

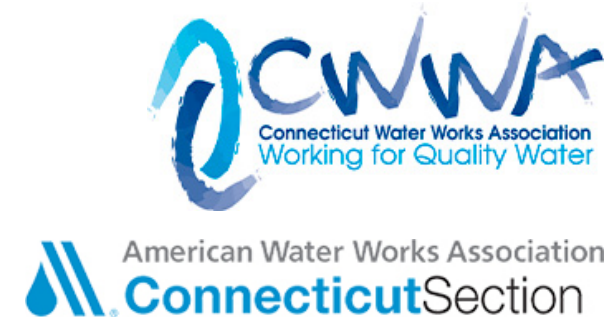
Round 2 of AWIA:

Risk & Resilience Assessment and Emergency Response Plan Updates

CWWA/CTAWWA Fall Conference

October 24, 2025

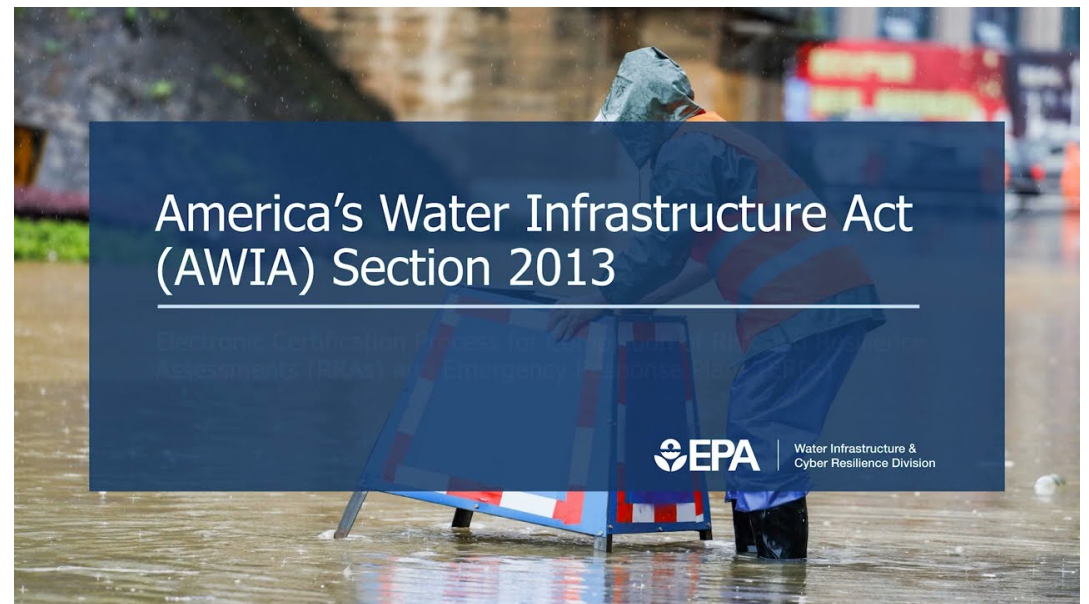
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Agenda

1. Background on what was done five years ago
2. Some lessons learned
3. The focus for the updates



Background on AWIA

2018 America's Water Infrastructure Act

- Supersedes the requirements of the Bioterrorism Act of 2002
 - ✓ 2002-2004 Vulnerability Assessments and Emergency Response Plans
 - Made Changes to Safe Drinking Water Act – overseen by EPA
 - ✓ AWIA Section 2013 updated SDWA Section 1433 requiring CWS serving > 3,300 people to certify to EPA the completion of a *Risk and Resilience Assessment (RRA)* every 5 years
 - ✓ Within 6 months of certifying the RRA, the utility must certify that the *Emergency Response Plan (ERP)* was updated to incorporate the RRA
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Certification Deadlines

Population Served	Previous RRA Deadline	Next 5-Year Submission Cycle RRA Deadline
≥100,000	March 31, 2020	March 31, 2025
50,000-99,999	December 31, 2020	December 31, 2025
3,301-49,999	June 30, 2021	June 30, 2026

ERP Deadline is 6 months to the day after RRA Certification Date

- No later than December 30, 2026 if RRA certified to EPA on June 30, 2026



RRA Requirements

Each community water system serving a population of greater than 3,300 persons shall assess the risks to, and resilience of, its system. Such an assessment shall include:

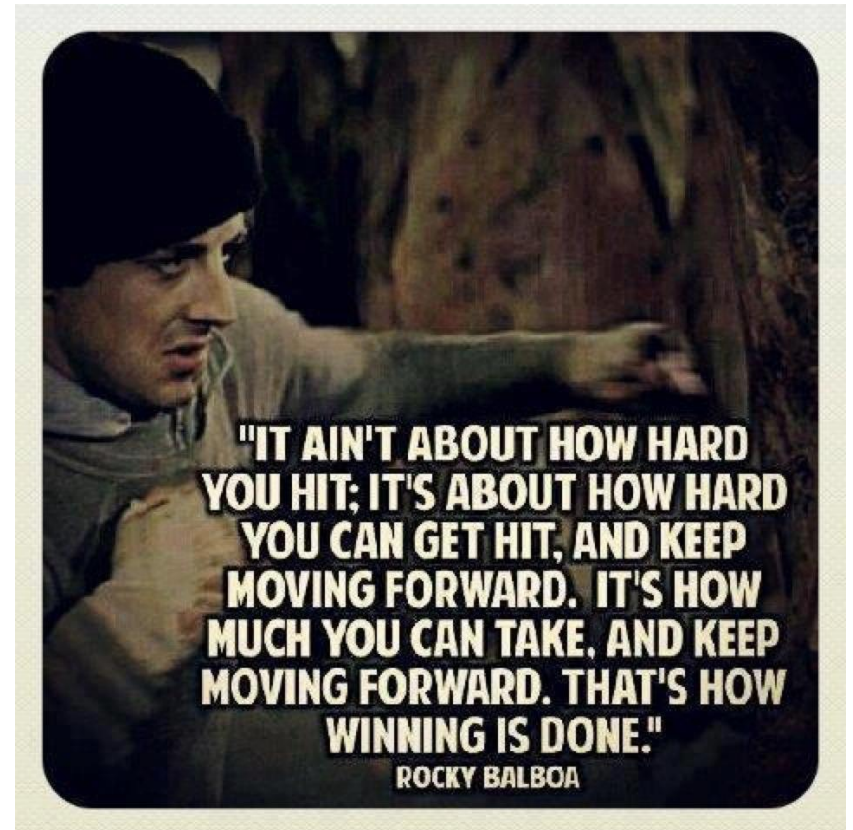
1. The risk to the system from **malevolent acts and natural hazards**;
2. The resilience of the pipes and constructed conveyances, physical barriers, source water, water collection and intake, pretreatment, treatment, storage and distribution facilities, **electronic, computer, or other automated systems (including the security of such systems)** which are utilized by the system;
3. The monitoring practices of the system;
4. The financial infrastructure of the system;
5. The use, storage, or handling of various chemicals by the system; and
6. The operation and maintenance of the system.

...and may include an evaluation of capital and operational needs for risk and resilience management of the system



What are Risk and Resilience?

- **Risk** is the potential for harmful effects (from malevolent acts and natural hazards)
- Water **resilience** refers to the ability of water utilities to withstand and quickly recover from natural and human-made disasters.



What are Malevolent Threats?

Directed Reference Threats by Threat Category							
Aircraft	Assault Team	Maritime	Vehicle Borne Bomb	Contamination of Product	Directed / Sabotage	Theft or Diversion	Cyber
(A1) Helicopter	(AT1) 1 Assailant	(M1) Small boat	(V1) Car	C(B) Biotoxin	S(PI) Physical— insider	T(PI) Physical— insider	(C1) Cyber attack
(A2) Small plane	(AT2) 2–4 Assailants	(M2) Fast boat	(V2) Van	C(C) Chemical	S(PU) Physical— outsider	T(PU) Physical— outsider	
(A3) Regional jet	(AT3) 5–8 Assailants	(M3) Barge	(V3) Midsize truck	C(S) Explosive	AS – Active shooter		
(A4) Large jet	(AT4) 9–16 Assailants	(M4) Deep draft ship	(V4) Large truck (18-wheeler)	C(P) Pathogen			
				C(R) Radionuclide			



Source: AWWA J100-21 Manual

What are Natural Hazards?



Drought



Floods



Earthquakes



Hurricanes



Tornadoes



Wildfires



Winter / Ice Storms

Other RRA Requirements

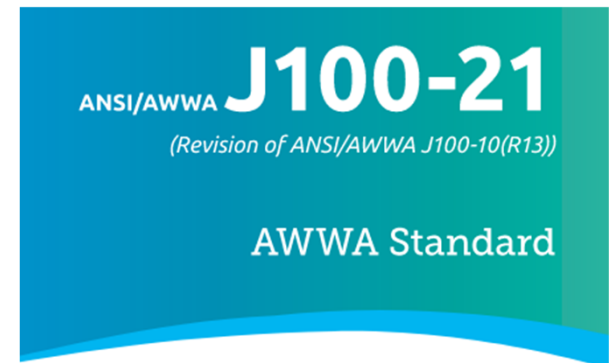
- Need to also consider dependencies (supply chain) and proximity hazards
- Community water systems **shall to the extent possible** coordinate with local emergency planning committees (LEPCs) established under the Emergency Planning and Community Right-To-Know Act of 1986 when preparing **or revising** an RRA or ERP under SDWA section 1433.
- Systems must maintain a copy of the RRA and ERP for five years after certifying the plan to the EPA.



RRA Development 5 Years Ago

EPA does not require any specific methodology, only that the documents prepared meet the requirements of SDWA Section 1433

- Most prevalent methodologies have been out for awhile:
 - ✓ 2004 - EPA developed the Vulnerability Self-Assessment Tool
 - Web version 2.0 used 5 years ago
 - ✓ 2010 - AWWA standardized its J100 / RAMCAP process
 - 2013 J100 Revision used 5 years ago
 - Current standard effective May 2021



RRA Development 5 Years Ago

- Both methodologies revolve around the Risk equation

$$\text{Risk (\$/year)} = \text{Consequence (\$)} \times \text{Vulnerability (mitigating factors)} \times \text{Threat Likelihood (frequency)}$$

- Both methodologies require the utility to identify assets and potential threats
 - ✓ The intersection of these are called “threat-asset pairs”
- It's not uncommon to start with thousands of threat-asset pairs
 - ✓ ...and then you “bottom cut”
 - Inapplicable pairs
 - Low-to-moderate risk pairs

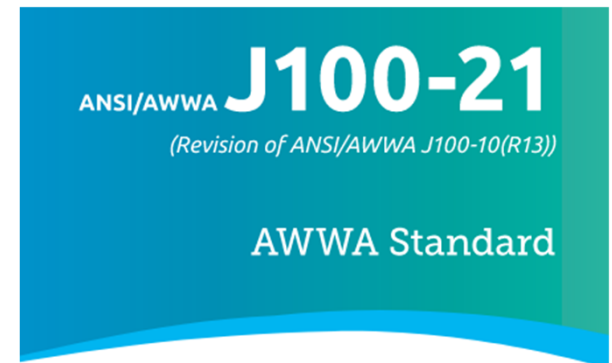
Pros and Cons of Each Method

- VSAT is a free web-based tool
 - ✓ Promulgated by EPA
 - ✓ Guides you through the process with specific questions
 - ✓ Requires pre-assessment to remove low risk threat-asset pairs, such as by using the *Risk and Resilience Assessment Checklist*
 - ✓ Includes AWWA's Utility Resilience Index
 - ✓ Is a bit clunky – may need to perform multiple runs for different groups of assets



Pros and Cons of Each Method

- J100 requires purchasing a manual from AWWA
 - ✓ Guides you through the process, but more generally
 - ✓ Requires pre-assessment to remove low risk threat-asset pairs, such as by using the *Risk and Resilience Assessment Checklist* or through “bottom-cutting” using worst reasonable consequences
 - ✓ More in-depth: More time required
 - ✓ Requires you to really like spreadsheets
- Mixing and matching different parts of each method is reasonable



Cybersecurity Assessment is Required

Evaluation of cybersecurity requires a bit more effort than just quantifying risk:

- EPA developed “Checklist of Cybersecurity Best Practices” to identify gaps and vulnerabilities
 - ✓ Likely the minimum standard, provides basic recommendations
 - ✓ Probably ok for systems with relatively basic process control and business enterprise setups
- EPA developed the Water Cyber Assessment Tool (WCAT) to assist with cybersecurity assessment
 - ✓ More questions for control identification
 - ✓ Provides a template for developing recommendations
- AWWA developed its Water Sector Cybersecurity Risk Management Tool
 - ✓ In-depth assessment of controls
 - ✓ Requires more time and effort
 - ✓ Provides prioritized recommendations



Water Security is National Security

Other Lessons from RRAs 5 Years Ago...

- Some water systems used AWWA's RAMCAP / J100 recommended methodology
 - ✓ The J100-21 standard was released effective May 2021 – still current
- EPA and AWWA recommended that cybersecurity risks be assessed with a 100% chance of occurrence in any given year – still true today
- Although supply chain resilience was analyzed, it tended to have less risk quantitatively than anticipated in the RRAs; nevertheless, procedures and recommendations were still important for the ERP
- The financial consequences of loss of service to various interdependencies (e.g., emergency services, energy, healthcare sectors) is difficult to quantify and likely portrayed a reduced risk for certain hazards. The VSAT is helpful here.



What Did EPA Learn?

Water systems are ultimately responsible for ensuring compliance with AWIA

- EPA inspections of systems revealed:
 - ✓ Inadequate RRAs and/or ERPs missing cybersecurity assessments and related strategies and actions
 - EPA has stated **“VSAT alone is not sufficient”**

and distribution facilities, **electronic, computer, or other automated systems** (including the security of such systems) which are utilized by the system;

- ✓ Failure to meet basic cybersecurity thresholds:
 - Failure to change default passwords
 - Using single logins for all staff
 - Failing to curtail access for former employees

What Did EPA Learn?

Water systems are ultimately responsible for ensuring compliance with AWIA

- ✓ Over 100 enforcement actions by EPA related to Section 1433 compliance
 - Failure to certify
 - Not addressing all statutorily required elements
- ✓ EPA has the power to issue fines of up to \$25,000/day for non-compliance
 - Goal of enforcement is to resolve discrepancies quickly

US EPA report cites cybersecurity flaws in drinking water systems, flags disruption risks and lack of incident reporting

NOVEMBER 15, 2024



What is the Focus Now?

Key Focus Points for Updates

- Changes to the system (new assets, operational changes)
- Regulatory changes
- Evolution of threats and hazards
- Implementation of mitigation measures that reduced risk
- Where are the single points of failure and what are the strategies to mitigate them?

Cybersecurity continues to be a highly ranked threat

- Top National Security Issue
- Policy and enforcement changes (EPA, CISA, Congress)
- **EPA says systems have a duty under AWIA to address**
- Enrolling in CISA's Vulnerability Scanning Service is recommended by AWWA



What is the Focus Now?

Cost and Availability in the Supply Chain

- Water Systems have many external dependencies
 - ✓ Power, communications, chemicals, fuel, computer chips
 - ✓ Harder to get parts
 - ✓ Provision of water to other water systems

Information Protection

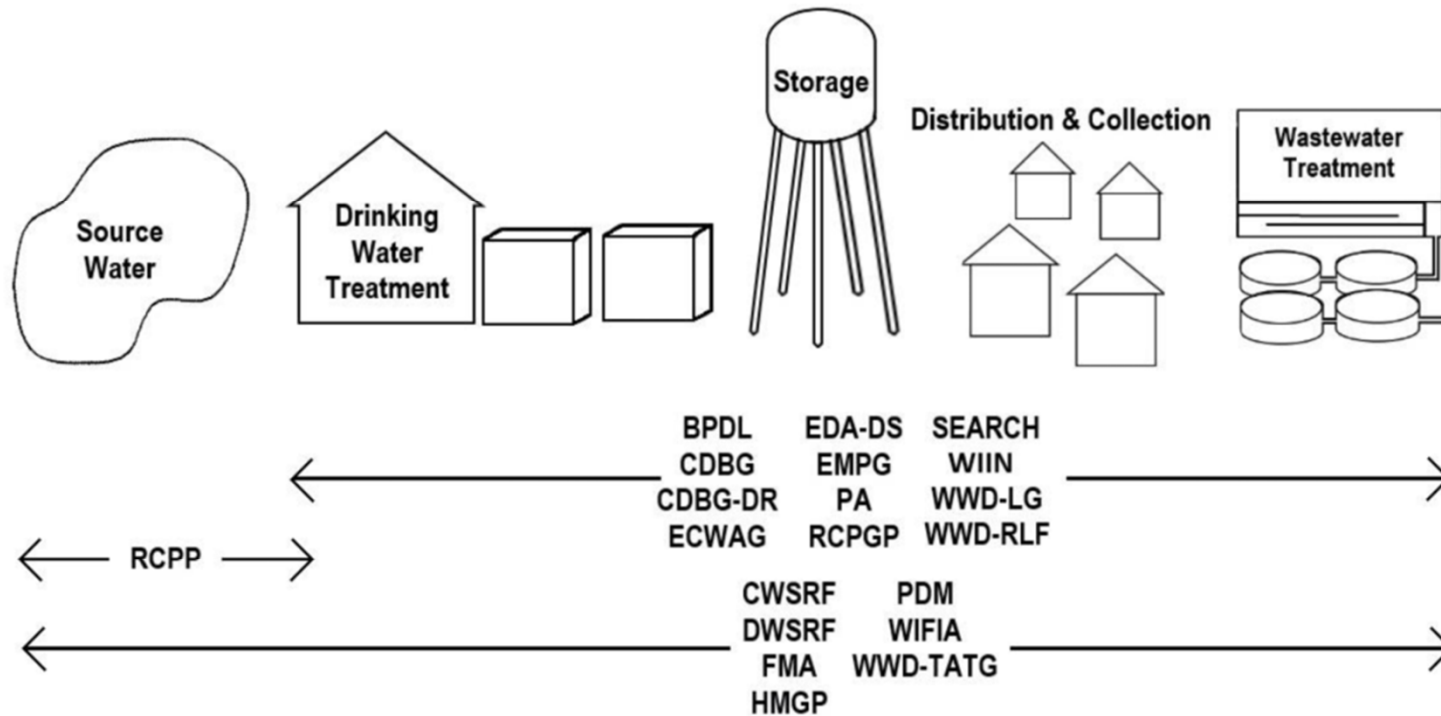
- Consider removing detailed information from website
- Include requirements for information protection in contracts

Funding

- Incorporate mitigation projects into budget/project planning
 - ✓ Summarize needed actions into CIP, Hazard Mitigation Plan
 - ✓ Apply for various grants noting that RRA quantified the risk



\$\$ AWIA Makes the Business Case for Funding \$\$



Source: Brodmerkel, Anna & Carpenter, Adam T. & Morley, Kevin M., 2020. "[Federal financial resources for disaster mitigation and resilience in the U.S. water sector](#)," [Utilities Policy](#), Elsevier, vol. 63(C).

The RRA Recertification: What Are You Certifying?

- Each utility designates an employee to certify the RRA and ERP
- You are certifying that the utility is meeting the specific requirements outlined under SDWA Section 1433
- EPA tracks certifications by PWSID
- You **do not** submit your RRA to EPA (or anyone else), just the certification

Part (C): Certification Statement

I, _____

[Name of certifying official]

hereby certify, under penalty of law³, that the following information is true, accurate, and complete, and that the community water system named under Part A, above, **has conducted, reviewed, or reviewed and revised** an assessment of the risks to, and resilience of, its system. This assessment included an assessment of:

Approach for the Updates

- Much of the RRA effort 5 years ago is still applicable
 - ✓ Reuse qualitative analyses
 - ✓ Worst reasonable consequences for bottom cutting
 - ✓ Assessments of asset vulnerability
- J100-21 (Effective May 2021) updated some threat categories
 - ✓ Should assess the changes to certain threat-asset pairs
- Address changes to the system, new assets, new mitigation measures




Approach for the Updates

- An updated cybersecurity assessment is needed
 - ✓ EPA's WCAT is reasonable if there has been a recent CISA assessment
 - ✓ Otherwise, AWWA's Cybersecurity Assessment Tool should be used
- “So can I just ‘review’ it?” **No, ‘Review and revise’**
- **Updates can be an annex to the extant RRA**


Part (C): Certification Statement
I, _____ <i>[Name of certifying official]</i>
hereby certify, under penalty of law ³ , that the following information is true, accurate, and complete, and that the community water system named under Part A, above, has conducted, reviewed, or reviewed and revised an assessment of the risks to, and resilience of, its system. This assessment included an assessment of:

ERP Requirements

Each community water system serving a population of greater than 3,300 persons shall prepare or revise, where necessary, an ERP that incorporates findings of the RRA. The ERP shall include:

1. **Strategies and resources** to improve the resilience of the system, including the physical security and cybersecurity of the system;
 2. **Plans and procedures** that can be implemented, and **identification of equipment** that can be utilized, in the event of a malevolent act or natural hazard that threatens the ability of the community water system to deliver safe drinking water;
 3. Actions, procedures and equipment which can obviate or **significantly lessen the impact of a malevolent act or natural hazard** on the public health and the safety and supply of drinking water provided to communities and individuals, including the development of alternative source water options, relocation of water intakes and construction of flood protection barriers; and
 4. Strategies that can be used to **aid in the detection of malevolent acts or natural hazards** that threaten the security or resilience of the system.
- 

General Lessons from ERPs 5 Years Ago...

- **Institutional knowledge** must be captured so it is not lost during turnover
 - ✓ Recording video calls and transcripts
 - ✓ Experienced employees should write, maintain, and update SOPs
 - Tailor incident action checklists (IACs) specific for your utility
 - ✓ USEPA's are general, even compared to what is in the ECP
 - ✓ **Conduct drills and evaluate actual emergencies** to develop specific IACs
 - Ask Local/Regional emergency management to participate
 - ✓ Try to use "living" plans that are electronically and physically assessable to employees and easy to update
 - File security must be considered for electronic files
 - **Hold training on-site** to directly engage and train first responders (particularly Fire and HAZMAT teams)
 - Join/Utilize CTWARN
- 

Approach for the Updates

- USEPA released a new ERP template in September 2024
 - ✓ Review the differences between your ERP and the current template
 - ✓ Make updates to contact information, etc.
- Set aside time to develop new annexes or update old annexes
 - ✓ Black sky plan
 - ✓ Crisis communication plan
 - ✓ Update generator specification annex

**Community Water System
Emergency Response Plan Template**
Template and Instructions

EPA Office of Water (4608T)

EPA 816-B-24-001

September 2024



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Resources that Can Help

- General Information and Resources: <https://www.epa.gov/waterresilience/awia-section-2013>
 - EPA Vulnerability Self-Assessment Tool Web 3.0: <https://www.epa.gov/waterresilience/vulnerability-self-assessment-tool-conduct-drinking-water-or-wastewater-utility>
 - Baseline Information on Malevolent Acts for CWS 3.0: <https://www.epa.gov/waterresilience/baseline-information-malevolent-acts-community-water-systems-version-30>
 - Small System Risk and Resilience Assessment Checklist: <https://www.epa.gov/waterresilience/small-system-risk-and-resilience-assessment-checklist>
 - Emergency Response Plan Template and Instructions: <https://www.epa.gov/waterutilityresponse/develop-or-update-emergency-response-plan>
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Resources that Can Help

- AWWA Water Sector Cybersecurity Risk Management Tool:
<https://cybersecurity.awwa.org/>
- EPA Water Cyber Assessment Tool (WCAT):
https://www.epa.gov/system/files/documents/2024-08/epa-water-cybersecurity-assessment-tool-3.1_links.xlsx





Thank you!

Questions/Comments

October 24, 2025
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