

Geography 222

Laboratory 6

Introduction

A web map is an interactive display of geographic datasets used to convey information, and depict stories in a spatial context. Interactive web maps contain a basemap and a set of data layers, which can include interactive pop-up windows to display attribute information. Other common functions included on web maps include: pan and zoom functions, toggles to turn datasets on and off, measure, and locator tools.


In today's laboratory you will use a combination of QGIS and ArcGIS online to create a map to show the locations of hiking trails in Prince George, British Columbia.

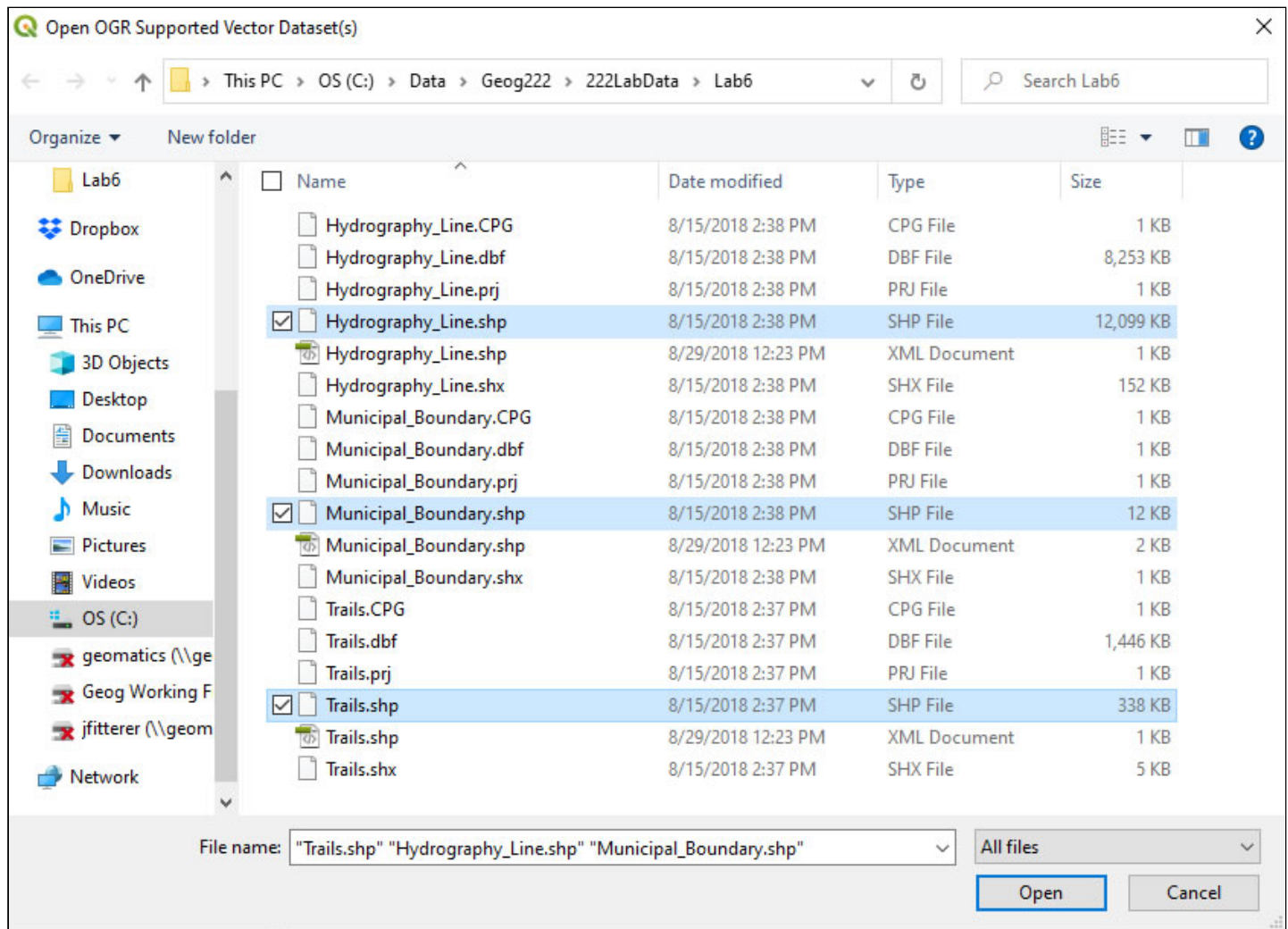
You will learn how to:

- Edit shapefiles for upload to ArcGIS Online
- Create and share a Web Map Application

Exercise

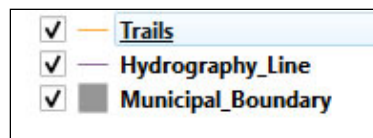
Downloading Data

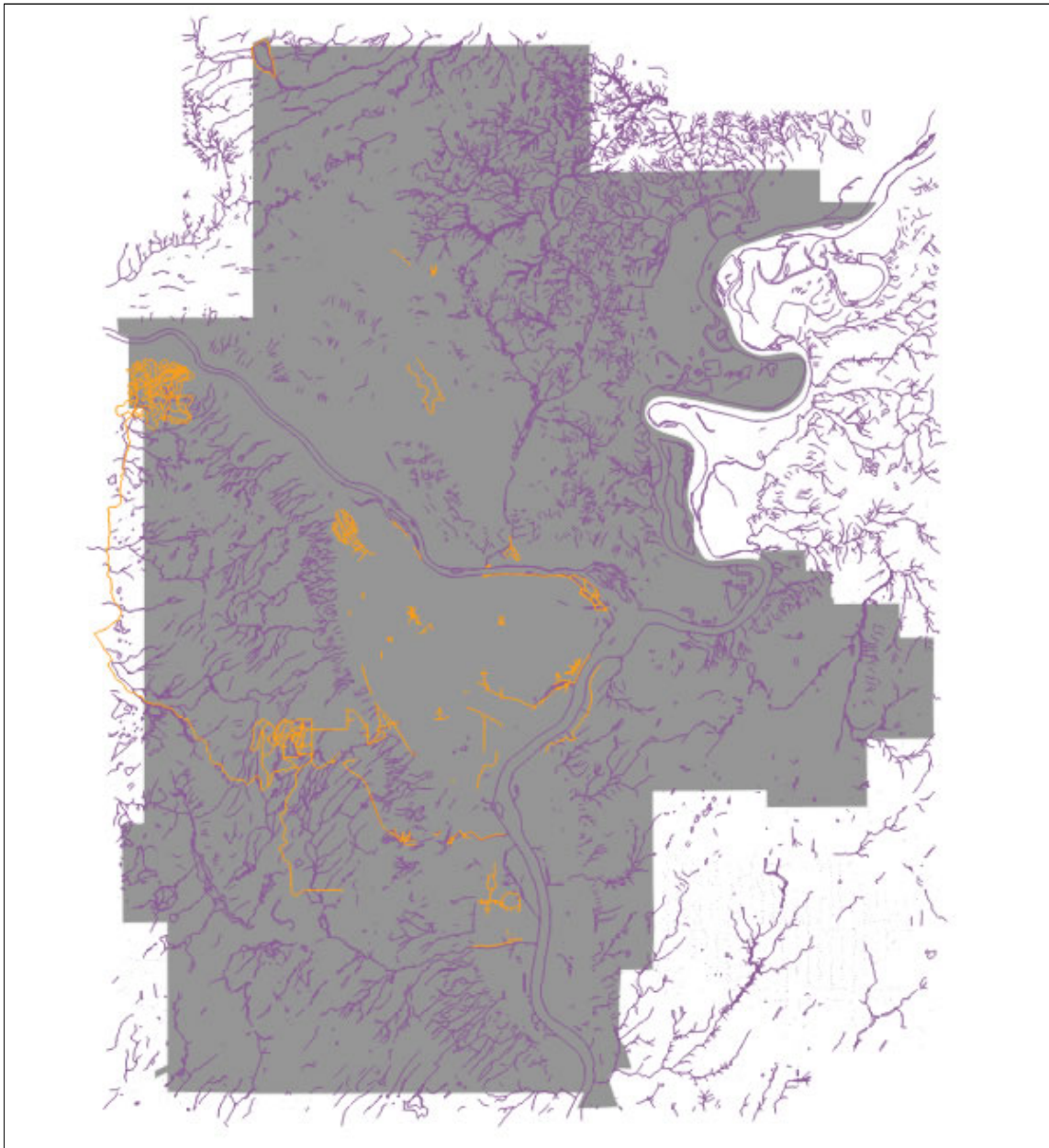
- 1.) Open QGIS
- 2.) Download the Prince George [datasets](#) to your Lab 6 folder and extract the folder
- 3.) In QGIS add  the Trails, Hydrology_Line, and Municipal_Boundary shapefiles



- Press **Open**
- Press **Add**

4. Arrange the layers in the following drawing order

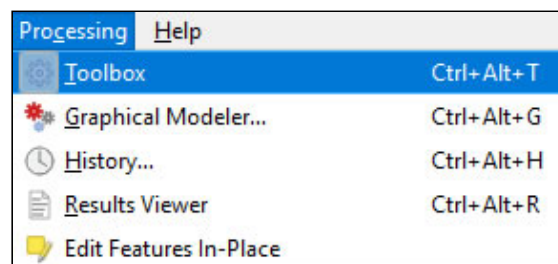




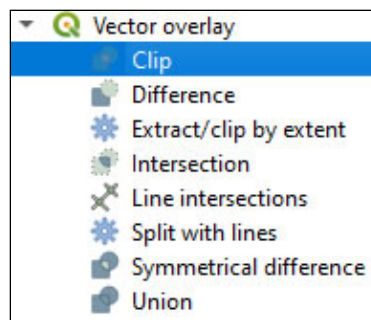
Data Editing

You will want to clip the Trails and Hydrography layers to the municipal boundary.

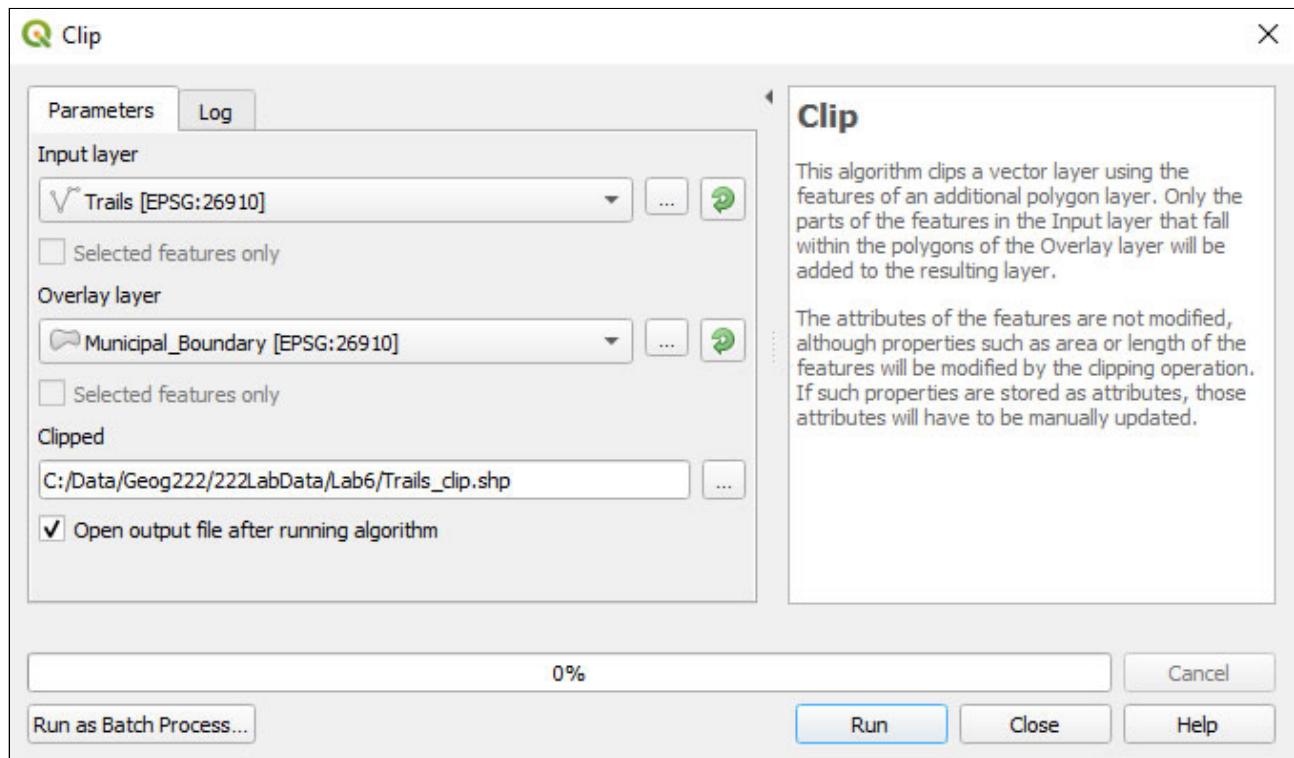
5. From the **Processing** menu select the **Toolbox**



- In the toolbox navigate to the **Vector overlay** tools → and select the **Clip**

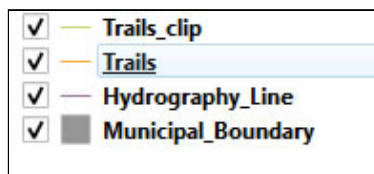


- Set the parameters as follows:

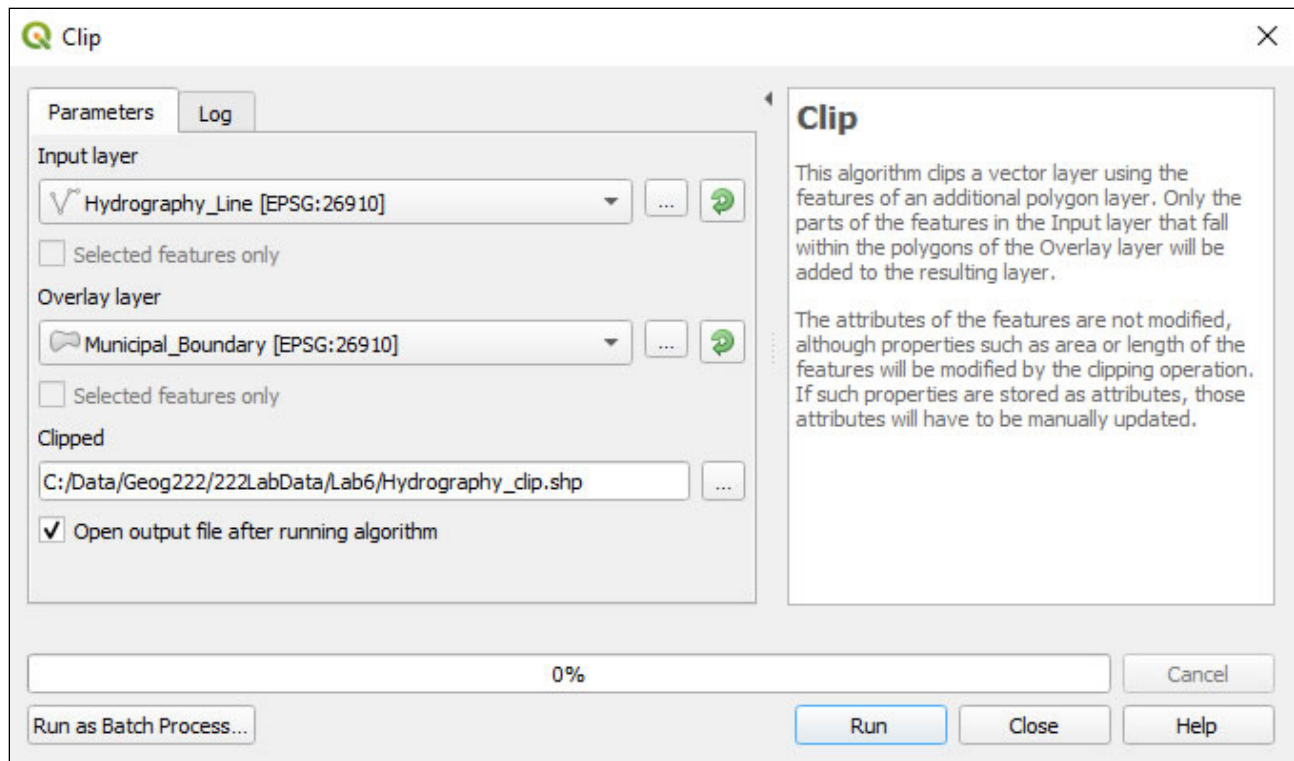


- Press **Run** → **Close**

A new clipped layer will have appeared in your table of contents

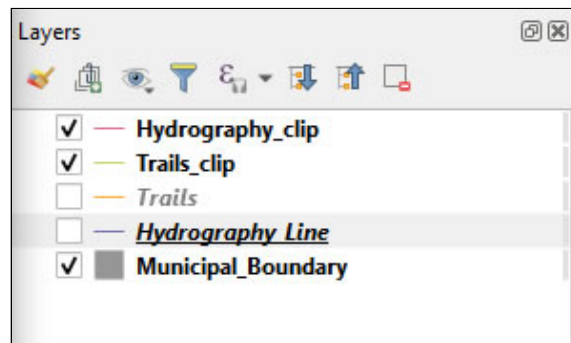


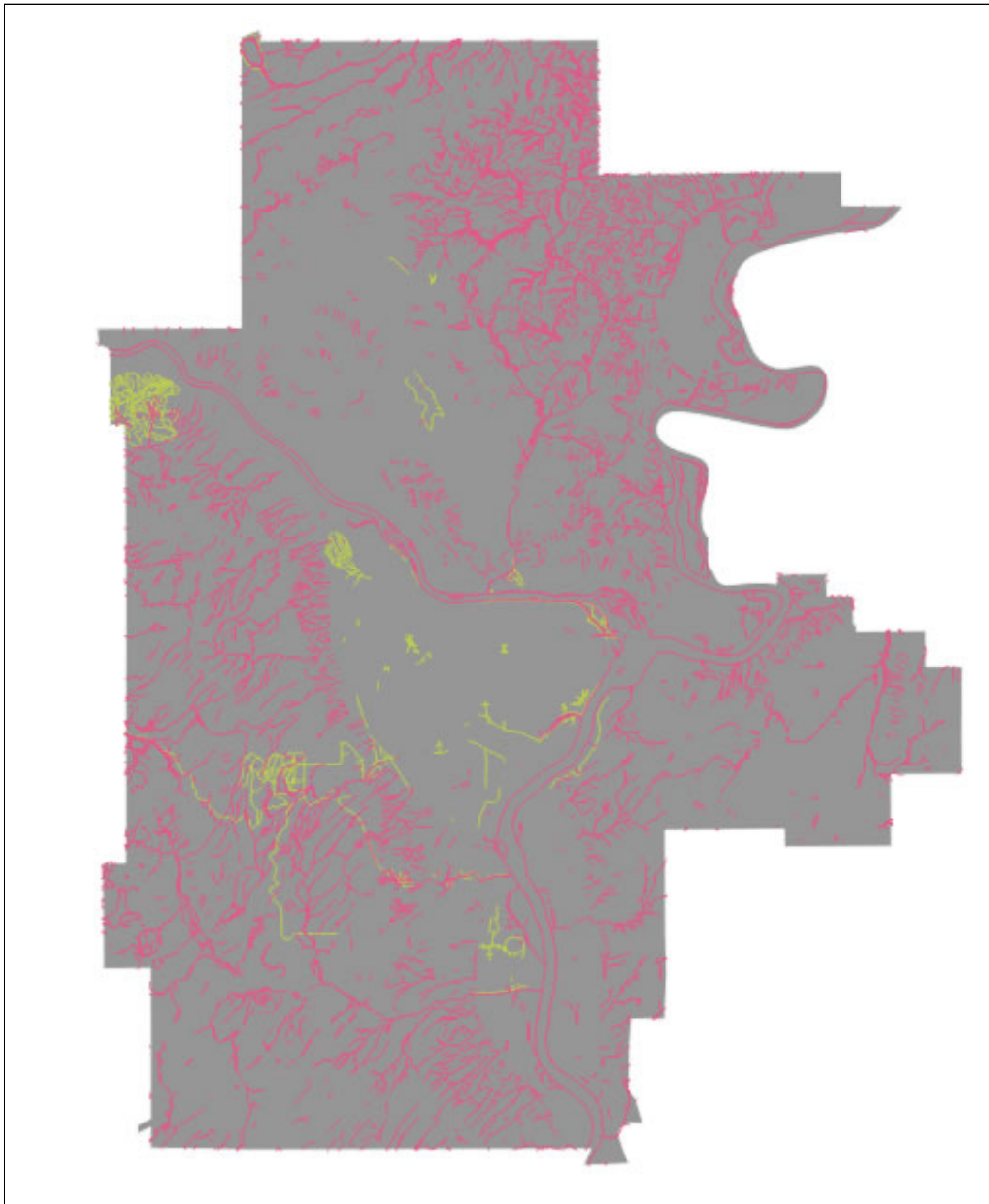
6. Now clip the **Hydrography_Line** layer as follows:



- Press **Run** → **Close**

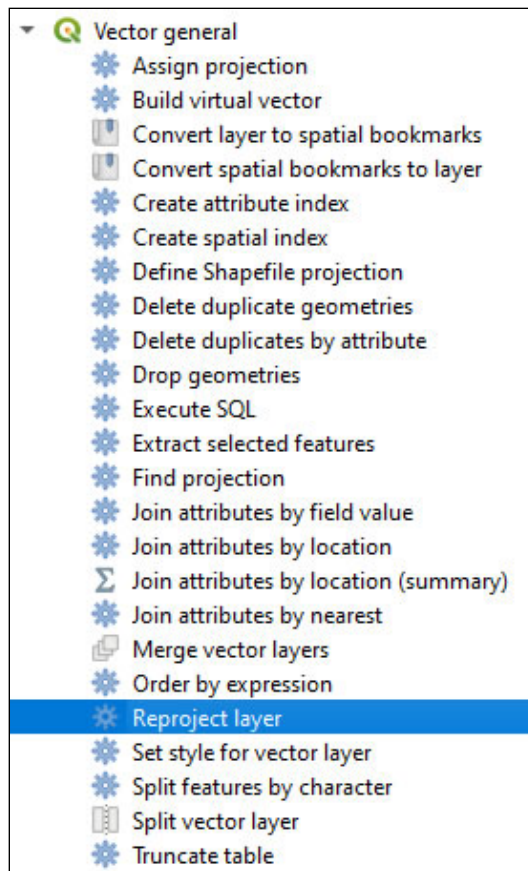
7. Turn off the **Trails** and **Hydrography_Line** layers to see the clipped boundaries.



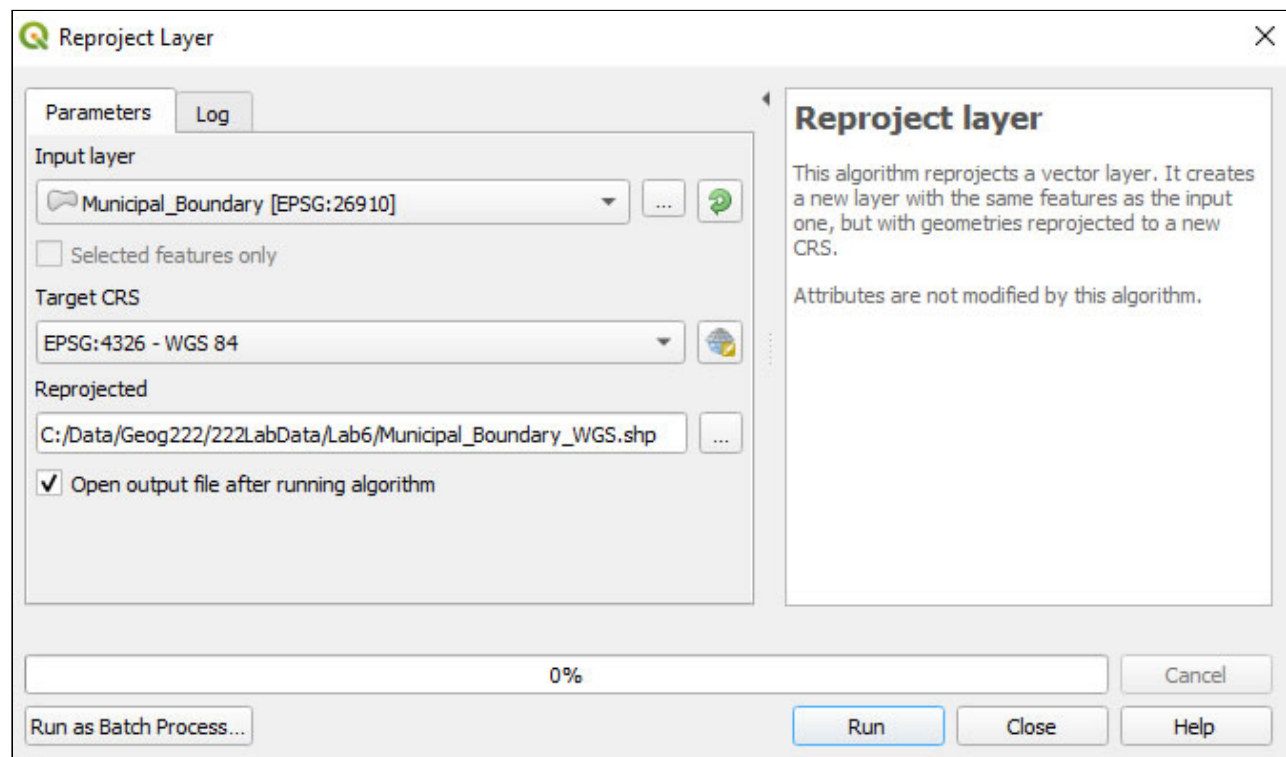


Next you will reproject the layers so you can import them into ArcGIS Online to build your webmap. In order to do so the layers must have a WGS 84 projection.

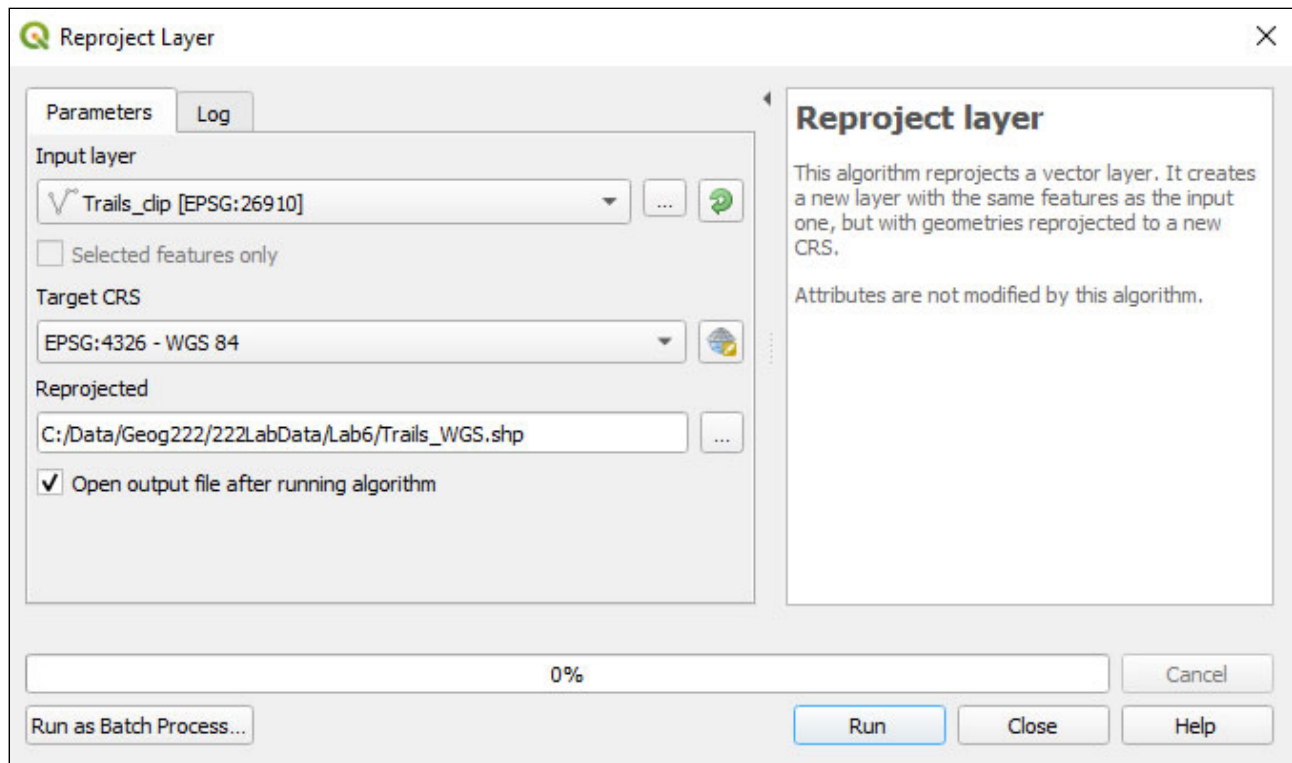
8. From the Processing toolbox select Vector general and then choose "Reproject layer"



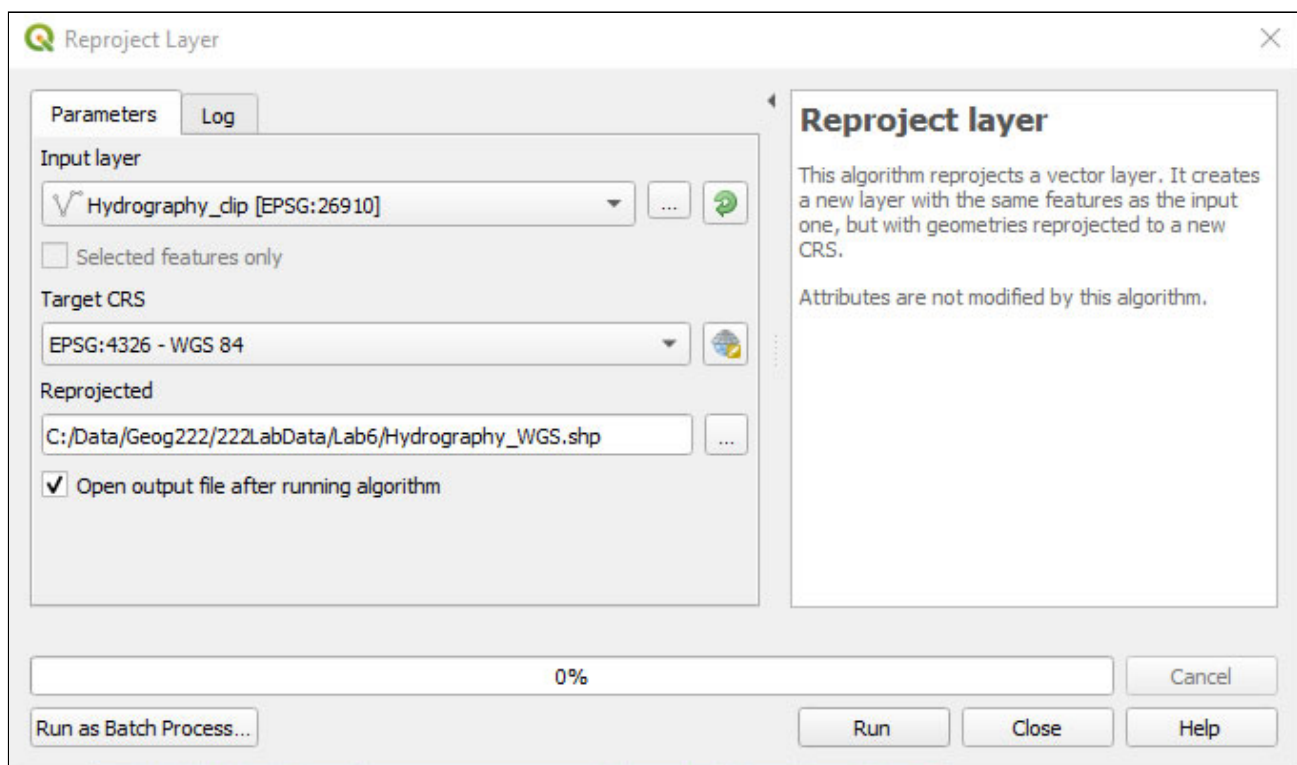
9. Set the Reproject layer parameters as follows:



- Press **Run** → Close



- Press **Run** → Close

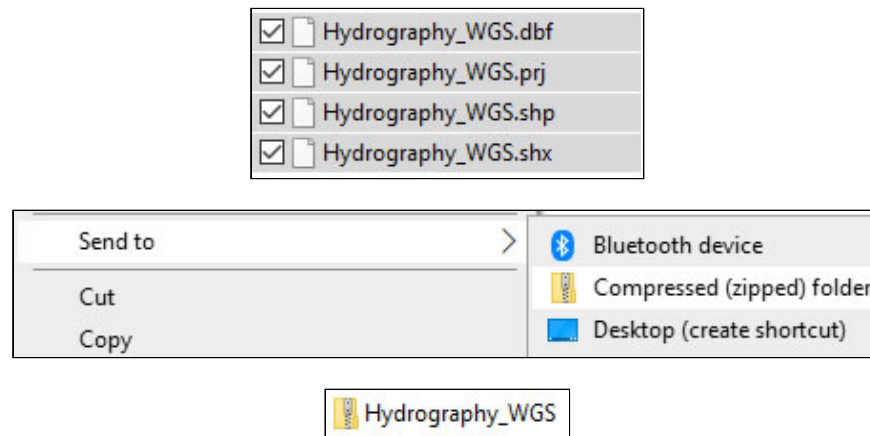


- Press **Run** → Close

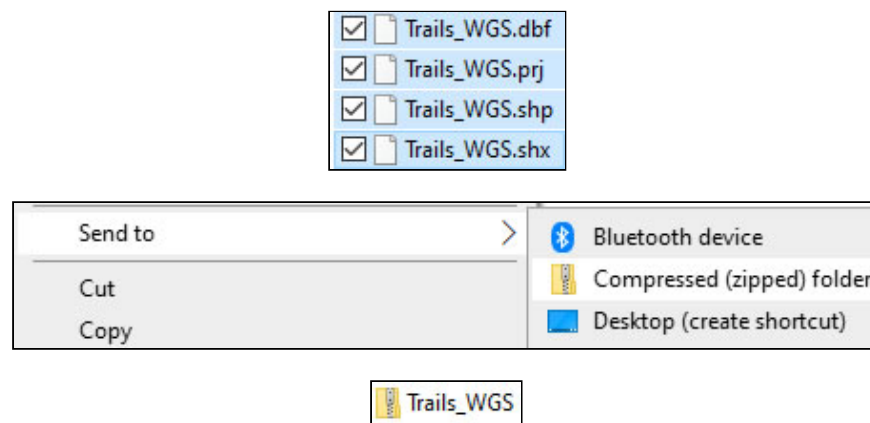
Now you are ready to prepare the layers for upload to ArcGIS online. ArcGIS online uploads shapefiles in a compressed storage format.

10. Using your computer's **File explorer** navigate to your Lab6 folder

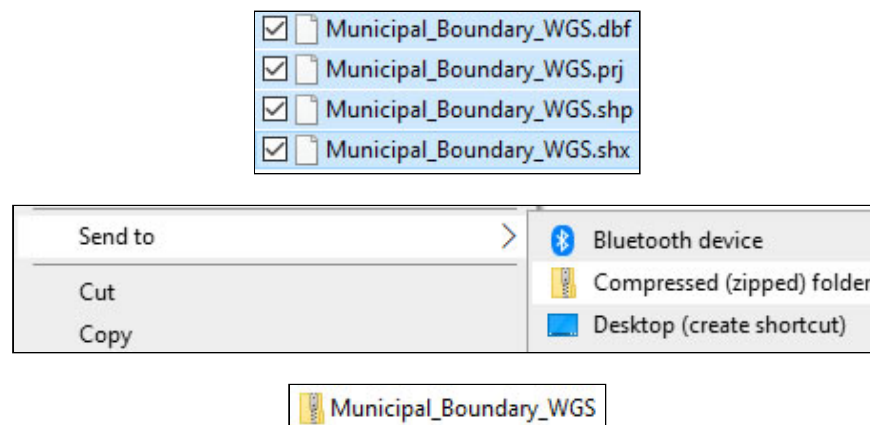
11. Holding control, select all of the **Hydrography_WGS** files → right click → send to a **Compressed (zipped) folder**



12. Holding control, select all of the **Trails_WGS** files → right click → send to a **Compressed (zipped) folder**



13. Holding control, select all of the **Municipal_Boundary_WGS** files → right click → send to a **Compressed (zipped) folder**

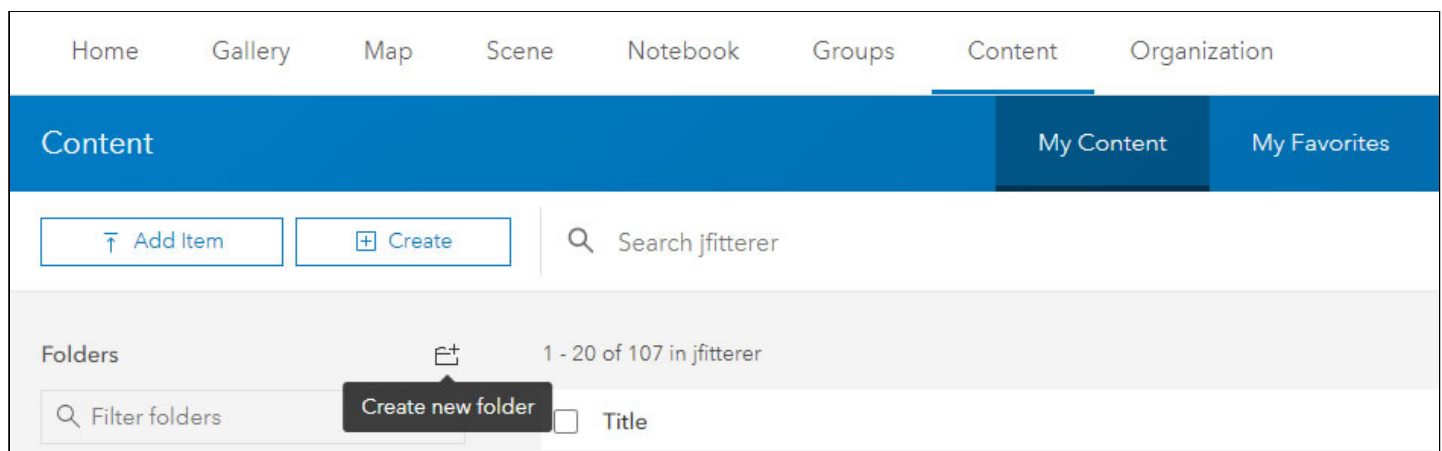


ArcGIS Online

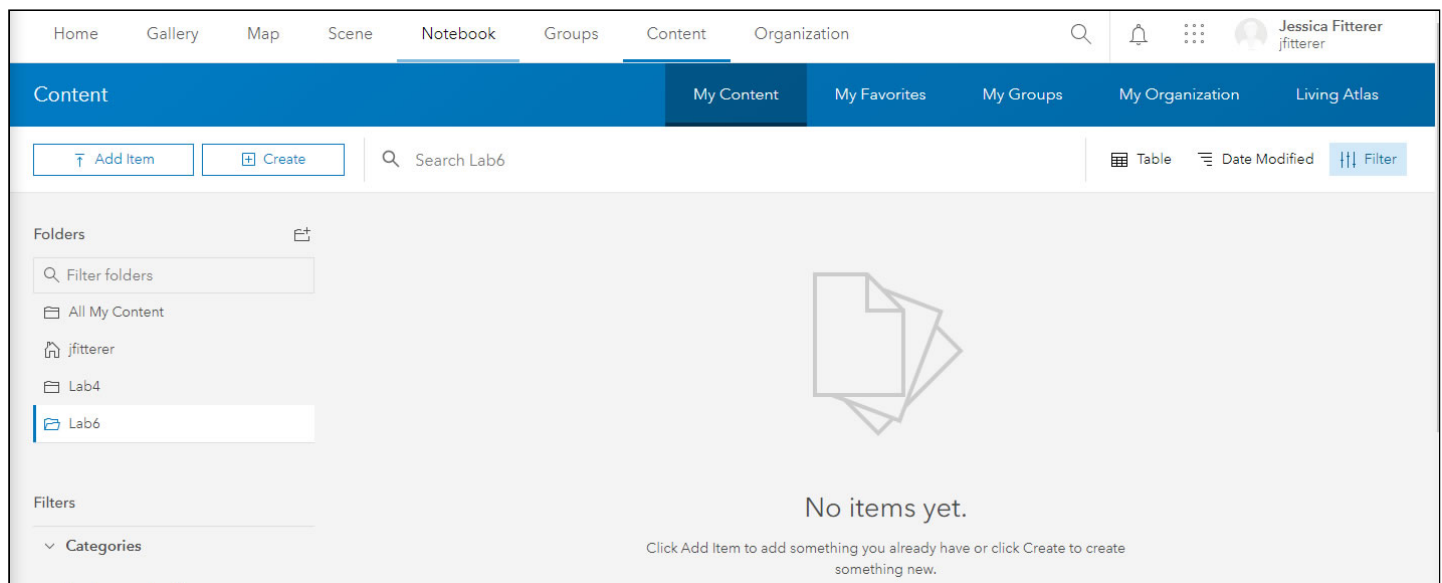
Now the layers are ready for upload to ArcGIS Online.

1. Login to [ArcGIS online](https://www.arcgis.com)

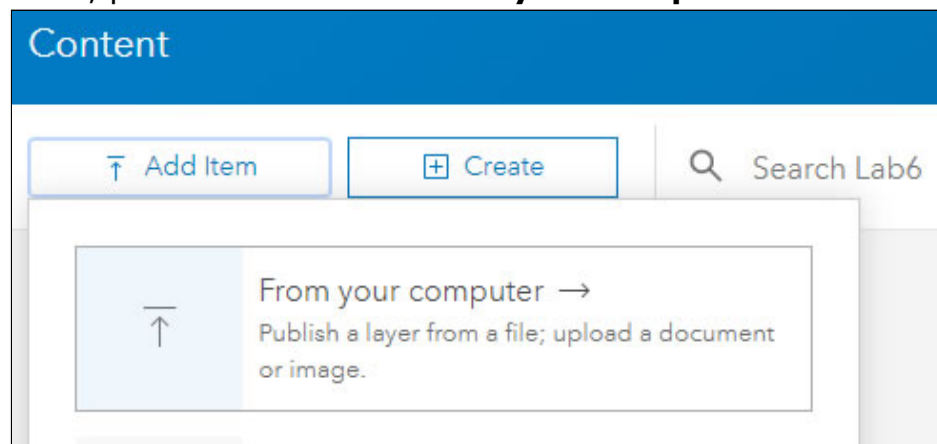
2. Go to your **Content** tab → open **My Content** → and press **Create new folder**



- Name the folder Lab6
- Press OK



3. In the Lab 6 folder, press **Add Item** → **From your computer**



4. Drag and drop the **Trails_WGS.zip** file into the **New Item** window

- Choose to add the file as a "hosted feature layer"

- Press "**Next**"
- Set the Tags and Summary as "**Trails**" add your netlink ID to the end of the name if you get a warning about a hosted layer having the same name

5. Navigate back to the Content tab → **Add Item** → **From your computer**

Drag and drop the **Hydrography_WGS.zip** file into the **New Item** window

- Choose to add the file as a "hosted feature layer"
- Press "**Next**"
- Set the Tags and Summary as "**Hydrography**" add your netlink ID to the end of the name if you get a warning about a hosted layer having the same name

6. Navigate back to the Content tab → **Add Item** → **From your computer**

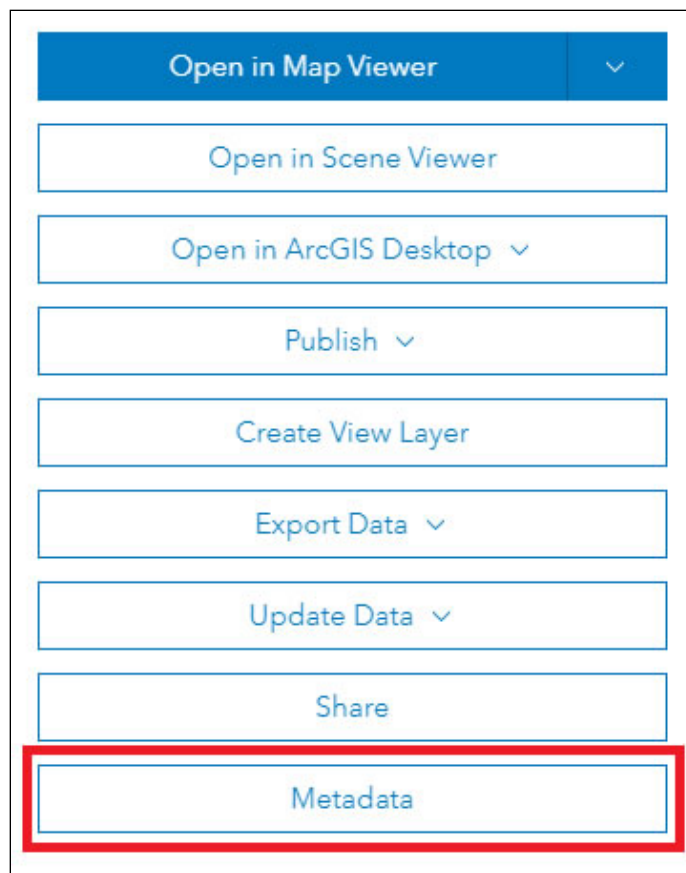
Drag and drop the file **Municipal_Boundary_WGS.zip** into the **New Item** window

- Choose to add the file as a "hosted feature layer"
- Press "**Next**"
- Set the Tags and Summary as "**Municipal Boundary**" add your netlink ID to the end of the name if you get a warning about a hosted layer having the same name

8. From the Content Page select the Trails layer



9. From the data page select Metadata



Metadata are information stored about a feature layer or shapefile. The information depicts the data source, curator, and date of acquisition.

- Select the Resources → Details
- Scroll to the credits and enter in the open website url: <http://data-cityofpg.opendata.arcgis.com/>

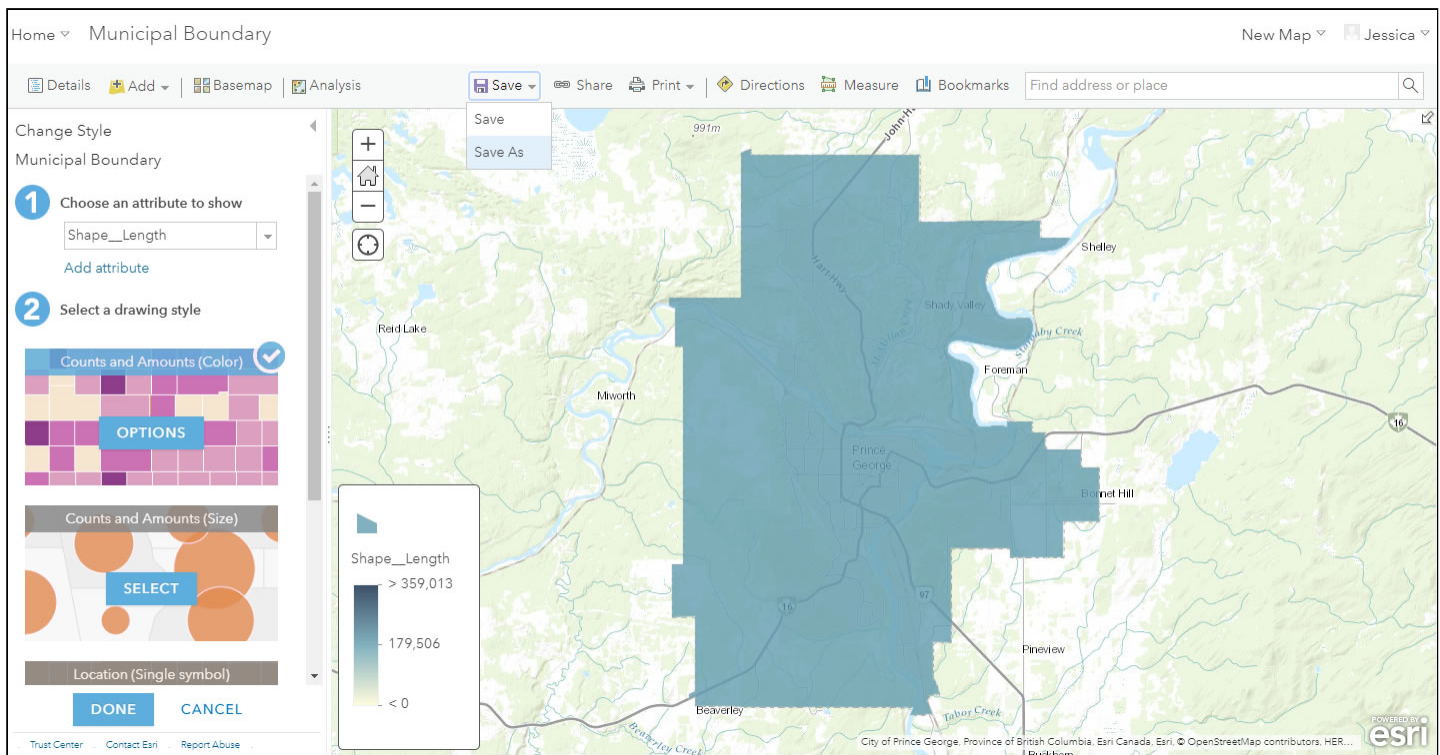
A dialog box titled 'Trails' with a close button (X) in the top right. It contains a toolbar with icons for View, Validate, Download, Delete, and Overwrite, along with 'Save' and 'Close' buttons. The main area has three sections: 'Description' (empty text area), 'Credits' (with expand/collapse icons and a text input field containing <http://data-cityofpg.opendata.arcgis.com/>), and 'Processing Environment' (empty text area). A vertical scrollbar is on the right.

- Press Save
- Press Close

10. Repeat the metadata procedure for the Hydrography and Municipal Boundary layers

11. From the Municipal boundary layer page select **"Open in Map Viewer"**

On the new map page select Save → Save As



12. Save the map details as:

×

Save Map

Title:

Web Map

Tags:

Prince; George; trails

×

Add tags

Summary:

Map of Prince George Trails and Streams

Save in folder:

Lab6

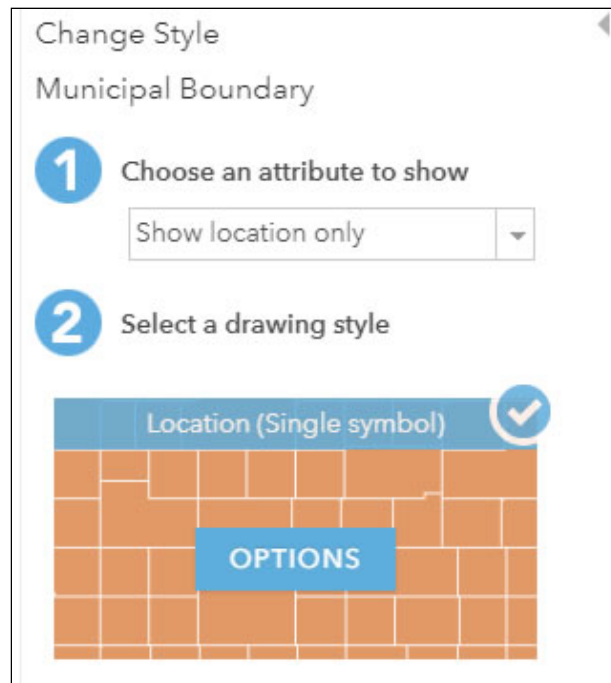
SAVE MAP

CANCEL

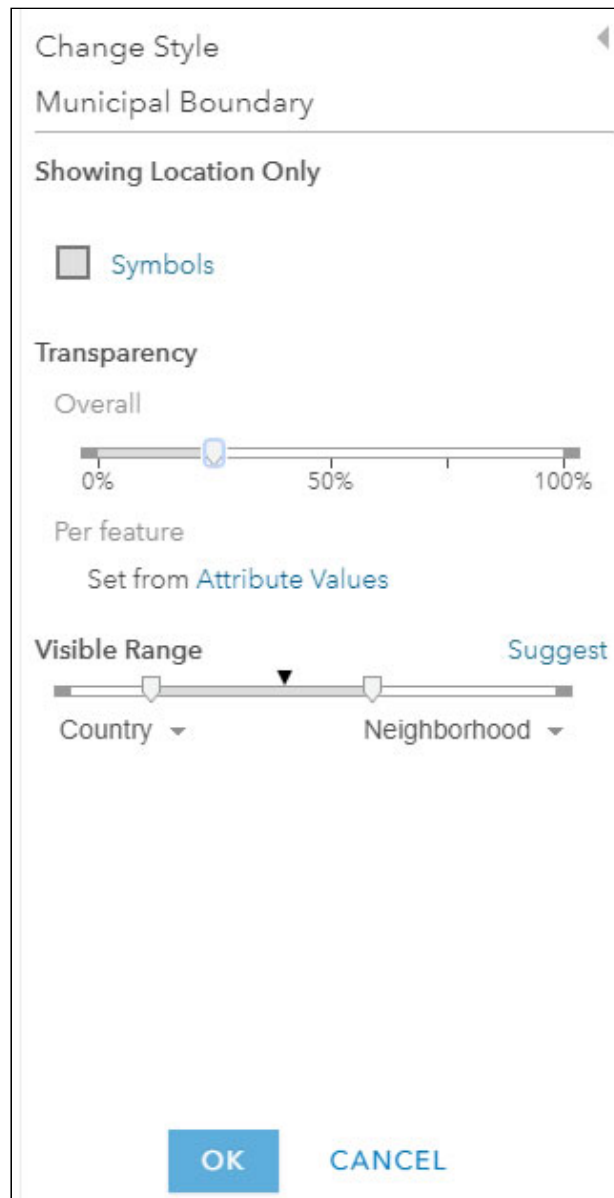
- Press **Save Map**

Symbology

1. In the symbology options for the municipal boundary set the "Choose an attribute to show" as "Show location only"

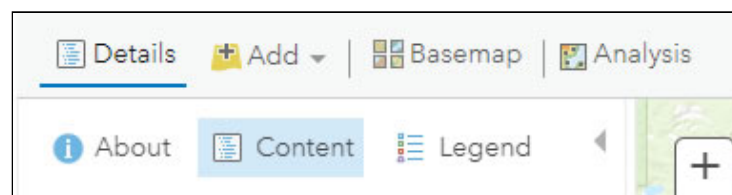


- Select the symbol options
 - Change the symbol to grey
 - Set the transparency to 25%
 - Set the visible range between Country and Neighbourhoods (this means that within the web map the boundary will be visible between these zoom levels)

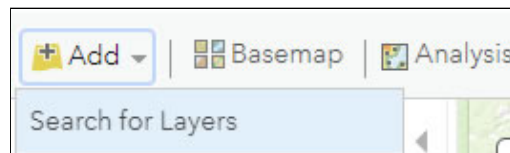


- Press **OK** → **Done**

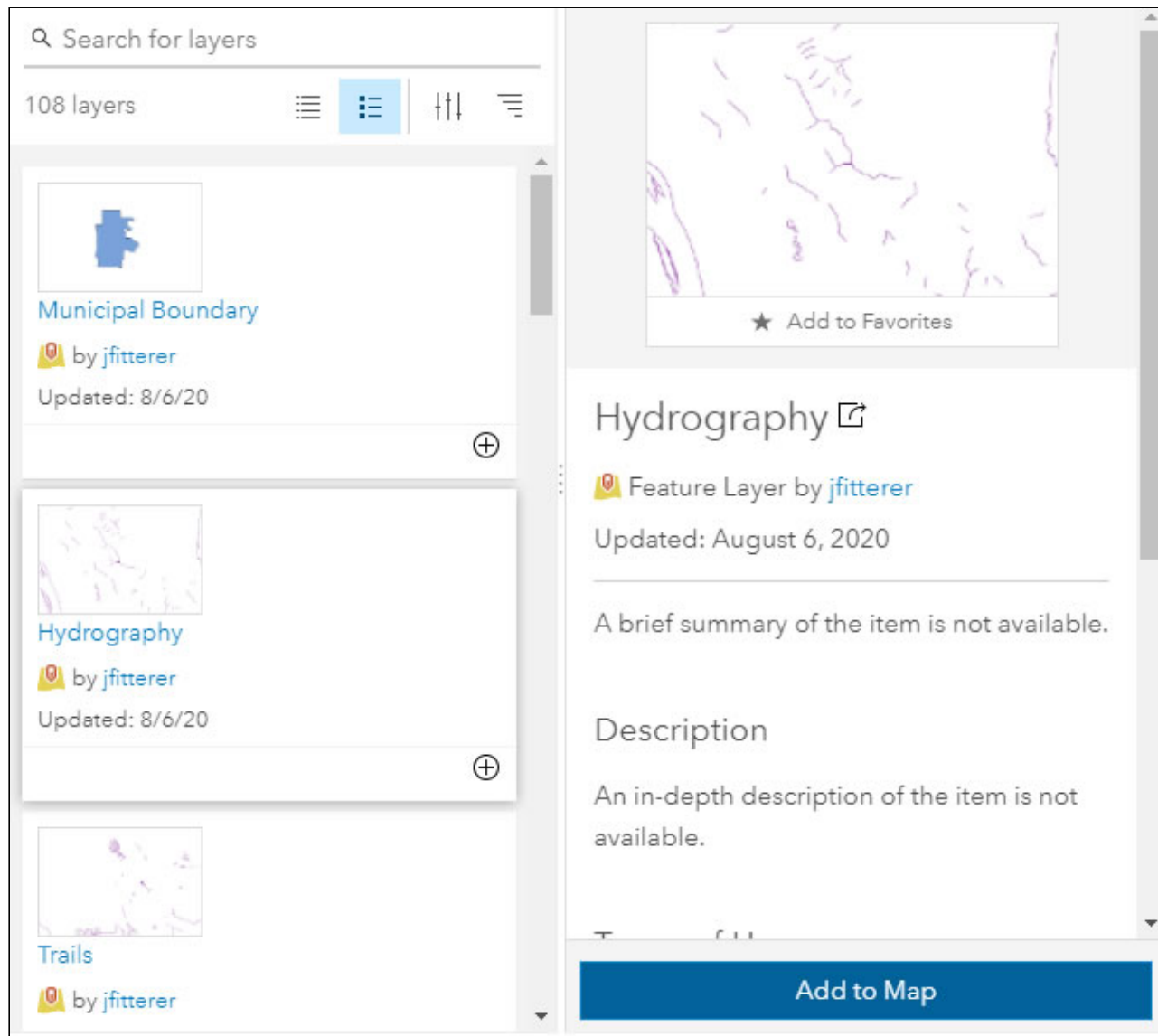
2. To exit the symbology options go back to the **Details** and **Content** options in the left hand side layer menu



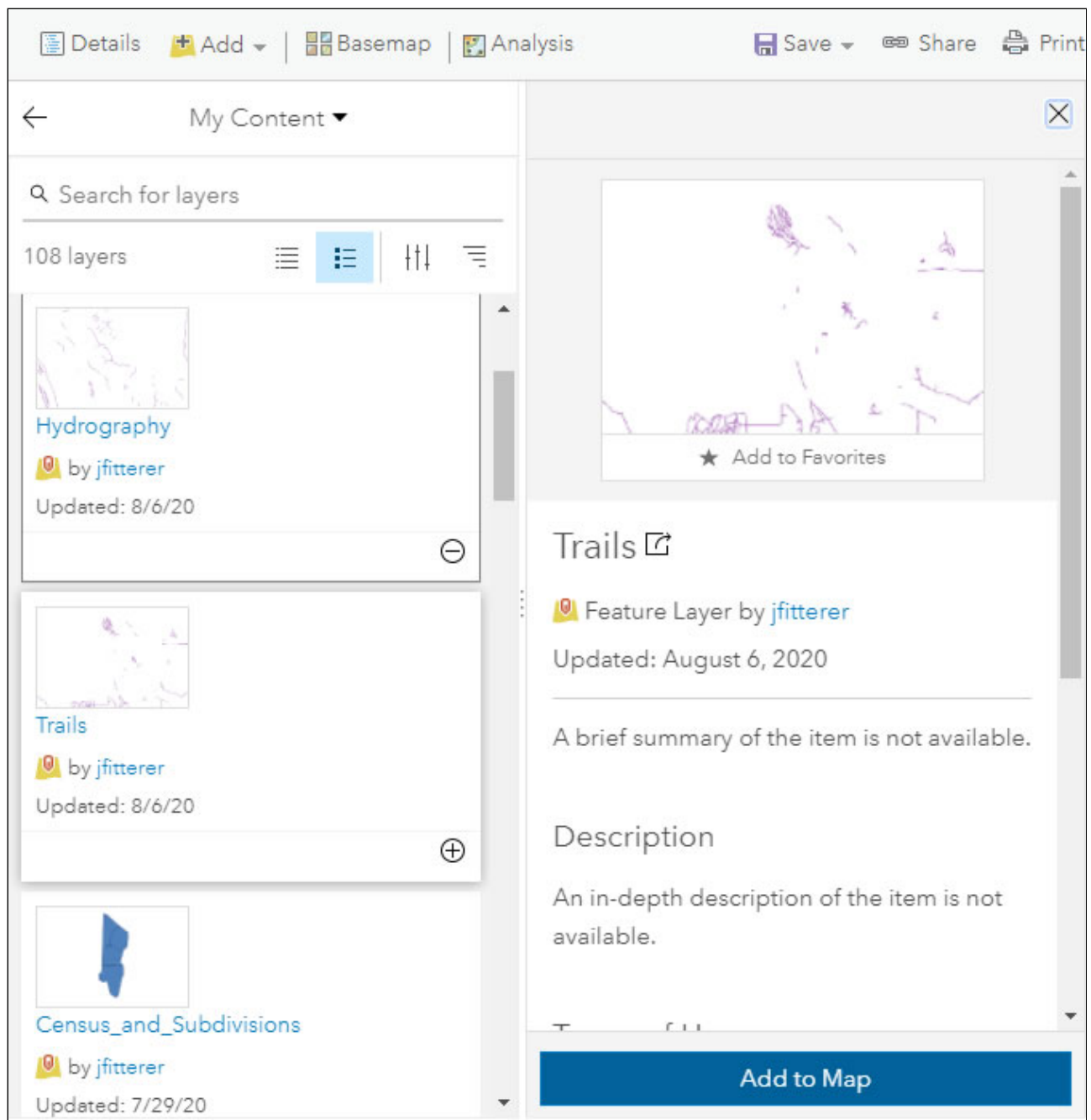
3. To add the trails and hydrology layers to your webmap use the Add button → search for layers



4. Choose the **Hydrography** layer → **Add to Map**

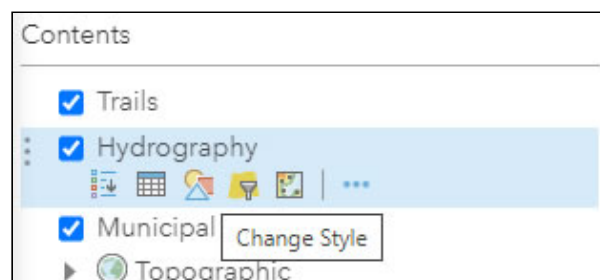


5. Choose the **Trails** layer → **Add to Map**




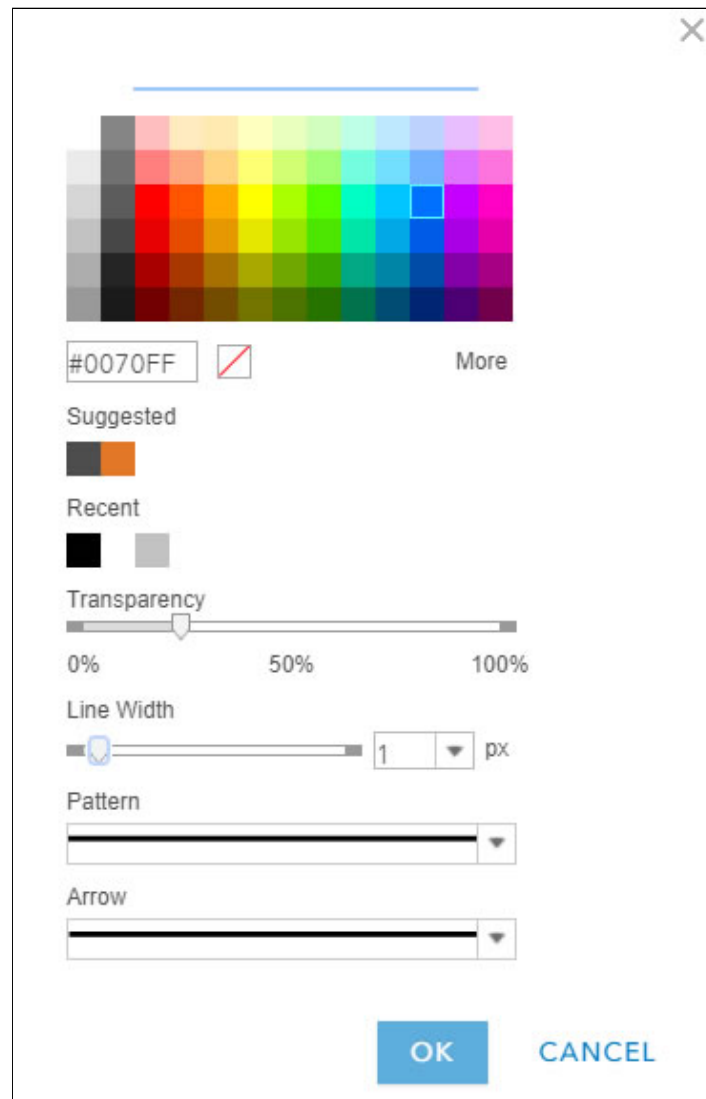
6. Go back to the Details and Content to set the symbology for the Hydrography and Trails layers

7. From the Content list, select the **Hydrography** layer and choose the **Change Style** option

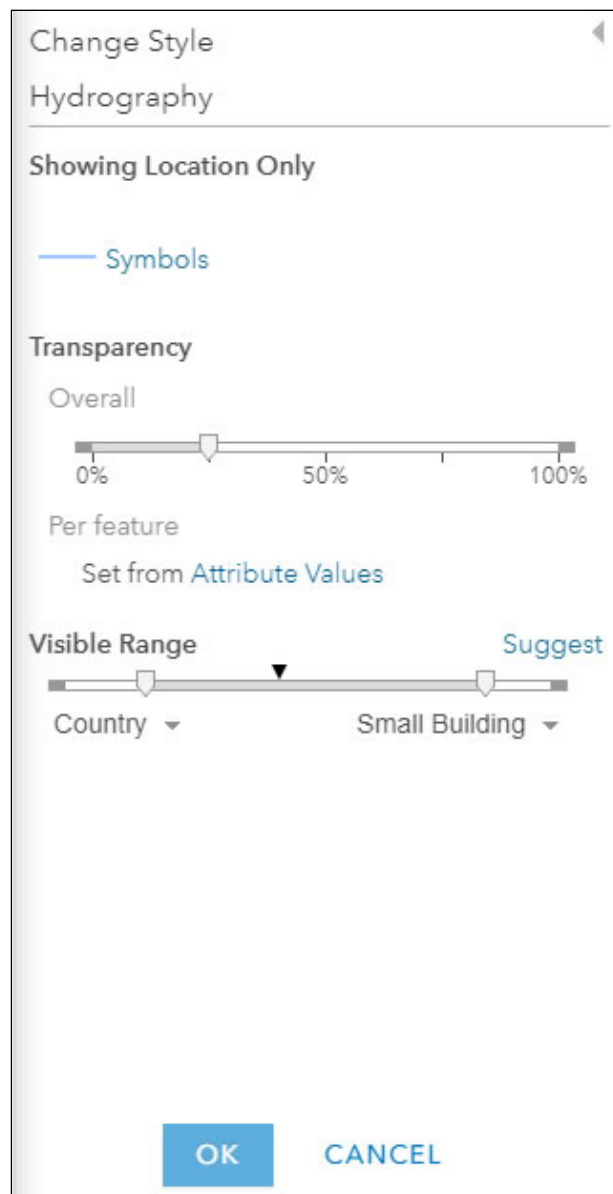


- Set the "Choose an attribute to show" as Name

- Then choose **Location (Single Symbols)** → **Options**
 - Choose the symbol  **Symbols** and set the options to:

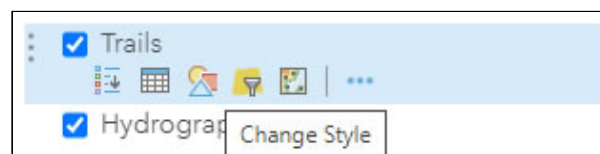


- Press OK
- Set the transparency to 25%
- Set the Visible range to: Country to Small Building
- Press OK → Done



These options set all the hydrology features to a blue thin line. Now you will change the trail items.

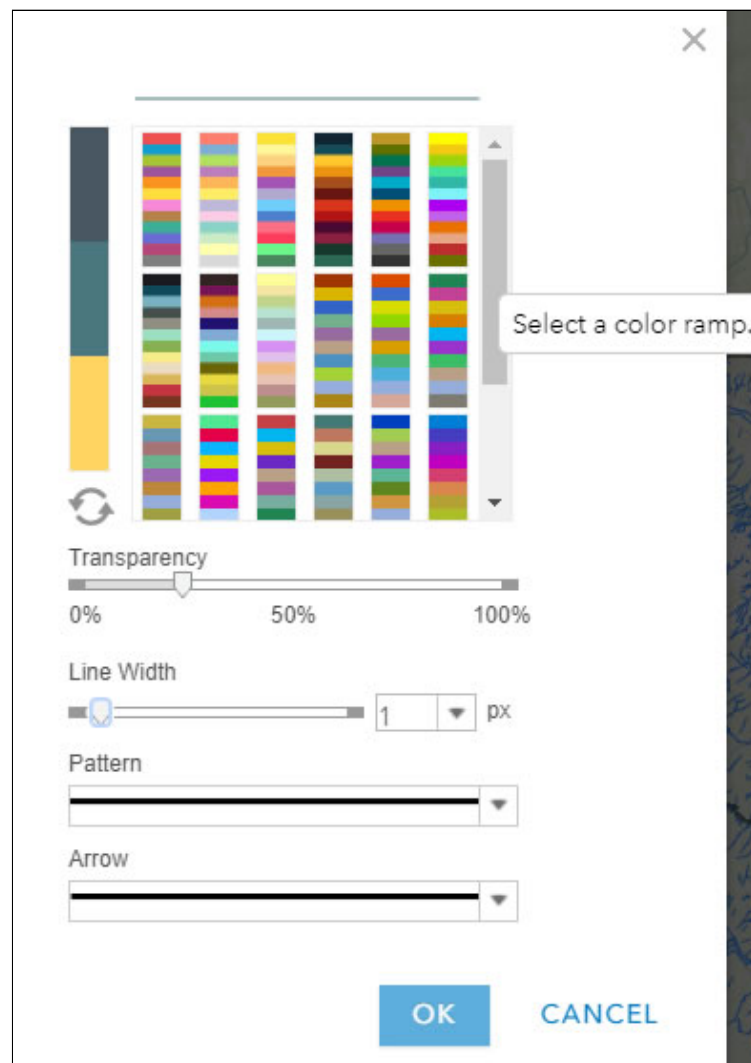
8. From the Table of Contents, select the Trails layer → choose Change Style



Set Choose an attribute to show as "TrailSurfa"

Select drawing style as: **"Types(Unique Symbols)"** → **Options** this will create a different colour trail for each trail type

In the options change the symbol  to:



- Press OK
- Set the transparency to 25%
- Set the visible range to: Country to Building

Change Style

Trails

TrailSurfa

Click to edit symbol or label.

	LABEL	COUNT	
⋮	— Rustic	233	
⋮	— Paved	210	
⋮	— Granular	151	
<input type="checkbox"/>	— Other	0	⬆️⬆️

0%50%100%

Per feature

Set from [Attribute Values](#)

Visible Range

Country ▾

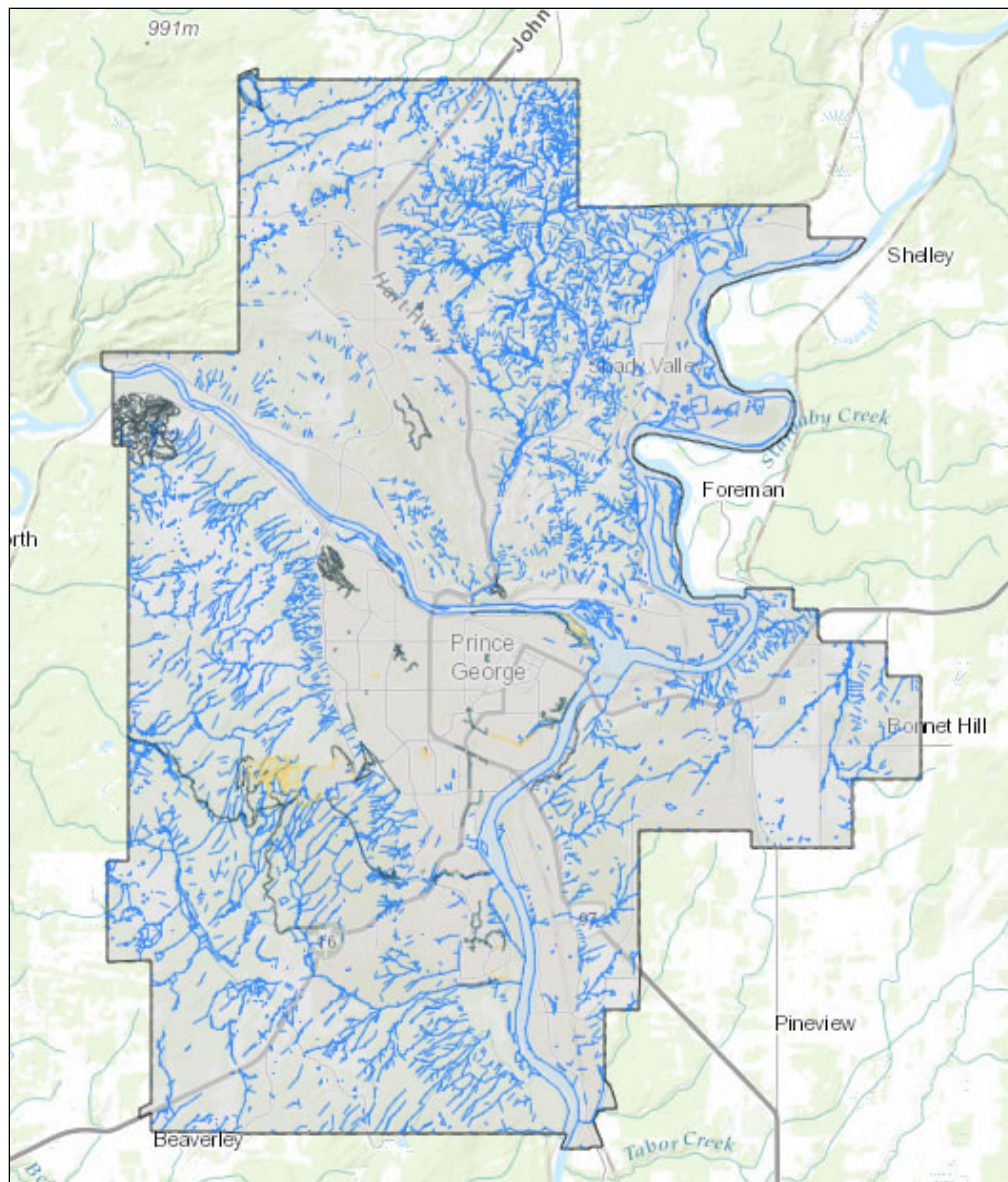
Building ▾

Suggest

OK

CANCEL

- Press OK




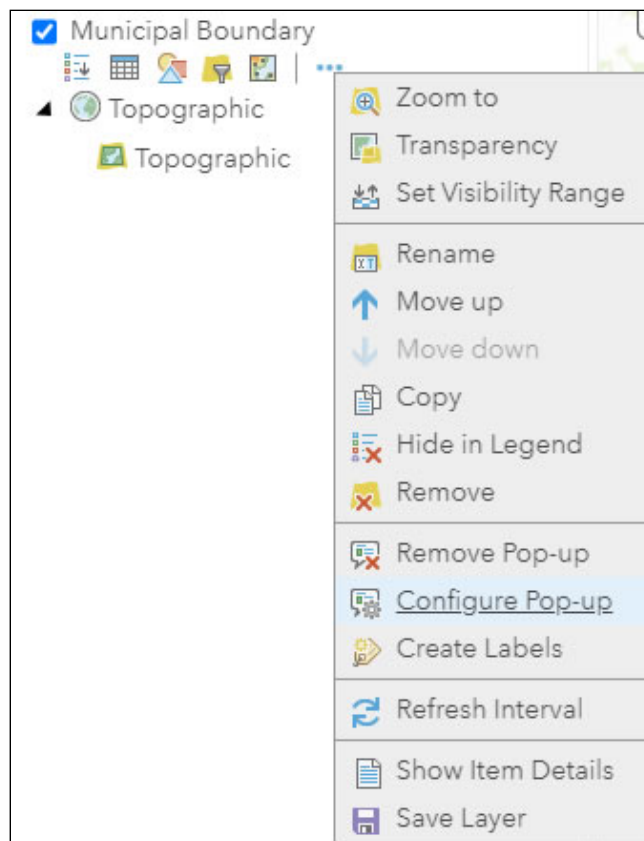
Configure Pop-ups

Now that the symbology is set you will configure the pop-ups.

Pop-ups are windows that show attribute information linked to each location on your map. In a web map these pop-up are displayed as you hover over or select information on the map.

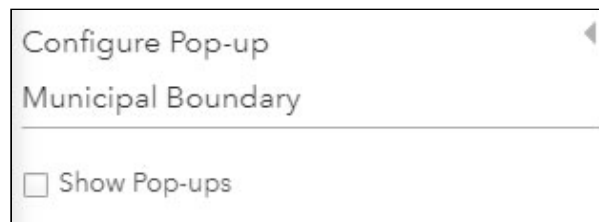
1. In the Contents pane, click on the **Municipal Boundary** layer to select it.

- Click the layer options  and click **Configure Pop-ups**




2. Uncheck the Show Pop-ups

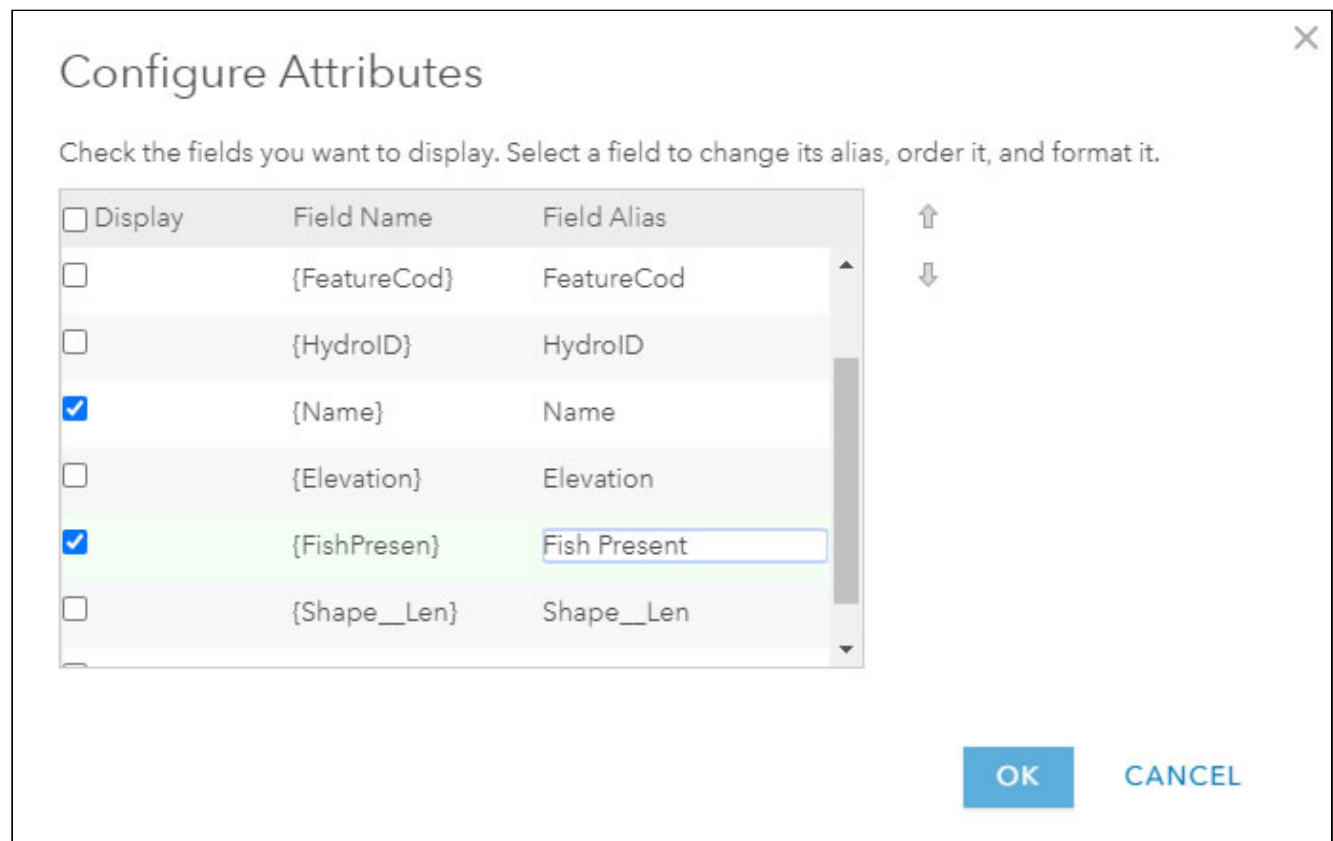
- Pop-ups were disabled, since there is no need to have a pop-up window for the Municipal boundary



- Press OK

3. In the Contents pane, click on the **Hydrography** layer to select it.

- Click the layer options  and click **Configure Pop-ups**
 - Display: A list of field attributes
 - Press [Configure Attributes](#) to edit the list
 - Leave the "Name" and "FishPresen" selected
 - Edit the Field Alias (heading that shows in the pop up) to Fish Present



- Press OK
- The press Ok on the configure pop-ups window

Configure Pop-up

Hydrography

☒ Show Pop-ups

Pop-up Title

Hydrography: {Name} +

Pop-up Contents

Display: A list of field attributes ▼

These field attributes will display:

Name {Name}

Fish Present {FishPresen}

↑
↓

[Configure Attributes](#)

Attribute Expressions

Adding expressions allows you to create new information from existing fields for use in pop-ups.

ADD

OK CANCEL

- Press OK

4. In the Contents pane, click on the **Trails** layer to select it.

- Click the layer options ☰ and click **Configure Pop-ups**
 - Display: A list of field attributes
 - Press [Configure Attributes](#) to edit the list
 - Leave the "LifeCycleS" and "TrailName" "trailSurfa" checked
 - Edit the Field Alias (heading that shows in the pop up) to:

<input checked="" type="checkbox"/>	{LifeCycleS}	Life Cycle
<input checked="" type="checkbox"/>	{TrailName}	Trail Name

<input checked="" type="checkbox"/>	{TrailSurfa}	Trail Surface
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- Press OK
- Then press OK on the configure pop-ups window

Configure Pop-up

Trails

☒ Show Pop-ups

Pop-up Title

Trails: {TrailName} +

Pop-up Contents

Display: A list of field attributes ▼

These field attributes will display:

Life Cycle {LifeCycleS}

Trail Name {TrailName}

Trail Surface {TrailSurfa}

↑ ↓

[Configure Attributes](#)

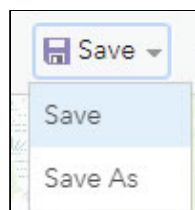
Attribute Expressions

Adding expressions allows you to create new information from existing fields for use in pop-ups.

ADD

OK CANCEL

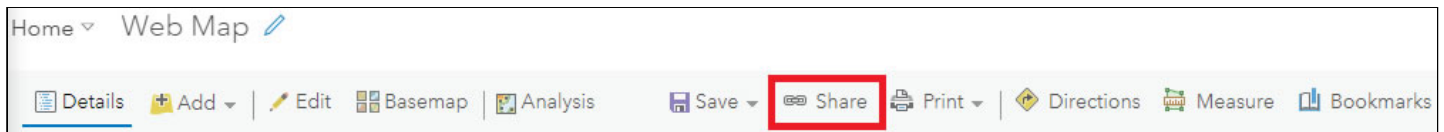
Now is a good time to save your web map.



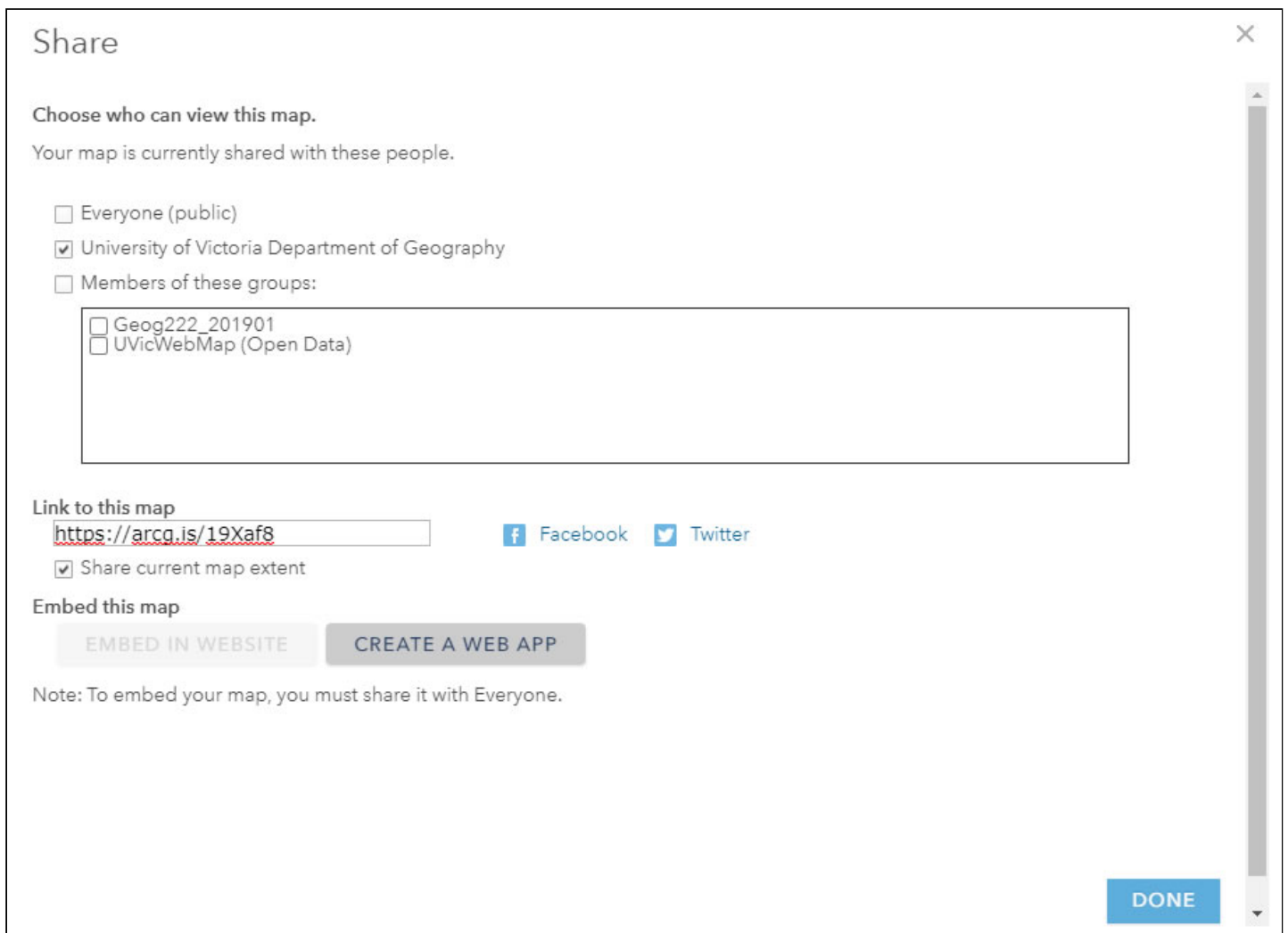
Sharing the Map to the Web

Now you will convert your web map to a web map application.

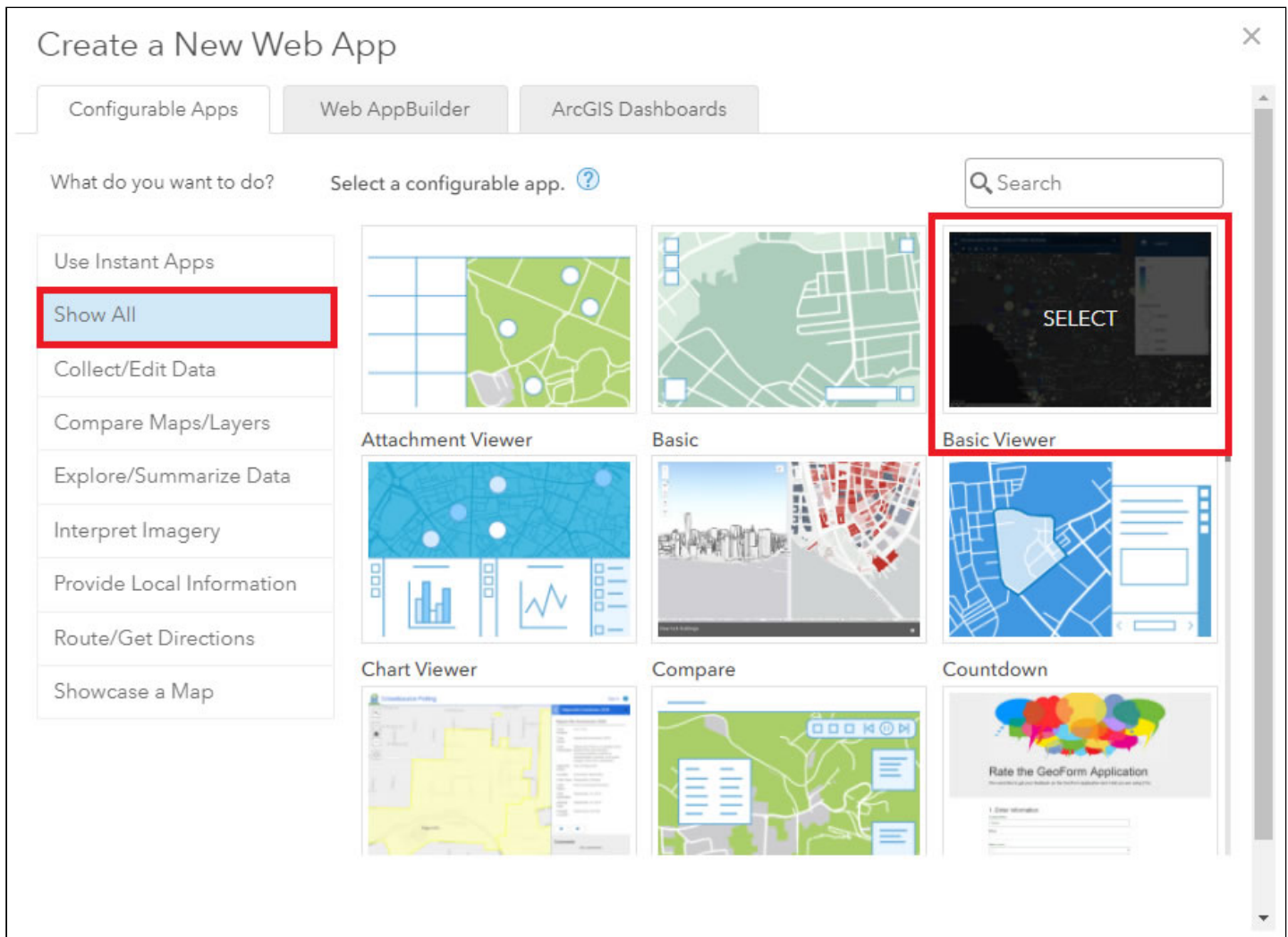
1. Select the **Share** button next to the save button in your web map window



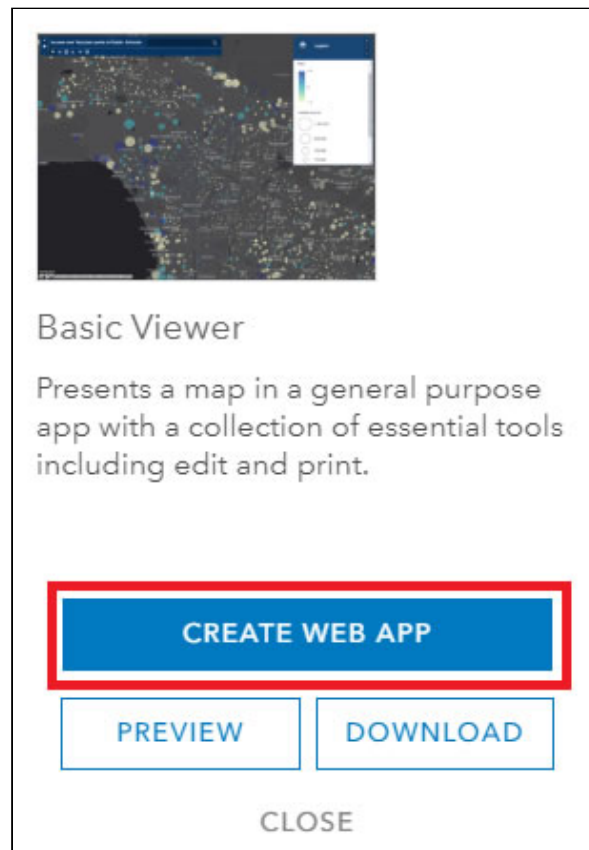
- Check the **"University of Victoria Department of Geography"**
- Copy the "Link to this map"
- Press CREATE A WEB MAP
- Press Done



2. The next window will present options for your web map application. **Choose the "Show All" menu and then choose the "Basic Viewer".**



3. Press CREATE WEB APP



Change the title to:

Prince George Nature Trails Map

Enter the following summary:

The Prince George Trail map delineates the boundary of Prince George showing the locations of all rivers/lakes, and nature trails. All data layers were downloaded from the Prince George's open data website <http://data-cityofpg.opendata.arcgis.com>.

Create a New Web App

Specify a title, tags, and a summary for the new web app.

Title: Prince George Nature Trails Map

Tags: Prince; George; trails ×
Add tags

Summary: (Optional)
The Prince George Trail map delineates the boundary of Prince George showing the locations of all rivers/lakes, and nature trails. All data layers were downloaded from the Prince George's open data website <http://data-cityofpg.opendata.arcgis.com>.

Save in folder: Lab6

☒ Share this app in the same way as the map (University of Victoria Department of Geography)

BACK DONE CANCEL

- Press DONE

The configuration window will appear:

The screenshot shows the ArcGIS web map configuration interface for the "Prince George Nature Trail Map". The interface is divided into two main sections: a configuration panel on the left and a map preview on the right.

Configuration Panel (Left):

- General Tab:** This tab is currently selected. It contains the following options:
 - Application title:** Defaults to "web map title".
 - Application subtitle:** Optional subtitle text.
 - Details:** A section for entering content for the details panel, with an "Edit" link.
 - Splash Screen:** A checkbox option.
 - Accessibility Options:** A section for defining text that will be read by screen readers, with an "Edit" link.
- Theme Tab:** A tab for selecting a theme.
- Options Tab:** A tab for configuring map options.
- Search Tab:** A tab for configuring search settings.

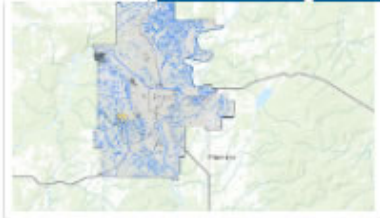
Map Preview (Right):

- The map shows the Prince George Nature Trail Map, featuring a network of blue trails overlaid on a green landscape.
- Key locations labeled on the map include: Miwath, Prince George, Foreman, Stedley, Sandy Valley, and Bonnet Hill.
- The map is titled "Prince George Nature Trail Map" and includes a search bar with the placeholder text "Find address or place".
- At the bottom of the map preview, there are three buttons: "Save", "Launch", and "Close".

4. Explore the options that you can adapt for the web map by toggling through the General, Theme, Options, and Search Tabs

Configure: Prince George Nature Trails Map

General
Theme
Options
Search



Select Web Map

Application title

Prince George Nature Trails Map

Application subtitle

Optional subtitle text

Details ✎ Edit

Enter content for the details panel

☐ Splash Screen

Accessibility Options

The primary purpose of alternative map text is to be read by screen readers to allow the content and function of the map to be accessible to users with visual or certain cognitive disabilities. For more information see this article on [Alt Text](#).

Alternate Map Text ✎ Edit

Define text that will be read by screen reader

Save

Launch

Close

5. If you make any changes press **Save**

Save

Launch

Close

6. Then press **Launch**

Save

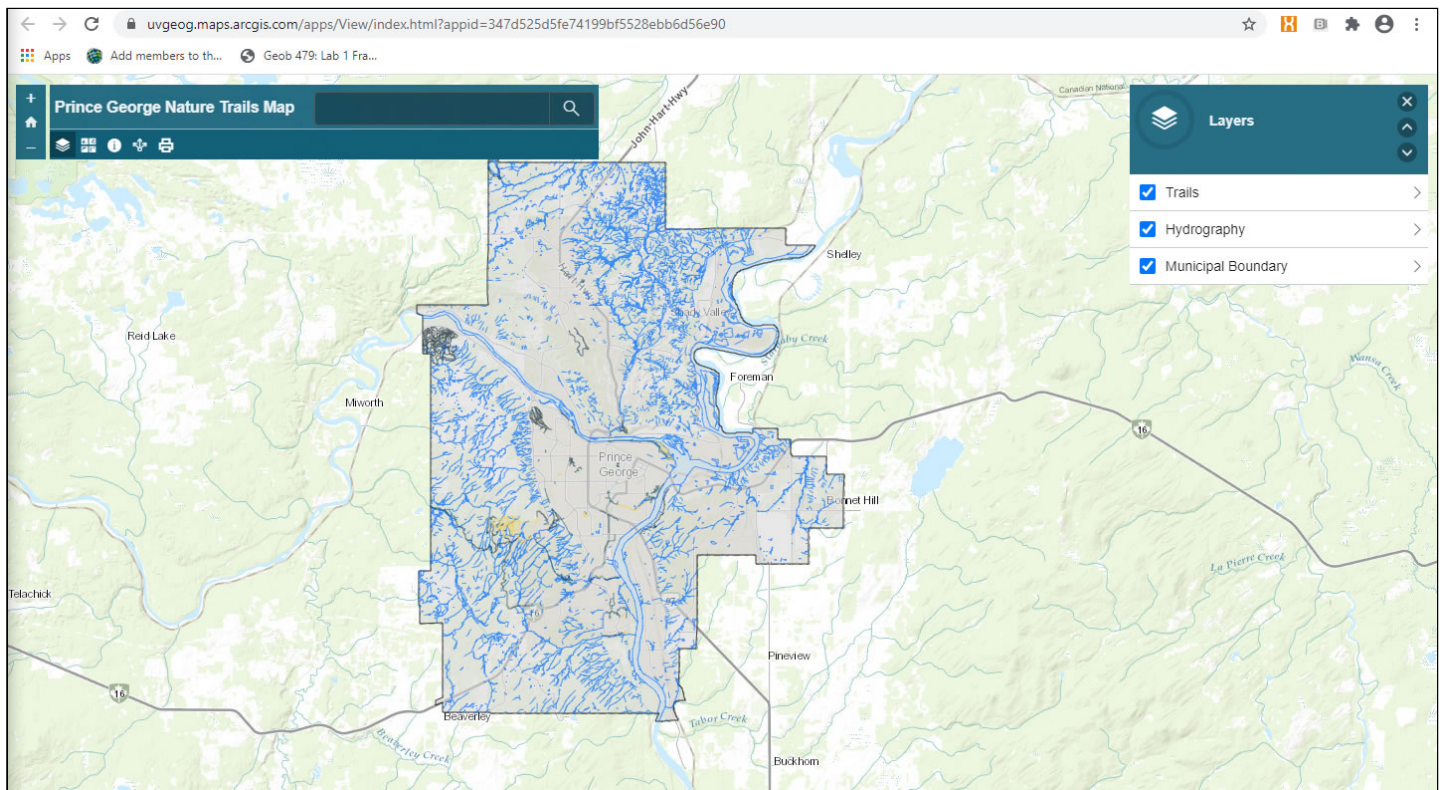
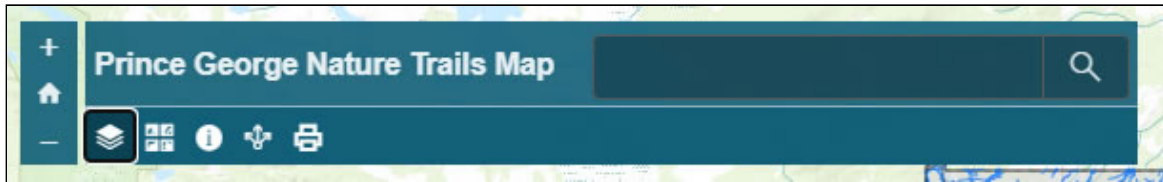
Launch

Close

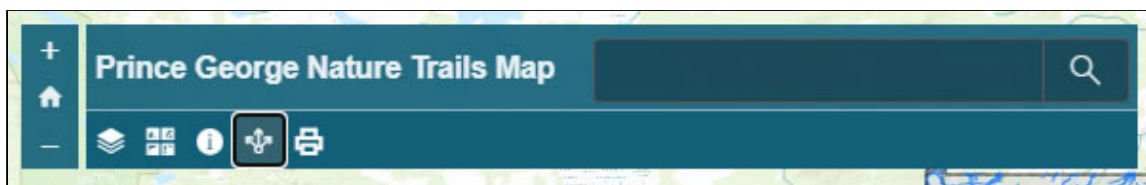
View app in new window

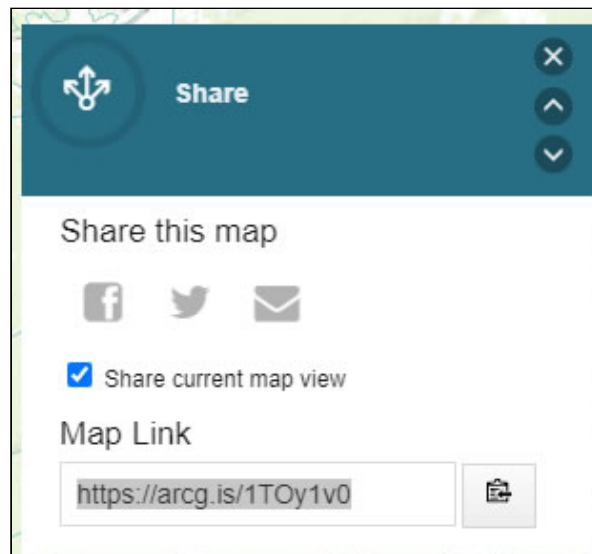
7.) From the menu options choose **layers** to see how you can toggle on and off the layers in your web map.

- You can also click on the map to see your pop-ups

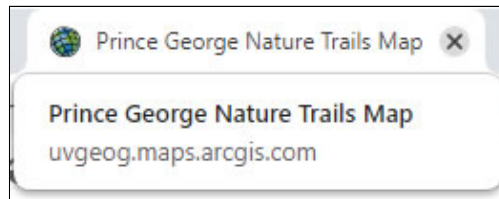


40.) From the menu options choose **Share** to gather the website link for your map.





41.) Close your map application, and open your **Content** page on **ArcGIS online**.




- Go to your My Content page in ArcGIS Online to see the list of your **Web Map** and **Web Mapping Application**.

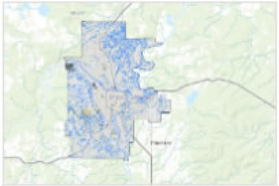
<input type="checkbox"/>	Title			Modified
<input type="checkbox"/>	Prince George Nature Trails Map	Web Mapping Application		☆ ... Aug 7, 2020
<input type="checkbox"/>	Web Map	Web Map		☆ ... Aug 7, 2020


42.) Choose to open the **Prince George Nature Trail Map** Web Mapping Application


- Edit the **Description** to include the same **Web Map** description:
 - The Prince George Nature Trail map delineates the boundary of Prince George, and shows the locations of all rivers/lakes, and nature trails in the region. All data layers were downloaded from the Municipality of Prince George's open data website at: <http://data-cityofpg.opendata.arcgis.com/>.


Prince George Nature Trails Map

 Edit Thumbnail



 Add to Favorites

The Prince George Trail map delineates the boundary of Prince George showing the locations  Edit of all rivers/lakes, and nature trails. All data layers were downloaded from the Prince George's open data website <http://data-cityofpg.opendata.arcgis.com>.

 Web Mapping Application by [jfitterer](#)

Created: Aug 7, 2020 Updated: Aug 7, 2020 View Count: 7

Description

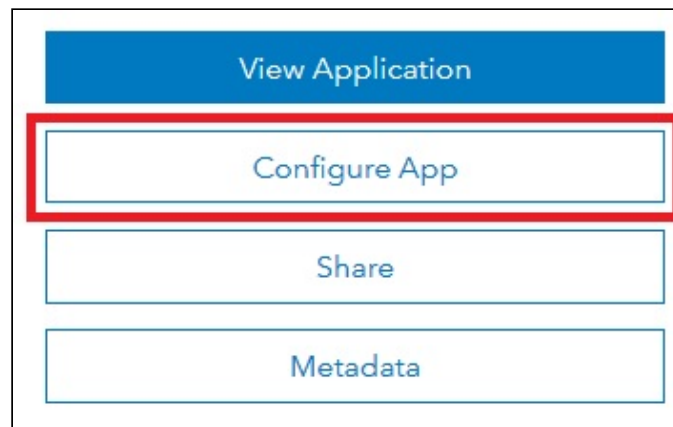
The Prince George Nature Trail map delineates the boundary of Prince George, and shows the locations of all rivers/lakes, and nature trails in the region. All data layers were downloaded from the Municipality of Prince George's open data website at:<http://data-cityofpg.opendata.arcgis.com/>.

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If you wanted to edit the web application from the content window you would select:

- Configure App



Assignment

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