

ANNUAL REPORT 2013

SUSQUEHANNA RIVER BASIN COMMISSION



WELCOME

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EXECUTIVE DIRECTOR’S MESSAGE



Andrew D. Dehoff, P.E.

If there is one thing that best characterizes 2013 at SRBC it is not a hydrologic event, such as a drought or flood, but CHANGE. Between June and December, SRBC saw the retirements of four senior and executive members of staff and relocated our headquarters to a new building after 36 years. Elsewhere in this Annual Report, we describe the significant contributions from those recent retirees and recognize the important legacy and history they leave behind. I am extremely grateful for their dedicated service and fortunate to have worked closely with each of them prior to their departures.

I have my own history with the Commission—20 years in fact. And I have seen a lot of changes. We’ve experienced significant growth, in terms of staffing, responsibilities and visibility. We’ve weathered floods and droughts. Some challenges faced by the Commission related to both water quality and water quantity have been met, while new issues that add demands to the river’s resources continue to arise.

But despite frequent, sometimes dramatic change, a few things remained constant over the years. First – our reliance on the best science available in crafting policy and making recommendations to our commissioners. That being said, even the science has changed – the 2003 low flow protection policy, which seemed to be on the cutting edge of science at the time it was adopted, now seems dated in comparison to the revised policy we adopted less than ten years later. But reliance on the best science is a constant.

Another constant is the staff. The faces may change from time to time, but the staff has always been comprised of smart, dedicated individuals pulling together as a team to fulfill the mission of SRBC. And finally, although their faces change too, we have always had extraordinary support from our commissioners and a great working relationship with our member jurisdictions.

I believe it was these constants that have allowed the Commission to be a leader in water resources management and succeed at our mission, and I know the current staff is committed to honoring that history – by keeping it constant into the future.

We look forward to another year of positive working relationships with our partners and sister agencies. SRBC welcomes the opportunity to offer its new headquarters as a venue for stakeholders’ meetings for the exchange of information and ideas related to the Susquehanna River Basin.

Thank you for taking the time to read our 2013 Annual Report.

COMMISSIONERS 2013



United States: Brig. General Kent D. Savre, Chair

Commander
North Atlantic Division
U.S. Army Corps of Engineers



New York: James M. Tierney, Vice Chair

Assistant Commissioner for Water Resources
New York State Department of Environmental Conservation



Pennsylvania: E. Christopher Abruzzo

Secretary
Pennsylvania Department of Environmental Protection



Maryland: Dr. Robert M. Summers

Secretary
Maryland Department of the Environment

MAURICE K. GODDARD AWARD

The Commission presented the Maurice K. Goddard Award for Excellence by a Water Management Professional to **Mr. Jim Brozena**, retired Executive Director of the Luzerne County Flood Protection Authority in Wilkes-Barre, Pa.

Mr. Brozena made enormous contributions to flood protection programs in the Wyoming Valley, including the Wyoming Levee Raising Project.



The project involved raising 15 miles of levees and flood walls and enhanced stormwater management, flood mitigation planning, and recreational opportunities. It also helped reconnect the residents of the City of Wilkes-Barre with the Susquehanna River by providing riverfront access through the River Commons project.

ALTERNATES

United States



1st Alternate
Colonel J. Richard
(Trey) Jordan, III



2nd Alternate
David J. Leach



3rd Alternate
Amy M. Guise

Pennsylvania



1st Alternate
Kelly J. Heffner



2nd Alternate
Andrew C.
Zemba



3rd Alternate
Randal D.
(Duke) Adams

Maryland



1st Alternate
Jay G. Sakai



2nd Alternate
Saeid Kasraei

New York



1st Alternate
Kenneth P. Lynch



2nd Alternate
Peter Freehafer



A YEAR OF

SRBC MOVES TO NEW HEADQUARTERS

SRBC moved into new headquarters over the summer of 2013.

Overlooking the Susquehanna River, the new office building provides state-of-the-art technology for SRBC's Internet-based operations, updated laboratory facilities, and conference space able to accommodate groups of up to 100 occupants.

LEED CERTIFIED

The 30,000 square-foot facility meets green building standards under LEED (Leadership in Energy & Environmental Design) in areas related to energy and water management. Green technology is seen in the energy-efficient lighting, low-flow plumbing fixtures, and management of stormwater runoff.

LOW IMPACT STORMWATER PRACTICES

The 3.4 acre site has a series of bioretention gardens that capture and treat runoff from the building's rear parking lot. Water not taken up by the native vegetation infiltrates the soil underground; pipes located deep in the planting bed carry excess, treated water to the neighborhood storm drainage system.



Native vegetation, such as this butterfly weed, improves a bioretention garden's biodiversity and filters water runoff.



Bioretention gardens capture and treat runoff from the rear parking lot.



TRANSITION

PAUL O. SWARTZ was honored by the Commission upon his retirement in 2013 after nearly 22 years of valuable service as Executive Director. Mr. Swartz was recognized for his deep devotion to the purposes of the Susquehanna River Basin Compact and his strong commitment to excellent public service.

During his tenure, the list of notable accomplishments achieved by the Commission included the water storage and release project at Curwensville Reservoir; the agreement with New York and the federal government establishing environmental restoration operations at Whitney Point Reservoir; the resolution of the City of Baltimore diversion dispute; securing mitigation for agricultural water use in the basin; the omnibus revision of Commission project review regulations; the update of the Comprehensive Plan for the Water Resources of the Susquehanna River Basin; issuance of the State of the Susquehanna reports that describe basin conditions; strategies for mitigating acid mine drainage impairment, and adoption of low flow protection criteria based on cutting-edge science.

Under Mr. Swartz's leadership, the Commission significantly improved Commission outreach to the public, legislators, and government policymakers at every level.



Paul O. Swartz, Executive Director, 1991 - 2013

The Commission also recognized **THOMAS W. BEAUDUY**, who retired from full-time service as Deputy Executive Director after 17 years of service. Under his watch, the Commission established innovative and practical approaches to the management of water resources, most notably in the regulation of water use by the natural gas development industry. Mr. Beauduy also provided leadership on water resource issues at the national level, having represented the Commission on the Interstate Council on Water Policy, by serving as its President and on its Board of Directors. Mr. Beauduy demonstrated his legal and administrative skills in a host of important Commission matters, including settlement negotiations with numerous project sponsors and the revision and implementation of the Commission's project review regulations.



Thomas W. Beauduy, Deputy Executive Director, 1996 - 2013

DR. JAMES RICHENDERFER retired as Director of Technical Programs after five years of service to the Commission. He was responsible for the oversight of five technical programs that address the Commission's regulatory, planning, and monitoring functions. Under Dr. Richenderfer's direction, the technical staff focused on the long-term sustainable utilization of the basin's shared water resources and protection of its most sensitive features.



Dr. James Richenderfer, Director of Technical Programs, 2008 - 2013

SUSAN S. OBLESKI retired from SRBC after 18 years of service. Ms. Obleski was SRBC's first Director of Communications and was instrumental in establishing an effective and responsive public information program. She led the production of high-quality reports and publications, expanded outreach to the public, and organized various conferences and events over the years. As SRBC's official spokesperson, Ms. Obleski skillfully developed effective working relationships with the media throughout the basin and raised awareness of Commission efforts by establishing our presence on the web and in social media.



Susan S. Obleski, Director of Communications, 1995 - 2013



WATER SUPPLY



SRBC PROVIDES GUIDANCE TO PUBLIC WATER SUPPLIERS

The Public Water Supply System Assistance Program (PWSAP) was made possible by a grant through the Pennsylvania Department of Environmental Protection. The PWSAP is intended to help smaller municipal systems renew expiring SRBC groundwater withdrawal approvals or add new groundwater sources to their system.

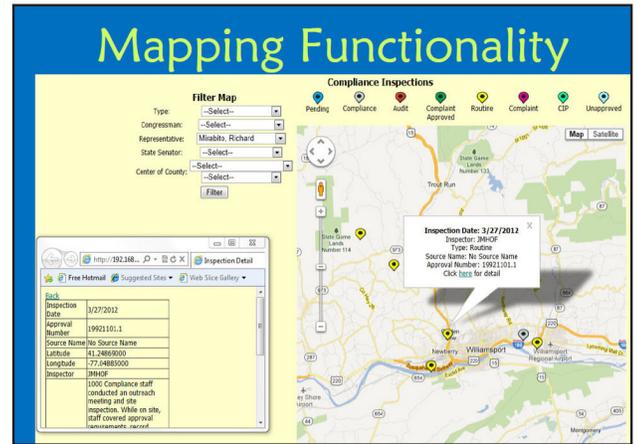
SRBC staff has worked with approximately a dozen small public water supply systems over the last two years, providing guidance on Commission regulations and the permitting process for renewing and adding groundwater sources, and evaluating potential new groundwater sources with respect to sustainability and SRBC regulations.

Among the goals of the PWSAP is to assist public water supply systems with the addition of new sources, to help ensure redundancy in systems for added reliability of clean and adequate water supplies for drinking, fire suppression, and other important uses. To accomplish this goal, staff has completed the newly offered pre-drill well site review for five potential well sites for qualifying systems that are exploring the possibility of adding a groundwater source to their public water supply system. When completing the pre-drill well site review in conjunction with the PWSAP, staff provided guidance on regulatory issues regarding the system, groundwater availability issues, potential impacts to surface water features, and potential ecological concerns. More information regarding the program can be found at www.srbc.net/programs/PWSAP.htm.

TECHNOLOGY ADVANCES COMPLIANCE OPERATIONS

SRBC's diligent compliance staff covers a lot of territory and has maximized effectiveness in enforcing our regulations through strategic application of technology, such as:

- ◆ Daily gage reports that inform inspectors which withdrawal sites are operational based on current flow conditions; and
- ◆ A customized compliance database module that allows inspectors to see the most recently approved projects, enables data entry from the field, and seamlessly synchronizes and communicates with SRBC's centralized database.



Created in 2011, SRBC's Compliance Module has been upgraded over 20 times to incorporate additional capabilities and features.

TIME-OF-TRAVEL TOOL AIDS EMERGENCY RESPONSE

On May 9, 2013, a tanker truck fully loaded with diesel fuel flipped over on a ramp just north of where Interstate 81 crosses the Susquehanna River. Roughly 2,000 gallons of fuel spilled into nearby Paxton Creek and the lake at Wildwood Park, a Dauphin County park that borders the interstate. During such incidents, emergency response teams notify public water supply systems of areas that may be impacted, including water intakes.



Critical to the response is knowing how long a spill might take to reach a public water supply intake. SRBC's role in such incidents is to employ a computer model that calculates how long a spill will take to travel downstream of an incident and gives basic information on the toxicity of the chemicals involved in the incident and its potential impact to human health and the environment. The model uses complex mathematical equations and real-time streamflow information from the USGS gage network to determine estimated travel times and the projected pathway for the spill.

For the I-81 incident, SRBC used the tool to determine that the spilled fuel would take nine hours to flow from Paxton Creek to the Susquehanna River, and shortly thereafter reach the first drinking water intake on the river. Armed with this knowledge, water supply managers can take necessary actions to avoid pulling spilled materials into treatment systems and the drinking water supply.

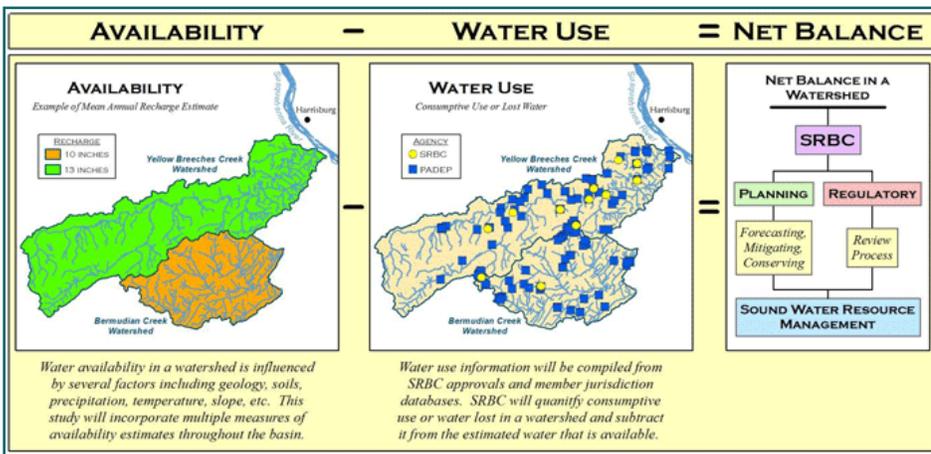
WATER SUPPLY GOAL

To meet immediate and future water needs of the people of the basin for domestic, municipal, commercial, agricultural and industrial water supply and recreational activities, in order to maintain sustainable economic viability, protect instream uses, and ensure ecological diversity through regulation and planning.

CUMULATIVE WATER USE AND AVAILABILITY STUDY LAUNCHED

With the demand for water continuing to increase for domestic use, power production, natural gas development, and other purposes, SRBC launched a multi-year water use and availability study in early 2013 that will quantify the potential impacts of consumptive water uses on the basin's water resources and aquatic life – not only individually but also cumulatively.

Specifically, SRBC will compile existing and projected water use data, quantify consumptive water use for all sectors at a watershed scale, determine water availability indices for basin watersheds, and develop an assessment tool to automate the water budget/use assessment evaluation process. The end products of this study will be a technical report and a water use and availability assessment tool for water managers and the public to use. Throughout the study period, SRBC will provide information and updates on study progress on its website at www.srb.net/planning/cwuas.htm.



SRBC will assess water availability versus cumulative consumptive water use for basin watersheds as depicted in this graphic.

LOWER SUSQUEHANNA SOURCE WATER PROTECTION PARTNERSHIP EVOLVES IN SECOND YEAR

Though still in its formative stages, the Lower Susquehanna Source Water Protection Partnership continued to serve as a regional networking hub for the 530 community water systems in the lower Susquehanna River region, which stretches from Dauphin, Perry and Schuylkill counties in Pennsylvania to Baltimore, Harford and Cecil counties in Maryland.

In November 2013, representatives from the region's water authorities, water companies, municipalities, private firms, state water agencies, and regional organizations took part in the partnership's second stakeholders' meeting. Attention was focused on collaborative case studies and opportunities related to stormwater management and the protection of source waters for drinking, as well as emergency response issues.

RELEASES FROM STATE AND FEDERAL IMPOUNDMENTS USED TO LESSEN WATER USE IMPACTS AND IMPROVE ECOSYSTEM FLOWS

Over the past five years, SRBC has been investigating the potential for tapping already planned releases of water from Pennsylvania-owned recreational impoundments for consumptive use mitigation and ecosystem flow protection. Water releases are periodically conducted to draw down the impoundments for aquatic habitat management or infrastructure maintenance or repair.

In early 2013, SRBC, Pa. Department of Conservation and Natural Resources - Bureau of State Parks, and Pa. Fish & Boat Commission reached agreement on how to coordinate planned releases to enhance downstream flow conditions during drought periods to ensure water availability for downstream uses, including ecosystem flow needs. Limiting requests for releases to late summer and early autumn will minimize disruption to recreational uses.

The U.S. Army Corps of Engineers is in the process of revising the Reservoir Regulation Manual for Cowanesque Lake in Tioga County, Pa. to adopt more responsive criteria for releasing SRBC-owned water supply storage in the lake to address downstream consumptive water use during critical low flow conditions. Developed in the 1970s, the former low flow criterion did not adequately address ecosystem flow needs in the basin.

After several years of technical studies and completion of an Environmental Assessment, a Finding of No Significant Impact was issued in 2013 in compliance with the National Environmental Policy Act, paving the way for adoption of the more protective release criteria. Under the new plan, water supply releases during critical low flow conditions will be more effective at mitigating consumptive use and meeting ecosystem flow needs downstream in the Cowanesque, Tioga, Chemung and Susquehanna Rivers.

WATER QUALITY



NEW WATER QUALITY PORTALS ON WEBSITE

Two new data portals were made available to the public on SRBC's website in 2013.

The **Water Quality Portal** provides public access to data collected as part of the Commission's monitoring programs to track and assess water quality conditions in the basin. The public can review chemical, biological, and habitat data for rivers and streams across the Susquehanna basin. These data were acquired through single, point-in-time, "grab" samples collected by Commission staff for a variety of long- and short-term projects.

Users can select from four categories of data, including water chemistry, habitat, fish, and other aquatic life. The portal provides tools to query and filter data and view sample locations in either a table or on a map. The data contained in the portal cover Commission monitoring activities through 2012, with date ranges extending back to the early 1980s for certain categories like water chemistry.

The **Mine Drainage Portal** 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. Within the Mine Drainage Portal, users can find chemical data for parameters typically associated with mine drainage impacts within the rivers and streams in the basin. These data were acquired from a variety of data sources, including other local, state, and federal agencies, as well as non-governmental groups.

BEAR RUN: AN AMD SUCCESS STORY

Bear Run, once one of the largest sources of abandoned mine drainage (AMD) impact to the headwaters of the West Branch Susquehanna River, is now supporting multiple fish species, including native brook trout. The rebound is the result of an eight-year partnership between the Indiana County Conservation District, SRBC, and Evergreen Conservancy that involved nine phases of treatment and reclamation. Key to project success was the strategic targeting of funds at 8 of 27 known AMD discharge sites in the watershed that were found to contribute nearly three-quarters of the AMD loading into Bear Run.

Six of the nine phases utilize passive treatment system technology and two use Swedish-Bucket Lime Dosers. Three phases also included mine refuse/abandoned mine land removal and/or reclamation. Funding was provided by the Pa. Department of Environmental Protection and federal Office of Surface Mining.

For more information, read the **Bear Run Watershed Renaissance Mine Drainage Restoration Project** report.

During 2013, SRBC also started work to design and construct treatment systems to address abandoned mine drainage along Sandy Run and Birch Island Run, two other tributaries of the West Branch Susquehanna River.



South Branch Bear Run at Beckett Road bridge before restoration (left) and after restoration (right).

TMDL LINKS GROUNDWATER AND SURFACE WATER CONDITIONS

SRBC continued work on the Octoraro Creek TMDL (Total Maximum Daily Load) Assessment, the first TMDL developed in Pennsylvania to address both aquatic life and drinking water impairments. The work also represents a collaborative effort between Clean Water Act and Safe Drinking Water Act programs, which is bringing to bear pooled resources for conducting outreach to watershed stakeholders, performing water quality monitoring, developing a groundwater/surface water model, and formulating recommendations for targeted implementation of best practices to improve watershed conditions. To date, the study results have documented the critical need for addressing both underground and surface pathways for the target pollutants. In addition, certain parts of the watershed are more conducive to contributing pollutants to those pathways, whether it is nitrogen in groundwater or phosphorus in surface water. This information will inform development of targeted implementation plans.

WATER QUALITY GOAL

To support the existing and designated uses of all water bodies by achieving water quality that meets or exceeds standards.

LOWER RIVER RESERVOIR PILOT STUDY COMPLETED

SRBC completed a water quality and biological assessment study in the lower reservoirs of the Susquehanna River as part of the Lower Susquehanna Subbasin Survey Year-2 project. This project was an exploratory pilot study representing the first focused, extensive monitoring effort by SRBC on this portion of the river, which is complex with rapidly fluctuating river levels. The lower reservoirs, created by three large hydroelectric dam facilities, are located in the final 45 miles of the Susquehanna River before its confluence with the Chesapeake Bay.



The objectives of this project were to assess current chemical and biological conditions within the reservoirs while also exploring a variety of assessment methodologies with which to incorporate routine monitoring of the reservoirs into SRBC's on-going monitoring program.

Whether looked at as a free-flowing river or series of lakes, nitrogen and phosphorus inputs from surrounding land uses into the river are the main water quality issue in the lower reservoirs. Macroinvertebrate data collected during this pilot are some of the only recent data of its kind for the reservoirs and may prove crucial in ongoing discussions about river health. Marginal to poor fish habitat exists throughout most of the reservoir system, at least in areas that can be sampled using an electroshocking boat. Significant data on fish species included data for the invasive flathead catfish, the catadromous American eel, Pennsylvania-threatened Chesapeake logperch and smallmouth bass.

By successfully completing this pilot study, SRBC better understands how these reservoirs function and what their biological communities include. This pilot study also provides excellent baseline data from which to plan future monitoring efforts. The use of new methods and protocols, some more successful than others, has expanded SRBC's monitoring capabilities and allowed for a more diverse monitoring and assessment program.

CEDAR RUN TO SEE STORMWATER RETROFITS

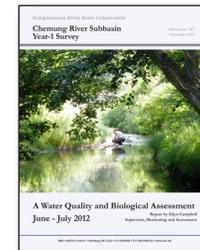
SRBC was awarded funding through the first round of Act 13 grants (generated by natural gas drilling impact fees) to be issued under the PA Commonwealth Financing Authority's Watershed Restoration Protection Program. Staff began work on the design and implementation of several urban stormwater bioretention retrofits in Hampden Township, Cumberland County, PA, within the Cedar Run Watershed. These bioretention measures will produce a standard approach for implementing "green infrastructure" within challenging sinkhole-prone terrain, providing a model for other municipalities to follow. In addition, the implementation of these measures will also help inform township officials as they look to develop and implement a local stormwater management program using a new fee structure based on impervious area.

NEW REPORTS IN 2013

SRBC announced findings from the following river monitoring programs:



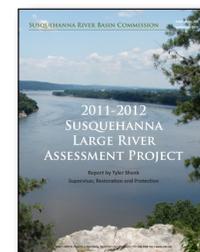
Remote Water Quality Monitoring Network - Data Report of Baseline Conditions for 2010 - 2012: A Summary



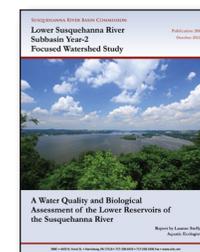
Chemung River Subbasin Year-1 Survey: A Water Quality and Biological Assessment



Assessment of Interstate Streams in the Susquehanna River Basin (2012 Summary Report)



2011-2012 Susquehanna Large River Assessment Project



Lower Susquehanna River Subbasin Year-2 Focused Watershed Study

FLOODING



SRBC REQUESTS FEDERAL SUPPORT OF RIVER GAGES

SRBC adopted a resolution in December 2013 urging the President and Congress to provide full funding for the National Streamflow Information Program (NSIP), thereby supporting the Susquehanna Flood Forecast & Warning System (SFFWS).

Concern by Congress for the long-term continuity and reliability of national streamgaging data led to the creation of the NSIP by the U.S. Geological Survey in 1999. NSIP was designed and authorized to operate as a federally funded “backbone” network supporting approximately 4,750 streamgages and tidal gages nationwide. These gages provide crucial data used in flood forecasting.

Forty-five gages in the SFFWS are eligible for NSIP funding. The resolution urged the inclusion of \$122 million in the FY2015 budget to fully fund all NSIP eligible gages in the nation.



River gage at Harrisburg, Pa.

FLOODING GOAL

To prevent loss of life and significantly reduce future damages from floods within the basin through an integrated system of structural and nonstructural flood damage reduction measures.

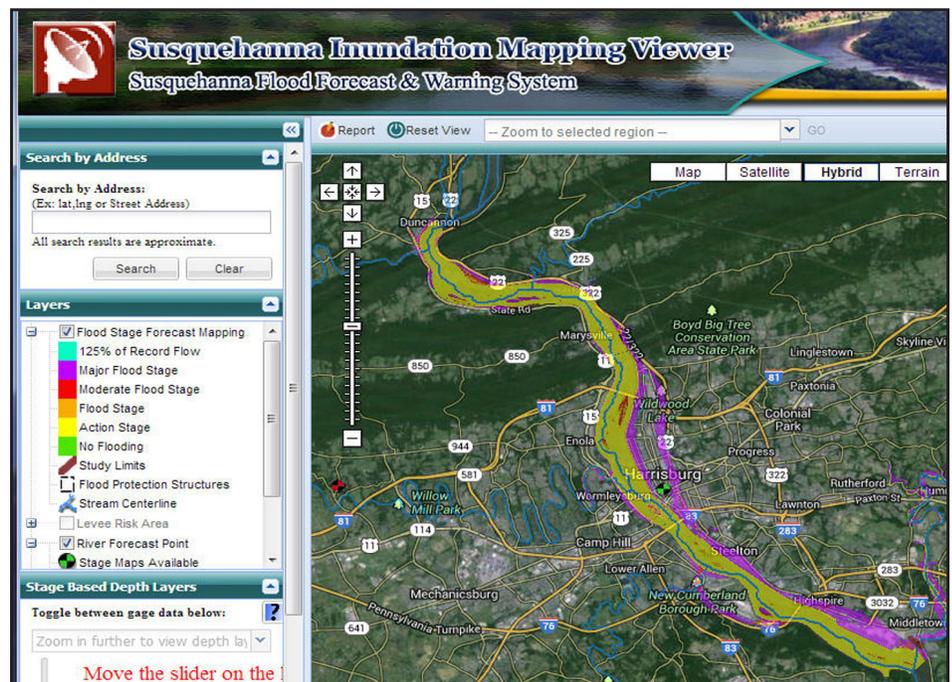
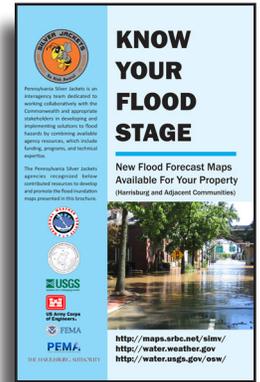
RESIDENTS LEARN ABOUT NEW FLOOD INUNDATION MAPS

In cooperation with the U.S. Army Corps of Engineers Silver Jackets team, consisting of various federal and state agencies involved in flood risk management, SRBC recently educated residents about newly developed flood inundation maps for Harrisburg, Pa. and surrounding communities along the Susquehanna River. The mapping depicts the extent of areal inundation of a community based on forecasted flood stages.

SRBC distributed a *Know Your Flood Stage* brochure that explains map viewing tools available on SRBC and National Weather Service websites to over 7,500 property owners impacted by the greatest extent of flooding identified by the maps. The brochure includes a magnet that can be marked with a location’s specific flood and action stage and displayed on home refrigerators. Residents are urged to continue to monitor river forecasts and take appropriate action when flood stages are forecasted.

New mapping tools also provide valuable information to emergency managers responsible for moving persons and property out of harm’s way during flood events.

SRBC has been involved in the production of flood stage forecast mapping for many years, but new electronic capabilities have allowed the development of more sophisticated flood risk communication tools than were previously available with basic paper mapping technology. Information about available flood inundation mapping and the *Susquehanna Inundation Map Viewer* system’s features are available online.



Flood inundation map shows flood stages for the Harrisburg river forecast point. To date, stage maps are available for river forecast points at 13 locations in New York and 7 in Pennsylvania.

CHESAPEAKE BAY



RELICENSING UNDER REVIEW

SRBC staff was busy in 2013 reviewing the federal relicensing of three hydroelectric power plants along the lower Susquehanna River: Conowingo (573 MW), Muddy Run (800 MW), and York Haven (19 MW). All three current Federal Energy Regulatory Commission licenses are set to expire in 2014.

For the Conowingo Dam, priority relicensing issues include fish passage, flow management and addressing the accumulated sediment. Adequate flows to Chesapeake Bay and reduction of nutrient-laden sediments to the Bay will be critical in meeting water quality goals for the estuary.

LOOKING BEHIND THE MONITORING NUMBERS

SRBC continued to examine trends in nutrient and sediment transport within the Susquehanna River based on data from 27 monitoring sites. The latest findings of SRBC's **Sediment and Nutrient Assessment Program** are available online.



STUDY OF SEDIMENT BEHIND DAMS NEARLY COMPLETE

Work is wrapping up on a multi-agency assessment of sediments and nutrients stored behind three hydroelectric dams on the lower Susquehanna River and the feasibility of various strategies to reduce their transport to the Chesapeake Bay.

Led by the U.S. Army Corps of Engineers (USACE) and Maryland Department of the Environment, the Lower Susquehanna River Watershed Assessment used monitoring data and computer modeling to better understand the dynamics of sediment and nutrients as they move through the lower river system.

Modeling simulated the influence of dam infill on the Bay's water quality and how river flows, scouring events and seasonal factors affect that influence. Potential management measures were also evaluated using modeling scenarios, including bypass strategies and the dredging of reservoirs to restore storage volumes behind the dams.

The issue of sediment and nutrient build-up behind the dams on the lower Susquehanna River has long been a concern for the Chesapeake Bay's water quality. In 2002, the Susquehanna River Basin Commission Sediment Task Force produced a set of riverine and reservoir management options for further exploration.

For this most recent assessment, SRBC provided technical support to Maryland and USACE. Other SRBC efforts that have been integrated with this assessment include SRBC's review of dam relicensing, mainstem nutrient and sediment monitoring, flow management modeling, and TMDL data collection and development in a number of watersheds in the lower Susquehanna basin.

The Lower Susquehanna River Watershed Assessment will be used to inform future management decisions. The final report is expected to be released in late 2014.



The Conowingo Dam, the closest of the dams to the Chesapeake Bay, for many years trapped about 2 million tons of sediment out of the approximately 3 million tons that annually reached its pond. It is now largely understood that the reservoir is at a dynamic equilibrium, with as much sediment leaving the pond as is annually captured. Photo credit: Jane Thomas (UMCES-IAN)

CHESAPEAKE BAY GOAL

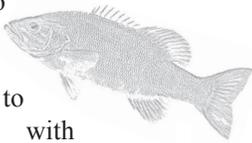
To manage the water resources of the Susquehanna River Basin to assist in restoring and maintaining the Chesapeake Bay so it meets or exceeds applicable water quality standards and supports healthy populations of living resources, including oysters, crabs, fish, waterfowl, shore birds, and underwater grasses.

ECOSYSTEMS



SRBC ASSISTS PA WITH SUSQUEHANNA MONITORING

SRBC assisted the Pa. Department of Environmental Protection staff in its continued effort to characterize water quality conditions as it relates to issues associated with the smallmouth bass fishery. In particular, staff collected pesticide data at select long-term river monitoring stations, as well as provided continuous water quality monitoring sondes for deployment during critical flow conditions in the river and major tributaries. Lastly, staff also provided logistical support for the sampling efforts.



DIDYMO FOUND

SRBC staff documented the second observance of the aquatic invasive species *Didymosphenia geminata* (didymo or “rock snot”) in the Susquehanna basin. Didymo was found in the West Branch of Pine Creek, Potter County, Pa. on October 16, 2013.

Didymo is a highly invasive algae that has caused ecological harm in many high profile instances worldwide. The massive blooms and mats resulting from the spread of didymo have the potential to choke aquatic life in the basin’s high quality, cold water streams and rivers.

Anglers, boaters, or anyone coming into contact with an infected waterway can unknowingly spread this microscopic algae, which can cling to fishing gear, waders, boots, and boats. Those coming into contact with an infected waterway are encouraged to disinfect their gear to prevent further spread.

SRBC STUDIES STREAM HEALTH NEAR NATURAL GAS SURFACE WITHDRAWAL SITES

Since 2010, SRBC has conducted expanded assessments of aquatic communities at proposed water withdrawal locations in response to public concerns regarding the use of water by the natural gas industry in small, headwater or exceptional value streams. The assessments are called Aquatic Resource Surveys. In 2013, SRBC completed its first research project examining surface water withdrawal impacts on biological communities at active natural gas water withdrawal sites.



SRBC staff collects fish specimens along Harrison Run in the Pine Creek Watershed, Tioga County, Pa.

Twelve active sites were studied in three distinct stream types: headwater, coldwater and large warm water. Fish and macroinvertebrate community data were collected upstream and downstream of the twelve active gas industry water withdrawals and three reference sites where no withdrawals were present in the watershed.

Findings included:

- ◆ Withdrawals from headwater streams removed the largest proportion of water relative to streamflow.
- ◆ The study found no impacts from water withdrawals on the fish and macroinvertebrates at the sites studied. Site-level variables (e.g., land use and drainage area) were more important than withdrawal metrics in explaining variation in fish and macroinvertebrate metrics previously shown to be sensitive to hydrologic alteration.
- ◆ Results suggest the threshold at which fish and macroinvertebrate communities lose resilience to hydrologic alteration has not been reached at study sites in the Susquehanna basin, potentially due to lower than expected water withdrawals and/or protective measures such as passby flow restrictions, which require water withdrawals to cease when flows drops below a predetermined low flow threshold.

A second phase of research in 2013-14 will focus on headwater streams with expanded data collection related to water quality, biological communities and local site-level variables.

ECOSYSTEM GOAL

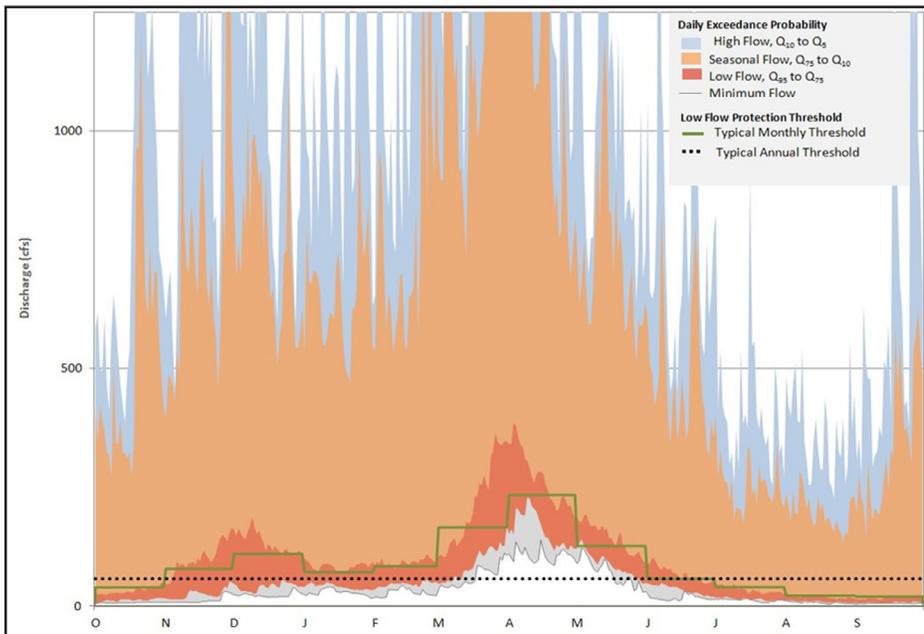
To achieve healthy ecosystems that provide groundwater and surface water of sufficient quality and in adequate supply to support abundant and diverse populations of aquatic, riparian, and terrestrial organisms, as well as human use.

NEW LOW FLOW PROTECTION POLICY

SRBC began implementation of its new Low Flow Protection Policy, replacing the former “passby” flow policy adopted in 2003. The new guidance will be used in concert with other tools to establish limitations or conditions on withdrawal approvals, such as passby flow or conservation release requirements, to ensure that any flow alteration does not cause significant adverse impacts to the water resources of the basin.

The new policy addresses lessons learned over the last nine years and is designed to strike an appropriate and reasonable balance between both the protection and use of the basin’s water resources. It incorporates ecosystem flow recommendations made by The Nature Conservancy (TNC) in a 2010 study specific to the waterways of the Susquehanna River Basin. One of the most critical findings of the TNC study is that seasonal flow recommendations are preferred to year-round flow recommendations as ecosystem flow needs are naturally seasonal — a finding reflected in the new policy’s monthly and seasonal flow protection criteria.

A summary of the [Low Flow Protection Policy](#) is available online.



This figure illustrates the contrast between a constant annual low flow protection threshold determined under the 2003 guidelines and variable monthly low flow protection thresholds determined under the new technical guidance, which provides for low flow protection conditions to be specified on a monthly or seasonal basis, to preserve natural flow variability and accommodate ecological needs, and a uniform classification of the basin’s streams and rivers to apply hierarchal levels of low flow protection.

MONITORING WRAPS UP AT WHITNEY POINT LAKE

SRBC completed a five-year monitoring program for the Whitney Point Project, designed to improve environmental conditions downstream of Whitney Point Lake, a U.S. Army Corps of Engineers reservoir located on the Otselic River in Broome County, N.Y.

In 2007, funds were secured to implement a storage and release plan, and project monitoring began in 2008. The project provides for releases from the lake to augment low flow conditions downstream in the Otselic, Tioughnioga, Chenango and Susquehanna rivers. The monitoring documents the impacts of these releases on the lake and associated wetlands. The results of the monitoring will be used to make appropriate adjustments in project management.

Though a lack of dry seasons during the five-year monitoring period prevented an ideal analysis of the impacts, data gathered have indicated a positive impact in downstream reaches of stream. Fish populations are healthy and certain nursery zones in the streams are being maintained. Project modifications created more stable lake levels and wetland areas that appear to be functioning well. Monitoring will continue on a smaller scale with the expectation that a dry period will allow for additional data collection.



Wetland monitoring plots at Whitney Point Lake.

COORDINATION, COOPERATION & PUBLIC INFORMATION



The first-ever Susquehanna Water Science Forum sponsored by SRBC was held on October 7 & 8, 2013. The forum was designed to collectively ask researchers what they know -- or don't know -- about threats to the river's ecosystems and water resources, where scientists need to do more research, and how policy leaders can use the latest findings to make better water management decisions.

For the nearly 200 attending researchers, planners, biologists, engineers and other professionals, the inaugural 2013 Susquehanna Water Science Forum was a welcome exchange of ideas about what the latest science is telling us about the health of the Susquehanna River and its tributaries. Forum presentations can be accessed at www.srbc.net/waterscienceforum.

COORDINATION, COOPERATION AND PUBLIC INFORMATION GOAL:

To maximize available human resources and achieve common and complementary management objectives by the Commission, its member jurisdictions and others; to promote the planning and management of the basin's water resources in the most efficient manner possible; to inform the public on the Commission's water management responsibilities; and to enhance the public's access to Commission information and decision making procedures.

SRBC UPDATES COMPREHENSIVE PLAN

The five-year update of the 2008 Comprehensive Plan for the Water Resources of the Susquehanna River Basin was adopted in 2013 after opportunities for public comment and a public hearing.

Significant changes and additions include:

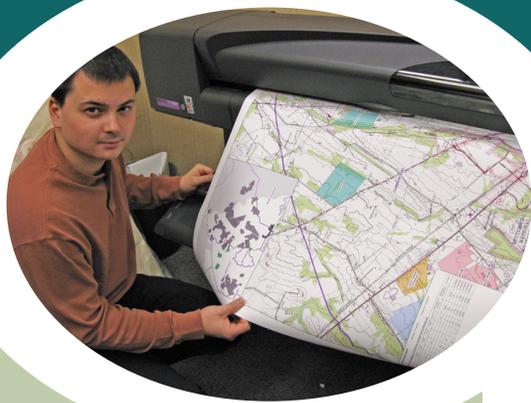
- NATURAL GAS** Discussion related to natural gas activities in the Susquehanna River Basin and the subsequent improvements made by SRBC to its regulatory program;
- WATER USE** Action to complete the Cumulative Water Use and Availability Study;
- COMPLIANCE** Enhanced regulatory compliance measures;
- MONITORING DATA** An initiative for improving water quality data collection methods to enable direct comparison and use of datasets regardless of the jurisdiction within which the data were collected; Improved water quality monitoring capabilities;
- STORMWATER** Action to support county and municipality efforts to develop/ implement regional stormwater management plans in the Lower Susquehanna Region;
- INVASIVE SPECIES** Enhanced tracking of aquatic invasive species in the basin;
- DRINKING WATER** Action to expand monitoring for drinking water parameters of concern for the mainstem of the Susquehanna River and major tributaries;
- ECOSYSTEM FLOW NEEDS** Enhanced coordination with partner agencies on flow management issues in the lower Susquehanna River and upper Chesapeake Bay; and
- EMERGING CONTAMINANTS** Action to collect and disseminate information regarding the effects of emerging contaminants on the biological resources of the basin.

SRBC MEETS WITH FOREIGN DELEGATIONS

SRBC staff met with delegations from China and Central Asia on separate occasions during 2013 to provide information on the multi-jurisdictional approach to watershed management.

Presentations focused on the need for managing water resources in an equitable manner for the benefit of all users and the environment, and for providing a forum for resolution of issues and controversies within the basin.





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(at time of publication)

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STAFF AWARDS

ANNUAL EXCELLENCE AWARD



Jeff Zimmerman, GIS Analyst, received the annual Staff Excellence Award for his efforts in three key areas: 1) stream classification within ArcGIS and creation of a map viewer used in the review of the Low Flow Protection Policy, 2) installation and configuration of a new ArcGIS Server and WEB Servers, and 3) improving data analysis associated with water budget analysis.

SPOTLIGHT AWARDS

2013 1st quarter – Todd Eaby, Cindy Obenstine

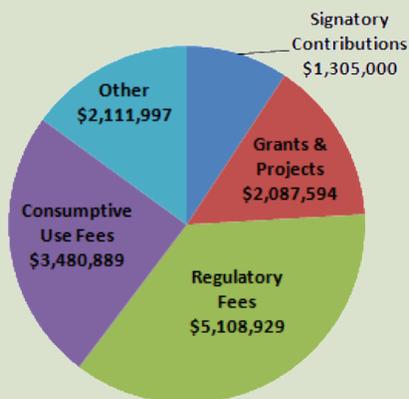
2013 2nd quarter – Bryan Snyder, Brent Bauman

2013 3rd quarter – Luanne Steffy, Chuck Frank

2013 4th quarter – Dawn Hintz, Craig Smith

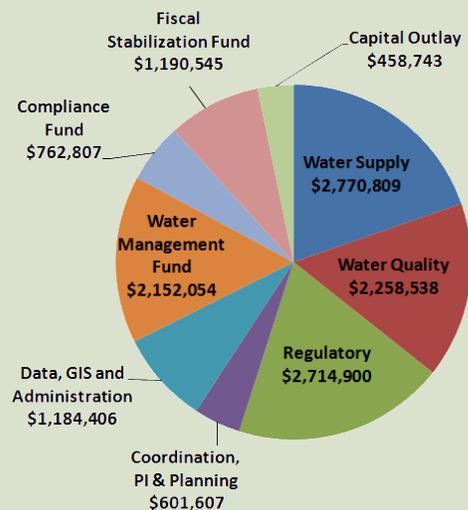
Fiscal Year 2013 Summary

Revenues



Total Revenue
\$14,094,409

Expenditures & Designations



Total Expenditures & Designations
\$14,094,409

Susquehanna River Basin Commission



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