Online Mapping Tools

Esri's ArcGIS Online –

A mapping tool for interactive digital maps

Access to map data – basemaps and your own data

Ease of Use – No programming, no system administration. Make maps fast with this productivity tool.

Publication – Fit a map into your CMS or link to a full page web map application

Personal non-commercial use is free, institutional use is through annual subscription

Let's make a map.

By the end of this workshop you will have published a working digital map viewable on the Internet.

Skipping data preparation

To fit the workshop in a one hour session, we'll skip data cleanup, always the most time-consumptive part of any mapping project. We'll use ready-to-go data and proceed step-by-step to our goal of publishing a simple useful map.

Making a story

In this workshop we want a map that shows sampled arsenic levels in wells located in Lubbock County, Texas. The data is from the Texas Water Development Board. There are about 140 wells with arsenic samples in the data set. Some of the samples are single readings, some are an average of multiple readings.

Arsenic naturally occurs in Lubbock County well water. Possible news-worthy stories around this fact are the long term health effects of arsenic, the lowered EPA standard for acceptable arsenic levels in drinking water, the costs of removing arsenic borne by water districts, and informing the public on this issue. A simple map display of arsenic levels could support any of these stories. See documents included in the .zip file for story ideas.

Steps to publishing a digital map in this workshop.

1. Download the workshop materials from Dropbox
2. Sign in to ArcGIS Online using the instructor supplied user name.
3. Start a new map and choose a base map layer
4. Load the well data to the map. Save the map.
5. Design map symbols that make the data easier to understand at a glance. Save the map.
6. Design a pop-up (point-and-click information window) for detailed well information. Save the map.
7. Publish as embeddable HTML to copy to your web page, and
8. Publish as a customized application linkable from your web page
9. (Optional) Create your own ArcGIS Online Personal Account. It's free, and by registering you are provided with a workspace, 2 gigabytes of data storage, and a platform for publication.

1. Download the workshop data

The workshop requires internet access. You can use Windows or Mac.

You should use a Chrome or Firefox web browser if possible. You can use Internet Explorer 9, but avoid earlier versions of Internet Explorer. The internet is evolving rapidly and new web capabilities sometimes require more recent browsers.

The workshop data are in a file called SEJWorkshop.zip in the Dropbox Internet file sharing service, a convenient place to store them. You can download this file using this link:

https://dl.dropbox.com/u/36538888/SEJWorkshop.zip

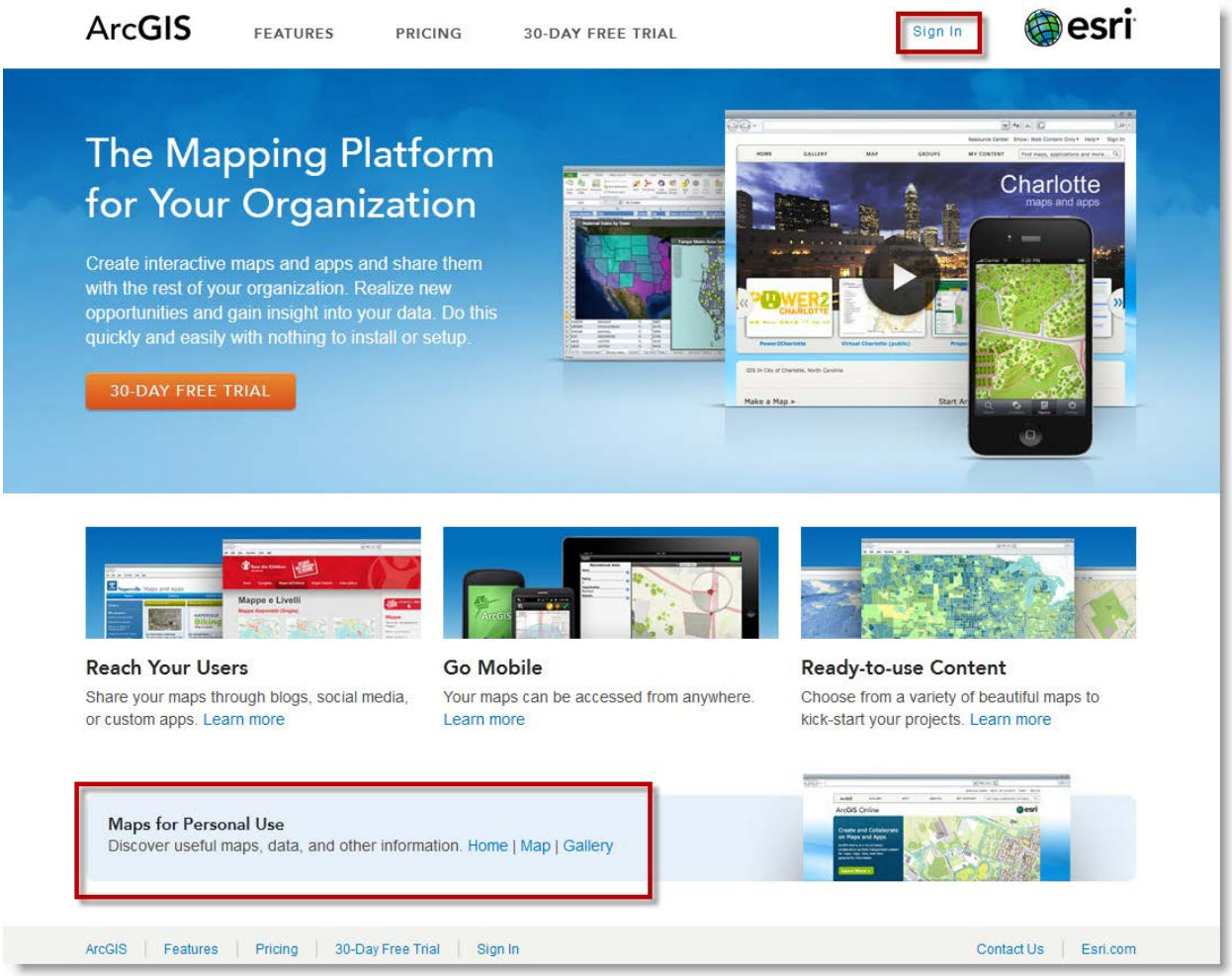
or http://bit.ly/OEuEYq

Click on either link above, or copy and paste one into the location bar of a web browser.

Once the .zip file is downloaded to your computer you need to extract the individual files it contains. Your operating system should have the software necessary to extract (unzip) SEJWorkshop.zip.

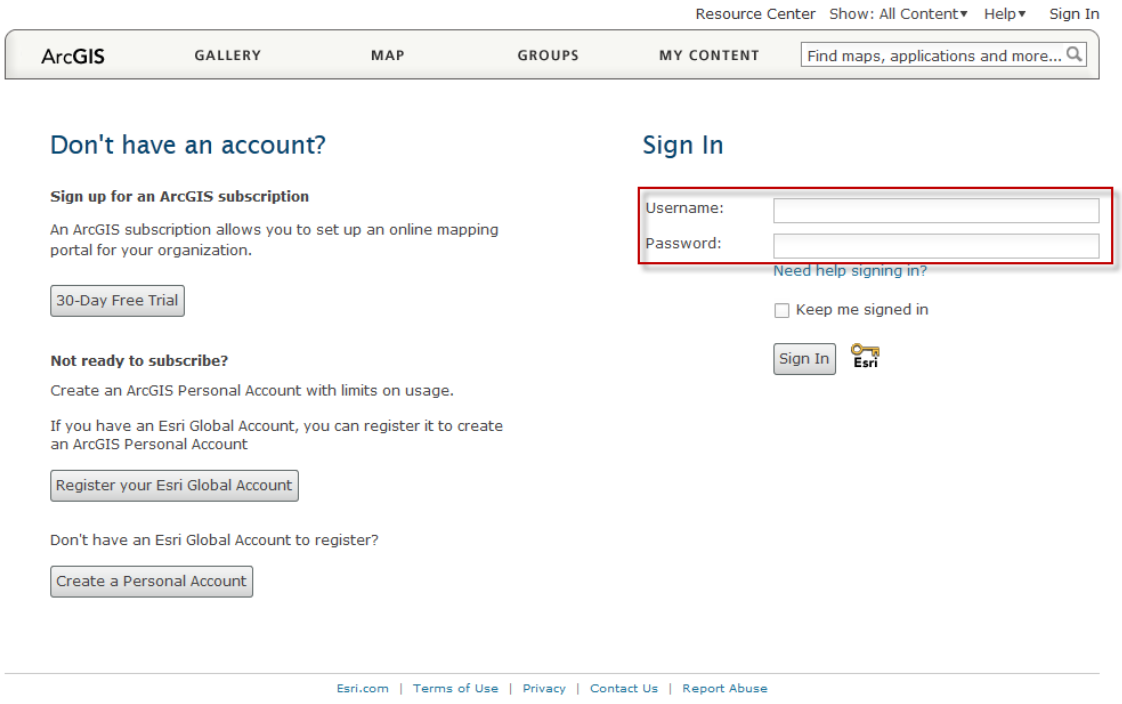
2. Sign in to ArcGIS Online

ArcGIS Online is located at http://www.arcgis.com . Locate to this website with your web browser.



ArcGIS Online is a subscription service used by organizations. To allow people to try it out, Esri offers Maps for Personal Use, which provides individual access for non-commercial purposes, such as this workshop.

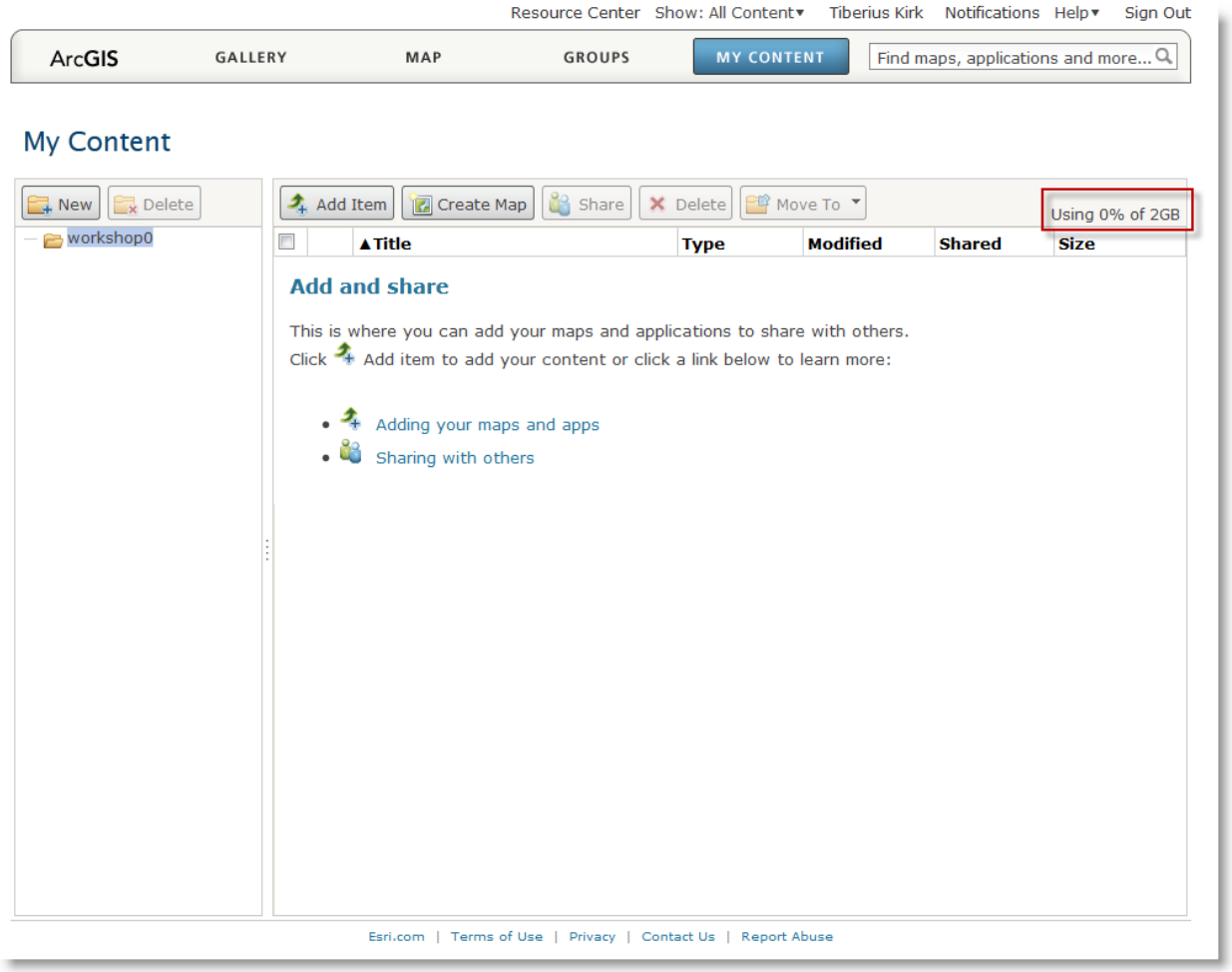
Click on Sign In at the top of the page. The following page should appear:



Your instructor has assigned you a Username- workshop1 through workshop20. Your password is the same as your username, ie., workshop1 through workshop20.

Fill in the form with your assigned username and password and click the Sign In button.

You are now logged in to your workshop ArcGIS Online account. Click on My Content.



Note that ArcGIS Online provides your Personal Account with 2 GB of storage.

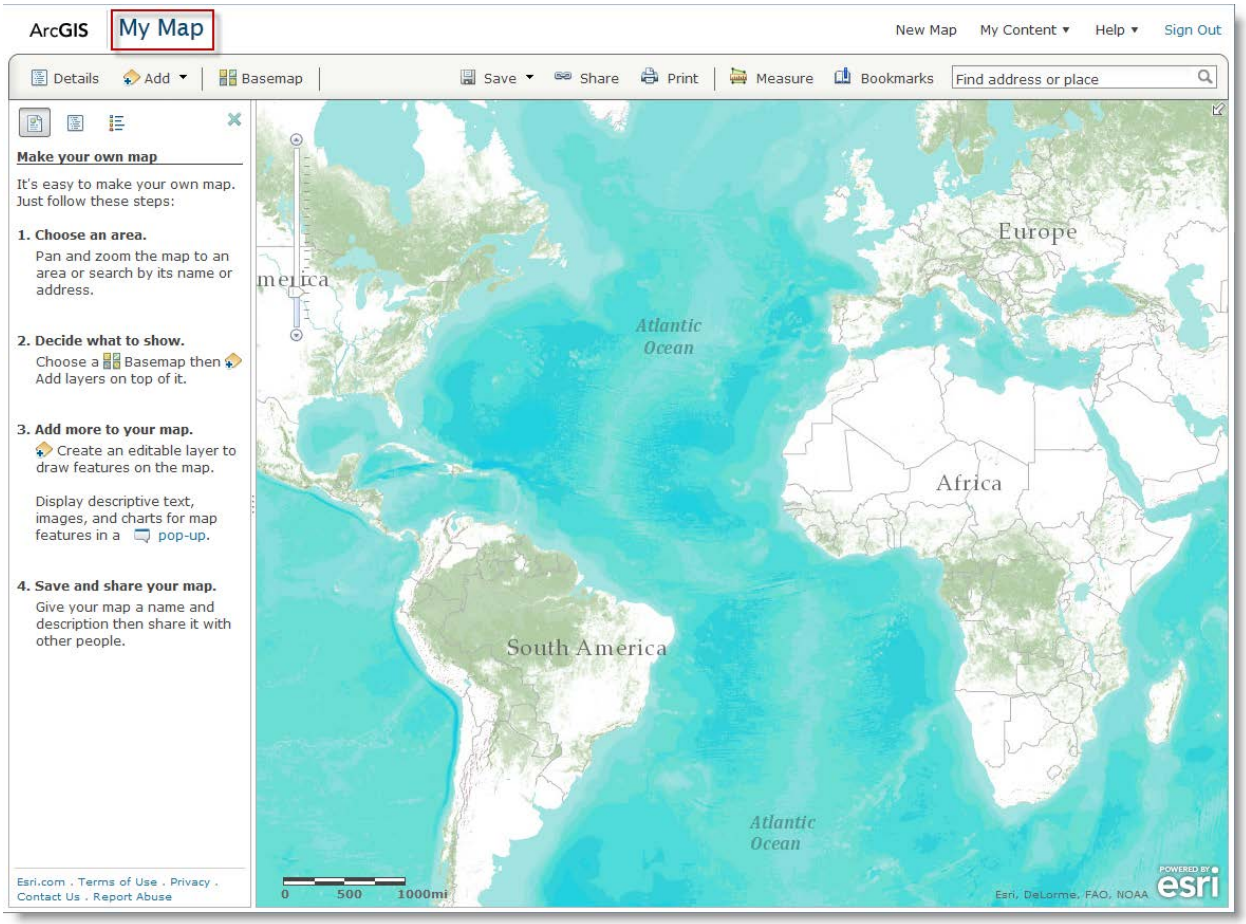
Note also that ArcGIS Online recognizes you and puts your name at the top of the page, e.g., Tiberius Kirk.

The My Content screen is the 'home page' for your ArcGIS Online Personal Account. As you use ArcGIS Online you will return here over and over again.

Take a moment to try out some of the buttons and controls on this page. When you are done click the My Content button.

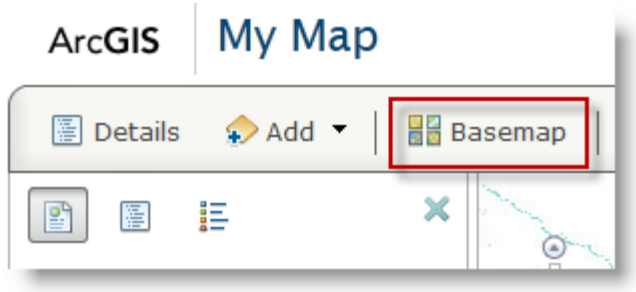
3. Start a new map

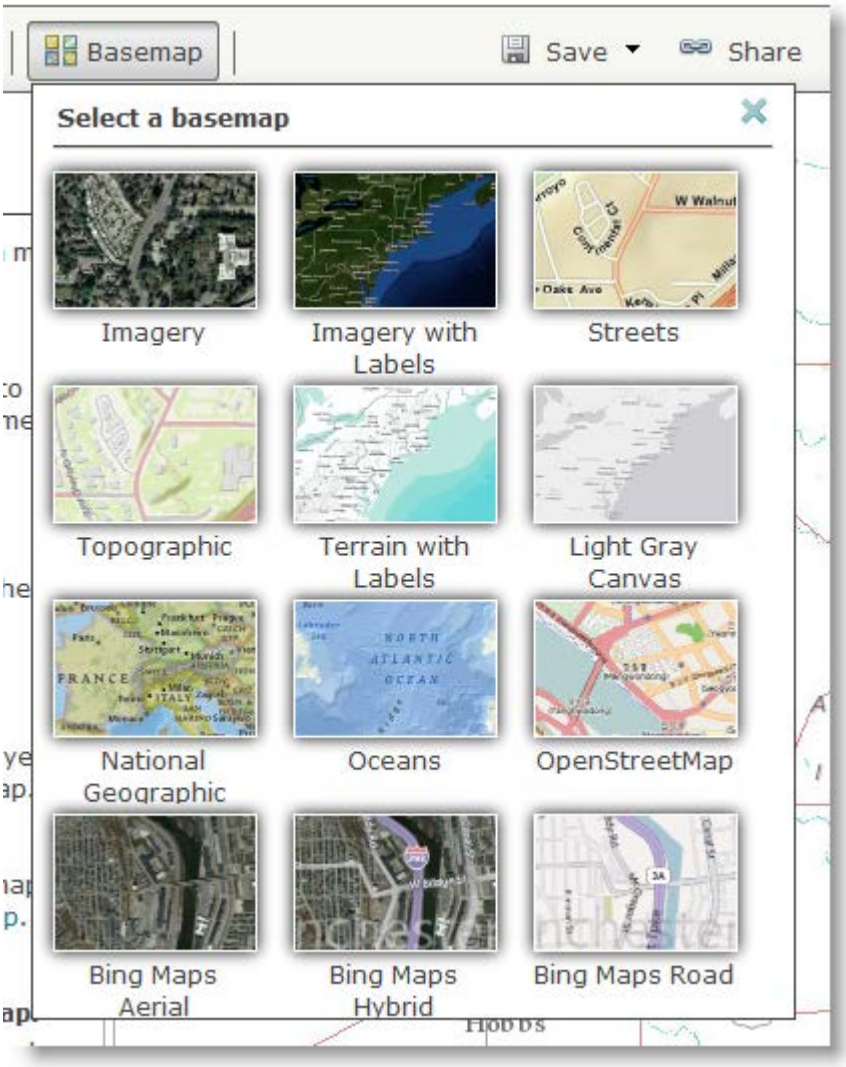
Click on Map – ArcGIS Online will create a new web map named My Map. You can change the name later.



The directions in the left column are what we will do next. Try dragging the map by clicking on it, then holding the mouse button down while pulling the map. There are three different styles to zooming in: 1) Double-click on a spot to zoom to, 2) Shift-Click-Drag to create a zoom box around the area you are intersested in, and 3) use the zoom widget in the upper left corner of the map. Play with the map and get it generally zoomed in and centered on the Texas panhandle.

Now choose a basemap. The purpose of the basemap is to provide visual context to other data you will layer on top. Click on the Basemap button to see basemap options.

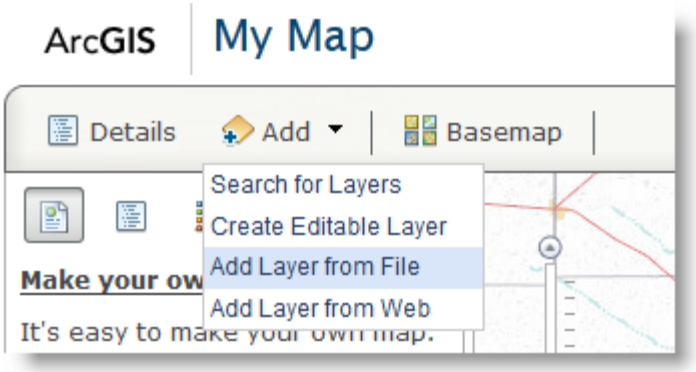




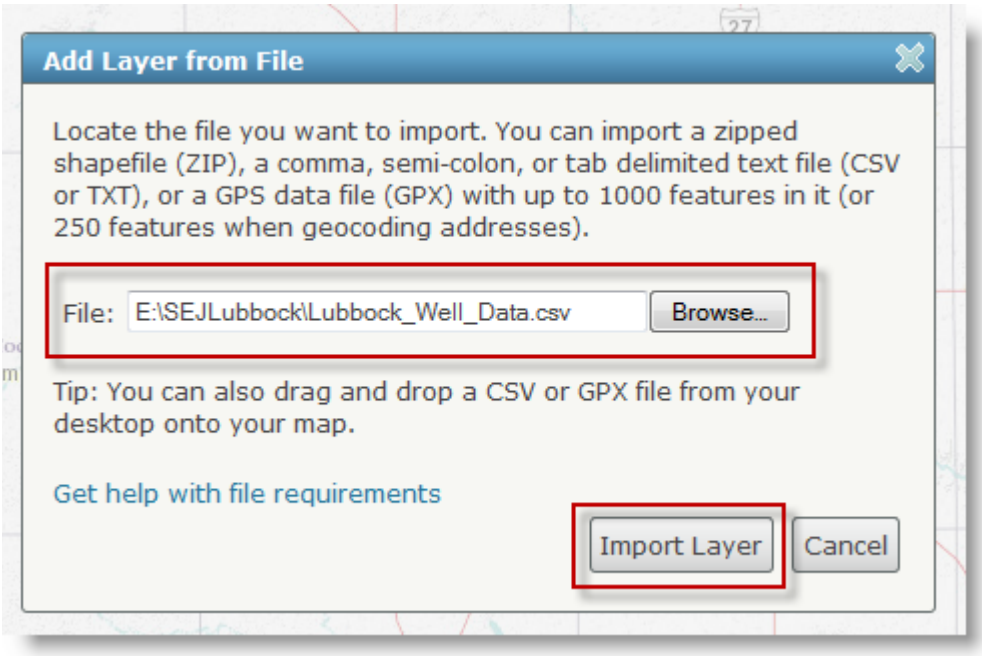
Choose from the gallery and find one you like. This workshop will use the Topographic basemap, the one a new map will use automatically.

4. Load the well data

Click the Add button, and choose Add Layer from File.

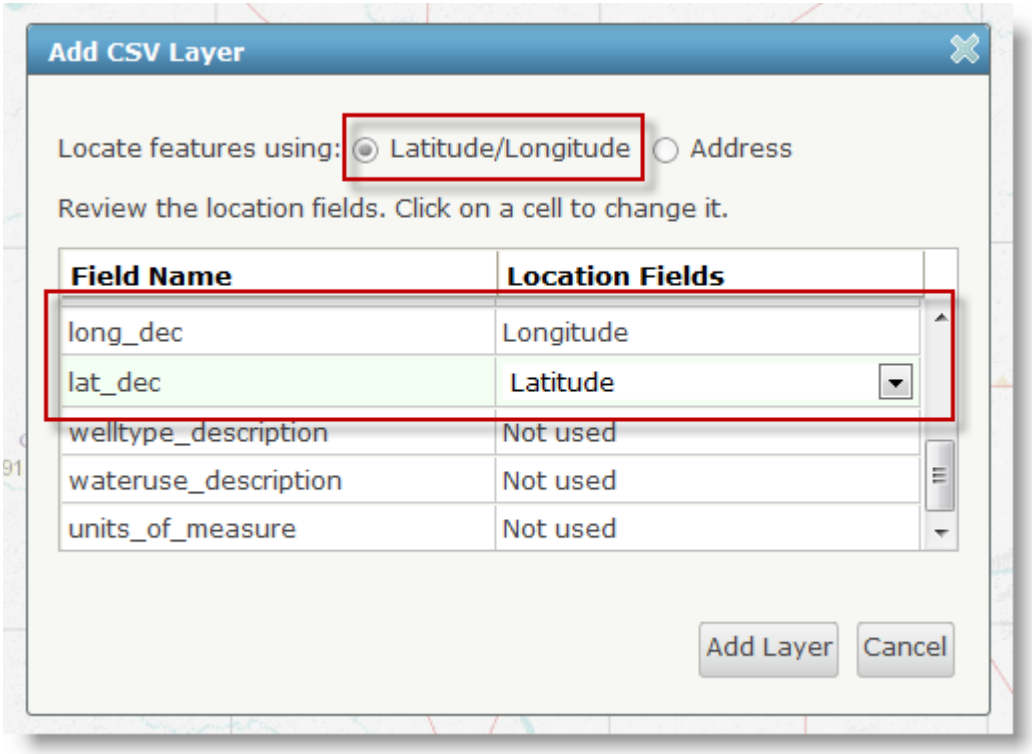


Use the Browse button to pick the Lubbock_Well_Data.csv file. This file was created on your computer when you unzipped the file downloaded at the beginning of the workshop.



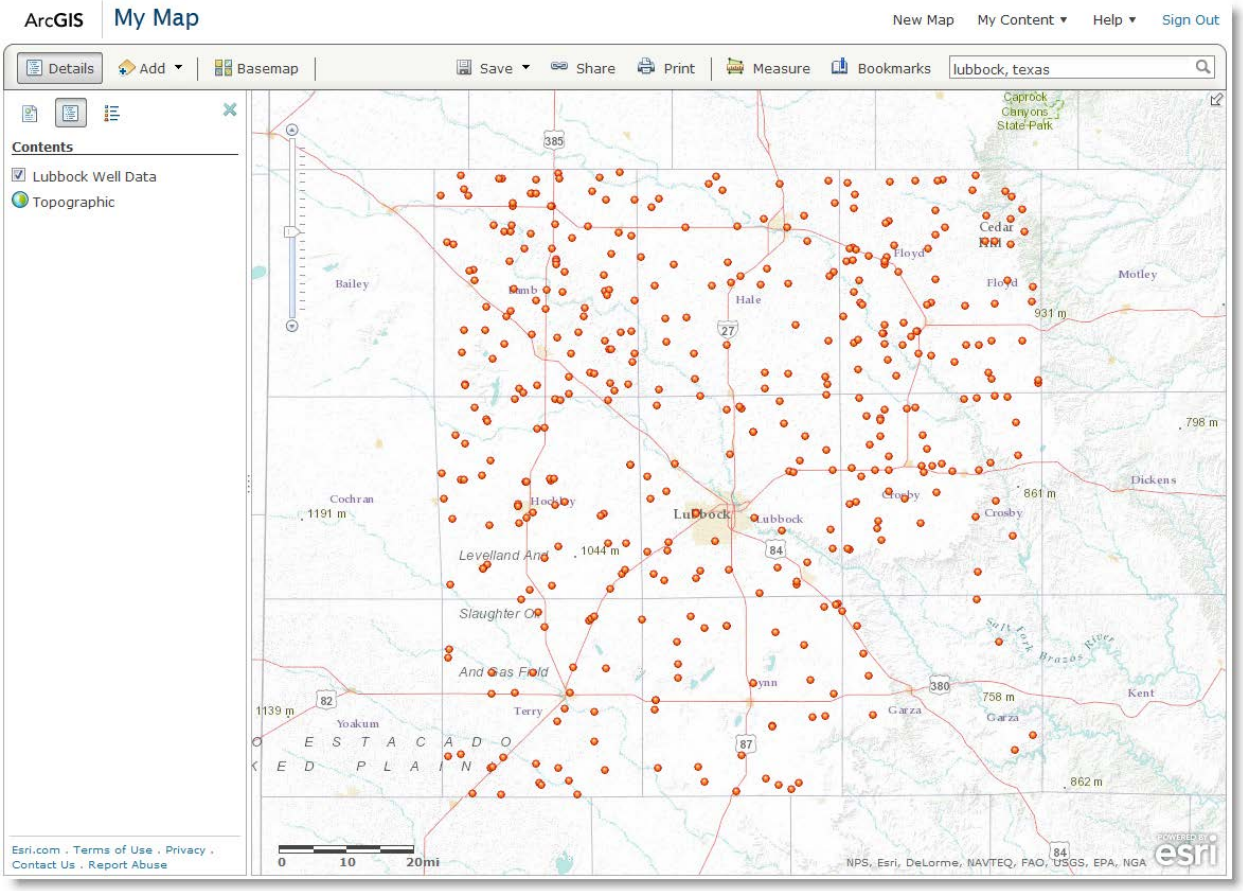
Click the Import Layer button.

ArcGIS Online will read the file, looking for field that it needs to place the data on the map. There are two choices: Latitude/Longitude or Address. The Lubbock_Well_Data.csv file has Latitude/Longitude, so click the Latitude/Longitude radio button. This file names the data it contains. ArcGIS Online lists the Field Names in the file, and gives us the ability to identify which field has latitude data and which field has longitude data.



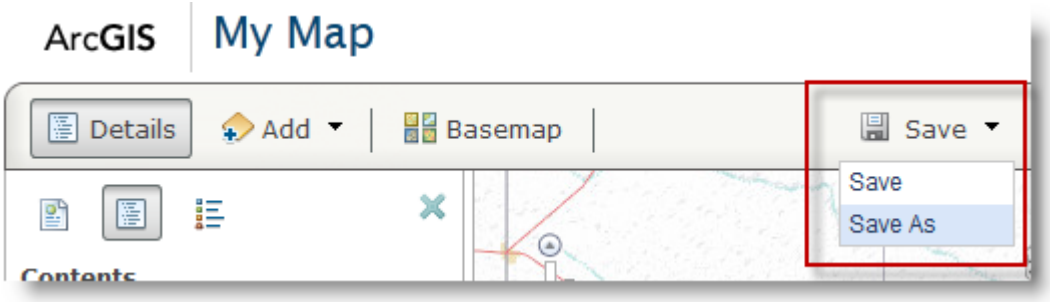
Click the Add Layer button.

You should see a map similar to this:



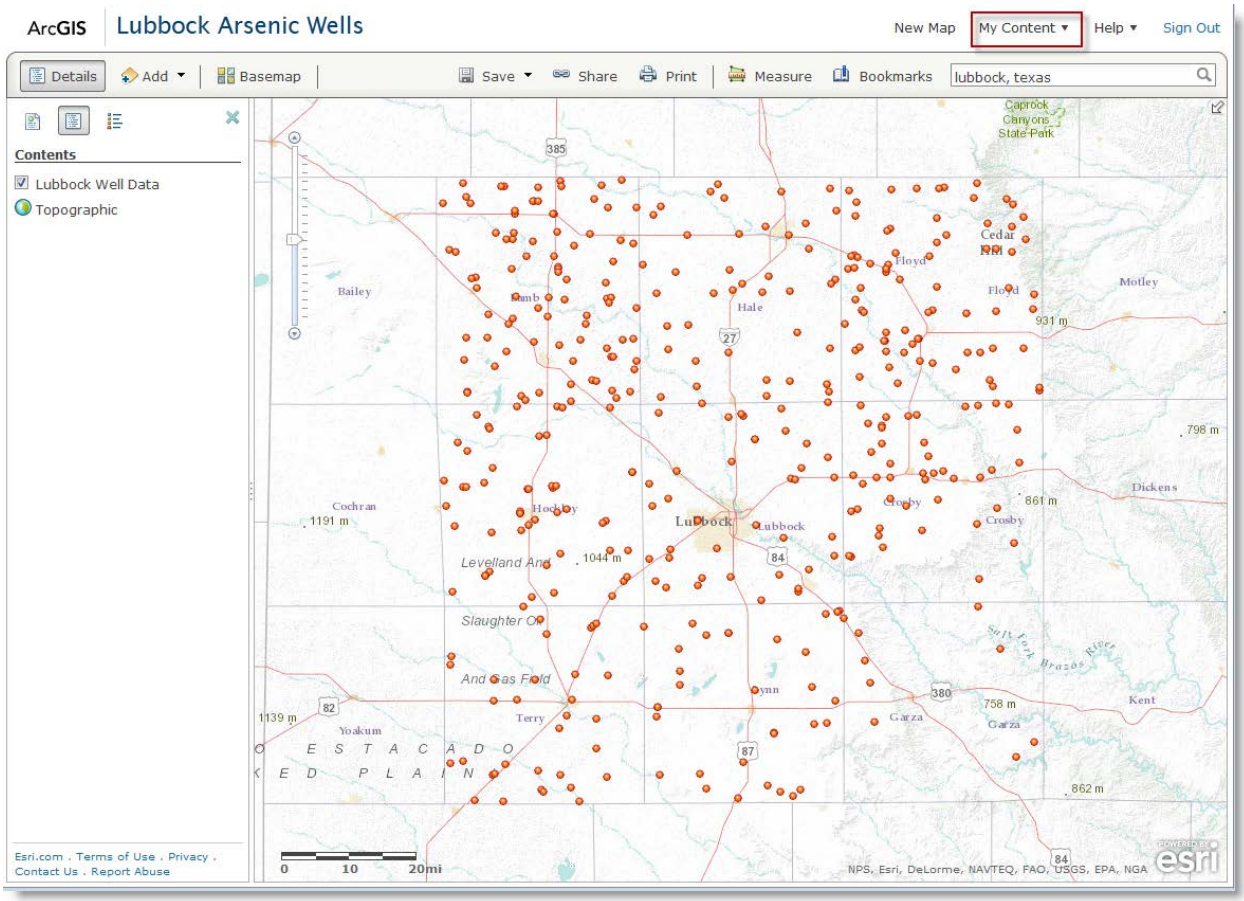
We have now successfully loaded well data into the map. Save your work – this will create a web map.

Use the Save As menu option in order to name the map as you choose.

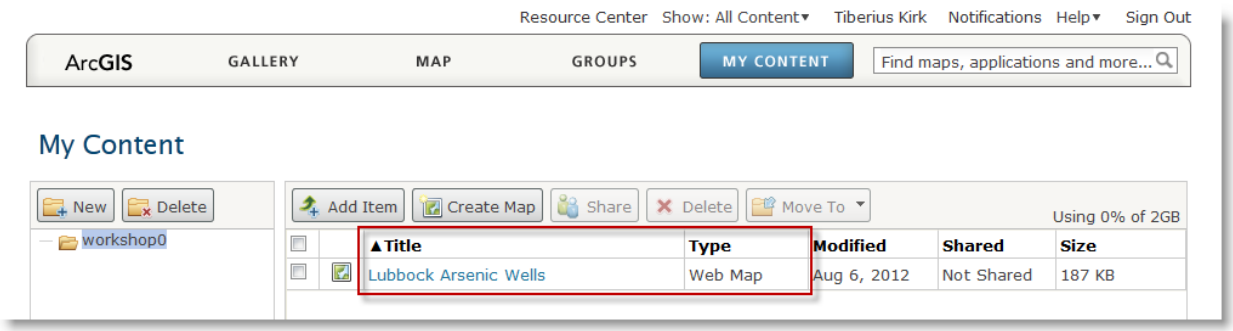


Provide values for Title, Tags and Summary, then click the Save Map button. Title is self-explanatory, Tags help the ArcGIS Online search engine find this map later. Choose values for Tags that are relevant to the map and separate them with commas. For convenience, you can cut and paste well-chosen Tags into the Summary field.

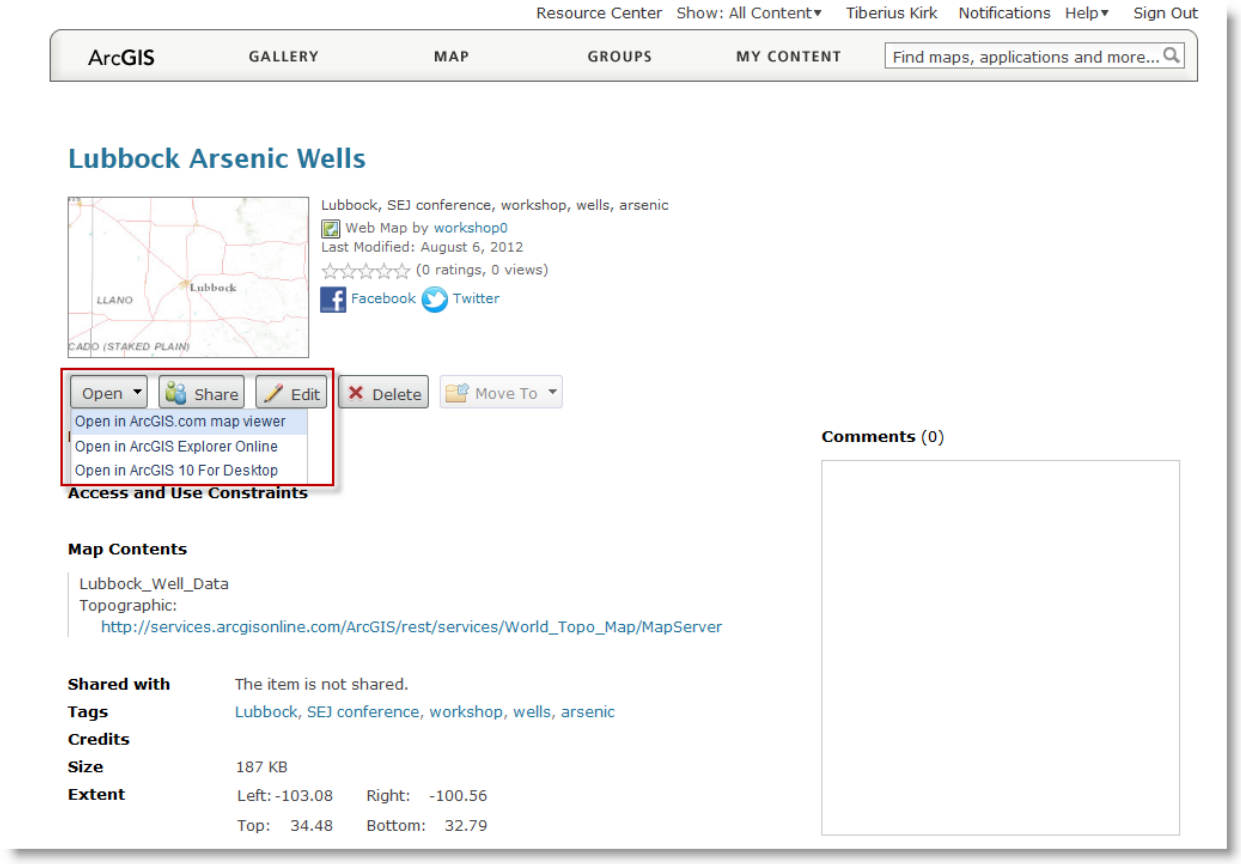
Once the map is saved, ArcGIS Online refreshes the screen, and displays the Title and a legend:



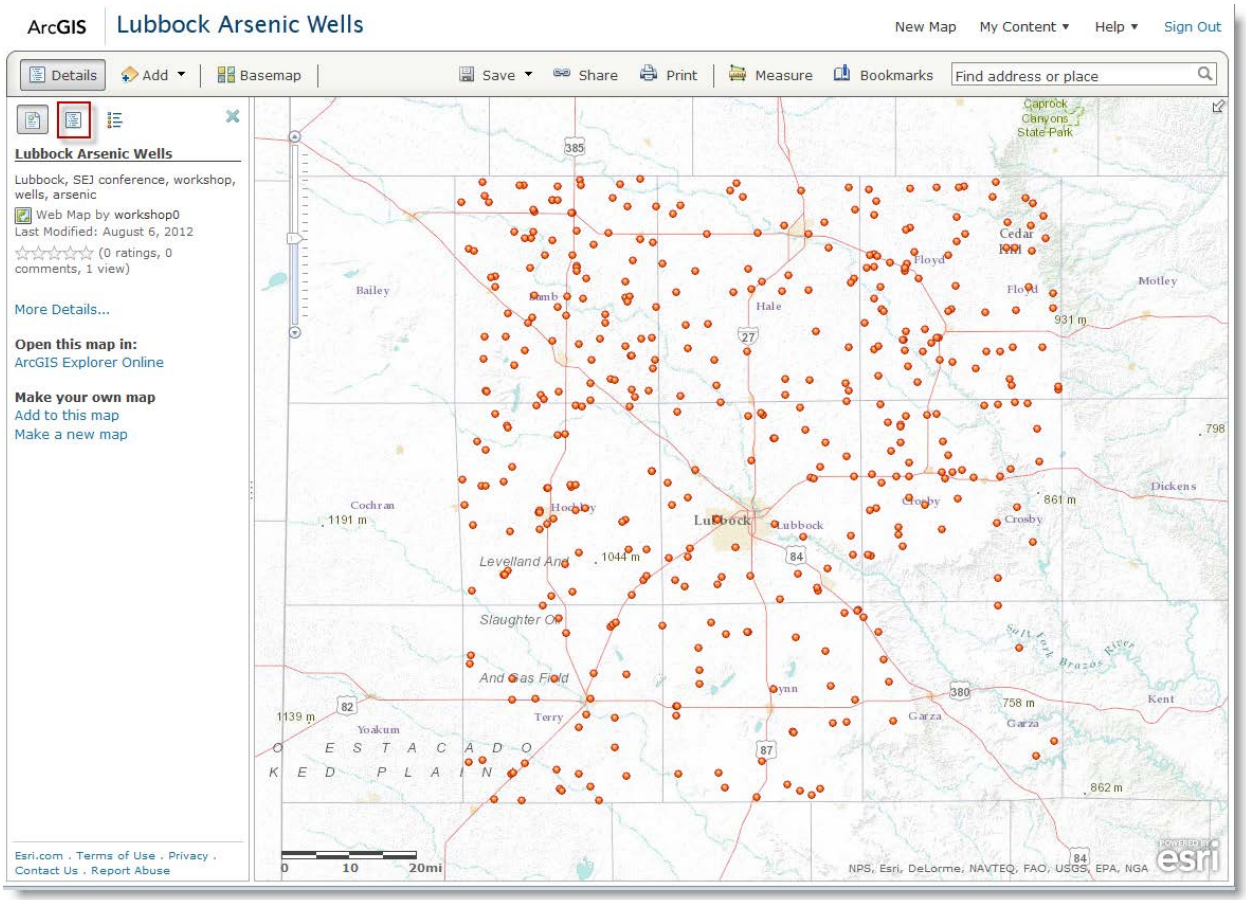
Click on My Content to see your web map on the 'home page'..



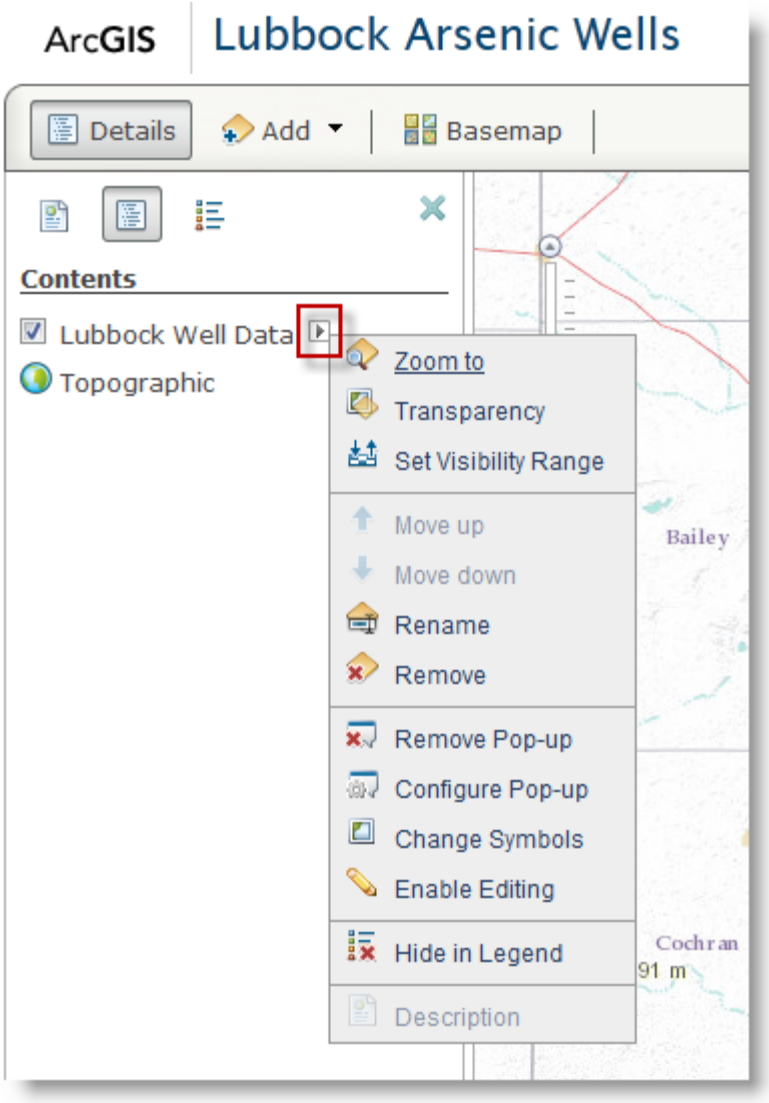
Double click on the Title. The next screen summarizes what ArcGIS Online knows about your web map, I.e. title, creator, size, contents, and geographic extent. Click the Open button and pick Open in ArcGIS.com map viewer.



We are now back to viewing the web map. Notice the view window is the same as when we saved it. Click on the small button in the upper left—this will change the left column to the Contents display where all map customization is performed.

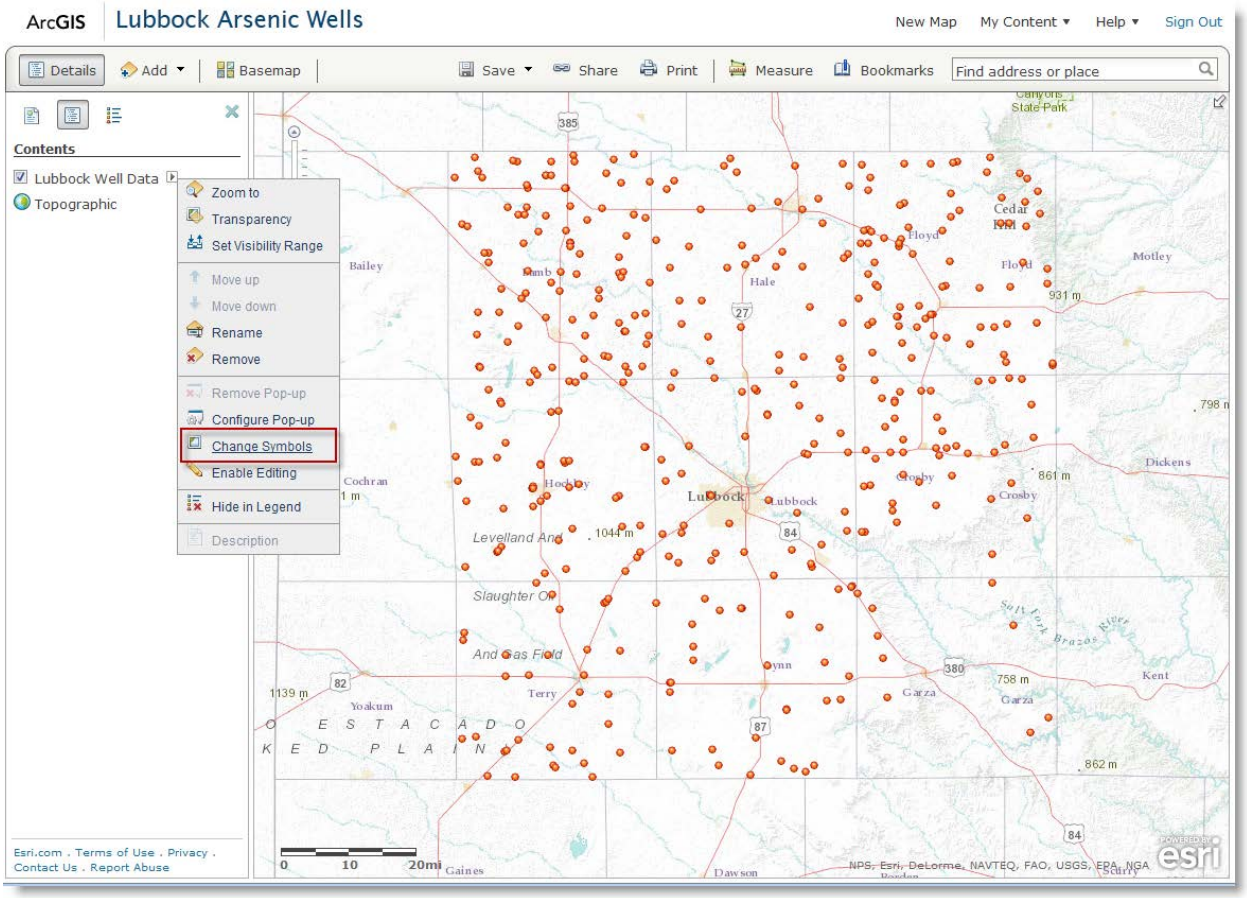


Click on the little button next to the Lubbock Well Data we loaded earlier. A menu appears, showing the actions you can perform on the well data layer. Take a moment and try out some of these controls.

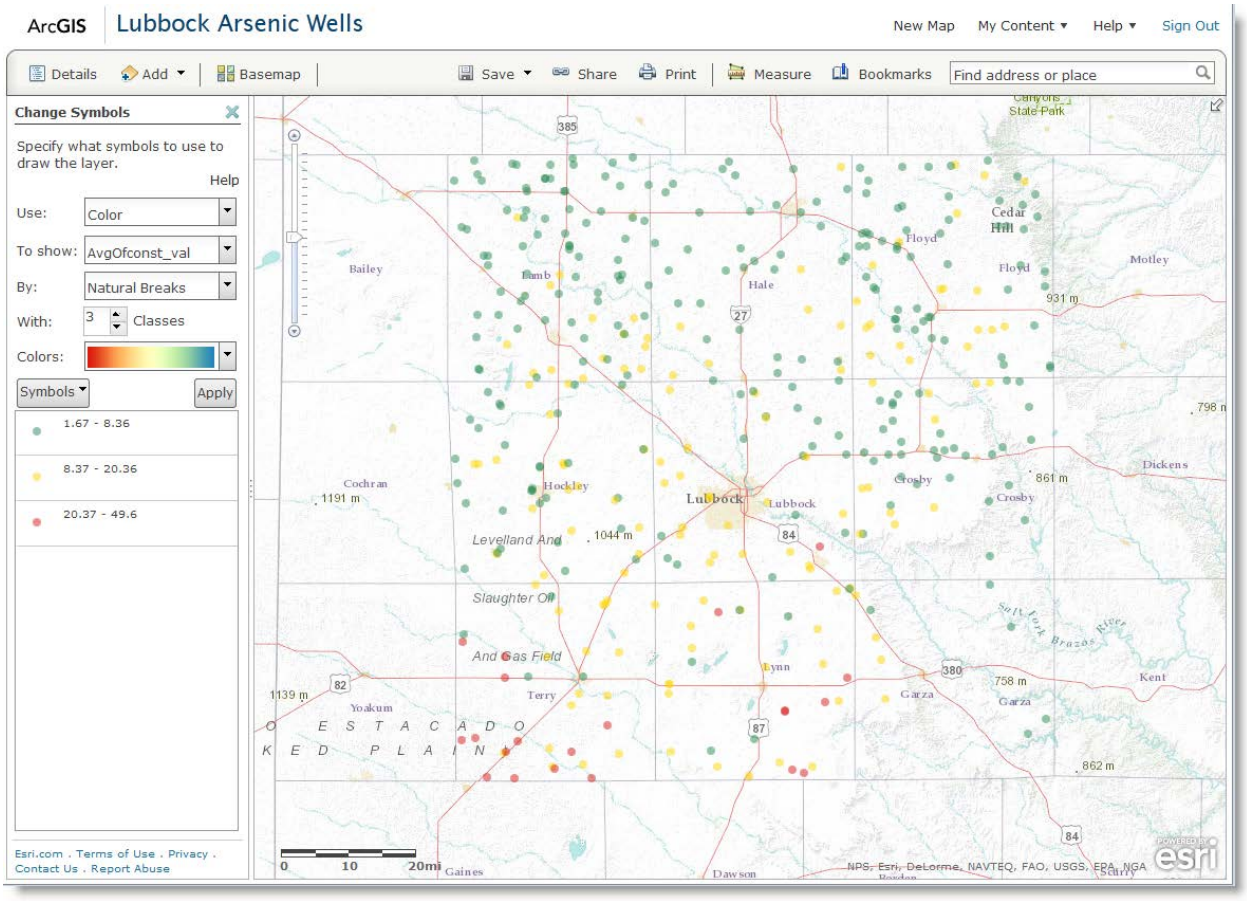


5. Design Map Symbols

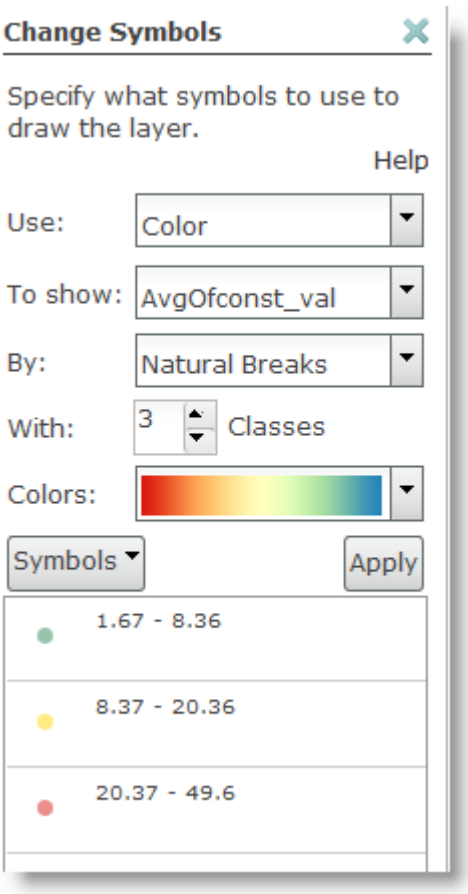
Zoom out until all wells are shown in the map display. Choose Change Symbols from the well data customize menu.



There are many ways to symbolize this data. You could use symbols to show which wells are used for drinking water, or show levels of arsenic by the size of the symbol. Through the Change Symbols controls in ArcGIS Online you can symbolize by using one symbology technique at a time. For this map, I want to show arsenic levels by color where red is highest, yellow is in the middle and green is least. Like this:



This map plainly shows that groundwater arsenic levels are highest in the southwest corner of Lubbock County. Presumably, this map display is appropriate and relevant to the narrative of my story.



To achieve this result I had to adjust several controls on the Change Symbols display. The Help button provides additional information on symbology controls.

Use: Choose Color as the primary symbology option.

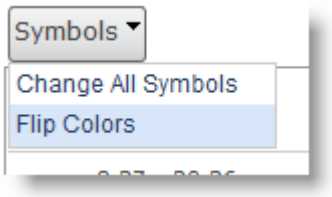
To show: Choose AvgOfConst_val as the field containing the arsenic readings.

By: Natural Breaks is one of several options for categorizing readings. Try out the others to see what happens.

With: Choose 3 classes rather than 5 just to simplify things.

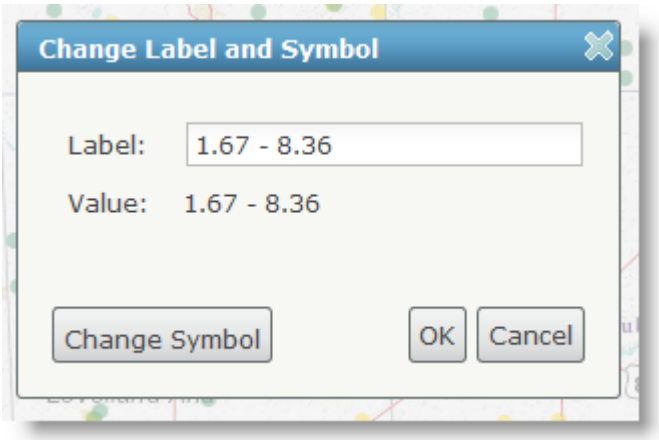
Colors: Choose a color transition that roughly fits your intent. Colors can be changed later.

The red value should be the high (more dangerous) value. Click on the Symbols button and choose the Flip Colors menu option:

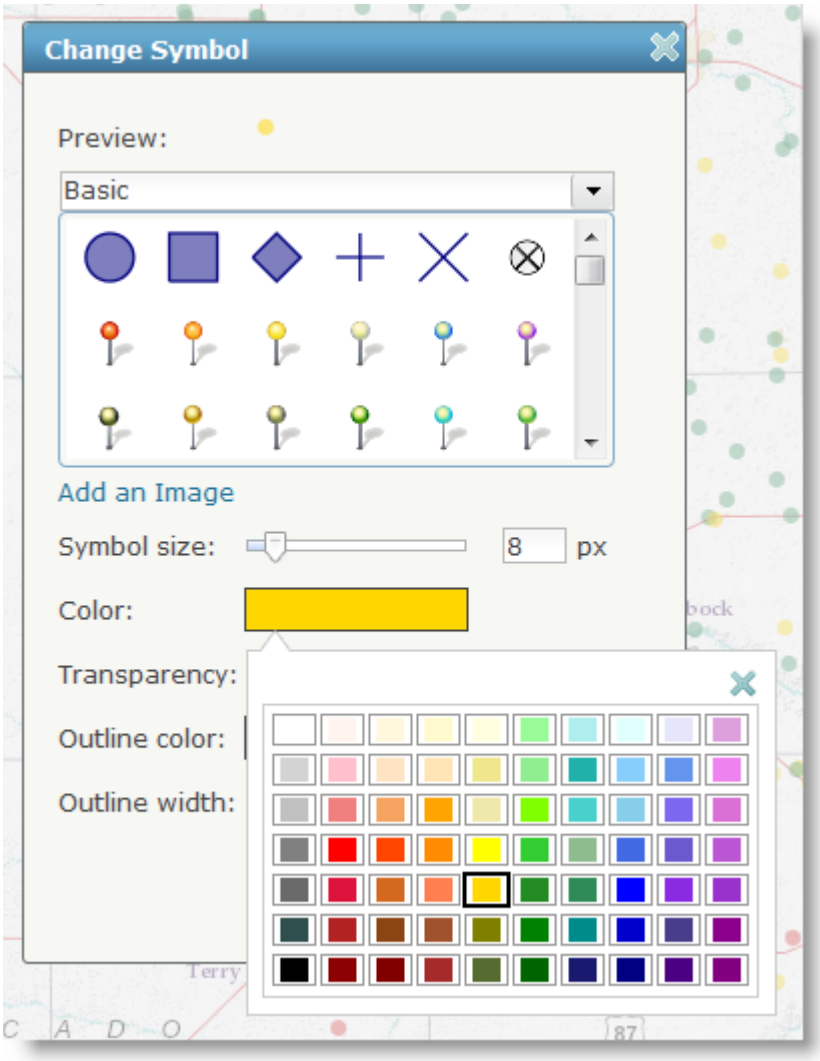


Click the Apply button to see the first draft symbology.

Close, but I want to tweak a couple things. First the middle color of yellow is too light. Click on the yellow dot.

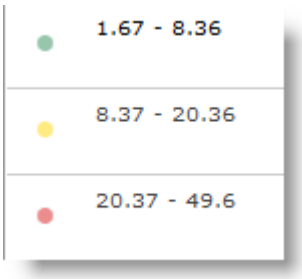


Now click on the Change Symbol button.

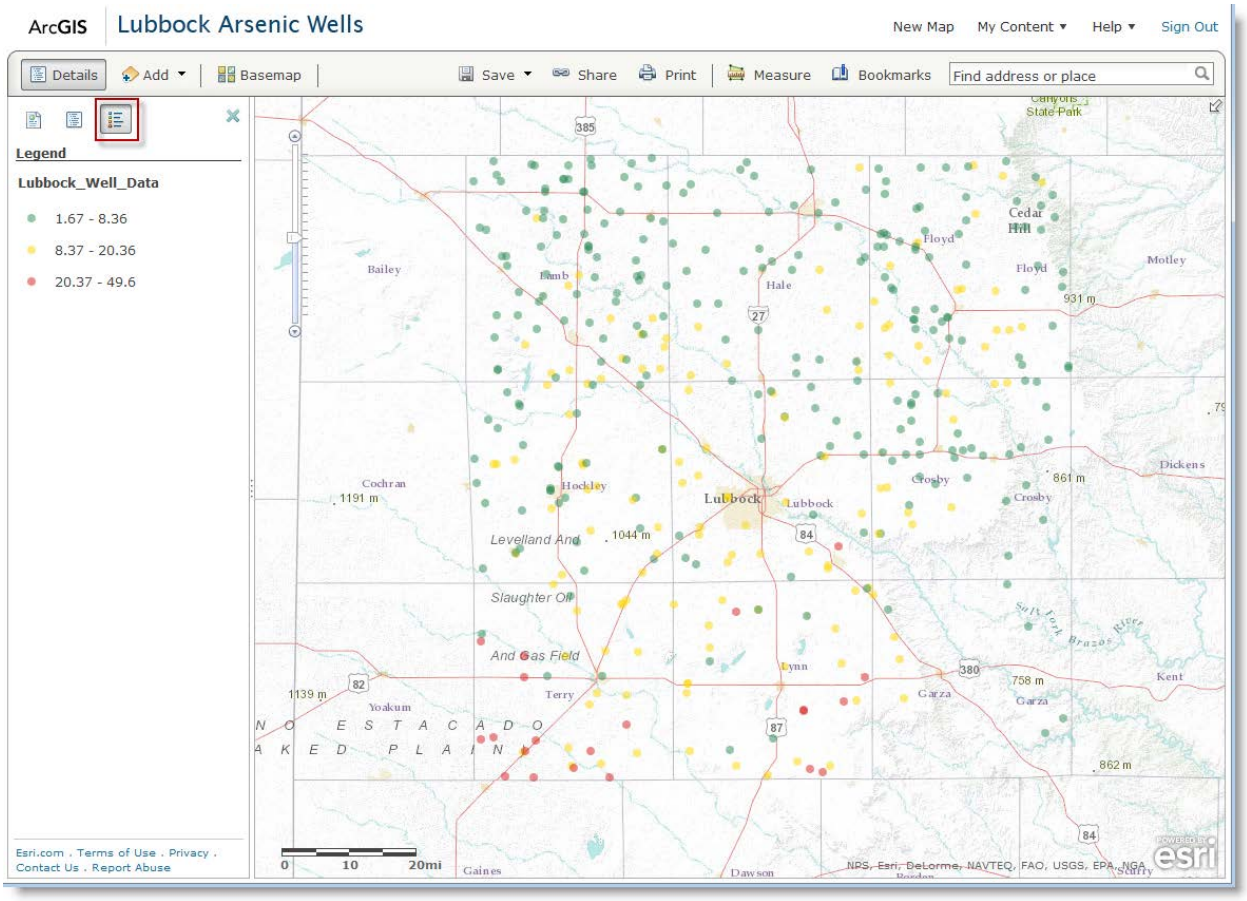


Click on the Color patch and choose a darker shade of yellow. Notice there are other symbol choices. Try them out to see what they do. When you are satisfied with the result click the Apply button.

Notice the three categories have overlapping label values. That is, the green dot goes to 8.36 and the yellow dot starts at 8.36. To fix this, click on the label for the yellow dot and change it's start value to 8.37. Do the same for the red dot. A small thing, but adds to credibility. The legend ends up looking like this:



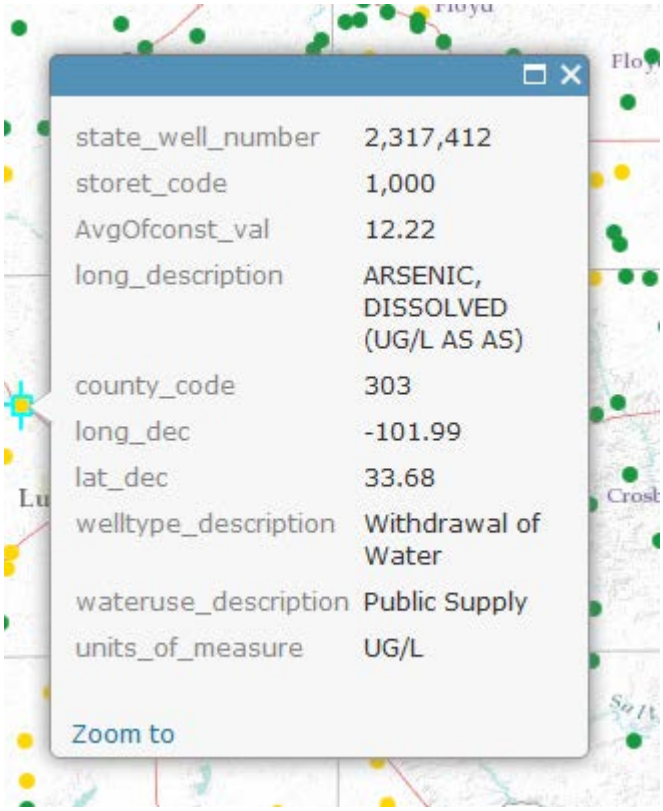
Click the Blue ‘X’ to collapse the Change Symbols display. Then click on the small button on the right to make the Legend appear:



Save the web map.

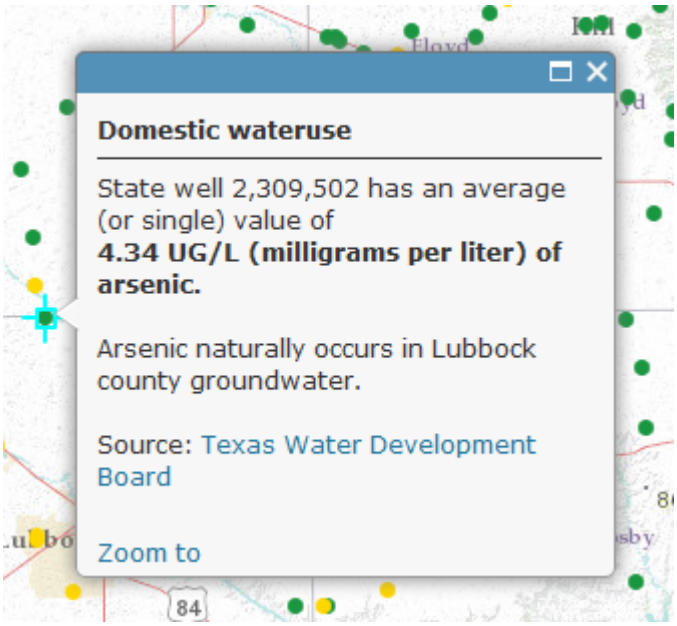
6. Design a Pop-up

A pop-up is an information window (aka balloon) that appears when you click on a map feature such as a well. Click on any well to see the default pop-up.

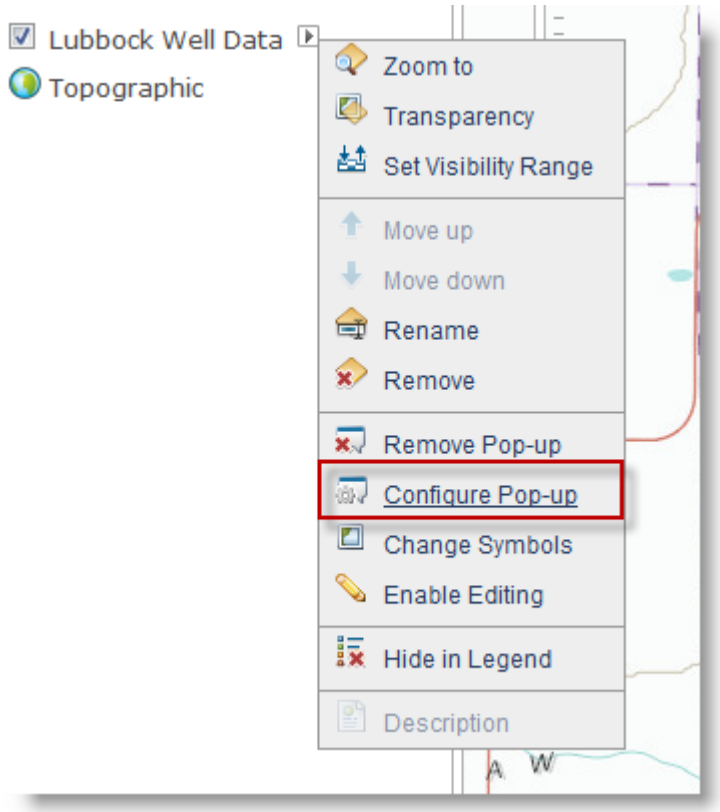


These are all the fields (aka attributes) of the wells in the well data file. This data, Source: Texas Water Development Board, is focused on wells in Lubbock County with arsenic measurements. Since my story is on arsenic, I want a simpler, more readable display that focuses on arsenic information.

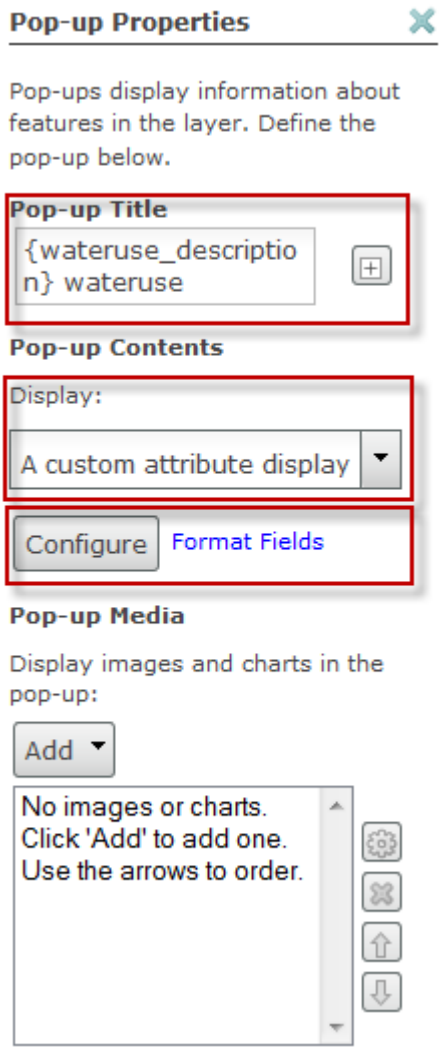
I want to design a pop-up that looks like this:



The Configure Pop-up menu option has the controls needed to format this pop-up. Click on it.

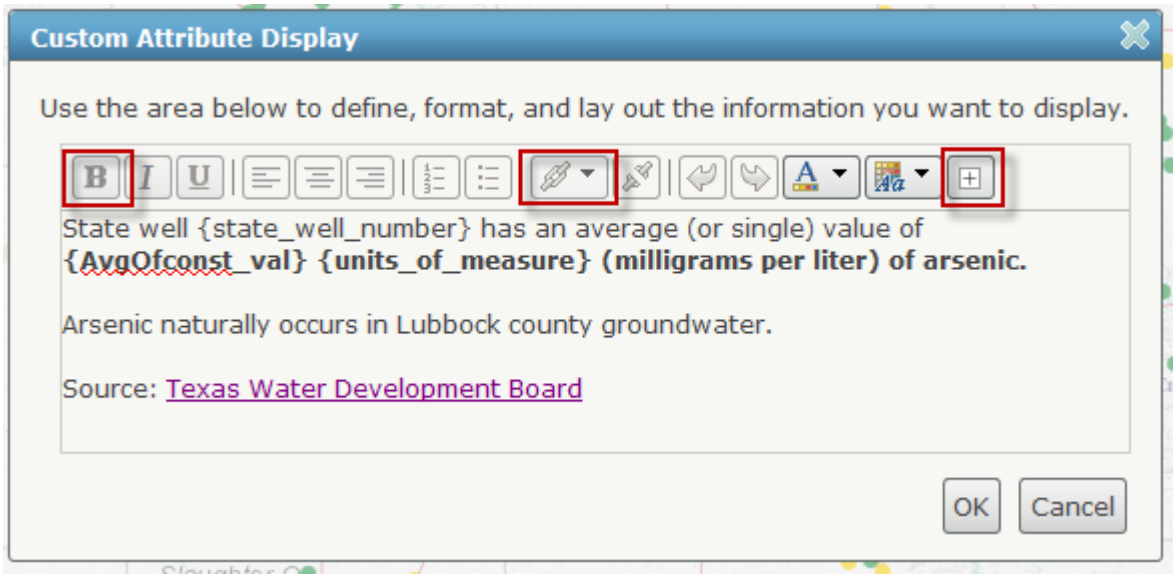


We will change Pop-up Title and Pop-up Contents as shown:



Click on the little button with the '+' sign next to **Pop-up Title** to display a list of fields. Choose {wateruse_description}. The curly braces signify the data value for that field.

For Pop-up Contents, pick' A custom attribute display' from the pull-down menu. Then click the Configure button.



The indicated buttons are used in this example to bold text, add a URL link, and display a list of field names.

To finish, Click OK, then click Save Pop-up (at the bottom of the Pop-up Properties display).

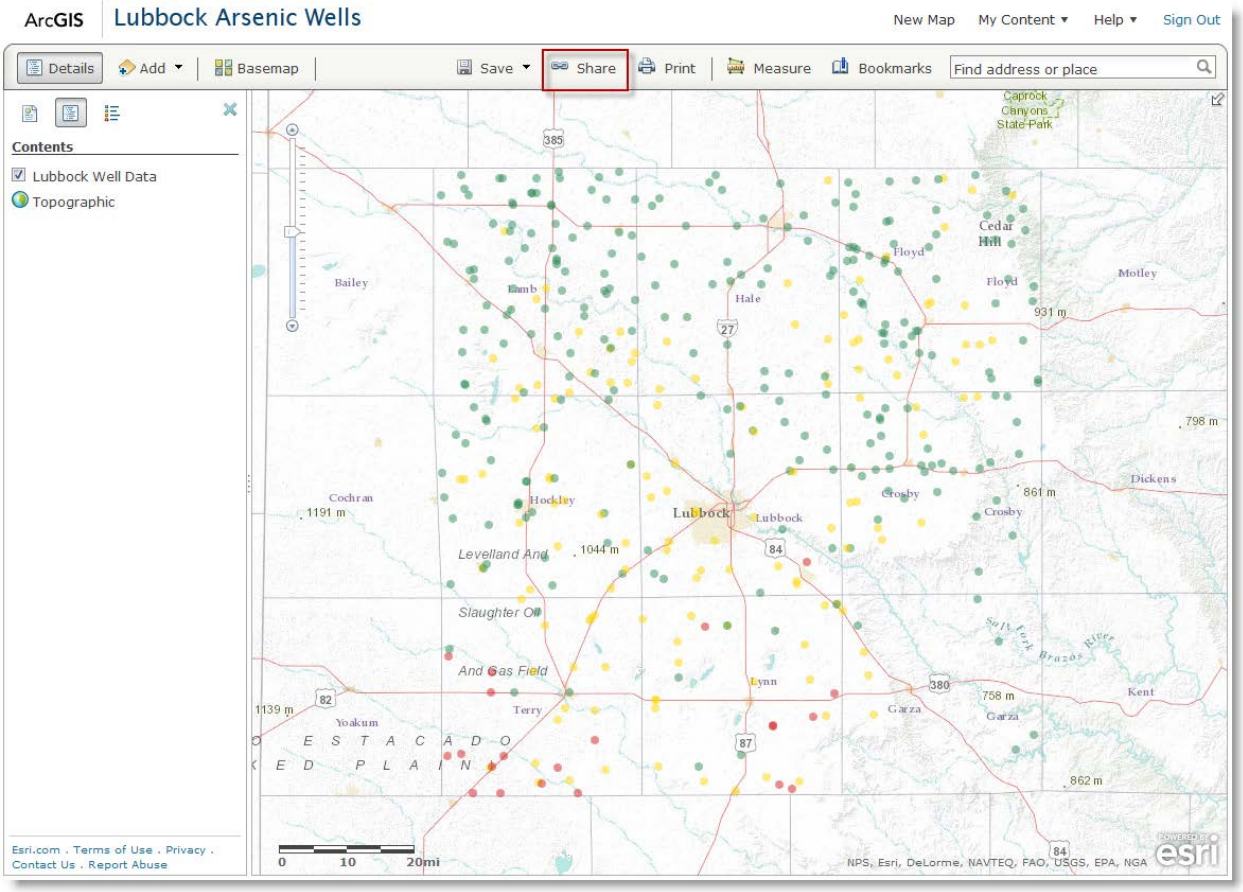
Play with the Pop-up Properties controls to create the pop-up as you want it. Then save the map. Get in the habit of saving your map when you have finished a section of work.

7. Publish as embeddable HTML

Internet news outlets often use a content management system (CMS) to manage the layout of pages and publication of those pages on their web site. ArcGIS Online can publish maps compatibly with this technical environment. You can use ArcGIS Online to publish HTML tags that can be cut-and-pasted into the CMS.

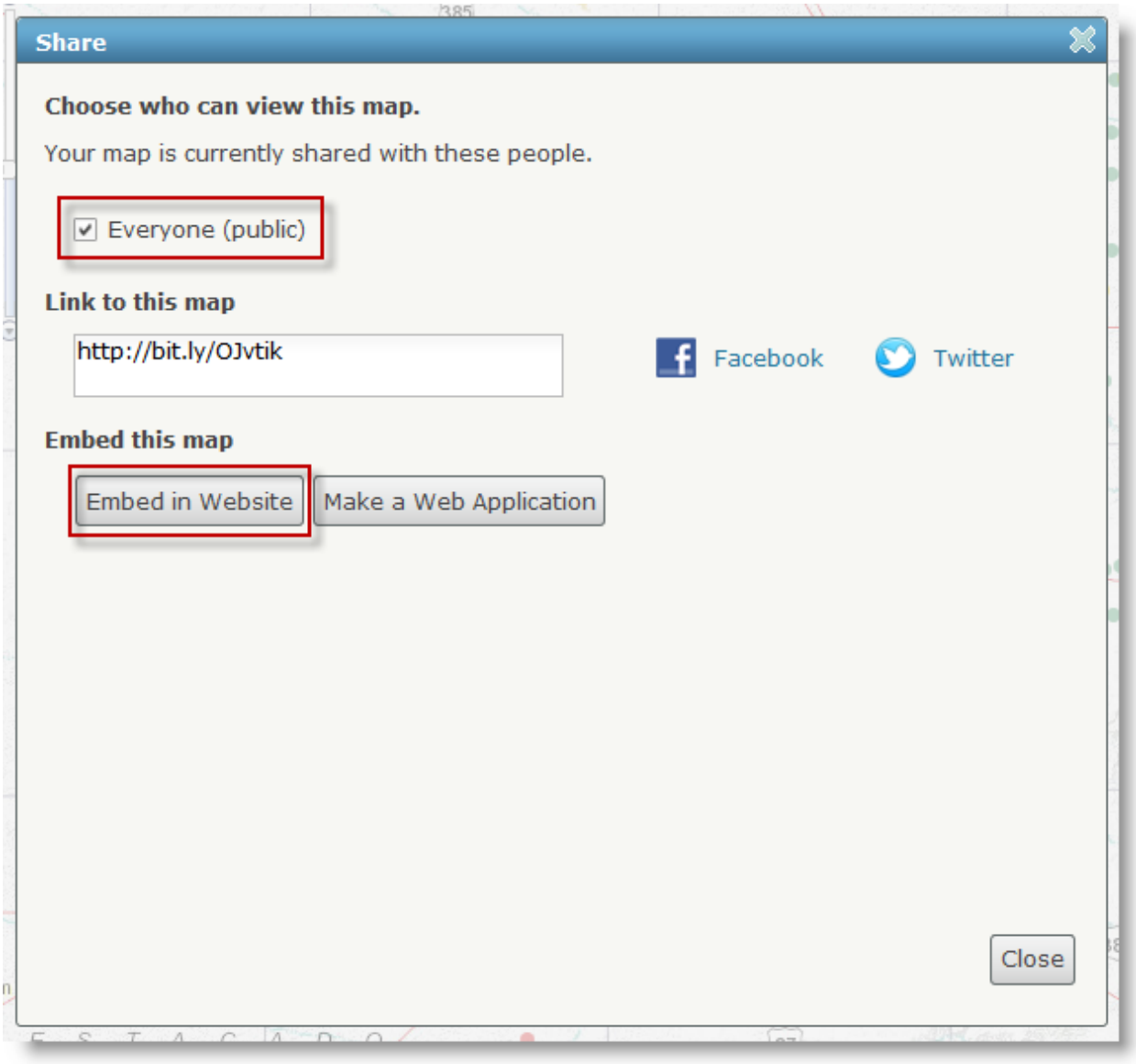
However, this workshop does not have access to a CMS or to a web server. Thus, in the following examples we will test publication on your computer. The final result on a live web site will look like our tests. In actual use, as a last step, you would copy the map to your web site.

Click on the Share button.

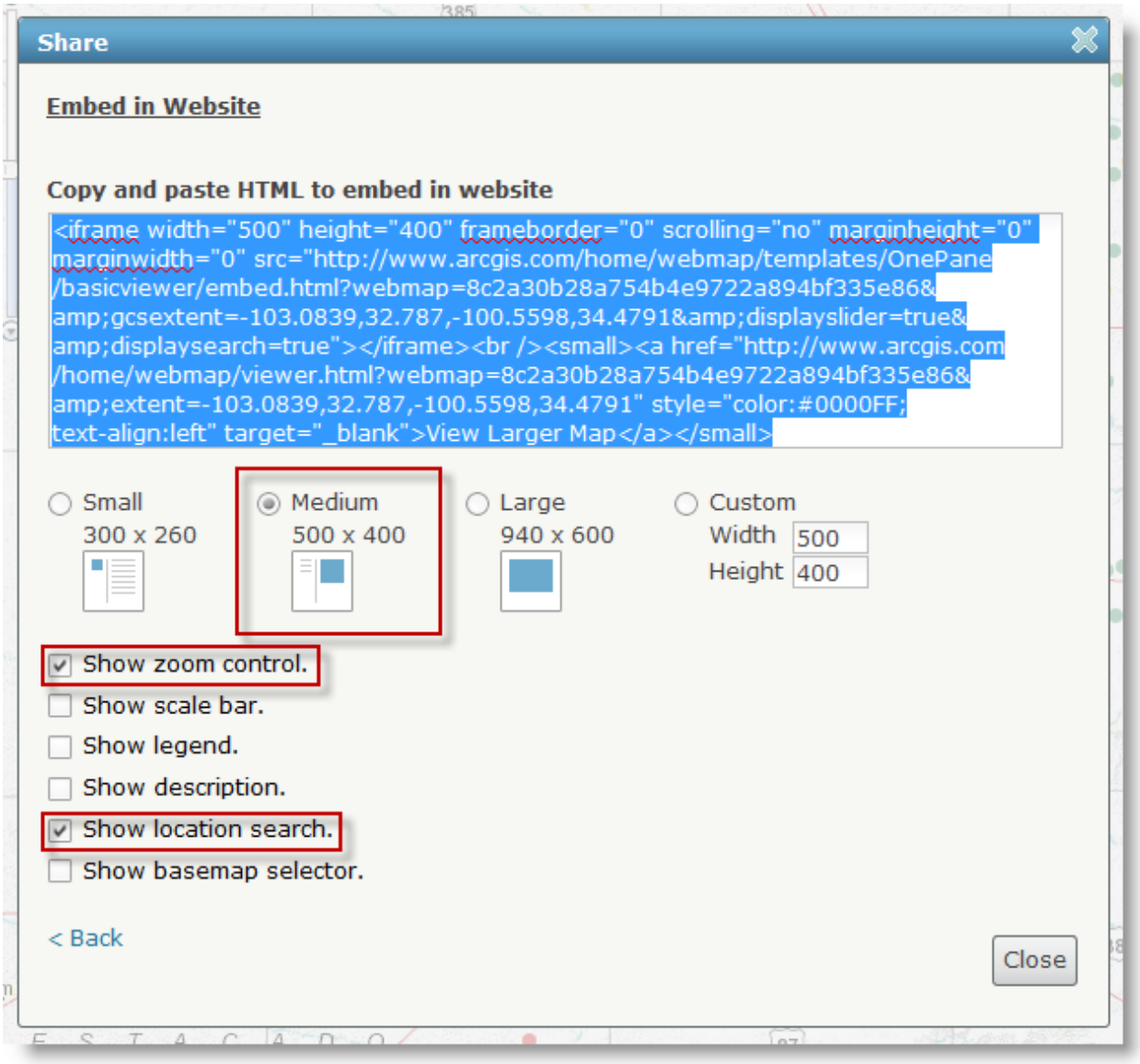


Check the Everyone (public) box. Sharing with Everyone is required for Internet publication.

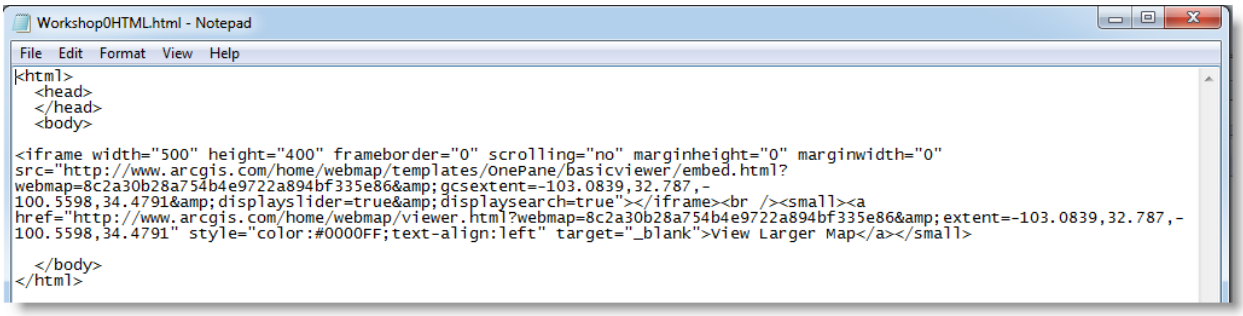
Then click on the Embed in Website button.



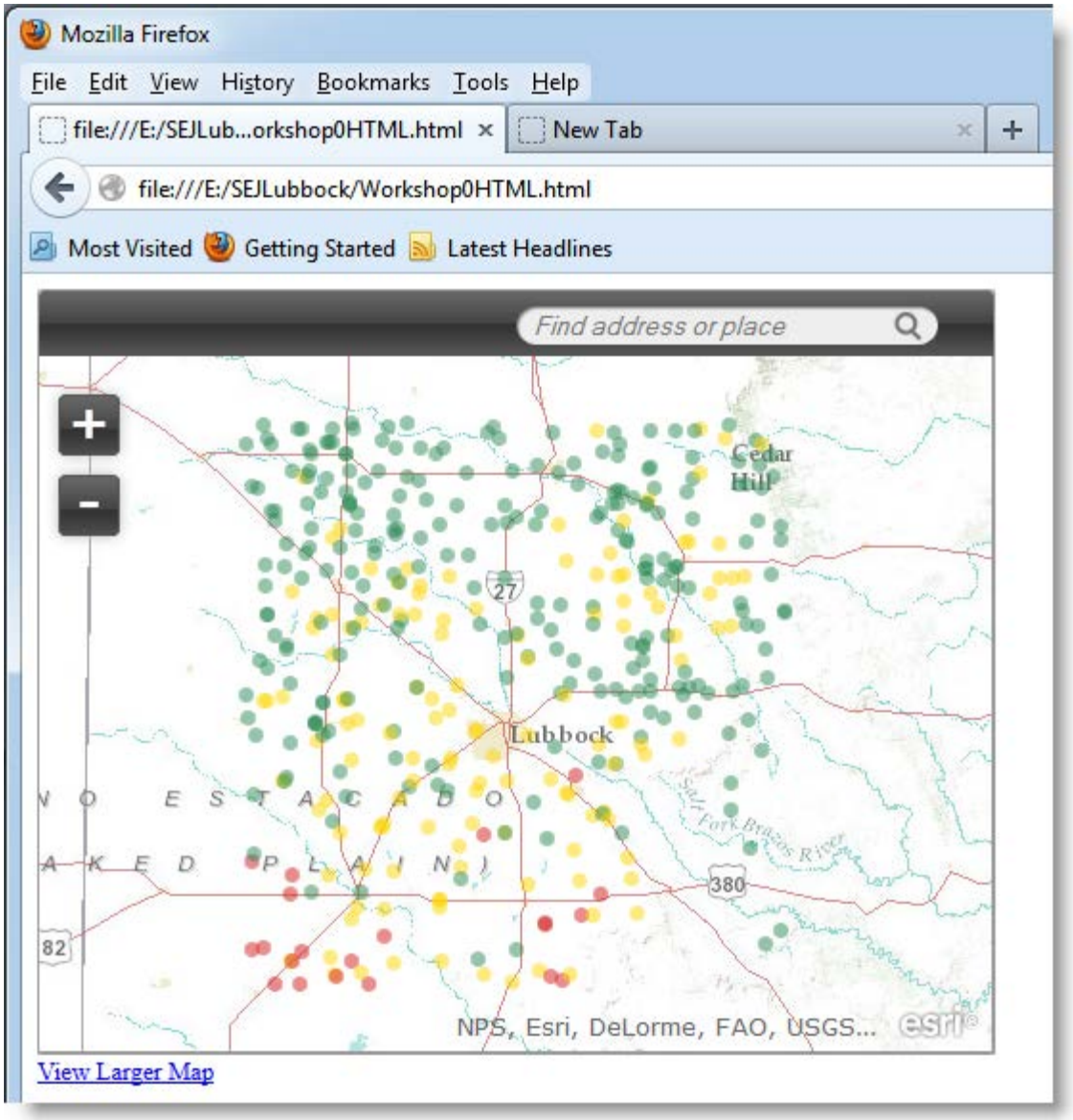
In this example, the HTML is shown in blue as selected. The embedded map will have a 500 x 400 footprint, and will have two useful widgets—a zoom control, and a place for people to enter an address (perhaps their own if they live in Lubbock County).



Test the HTML in a simple way on your computer. Open the supplied HTML file, TestHTML.html, in a simple text editor such as Notepad (Windows) or TextEdit (Mac). Paste the HTML between the <body> tags:



Save the html file. Drag it into an open web browser window. This test shows how the web map will appear in your website.



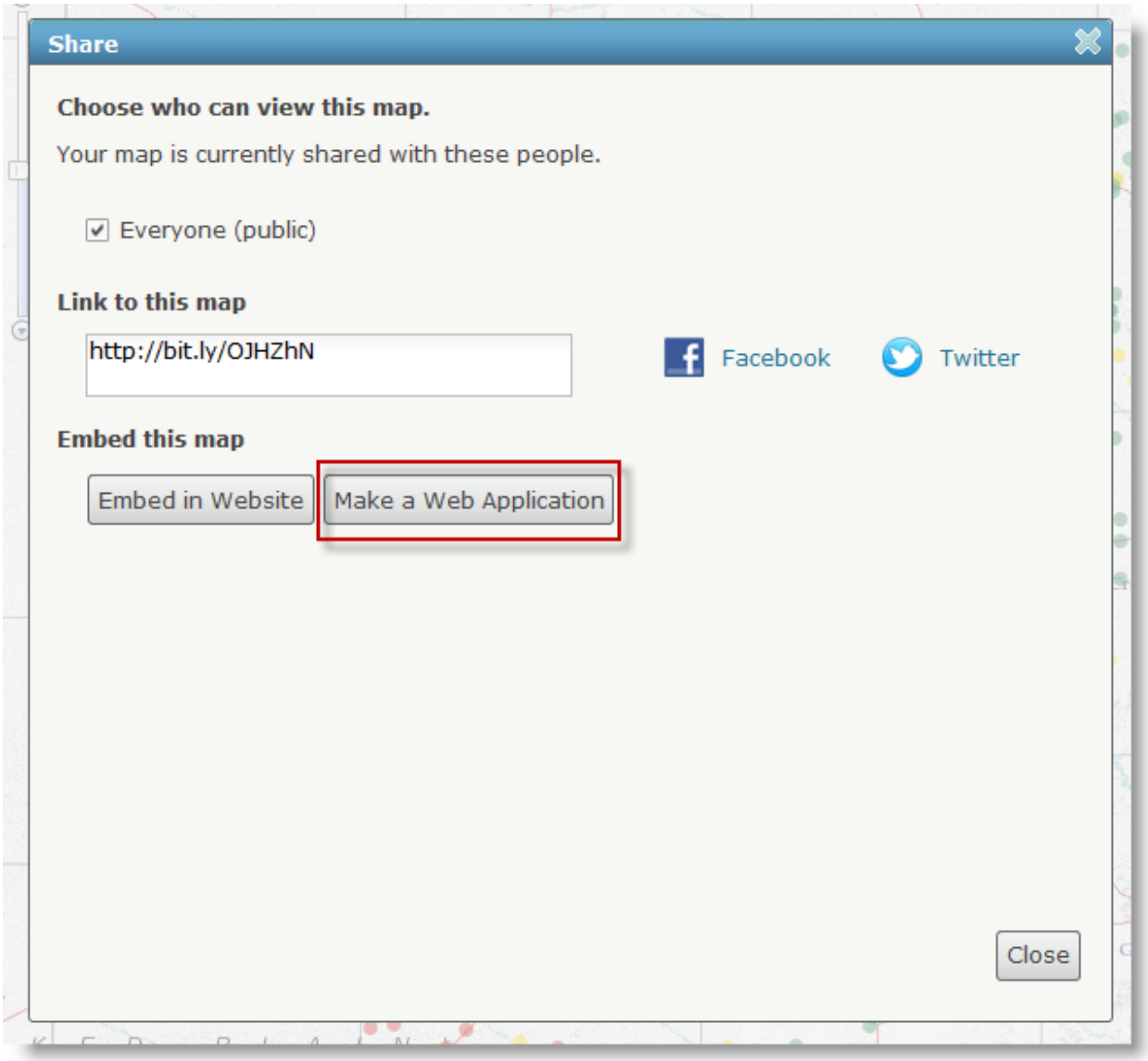
Play with the controls on the map. Enter a Lubbock address, such as “Texas Tech, Lubbock, Texas”. Click on a well and view a pop-up. Try going back to ArcGIS Online and recreating HTML with a different footprint size. If you comfortable with HTML, take a closer look at the tags to puzzle out their functions. See if you can remove the ‘View Larger Map’ link under the map.

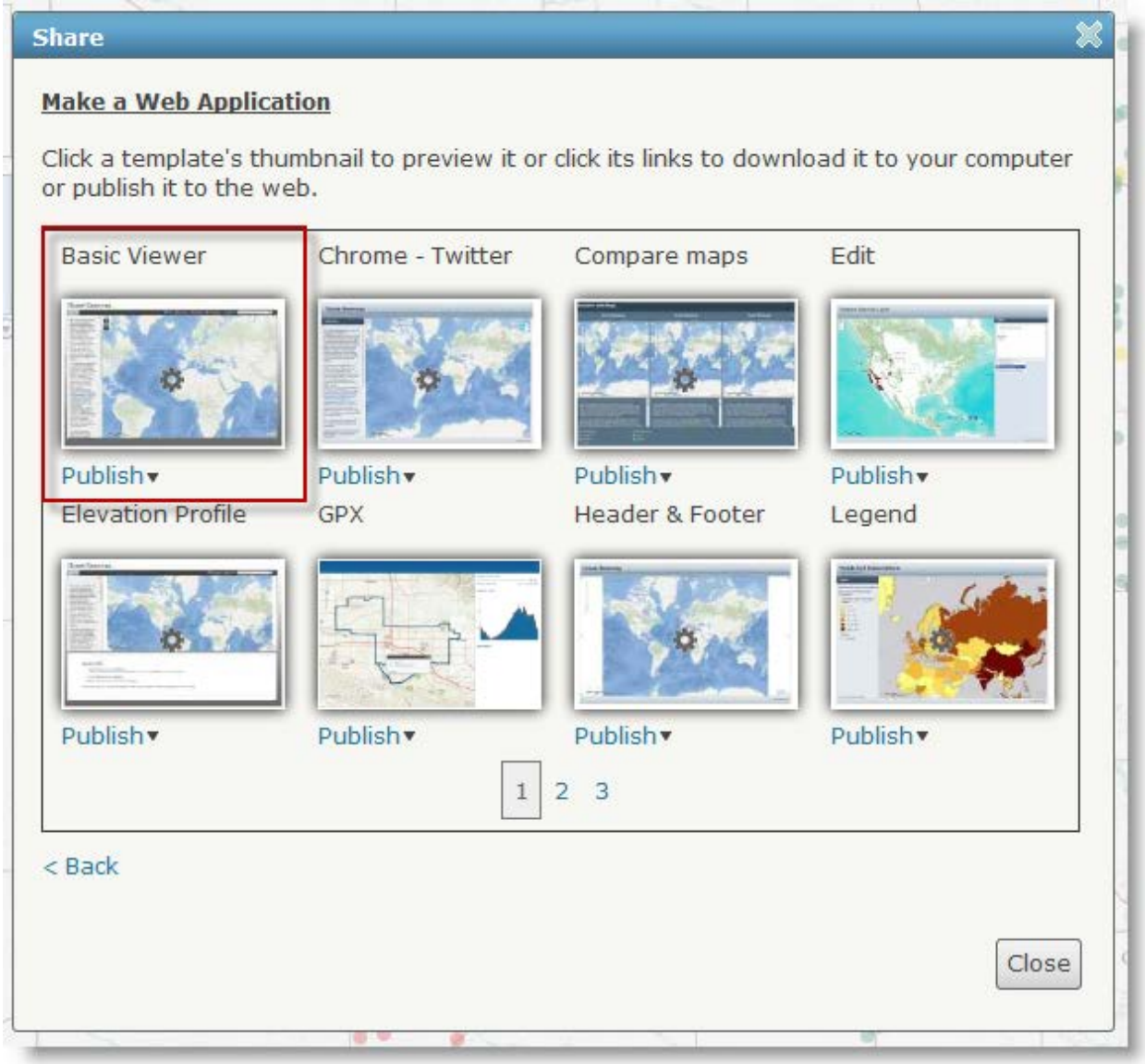
If open, close the Share window.

8. Publish as a customized application

ArcGIS Online comes with a gallery of web map applications. These applications provide additional storytelling capability. Unlike embedded HTML, the web map applications are not embedded, but placed as a link that will open a new window. Web map applications can be hosted on ArcGIS Online or on your website. It is easier to host on ArcGIS Online, but if hosted on your site, you will get the hits.

Click the Share button and then click the ‘Make a Web Application’ button.

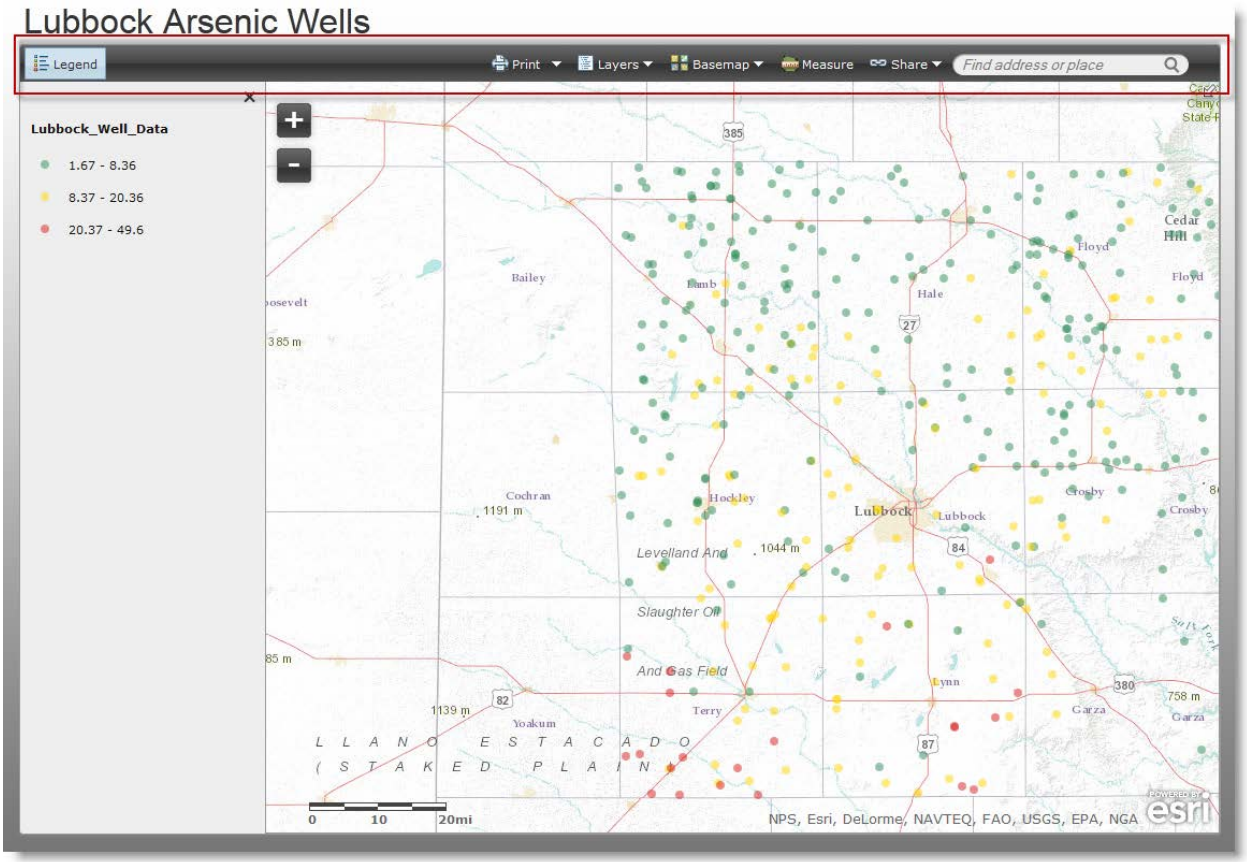

Share
Choose who can view this map.
Your map is currently shared with these people.
Everyone (public)
Link to this map
http://bit.ly/OJHZhN
Facebook
Twitter
Embed this map
Embed in Website
Make a Web Application
Close



Take a moment to explore the three-page application gallery. Notice some of the application thumbnails have a grey gear icon superimposed on them. These applications have additional configuration options that allow more customization without programming.

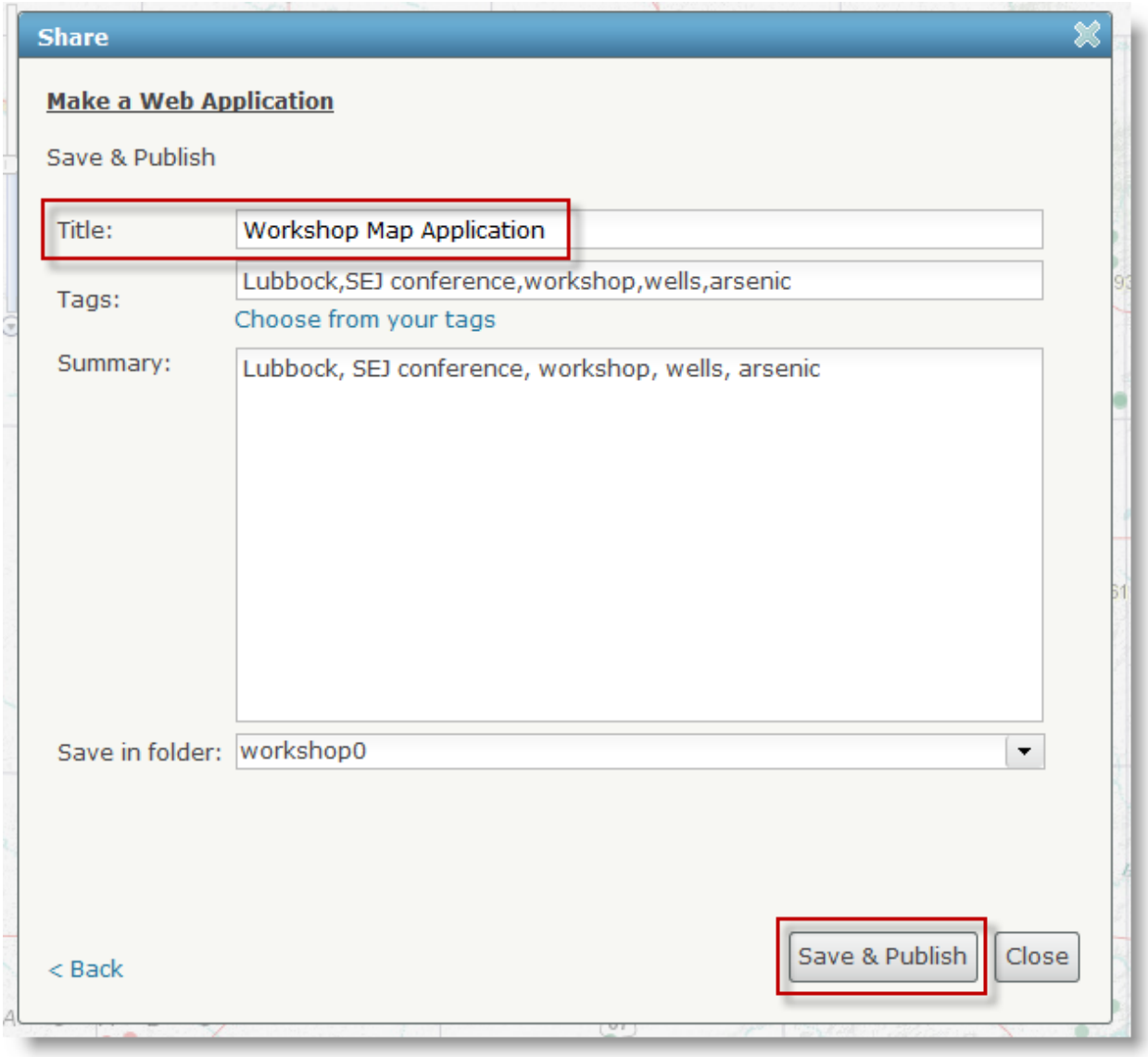
Return to first Make a Web Application window and click on the menu under the Basic Viewer thumbnail. Choose the Preview option:

A new browser window will open. Play with the widgets in the menu bar across the top. In a moment, you will have the option to leave or delete these widgets.

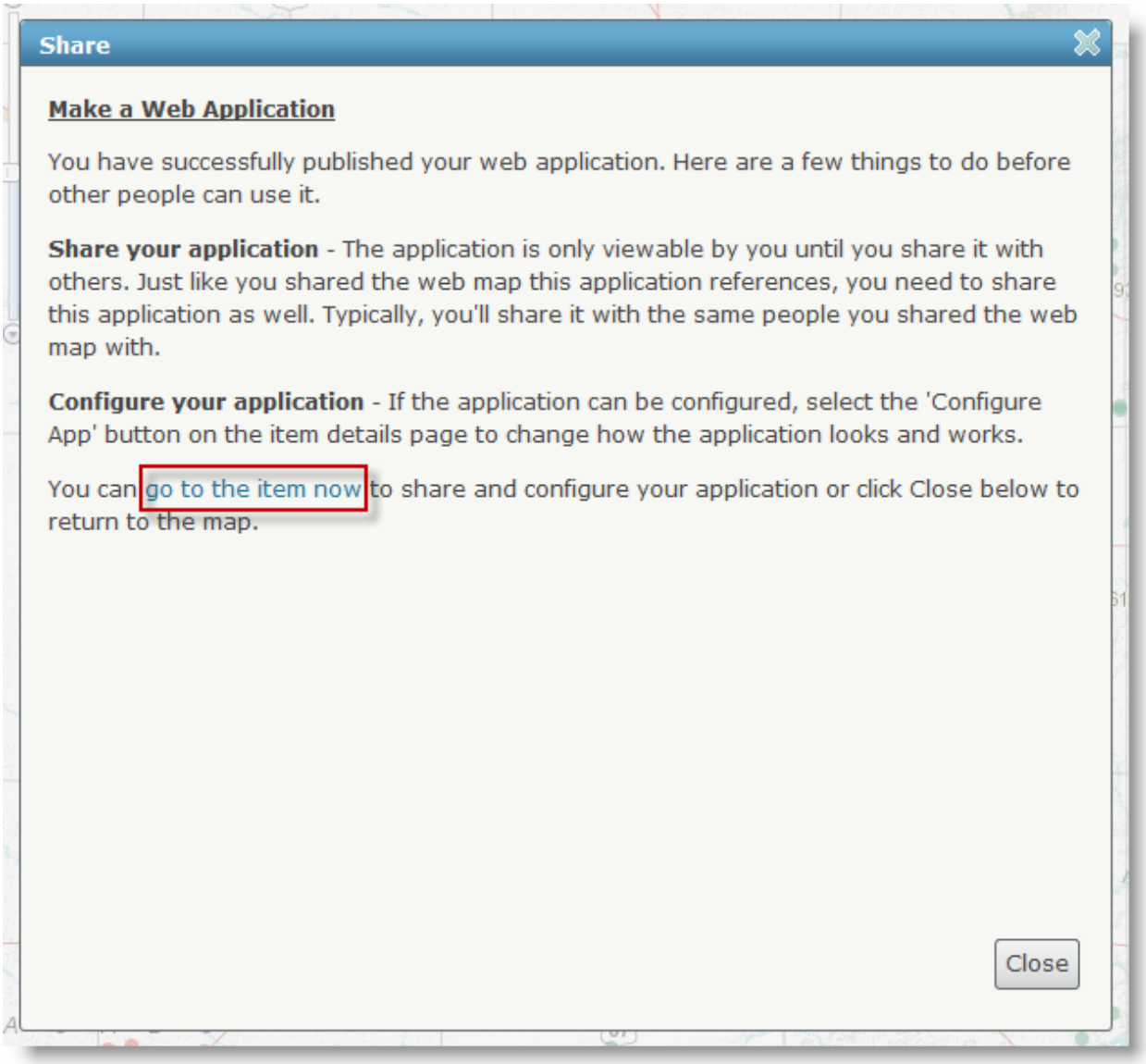


Return to the web map applications gallery window. Choose the Publish menu option:

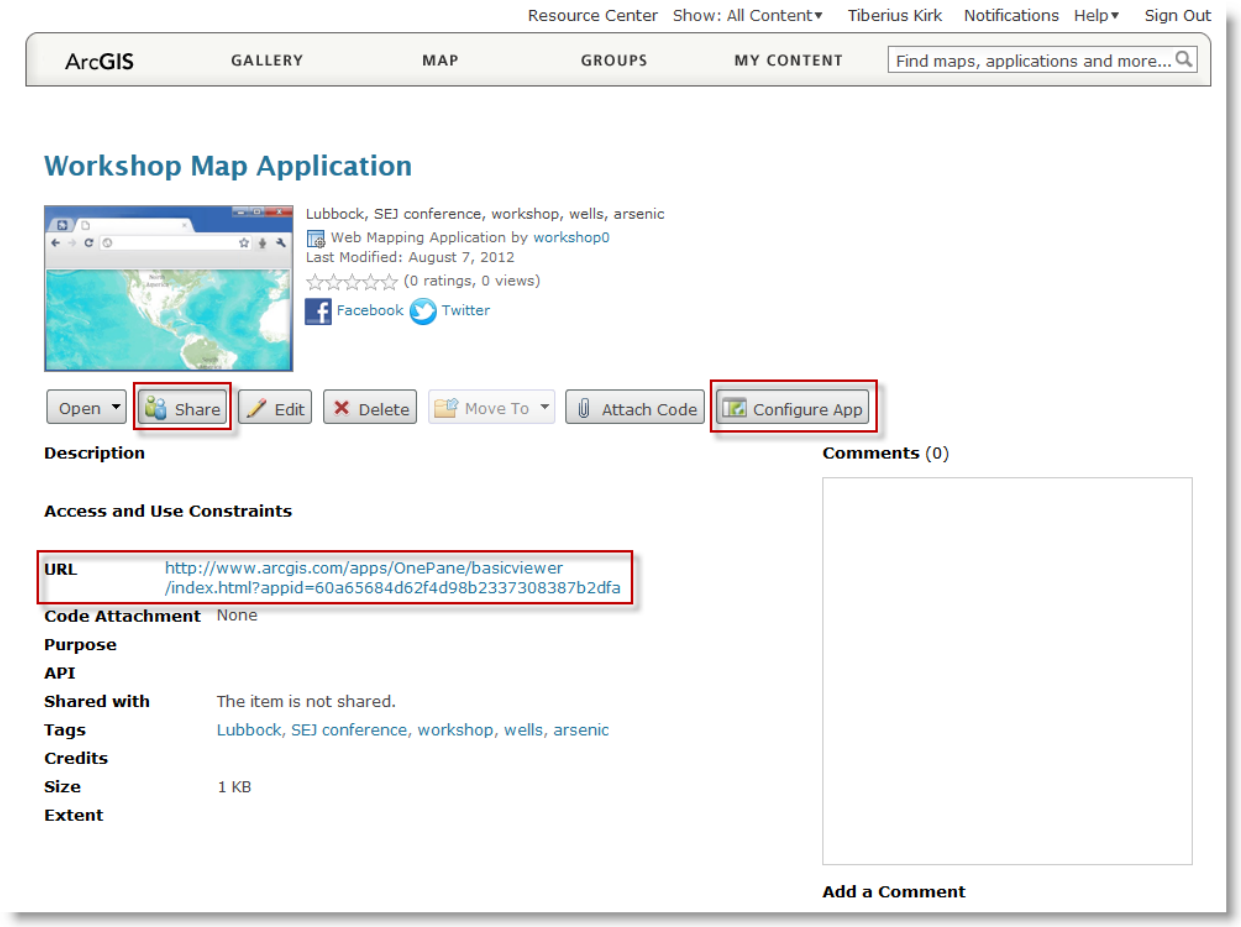
Enter a map application Title, and click the Save & Publish button:



Title is the name for the web map application used in the My Content page, not the title that appears on the map.



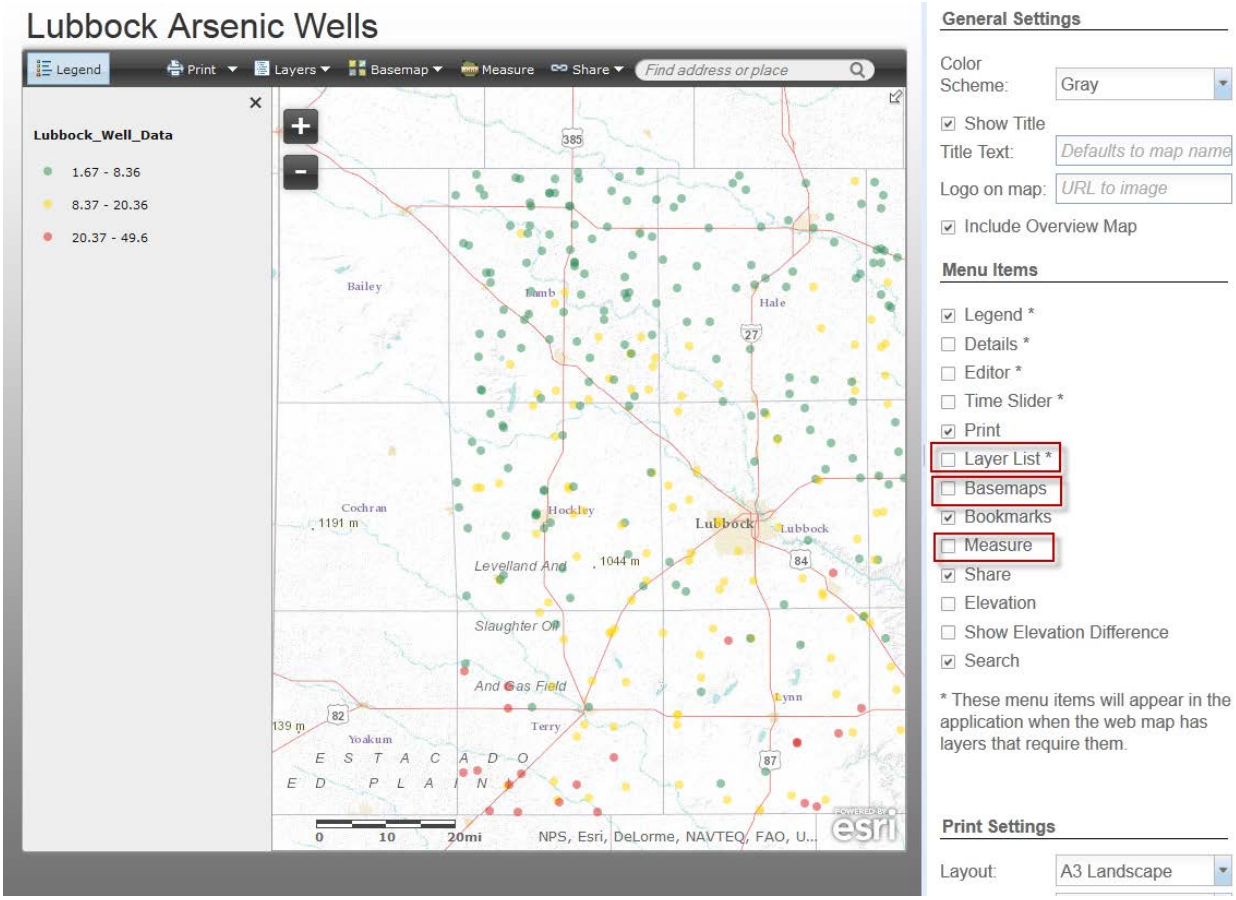
Take a moment to read this window. Click on the “go to the item now” link.



Click on the Share button to make the web application available to the Internet.

The URL link is the link you will put in your CMS in order to launch the web map application.

Click on Configure App button.

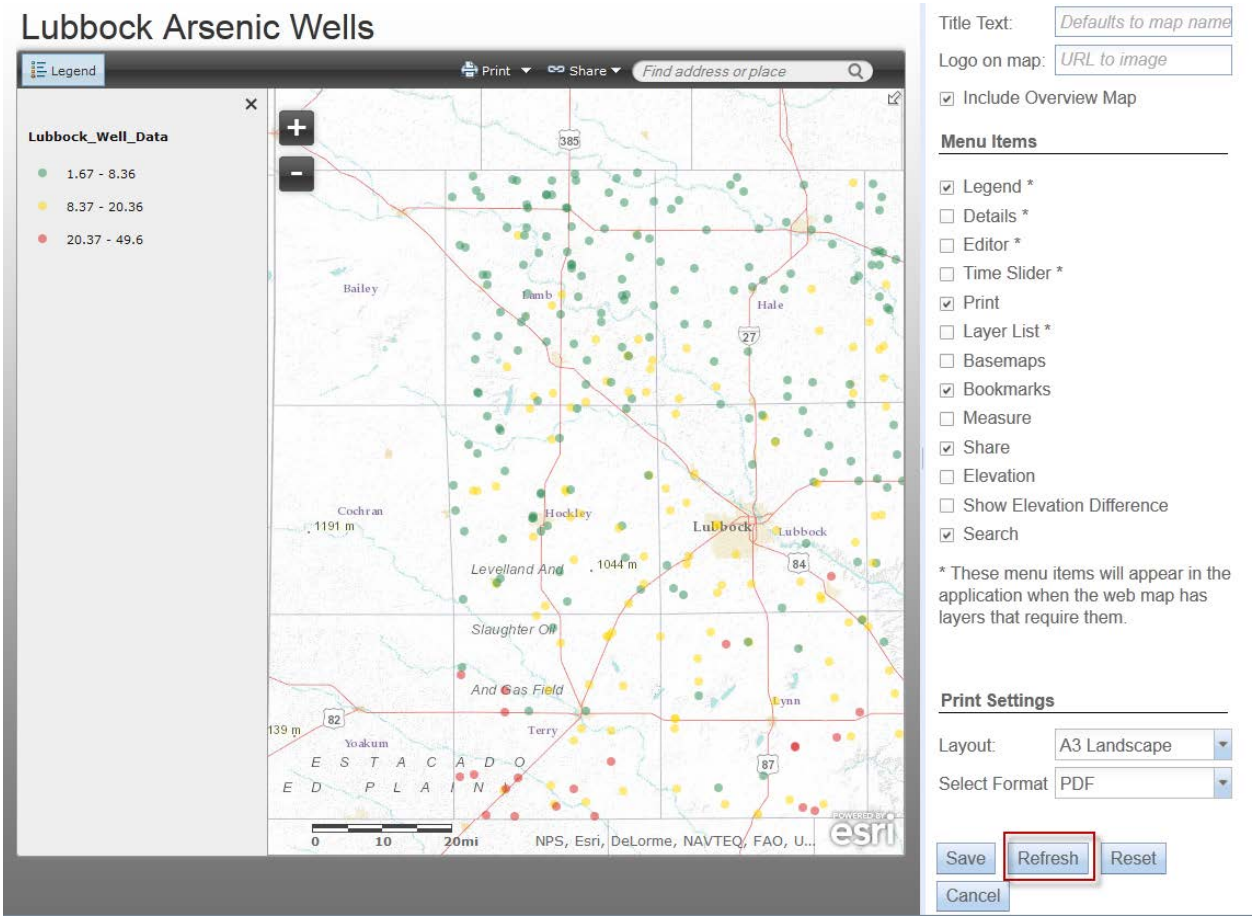


Uncheck unwanted widgets—Layer List, Basemaps, and Measure.

Leave Legend, Print, Share, and Search because they will appeal to your readers or bring hits to your site.

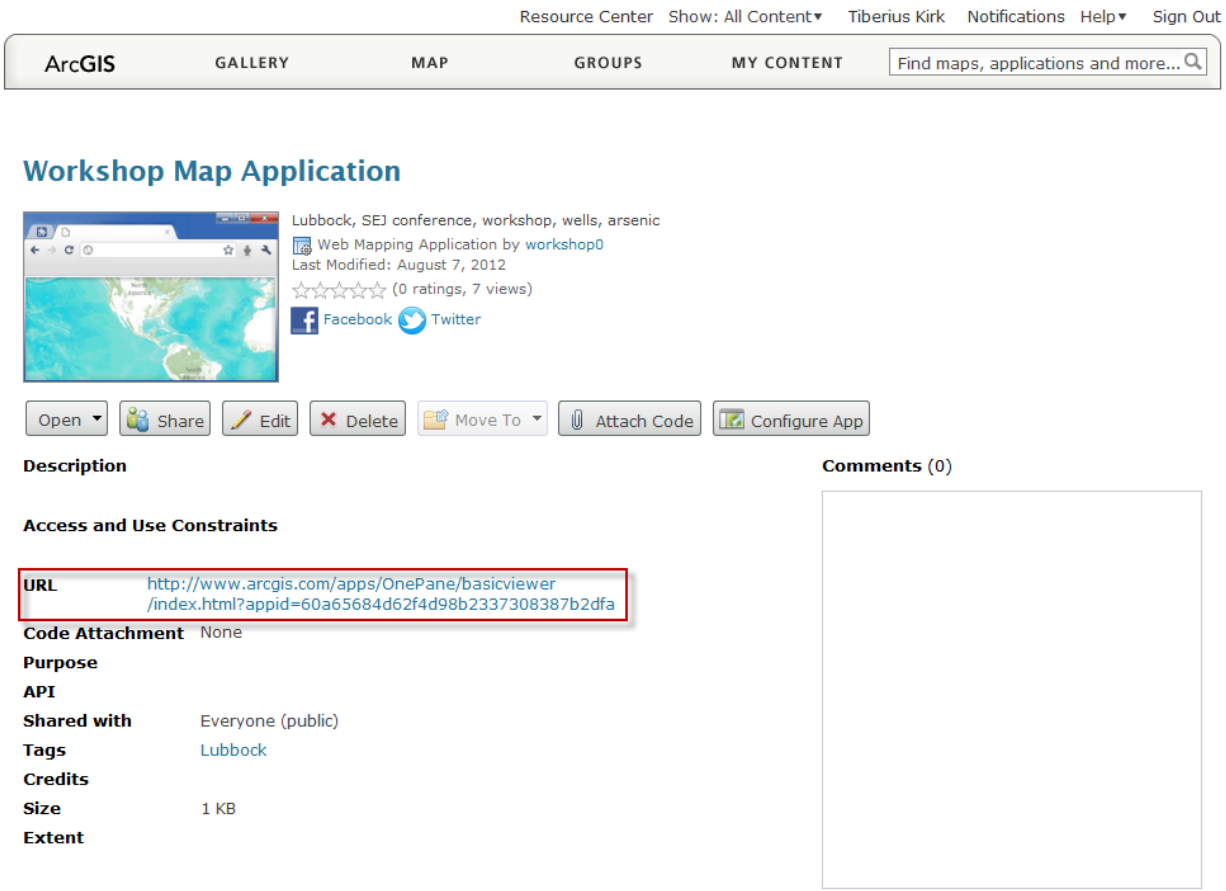
Play with other options such as Color Scheme, Overview Map, and Print Settings.

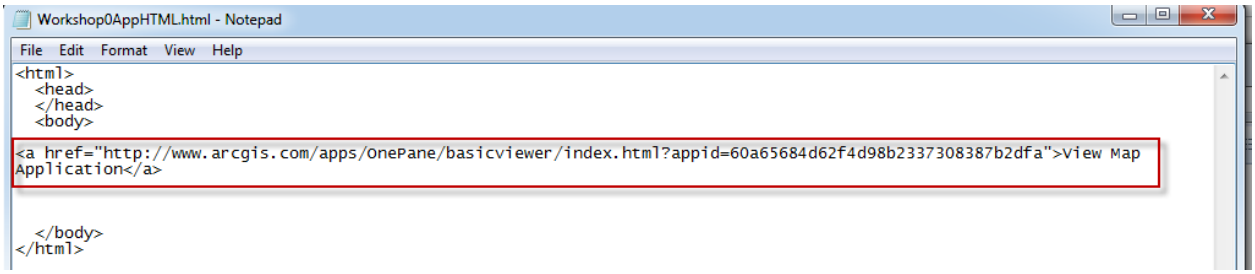
Click the Refresh button to view the re-configured application:



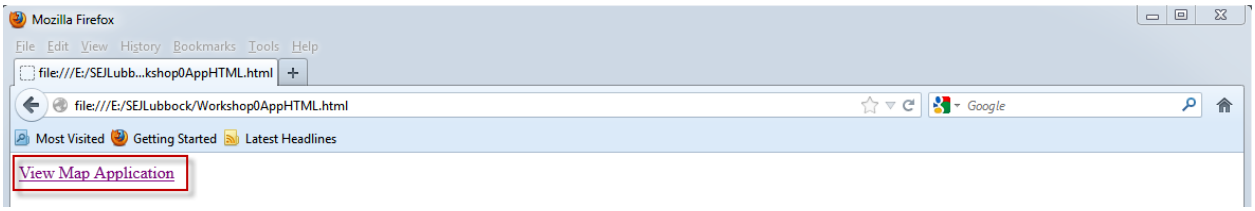
Click the Save button.

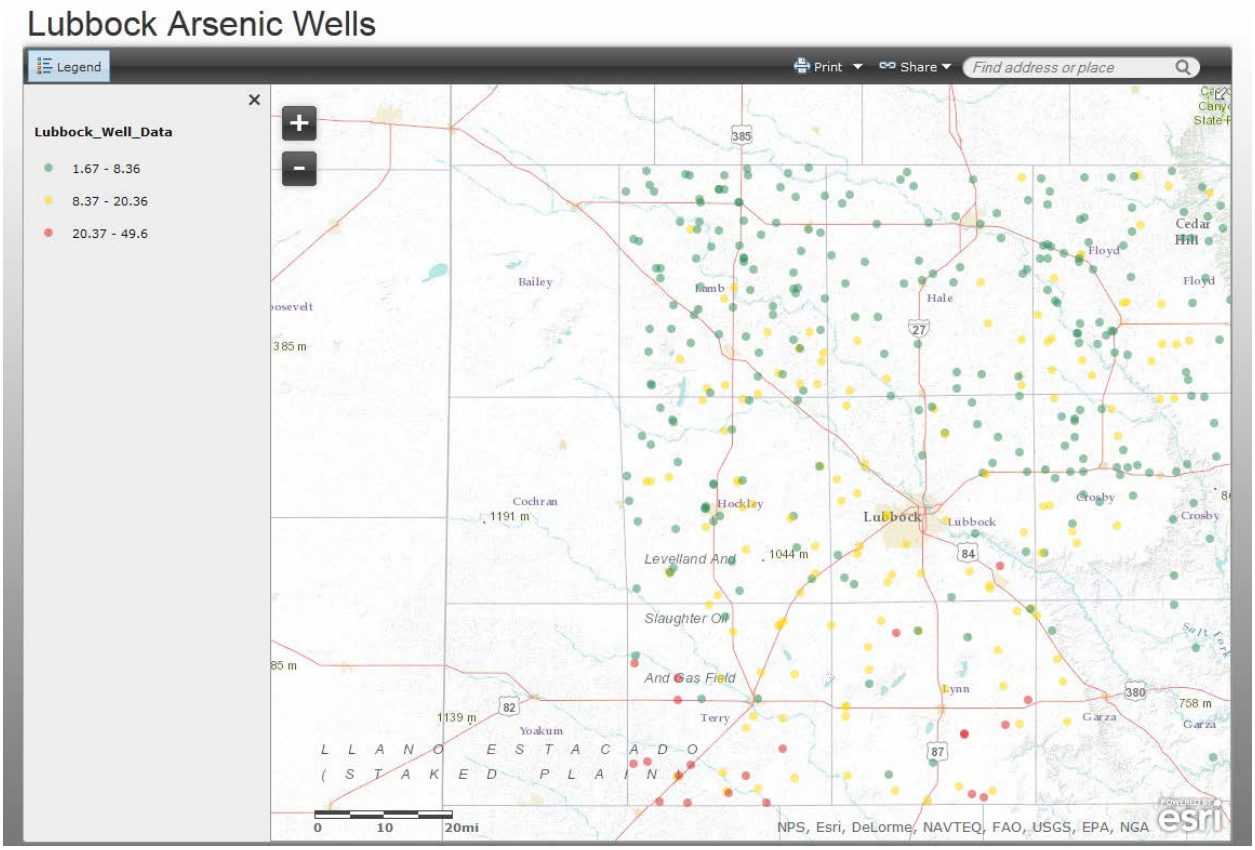
Test the application by copying its URL into an HTML test file.





Drag the test HTML into an open browser window and click on the View Map Application link. This will launch a new window with the web application in it.





Play with the map widgets to understand their operation and explore further configuration tweaks.

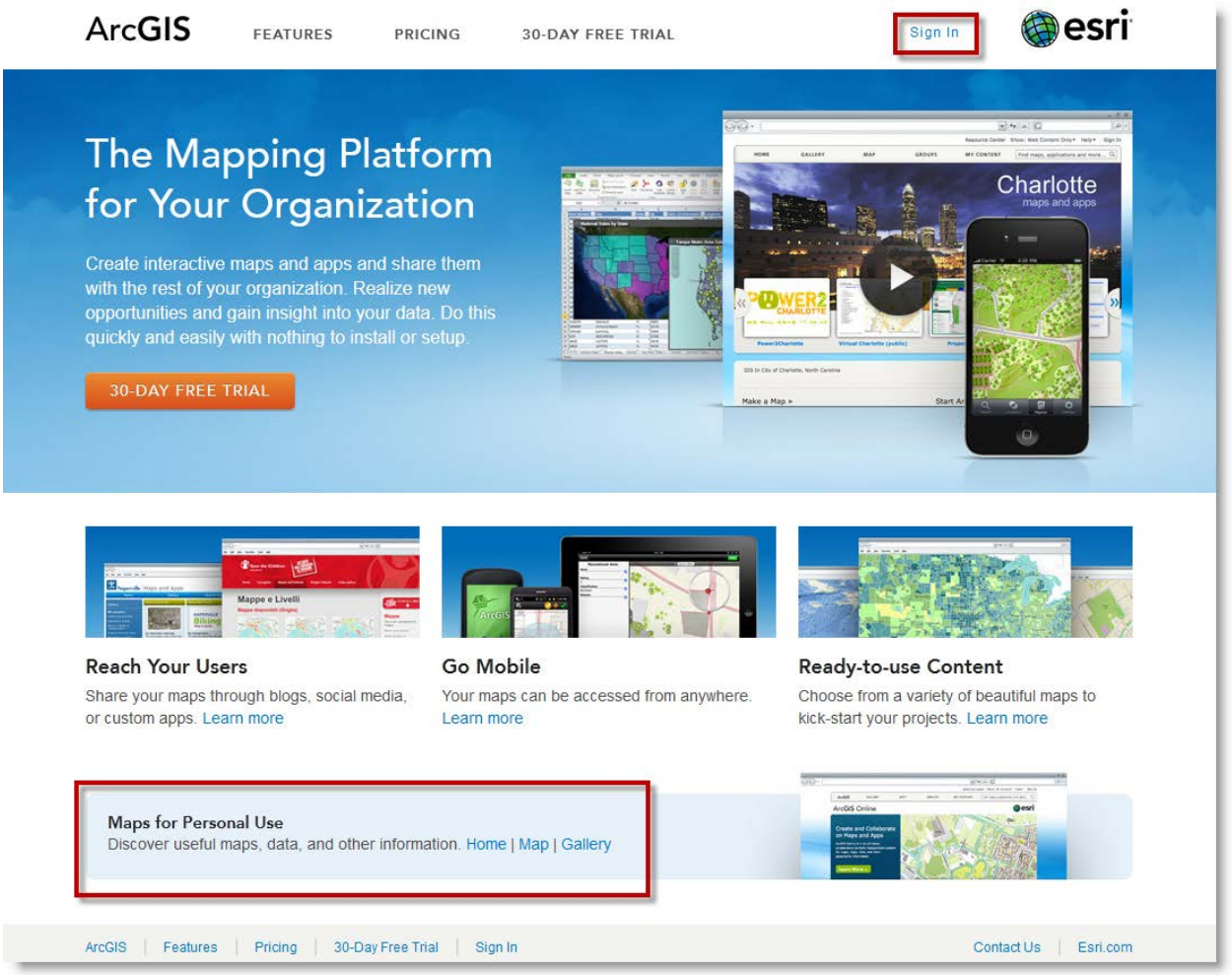
Congratulations! You have completed the workshop.

9. (Optional) Create your own ArcGIS Online Personal Account

The ArcGIS Online username you used in this workshop is reused by the next workshop. Your work in this workshop will be erased within ten days.

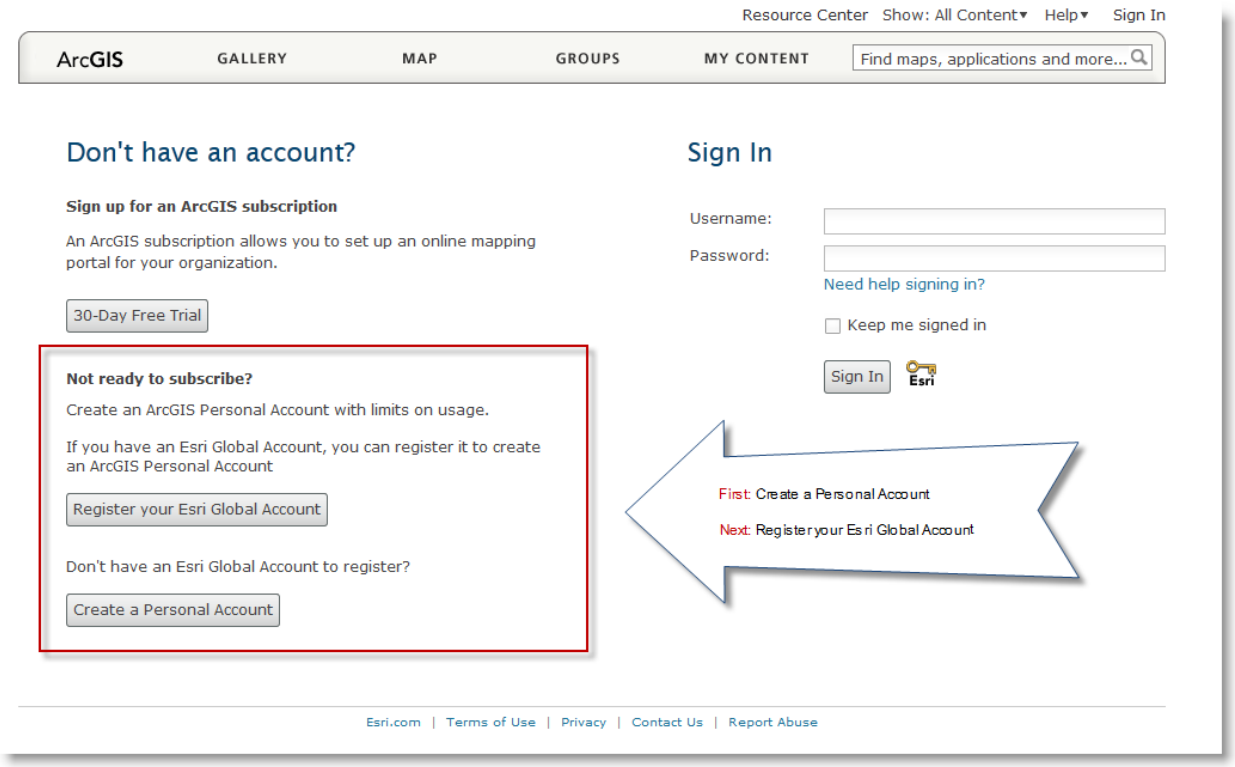
If you want to explore ArcGIS Online on your own you can create your own ArcGIS Online Personal Account. With your own account you can experiment with your own data, explore the online help and try many mapping options not covered in this workshop.

Go to www.arcgis.com to create your own account.



ArcGIS Online is a subscription service used by organizations. To allow people to try it out, Esri offers Maps for Personal Use, which provides individual access for non-commercial purposes, such as this workshop.

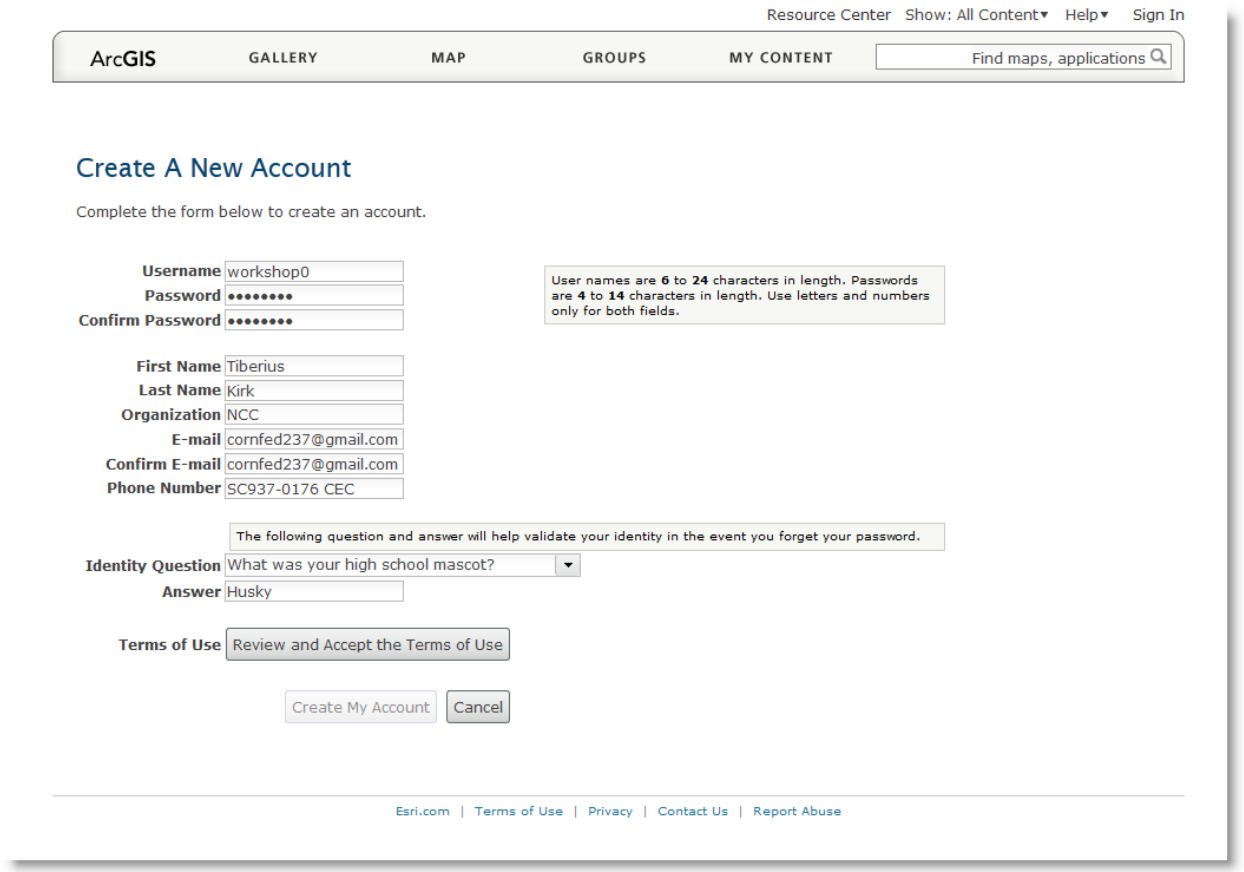
Click on Sign In at the top of the page. The following page should appear:



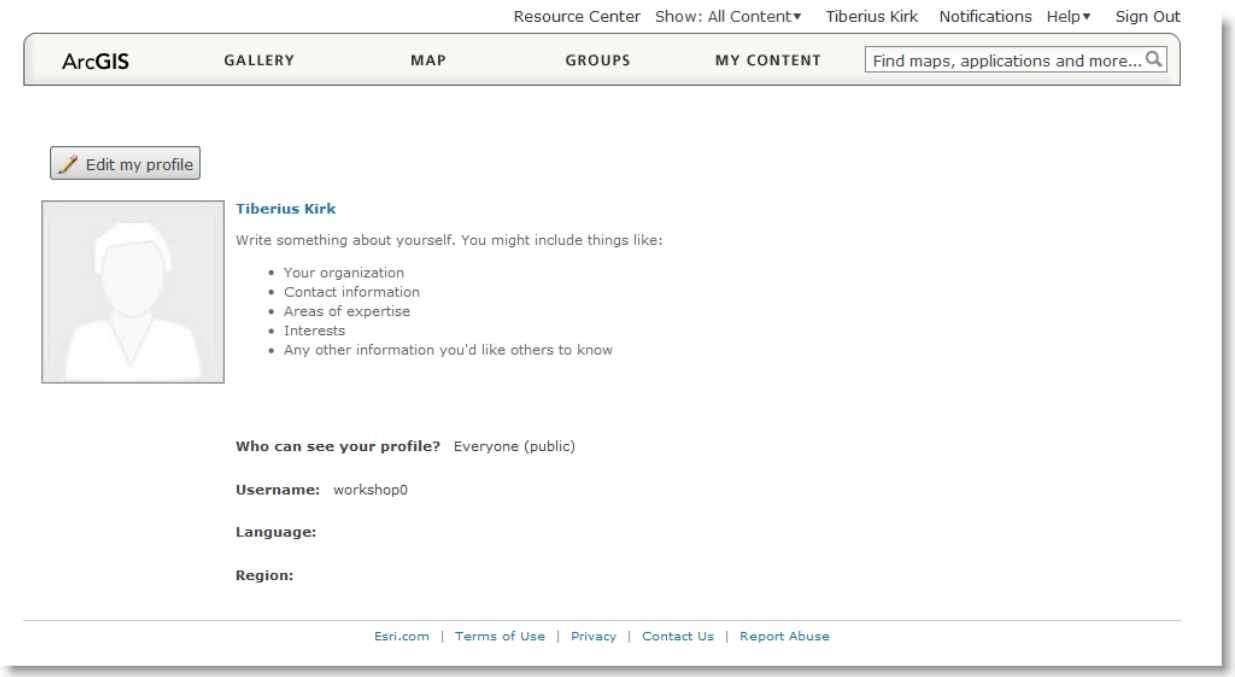
If you do not have an Esri Global Account, click on Create a Personal Account.

If you already have and Esri Global Account click on Register your Esri Global Account.

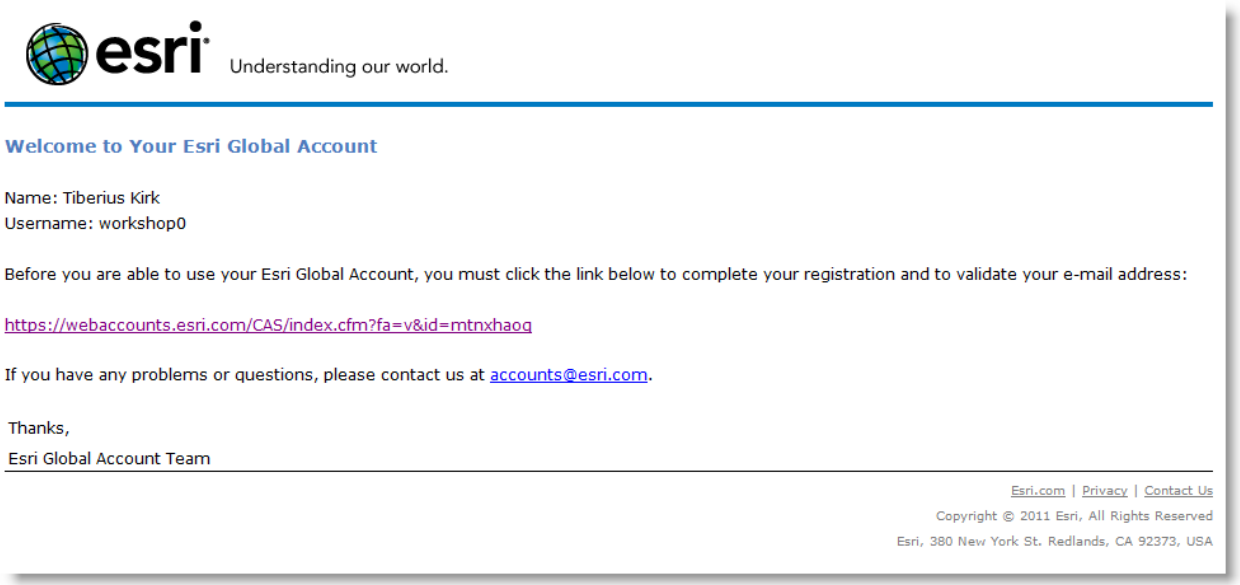
Do not sign up for an ArcGIS subscription –this workshop does not need a subscription. You can sign up for a subscription later if you like.



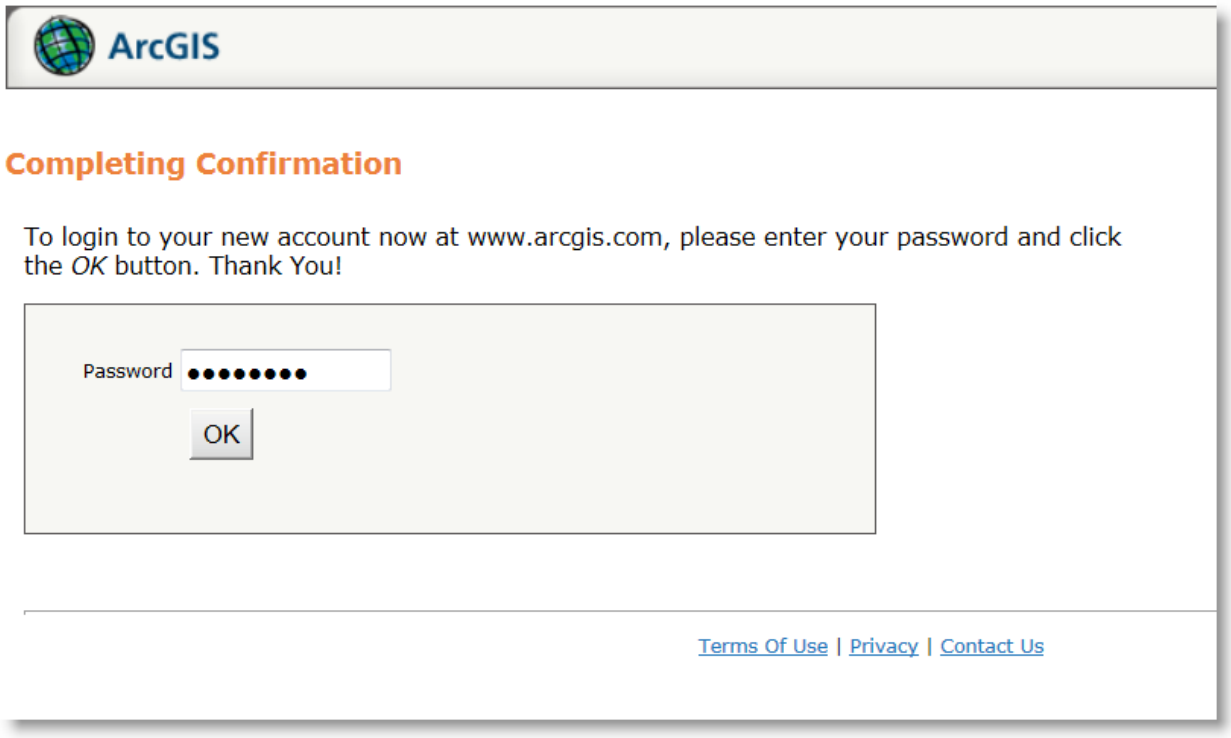
The email address you supply is used by ArcGIS Online to communicate with you, including sending you a verification email. Once you fill in the form, review the Terms of Use, and click Create My Account, this screen appears:



Here is the verification email:

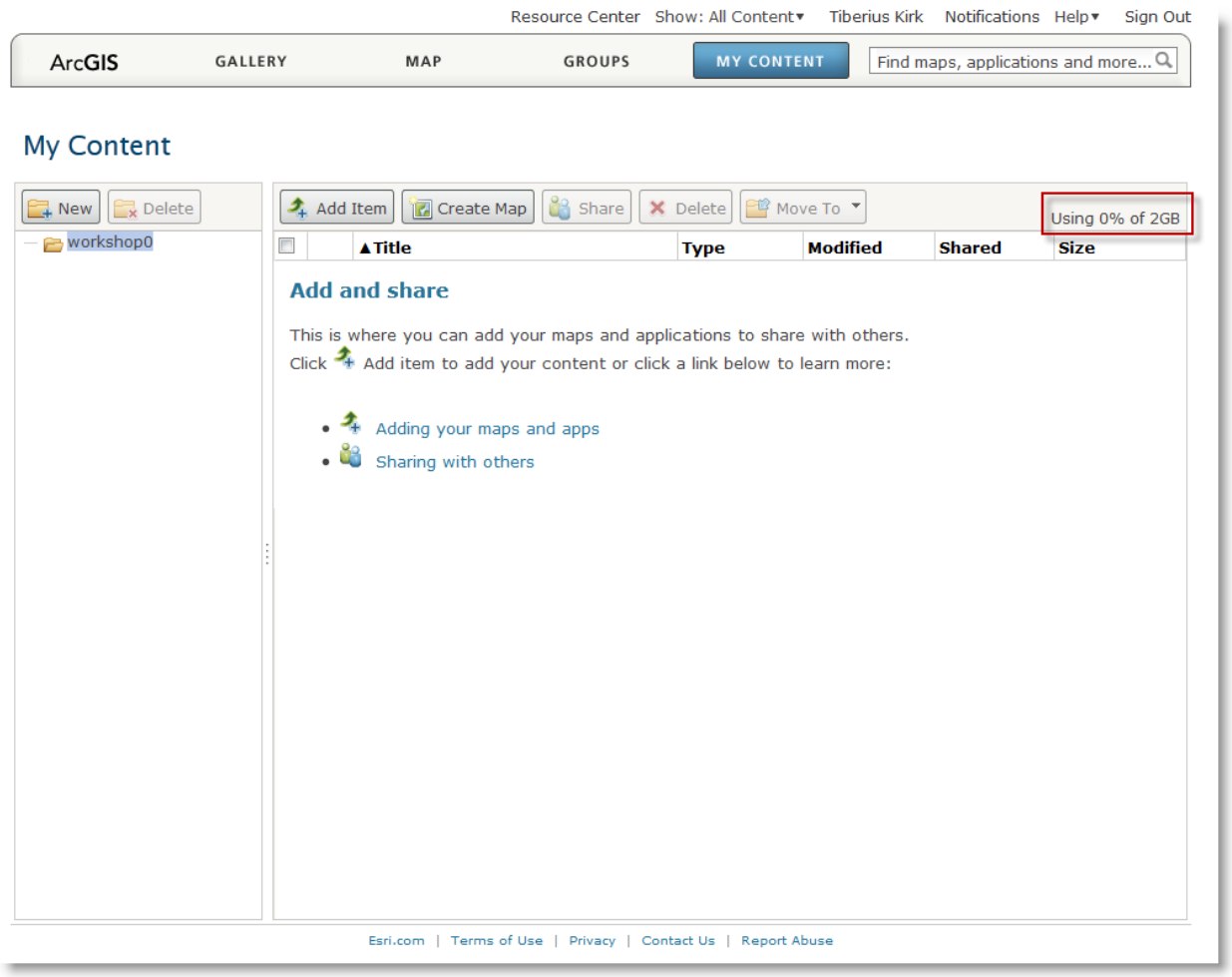


Click on the link in the email and supply the password in your browser:



You now have an ArcGIS Online account. Click on My Content.

If you completed the email confirmation, sign in with your new username (e.g., workshop0) and password. Then click on My Content.



Note that ArcGIS Online provides your Personal Account with 2 GB of storage.

Note also that ArcGIS Online recognizes you and puts your name at the top of the page, e.g., Tiberius Kirk.

The My Content screen is the 'home page' for your ArcGIS Online Personal Account. As you use ArcGIS Online you will return here over and over again.

Take a moment to try out some of the buttons and controls on this page. When you are done click the My Content button.

Happy Mapping!