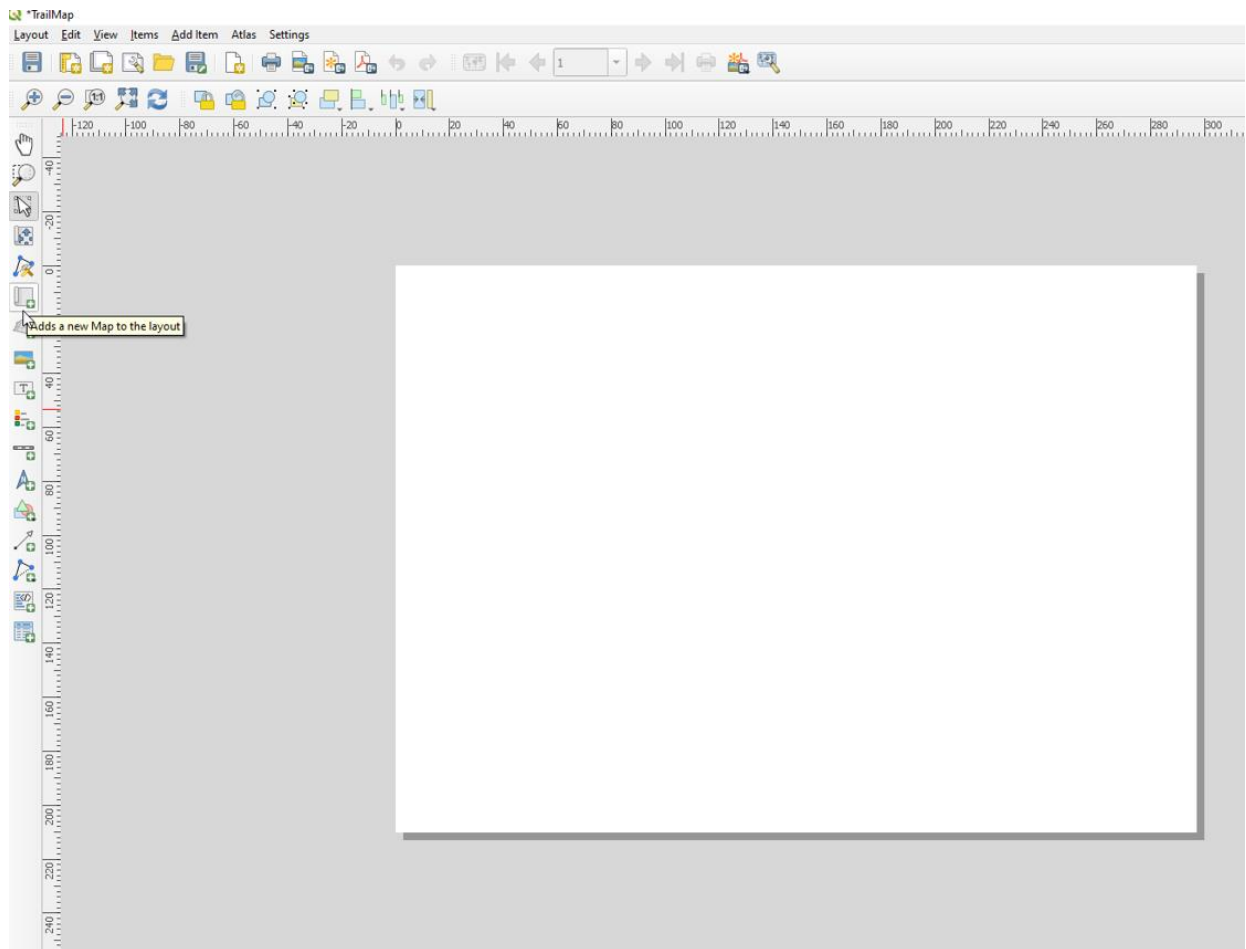
The Meeting Workforce Needs for Skilled Geospatial Technicians through Virtual Geospatial Information Science Technology Education project was funded through the U.S. National Science Foundation (NSF) Office of Advanced Technological Education under Grants Award # 195256 to Monroe Community College. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.


7. Create printable map

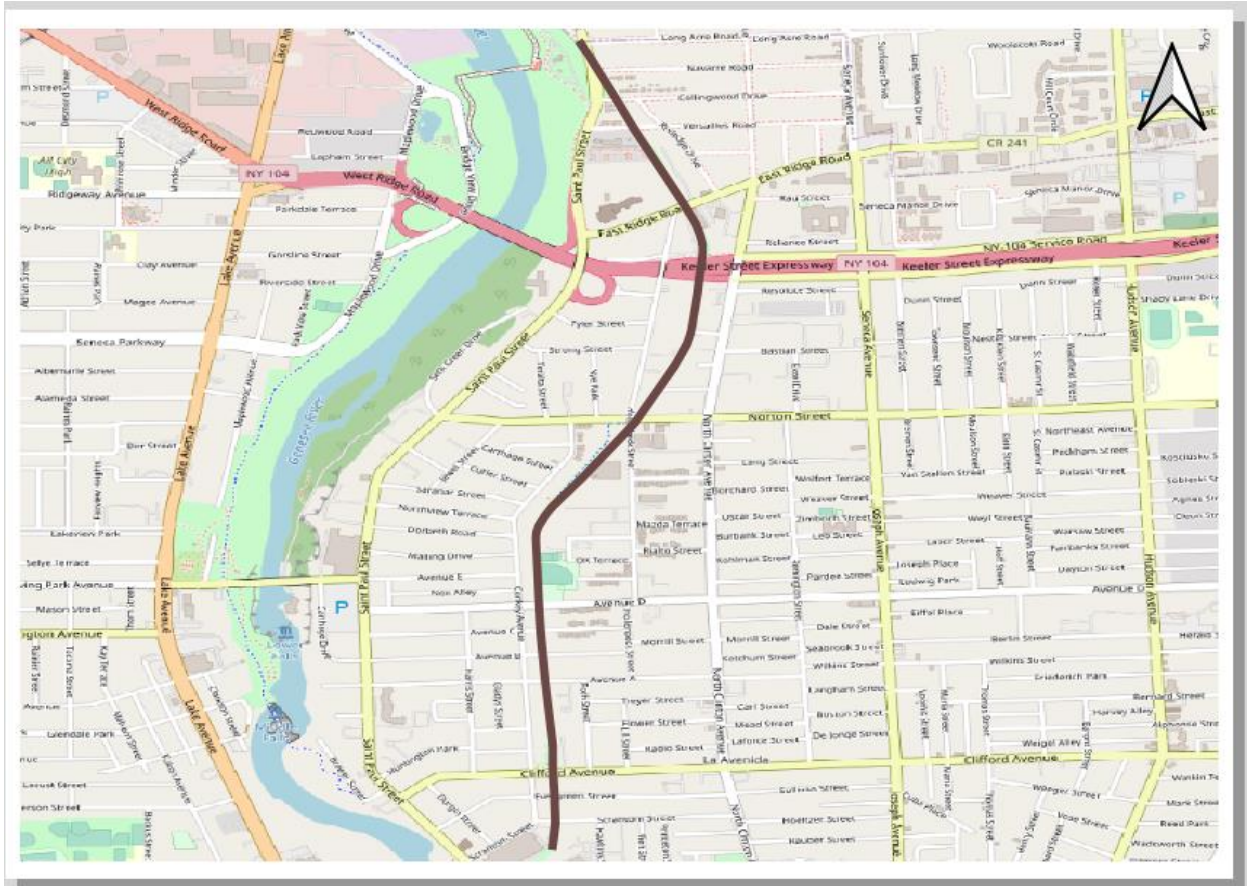
- a. Go to Project > New Print Layout
- b. Give your print layout a title




- c. Click  to add a new Map to the layout and draw a box with the cursor in the white space of the map layout

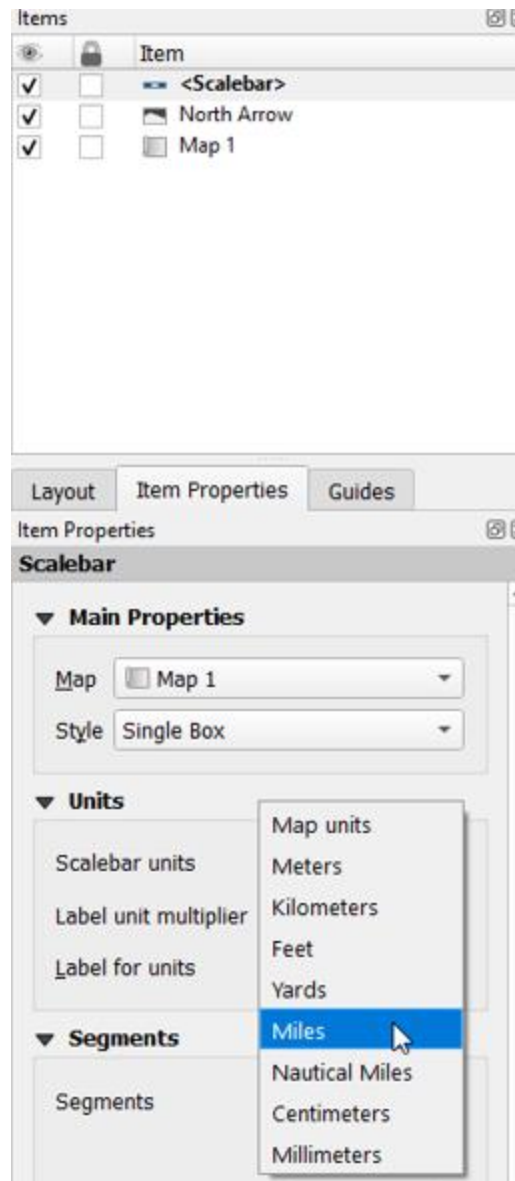



- d. Now your map project will appear in the layout. Click on  to add a North Arrow to your map. Once clicked, draw a box with the cursor where you want your north arrow on the map.



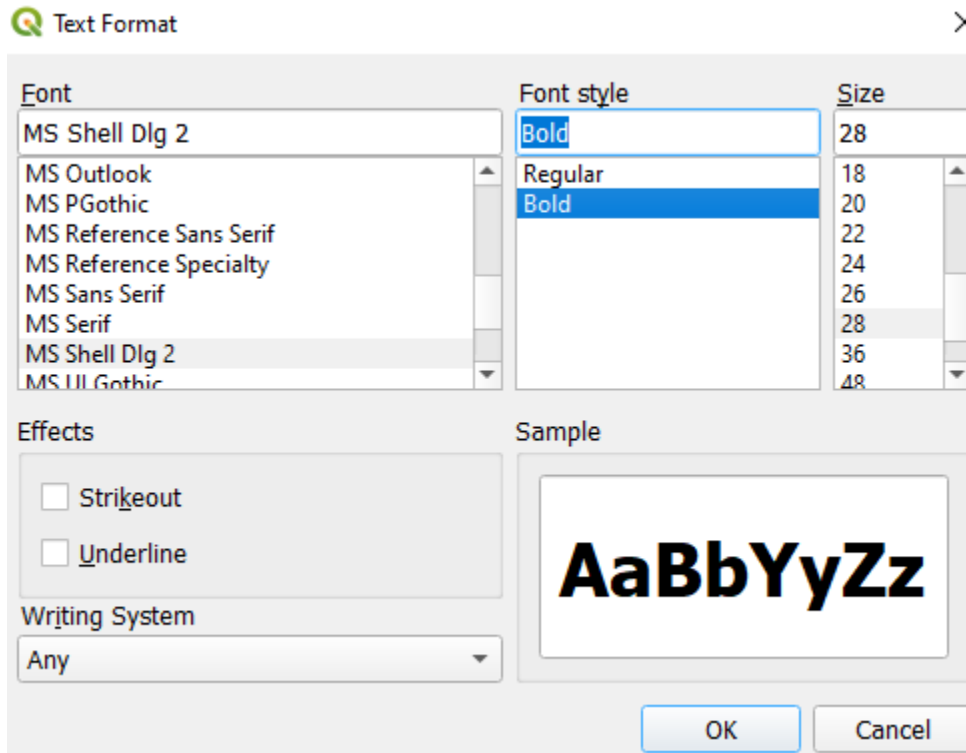
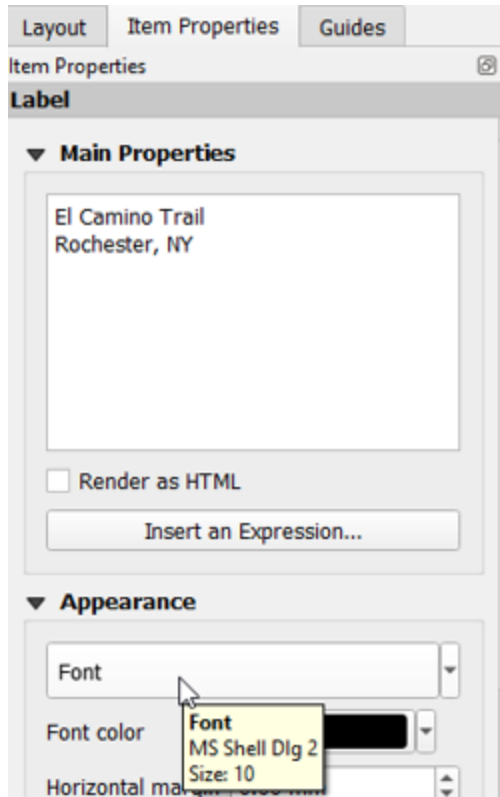
- e. Next, click  to add a scale bar to your map. Draw a box where you want the scale bar to be, and this will insert your scale bar. Make sure the units are in miles instead of meters by highlighting the scale bar on the right side of the map layout and expanding the Units tab. Click the first field for Scalebar units and ensure it is in miles.

The Meeting Workforce Needs for Skilled Geospatial Technicians through Virtual Geospatial Information Science Technology Education project was funded through the U.S. National Science Foundation (NSF) Office of Advanced Technological Education under Grants Award # 195256 to Monroe Community College. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.




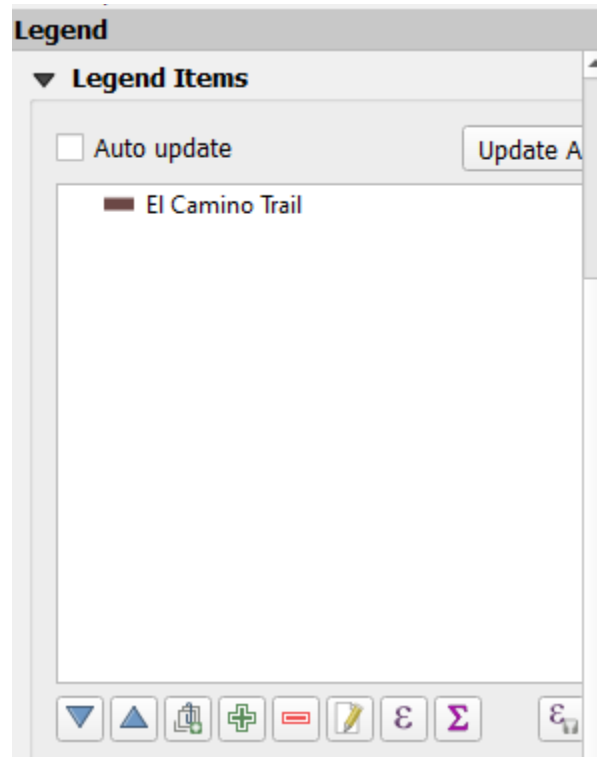
- f. Click  to add a Title to your map and draw a box where you want the title to be. The default font size is very small. Under Item Properties, Main Properties for the title, type your map title in the box. Under Appearance, click Font to open the Text Format window. Change the size to something larger and the style to bold. You can also change the font style as well if desired. Then hit OK.

The Meeting Workforce Needs for Skilled Geospatial Technicians through Virtual Geospatial Information Science Technology Education project was funded through the U.S. National Science Foundation (NSF) Office of Advanced Technological Education under Grants Award # 1955256 to Monroe Community College. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

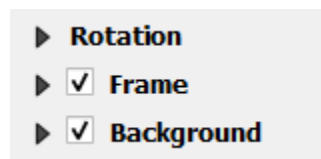


The *Meeting Workforce Needs for Skilled Geospatial Technicians through Virtual Geospatial Information Science Technology Education* project was funded through the U.S. National Science Foundation (NSF) Office of Advanced Technological Education under Grants Award # 1955256 to Monroe Community College. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

- g. Click  to add a Legend to your map layout. Draw a box with the cursor where you want your legend.
- h. Under Legend > Legend Items in the Item Properties for the legend, uncheck the box for Auto update and use the red subtraction sign to remove the basemap from the legend.




- i. Scroll down in Item Properties for the legend and make sure the box for Frame is checked on.



j. Now your map layout should look something like this:



k. At the top of the print layout, click  to save/export your map as a PDF. Choose your save location and give your map PDF a name. Click Save once complete and navigate to the location you saved your map. Now you can turn your map in to your internship supervisor 😊

The Meeting Workforce Needs for Skilled Geospatial Technicians through Virtual Geospatial Information Science Technology Education project was funded through the U.S. National Science Foundation (NSF) Office of Advanced Technological Education under Grants Award # 1955256 to Monroe Community College. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.