



# Delaware River Basin Commission

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## **DRBC WATER MANAGEMENT ADVISORY COMMITTEE MEETING MAY 25, 2004**

### **COMMITTEE MEMBERS PRESENT:**

Jan Bowers	Chester County WRA
William Gast	PA Department of Environmental Protection
Joseph Miri	NJ Dept. of Environmental Protection
Ronald Sloto	U.S. Geological Survey
John Mello	U.S. EPA Region 2
Mary Ellen Noble	Delaware Riverkeeper Network
Bob Molzahn	Water Resources Association
George Kunkel*	Philadelphia Water Department (for Howard Neukrug)
Stewart Lovell	Del. Dept. Natural Resources
Jerry Kauffman	University of Delaware (for Tom Sims)
Edith Stevens	League of Women Voters
Bruno Mercuri	Mercuri and Associates, Inc.
Debra Buxton*	U.S. Geological Survey
Mary Chepiga*	U.S. Geological Survey

\*Denotes alternate or non-official member.

### **DRBC STAFF:**

David Sayers, Planning & Implementation Branch  
Kenneth Najjar, Planning & Implementation Branch Head  
Jessica Rittler Sanchez, Basin Planner

### **CALL TO ORDER:**

The meeting was called to order at 9:45 am by Chairwoman Jan Bowers.

### **REVIEW OF MINUTES / REVIEW AND APPROVAL OF AGENDA**

The minutes from the March 24, 2004 meeting were reviewed and approved, with an abstention by Bruno Mercuri, who was not in attendance for that meeting.

### **UPDATE ON WMAC MEMBERSHIP**

David Sayers provided a membership update to the committee. Edie Stevens was introduced as the representative for the League of Women Voter's, filling a previously open position. The Army Corp. of Engineers has replaced Fred Schaeffer (who retired) with Glen Stevens, but Mr. Stevens was unable to attend today. New York State and New York City haven't made any progress with a designated member of the committee, but Kurt Rieke of NYCDEP will try to attend WMAC meetings in future. We are still searching for a Water Utility Representative. Debra Lord notified DRBC that she will be resigning her position on the WMAC due to other

commitments. Members have been asked to designate an official alternate and submit their names to David Sayers. There were no proxies received for today's meeting.

### **ACCOUNTING FOR WATER USE AND WATER LOSSES**

The purpose of this discussion is to review the concepts of the recently proposed AWWA methodology on water accountability, as presented by George Kunkel of the Philadelphia Water Department (PWD) at the previous meeting. Over the past nine years Mr. Kunkel has worked closely with the American Water Works Association (AWWA) particularly on water accountability and water loss issues. He chaired the AWWA sub-committee that recently published a report (which had been distributed to members of the WMAC) outlining methods for drinking water utilities to account for the water that they manage and how to evaluate and control losses in their systems.

Mr. Kunkel distributed copies of the PowerPoint presentation given at the previous meeting on 3/24/04, along with a handout labeled "Accounting for Water Use and Water Losses". A one page document was also handed out which contained some key discussion points.

Mr. Kunkel reminded the committee that the first and most important step in tackling water loss issues is to develop and implement a sound water audit and accounting structure. This identifies where water losses occur, whereas a simplistic unaccounted for water percentage does not. Typically, sources of loss from a system can be both real (such as leaks and theft) and apparent (such as meter error, unbilled connections and data handling errors). A well-designed audit should benefit the water purveyors themselves. Joe Miri questioned why, if audits and leakage control efforts are in the best interest of utilities, they do not undertake these efforts themselves. Mr. Kunkel replied that not all utilities can adequately quantify their leaks. They can't manage it because they don't measure it. Stewart Lovell added that for investor-owned utilities the incentive may not be there; their profit margin level is set by a regulatory agency. For municipal systems financial losses can be covered with other services, or their may not be the incentive to manage the system with a long-term perspective. Bruno Mercuri noted that several Pennsylvania systems he had worked with had made efforts to improve their unaccounted for water. Bill Gast noted that it might be beneficial to put this issue to state utility regulators, who may be better placed to evaluate utility performance in this issue, especially if it is one of operational efficiency. Mr. Lovell questioned other state representatives as to how this issue would be received by the utility commissions. Mr. Gast noted that in Pennsylvania the PUC has shown some interest in looking more closely at this issue. It was agreed that state representatives would contact their respective utility commissions to find out their position on this issue.

DRBC resolution 88-2 (Leak detection and repair) outlines the current requirements on water purveyors to produce data and reports on this topic. Mr. Sayers noted that although there is a requirement for these reports to be updated every three years he believes that the last general Basin-wide review occurred in 1999. Ms. Stevens questioned why these reports were not being submitted if there was already a requirement to do so. Mr. Sayers responded that the requirement was not being pursued vigorously at this stage due to the perceived weakness in the language of the current resolution. Even if reports were being compiled they would be of questionable value given the current reporting format. If the Committee agrees that the AWWA method provides a more robust reporting format, it may be worth holding off on requesting purveyor to submit until the new and improved reporting format is developed.

A question was posed about the regulatory agencies playing a larger role in the loss reduction approach. Dr. Najjar stated that the first benefit is that the accounting would give real

information in terms of usage, which is better than what is now being used. Jan Bowers suggested that this suffers from the following problems:

- There are so many utilities, can we expect them all to do the audit
- DRBC has trouble collecting the data
- States also don't have resources to collect the data
- Audit is still only a concept being moved forward little by little

Ms. Bowers recommended that the audit procedure should be part of the docket application process.

Mr. Kunkel noted that some states are pushing forward legislation to adopt and implement these new methods. Maryland has tried to push the methodology on a voluntary basis and Texas has passed new legislation requiring purveyors to carry out audits – although the exact format is not specified. Mr. Kunkel suggested that we should not be considering new DRBC resolutions at this stage but identified several ways in which DRBC (and member states) could promote and encourage the concepts:

- Standardize water-use terminology and performance indicators
- Refine reporting structures to gather data using these indicators
- Increase general awareness of new methods by posting information on respective websites
- Institute education, outreach programs for water utilities

In summary, the committee agreed that the issue was worthy of closer examination. Dr. Miri suggested a workshop be held to discuss what an audit is, the AWWA approach, benefits, etc. Ken Najjar suggested that at this stage a sub-committee be created to carry on this discussion and explore the issue of water audits and their role in accounting for water and water losses. The formation of the subcommittee was approved by the committee. It was agreed that the subcommittee, which would be organized by DRBC staff, would include: Mr. Gast, Dr. Miri, Mr. Lovell, Ms. Noble, Dr. Mercuri and Mr. Kunkel. The subcommittee would meet to discuss this issue in more detail and then bring recommendations back to the WMAC as to how it should proceed.

### **USGS / DRBC STUDY: WATER BUDGETS / GW AVAILABILITY**

Reports on the progress and preliminary results of the programs were given to the WMAC.

#### **Ground Water Availability:**

The project was designed to develop a systematic approach for evaluating existing and future water withdrawals against the available water supplies. The objective of the project is to develop a GIS based methodology for the assessment of water supply for all of the watersheds in the Delaware River Basin.

The first step was to break down the 13,500 sq. mi. of the basin into a manageable size – 147 watersheds in the basin (sizes ranging from 17.9 to 210 sq. mi, with an average size of 87 sq. mi.) Two different methods were applied; one for the consolidated fractured rock aquifers and one for the unconsolidated coastal plain sediments.

Consolidated Rocks: The first step was to take existing digital geologic mapping and compile and simplify the data into 212 geologic units. Base flow recurrence intervals were calculated from index gauging stations, with the most appropriate stations identified for use in the study. Those

stations are located in the Piedmont Upland Section, Piedmont Lowland, New England Highlands, and Appalachian Plateaus.

After the index stations were chosen, values could be assigned to each geologic unit. An analysis was completed using 2, 5, 10, 25, and 50 year annual baseflow recurrence intervals for all those watersheds in the consolidated rocks. The method follows the same principals used to develop the ground water withdrawal limits in the Southeastern Pennsylvania Ground Water Protected Area (GWPA). Groundwater usage information was supplied by a database obtained from the DRBC. The groundwater recharge was estimated from the DRBC databases. Domestic Use was based on the 1990 census and 2000 census and this analysis is not quite finished yet. In 1990 the census asked people whether they obtained water from a public system or domestic well. In 2000 this question was not asked so the 1990 percentages were applied to 2000 population data to generate an estimate of population on domestic wells in 2000. However, some problems arise where census blocks do not match between 1990 and 2000. Scott Hoffman (USGS GIS specialist in the New Cumberland office) is currently working out a method to come up with these numbers.

The numbers calculated are basically groundwater availability minus the groundwater pumping, minus the domestic use, plus the groundwater recharge. The statistic being used for the time being is called "Water use as a percentage of availability". Mr. Sloto noted that preliminary results were compiled this morning without the benefit of having the domestic water use plugged in (although that is likely to make minimal difference). Looking at the two year recurrence which is equal to the median annual baseflow, for all but 1 basin the use is between 0 and 24% of the availability. For the 5-year, it's between 0 and 32%, for the 10-year it's between 0 and 37% except for 1 basin, for the 25-year recurrence it's between 0 and 47.7%, for the 50-year it's 0 to 54%.

Debra Buxton gave her update on efforts to quantify groundwater availability in the Coastal Plain. Using previous reports generated by the state of New Jersey, 129 baseflow sites were identified for the analysis. Ten of them were eliminated because they were north of the fall line, leaving a set of 119 baseflow sites for the coastal plain. Preliminary statistical analysis revealed relations between baseflow and 28 different factors which were both human factors and natural factors, such as soils, geology, etc. The 3 top factors that came out from the preliminary statistics for the controlling factors of baseflow were the average saturated hydrologic conductivity of the soil, undeveloped land, and stream length. Contributing drainage areas have to be established for each of the 119 baseflow sites. The dominant factor will be used to select the index stations and derive a natural baseflow statistic following along with Mr. Sloto's methodology.

#### **Water Budgets for Selected Watersheds in the Del. River Basin:**

Two major components of water allocation policy are the development of measurable water supply estimates and good water use data. In order to effectively allocate managed water resources, it must be known how much water is available, the amount being used, and quantity and location of any returns to the system.

The objectives of this project were to develop prototype water budgets for 5 watersheds; to develop water budget methodology that would be transferable to all the watersheds in the Delaware River Basin and to document the methodology. The 5 watersheds selected are: Wissahickon Creek (64 sqmi urban fractured rock watershed), Pocono Creek (47 sqmi rural fractured rock watershed / unguaged), East Branch Brandywine Creek (124 sqmi fractured rock watershed with reservoir storage), Greenwood Branch Rancocas (78 sqmi rural coastal plain watershed), Cooper River (51 sqmi urban coastal plain watershed).

The budget methodology provides an accounting system that apportions water to various components of the water cycle. Preliminary results have been generated for three Pennsylvania watersheds and the preliminary budgets are nearly complete for the two New Jersey watersheds.

### **UPDATE ON DRBC PROGRAMS:**

#### **Basin Plan Update**

Jessica Sanchez updated the committee on the Water Resources Plan for the Delaware River Basin. The public review draft was sent out and six public meetings have been held with good support from the public. On May 7, 2004, the Watershed Advisory Council reviewed public comments and made minor revisions to the Plan for the Governors' approval. We are trying to have it printed for the Commission Meeting to be held on 7/13/04. We need the states' approval so that it can be produced in time for the Urban Watershed Summit to be held in September 2004. The next step is to develop a baseline assessment process and implementation process. A new committee would then be formed for plan implementation, including some members of the WAC.

#### **EPA ORD Laboratory for Sustainability**

The application to the EPA is about 95% completed. The Pocono Creek was selected because of its established organization in the watershed, pre-formed partnerships, and technical work that has already been started. This is a demonstrative 3-year program for sustainable water use, partially funded by the EPA, with measurable results that are transferable elsewhere. The study will focus mainly on stream flow and the effects of ground water pumping. The 3 phases of this project are:

- 1 Scientific analysis
- 2 Planning, education & outreach
- 3 Implementation

It was decided that this project would be discussed further during the next WMAC meeting.

#### **Water Demand Forecasting: Power projections in the Del. River Basin**

Mr. Sayers presented a summary of efforts by staff to look at the potential growth in water demand by the power sector. Previous efforts by staff have indicated a rapid growth in demand by this sector. Mr. Sayers presented a graphic showing an extrapolation of past trends, combined with some energy supply capacity projections compiled by the Energy Information Administration (part of the US Dept. of Energy). These two sources showed similar rates of growth, with both growth rates being less than the previous DRBC predictions of water demand increase for the energy sector. The committee agreed that more work was necessary to forecast future water demand for this sector, particularly given the complications of deregulation. It was suggested that experts in this areas such as Dave Burd and Bob Molzahn along with PSE&G and Exelon should be contacted to get more information on future projections.

#### **Estuary Monitoring Report**

Dr. Najjar made the committee aware of the ongoing DRBC work to prepare the Delaware Estuary Monitoring Report. The report is due every five years from the Delaware Estuary program. This report consists mainly of water quality, aquatic resource, and estuary resource information, but there is an element of water management. DRBC staff is putting together a part of the narrative for the report, due to be completed this summer. This narrative relates to flow trends in the Estuary. Dr. Najjar reviewed graphs showing flow trends over the past 5 years into the estuary vs. (normal) 30 years of record and a graph showing isochlor location (250 ppm) between 1999 and 2003. The consensus of the committee was that to draw any firm conclusions as to whether there has been any significant flow diminution, a period longer than 20-years is required.

**Update on SEF Activity**

Jan Bowers requested an update on the SEF activity at the next WMAC meeting.

**MEETING ADJOURNED:**

The meeting concluded at 3:15 p.m. The next meeting is scheduled for 9:30am September 29, 2004. Bob Molzahn begins his term as chair at the next meeting.