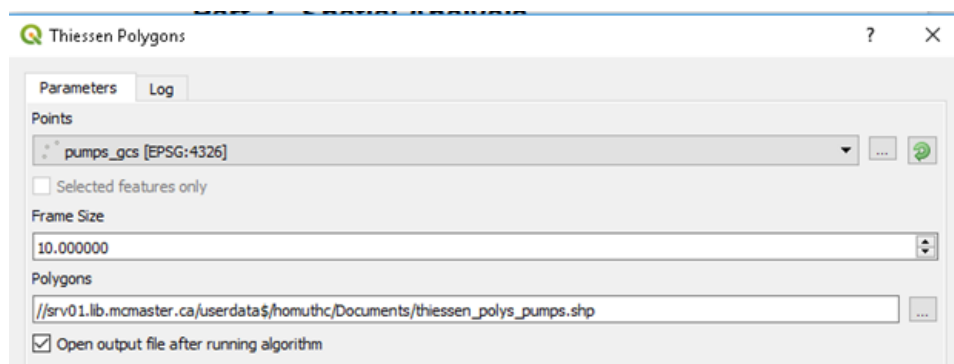# Part 2- Basic Spatial Analysis

Thiessen polygons

- Go to **Processing > Toolbox** to access additional tools not included in the default toolbar.
- Search for "**Thiessen polygons**" and double-click the ⬡ Thiessen polygons tool.
- Use the pump data as the **input** points.
- Under **Polygons**, save the output data to a file in your folder.
- Click **Run**.

Output file paths will vary by user

Point in polygon

- From the top menu bar, click on **Vector > Analysis Tools > Count Points in Polygons**.
- For **Polygons**, select your Thiessen Polygon layer.
- For **Points**, select the cholera layer.
- (Optional) in the **Count** field, navigate to the directory you wish to save the new file and give the new file a name.
  (This will save a permanent copy, otherwise a temporary copy will be saved within the project only).
- Click **Run**. A new layer will be added to your Layers Panel (default name: "Count").
- **Open the Attribute table** of the new *Count* layer:
- A new column, **NUMPOINTS** (the number of cholera cases within each polygon), has been added.
- Remove the original thiessen polygon layer (**right-click > Remove Layer...**).
- Rearrange layers so underlying datasets are visible.

Choropleth map

Create a choropleth map with a graduated colour scheme that corresponds to the number of cases in each polygon.

- **Double-click** the layer created above, or right-click and select **Properties**.

- Click the **Symbology** tab .

- In the top dropdown menu, change to to .

- In the **Column** dropdown, select the column containing the number of cases (from the previous step).

- Select a **colour ramp** from the dropdown menu (or right-click). Be thoughtful with your colour selection.

- Click **Classify** and observe that 5 classes are created.

- Edit the opacity of this layer so that the webmap beneath shows (under **Layer Rendering**).

- Click **OK** to exit the layer properties dialog box.

Update print layout

- Return to the print layout window, update the legend, and re-export the map.

Topics / skills covered:

- Accessing tools through the toolbox.
- Basic spatial analysis (thiessen polygons, count points in polygons).
- Choropleth map and graduated symbology.