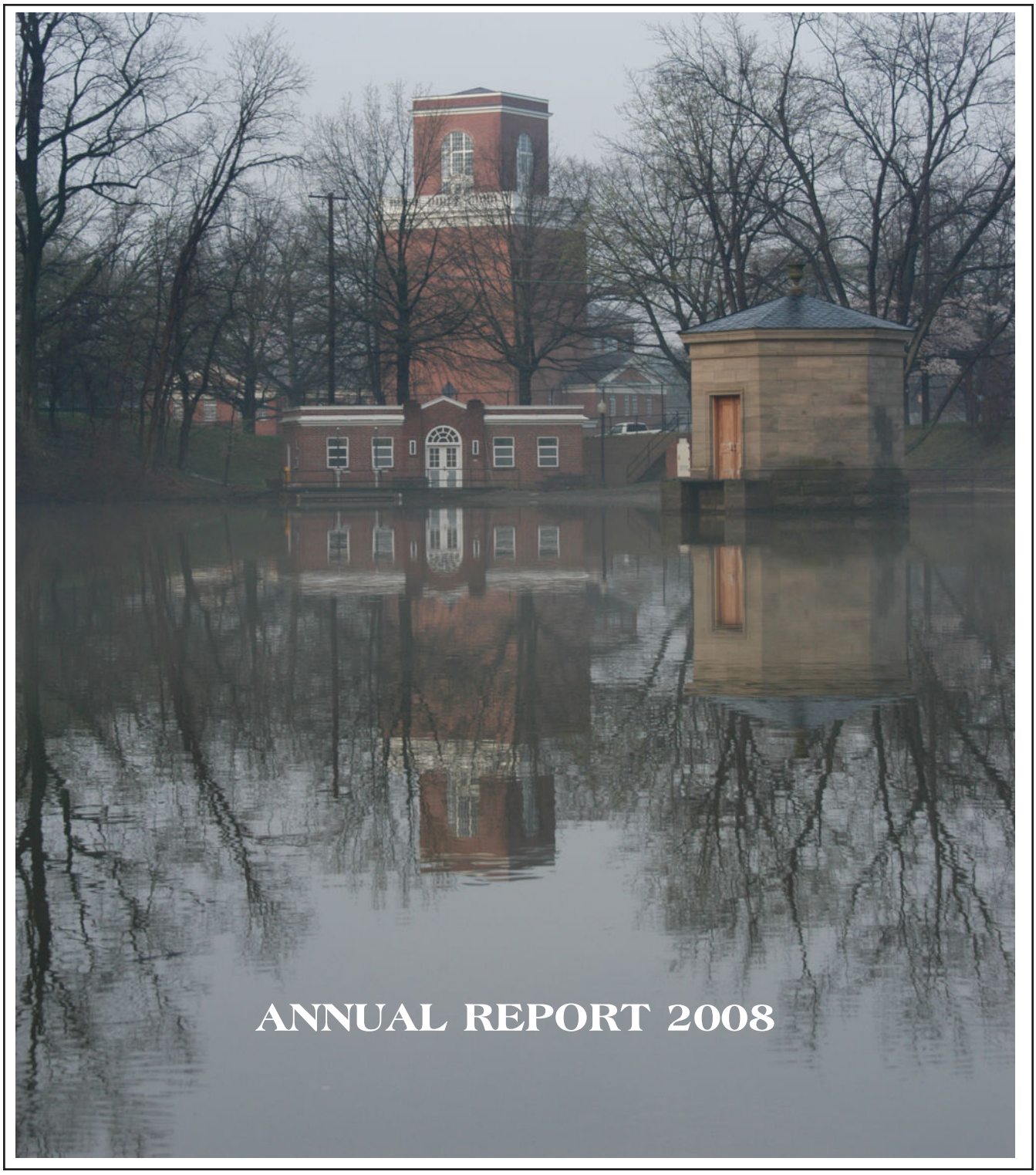
Potomac River Basin Drinking Water Source Protection Partnership



"For Life, For Health, Clean Water"

The Potomac River Basin Drinking Water Source Protection Partnership

Our mission is to serve as a cooperative and voluntary partnership working toward the goal of improved source water protection within the Potomac River basin in recognition of the vital role of the river and its tributaries in supplying drinking water to millions of people and in support of the multi-barrier approach to safeguarding the drinking water supply for public health.

The Partnership

The Potomac River Basin Drinking Water Source Protection Partnership (DWSPP) is a unique regional organization formed to help ensure that the basin's public drinking water sources, serving more than five million people, are protected from contamination that could adversely affect the health of consumers. The Partnership was formalized in 2004. At the present time, 20 drinking water utilities and government agencies from throughout the Potomac River basin are DWSPP members.

Through technical work groups, education and outreach activities, and participation at Partnership meetings, the DWSPP is implementing a strategy for carrying forward source water protection as recommended by assessments that were prepared throughout the Potomac basin. These efforts include, but are not limited to identifying regional priorities, increasing coordination among water suppliers, promoting information sharing among stakeholders, and developing new ways to cooperatively protect source water quality.

Members

City of Frederick, Md.

City of Hagerstown, Md.

City of Rockville, Md.

D.C. Department of the Environment

Fairfax Water, Va.

Frederick County, Md.

Interstate Commission on the Potomac River Basin

Loudoun Water, Va.

Md. Department of the Environment

Pa. Department of Environmental Protection

Town of Leesburg, Va.

U.S. Environmental Protection Agency, Region 3

U.S. Geological Survey

Va. Department of Environmental Quality

Va. Department of Health

Washington Aqueduct, U.S. Army Corps of Engineers

Washington County, Md.

Washington Suburban Sanitary Commission, Md.

W.Va. Department of Health and Human Resources

W.Va. Department of Environmental Protection

Front Cover: Dalecarlia Reservoir, a part of the District of Columbia's water supply system operated by Washington Aqueduct. Photo courtesy of T. Jacobus.

LETTER FROM THE CHAIRMEN

We are pleased to report continued progress in the Partnership's fourth year of organized activities. Highlights of 2008's accomplishments include the publishing of a *Cryptosporidium* source tracking report, an introductory workshop on the beef and dairy industries in the Potomac River basin and their relation to water quality, an emergency spill response training and exercise, and continued involvement in the research and monitoring of emerging contaminants.

The Partnership's workgroups were busy this year. Here is a quick take on their activities.

This year the Pathogens Workgroup completed the *Cryptosporidium* source tracking project and published the results in a prominent microbiology journal. As a follow-up to this study, the workgroup, with assistance from the Mid-Atlantic Regional Water Program and others, began developing a strategy to involve the Partnership in source water protection measures to help prevent *Cryptosporidium* from entering drinking source waters.

To begin this effort, an "Ag 101" workshop was organized to present information on operations, regulations, and best management practices related to the beef cattle and dairy industries. The workgroup also organized a field tour of beef and dairy farms for this year's Partnership Annual Meeting. Complementing the focus of the Pathogens Workgroup, Partnership members began to identify opportunities for partnering with local agencies and watershed groups in several Potomac basin subwatersheds.

The Emerging Contaminants Workgroup continues to monitor and review ongoing research efforts related to endocrine disrupting compounds (EDCs), pharmaceuticals and personal care products (PPCPs), and other classes of emerging contaminants. Washington metropolitan area water suppliers, through active participation in the Water Research Foundation, known formerly as the American Water Works Association Research Foundation (AwwaRF), have prompted the foundation to make the Potomac River basin a focus of a number of projects in which the Partnership will be involved. In addition, activities this year by individual Partnership members included synoptic sampling for EDCs, perchlorate monitoring, and participation in a pharmaceutical disposal summit.

The Early Warning/Emergency Response Workgroup, with the assistance of EPA Region 3 and the U.S. Department of Transportation, organized a two-day emergency response training and spill response exercise in cooperation with federal, state, and local authorities, and the Colonial Pipeline Company.

The Urban Issues Workgroup continued efforts to research and monitor the effects of de-icing compounds on drinking water sources within the Potomac River basin and the Reaching-Out Workgroup distributed information generated by the workgroups through our new website, *www.potomacdwspp.org*, and other media outlets.

We are proud of the role the Partnership plays in protecting the Potomac River basin's drinking water sources. We appreciate the commitment and hard work of our members and extend an invitation to other water utilities and government agencies to join us in this important effort.

Robert Summers
Deputy Secretary, Maryland Department of the Environment
2009 Chairman, Potomac River Basin Drinking Water Source Protection Partnership

Thomas Jacobus
General Manager, Washington Aqueduct
2008 Chairman, Potomac River Basin Drinking Water Source Protection Partnership

Partnership Completes Crypto Tracking Project

Cryptosporidium (Crypto), a protozoan parasite, has been identified by DWSPP as a priority pollutant of concern for the water utilities in the Potomac River watershed. Crypto oocysts (the infectious dormant form of the organism) are excreted by infected animals and humans and are commonly found in lakes, rivers, and streams that serve as drinking water sources. Potential sources of Crypto include agricultural activities and animal operations, combined sewer overflows and wastewater treatment plant discharges, wild animals, and stormwater runoff. Crypto oocysts are resistant to disinfection by chlorination and cause significant gastrointestinal illness and, in some cases, death.

The Partnership, in cooperation with the USEPA Office of Research and Development (ORD) and the U.S. Centers for Disease Control and Prevention (CDC), began the Crypto Source Tracking Project within the Potomac watershed in October

Beef and dairy cattle operations can be a source of Cryptosporidium.

2006 to identify the specific sources of Crypto found in local drinking source waters. This is important for addressing the problem as most Crypto species and genotypes are host-specific, and most are not harmful to humans. A total of 64 base flow and 28 storm flow water samples were collected from the Potomac River and its tributaries from October 2006 to February 2008.

The most frequently detected species was *Cryptosporidium andersoni* (detected in 41 samples), a species known to infect cattle but not harmful to humans. Additionally, 14 other species or genotypes – almost all wildlife associated – were detected. The two most common human-pathogenic species, *Cryptosporidium hominis* and *Cryptosporidium parvum*, were not detected. While *Cryptosporidium andersoni* was common at sites influenced by agriculture, it was largely absent at an urban wastewater site. In aggregate, the results suggest that cattle operations may be the primary contributor of Crypto that is detected at the Washington metropolitan water utilities' Potomac River intakes. Although the species harmful to humans were not found in this study, the sampling was limited to several events and it is possible that these species may be present at different times of the year (e.g., during calving season). Based on the results of this study, the Partnership will promote a multi-barrier approach to source water protection, which includes a focus on cattle operations, to reduce risks from Crypto.

An abstract for the published results of this project, "*Cryptosporidium* Source Tracking in the Potomac Watershed," by W. Yang et al., *Applied and Environmental Microbiology*, Vol. 74, No. 21, November 2008, is available. A link to download the article can be found on the DWSPP website.

Potomac River Spill Response Training Protects Water Supplies

The Potomac Drinking Water Source Protection Partnership, EPA Region 3, and the U.S. Department of Transportation jointly sponsored a two-day event this fall to help agencies better prepare for a contaminant spill that affects the sources of drinking water in the Washington, D.C. metropolitan area. Spill response training was conducted on September 16 and a table-top exercise took place on October 21, 2008. The purpose of these sessions was to provide emergency response training, enhance coordination and communication between all potential responders, improve the understanding of roles and responsibilities, and discuss immediate steps to prepare for a future water system-specific emergency incident. Participants included representatives from drinking water utilities, state and local emergency response departments, and state, regional and federal agencies.

The training session provided an overview of the Incident Command System (ICS) framework for emergency response, provided participants with an opportunity to review local and regional emergency response plans related to drinking water, and ended with an exercise to develop an ICS Command Structure for a Potomac spill response. The tabletop exercise addressed a hypothetical oil spill from a pipeline into the Potomac River upstream of the major water

The 1993 pipeline rupture that spilled oil into Sugarland Run and the Potomac River focused the region on the importance of emergency response to accidents.

supply intakes for the Washington, D.C. metropolitan area. It consisted of a series of facilitated discussions on the following topics:

- Communications
- Oil tracking and forecasting via simulation models or visual observation
- Oil containment measures and options for protecting water supply intakes
- Potential operational changes at intakes and water treatment plants by water utilities
- Emergency water restrictions
- Media and public relations

Many organizations contributed time and resources to help make this event a success by assisting in planning, donating resources, and by preparing presentations. The sessions were facilitated by the EPA-funded contractor, the Horsley-Witten Group. The Meeting facilities were donated by Fairfax Water, and lunch was provided by the Colonial Pipeline Company.

Agricultural Water Quality Explored

The Pathogens Workgroup coordinated two events this year to help educate Partnership members on the relationship between agricultural practices and source water protection. The Mid-Atlantic Regional Water Program assisted with the coordination of the Agriculture (Ag) 101 workshop, held on August 21, 2008, at the U.S. Department of Agriculture's Agricultural Research Center in Beltsville, Md. This workshop provided Partnership members with a baseline understanding of the microbe *Cryptosporidium* and its transport into receiving waters. It also covered best management practices to deal with agricultural runoff—including cost sharing programs, the economics of and the current trends in basic cattle and dairy operation management, and agricultural regulations at the state and federal level. Additionally, the workshop served to inform representatives of state agencies, whose primary focus is nutrients and sediment, about source water protection issues, and to provide Partnership members with a foundation for developing source water protection strategies in the Potomac River basin.

Modern agricultural practices can protect the water quality of the the sources of our drinking water.

On December 2, 2008, the Partnership members participated in tours of a beef cattle operation and a state-of-the-art dairy facility. The farm tours allowed the members to get better acquainted with various agricultural practices of modern beef and dairy operations and with the issues producers and local conservation agencies face when implementing measures to reduce runoff.

DWSPP/Water Research Foundation Partnership

Many of the source water issues we face in the Potomac River basin are not unique, but are also of concern in other parts of our country. For this reason, Partnership members are working with a national organization, the Water Research Foundation to help us achieve our goals. The foundation sponsors research and promotes collaboration on topics related to drinking water. Washington metropolitan area utilities are active members of this organization, and their participation in several foundation governance boards helps communicate Potomac basin concerns to a broader audience.

During the past year, the Partnership became involved in two foundation projects on emerging contaminants. First, with Partnership input, the foundation designed and sponsored a special workshop for our members in April, entitled "AwwaRF Research on EDC'S and Risk Communication for Potomac Region Stakeholders." Second, DWSPP members succeeded in having the Potomac basin selected as a case study for an upcoming project, "Water Utility Framework for Responding to Emerging Contaminant Issues."

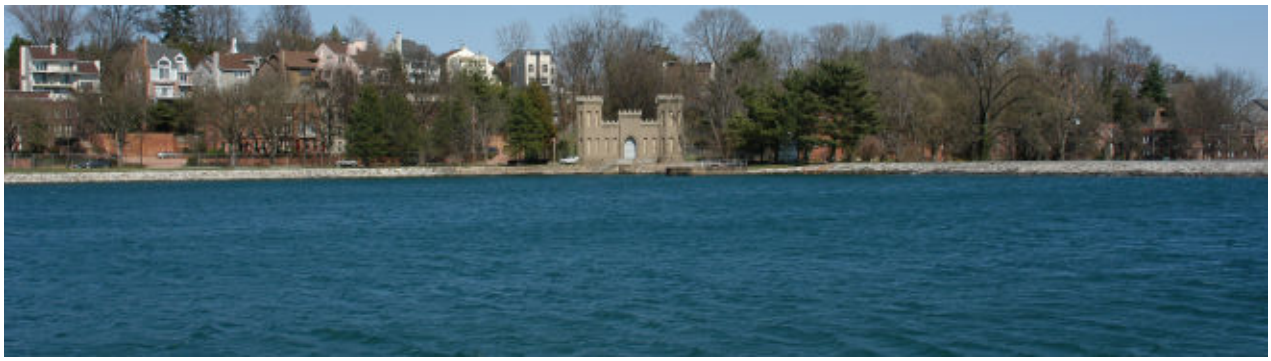
Potomac River Drinking Water Source Protection Partnership Upcoming Efforts for 2009

- *Continue to learn about Cryptosporidium in the Potomac basin and foster partnerships to reduce its presence in the watershed.*

- *Participate in the regional case study being conducted by the Water Research Foundation, "Water Utility Framework for Responding to Emerging Contaminants."*

- *Build on the spill exercise conducted in 2008 to improve the capacity to respond to a spill in the basin and to ensure source water protection issues are taken into consideration. The focus will be on refining the communications strategy and building relationships with regional emergency response agencies.*

- *Review NPDES permits in the basin as they relate to sources of drinking water. Develop an understanding of the permitting process and get a sense of where permitting is headed in each of the basin states.*



The Georgetown Reservoir holds settled water for the District of Columbia. The U.S. Army Corps of Engineers "castle" is a local landmark.

Questions, Comments, Contact

Want to know more about the Partnership? Would your organization like to participate? Please contact us.

Cherie Schultz, Ph.D.
Associate Director, Water Resources
email: cschultz@icprb.org

Karin Bencala
Water Resources Planner
email: kbencala@icprb.org

Interstate Commission on the Potomac River Basin
51 Monroe Street, Suite PE-08
Rockville, MD 20850
phone: 301-984-1908 ext 139
fax: 301-984-5841

Visit the Partnership on the web at: ***www.potomacdwspp.org***

Front and back cover photos courtesy of T. Jacobus, Washington Aqueduct. Inside photos courtesy of C. Dalpra/ICPRB.