Using ArcGIS Online for Communication with the Public

KAMPRO 2017

September 7, 2017

Tobey Adams, GIS Lead
Eric Stigall
Kentucky American Water
Our Team

- Tobey Adams, GIS Lead

  - Have about 10 years of experience in GIS
  - Southeastern Kentucky native
  - Started Cartography in ‘94 with Cyprus Mountain Coals Corporation
  - Started as a pure mechanical drafter in Lexington in ’98
  - Joined Kentucky American Water in 2000
  - First big project: conversion from CAD to GIS
  - More GIS focus in last few years
Our GIS Team

- Eric Stigall
  - Principal designer for new projects
  - Joined company in 2004 as drafter
Who is American Water?
We are the largest and most geographically diverse publicly traded water and wastewater service provider in the United States.

• We provide services to approximately 15 million people in 47 states and Ontario, Canada

• We employ 6,700 dedicated and active employees and support ongoing community support and corporate responsibility

• We treat and deliver more than one billion gallons of water daily
American Water’s Regulated Presence

16 regulated states

Note: Numbers may not total due to rounding.
Communicating to your customer base

• Many projects require communicating to general public or segment of our customer base.

• Traditional communications:
  ▪ Newspapers
  ▪ Radio
  ▪ Television
  ▪ Direct mail

• How effective are they? Are there better ways?
What does the customer expect?

• Today’s world is DIGITAL!
  ▪ Many people have a good grasp on technology
  ▪ People have high expectation levels for information

• Our challenge? Redevelop and reimagine the way we communicate.
  ▪ Some utilities have embraced the challenge
  ▪ Others are lagging behind.
Project Background: Booster Zone Web Map

• Urban Southeast Lexington (Jacobson Park Booster Zone).

• The problem?
  ▪ Greater development in southeastern Fayette County – a high elevation area – meant water pressures were lower than other areas of the county and would continue to be stretched as growth continued.

• The solution?
  ▪ Install infrastructure and a booster pump station that would positively affect the water pressures of a specific geographic area – a pressure “zone.”
What was the next step?

• Let’s start with the finished product …

• Then review the various steps I took.

• No live demo due to time constraints.
Jacobson Park Booster Zone
Live Web Map Demo

- http://kyaw.maps.arcgis.com/apps/webappviewer/index.html?id=f204aeb96ec14e19bf948c8ae734af4c
What did it take?

- **Data**
  - Parcel data, courtesy of LFUCG Open Data Portal.
  - Hydraulic Nodes, shapefile
  - Boundary Shapefile

- **Software**
  - ArcMap
  - WaterGEMS
  - ArcGIS Online Account.
    - An ABSOLUTE MUST if you want to start getting an online mapping presence.
Where did I start?

- Create a working MXD.
  - Setting all the properties I would need, such as Coordinate System. We work in KY N NAD 83.
  - Ensure each layer is using the correct Coordinate System as well.
  - My file has three basic layers to start
    - Proposed Zone Boundary
    - Hydraulic Nodes Export
    - Parcels (LFUCG)
• First layer added: Pressure Zone boundary file provided by my engineers. This is the most defining layer I will have in my file. That defines the extents of my .MXD.
• Add the Hydraulic Nodes Layer.
**Hydraulic Data**

- **Focused on two columns:**
  - **EX_AvePres** = The existing average pressures based on flow test and current calibrated model.
  - **Pr_AvePres** = The projected average pressures based on the results from the model.

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• Add the Parcels layer.
• Then ran the “CLIP” tool, to only have the affected parcels in the data set.
What next? Some Analytics!

• I now have all of my basic data together, in one working .MXD.

• I need to create three more layers to make this work.
  ▪ The first is a Centroid Point on each parcel.
  ▪ The second and thirds are Surfaces from the Hydraulic nodes layer this will create a two new Raster Layer.
Creating your Centroid.

- First step is to create two new fields in your Parcel Layer.
  - X_Centroid
  - Y_Centroid

- Right click each field and run “Calculate Geometry.” This will populate the fields.

- Next, right click on your data and tell it to “Display XY Data.” This will populate your Centroids as points and create a new layer that you should name ParcelCenters.
### Parcel Centroids

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Pressure Surface Terrain

- To create the surface I used “Spatial Analyst Tools-Interpolation”

- Once for each column “Ex_AvePres” and “Pr_AvePres”, which creates two raster layers.

- For this I used the “IDW” option.
• In the tool pop-up fill out only the required items.
• Highlighted here in RED.
• The click OK to run the tool.
The results
Putting it together

- Centroid Points represent each affected parcel.

- Surface terrains represent both “Existing and Projected” pressures.

- Now, combine them -- use the “Spatial Analyst Tool” again.
• Go to ArcToolBox.

• “Spatial Analyst Tools – Extraction”

• Use “Extract Multi Values to Points”
• Choose the layer you want to append the columns too.
• You can have multiple INPUT RASTERS, as well. Run this tool only once.
• The Centroid Points looks the same, but the data has two new columns -- each one representing their respective surface rasters.
Nearly done with ArcMap

• Finally do a “Join between the Parcels” layer and the Centroid layers to get the unique pressure columns over to the parcels polygon layer.

• SAVE your file along the way!

• This is also the time to clean up you .MXD prior to publishing to ArcGIS Online.
Publishing out to ArcGIS Online

- First you will need to login to your AGOL account from within ArcMAP.

- You can find the AGOL Sign-in option under FILE drop down menu. It opens a pop-up dialog box.
What to publish

• Any layers you have in your .MXD will be published.

• Remove any unwanted layers prior to publishing. In this case, I removed the Raster Images, Centroids, and Hydraulic Nodes. Those are large data sets that will take up precious cloud storage space.

• Plus, I may not want those data sets out on the Cloud.

• I am only going to be publishing two layers to AGOL.
Now we are ready to publish the data to AGOL.

- Go to FILE drop down menu.
- Chose "SHARE AS"
  - SERVICE

Click NEXT
• Create the name of your service.

• For this purpose I use TJA_Pressure_Zone.

• Check to ensure you are publishing to the correct connection. i.e.: My Hosted Services (Kentucky American Water)
First, I know that I have more than 1,000 records. So I will change it to 10,000. This will allow AGOL to display more data.

- In the CAPABILITIES menu, chose FEATURE ACCESS and deselected TILED MAPPING. We do not want to create a tiled cache at this point.

Notice at this point the capabilities section got smaller. And since this is for informational purposes, we only need QUERY checked.
The Items Description is necessary. You will have to populate all the REQUIRED fields in order to move forward.

Here, setup your initial sharing of data. As administrator you will not need to do this until you are ready. At this point you are ready for PUBLISHING!
ArcGIS Online

• For this map I used ArcMAP.

• Login to AGOL.

• Use Internet Browser, (Google Chrome) to login to my AGOL Account.

• Everyone will administer their accounts differently, but I try to keep everything in an appropriate project folders.
Mapping Portal

- The 7 options in the top left are ALWAYS available on your landing page. I am going to select “CONTENT”.

![Mapping Portal](image-url)
• In the content window go to your folder if you have one.
• For this project I used “TJA_Pressure_Zone”
• We are going to be working with the (Feature Layer(hosted)).
• This is the details screen of the feature service.
• Here you can work with the feature service, by sharing, exporting, or creating a web map.
• Just like that, we have created the basis of a new web map.
• **Editing.**

• By clicking on 3 dots under the layer name you can access some options. One is to rename the layer, which I am going to do.

• I am going to change the names on both layers to something simple.

• At this time I am going to set my VISIBILITY RANGE for the parcels

Using the slider that pops up from the menu, I will slide it to Street Level.
Save your Web Map

- **Title** – Something easy to find and think about the Users.
- **Tags** – Another way the users will be able to find you maps.
- **Summary** – Description of the map.
- **These are all ways AGOL will allow you to identify your maps.**
Change the styles

- Change the symbology to make the map user friendly.
- Click on the 3 shapes, below the layer name.
- Click on OPTIONS.
Here we can change the colors, transparency, or visibility ranges. I previously changed the Visibility range on the parcels.

By clicking SYMBOLS, you will access a new dialog that will allow you to change the color. The fill or outline are changed individually. So pay attention to which part of the symbol you are changing.

Pass a new symbol on and change the color.
• Once you are satisfied with your changes.

• Click OK.

• Click DONE. Accidentally hitting cancel at this point will cancel all changes you made on the symbology. And you will need to start over.
This is what we have so far
Next we need to limit the amount of information being presented to the customer.

We do this by using POP-UPS and these are customizable.

To access the POP-UPS, click on the 3 dots beside the Layer Name.

Click on CONFIGURE POP-UP.
• First, make the Address of the parcel, the title for the Pop-Ups.

• Click on the + symbol to the right. It brings up a list of every field in the data set. You can chose Address.

• Move onto DISPLAY.

• Click the down arrow and choose “A Custom Attribute Display”
Clicking on CONFIGURE, will open the Custom Attribute Display.

Custom Attribute Display

Use the area below to define, format, and lay out the information you want to display.
Here we can choose between the fields we want to show and formatting.

This does not require any programming knowledge.

- You can find a listing of your columns if you click the + button.

- Click OK to accept.
- Click OK at bottom of this menu to accept and set your Pop-Up configuration.
• The result! Make sure you hit your Home Button and return to the full extents and hit SAVE.
Time to make the Web App Map to share.
Choose who can view this map.

Currently, only you can view your map. Before you can link to it or embed it, you need to allow others to view your map.

- Everyone (public)
- Kentucky American Water
- Members of these groups:
  - Base Map
  - Business Development
  - Contractors
  - Data Management
  - Distribution App
  - Engineering
  - ESRI Support Testing
  - External

Link to this map

http://arcg.is/1qS898

- Share current map extent

Embed this map

- Embed in website
- Create a Web App

Click “Create A Web App”
Click WEB AppBUILDER

Put in the required information -- everything except the Summary.

Click GET STARTED.
• Here we have a lot we can do.

• Theme tab will allow you to set the basic dynamics of your new Web App.

• Map tabs let you choose a web map other than the one you started with and modify any of the extents. I usually leave this a default.

• Widgets let you really get creative. I am going to keep the Welcome, Zoom Sliders, Home, and Search Widgets.

• Attributes let you define how customers see the map.

• For this purpose, I am accepting the Theme and Map Defaults to keep moving along.
In the widget tabs tool I am going to turn on the highlighted widgets.

- Find Me (Search Bar) is customizable.
  - Home button
  - Zoom slider
  - Welcome (Splash Screen)

- ONLY the Welcome and Find Me widgets will be customized.
• Just by putting your mouse over the icons, you can see two smaller icons. In the top right is an eye for turn on or off. The bottom right is EDIT.
• Edit the Search (FIND ME)
• Click ADD SEARCH SOURCE
• Choose FEATURE LAYER
• Highlight PARCELS and click OK
• Edit the highlight areas to FIND ME

• At this point we are done! Click SAVE at the bottom.
• Click on the HOME drop down menu, and choose CONTENT.

• All that is left is to open the Web Mapping Application “TJA_Pressure_Zone”.
• We are now going to make it public.

Choose SHARE button.

• Select EVERYONE (public). It will automatically select your main account group.

• Click OK and since we did not save any of the other files earlier it will ask you to update their sharing as well. It is necessary for you to update the sharing.
Finished!

- You can now click VIEW APPLICATION.

- You may now scroll to the bottom and distribute the URL at the bottom.

http://kyaw.maps.arcgis.com/apps/web
Thank you for time!

Questions?