LEVERAGING THE WATER QUALITY PORTAL TO CHARACTERIZE HISTORIC CONDITIONS UNDER A TIGHT TIME-FRAME: A LESSONS LEARNED REPORT

OR....

HOW THE PORTAL SAVED THE DAY

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BACKGROUND

• Although this story centers around the Gold King Mine release, it really could be any event

• How can we answer the question: “What did it look like before the event?”

• What if you need to answer that question quickly?
DAY 1: 4:00 PM

Request: We need to be able to say something about what historical data we have. We have STORET, what can we say?

Our hero: The Portal has this data, let me see what we can find

• After a quick assembly of the four 8-digit HUCs that were downstream of the release, and a quick check of the Portal, the data seemed quite available

At this point, our hero doesn’t know that he just stepped into quick sand....
DAY 1: 6:00 PM

After a somewhat painful commute home, our hero fires up his Mac....

With a quick check again against the Portal for only Metals and pH data, we are able to generate a very basic URL that will retrieve the stations for each HUC:

http://www.waterqualitydata.us/Station/search?huc=14080104&characteristicType=Inorganics%2C+Major%2C+Metals&characteristicType=Inorganics%2C+Minor%2C+Metals&characteristicType=Physical&mimeType=csv&zip=no&sorted=no
DAY 1: 6:15 PM – “TO ARC GIS ONLINE ROBIN!”
DAY 1: 6:30 PM – NOW JUST REPEAT FOR ALL FOUR HUCS, CLEAN IT UP, ADD LINKS TO DOWNLOAD THE RESULTS, AND SHARE IT OUT – DONE!
DAY 2: 8:00 AM

Our silly hero, thought he was done, and started working on other projects....
Request: The map looks great, but... we really need a summary of all the data by each 8-digit HUC. We’re meeting tomorrow morning, and it would be good to have that summary by then.

No problem... “Back to the Portal!”
DAY 2: 10:30 AM

All the data are downloaded from the Portal, loaded into a local ACCESS database, and our hero begins the process of developing the queries to summarize the data.

Needed to know the following:

- Who collected the data
- Their period of records
- Maximum Values
- Summaries by HUC and Station
- Minimum Values
- Averages
- Quartiles
- Range of values for each parameter
DAY 2: 3:00 PM

With a little ACCESS magic, the summaries are starting to come together. With a little more QA, everything should be ready by morning.
DAY 3: 10:00 AM

Summaries all get shared, some immediate lessons learned:

- Some of the data are pretty old. What data can reasonably be used?
- Some of the data providers appeared to have run into issues with sharing the most current data
- This only wets the appetite for the actual data, not just the summaries
- Also want to know what samples are on the mainstem, not just in the 8-digit HUC

Luckily, it’s a Thursday… That means tomorrow is a Tech-Friday to see what else can be done.
DAY 4: 7:30 AM – TECH FRIDAY!

Problem: How can we provide the data in an easy accessible format that provides the relevant main stem data?

BACK TO ARC GIS ONLINE!
DAY 4: 8:00 AM – LET’S CREATE AN INTERACTIVE MAP

• Step 1: Use the ArcGIS Online downstream trace tool to create a line that represents the mainstem from the release point, downstream 400 miles

• Step 2: Run the mainstream trace through the Catchment Indexing Tool to get the corresponding NHD Plus Catchments

• Step 3: Match up stations with chosen catchments to determine which stations are on the mainstem and which aren’t
DAY 4: 9:30 AM – MATCH UP STATIONS WITH PLANNED FOLLOW-UP MONITORING STATIONS

- Using Arc GIS Online, identify which historical stations match up with planned follow-up monitoring stations.
- Create a summary for each of these stations from the ACCESS database that contains the Portal data.
- Convert those summaries into html so they can show up in the pop up on an Arc GIS Online map.
- Generate a Portal web service request URL for each station to allow for the download of the data.
DAY 4: 11:00 AM – MAKE THE MAP PRETTY
### Day 4: 1:00 PM – Add Summaries

#### Data Summary

**Water**

<table>
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<tr>
<th>Parameter Measured</th>
<th>Period of Record</th>
<th>NumSamples-Detects-NonDetects</th>
<th>Max</th>
<th>Min</th>
<th>Average</th>
<th>StdDev</th>
<th>10th</th>
<th>25th</th>
<th>Median</th>
<th>75th</th>
<th>90th</th>
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<td>8/1/2002-3/1/2012</td>
<td>5-5-0</td>
<td>197</td>
<td>88.7</td>
<td>137.24</td>
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<td>6/8/1975-6/8/1975</td>
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<td>Aluminum, Dissolved as mg/l</td>
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</table>

**Zoom to**, **Get Directions**
DAY 4: 2:00 PM – MAKE DATA
DOWNLOAD TOOLS IN EXCEL TO MAKE IT EASY FOR FOLKS TO ACCESS DATA
DAY 4: 4:30 PM – SHARE EVERYTHING OUT AND CALL IT A DAY

After some testing of everything to make sure it all works, our hero shares out the products of a successful Tech-Friday. The Portal saved the day! Our hero was able to escape the quicksand without too many new gray hairs.

Our hero, then proceeds to show his teenagers the cool stuff he was able to work on that day, only to receive a shoulder shrug and an ‘Eh, whatever; yeah I guess it’s cool.’
SOME LESSONS LEARNED

• The Portal allowed for the quick access to the data
• Web Services proved invaluable in being able to include the data in other applications
• The summaries were the hardest part. It would be nice if the Portal did that.
• Discovering what data were on the mainstem took some trickery. That would also be a nice improvement to the Portal.
• Data gets outdated quickly. It’s important that data be consistently shared.
THE END? .......

QUESTIONS?

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