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America's 2018 Water Infrastructure Act

City Engineers Association of Minnesota
January 31, 2020 Earle Brown Heritage Center

Acronyms

America's Water Infrastructure Act	AWIA
Risk and Resilience Assessment	RRA
Emergency Response Plan	ERP

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Quick Facts About AWIA

Replaces the 2002 Bioterrorism Act

Requires water systems with population > 3,300 to

- Complete RRA within specified deadlines
- Complete ERP within 6 months of RRA certification
- Conduct RRA & ERP once every 5 years in perpetuity

Potential non-compliance penalty up to $57,317 per day

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Dates Certifications of Completion are Due

Population Served	Risk & Resilience Assessment (RRA)	Emergency Response Plan *within 6 months after RRA certification - sooner than date shown!
≥100,000	March 31, 2020	September 30, 2020
50,000-99,999	December 31, 2020	June 30, 2021
3,301-49,999	June 30, 2021	December 30, 2021

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Due Dates & Population Served

- AWIA only applies to systems serving populations greater than 3,300 during August 1, 2019.
- ERP is always due within 6 months after RRA certification.
- Your population served includes consecutive systems purchasing water from you.
- Conduct RRA & ERP each 5 years thereafter. The new RRA due dates will be announced well beforehand.

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Consecutive Systems

- "When determining population served in relationship to the RRA and ERP certification due dates, CPWS wholesalers should account for the entire population(s) served of the community or communities to which they sell or provide water."
- "A consecutive system is a public water supply that receives some or all of its finished water from one or more wholesale systems" (40CFR 141.2)

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Third Part Standards

- EPA does not require water systems to use any designated standards, methods, or tools to conduct RRA or ERP.
- Community water systems may use any standards, methods, or tools that aid the system in meeting the requirements of section 1433
- Regardless of standard, method, or tool, the CPWS must ensure that its RRA & ERP fully address all requirements of AWIA.

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Focus on the Goal!

Focus on complying with AWIA requirements as they are listed in the Federal Register

Research & identify the AWIA tools & guidance that will best assist your utility

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Take Ownership!

Your RRA is designed to be a practical and effective planning and decision-making tool

Intended to be comprehensive in its scope

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Risk and Resilience Requirements

Your RRA must thoroughly assess the following (new requirements in red):

- the risk to the system from malevolent acts and natural hazards
- 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

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Risk and Resilience Requirements (continued)

- the monitoring practices of the system (any type of monitoring that provides detection or early warning of malevolent acts & natural hazards)
- The financial infrastructure if the system (basic financial operations)
- the use, storage and handling of chemicals used by the system
- the operation and maintenance of your water system

Recommended but not required:

- An evaluation of capital & operational needs for risk and resilience management of the system.

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EPA Tools & Resources (Released August 1, 2019)

- Baseline Information on Malevolent Acts
- Vulnerability Self Assessment Tool (VSAT Web 2)

AWWA Tools & Resources

- J100-10-(R13) Seven-Step Tool (not listed by EPA)

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EPA Tool 1: Baseline Information on Malevolent Acts

Estimate three parameters:

- **Threat Likelihood:** the annual probability that a perpetrator will attempt to carry out the malevolent act against the facility.

- **Vulnerability:** the probability that the malevolent act will have an adverse impact on the facility

- **Consequences**: the public health and economic consequences resulting from the impact of the malevolent act on the facility

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EPA Tool 2: VSAT Web 2.0

- **Utility Overview –** Provides basic information about utility
- **Utility Resilience Index –** assess overall resiliency to risk
- **Qualitative Risk Assessment –** identify individual critical assets
- **Quantitative Risk Assessment -** quantify risk
- **Countermeasure Analysis –** quantify achieved risk reduction
- **Report –** download the report when finished
- **AWIA Certification –** review instructions on how to certify

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AWWA Tools: J100-10 (Seven-Step Process)

- **Asset Characterization**
- **Threat Characterization**
- **Consequence Analysis**
- **Vulnerability Analysis**
- **Threat Analysis**
- **Risk/Resilience Analysis**
- **Risk/Resilience Management**

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How does VSAT 2.0 & J100 determine Risk?

Risk = Threat x Vulnerability x Consequence

Each water system asset is paired with one or more risks.

‘Consequence’ is a dollar amount.

The calculated risk to each asset is **reduced** by applying ‘counter-measures’ that lower threat and/or vulnerability

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Baseline Risk

Threat-Asset Pair	Consequence	Vulnerability	Threat Likelihood	Risk
Cyber Attack Water Treatment Plant	$2,000,000	1.0	0.4	$800,000

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Reduced Risk with Improvements

Threat-Asset Pair	Consequence	Vulnerability	Threat Likelihood	Risk
Cyber Attack Water Treatment Plant	$2,000,000	0.2	0.1	$40,000

How Should My System Complete the RRA ?

- Use your Preferred Templates and modify as needed for AWIA compliance
- Use VSAT 2.0 (designed to cover new AWIA RRA requirements)
- Use J-100 (must cross-reference & compare to meet AWIA requirements)
- Large, complex systems may contract with a water security consultant
- Merge recent security assessments your system has completed into RRA
- Form work teams each with special focus
- Cyber Security & SCADA can be handled by in-house IT person (larger systems)
- Small and medium-sized systems may use basic cyber-security tools and guidance (ex: Cyber Security Tools from AWWA)

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Emergency Response Plans

Your ERP must contain the following:

- Strategies and resources to improve the resilience of the system, including the physical security and cybersecurity of the system
- 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

Emergency Response Plans (cont.)

Your ERP must contain the following:

- 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

Emergency Response Plans (cont.)

Your ERP must contain the following:

- 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
- Community water systems must, to the extent possible, coordinate with local emergency planning committees (LEPC) when preparing or revising a risk and resilience assessment or emergency response plan under the AWIA.

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Other Useful Resources & Tools

AWWA J-100: 'Risk and Resilience Management of Water and Wastewater Systems'

AWWA G440-17: 'Emergency Preparedness Practices and AWWA M-19: Emergency Planning for Water and Wastewater Utilities'

AWWA G430-14: 'Security Practices for Operation and Management'

WaterISAC '10 Basic Cybersecurity Measures'

AWWA 'Cybersecurity Guidance and Use Case Tools'

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