

THE SCIENCE OF WATER



AMERICAN WATER



At American Water, we believe that every drop of water is precious, and we devote all our resources to help ensure that it is safe, pure and affordable.

We are proud to celebrate the 30th anniversary of the formation of our formal, dedicated research department, and our efforts to advance innovation in water treatment and delivery.

We have continually pursued innovative solutions because what we have to gain is so great: customer needs met, resources conserved, energy saved, public health protected, and quality of life improved.

As we look to the future, we rededicate ourselves to pursuing new research and technologies that will enhance our services, help ensure water quality and environmental compliance, and shape a more sustainable future.



**WE CARE ABOUT WATER.
IT'S WHAT WE DO.®**



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A closer look at the workings of an ozone generator. Ozone is used to eliminate potentially harmful microbial agents in drinking water without the addition of chemicals.



“Access to clean water has emerged as one of the most important challenges of the twenty-first century. At American Water, we are in a position to leverage significant resources and expertise to transform how water and wastewater is treated and delivered. Water is a finite resource, and we never take it for granted.”

*- Dr. Mark W. LeChevallier
Director, Innovation & Environmental Stewardship*

INNOVATION

Developing tomorrow's solutions today

We are guided by a simple belief that there is nothing so powerful as a great idea, and we work hard to develop and implement innovative solutions for treating and delivering water and wastewater, maintaining our infrastructure, conducting testing, and making efficient use of energy resources.

It takes a team of exceptional individuals to bridge the “innovation gap” between idea and deployment. You'll find them at American Water.



An integral part of our innovation process is engaging with other water industry professionals and working with organizations that promote the sharing of ideas. We work closely with the U.S. Environmental Protection Agency (EPA) and other leading organizations to help promote water quality and safety standards. We are also involved with all the major water funding agencies in a leadership role as we help to set research plans.

Awards and Recognition

More than 60 research grants, totaling more than \$27 million, from:

- U.S. Environmental Protection Agency
- American Water Works Association
- Water Research Foundation
- WaterReuse Research Foundation
- Water Environment Research Foundation
- State agencies

Of all the participants in the EPA's voluntary program, American Water earned, on average, one-third of all the awards given for consistently achieving water treatment standards that surpass regulatory requirements.



We are proud to participate in the EPA's WaterSense® program, helping to encourage water efficiency and water-saving practices among our customers.

Innovation Development Process

Our Innovation Development Process (IDP) program allows us to leverage our position and expertise to develop, test and promote new technologies for industry use. At the heart of the IDP is an open collaboration model that brings together professionals from across our own business and strategic partners to create greater efficiencies. Current IDP efforts focus primarily on the areas of water reuse, desalination, wastewater operations and bioenergy.

IDP is making a difference. During the program's first year, over 200 ideas were reviewed and several have proceeded to pilot testing and the preparation of a business case. We have completed a pilot study in collaboration with ENBALA Power Networks to capture untapped efficiencies between our water systems and the electricity network. Water and wastewater treatment and delivery requires a significant amount of energy, and we seek to take advantage of opportunities to reduce our energy footprint.



WATER INDUSTRY TRENDS

Leading through our actions

We have earned a leadership role within the water industry by continually driving the development and implementation of technologies that address a wide range of issues. The challenges of infrastructure replacement and compliance with water quality requirements under the Safe Drinking Water and Clean Water Acts are numerous, and we must pursue cost-effective solutions that support the needs of our customers.

Climate change and energy efficiency are affecting not only how we provide critical services to our customers, but also how much those services cost. To lead by example, we made a commitment to reduce greenhouse gas emissions by 16 percent by the year 2017. We are exploring wastewater treatment technologies that will help reduce energy usage by 40 percent and improve efforts to remove nitrogen and phosphorus during the treatment process.

Integrated Water Resource Management (IWRM) is a more holistic approach to the management of precious resources and a key element of our business strategy. IWRM is the management of the complete water cycle and encompasses water and wastewater treatment, water reuse, water supply management and groundwater recharge.

Our Perspective on IWRM

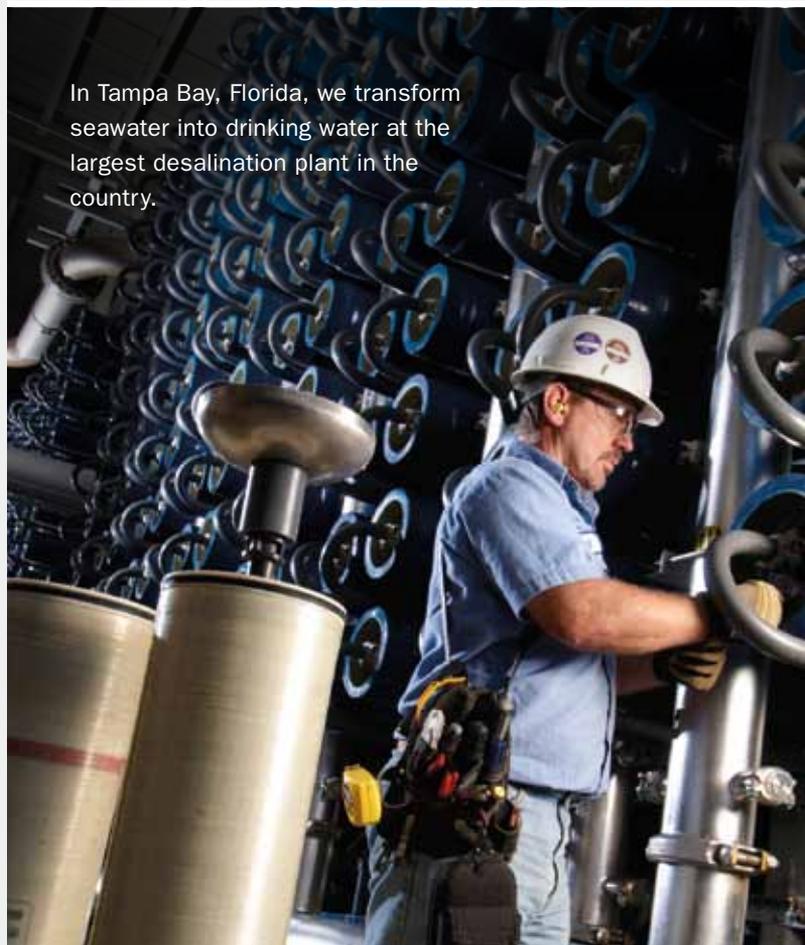
- Embrace concepts of sustainability
- Facilitate economies of scale
- Promote research and development, knowledge sharing and best practices
- Encourage innovative, cost-effective solutions to current and future challenges

Water conservation and leak detection are top priorities for American Water. We typically invest between \$800 million to \$1 billion annually to repair or replace aging infrastructure. We are pioneers in the use of acoustic leak detection systems that help us find and stop leaks quickly without excessive digging. This not only helps save water, but fewer leaks means a reduction in energy use and associated greenhouse gas emissions. And because the best form of resource management is a proactive one, we continue to educate our customers about how they can save water and money by taking steps to conserve.

In Fillmore, California, we designed, built and operate the Fillmore Water Recycling Plant, a zero-discharge facility that reuses 100 percent of the wastewater it treats.



In Tampa Bay, Florida, we transform seawater into drinking water at the largest desalination plant in the country.



ENVIRONMENTAL STEWARDSHIP

Protecting and preserving natural resources

Our environmental stewardship efforts focus on a wide range of issues that affect the quality of the water we provide and contribute to how we provide those services to our communities. We are proud of our compliance record, but do not rest on our laurels.

We typically perform approximately 26 times better than industry averages (as reported by the EPA) for drinking water quality compliance, and 260 times better than average for meeting monitoring and reporting standards. Our wastewater performance is typically double the national rate for systems without any discharge exceedances.

Environmental Management Plans help ensure that our facilities are doing their best for the environment and the community. These plans outline regulatory requirements and environmental stewardship opportunities at each of our facilities. They summarize environmental regulations such as safe drinking water, clean water and clean air that apply to a particular facility. Plans are developed at the system level and include facility-specific requirements and designation of the employees responsible for implementation. Environmental Management Plans are reviewed quarterly and updated as needed to include new requirements and changes in responsibility.

Through our **Environmental Grants Program**, we partner with local environmental groups to promote protection and stewardship of watersheds that impact our service areas. All environmental grant programs are implemented in conjunction with state and local environmental and civic groups. Grants of up to \$10,000 support a wide range of activities, including watershed cleanups, restoration efforts, biodiversity projects and hazardous waste collection efforts.

We have consistently achieved greater than a 99.9 percent compliance rate for meeting state and federal drinking water standards and greater than 99.5 percent for compliance with wastewater requirements.



Our environmental policy calls on all operations to “sustain the environment through responsible business practices,” including the protection and enhancement of biodiversity on the property that we own. For example, American Water implements the requirements of the Endangered Species Act at a number of environmentally sensitive locations. In Odgen Dunes, Indiana, American Water has sponsored the planting of wild lupine to enhance the habitat for the Karner blue butterfly. In Monterey, California, we are developing alternative water sources to maintain minimum stream flows that protect the red-legged frog. In the Midwest, our water companies have erected osprey nesting platforms near waterways as a way of protecting this endangered species.



A female bald eagle nesting on the grounds of New Jersey American Water's Swimming River Treatment Plant receives a checkup by wild bird specialists.

PUBLIC HEALTH PROTECTION

Taking steps for healthier communities

Providing a life-essential resource is a responsibility we take seriously. The quality of the water and services we provide directly affects the quality of life our customers enjoy. Advancing the science of water helps us improve public health protection and take steps to ensure healthier communities.

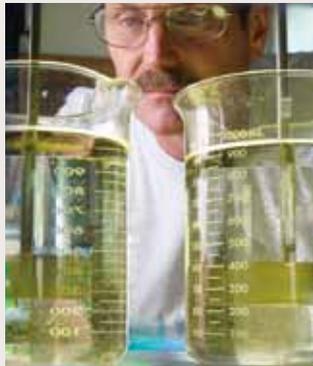
Disinfection and Repair of Main Breaks – We know that even a short disruption in water service can be very inconvenient to the people we serve. That's why we've developed a risk-based analysis to evaluate the disinfection and flushing of repaired sections that helps not only control risk, but also minimize the time water is out of service.

Pressure Management – Maintaining positive and consistent pressure in distribution systems is critical to protecting public health. Our research in the management and control of pressure transients is leading the industry in understanding and controlling risks due to low pressures.

Cross Connection Control – American Water is pioneering the use of automatic meter reading in the detection of instances of backflow in service lines. Backflows can introduce contaminants into the system. Meters can be programmed to issue an alert when a backflow is detected, and American Water professionals can quickly address the situation.

Reclaimed Water Quality – Reclaimed water is wastewater that has been treated specifically for beneficial reuse, such as the irrigation of parks or golf courses, and for toilet flushing, car washes, and water features, including fountains. We have developed comprehensive testing programs to help maintain consistent quality and ensure that the water we treat for reuse meets all quality requirements.

We have genetically engineered strains of bacteria to produce light to rapidly monitor the assimilable organic carbon in water. The bioluminescence assay has been used to help ensure consistent water quality for potable, reuse and desalinated water.



We continue to advance the science of water through the development of advanced molecular assays for important waterborne pathogens like *Giardia* and *Cryptosporidium*.





INNOVATION IS AN AMERICAN TRADITION

2011 marked the 125th anniversary of the founding of American Water. Our story is one of vision, ingenuity, service and commitment. We have created solutions and improved the quality of life for the people we serve. Our traditions established over the years built a foundation for success, and we plan to build on that foundation for another 125 years.

To learn more about our commitment to innovation and environmental stewardship, please contact Dr. Mark LeChevallier at (856) 346-8261.

For specific information about our Innovation Development Process program, please contact Paul Gagliardo at (856) 727-6151.



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