

**Susquehanna River Basin Commission (SRBC)**  
**Water Quality Advisory Committee (WQAC) Meeting Minutes**  
U.S. Geological Survey (USGS) Office  
215 Limekiln Rd  
New Cumberland, PA

May 22, 2013  
10:00 a.m. – 3:00 p.m.

**A. Introduction, Opening Remarks, Updates on SRBC Initiatives (Andy Gavin, SRBC)**

Andy Gavin, SRBC, opened the meeting with introductions (see Participant List in Attachment A). The WQAC usually meets twice each year, in spring and fall.

Andy gave an update on SRBC's activities. SRBC is updating its Comprehensive Plan, which will be released to the public this summer. There will be a comment/response period in the fall, followed by a final update approval in December. Andy also highlighted the 2013 State of the Susquehanna report, which was released this spring, and the Cumulative Water Use and Availability Study, also released in the spring. SRBC is holding a Water Science Forum on October 7-8, 2013, and accepted abstracts until June 1.

SRBC's Monitoring and Protection program had 15 different monitoring projects throughout all subbasins and jurisdictions in 2012, including an expansion of the Bay monitoring. The program completed its first research-related data collection effort for the Aquatic Resource Survey (ARS) research project. Another highlight of the program included completion of data collection efforts for several Total Maximum Daily Loads (TMDLs) related to nutrients, sediment, and atmospheric deposition. The program also completed a study on the reservoirs in the lower 45 miles of the Susquehanna River. Staff collected water chemistry, macroinvertebrate, and fish data, as well as general habitat and depth profile data. Staff continues to operate the continuous Remote Water Quality Monitoring Network (RWQMN) throughout the Susquehanna River Basin. There are a total of 58 stations providing continuous water quality data that are uploaded to the SRBC's web site.

SRBC continues to coordinate with its member jurisdictions. In New York, the agency is coordinating subbasin survey activities with different agencies (like New York State Department of Environmental Conservation (NYSDEC)) in the Chemung and Upper Susquehanna basins. In Pennsylvania, SRBC is helping with sampling for chemicals/pesticides in the Susquehanna, fish data collection (taxonomy support) and water quality datasonde support. SRBC has exchanged information with Maryland related to shale gas region monitoring, and outreach will be conducted regarding the Lower Susquehanna Drinking Water Partnership and Early Warning System upgrades. SRBC is also doing U.S. Environmental Protection Agency (USEPA) National Rivers and Streams Assessment work for FY2014-2015, supporting USEPA Climate Study monitoring, and supporting the U.S. Geological Survey (USGS) Technical Advisory Committee for Appalachian Basin Shale Gas Study.

New SRBC initiatives include the water quality portal, which will be web access of chemical, biological, and habitat data. Users will be able to download data from a map or menu options, and it is scheduled to be completed in June 2013. Another new initiative is changes to the USEPA 106 monitoring program. The new monitoring design will incorporate long-term records, probabilistic design, and programmatic/regulatory interest. New technology and studies include acoustic Doppler survey equipment, precipitation/streamflow stations, basinwide fish community health assessment, and sediment/turbidity assessment.

The Interstate Streams program at SRBC has collected data since 1986. There are about 50 stations where chemistry data are collected quarterly and biological and habitat data are collected annually. Possible program adjustments include bolstering large river and tributary monitoring, bolstering sediment/nutrient monitoring in small watersheds, and expanding the low flow water quality network.

## **B. Update on Implementation of SRBC's Low Flow Protection Policy (Drew Dehoff, SRBC)**

Drew Dehoff, SRBC, gave an update on the implementation of SRBC's Low Flow Protection policy. SRBC collaborated with The Nature Conservancy (TNC) and U.S. Army Corps of Engineers (USACE) on the Ecosystem Flows Study. The goal was to determine ecological flow needs for the Susquehanna River and its tributaries in order to guide withdrawal approval conditions, releases from storage during low flow periods, and consumptive use mitigation planning. The study generated recommendations, which led to SRBC updating its policy (2012-01) from 2003 (2003-01) to include aquatic resource classes, monthly passbys, and monthly exceedance values that determine necessity of passbys and passby values. With the old policy, 10 percent Q7-10 was *de minimus* threshold; 15, 20, 25 percent average daily flow passby based on stream designation. SRBC determined that the *de minimus* withdrawals were too low in magnitude to have any appreciable effect on instream flows.

SRBC Policy 2012-01 states the following on withdrawal limits: "In order to preserve natural flow variability and meet seasonal flow protection objectives, the Commission may limit a proposed withdrawal rate to a percentage of the monthly passby flow or monthly median flow. This condition may be imposed when the proposed withdrawal has the potential to affect seasonal flow variability and/or result in unacceptable levels of hydrologic alteration. In establishing such conditions, the Commission will consider the ecosystem flow recommendations contained in TNC's "Ecosystem Flow Recommendations for the Susquehanna River Basin" (2010) or other related environmental flow protection scientific studies."

There are special cases and conditions for this policy. They include seasonal (to simplify operations), exceptional quality (higher monthly flow values for traditional low flow months), impaired waters (raise threshold where passbys become necessary, lower passbys), agency coordination (case-by-case can deviate from guidance), and reservation (reserve right to increase passby flow where sensitive resources or water quality may be impacted). The new rules apply to new applications and modifications to existing applications.

### **C. Proposed Modifications to SRBC Monitoring Programs (SRBC Staff)**

Luanne Steffy, SRBC, gave an update on proposed modifications to SRBC's monitoring programs. The subbasin survey program is a broad-brush look at each of the six major subbasins on a rotating basis, and started in the 1980s. Sites were chosen primarily by ease of access at the mouths of large tributaries and bridge crossings, and larger watersheds arbitrarily got more sites. Staff is looking at possible targeted site selection and randomized site selection. Targeted sampling is a very useful and valid type of sample design if project goals include characterization of regional reference conditions, long-term trend monitoring at specific sites, and bracketing a known source (i.e., discharge point). Inferences can only be applied to sites where data were collected due to biases associated with site selection (cannot apply results to entire study area). Randomized site selection (probabilistic sampling design) is useful when project goals include the following: aquatic life use attainment in an un-biased, statistically sound manner across large areas; uniform comparability between datasets and other national datasets; and inference allowed from the sample data to the status of the entire study area. It is necessary to avoid the biases, even unrecognized ones, inherent in selecting sample sites.

SRBC is proposing a new sample design starting with the Middle Subbasin in 2014. Some targeted sites (major tributaries, reference condition sites) from past surveys will be kept, but a set number of new probabilistic sites per subbasin will also be included, most likely chosen through Generalized Random Tessellation Stratified (GRTS) Design. (GRTS is a GIS-based approach with the site selection done using the R stat program, and it allows for simple or more complex designs.) The remaining sites will be designated for streams of concern to member jurisdictions, unassessed waters, or other specific targeted interests. The mainstem Susquehanna River sites would be removed since the Large River program assesses those sites.

### **D. "Roundtable" Feedback of SRBC Efforts and Updates on Related WQAC Member Efforts (ALL)**

The meeting attendees gave some feedback on SRBC's proposed monitoring design. They suggested knowing what questions you want to answer, for instance: what is your goal? What do you want to answer? What will the scale be?

### **E. Update on Lower Susquehanna Study and Conowingo Reservoir (Michael Langland, USGS)**

Mike Langland, USGS, gave a presentation on Susquehanna Reservoir Sediment Transport Simulation and Effects in Chesapeake Bay using HEC-RAS, AdH, and the Water Quality Model. USGS collected bathymetry in 1990, 1993, 1996, and 2008 and collected sediment cores for the same years plus 2001. The cores were analyzed for size, nutrients, major ions, organics, and metals. USGS wants to document change in sediment storage capacity, size composition, and sediment chemistry. Implications of remaining capacity involve the Chesapeake Bay Watershed TMDL and the need for Pennsylvania and New York to reduce more

to meet goals. As of 2012, only 10-15 percent of original volume of the reservoirs remains to fill to capacity.

USGS constructed, calibrated, and validated a HEC-RAS 1-D sediment model for the entire reservoir system (approximately 33 miles). The goal was to simulate the loads in and out, bed-form changes, and particle size distribution. The product was input boundary condition files for Conowingo Reservoir for USACE AdH 2-D model. The AdH model provides inputs (nutrients and sediments) to the CB Water-Quality Model for scenario runs.

The HEC-RAS model has three main steps. The first is to prepare input data (sediment and flow). The second is to construct geometric and hydraulic framework. Finally, it needs calibrated to observed data. (Please see PowerPoint presentation for further details.)

Due to uncertainty (fall-velocity and bed sorting), USGS built and verified two models, one net “depositional” and one net “scour.” Both boundary condition outputs were delivered to USACE for 2-D model calibration. The “depositional” model was recommended and produced the best overall results. The “scour” model performed better for Tropical Storm Lee and other short-term high flow scour events.

The USACE/USEPA Chesapeake Bay models produced results for a reference point in the middle of the Bay. It ran simulations for chlorophyll, dissolved oxygen, light, and nutrients, with the reservoir full, Watershed Implementation Plans (WIPs) full, and varied timing of scour events. Nutrients from the scour event deposit in bottom sediments and persist for years. Solids from scour events are inert after deposition.

In summary, the HEC-RAS model is generally not conducive for cohesive (silts/clays) simulations. The two models provide a range of uncertainty in the boundary condition files. Estimated total sediment transport is most likely underestimated, but “reasonable,” and both models indicate upper two reservoirs still play a role in sediment transport.

As for the AdH 2-D Model, present day conditions have 50 percent more scour potential as compared to 1996. Present day conditions have 50 percent less storage capacity as compared to 1996. Negligible difference in 2011 and full simulations indicates reservoir is close to full capacity.

With the Water Quality Model, sediment and nutrient releases are event-oriented (floods). Erosion events increase depth and diminish subsequent erosion events. WIPs decrease reservoir sediment deposition and decrease loads to Bay.

Next steps include finding out how to maintain tracking capacity and costing out sediment management strategies. There is no single, cheap solution. The models allow a detailed look at transport capabilities.

## **F. Lunch**

## **G. Presentation on iMap Invasive Species Database (Mary Walsh, Western PA Conservancy)**

Mary Walsh from the PA Natural Heritage Program, Western PA Conservancy (PNHP/WPC), gave a presentation on tracking invasive species in the Susquehanna River Watershed. Currently known threats to the watershed include crustaceans, fish, mollusks, and plants. The management plan goals of the PA Invasive Species Council (PISC) in 2009 include early detection and rapid response, survey and monitoring, and data management. One goal is to detect new introductions of nonnative invasive species and control or contain target species before they can become permanently established in Pennsylvania or move into areas in which they previously did not exist. Another is to expand survey and monitoring efforts of nonnative invasive species in Pennsylvania. A third goal is to develop a statewide invasive species database clearinghouse or information sharing system linking data from various state, federal, and non-governmental entities.

The strategy of the PA Aquatic Invasive Species Plan (PISC, 2006) is to establish a simple, coordinated reporting system(s) for Aquatic Invasive Species (AIS) detection and monitoring in Pennsylvania and establish a comprehensive process to identify the AIS of greatest concern that are not yet present in PA waters. Priority action items include the following: engage those conducting field work to be aware of key invasive species; conduct training for field staff to ensure they can easily identify AIS; implement a statewide monitoring network to assist in the early detection and monitoring of AIS, partner with AIS management programs in nearby states to share data and coordinate management activities; and pay special attention to “upstream” and “downstream” neighboring states to prevent AIS introduction and spread.

Mary mentioned a few agencies that handle AIS reporting. PNHP/WPC has the iMap Invasives database. PA Sea Grant has a zebra and quagga mussel database. PA Fish and Boat Commission has a web site report link (<http://www.fish.state.pa.us/ais-reporting.htm>) where you can report invasive species. USGS also has information on invasive species on their web site: <http://nas.er.usgs.gov/>.

iMap is a system to keep track of invasive distributions or treatments. It stores and retrieves data-you can download as a .csv or geodatabase. The minimum information includes species, date, observer, and location. There are 9 state-run iMap invasive programs that collect invasive plant and animal data. The web site is <http://www.imapinvasives.org/>. To map and search by species, you will need to request log-in information on [www.imapinvasives.org/paimi](http://www.imapinvasives.org/paimi).

iMap is a helpful tool that could inform SRBC and its member states and organizations about invasive threats. The tool publicizes invasive species and tracking. It brings together agencies and organizations with invasive species interests and informs policy, planning, and control efforts. iMap works with regional and national tracking efforts by collating PA data.

## **H. Update on SRBC Field/Database Invasive Species Tracking (SRBC Staff)**

Tyler Shenk, SRBC, gave an update on SRBC Invasive Species Tracking. Historically, SRBC entered invasive species information in the “comments” section of its Habitat Assessment Form. In Spring 2012, SRBC added an invasive species checklist to the back of its Habitat Assessment Form so it was easier to document invasive species in the field. On this checklist, there are sections for benthics/plankton, animals, aquatic vegetation, and terrestrial vegetation. If invasive species are found, SRBC staff enters information into their internal water quality database. Several species were found and recorded in the 2012 field season.

SRBC adopted a biosecurity protocol in 2009. The protocol includes avoiding felt-soled waders, and being aware of existing problems in watersheds. Staff samples with flow (i.e., headwaters to mouth). All water is drained from boats/barges to allow drying. All equipment is disinfected and decontaminated with proper treatment between watersheds or field days.

SRBC reports any zebra or quagga mussel finds to PA Sea Grant. There have been a few found in the Susquehanna basin. SRBC also uses the iMap web site as mentioned above.

## **I. “Roundtable” Committee Member Updates/Issues**

Several agencies and organizations offered to share their experiences with invasive species. PA Sea Grant offers free trainings on invasive species. Noted absence of species is also helpful to note, not just occurrences. PA Sea Grant is working on education for boat access signs in boating/fishing areas. PA Fish and Boat Commission follows biosecurity protocols, and received grant money to buy multiple sets of gear. The agency is helping rewrite the state rapid response plan. PADEP decontaminates equipment and boats, but has no formal protocols or data collections. The agency plans to look at SRBC’s protocols. Maryland Department of Natural Resources (MDNR) adopted biosecurity protocols and decontaminates equipment as well. MDNR has also increased public education by posting signs in boat areas and by adding wader wash stations. The agency also has invasive species information on their web site at <http://www.dnr.state.md.us/invasives/>. NYSDEC follows biosecurity for field staff. The U.S. Fish and Wildlife Service has no written protocols but they use chemicals to rinse gear in didymo areas. The New York Soil and Water District said making note of species could be done while in the field, and staff would need training to help identify specimens. Mary from WPC said that staff confirms invasive species by looking at photographs. PADEP said that specimens can be sent to PADEP lab for identification as well.

## **J. Discussion Wrap-up and Action Items from Meeting (Andy Gavin, SRBC)**

SRBC will compile and provide meeting minutes to the group. SRBC will also consult with members of the group on the changes to its programs over the next few months.

## **K. Adjourned**

The meeting was adjourned at approximately 3:00 p.m.

## Attachment A

### Participant List

<b>Name</b>	<b>Organization</b>
Guy Alsentzer	Lower Susquehanna Riverkeeper
Paula Ballaron	SRBC
Scott Cook	NYSDEC
Andrew Dehoff	SRBC
Sheila Eyler	USFWS
Sherm Garrison	MDNR
Joe Graney	Binghamton University
David Hamilton	Office of Surface Mining
Mark Hartle	PFBC
Mike Hoffmann	USEPA
Hilary Hollier	SRBC
Mike Langland	USGS
Hoss Liaghat	PADEP
Rhonda Manning	PADEP
Margaret Novak	NYSDEC
Bill Richardson	USEPA
Curtis Schreffler	USGS
Tony Shaw	PADEP
Tyler Shenk	SRBC
Dustin Shull	PADEP
Geoff Smith	PFBC
Luanne Steffy	SRBC
Paul Swartz	SRBC
Ryan Szuch	PADCNR
Mary Walsh	Western PA Conservancy
Gary Walters	PADEP
Sarah Whitney	PA Sea Grant