POTOMAC RIVER BASIN DRINKING WATER SOURCE PROTECTION PARTNERSHIP

2005 Annual Report

Accomplishments this year:

- Strategic plan adopted
- Pathogens workshop held in June
- Emerging contaminants workshop held in September

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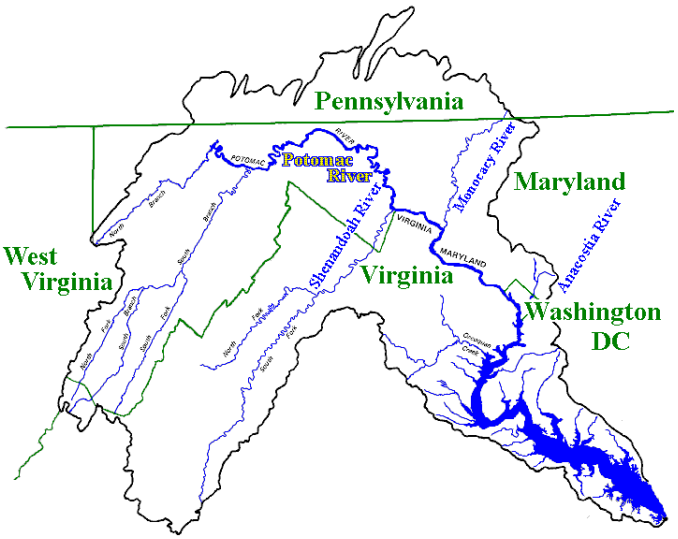
LETTER FROM THE CO-CHAIRS

Protection of raw water sources is an important aspect of the drinking water business. It helps to reduce public health risks, protects the environment, and reduces costs associated with finished water treatment. The Safe Drinking Water Act Amendments of 1996 required that source water assessments be done on all community water sources. A *source water assessment* includes a delineation of the assessment area, an inventory of potential sources of contamination within that area, and a determination of the susceptibility of a water supply to those contaminant sources. The Potomac River Basin Drinking Water Source Protection Partnership was established in 2004 to better protect the Potomac River for its use as a water supply for the Washington Metropolitan Area and many other communities in the region. The Partnership builds on the source water assessment work that was completed during the last several years.



The Partnership has had a strong first year. During this first year the Partnership adopted *A Strategic Plan for Source Water Protection in the Potomac River Basin*. This plan outlines the priorities and projects that the Partnership will be pursuing. Pathogens and emerging contaminants were identified as priority concerns that would be focused on in the coming year. The Partnership organized a Pathogens Workshop to learn more about pathogen sources and begin discussion on a strategy to reduce pathogen loads in the Potomac River Basin. The workshop focused primarily on *Cryptosporidium*. The Partnership also sponsored a workshop on Emerging Contaminants and Water Supply in Shepherdstown, West Virginia, focusing on Endocrine Disrupting Chemicals, or EDCs. We would like to recognize and thank the Environmental Protection Agency, a member of the Partnership, which provided funding to make both of these workshops possible. We also express our gratitude to the West Virginia Department of Health and Human Services, which provided funding for the second workshop. We look forward to building on this initial work as the Partnership moves forward.

The Partnership can be made stronger through increased participation by water utilities and other organizations that support source water protection in the Potomac River Basin. If you or someone you know would like to learn more about participating in Partnership activities, please contact us.

Julie Kiang,
Associate Director, Water Resources, Interstate Commission on the Potomac River Basin
CO-Chair, Potomac River Basin Drinking Water Source Protection Partnership

Mohammed Habibian,
Environmental Group Leader, Washington Suburban Sanitary Commission, CO-Chair, Potomac River Basin Drinking Water Source Protection Partnership

Partnership signing, September, 2004 (ICPRB)

ABOUT THE PARTNERSHIP

Water utilities and the various government agencies responsible for drinking water protection in the Potomac River basin have forged the Potomac River Basin Drinking Water Source Protection Partnership, a unique regional partnership to ensure that the public drinking water sources serving more than 4 million people are protected from contamination that could have adverse health effects on consumers. The Partnership is a voluntary organization of drinking water suppliers and government agencies working to protect drinking water sources, thereby safeguarding both public health and the environment. The Partnership was formalized through a signing ceremony held September 24, 2004 at Black Hill Regional Park in Boyds, Maryland, adjacent to Little Seneca Reservoir, a crucial element of the Washington Metropolitan Area water supply. Nineteen government agencies and drinking water utilities from throughout the Potomac River Basin have formally joined the DWSP Partnership.

The Partnership is currently comprised of two main committees, a **Government Partners Committee**, and a **Metropolitan Area Utility Committee.** The Government Partners Committee includes representatives from state (Maryland, Virginia, West Virginia, and Pennsylvania), interstate, and federal agencies and the District of Columbia. Representatives are generally responsible for source water protection programming. The Metropolitan Area Utility Committee focuses on water supply for the Washington, D.C. metropolitan area and includes representatives from the D.C. metropolitan area water suppliers. **Additional utility and/or regional committees** will be developed as the Partnership moves forward. Each Committee selects a chairperson to facilitate meetings and represent the Committee. The Chairperson for the overall Partnership rotates on an annual basis among the chairpersons of the Committees. Each committee may act independently, but the Partnership's actions or positions will be based on the consensus of its interested members. The **Interstate Commission on the Potomac River Basin**, as an independent agency whose charter encompasses the entire Potomac River Basin, is the Partnership Coordinator. ICPRB works with the Partnership committee chairpersons to host meetings, prepare agendas, and meet other needs for Partnership and Committee meetings.

Through work groups and active discussion at Partnership meetings, the DWSP Partnership is implementing a strategy for carrying forward source water protection as recommended by source water assessments that were prepared throughout the Potomac basin.

The goals of the Partnership are to:

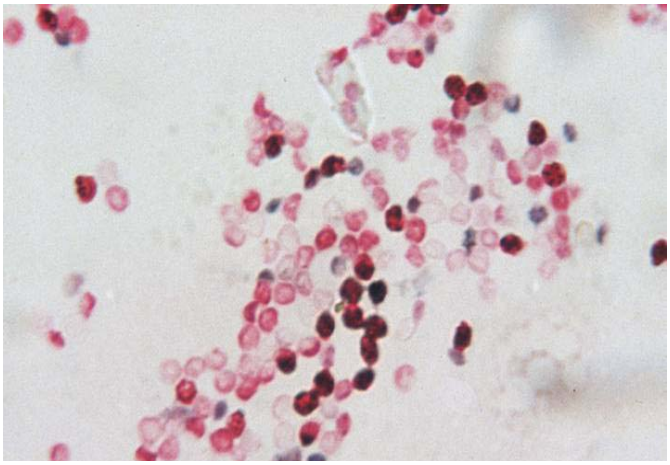
- Identify regional priorities for source water protection efforts.
- Coordinate, where appropriate, source water and drinking water protection efforts to benefit multiple water systems.
- Establish and maintain a coordinated dialogue, including a Partnership Framework, between water suppliers and government agencies involved in drinking water source protection within the Potomac River Watershed.
- Establish and maintain a coordinated dialogue between the Partnership agencies and other groups working towards watershed protection within the Potomac River Watershed.
- Promote information sharing among groups working on, and affected by, safe drinking water issues.
- Enhance coordinated approaches to water supply protection measures in the Potomac basin, especially for boundary waters and for project planning that impacts interstate waterways.
- Develop new initiatives within the drinking water community and with partners that will fill program voids, ensuring higher quality drinking water supplies.

Web Site: http://www.potomacriver.org/water_quality/safewater.htm

Thomas Jacobus, Chief, Washington Aqueduct (ICPRB)

PATHOGENS WORKSHOP HELD IN JUNE

Cryptosporidium is a parasite that has caused significant waterborne disease outbreaks. This parasite causes *Cryptosporidiosis,* a gastrointestinal illness with symptoms that include diarrhea, nausea, and/or stomach cramps. *Cryptosporidium* can cause death in immunocompromised individuals. *Cryptosporidium* can be found in lakes and rivers, and can be present in increased numbers in areas contaminated with sewage or animal wastes. It is resistant to disinfection and can be difficult to treat. The US Environmental Protection Agency (EPA) has issued several rules in recent years to increase protection of drinking water from cryptosporidium.



Cryptosporidium, photo by Thaddeus Graczyk , Johns Hopkins University

On June 28th the Partnership held a workshop entitled *Developing a Plan to Identify Cryptosporidium Sources in the Potomac River*. The workshop brought together speakers from academia, industry, and government to discuss a variety of topics. The goals of the workshop were to educate water suppliers on *Cryptosporidium* in the Potomac River Basin, provide an overview of sampling methods, and to discuss a plan of action to better address pathogens in the watershed.

Presence of *Cryptosporidium* in the Potomac River Basin. The Maryland Department of the Environment presented the results of a study conducted from 1998 through 2002. The study evaluated cryptosporidium levels near wastewater treatment plant discharges and raw water withdrawals. Johns Hopkins University performed the analysis. Oocysts were tested for viability, infectivity and genotype. Seven of the nine wastewater treatment plants sampled were found to have *Cryptosporidium* in their effluent. For the raw water sampling, seven of nine baseflow samples were positive for *Cryptosporidium*.

Sampling and Detection Methods. Presentations were provided describing methods for sampling and detecting *Cryptosporidium*. Thaddeus Graczyk, Ph.D., Johns Hopkins University; Susan Boutros, Ph..D., Environmental Associates, and Michael Ware, Ph.D, EPA, provided detailed information on the various sampling methods available. Kristen Jellison, Ph.D., Lehigh University, discussed source tracking methods that have been developed and utilized in studies for the Massachusetts Water Resources Agency. Trisha Johnson, US Geological Survey, discussed the presence of enteric viruses in groundwater.

Public Health Risks. Dr. Graczyk provided an additional presentation on public health risks. He identified young children, patients undergoing immunosuppressive therapy, and with acquired or congenital immunodeficiencies as those most at risk. He also discussed modes of transmission for *Cryptosporidium* and discussed the risk of infection associated with different levels of *Cryptosporidium*.

The workshop concluded with a panel discussion. The group discussed potential next steps in evaluating sources of cryptosporidium in the Potomac River Basin. Some of the next steps identified include looking at the available data, then developing a sampling plan to look at one or two smaller, representative watersheds within the basin. Presentations are available on the ICPRB website at http://www.potomacriver.org/water_quality/safewater.htm

Partnership staff has been building on the workshop and working to develop a study plan for future evaluations. The **proposed study plan** will most likely include a 3-year monitoring study focusing on 2 to 3 diverse watersheds within the Potomac River Basin, as discussed during the panel discussion. Funding options are currently being investigated to implement a final version of this plan.

The Partnership thanks **Miranda Brown**, Washington Aqueduct, for acting as Chairperson for this workshop.

EMERGING CONTAMINANTS WORKSHOP HELD IN SEPTEMBER

A significant number of studies have been done in recent years to quantify the presence of pharmaceuticals, personal care products, and/or endocrine disrupting chemicals in raw water sources. Endocrine disrupting chemicals affect the body's endocrine, or hormone systems, and include glands, hormones made and released by the glands, and receptors in organs or other tissue that respond to the hormones. However, the biological significance of these chemicals at very low levels in the environment is not yet well documented. In addition, many of these chemicals are not regulated in the environment or in finished drinking water. How water utilities respond to address these concerns has become a challenge in recent years.

On September 19th the Partnership held a workshop on emerging contaminants at the National Conservation Training Center in Shepherdstown, West Virginia. The workshop focused specifically on endocrine disrupting chemicals (EDCs) and was targeted towards public drinking water suppliers, government agencies responsible for implementing the Safe Drinking Water Act, and agencies involved in research on emerging contaminants. The goals of the workshop were to educate water suppliers and government agencies on emerging contaminants in the Potomac basin, provide an overview of currently available data, and discuss a plan of action for furthering understanding of emerging contaminants and their possible impacts on the Potomac River Basin as a drinking water supply. A variety of topics were discussed, covering both national research and Potomac

River Basin studies:

Occurrence of EDCs in the Potomac River Basin. The United States Geological Survey (USGS) provided several presentations. Dana Kolpin with the Iowa Water Science Center, discussed ongoing work that USGS is doing to quantify pharmaceuticals and other emerging contaminants in the environment throughout the United States. Dr. Cherie Miller, with the Maryland Water Science Center, provided an overview of USGS studies on pesticides and other toxic contaminants within the Potomac River Basin. Dr. Miller's presentation discussed trends in the Potomac Basin related to land use, including compounds more commonly found in urban or agricultural land uses.

Effects on Fish in the Potomac River Basin. Doug Chambers, with the West Virginia Water Science Center, USGS, discussed sampling that has been done in the South Branch of the Potomac River and the Cacapon River after widespread incidences of fish lesions were identified. A significant number of smallmouth bass in the South Branch were found to have lesions and a number were characterized as "intersex males." In 2004, the USGS installed passive water sampling devices to characterize the chemical environment at several sites. Analyses showed the presence of pesticide, flame retardant, and personal care product residues in stream water. Several of these compounds, some known or suspected EDCs, were also found in the blood plasma collected from intersex fish. Investigations are continuing. Dr. Vicki Blazer, with the National Fish Health Research Laboratory, Leetown Science Center, USGS, provided a related presentation discussing the biological effects of such chemicals on fish.

Hardy County Cancer Cluster. Alan Ducatman, MD, Department of Community Medicine at the West Virginia University School of Medicine, discussed a cancer cluster in Hardy County, WV, which has been suspected of being related to EDCs. A link between the increased rates of specific estrogen-related cancers and EDCs has not yet been established, but further study is planned.

Risk Communication. Lisa Ragain, Department of Environmental and Occupational

Health, George Washington University, discussed recommendations on how water providers can communicate with the public about emerging contaminants. The presentation focused on research results from the AwwaRF study, "Risk Communication and Emerging Contaminants," completed in 2005. Basic risk communication and risk perception principles were discussed. Approaches to developing a strategic and comprehensive risk communication program for utilities to address current and emerging contaminants were discussed.

EPA's Long Term Plan. Dr. Elaine Francis, national program director for EPA's Pesticides and Toxics Research Program described how, in 1996, EPA was directed to screen pesticides for estrogenic activity in humans through enactment of the Food Quality Protection Act. EPA was also given the authority to screen for other endocrine effects as well. Also in 1996, the Safe Drinking Water Act Amendments authorized EPA to screen drinking water contaminants for similar activities. As a result, EPA is developing and implementing the Endocrine Disruptor Screening Program (EDSP). In addition, known or suspected EDCs will be considered in the Contaminant Candidate Listing process under the Safe Drinking Water Act and development of water quality criteria and standards under the Clean Water Act. A blueprint for EPA's research program, published in 1998 as the *Endocrine Disruptors Research Plan,* as well as a more recent *Multi-Year Plan for Endocrine Disruptors*, outline specific issues that will be addressed over the next five to ten years. The long term goals associated with the plan are to provide a better understanding of science underlying the effects, exposure, assessment, and management of endocrine disruptors; determine the extent of the impact of endocrine disruptors on humans, wildlife, and the environment; and support EPA's screening and testing program.

Risk to Water Suppliers of Litigation. Barbara Little, Esq., Jackson Kelly PLLC Attorneys at Law, discussed tort law and the likelihood of a water supplier being susceptible to lawsuits associated with unregulated contaminants. Recommendations included always being in compliance with the Safe Drinking Water Act and communicating risks and known information associated with unregulated contaminants.

AwwaRF Research. Kim Linton, American Water Works Association Research Foundation (AwwaRF), discussed studies regarding emerging contaminants that have been conducted. A discussion of the recently completed project *Evaluation of Conventional and Advanced Treatment Processes to Remove EDCs and PhACs* was provided.

Other Research. Studies of emerging environmental contaminants by academic institutions were described in presentations by Dr. Rominder Suri, Villanova University, and Dr. David Orvos, Sweet Briar College. In addition, Dana Heriegel, from EPA Region III, summarized pharmaceutical take-back pilot programs as one of the possible source control best management practices.

The workshop concluded with a panel discussion focusing on development of next steps for the Partnership to take to address EDCs in the Potomac River Basin. **Proposed next steps** include surveying other water suppliers, outreach and communication by the Partnership and partnering with AwwaRF on a study with the Potomac River Basin as a case study.

The Partnership thanks **Martin Chandler** with Washington Suburban Sanitary Commission (WSSC) for acting as Chair for this workshop and thanks WSSC for funding limited consultant services in support of the workshop.

STRATEGY DOCUMENT ENDORSED

The Partnership formally adopted a Strategic Plan on August 9, 2005. The Strategic Plan sets forth the Partnership's mission, objectives, and priorities, and establishes workgroups to study important issues and project areas in greater depth. Progress in meeting the objectives of the Strategic Plan will be evaluated on an annual basis. As needed, the Strategic Plan will be updated to reflect past accomplishments, changing watershed conditions, and the evolving priorities of the Partnership.

The Partnership's Mission Statement

To serve as a cooperative and voluntary partnership working towards the goal of improved source water protection of the Potomac River in recognition of the vital role of the river in supplying drinking water to millions of people within the Potomac watershed and in support of the multi-barrier approach to safeguarding the drinking water supply for public health.

The Strategic Plan sets forth the issues of initial importance to the Partnership and establishes six workgroups to focus on particular issues.

1.The **Pathogens Workgroup** will provide the Partnership with information on pathogens which may affect the raw water supplied by the Potomac River and its tributaries. The workgroup will seek to understand the sources of pathogens in the Potomac watershed and methods for controlling their introduction into the water supply.

2.The role of the **Emerging Contaminants Workgroup** is to support the Partnership by tracking and reporting on findings of research and monitoring of persistent and newly identified threats posed to the Potomac River drinking water supply.

3.The **Early Warning and Emergency Response Workgroup** is intended to better prepare the Partnership's member utilities to respond in the event of a spill or other incident that affects their water supplies. The workgroup will evaluate the need for an early warning monitoring system for the Potomac River and its tributaries and help to coordinate the development of needed components of such a system. The workgroup will also assist in the development of an emergency response plan to improve communication among all affected utilities in the event of a water supply emergency.

4.The **Disinfectant By-Product (DBP) Workgroup** is intended to develop better information for Partnership utilities to address disinfection by-product issues from a source water protection approach. This workgroup shall focus on prioritizing and conducting research to assess the relative contribution of different watershed sources of natural organic matter and DBP precursors. The goal of this workgroup is to focus source water protection efforts on those sources most significant to DBP levels in treated/distributed water and to identify the most feasible and cost effective source water protection measures.

5.The **Urban Issues Workgroup** is intended to position the Partnership to better communicate drinking water needs in the Potomac River Basin to the agencies who oversee implementation of urban stormwater management programs. This workgroup will focus on urban stormwater including urban runoff, combined sewer overflows, and sanitary sewer overflows associated with storm activity.

6.An **Agricultural Issues Workgroup** is planned to integrate source water protection efforts with agricultural issues.

The Strategic Plan identifies a series of activities or action items in each of the workgroup areas. While many of the activities identified in the Strategic Plan can be achieved through the internal staffing and resources of the Partnership's member organizations, a number of projects will require additional funding. The Partnership will consider and pursue funding opportunities to support proposed projects and future Partnership demands through grants or other means as appropriate.

Partnership signing, September, 2004 (ICPRB)

PARTNERSHIP MEMBERS

Signatory List, as of 10/14/05

City of Frederick, Maryland
City of Hagerstown, Maryland
City of Rockville, Maryland
Fairfax Water
Frederick County, Maryland
Interstate Commission on the Potomac River Basin
Maryland Department of the Environment
Pennsylvania Department of Environmental Protection
Town of Leesburg, Virginia
United States Environmental Protection Agency, Region III
United States Geological Survey
Virginia Department of Environmental Quality
Virginia Department of Health
Washington Aqueduct Division of the U.S. Army Corps of Engineers
Washington County, Maryland
Washington, D.C. Department of Health
Washington Suburban Sanitary Commission
West Virginia Department of Health and Human Resources
West Virginia Department of Environmental Protection

PARTNERSHIP LOGO DEBUTS

The Partnership thanks **Eileen Bowling**, a free-lance graphic designer and resident of the Potomac River Basin from Gettysburg, Pennsylvania, for her contribution to the Partnership, development of the new logo. The logo illustrates the different kinds of land uses in the basin and includes a representative form of the Potomac River Basin. The logo will be used on Partnership letters and other documents. This Annual Report is the first official use of the logo.

CONTACT INFORMATION

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