



**CITY OF ATLANTA**  
City Auditor's Office  
Leslie Ward, City Auditor  
404.330.6452

April 2017

### ***Why We Did This Audit***

We undertook this audit of the Department of Watershed Management's efforts to reduce water loss to determine whether it has complied with state-mandated annual water loss initiatives and to evaluate the efforts compared with industry benchmarks.

### ***What We Recommended***

To reduce real loss, the Department of Watershed Management should:

- Conduct ongoing leak detection surveys.
- Document clear data management policies and estimate the volume of water loss.

To reduce apparent loss, the Department of Watershed Management should:

- Estimate the number of staff and add resources to monitor vacant accounts.
- Implement the system to alert customers of suspected leaks.
- Finalize the draft of standard operating procedures and begin enforcing provisions to track hydrant meters and collect billing data.

To finalize and implement the Water Loss Control Program, the Department of Watershed Management should:

- Finalize the water loss control program.
- Select specific goals for the program.
- Include leak management and capital improvement plan initiatives as a part of the overall water loss control program.
- Ensure the water loss team meets at least twice a year.
- Participate in the voluntary distribution system audits with the Georgia Association of Water Professionals.
- Create a mechanism to track individual goals and the volume of water.
- Submit annual water audits to the American Water Works Association.

For more information regarding this report, please use the "contact" link on our website at [www.atlaudit.org](http://www.atlaudit.org)

## ***Performance Audit:***

### **Department of Watershed Management: Efforts to Reduce Water Loss**

#### ***What We Found***

Water loss from the city system averaged 9.9 billion gallons per year between 2013 and 2015, amounting to about 30% of annual water production. The proportion of water loss attributed to real losses—physical losses from the distribution system—increased 17%, from 6.9 billion gallons in 2013 to 8.1 billion gallons in 2015. The proportion attributed to apparent loss—water that is unaccounted for due to error or unauthorized consumption—decreased 30%, from 3 billion gallons in 2013 to 2.1 billion gallons in 2015.

Aging infrastructure is the primary driver of real loss, but an active leak control program could reduce real losses. Since 2003, the city placed \$1.95 billion of assets into service in its wastewater system primarily for consent decree-related projects. Over the same period, the city placed about \$350 million of drinking water infrastructure assets into service. The Department of Watershed Management's consultant recommended an active leak detection strategy in 2014, but the department has yet to implement the recommendation. The planned capital improvement projects should also help to reduce real loss.

The department has implemented most of the consultant's recommendations to reduce apparent losses and to improve data validity, including steps to reduce unauthorized consumption, improve billing accuracy and test and calibrate production meters. The department could continue to reduce apparent losses by devoting additional resources to vacant accounts and reducing adjustments through finalizing efforts to alert customers of suspected leaks.

The Department of Watershed Management compiled its consultant's recommendations to document its water loss control program. The department missed the state's implementation deadline; improved coordination would likely strengthen the program. The department could also strengthen the program by adding initiatives to reduce real loss and identifying measurable goals to track progress.

## Summary of Management Responses

**Recommendation #1:** We recommend the Department of Watershed Management conduct ongoing leak detection surveys.

**Proposed Action:** DWM currently has a water line condition assessment program underway as part of the Department's asset management strategy. This condition assessment will identify integrity issues in water mains which give rise to leaks and breaks. To capture baseline data, the Department may engage specialists or new technology for system-wide leak detection; however, we are also working to procure additional equipment for in-house Leak Detection surveys as part of a Water Loss Control Program. **Agree**

**Timeframe:** December 2017

**Recommendation #2:** We recommend the Department of Watershed Management document clear data management policies to better track municipal leaks and breaks and estimate the volume of water loss, as recommended by the consultant.

**Proposed Action:** OLIO has developed and is collecting water loss data in a Water Loss Tracking spreadsheet. This will provide an annual data summary for tracking, reporting and progress monitoring purposes. We have also placed policies to collect the water loss data and some of the measures include the use of hydrant meters on the city's use of city water for flushing and other purposes. **Agree**

**Timeframe:** May 2017

**Recommendation #3:** We recommend the Department of Watershed Management estimate the number of staff needed to manage the expected volume of vacant accounts, compared to the revenue lost through unauthorized consumption, and add resources to monitor vacant accounts if shown to be economically advantageous.

**Proposed Action:** The Department has modified the process to handle unauthorized consumption on vacant accounts. As of March 6, 2017, seven investigators from the Office of Safety, Security & Emergency Management have been assigned to investigate vacant properties with water consumption, which will assist in reducing the backlog. We are already seeing results from the process change; customers are coming into the Department to set up accounts and payment plans for back-billed usage. We anticipate that the current backlog will be substantially reduced within the next three months. **Agree**

**Timeframe:** Fully Implemented

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| <b>Recommendation #4:</b> | We recommend the Department of Watershed Management implement the system to alert customers of suspected leaks.   |              |
| <b>Proposed Action:</b>   | The Department has several initiatives underway to address the accuracy of billing, including manual reviews of high consumption accounts. Currently, residential accounts with a 100% increase over the average consumption are flagged for an alert via robo-call from the department. The customer is given a call back number to discuss potential causes of the high consumption. The department is planning to move to AMI (Advanced Metering Infrastructure) which will allow for automatic leak alerts that can be accessed by the customer via the customer portal. A pilot of AMI metering technology is planned for late Summer 2017. In addition, the Department will pilot meter health and analytics technology for large meters this Spring. This technology alerts to the accuracy and health of the meter. | <b>Agree</b> |
| <b>Timeframe:</b>         | August 2017   |              |
| <b>Recommendation #5:</b> | We recommend the Department of Watershed Management finalize the draft of standard operating procedures for tracking and reporting hydrant meters and begin enforcing provisions to track meters and collect billing data.  |              |
| <b>Proposed Action:</b>   | The Department plans to finalize the procedures for tracking and reporting rental hydrant meters. Part of these procedures will include the monitoring and collection of billing data.  | <b>Agree</b> |
| <b>Timeframe:</b>         | June 2017   |              |
| <b>Recommendation #6:</b> | We recommend the Department of Watershed Management finalize the water loss control program.  |              |
| <b>Proposed Action:</b>   | The Department has many activities underway related to water loss; however, the Department plans to engage a Water Loss Consultant to prepare a formal, comprehensive Water Loss Control Program Plan that will integrate the various necessary program elements being implemented by DWM.  | <b>Agree</b> |
| <b>Timeframe:</b>         | June 2017   |              |
| <b>Recommendation #7:</b> | We recommend the Department of Watershed Management select specific goals, or performance indicators, for the water loss control plan in order to measure and improve water supply efficiency.  |              |
| <b>Proposed Action:</b>   | Specific goals and metrics will be developed and formalized as part of the proposed Water Loss Control Program Plan that will integrate current program elements. The plan will include both short-term and long-term goals and metrics that will help improve DWM's confidence in the data used for estimating Apparent Losses and track reductions of Real Water Loss.  | <b>Agree</b> |
| <b>Timeframe:</b>         | December 2017   |              |

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**Recommendation #8:** We recommend the Department of Watershed Management include leak management and capital improvement plan initiatives as a part of the overall water loss control program.

**Proposed Action:** The Department is in the process of developing a Department Strategic Plan including strategy for water loss reduction. Finalizing the Water Loss Control Program Plan to include descriptions of the processes for leak management, planned capital investments, and tracking implementation progress will be included as part of the strategy. **Agree**

**Timeframe:** December 2017

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**Recommendation #9:** We recommend the Department of Watershed Management ensure the water loss team meets at least twice a year, as recommended, to assess progress in reducing water loss.

**Proposed Action:** The proposed Water Loss Control Program Plan will include both short-term and long-term schedules for achieving the goal established. **Agree**

**Timeframe:** December 2017

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**Recommendation #10:** We recommend the Department of Watershed Management participate in the voluntary distribution system audits with the Georgia Association of Water Professionals.

**Proposed Action:** Once the Water Loss Control Program Plan is final and has completed one-year of formal implementation, DWM will request an independent distribution system audit from GAWP. **Agree**

**Timeframe:** March 2019

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**Recommendation #11:** We recommend the Department of Watershed Management create a mechanism to track individual goals and the volume of water saved from apparent and real loss categories, including the various initiatives and methods used, and to relate the revenue recovery or cost reduction as appropriate in order to demonstrate progress of the water loss control program.

**Proposed Action:** The Department has developed a draft tracking spreadsheet designed for interim tracking on a year-by-year comparison basis. In addition, OLIO developed a water loss tracking system that will be used to track more detailed information, beginning with calendar year 2017. Based on future data, the Department will be able to improve on implementation initiatives developed in the Water Loss Control Program Plan that will help the City to further reduce overall system water losses. These processes will be formalized in the Water Loss Prevention Program Plan and implemented by the Department. As part of revenue recovery efforts under our Collections Unit, we are tracking the revenue recovered from vacant with consumption accounts and illegal tie-ins. **Agree**

**Timeframe:** May 2017

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| <b>Recommendation #12:</b> | We recommend the Department of Watershed Management submit annual water audits to the American Water Works Association for benchmarking and comparison. |
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| <b>Proposed Action:</b> | DWM will submit its 2016 Water Loss Audit Report to the AWWA for benchmarking and comparison and will continue to do so in future years. | <b>Agree</b> |
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| <b>Timeframe:</b> | June 2017 |
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