

# This presentation premiered at WaterSmart Innovations

[watersmartinnovations.com](http://watersmartinnovations.com)



# *AWWA Water Conservation and Efficiency Program Standard - Preview of Version 2.0*

*Veronica Blette, USEPA  
Bill Christiansen, AWE  
Brian Skeens, Jacobs*



**American Water Works  
Association**

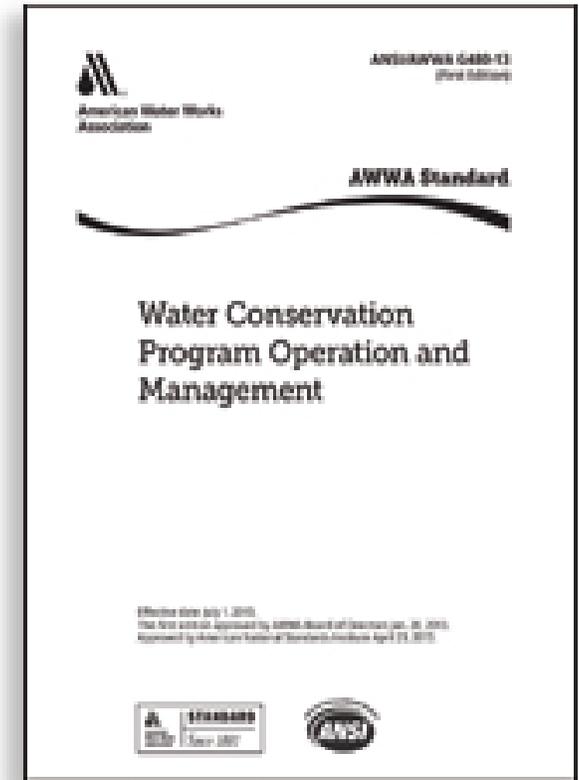
*Dedicated to the World's Most Important Resource®*

**WaterSmart Innovations Conference  
October 3, 2019**

# Purpose of the Presentation

- Familiarize you with provisions of the pending revisions to AWWA/ANSI G 480 Water Conservation Program Operation and Management Standard
- Provide examples from utilities that have used it
- Outline information to help you develop programs

## ANSI/AWWA G480-13



## What are G-Series Standards?

- AWWA G-Series Standard
  - Voluntary, utility management standard.
  - Utilities or communities can choose to adopt it or not.
  - Once adopted, there is no governance structure or enforcement beyond what the entity itself chooses to establish.
  - No formal AWWA process to verify and confirm utility compliance to the standard
- Intended to improve a utility's overall operations and service
- Establishes formal management and operations guidelines
- These guidelines are appropriate practices, procedures and behaviors whose implementation will promote effective and efficient utility operations

G-480 Water  
Conservation  
*and Efficiency*  
Program  
Operation and  
Management  
Standard

- 1<sup>st</sup> edition of the G480 standard was released in 2013
- The periodic review of the standard began in 2018
- **BIG CAVEAT** - The revised standard has not yet been finalized and issued – so information provided here may change
- The title of the standard has been changed to acknowledge efficiency with conservation
- The basic structure of the standard is retained -
  - some language has been changed to add clarity
  - some provisions have moved within the text
  - some requirements have been strengthened
  - some new requirements have been added

# Who Helped Create Version 2 of the Standard?

## Volunteers!

*Developed by an AWWA Standards Committee, including members of the Water Conservation Division*

- \*Chris Brown, consultant (chair)
- Mike Buettner, City of Bend
- \*Veronica Blette, USEPA
- Bill Christiansen, AWE
- \*Paul Lander, Dakota Ridge Partners
- \*Peter Mayer, Water Demand Management
- \*Kathy Nguyen, Cobb County
- \*Ed Osann, NRDC
- Kevin Reidy, CO Water Conservation Board
- \*Marjie Risk, consultant
- Jennifer Shimmin, Cochella Valley Water District
- \*Brian Skeens, Jacobs

\*also participated in version 1

## Why Use the Standard?

- Establishes consistent expectations of the conservation program
- Assures rate payers, regulators, and decision makers conservation program meets established qualifications
- Offers a benchmark for new programs
- Provides basis for evaluating adequacy of program design and deliverables
- Offers a level playing field for program development
- May assist utilities in establishing compliance with conservation program mandates

# G480 Leaderboard

<https://www.allianceforwaterefficiency.org/resources/topic/g480-standard-and-awe-leaderboard>

The Alliance for Water Efficiency offers their members a service to verify compliance with the standard. We will share some insights of that process today.



## Platinum

- Austin Water Utility (TX)
- Irvine Ranch Water District (CA)
- City of Santa Cruz (CA)
- Valencia Water Company (CA)



## Gold

- Cobb County Water System (GA)
- Elsinore Valley Municipal Water District (CA)
- City of Sacramento (CA)



## Silver

- City of Bend (OR)
- City of Guelph (Ontario, Canada)

# Key Elements of the G480

1. Top Level Organizational Functions  
Staff, planning, education, ordinances
2. Internal Utility Actions and Requirements  
Metering, rate structure, billing practices,  
landscape efficiency program, distribution  
system and pressure management program
3. External Policy Requirements  
Codes and standards
4. Wholesale Agency Requirements



\*subject to change in final release

*Top-Level  
Organizational  
Requirements*  
Staff for  
Conservation  
Initiatives

- Dedicated coordinator responsible for water conservation and efficiency planning and implementing
- Minimally, a person designated as primary contact for water conservation inquiries
- Defining the position - *Position Purpose; Essential Functions; Knowledge and Skills Required; Experience; Education*

# Position Purpose

## City of Dallas

- Plans and organizes moderately complex interrelated projects and programs in one or more operational areas; and
- Develops, collects, reviews and implements operational and program statistics to assess effectiveness; monitors compliance with established criteria to ensure the division complies with applicable rules and regulations.

## City of Tempe

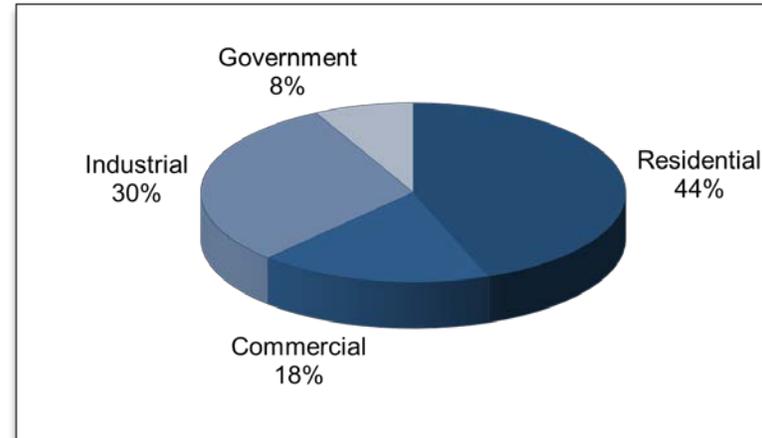
- To actively support and uphold the City's stated mission and values. To perform a variety of duties involved in the implementation of the City of Tempe's water conservation programs; and to coordinate activities related to water conservation including plumbing and landscape rebates, distribution of retrofit kits, enforcement of ordinances and implementation of xeriscape classes, school programs and other related programs.

# Essential Functions of Position

Program Design and Implementation	Stakeholder Engagement
<ul style="list-style-type: none"> <li>• Implement effective education and outreach programs and services to the community.</li> <li>• Develop public information material to promote current, on-going and upcoming events.</li> <li>• Assist in the planning and implementation of water conservation programs for City facilities.</li> </ul>	<ul style="list-style-type: none"> <li>• Coordinate with other city departments, private and non-profit organizations, associations, volunteers, and citizen groups.</li> <li>• Coordinate and promote strategic partnerships between local, regional, state or federal governments in order to provide coordinated and comprehensive service delivery</li> </ul>
Specific Program Components	Monitoring and Enforcement
<ul style="list-style-type: none"> <li>▪ Participate in the planning and implementation of multifamily residential water conservation program; assist in the implementation of the Industrial Conservation Program.</li> <li>▪ Review plumbing and landscape rebate applications.</li> <li>▪ Organize and schedule xeriscape classes; assist with the public viewing of the Xeriscape Demonstration Garden.</li> <li>▪ Coordinate the distribution of plumbing retrofit kits; organize class presentations for Kindergarten through sixth grades; make presentations on water conservation to civic groups.</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain water use data and statistics; provide information and reports as required.</li> <li>• Monitor and enforce Water Conservation Ordinances; review landscape and construction plans to ensure consistency and compliance with Federal, State and local regulations.</li> </ul>

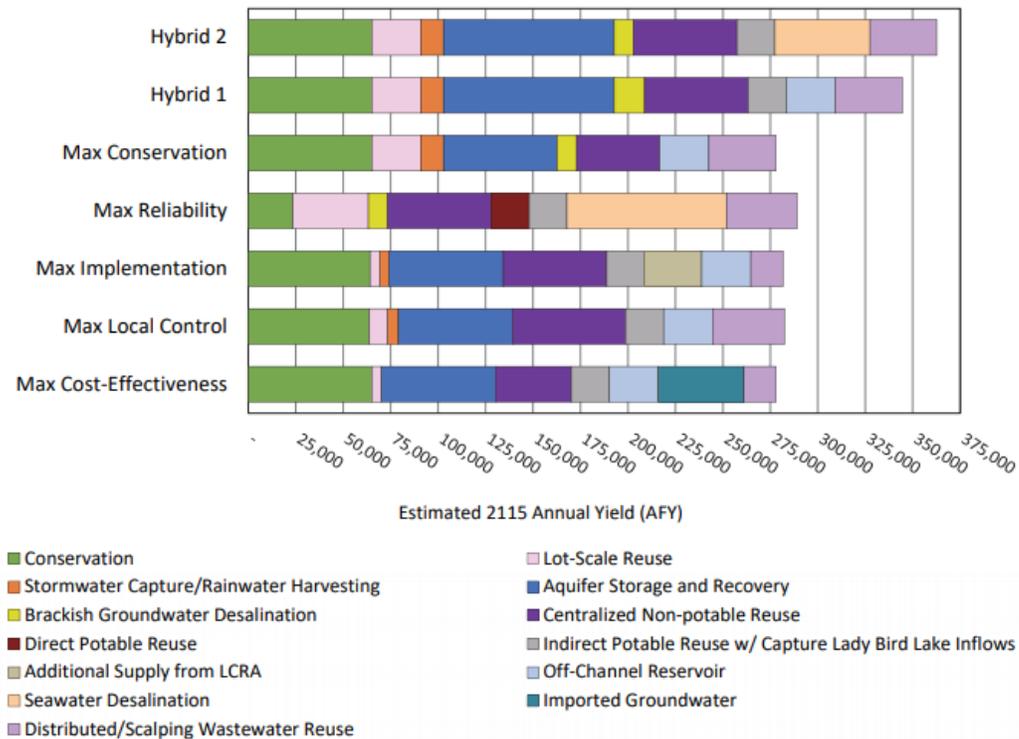
*Top-Level  
Organizational  
Requirements*  
Water  
Conservation  
Planning

- Develop a water conservation and efficiency plan that sets goals, and identifies cost-effective programs to meet the goals
- Address all customer categories and include clearly defined and measurable performance goals with benchmarks to assess progress
- Implement, monitor, and report progress toward goals



*Top-Level Organizational Requirements*  
**Integrated Resources Planning**

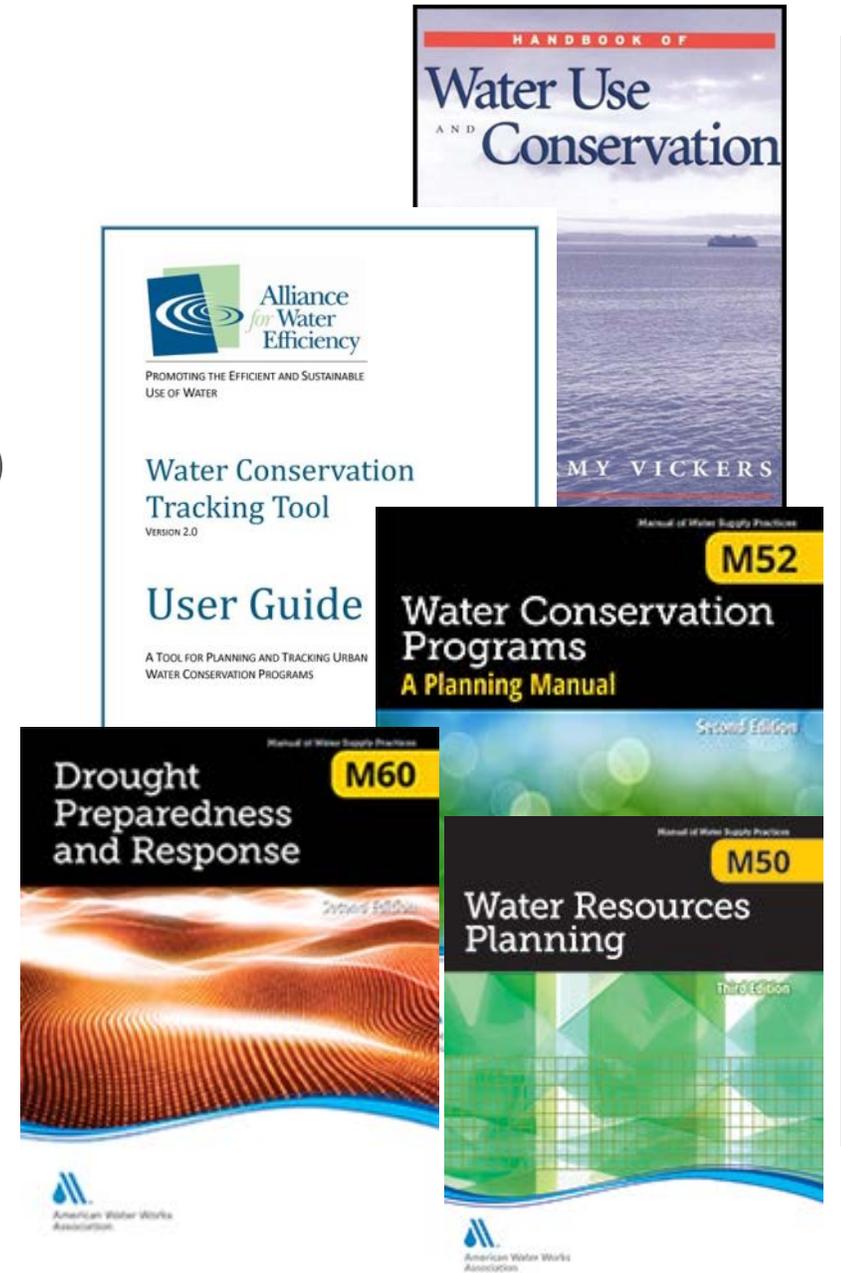
- Incorporate water conservation as part of long-term water resource planning.
- The cheapest source of supply is the one we already have – so make the most of it through water conservation.
- Have a plan to describe actions in the event of drought or other water shortage conditions



# Water Conservation, Drought, and Water Resources Planning

## Helpful Tools:

- *Water Conservation Programs: A Planning Manual, M52* AWWA (2018)
- *Drought Preparedness and Response, M60, AWWA (2019)*
- *Water Resources Planning, M50, AWWA (2017)*
- AWE Conservation Tracking Tool
- *Handbook of Water Use and Conservation, First Edition* by Amy Vickers (WaterFlow Press, 2001)



*Top-Level  
Organizational  
Requirements*  
Public  
Information and  
Education

- Consumer messages should be customized to the goals of the utility.
- Program should raise public awareness and foster a culture of conservation and efficiency
- Components of the program should include:
  - ✓ Effectively communicating the value of water
  - ✓ Information on methods and opportunities for reducing consumption
  - ✓ Delivery of consistent and persistent messages
  - ✓ Promotion of the use and maintenance of water-efficient products, practices, and services to all customers

# Public Information and Education

- Pre-packaged programs can be used as appropriate.
- Numerous information and education programs are available (AWWA, Water Use It Wisely, Water IQ, Learning to be Water Wise, Save Our Water, Project WET, WaterSense and AWE to name a few).

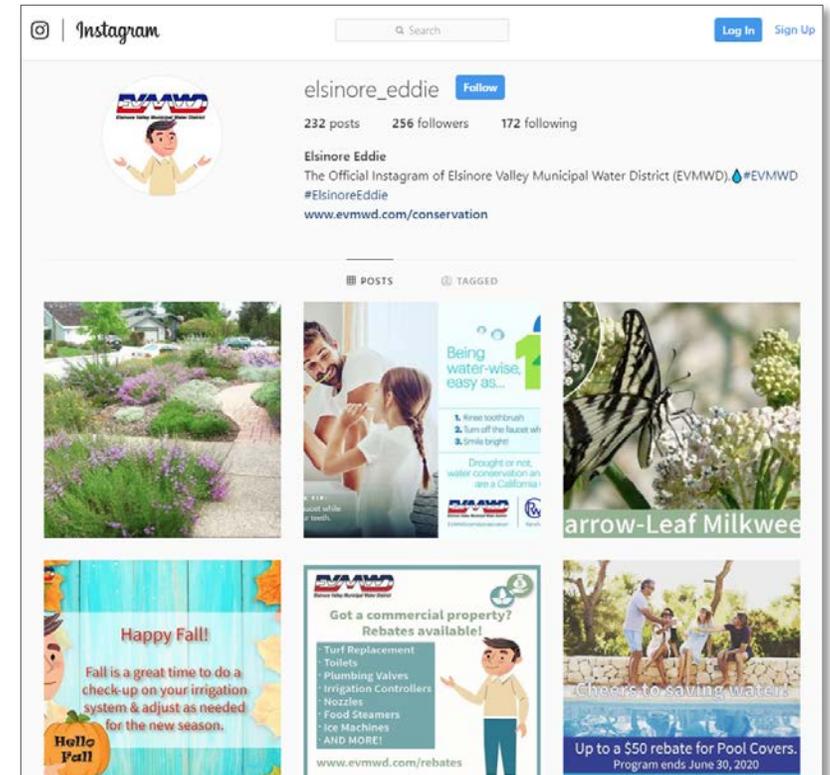


## Re-imagine Your Landscape!

FREE WaterWise Yard Transformation Workshops at Hollinshead Park



Learn simple step-by-step methods to convert your yard into a beautiful and functional WaterWise landscape.



*Top-Level  
Organizational  
Requirements*

# Water Waste Ordinance



*Note: provision moved from a later section and revised*

- Must have a water waste ordinance in force and in effect throughout the service area.
- May be a governmental ordinance or regulation, or a utility's own regulation
- For wholesale, a provision in the water service contract with retail providers is sufficient

# Example of Water Waste Ordinance

- Excerpt from Santa Cruz water waste regulations
  - It is unlawful for any person to use water for any of the following:
    - (a) Fire Hydrants. Use of water from any fire hydrant unless specifically authorized by permit from the city, except by regularly constituted fire protection agencies for fire suppression purposes, or for other authorized uses, including distribution system flushing, fire flow testing, and filling of approved vehicles for sewer system flushing, storm drain maintenance, and street sweeping purposes.
    - (b) Watering/Irrigation. The watering of grass, lawn, groundcover, shrubbery, open ground, crops and trees, including agricultural irrigation, in a manner or to an extent which allows excess water to run to waste.
    - (c) Plumbing Leaks. The escape of water through leaks, breaks, or malfunction within the water user's plumbing or distribution system for any period of time within which such break or leak should reasonably have been discovered and corrected. It shall be presumed that a period of twenty-four hours after the water user discovers such break, leak or malfunction, or receives notice from the city of such condition, whichever occurs first, is a reasonable time within which to correct such condition or to make arrangements for correction.
    - (d) Washing of Exterior Surfaces. The washing of sidewalks, walkways, driveways, parking lots, patios, or other exterior surfaces unless the hose is equipped with an automatic shutoff nozzle.
    - (e) Cleaning of Structures and Vehicles. The cleaning of building exteriors, mobile homes, cars, boats, and recreational vehicles unless the hose is equipped with an automatic shutoff nozzle.
  - etc. Full regulation at <https://www.codepublishing.com/CA/SantaCruz/html/SantaCruz16/SantaCruz1602.html#16.02>

*Internal Utility Actions and Requirements*

## Metering Practices

- Implement metering practices that promote conservation
  - ✓ Have universal metering of all service (public and private) connections. If not universally metered, have a plan to get there.
  - ✓ Implement metering of all sources (including, but not limited to, groundwater, surface water, reclaimed water)



*Internal Utility Actions  
and Requirements*  
**Water Rate  
Structures**

- Utilities shall use a non-promotional water rate that provides the financial incentive for customer to conserve.
- *Examples of non-promotional rate structures:*
  - Inclining tier rates
  - Marginal cost pricing
  - Seasonal rates
  - Water budget-based rates (as defined in AWWA M52)
- If a utility provides sanitary service, the rates shall include a volumetric component based on water delivery. Rates should include a conservation signal by using wintertime water use to set sewer rates.



*Internal Utility Actions and  
Requirements*  
**Billing Practices**

- *Minimum requirements for G480 compliance*
  - Bill shall be understandable with water use clearly defined in gallons or liters (or provide conversion factor)
  - Units of consumption clearly labeled
  - Retail billing frequency shall be monthly. Also, utilities shall estimate a bill amount no more than twice a year per customer.



*Internal Utility Actions  
and Requirements*  
**Landscape  
Efficiency  
Program**

- Utilities shall establish a program to improve and maintain water-efficient landscape and irrigation
- *The landscape efficiency program should include any or all of the following:*
  - Design, installation, and maintenance practices.
  - Irrigation scheduling.
  - Landscape water budgets to encourage efficiency *where water use is in excess of landscape needs*
  - Landscape transformation programs to (1) assist customers to modify landscapes to adopt climate appropriate or adapted plants that require little to no supplemental irrigation, and (2) encourage and assist customers to modify irrigation systems to more efficient and appropriate to plant needs.



*Internal Utility Actions and Requirements*  
**Water Loss Control Program**

- Minimize distribution system water loss and reduce real and apparent losses
- Follow IWA/AWWA audit best practice methodology
- Identify activities to reduce water losses



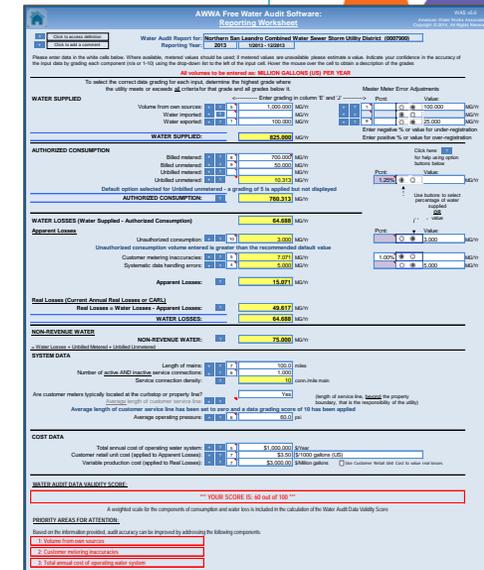
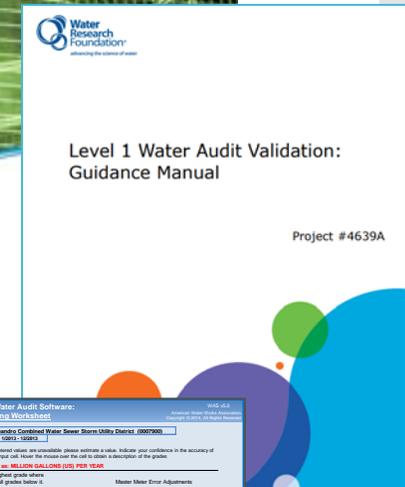
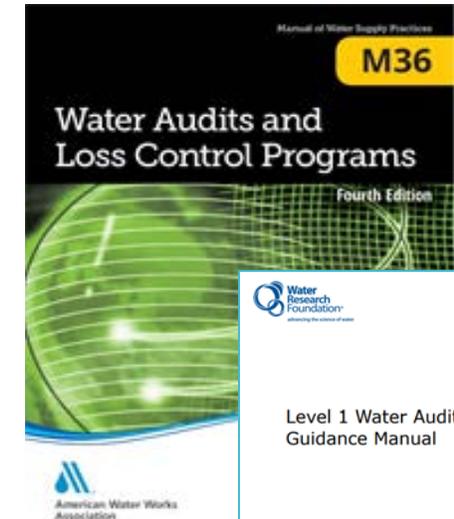
# Water Loss and Audits

- Conduct an annual water loss audit using AWWA/IWA Water Audit method/free software and AWWA M36
- Each audit shall undergo Level 1 Water Audit Validation
- Each validated water loss reporting worksheet shall be made publicly available on the utility web site

Water From Own Sources (corrected for known errors)	System Input Volume	Water Exported	Authorized Consumption	Billed Authorized Consumption	Billed Water Exported		Revenue Water
		Water Supplied			Unbilled Authorized Consumption	Billed Metered Consumption	
Water Losses	Apparent Losses		Unbilled Metered Consumption	Leakage on Transmission and Distribution Mains			
		Real Losses	Unbilled Unmetered Consumption		Leakage and Overflows at Utility's Storage Tanks		
Water Imported					Leakage on Service Connections Up to Point of Customer Metering		

# Water Loss Resources

- *Water Audits and Loss Control Programs (4<sup>rd</sup> Ed), M36 by AWWA (2016)*
- AWWA Free Water Audit Software ©
- Water RF Level 1 Water Audit Validation as described in Water Research Foundation guidance (4639A)
- WaterRF Component Analysis Tool (4372a)
- <https://www.awwa.org/Resources-Tools/Resource-Topics/Water-Loss-Control>



*External Policy  
Requirements*

## External Policies

- *The utility shall:*
  - Engage in development & adoption of water efficient codes and standards (where feasible)
  - Integrate water efficiency into land use planning (where appropriate)
    - To influence water demand (e.g., low water use landscaping, adherence to green building standards)



# *G480 Key Requirements* Documentation and Reporting

- Minimum documentation required:
  - ✓ Job description that incorporates water conservation
  - ✓ Water conservation and efficiency plan
  - ✓ Water resource plan
  - ✓ Drought or water shortage plan
  - ✓ Public information and education program
  - ✓ Water waste ordinance
  - ✓ Rate schedule and sample water bill
  - ✓ Landscape efficiency program promo materials
  - ✓ AWWA Water audit worksheet
  - ✓ Water loss plan and tracking to document progress
  - ✓ Documentation of how engaged in codes and standards
  - ✓ Documentation of how engaged in land use planning



## G480 Water Conservation Standard Checklist

Utility Name: \_\_\_\_\_

This checklist is intended to help you determine if your utility is meeting the G480 standard. The Requirements column includes a description of the elements of the standard and their relevant section. Review the requirements and provide an explanation in the Documentation column as to how you are meeting the requirement (being specific about source and page numbers may be helpful to you later). Text in **bold** notes verification requirements included in the standard for documents that should be made available to the public to help show how the utility is meeting the standard. Notes on work that still needs to be done before you meet the requirement can be described in the To Do column. Note the date you have met the specific requirement in the Date Completed column.

Section	Requirement	Documentation	To Do	Date Completed
<b>4.1 Regulatory Requirements</b>				
4.1.1	Demonstrate meet or exceed applicable regulatory requirements for jurisdiction	<i>Note how met.</i>		
<b>4.2 Top Level Organizational Functions</b>				
<i>4.2.1 Staff for conservation initiatives</i>				
4.2.1	Assign dedicated water conservation coordinator	<b>Provide job description of staff person assigned duties (5.1.1)</b>		
<i>4.2.2 Water conservation planning</i>				
4.2.2	Create, implement, and maintain a water conservation plan	<b>Provide water conservation plan (5.1.2)</b>		
	Plan guided by AWWA M52 – AWWA Water Conservation Programs – a Planning Manual or some other guidance	<i>Note guidance informing plan development</i>		
	Plan must: <ul style="list-style-type: none"> <li>Address water conservation across all relevant customer categories</li> </ul>	<i>Note if covered in conservation plan</i>		
	Plan should include:	<i>Note if covered in</i>		

## In Closing.....

- Hope to see release of version 2 before end of 2019 or in early 2020
- Got any questions?
  - Follow <https://www.awwa.org/Resources-Tools/Resource-Topics/Water-Conservation> for updates on the availability of the revised standard
  - Veronica Blette, USEPA  
[Blette.Veronica@epa.gov](mailto:Blette.Veronica@epa.gov)  
202.564.4094
  - Brian Skeens, Jacobs  
[Brian.Skeens@jacobs.com](mailto:Brian.Skeens@jacobs.com)  
678.530.4327
  - Bill Christiansen, AWE  
[bill@a4we.org](mailto:bill@a4we.org)  
773-360-5100



**American  
Water Works  
Association**



**NORTH AMERICAN  
WATER LOSS 2019**

NASHVILLE, TENNESSEE  
DECEMBER 3-5

**Registration is Open!**

[www.awwa.org/waterloss](http://www.awwa.org/waterloss)

**With Support From:**



**Local Host:**

