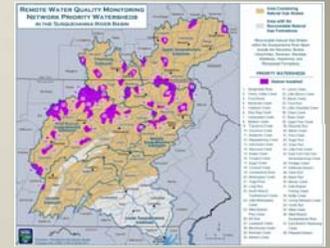




Susquehanna River Basin Commission Water Quality Data Portals

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Water Quality and Mine Drainage Portals

The Susquehanna River Basin Commission (Commission) developed two portals in 2013 in order to better disseminate water quality data to the public. The Water Quality Portal (<http://mdw.srbc.net/waterqualityportal/>) provides public access to data collected as part of the Commission's programs to assess and track water quality conditions in the basin. Within the portal, chemical, biological, and habitat data for rivers and streams in the Susquehanna River basin are available to the public. These data were acquired through single, point-in-time, "grab" samples collected by Commission staff.

The Mine Drainage Portal (<http://mdw.srbc.net/minedrainageviewer/>) provides public access to data compiled as part of the Commission's efforts to assess and track impacts to water quality from mine drainage in the basin. Chemical data for parameters typically associated with mine drainage impacts within the rivers and streams in the Susquehanna River basin are available in this portal. These data were acquired from a variety of data sources.

Each portal provides two approaches for selecting water quality monitoring stations to view and download data from – a map viewer (Figure 1) and data viewer (Figure 2). Prior to being released to the public, all data in the portals have passed a quality assurance process. The Water Quality data portal is updated on an annual basis and the Mine Drainage Portal is updated on a quarterly basis as data are received from other organizations.



Figure 1. Map Viewer – Mine Drainage Portal

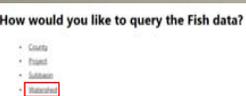


Figure 2. Data Viewer – Water Quality Portal

1. *Select Data Type

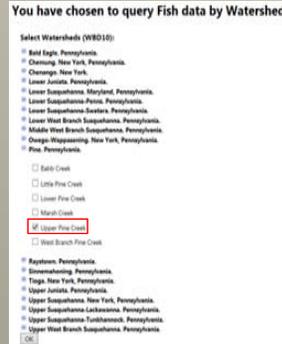


2. Select Method to Query Data



*Mine Drainage Portal starts on Step 2
 **Mine Drainage Portal Only

3. Select Watershed



4. View Monitoring Stations in the Watershed

Station ID	County	Waterbody	Subbasin	Comp	Lat	Fish Date	Results	Stat
SRWQ000-00001	Fulton, PA	Big Run	West Branch Susquehanna	77.8224	41.7109	10/15/2008 - 10/15/2008	2 samples	
SRWQ000-00002	Fulton, PA	Pine Creek	West Branch Susquehanna	77.82467	41.71047	10/13/2008 - 10/13/2008	1 sample	
SRWQ000-00008	Fulton, PA	Pine Creek	West Branch Susquehanna	77.8249	41.7185	9/15/2010 - 9/15/2010	1 sample	
SRWQ000-00009	Fulton, PA	Pine Creek	West Branch Susquehanna	77.71201	41.7824	5/12/2011 - 5/12/2011	1 sample	
SRWQ000-00010	Fulton, PA	Pine Creek	West Branch Susquehanna	77.8249	41.7185	9/15/2010 - 9/15/2010	1 sample	
SRWQ077-04177	Fulton, PA	Pine Creek	West Branch Susquehanna	77.70341	41.70973	7/19/2012 - 7/19/2012	2 samples	

5. **Graph Water Chemistry Results



5. View Fish Data at a Monitoring Station



Water Quality Portal and Mine Drainage Portal Components

1. Database - Each portal has a database storing the information; the Water Quality Portal database is in Access and the Mine Drainage Portal is in SQL. Tables, views, and queries are the main parts of a database.
2. Data Access - the web-based portals access the information using an application programming interface (API). APIs provide flexibility because they separate logic from the main application and expose functionality to other applications (web pages, apps, etc.) that may have overlapping requirements (Figure 3).

3. Map Services – ArcGIS Server is a tool that allows maps and GIS processes to be published as services to be consumed by other applications. Map services can be used to display, query, or edit GIS layers. Geoprocessing services may be used to run complex GIS tasks over the web.



Figure 3. API

4. Viewer – both portals utilize .NET as a framework to develop the web sites (Figure 4).



Figure 4. .NET Framework

5. Map – ArcGIS APIs were used to work with ArcGIS Server to provide maps, legends, symbology and provide functionality to interact with the map (Figure 5).



Figure 5. ArcGIS API with ArcGIS Server

Continuous Real-Time Monitoring Data

In 2010, the Commission began collecting continuous, real-time water chemistry data in the basin in response to the increase in hydraulic fracturing for natural gas extraction in the Susquehanna River basin. Five parameters are continuously monitored (Table 1) and these raw data are uploaded to a public web site on a two-to-four-hour interval (http://mdw.srbc.net/remotewaterquality/data_viewer.aspx).

Parameters Monitored

- Dissolved Oxygen
- pH
- Specific Conductance
- Temperature
- Turbidity



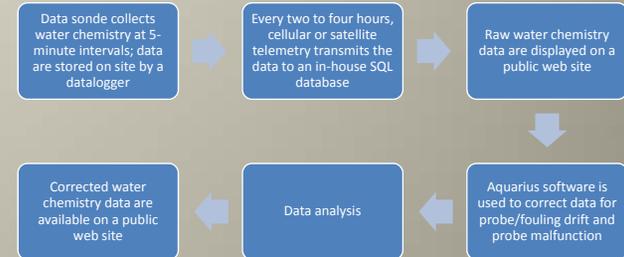
Table 1. Parameters Monitored

YSI 6600 series data sonde with probes



NexSens datalogger

Data Flow Pathway



Web Site Tools

The web site allows users to view the most recent results for each monitoring station (Figure 6), determine basic statistics, graph results over a selected timeframe (Figure 7), compare parameters at several stations, download raw data, and provides a map displaying the monitored watersheds.



Figure 6. Recent Results web page

Figure 7. Parameter Graphing Tool

Database and Web Site Components

Real-time data are transmitted to iChart software in-house; a statement imports data into a SQL database. The web site is written in .NET and uses Google Chart API graphing capabilities and ArcViewGIS Viewer for Flex for mapping capabilities. The web site and the SQL database are connected through a WCF service; the web site queries the SQL database for the most recent real-time data.