

The Delaware River Basin Commission's Water Audit Program

– Summary Results from the First Annual Data Collection –

Introduction:

For several decades, the Delaware River Basin Commission (DRBC) has employed a comprehensive water efficiency program, which has formed an integral component of its broader strategy to manage water supplies throughout the basin. In 2009, as part of DRBC's effort to ensure its regulations reflect the latest thinking in the field of water efficiency, the commission amended its Comprehensive Plan and Water Code to implement an updated water audit approach to identify and control water loss in the basin. The purpose of the water audit is to track how effectively water is moved from its source to customers' taps and to ensure that Public Water Supply systems quantify and are accountable for water losses.

Background:

The 2009 DRBC rule change required a new reporting format to be used for the 2012 calendar year (CY2012) water audit. The new approach is consistent with the International Water Association (IWA) and American Water Works Association (AWWA) Water Audit Methodology and is considered a best management practice in water loss control. In the time between the passing of the resolution and the implementation of the new reporting format, the DRBC raised awareness of the new approach and requirements through efforts such as:

- Presentations and outreach to the regulated community;
- A one-day water audit training workshop held by DRBC in partnership with water utilities in the basin; and
- New DRBC webpages dedicated to water audits that provide materials from the training workshop and other supporting information.

Implementation:

DRBC notified the regulated community subject to the new water audit requirement that the first report would cover CY2012 and be due to DRBC by March 31, 2013, with subsequent reporting required annually thereafter. An important aspect of the new DRBC water audit requirement is an emphasis on electronic reporting and processing of water audit reports. The format for the new report is the AWWA Free Water Audit Software®, available from the AWWA website (www.awwa.org). Water utilities enter their audit information into the Water Audit Software, which is in the format of a user-friendly MS Excel workbook. The software contains interactive feedback to help users complete the audit correctly and avoid common errors. The completed audits are then submitted electronically to DRBC as an email attachment to a dedicated email address. This process allowed DRBC to aggregate the audit data efficiently into a database for further analysis. In preparation for the new reporting, DRBC improved its in-house database to identify which of its docket holders are subject to the water audit regulation and to ensure that accurate contact information is available. New reports were developed in the database to help track compliance with the reporting requirements.

Results:

The electronic-based reporting and improved database functionality allowed staff to assess the status of water audit submissions following the March 31, 2013 deadline. DRBC staff worked on additional outreach to those who did not submit the audit on time and to those who submitted an audit but for which reporting issues were identified. Typically, the audit issues were simple to resolve and in many cases were related to incorrect units being entered in the software or where an audit was submitted but was incomplete. In some cases, DRBC staff worked with water utilities directly to provide technical assistance or recommendations for completing the water audit. Based on the experience gained from the first round of reports, the list of Water Audit FAQs on the DRBC web site has been updated to provide additional information that should help users complete future water audit reports.

The information that follows summarizes some key statistics and information based on results of the CY2012 water audit program:

- The Public Water Supply sector is the **2nd largest** water-using sector in the Delaware River Basin (DRB).
- **Over 230** CY2012 water audits were submitted to DRBC, representing over 700 million gallons per day (MGD) of water withdrawals.
- Use of an electronic reporting format and associated database tools available from AWWA enabled DRBC to assemble and analyze the water audit data.
- **Non-revenue water** is a term used in the AWWA Free Water Audit Software© to quantify water losses and unbilled consumption. **Non-revenue water** is water that has been treated and pressurized and enters the distribution system, but generates no revenue for the water purveyor. Water losses can be *real* losses (through leaks, also referred to as physical losses) or *apparent* losses (for example, through theft or metering inaccuracies). Based on the CY2012 reported data, **120** systems (**52%**) reported non-revenue water as a percentage of water supplied in excess of 15%.
- An estimated **128 MGD** was reported as physically lost from distribution systems in the DRB along with an estimated **34 MGD** reported as apparent losses. This non-revenue water has an estimated value of **\$110 million** to water utilities in the DRB, representing a significant opportunity to improve the efficiency of public water supply in the basin.
- The Water Audit Data Validity Score is an important feature of the AWWA Software and can be used to indicate the level of confidence in the water audit data. The median reported Water Audit Data Validity Score was 75, out of a possible 100, with a range of 34 to 94.

Conclusion and Future Steps:

The first year of data collection under the DRBC's water audit program marks a significant step in a long-term effort to improve water efficiency and promote best practices in water loss control for basin water purveyors. During the first few years of the program, the emphasis will be on ensuring water purveyors build confidence in the data submitted in the water audit. Developing and providing accurate data to the water audit process will result in a clearer understanding of the causes of water loss and is a vital first step in the process (akin to "*if you don't measure it, you can't manage it*").

Once a sufficient baseline dataset has been established, it is anticipated that DRBC will adopt a selection of performance indicators and metrics against which it will assess water system performance. Looking further

ahead, DRBC anticipates that significant reductions in water losses (both real and apparent) can be realized through its water audit program and that focus on this issue will result in system operators, utility managers, and regulators more effectively targeting their efforts to improve water supply efficiency, saving both water resources and money.

As part of its efforts to ensure progressive water resources management, the DRBC is one of only a handful of regulators in the U.S. that has made the AWWA Water Audit Methodology a regulatory requirement. The DRBC would like to recognize the efforts of those water utilities that submitted their water audits for CY2012 and their contribution to making the first year of the DRBC’s new water audit program a success.

Additional information can be found on the DRBC’s web site at <http://www.state.nj.us/drbc/programs/supply/audits/>.

Figure 1. DRBC water audit program summary (CY2012); aggregate of 232 individual water systems.

