



Putting WaterSense® to Work

Federal Agency Implements Water Management Strategy

Sector: Laboratories; Focus: Water Monitoring and Management

Project Summary

The U.S. Environmental Protection Agency (EPA) owns or operates 30 research laboratories across the country. These laboratories encompass more than 3.8 million square feet of conditioned space and are occupied by approximately 5,800 employees. For more than a decade, water conservation has been a top priority for EPA and the managers of these laboratories.

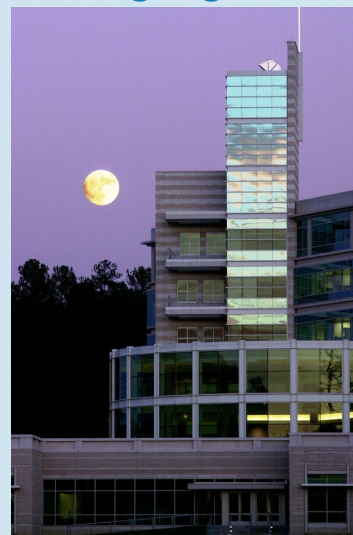
In 2002, EPA began conducting facility water assessments at 29 of its major laboratories. Consistent with *WaterSense at Work Section 1.2 Water Management Planning*, EPA's goal during every water assessment is to fully understand where all water entering the facility is used and to identify ways to reduce that water use. Specifically, the assessments focus on:

- Reviewing historical water use.
- Identifying utility cost information.
- Touring the facility to inventory all water-using equipment and processes.
- Identifying and fixing apparent leaks.
- Preparing drought contingency plans.
- Developing a "water balance" of all water uses in the facility.
- Identifying project opportunities to reduce water use.

Due to its efforts between 2002 and 2007 to assess water use, set water management goals, and implement projects, EPA was able to reduce its water use intensity by 8.4 percent.

With the passage of the Energy Independence and Security Act (EISA) and the signing of Executive Order 13423 in 2007, federal agencies were required to: track and reduce potable water use 16 percent by 2015, assess their water use in individual facilities, and implement projects to reduce water use. Subsequently, Executive Order 13514 required federal agencies to reduce potable water use intensity by 2 percent per year through 2020, from a 2007 baseline, and track and reduce non-potable water use. Since EPA had been assessing water use at most of its laboratories, it was easily able to establish its 2007 baseline; however, its challenge was to continue to reduce water use by identifying additional project opportunities.

Case Study Highlights



- **Facility name:** EPA laboratories
- **Location:** 29 laboratories nationwide
- **Number of occupants:** Approximately 5,800
- **Building size:** 3.9 million gross square feet
- **Water savings:** Among all 29 laboratories, reduced water use intensity (in gallons per gross square foot) by 18.7 percent between 2007 and 2010, which is equal to 23.4 million gallons of total water saved
- **Cost savings:** Approximately \$200,000 in water and sewer costs over the three-year period

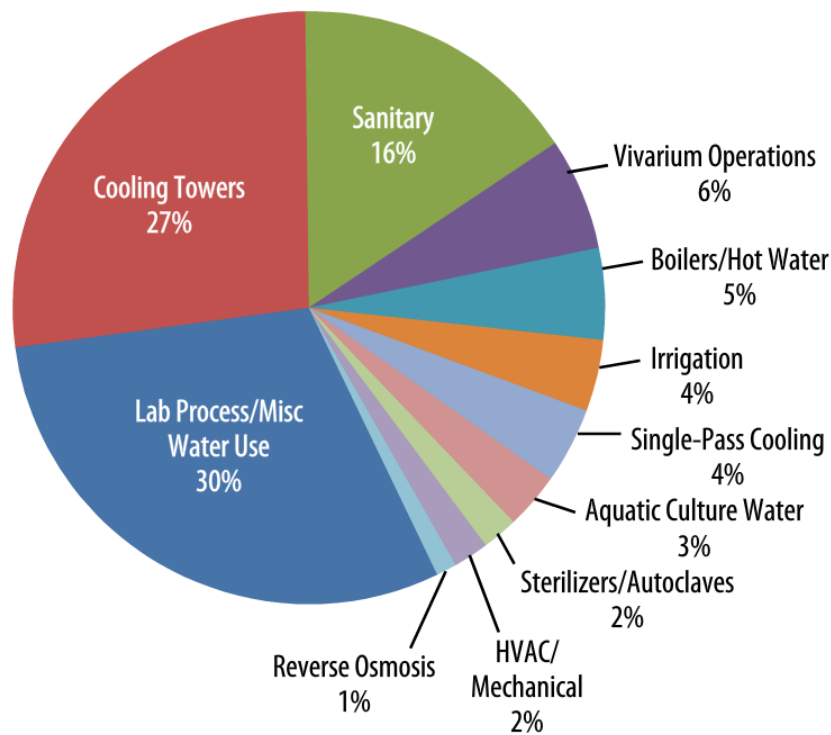
In 2008, EPA developed an Agencywide Water Conservation Strategic Plan. The plan was built on the Agency's prior water efficiency success and EISA and Executive Order requirements. The plan's objectives are to:

- Conduct water use and conservation assessments at each of its major laboratories every four years.
- Establish annual facility-specific water reduction targets.
- Identify and implement new water efficiency projects.

The plan is updated regularly to document EPA's water reduction successes and incorporate plans and goals for the future.

EPA's 2009 aggregated laboratory-wide water balance, taken from its 2010 strategic plan update, is shown in Figure 1. Water use for each individual laboratory is tracked separately and may vary from this aggregate, depending upon its specific operations and processes.

Figure 1. Typical Water Use at EPA Laboratories, 2009



Since 2007, EPA has completed a variety of projects across some or all laboratories in its portfolio, including:

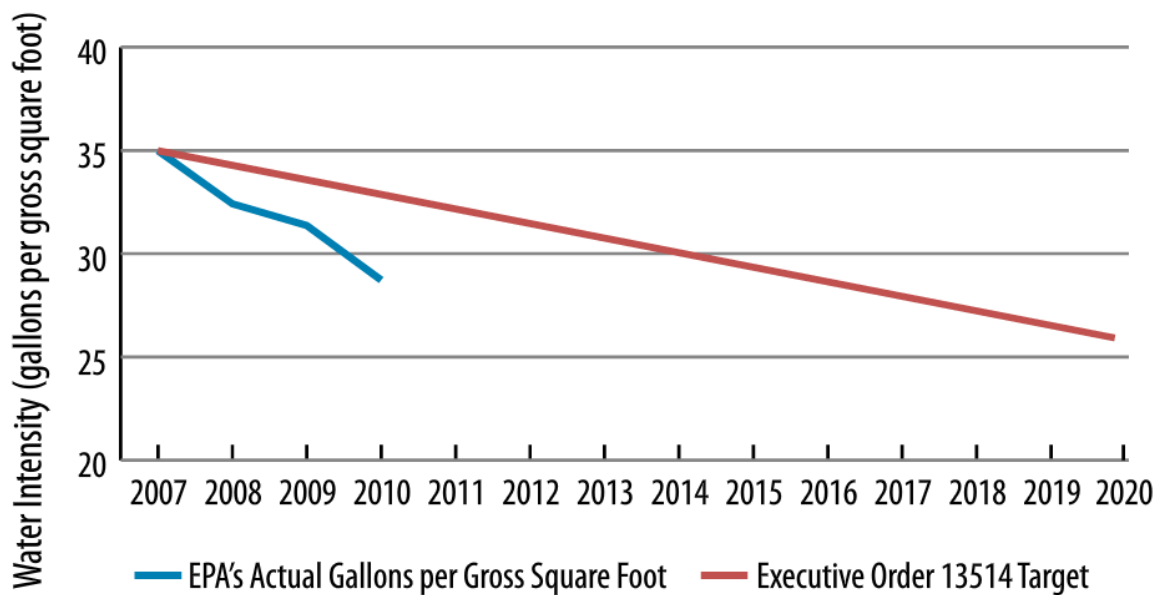
- Installing 1.6 gallon per flush (gpf) or dual-flush toilets, WaterSense labeled flushing urinals, and 0.5 gallon per minute (gpm) faucet aerators on lavatory faucets.
- Contracting with irrigation professionals certified through a WaterSense labeled certification program to conduct irrigation system audits and identify areas of improvement.
- Closely monitoring cooling towers to ensure that cycles of concentration are maximized.
- Collecting and reusing air handler condensate as cooling tower make-up water.
- Eliminating any remaining instances of single-pass cooling, replacing equipment such as water-cooled ice machines and liquid-ring vacuum pumps.
- Controlling the use of tempering water to cool steam sterilizer discharge water, only allowing the tempering water to flow when the equipment is in use.

EPA also established annual water reduction targets for each facility. As the targets are monitored and the facilities are reassessed, targets are updated and new projects are identified so EPA can continue making progress towards Agencywide goals.

Savings Summary

EPA’s facility-specific approach to water efficiency has resulted in significant savings when tallied up among all of the Agency’s laboratories. As of the end of 2010, EPA has reduced its water use intensity by 18.7 percent from the required 2007 baseline. This amounts to approximately 23.4 million gallons in total water savings and water and sewer cost savings of more than \$200,000. See Figure 2 for an illustration of EPA’s water savings in recent years.

Figure 2. Water Use Intensity of All EPA Laboratories (gallons per gross square foot), 2007–2010



Acknowledgements

The U.S. Environmental Protection Agency’s (EPA’s) WaterSense program acknowledges EPA Water Management Coordinator Dexter Johnson and EPA Sustainable Facilities Practices Branch Chief Bucky Green for providing information for this case study.

Learn More

To learn more about water efficiency in commercial and institutional buildings, visit the WaterSense website at www.epa.gov/watersense/commercial to access *WaterSense at Work* best management practices, tools, case studies, and more.