

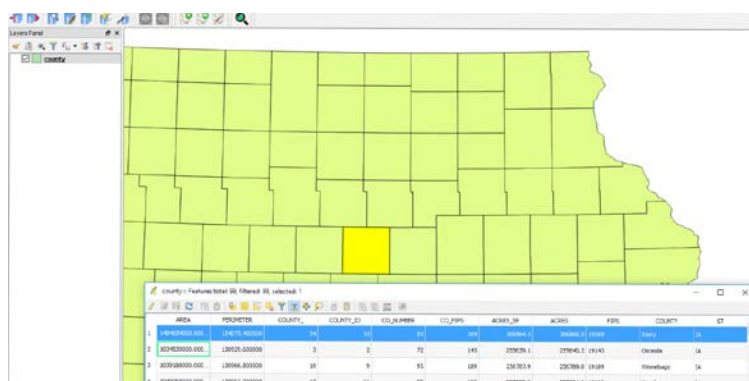
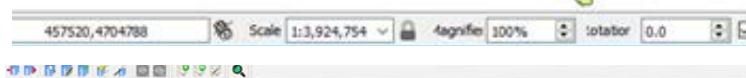
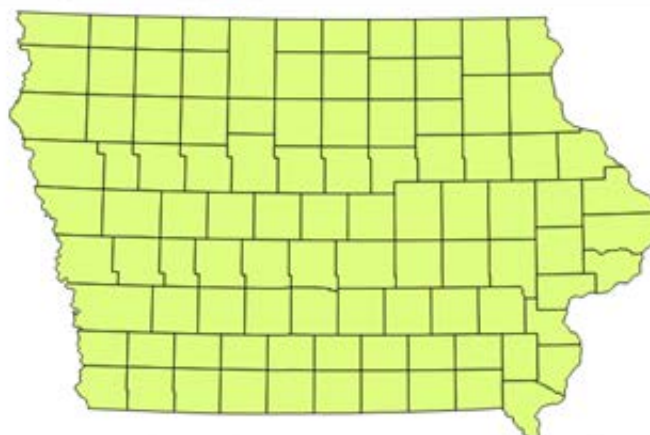
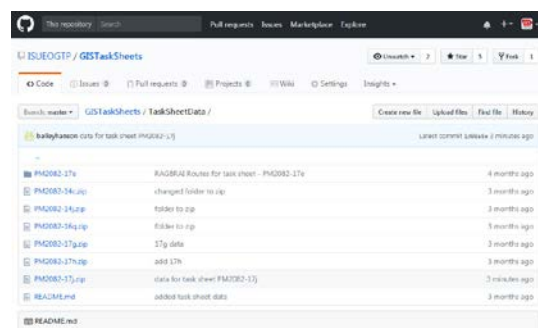
QGIS: Geoprocessing Tools - Clip and Buffer

Welcome to the Essential QGIS Task Sheet Series. This series supplements the Iowa State University Geospatial Technology Training Program short course series. The task sheets are designed to provide quick, easy instructions for performing mapping tasks.

There are many statewide geospatial data resources available for free Online. However, when you are working on a regionally focused project, you will often only need data that is relevant to your specific area of interest. This task sheet will show you how to use the clip and buffer geoprocessing tools to create layers representing a specific area of interest.

1. Getting Started

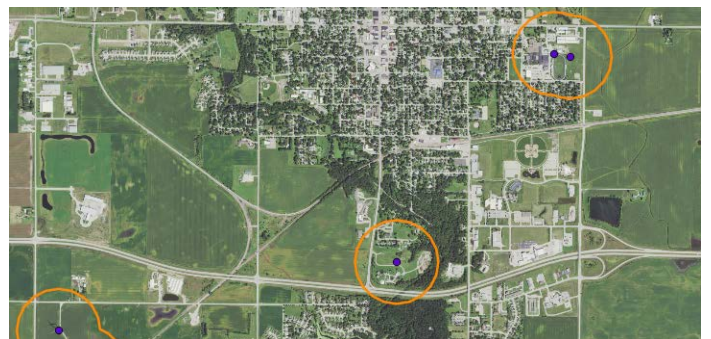
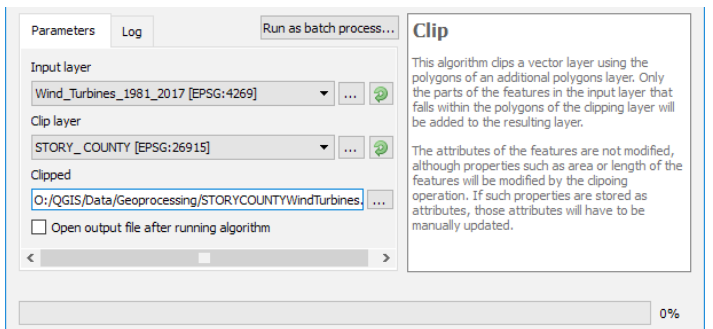
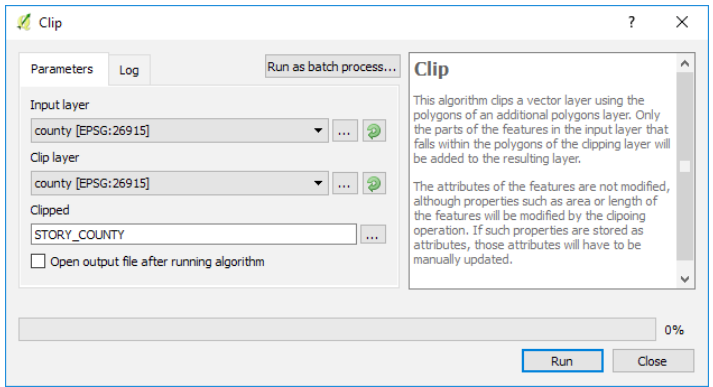
- Download the data used in this task sheet by navigating to <http://issueogtp.github.io/GISTaskSheets/TaskSheetData/PM2082-17n.zip> in a web browser. When the download is complete, copy the files into your working directory.
- Open **QGIS** and **create a new project**.
- Click on the **Add Vector** icon, and browse to the location of your saved data. *Make sure to use the drop-down menu to specify ESRI Shapefile.* Select **county.shp** and click **Open**, click **Open** again. Now the Iowa Counties shapefile should appear.
- In a web browser go to ortho.gis.iastate.edu. Click on **WMS Directory** and find **ortho/naip_2015_nc** and copy the URL listed.
- In the **Browser Panel (View > Panels > Browser Panels)**. Scroll to **WMS**. Right-click and select **New Connection....** In the **create a new WMS Connection** window, type **naip_2015_nc** for **Name**. In the **URL** box, paste the URL you copied earlier. Click **OK**. The layer appears under **WMS**.
- Double-click **naip_2015_nc**. Select **naip_2015_nc** and drag it to the **Layer Panel**. Turn the layer off for now.



2. Selecting and Clipping

- Select **county** from the **Layers Panel**. Right-click and select **Open Attribute table**. Notice the county names are in the **County** attribute field (second to last column). Find the **Select/filter features using form** tool, then type **Story** into the **County** field.

- b. In the **Show All Features** drop-down menu at the bottom of the table, choose **Show Selected Features**. In the bottom right-hand corner, change from **form view** to **table view**. Close the attribute table. Notice Story County is selected.
- c. Now clip Story County from the county shapefile. In the **Menu** bar select **Vector > Geoprocessing Tools > Clip**.
- d. In the **Clip window**, choose **county** for both the **Input layer** and **Clip layer**. In the **Clipped** box click on the ellipsis **...** button, and choose **Save to file...** Name the new file **Story_County**, and save it with your other files for this project. Click **Save**.
- e. Click to uncheck the box next to **Open output file after running algorithm**, and click **Run**.
- f. Use the **Add Vector** tool to add **Story_County.shp** and **Wind_Tubines_1981_2017.shp** to your QGIS project. *Note: if you would have left the open output file after running algorithm checked, the file would have been added to your map automatically.*
- g. Now follow **steps 2c-2d** to clip the wind turbine layer to the Story County boundary. Call the new wind turbine layer: **Story_County_Wind_Turbines**.



3. Buffering

- a. Story County has an ordinance that wind turbines must be 300 meters from residences, schools, and hospitals. Create a buffer of 300 meters around each wind turbine in story county. In the **Menu** bar select **Vector > Geoprocessing Tools > Fixed distance buffer**.
- b. Choose **Story_County_Wind_Turbines** from the **Input layer** drop-down menu. Type in **300** in the **Distance** box. Leave **segments** at **5**, click the ellipsis **...** button, and choose **Save to file...**, name the new file **BufferedTurbines300m**. Check the box next to **Open output file after running algorithm**, and click **Run**. The new layer should be added to your map when the geoprocessing tool is complete.
- c. Click and drag the layers in the **Layers Panel** into the following order:
Story_County_Wind_Turbines
BufferTurbines300m
Story_County
NAIP_2015_nc
- d. Adjust the symbology for the **Story_County**, and **Story_County_Wind_Turbines** layers so that you visually examine all the layers together.
- e. Now visually examine the buffers surrounding the wind turbines, do they all meet the county ordinance guidelines?

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