



Massachusetts Water Resources Authority

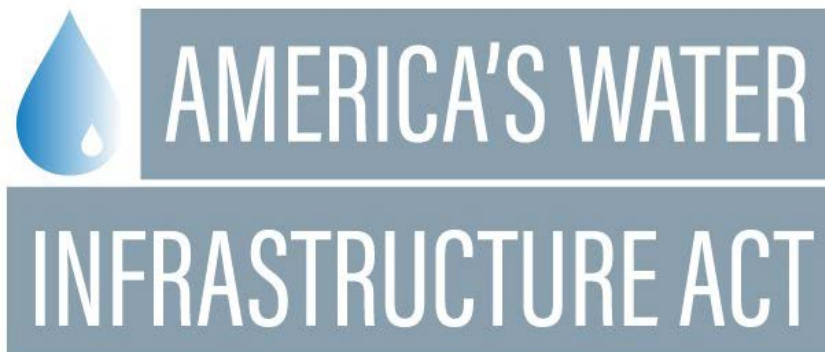
***America's Water Infrastructure Act  
of 2018 (AWIA)***

**Water Supply Citizens Advisory Committee  
October 13, 2020**



# Presentation Outline

- **America's Water Infrastructure Act of 2018 (AWIA)**
  - Background
  - Requirements and Deadlines
- **Risk And Resiliency Assessments (RRAs)**
  - Tools and Resources
  - RAMCAP Process
  - MWRAs Experience and Takeaways
- **Emergency Response Plans (ERPs)**





# Background

## September 11<sup>th</sup> Attacks (2001)



## Hurricane Katrina (2005)



## Stuxnet Virus (2010)



**Malevolent Acts**

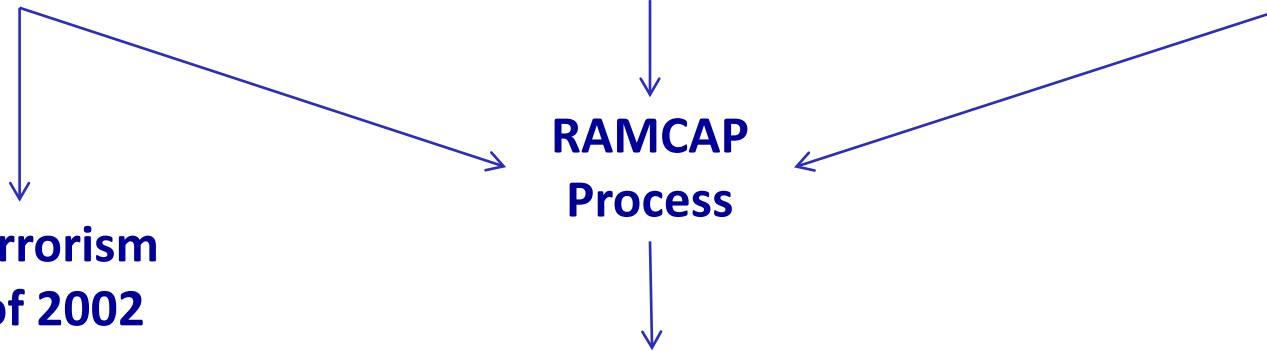
**Natural Hazards**

**Cybersecurity**

**Bioterrorism  
Act of 2002**

**RAMCAP  
Process**

**AWWA J100  
Standard**





# Background

**September 11<sup>th</sup>  
Attacks (2001)**



**Malevolent Acts**

**Hurricane Katrina  
(2005)**



**Natural Hazards**

**Stuxnet Virus  
(2010)**



**Cybersecurity**

**America's Water  
Infrastructure Act of 2018**

**COVID-19???**



# AWIA Requirements and Deadlines

- 1. Conduct Risk and Resiliency Assessment (RRA)**
- 2. Submit RRA Certification to EPA**

Population Served	RRA Certification Deadline
≥100,000	March 31, 2020
50,000-99,999	December 31, 2020
3,301-49,999	June 30, 2021

- 3. Prepare or Update Emergency Response Plan (ERP)**
- 4. Submit ERP Certification to EPA (6 months after RRA Cert)**

Population Served	ERP Certification Deadline
≥100,000	September 30, 2020
50,000-99,999	June 30, 2021
3,301-49,999	December 31, 2021

- 5. Review, Update, and Recertify RRA and ERP every 5 Years**





## AWIA Requirements and Deadlines – Other Items

- Coordinate with local emergency planning committees (LEPCs)
- Submit request to EPA to return old vulnerability assessment (by RRA deadline)
  - Submit letter to [WSD-Outreach@epa.gov](mailto:WSD-Outreach@epa.gov) on utility letterhead and include;
    - Utility name,
    - PWS ID#,
    - Address and point of contact information for the individual who will be responsible for receiving the vulnerability assessment



# RRA Certification Deadlines for MWRA Communities

Population Served	100,000+	50,000 - 99,999	3,301 - 49,999	
Certification Deadline	March 31, 2020	December 21, 2020	June 30, 2021	
Communities	MWRA	Brookline	Arlington	Reading
	Boston	Chicopee	Bedford	Saugus
	Cambridge	Framingham	Belmont	South Hadley FD1
	Worcester	Lynn	Canton	Southborough
		Malden	Chelsea	Stoneham
		Medford	Dedham-Westwood WD	Stoughton
		Newton	Everett	Swampscott
		Peabody	Lexington	Wakefield
		Quincy	Lynnfield Water District	Watertown
		Revere	Marblehead	Wellesley
		Somerville	Marlborough	Weston
		Waltham	Melrose	Wilbraham
			Milton	Wilmington
			Nahant	Winchester
			Needham	Winthrop
		Northborough	Woburn	
		Norwood		



## Resources and Tools - RRAs

- **U.S. Environmental Protection Agency**
  - **Small System RRA Checklist (the “Checklist”)**
  - **Vulnerability Self-Assessment Tool (VSAT) 2.0**
  - **Baseline Info on Malevolent Acts for CWSs**

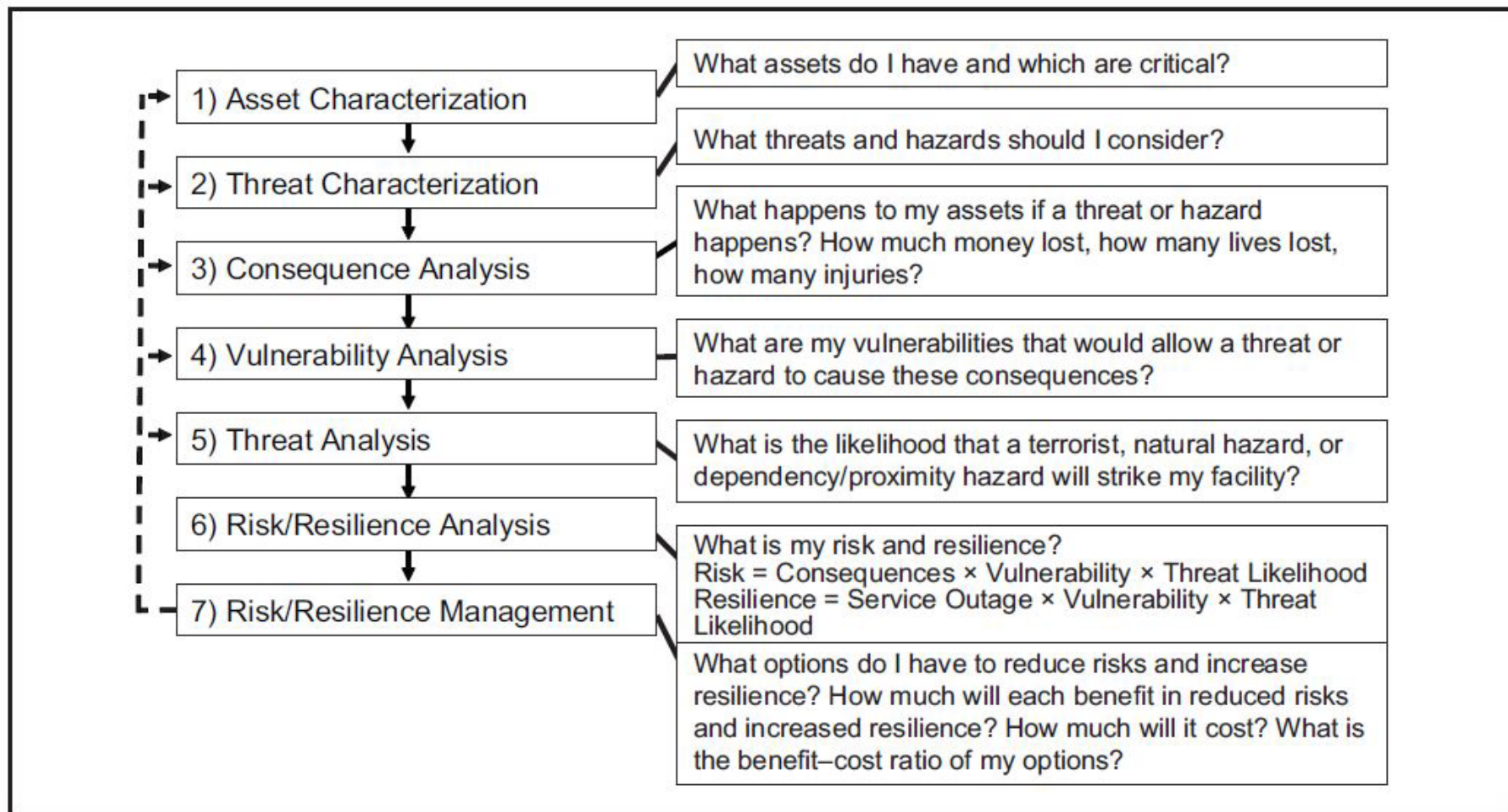


- **AWWA**
  - **Utility Risk and Resilience Certificate Program**
  - **J100 Risk and Resilience Management of Water and Wastewater Systems**





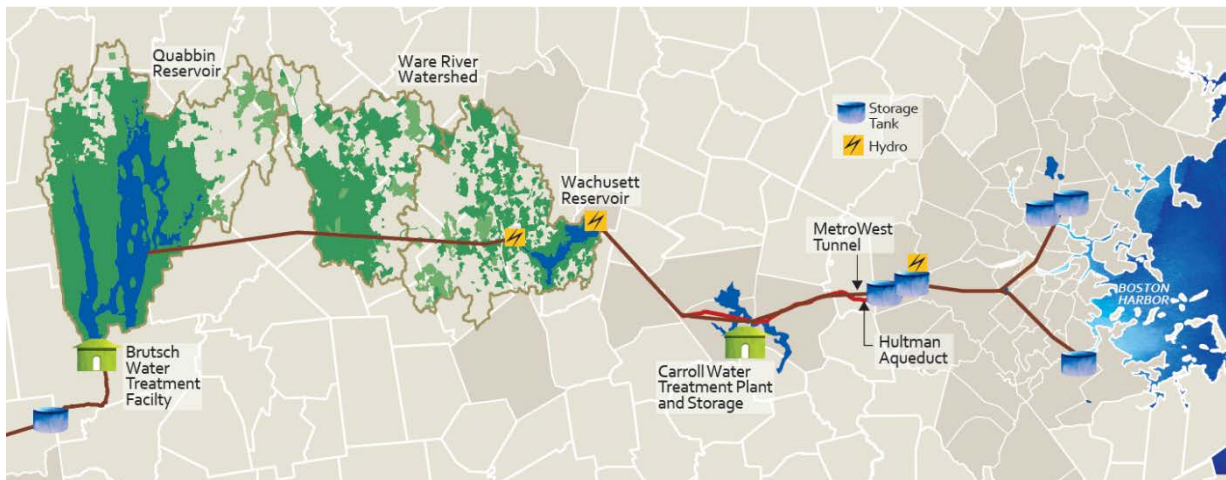
# RAMCAP Process (AWWA J100) for RRAs





# Step 1 - Asset Characterization

- **Water Facility Infrastructure** →
  - **Monitoring Practices**
  - **Financial Systems (Billing Systems)**
  - **Chemical Storage and Handling**
  - **Operation and Maintenance**
- **Pipes and Constructed Conveyances**
  - **Physical Barriers**
  - **Source Water**
  - **Water Collection and Intake**
  - **Pretreatment**
  - **Treatment**
  - **Storage and Distribution Facilities**
  - **Electronic, Computer, or other Automated Systems**





# Step 2 - Threat Characterization

## Natural Hazards



- Hurricane
- Flood
- Earthquake
- Tornado
- Ice Storm
- Fire
- Other

## Malevolent Acts



- Assault on Utility (Physical)
- Contamination (Intentional and Unintentional)
- Theft or Diversion (Physical)
- Cyber Attack (Business Enterprise Systems or Process Control Systems)
- Sabotage (Physical)
- Others

## Dependency / Proximity



- Loss of Utilities
- Loss of Suppliers
- Loss of Employees
- Loss of Customers
- Loss of Transportation
- Proximity to Other Targets



# Steps 3 through 6 - Risk Calculations

## CONSEQUENCE



- Deaths or Injuries
- Utility consequences
- Regional economic consequences



## VULNERABILITY



### Malevolent Acts

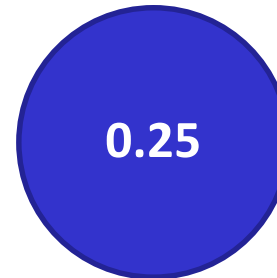
- Detect
- Delay
- Respond

### Natural Hazards

- Preparation / Resilience
- Active Response
- Recovery



## LIKELIHOOD



### Malevolent Acts

- EPA – Baseline Info on Malevolent Acts for CWSs

### Natural Hazards

- J100 Standard
- USGS, FEMA, NWS, Others



## RISK





# Step 7- Risk Mitigation (Countermeasures)

## WITHOUT COUNTERMEASURE

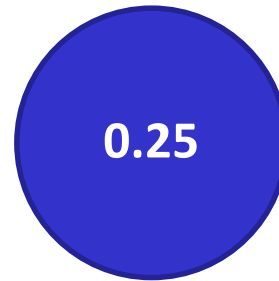
CONSEQUENCE



VULNERABILITY



LIKELIHOOD



RISK



## WITH COUNTERMEASURE

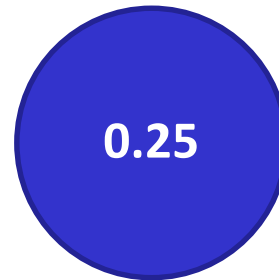
CONSEQUENCE



VULNERABILITY



LIKELIHOOD



RISK





# Certification

## Certification of Community Water System Risk and Resilience Assessment in Compliance with America's Water Infrastructure Act of 2018

### Part (A): Community Water System Identification

Community Water System Name:

Community Water System Complete Mailing Address:

Public Water System Identification Number:

Population Served:

### Part (B): Certification Date

Date of the certification:

### Part (C): Certification Statement

I,

*[Name of certifying official]*

hereby certify that the community water system named under Part A, above, has *[select all that apply]*

conducted  reviewed  reviewed and revised





# Certification

an assessment of the risks to, and resilience of, its system. This assessment included an assessment of:

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

Signature

*[Signature of certifying official - click to add a digital signature, or print and sign]*



# MWRA RRA Approach

- Reviewed Existing Vulnerability Assessments
- Developed Diverse Teams
- Brought Consultant on Board to Assist
- Performed RRAs for New Critical Assets
- Developed Final RRA Documentation
- Submitted Certification

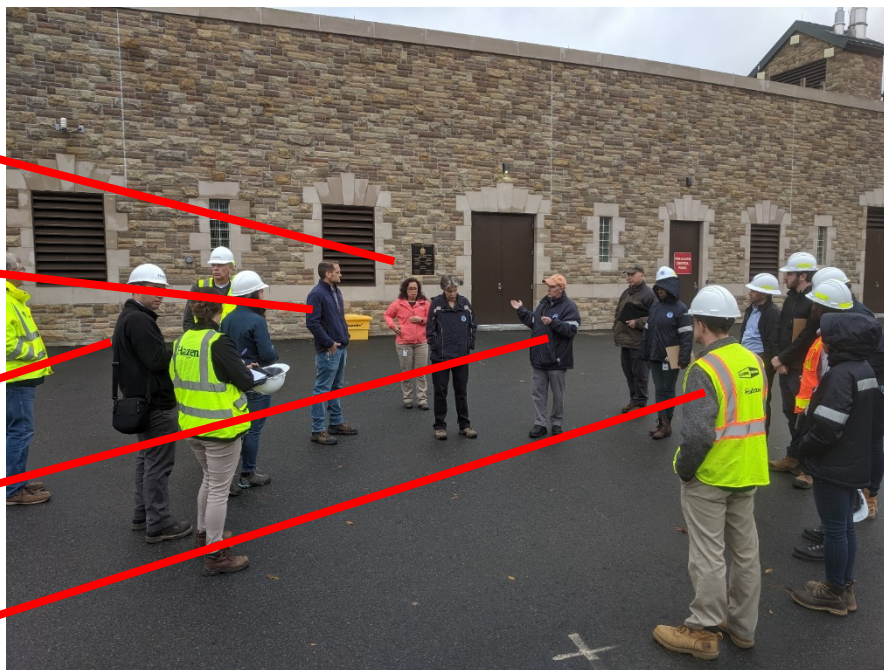
**MWRA SECURITY**

**MWRA ENV QUALITY**

**CONSULTANT**

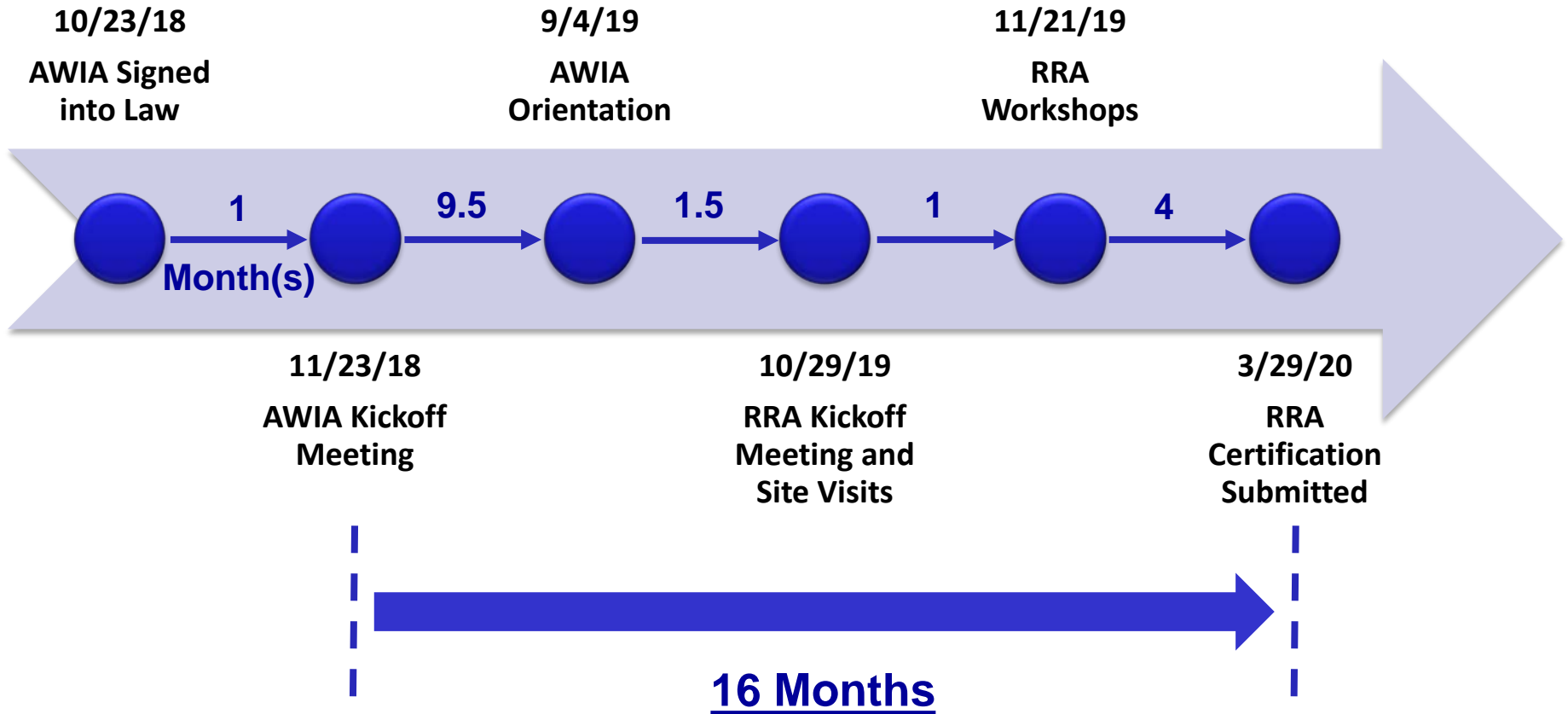
**MWRA OPERATIONS**

**MWRA ENGINEERING**





# MWRA RRA Timeline





# MWRA RRA Takeaways

- **Start Now**
  - Develop Plan Ahead Of Time
  - Become Familiar with Tools And Resources
  - There Isn't One Right Way
- **Opportunity for Knowledge Transfer and Coordination**
  - Coordinate with LEPCs
  - Develop Diverse Teams
- **Results Are Relative**
  - Assessments are Subjective and Unique to each Utility
- **Use as a Planning Tool**
  - Identify Cost Effective Countermeasures and Resiliency Improvements and Incorporate into O&M Budgets and CIPs
  - Present Results to Governing Bodies to Support Budgets and Plans



# Emergency Response Plan (ERP)

- **U.S. EPA Resource**
  - **AWIA ERP Template and Instructions**
- 1. Strategies and Resources to Improve Resilience**
  - a. **Emergency Response and ICS Roles**
  - b. **Communication Strategies**
  - c. **Public Notification Templates**
- 2. Plans and Procedures for Responding to a Threat**
  - a. **Core Response Procedures**
  - b. **Incident-Specific Response Procedures**
- 3. Actions and Equipment to Lessen the Impact of a Threat**
- 4. Strategies to Detect Threats**



# Gather Key Information for ERP

1. **Conduct a RRA and Incorporate Findings into ERP**
2. **Identify State Regulatory Requirements**  
[mass.gov/lists/emergency-response-for-public-water-systems](http://mass.gov/lists/emergency-response-for-public-water-systems)
3. **Identify and Integrate Local Plans**
4. **Coordinate with LEPCs and Response Partners**

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## 5. Plan for Resources





## After ERP is Complete

- **Submit ERP Certification to EPA**
- **Store Safely and Securely – May Contain Sensitive Info**
- **Living and Evolving Document – Routinely Update**
- **Train Personnel and Response Partners**
  - **U.S. EPA Tabletop Exercise Tool for Drinking Water and Wastewater Utilities (TTX Tool)**





**Thanks!**

- **Hazen And Sawyer**
  - Katie Hoek, Task Order Manager
  - Eric Segal, Task Lead
  - The rest of the Hazen Team
- **Triad Consulting**
  - Rick Withers, Task Lead
- **MWRA Team**
  - Stephen Estes-Smargiassi, Director Of Planning And Sustainability
  - Mark Johnson, Director Of Waterworks
  - Andrew Hildick-Smith, Director of SCADA, Meter and Monitoring
  - Lots Of Others!

# Questions or Comments?

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**Drink with Confidence**

**Flush with Pride**

This presentation represents the opinions of the author and not necessarily those of the MWRA