

Water Matters



ISSUE 3

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Dear Friends:

Happy holidays, and welcome to another issue of **Water Matters**, the newsletter of IPA's Water Resources Agency! It's been a busy year in water, during which time we said goodbye to some colleagues and hello to some others.

Kevin Vonck, after a long and distinguished tenure at WRA, moved on to greener (or whiter) pastures—Wisconsin. The GIS group was finally able, after considerable delay, to bring a new analyst on board; Tina Callahan brings new perspectives and technical competence to help us fulfill our research, education, and outreach mission. In addition, the fall saw an influx of bright young students who have quickly distinguished themselves with their scholarship, camaraderie, and Fantasy Football prowess.



Students Megan, Sallyann, and Shelley, and staffers B.J. and Troy pause for a picture after volunteering for the Christina Basin clean up.

Water, ignored unless there is too much or too little, lately has become an increasingly major player in the public's perception. From Katrina to massive flooding in the Midwest, from record drought in the Southeast (with Atlanta being literally days from running dry), to rampant wildfires in southern California, water-related issues are increasingly recognized as of central concern to the economy, the environment, and public safety. Locally and regionally, water issues also loom large. For instance, Delaware Governor Minner recently declared a drought watch for the state (WRA was on the panel that made this recommendation). Issues such as the protection of riparian buffers, water treatment, concerns over water supply and surface water contamination, as well as regional disputes regarding flow in the Delaware River Basin have all become hot topics lately. At the municipal level, the

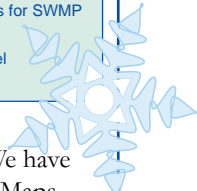
deadline for implementing source water protection plans is approaching fast.

Through our project work, collaborations, research, and involvement in advisory panels, WRA seeks to address many of these pressing issues. We have produced the new round of Water Resource Protection Maps to help guide protections in New Castle County, drafted the Pollution Control Strategy for the Christina Basin in collaboration with a multi-agency, multi-state task force, finalized a draft of the *State of the Delaware River Basin Report* (the scope of which extends into upstate New York and includes drinking water supplies for millions of people), worked with localities to draft source water-protection ordinances, and even helped map the catch basins around campus. Big or small, broad or narrow, these and other efforts by WRA all seek to protect the resource we all use daily, but which sometimes does not get the attention it deserves.

Remember, **Water Matters**...as Mark Twain said, "Whiskey is for drinking, water is for fightin'"...and we certainly think it's worth fighting for!

Andrew Homsey
GIS Services Coordinator

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Photograph by Martha Corrozi
The Brandywine River

Martha Corrozi Receives the American Water Resources Association's Outstanding Young Professional Award

by Jerry Kauffman

Described as a rising young star in water resources in the USA, the University of Delaware's Martha Corrozi received the 2007 American Water Resources Association A. Ivan Johnson Outstanding Young Professional award. Established in 2000 as the Pyramid Award and renamed in 2006 to honor A. Ivan Johnson and recognize his contributions to the support and training of young water resources professionals in the United States, this recognition is awarded to a young professional who has demonstrated outstanding achievements, talents, and leadership potential through their professional activities related to water resources.

Martha is an Assistant Policy Scientist with the University of Delaware's Institute for Public Administration-Water Resources Agency. Ms. Corrozi received the award from AWRA President Dr. Gerald Galloway on November 14, 2007, at the national conference in Albuquerque, N. Mex. Founded in 1964, the



Martha receives her award from the AWRA President, Dr. Gerald Galloway.

American Water Resources Association has over 5,000 members worldwide and is the professional association dedicated to the advancement of men and women in water resources management, research, and education.

Ms. Corrozi is co-founder of the Delaware Section of AWRA and recently completed her term as the first Charter President of the Delaware Section of AWRA. Just last year Martha served as the chair of the Student Activities Committee, which included securing a panel for the student activities night and organizing a student paper/presentation competition for the November 2006 AWRA national conference in Baltimore, Maryland. Martha also co-organized the regional Mid-Atlantic American Water Resources Association conference in September 2007 with the New Jersey, Pennsylvania, and Philadelphia Sections of AWRA

focusing on the economic benefits of watersheds, held on the University of Delaware campus in Newark, Delaware. Martha was recently elected to the AWRA Board of Directors for a three year term.

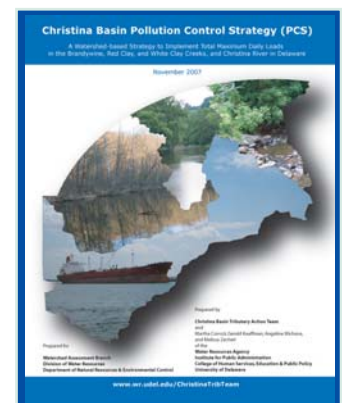
Those interested in learning more about water resources are invited to visit the Delaware Section of AWRA's website www.deawra.org or AWRA's website www.awra.org.

The Christina Basin Pollution Control Strategy

by Martha Corrozi

Since February 2006 the University of Delaware's Institute for Public Administration-Water Resources Agency (IPA-WRA) has been facilitating the Christina Basin Tributary Action Team and drafting the pollution-control strategy (PCS) for the Delaware portion of the Christina Basin. The Christina Basin Tributary Action Team has identified 40 recommendations, compiled the data for these recommendations, and drafted the *Christina Basin Pollution Control Strategy (PCS)*. These 40 recommendations form the framework for this document. It is the team's intent that this document contains the tools to meet the TMDLs set for the Delaware portion of the Christina Basin and will serve as a springboard for the groups and organizations working in the basin.

The Tributary Action Team began its process in February 2006 and held 13 meetings over the past 22 months, including a public forum in June 2006. Through this forum, the group learned the community's priorities and developed guiding principles that have helped shape the PCS for the Delaware portion of the Christina Basin. In December 2006 the group finalized a set of 40 voluntary and regulatory recommendations for the stormwater, open space, wastewater, agriculture, and education sectors. Each sector contains five to ten specific recommendations designed to reduce the levels of nitrogen, phosphorus, and bacteria in the Delaware portion of the Christina Basin, in accordance with the TMDLs. The document outlines the following for each of the 40 recommendations: responsible parties, estimated nutrient reductions, estimated costs, source(s) of funding, location for implementation, and the type of approach (regulatory or voluntary). The document also contains detailed information on the characteristics of the basin, the value of the Delaware portion of the basin, the Tributary Action Team process and members, the water quality trends in the Delaware portion of the basin, the monitoring efforts and the importance of water quality monitoring, and the cost of implementing the

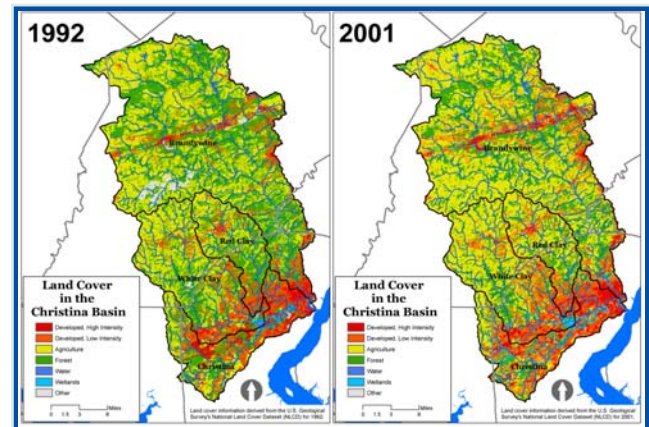


recommendations outlined in the strategy. The document can be viewed and downloaded from the Christina Basin Tributary Action Team's website www.wr.udel.edu/ChristinaTribTeam/.

The Christina Basin Tributary Action Team held its final meeting on November 5, 2007, at the Chase Center on the Riverfront in Wilmington, Del. The Tributary Action Team members who have worked so diligently on this project for the past year and a half were invited to sign the Christina Basin PCS at the beginning of this meeting. On behalf of the team, Martha Corrozi, the Christina Basin Tributary Action Team facilitator, formally submitted the plan to DNREC Secretary John Hughes. This meeting was a great opportunity for the public and Secretary Hughes to meet the Christina Basin Tributary Action Team while serving as a formal wrap up for this phase of the Christina Basin PCS process.

The document will be reviewed by DNREC, and, once finalized, the regulatory recommendations will be promulgated into law. In addition, IPA-WRA plans to begin meeting with the key implementing organizations identified in the PCS to begin

implementing some of the voluntary recommendations as soon as possible. Throughout the process, the team facilitator has updated Pennsylvania's stakeholders on the activities and the final recommendations. Now the recommendations for the Delaware portion of the basin will be joined with ongoing TMDL efforts in the Pennsylvania portion of the Christina Basin.



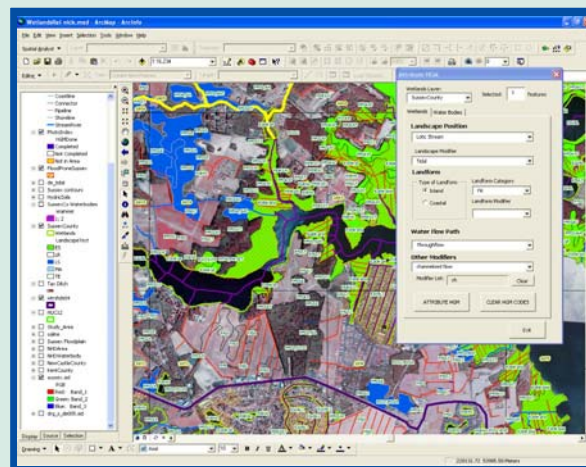
The Christina Basin Watershed land use maps shown above depict land use change from 1992 to 2001.

The Application of Hydrogeomorphic Identifiers to the Delaware Statewide Wetland Mapping Project

by Nick Walls

The state of Delaware, through the Department of Natural Resources and Environmental Control, has contracted the Institute for Public Administration-Water Resources Agency to apply hydrogeomorphic (HGM) modifiers to the Statewide Wetland Mapping Project (SWMP) database in the Delaware Estuary. This project entails two specific components. The first is the modification of the National Hydrologic Dataset with Delaware's Tax Ditch and other information derived from aerial photography. The second phase is the application of the HGM modifiers to the existing wetland database.

The Hydrogeomorphic coding system is based on identifying the relationships between a wetlands' physical location, hydrologic connections and influence, and human activity. By synthesizing this information into a standardized system, HGM allows natural-resource planners to identify wetlands that may perform specific functions. By combining Hydrogeomorphic coding information with the traditional, vegetation-based classification system (devised by Lewis Cowardin et al.), as well as other GIS data, planners can create more detailed and accurate analyses of wetland function.



Functional analyses provide information regarding what role a wetland may play in an ecosystem and can address issues such as endangered species habitat, flood abatement, nutrient filtration, or sediment capture.

This information can be applied in a variety of ways. For example, regions needing to meet regulatory targets (such as TMDLs) may use these analyses to determine which wetlands can serve as nutrient transformers. After identifying those systems that can serve this function, those that are degraded and do not meet their maximum potential pollutant-removal capability can be identified for restoration activities. Additionally, those wetlands that do function efficiently as pollutant removers can be targeted for preservation efforts. These two steps may help local jurisdictions meet their TMDL goals.

Another example of the possible utility of HGM coding is in preservation and restoration of trout and cold-water fish habitat. Combining information on historic trout stream reaches with wetlands that function to provide habitat needs for these species (those that provide stream shade and leaf detritus among others), planners can determine which wetlands may have the greatest effect on those populations. In these and other ways, hydrogeomorphic coding and the resultant functional analyses provide a very useful tool for future natural resource-planning efforts.

Holiday Water-Saving Tips

by Kelly Wolfe

Don't forget to go green and save on water usage this holiday season while putting up all the green and red decorations. With the hustle and bustle typical of the season, things tend to get a little crazy and we sometimes forget to take the extra step to conserve water. But water conservation should be practiced year-round, so why not start off on the right foot in the New Year?

One easy way to put water conservation into practice during the holidays is to gather everyone together to wash and dry the dishes by hand. Though a load of dishes cleaned in a dishwasher requires 37 percent less water than washing dishes by hand, if you fill wash and rinse basins instead of letting the water run, you'll use half as much water as would be used by a dishwasher. This is a simple, fun, and quick way to save energy. Make sure you don't keep a steady stream of hot water flowing, or you'll waste more energy than you'll save.

Here are some additional simple and cost-effective tips to save water this holiday season:

- 🌱 Defrost frozen items in the refrigerator, not under running water.
- 🌱 Cook your turkey, vegetables, and desserts in recyclable pans such as aluminum.
- 🌱 Keep soap use to a minimum to reduce the amount of rinse water needed when washing dishes.

- 🌱 Run only full loads in automatic dishwashers—you could save 1,000 gallons a month.
- 🌱 Compost appropriate food scraps instead of running garbage disposals.
- 🌱 Use cold water when operating your garbage disposal. Cold water saves energy and solidifies grease so that it will move through the drainpipes easier.
- 🌱 Check your water heater, setting water heater temperatures at 120 degrees. By lowering the thermostat on the water heater to 120 degrees, you can cut water heating bills without sacrificing comfort.
- 🌱 Insulate hot water pipes so you don't have to run as much water to get hot water to the faucet.
- 🌱 Soak pots and pans rather than letting them sit under running water while you scrape them clean.
- 🌱 Keep a pitcher of water in the refrigerator instead of running the tap for cold drinks.
- 🌱 Winterize outdoor spigots to avoid pipes from bursting or freezing.
- 🌱 Buy organic foods for holiday meals. Organic farming usually involves farming methods that help conserve soil and protect water supplies.
- 🌱 Party green and avoid disposables when entertaining. If you must use them, buy napkins and plates made from recycled materials. A good compromise is to use plastic dishes, cups, and utensils that you can wash and reuse year after year.

Source: *EarthShare.com*



Photograph by Martha Corrozi
The Brandywine River

Please welcome our new personnel!



Staff member, **Christina Callahan**, Geospatial Applications Specialist
 BA, University of Delaware 1997, Geography
 Tina is currently completing a Master of Science in Geography at the University of Delaware.
 With more than ten years of GIS and web-development experience, Tina's ongoing mission is to challenge people to be better thinkers and to become spatially aware. Through her efforts in K-12 education, higher education, and state and local government, Tina has been involved in an array of digital geospatial data-sharing initiatives and statewide collaborative projects.

Research Assistants



Andrew Belden

BA, Cornell University 2000, Biological Sciences
 Andy is currently enrolled in the MEEP program at the University of Delaware, specializing in Energy and Environmental Policy. Andy is expecting to graduate in May 2008.
 Andy lives in Chadds Ford, Pa., and enjoys rowing, trout fishing, and the endless disappointment that goes along with cheering for Philadelphia sports teams.



Erika Farris

BS, University of Delaware 2006, Natural Resource Management, Wildlife Conservation
 Erika is currently enrolled in the MA program in Urban Affairs and Public Policy at the University of Delaware, specializing in Energy, Environment, and Equity. Erika is expecting to graduate in May 2009.
 When Erika is not busy being a student and research assistant, she enjoys hiking around mountains but, for some reason, finds herself living in the state with the lowest mean elevation.



Maureen Seymour

BA, University of Michigan 2002, Anthropology
 Maureen is currently enrolled in the MA program in Urban Affairs and Public Policy at the University of Delaware, specializing in Energy, Environment, and Equity. Maureen is expecting to graduate in May 2009.
 Maureen came to Delaware to take advantage of the tax-free shopping.



Laura Yayak

Laura is currently pursuing a BS in Global Environmental Governance through the Dean's Scholar program at the University of Delaware. Laura is expecting to graduate in May 2008.
 This winter, Laura is studying abroad with UD's program in Antarctica and Argentina, learning about international conservation issues and practicing wildlife photography.



Kelly Wolfe

BA, University of Delaware 2005, International Relations
 Kelly is currently enrolled in the MA program in Urban Affairs and Public Policy at the University of Delaware, specializing in Energy, Environment, and Equity. Kelly is expecting to graduate in May 2009.
 As a native Delawarean, Kelly has enjoyed taking full advantage of Delaware's water resources, especially the beaches in the summer, and is excited to start giving back to public water resources policy and management.

Nick Walls

BA, University of Oregon 2001, Environmental Studies
 Nick is currently enrolled in the MA program in Urban Affairs and Public Policy at the University of Delaware, specializing in Environmental Land Use Policy. He expects to graduate in May 2008.

PUBLIC SERVICE

Delaware Water Supply Coordinating Council

- Finalizing the *Tenth Report to the Governor and General Assembly* regarding the progress of the Delaware WSCC, (January 2008) to comply with the Delaware Water Supply Coordinating Council Law of 2003.

Delaware Source Water Assessment and Protection Program (SWAPP)

- Preparing and assisting with source water ordinances for Middletown, Odessa, Wilmington, and New Castle County to comply with the Delaware Source Water Protection Law of 2001.
- Maintaining and designing the Delaware Source Water Assessment and Protection Program website.

Christina Basin Watershed

- Coordinating the Christina Basin Clean Water Partnership Coordination Committee.
- Finalizing the Christina Basin Pollution Control Strategy and beginning the implementation of key recommendations contained in the strategy.
- Serving as the Delaware co-chair for the White Clay Creek Wild and Scenic River Committee.
- Preparing a State of the Watershed report for the White Clay Creek.
- Providing GIS support for the flood-mitigation efforts in the Red Clay Creek Valley in concert with DNREC and the Army Corps of Engineers.
- Maintaining and designing the Christina Basin Tributary Action Team website.

Delaware River Basin

- Finalizing the State of the Basin report for the Delaware River Basin's 13,000-square-mile watershed in concert with land grant universities at Cornell, Penn State, and Rutgers and with DRBC and the Delaware Estuary program.

New Castle County

- Setting up a database and mapping of recharge facilities as requested by the New Castle County recharge protection area technical advisory committee.
- Authored water supply and water quality provisions of the New Castle County comprehensive plan.
- Mapping natural resource areas upstream of the four water supply intakes in the Christina Basin as part of the New Castle County Source Water Protection Approach.

City of Newark

- Coauthored a book on the history of Newark's water supply.
- Reviewing updates to Newark's stormwater code.
- Updating Newark's Upper Christina River 1993 Floodplain Management Plan with the USDA, Natural Resources Conservation Service.
- Prepared EPANET2 computer water supply distribution model for the city.
- Assisting with the NPDES permitting process in conjunction with the University of Delaware's Facilities Department.

City of Wilmington

- Working with Trees for Wilmington, a task force of the Wilmington Beautification Commission, to set an urban tree canopy goal and identify impediments to increasing the urban tree canopy in Wilmington.
- Assisting with the development of the revised Source Water Protection Area maps for the City of Wilmington.

American Water Resources Association (AWRA)

- Serving on AWRA's Board of Directors.
- Serving on the Delaware Section of AWRA's Board of Directors.

RESEARCH

- Implementing a stream restoration project on the Blue Hen Creek, located on the University of Delaware's campus, with funding from the National Fish and Wildlife Foundation.
- Updating the statewide wetlands coverage with hydrogeomorphic modifiers.
- Analyzing trends in water quality in the major watersheds of North America for an article in *Science* journal.
- Developing an article, "Impervious cover and base flow in White Clay Creek watersheds" for the *Journal of Hydrology*.
- Submitting a manuscript of the article, under peer-review, "The Severity of the 2002 Drought Based on Historic Mill Accounts and Tree Ring Records dating to 350 AD," to the *Journal of the AWRA*.
- Writing an article titled "GIS Reconstruction of Howe and Washington between the Chesapeake and Brandywine in August/September 1777" for the *Delaware Historical Society Journal*.
- Delineating the official watershed boundaries to conform to USGS and DNREC standards.

EDUCATION AND OUTREACH

Courses

- CIEG 440: Water Resources Engineering
- CIEG 452: Watershed Engineering, Planning, and Design
- UAPP 611: Regional Watershed Management
- UAPP 652-010: GIS in Public Policy
- UAPP 655-010: GIS in Public Policy
- University of Delaware's Sea Grant Nonpoint Education for Municipal Officials (NEMO) program
- GIS in Education Working Group

Forums

- Formulating the theme for the 8th Annual Water Policy Forum Fall 2008, tentative theme: Impacts of Climate Change on Water Resources in the Delaware River and Chesapeake Bay Basins.
- Planning the annual Delaware GIS Conference: A Spatial Network. The conference will be held on Wednesday, April 23, 2008, at the Sheraton Conference Center in Dover, Delaware.

