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Maintaining Water Service: How to Identify Risks and Respond to Emergencies

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The contents of this document do not necessarily reflect the views and policies of the Environmental Protection Agency, nor does the EPA endorse trade names or recommend the use of commercial products mentioned in this document.
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Webinar Agenda

- Define utility threats
- Explain how to evaluate the threats to certain types of infrastructure
- Describe how to mitigate these threats through countermeasures and emergency response procedures
- Discuss stories of emergency response planning from the field
- Identify tools and resources to help with plans
Emergency response planning is a best practice for all water systems. Anticipating emergencies and being proactive will give you the best opportunity to maintain water service when the unexpected occurs. And it is more cost-effective.
Why Prepare for Emergencies?

- Emergency response planning is a *best practice* for all water systems. Anticipating emergencies and being proactive will give you the best opportunity to maintain water service when the unexpected occurs. And it is more cost-effective.

- If you serve 3,300 people or more...you are required to do a plan in 2021
America’s Water Infrastructure Act of 2018 (AWIA)

- Section 2013(b): For water systems serving between 3,300 and 49,999 people

- Certification of risk and resilience assessment by June 30, 2021

- Certification of emergency response plan no later than six months after the risk and resilience assessment (December 30 at the latest)
Two Types of Risks

- Natural hazards—risks from nature that may disrupt safe drinking water service

- Malevolent acts—risks from human behavior that may disrupt safe drinking water service
Natural Hazards
Natural Hazards
Natural Hazards
The National Risk Index

Discover the landscape of natural hazard risk in the United States
Malevolent Acts

Police interview teen in connection to water tower vandalism

The affected North Bend Homes are still under a no drink order as Sallal runs further tests.

By Kailan Manandic
Wednesday, November 7, 2018 1:46pm | NEWS

Vandalism, a Persistent Threat to Water Utilities, Is Tough to Stop

A little-recognized but common problem, vandalism can put water supplies at risk of contamination. Alarms and a safety-first approach are often the only recourse for water agencies.
Malevolent Acts

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How do these threats impact your ability to deliver safe drinking water?
Asset Categories

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Think Broadly At First

- For each category of assets, is it vulnerable *in general* to any natural hazard or any malevolent act?

- Most likely, the answer will be yes

- Then, narrow down to how specific threats can impact specific asset categories
Asset – Threat Pairs
Asset – Threat Pairs

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Asset – Threat Pairs

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Asset – Threat Pairs
Unsafe to drink: Wildfires threaten rural towns with tainted water

by Rachel Becker
11.24.2020, 1:36pm

Health

The damage to water systems can linger for years. The cost in just one small town: as much as $150 million.

For more than a month after a wildfire raced through his lakeside community and destroyed his Napa County home, Kody Petrini
All Hope Isn’t Lost!

- Countermeasures are actions that utilities can take to limit the potential impact of the threat pairs

- Includes capital improvements that you may wish to prioritize
Countermeasures
Countermeasures
You should prepare, but...

You will have emergencies, guaranteed.
During an Emergency, Who is in Charge?

- Operator?
- Utility manager?
- Mayor/Tribal Chair/Board Chair?
- Owner?

Depends on the emergency
Where Can You Get Backup Water?
How Will You Notify the Public?
Do you have these lined up and on call?
Repairs
Backup Generators
Backup Operator
Technical Assistance

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Being Prepared If Your Operator Can’t Work

ROCKWOOD WATER TREATMENT PLANT
STANDARD OPERATING PROCEDURE

4. Open to 3/4. This is done by pressing the R button on valve control. Hold till gauge reads 150.
5. Pull 3 raw water pumps to open manually at your valve control switch.
   - (2 raw pump works on water 2 valve)
6. Open to all. This is done by pressing the R button on valve control. Hold till gauge reads 90.
7. Start all 3 Diaphragm (759) chemical pumps.
8. Start all 8 flash mixers.
9. Start all 4 aerators.
10. Open all 6 limiters on the housewell control by pushing button from Manifold to Automatic. Digital read will show either 1 or 4 Min.
11. Turn 2 Carry Water pumps on.
12. Turn 2 Beach pumps on (most about 5-10 seconds in between turning pumps on).
13. Turn 2 chlortide feed pumps on.
14. Turn 2 phosphate 7500 feed pumps on.
15. At approximately 30 minutes after start up start all (4) high service pumps OR.
16. When chlorwell indicator reaches approximately 15 a start (2) or (3) high service pump.
17. At this time, 2 raw pumps and 2 high service pumps are operating.

Your goal is to get tank level and chlorwell level full at about the same time.
- Check Arc Real and ever flows at level 57.0 (full to 59.6)
- Checkwell full level is 97.5
- During heavy rain events, fill chorwell to 14.6.

DAILY OPERATIONS
- Make sure raw flows remain at 1780 gpm and 2800 gpm. Adjustments may be necessary periodically during the day.
- Go down stairs check all your chemical feed pumps to assure they are operating.
- Inside of Beachs room check both feed rate and make sure bleach is feeding.
- Then go to high service building unlock and make sure everything looks normal (no water coming in, etc.)

SHUT DOWN
1. Larger (4) high service pump will shut automatically.
   - Turn switch to off position. Be sure to let pressure stabilize in between each high service pump before shutting to prevent water hammer.
2. Switch to the off position one small high service pump.
3. Push stop button on 3 (2800gpm) raw water pump.
4. As 3 raw pump begins shut down, push small 3 or 4 (1200 gpm) raw pump stop button.
5. Go to the control and press and hold the "L" button till the light gets brighter on "L". When you see, the valves start to close on the small raw water 1 or 2 go to the control and press and hold the L button till the orange light turns a dim color.
6. These valves (small raw water valve 1 and 2)

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Stories from the Field

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For communities of a certain size, these plans are required. But why should all utilities want to go through this process?
How long does it take to prepare an assessment?
What information do you need from a community? What information has been the hardest to gather?
Who from the community should be involved?
What are the most common issues that your communities have faced? What are some of the unusual ones?
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What is the value of having a technical assistance provider such as from RCAP assist with developing the plans?
Resources
Field Assessment Checklist for Small Systems Critical Assets

Personnel
1. Is appropriate warning and informational signage in place? (e.g., “NO TRESPASSING,” “AUTHORIZED PERSONNEL ONLY”)

2. Are access keys or codes only supplied to authorized individuals?

Operational Security
1. Is the area periodically patrolled by:
   • Internal security force
   • Local law enforcement agency
   • Memorandum of understanding (MOU) in force
   • Neighborhood watch
   • Other

2. Are facilities periodically inspected?
   • What is the frequency of inspection?
Course 1: Introduction to Resiliency and America’s Water Infrastructure Act of 2018 - EL272
As the introductory course in the Small Systems Resiliency Certificate Program, this course introduces the requirements for water utilities established by America’s Water Infrastructure Act of 2018 (AWIA) and defines how the certificate program can help small systems to meet those requirements.

Course 2: Operational Measures for Resiliency - EL273
The second course in the Small Systems Resiliency Certificate Program, course content covers each aspect of security, field assessments of critical assets, and operational resiliency.

Course 3: How to Develop a Risk and Resilience Assessment - EL274
As the third course in the Small Systems Resiliency Certificate Program, the course guides small systems through developing a Risk and Resiliency Assessment with a worksheet designed for small utilities.

Course 4: How to Develop a Small System Emergency Response Plan - EL275
As the fourth course in the Small Systems Resiliency Certificate Program, the course guides small systems through developing an Emergency Response Plan (ERP) with the EPA ERP template.

Course 5: Cybersecurity for Water Systems - EL276
The fifth course in the Small Systems Resiliency Certificate program, explains the importance of cybersecurity best practices for critical infrastructure and demonstrates how AWWA’s water sector cybersecurity risk management guidance and tool can help a utility identify gaps in current cybersecurity practices.
Emergency Response for Drinking Water and Wastewater Utilities

EPA has a variety of tools and guidance to support drinking water and wastewater utility preparedness and response. Our resources can help you become a more resilient utility.

Emergency Planning

- Develop emergency response plans
- Plan for emergency drinking water supply

Hazard Resilience

- Mitigate natural disasters
- Build flood resilience

Related Information

- Water Resilience
- Water Utility Response On-The-Go Overview Video
- Community Water Resilience

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VSAT WEB 2.0
Vulnerability Self Assessment Tool

ABOUT VSAT
VSAT is a tool for assessing risk and resilience at drinking water and wastewater systems. It can be used to estimate risks from malevolent threats and natural hazards and to evaluate improvements for increased security and resilience. EPA designed VSAT Web 2.0 to help water systems comply with America’s Water Infrastructure Act.

AMERICA’S WATER INFRASTRUCTURE ACT
America’s Water Infrastructure Act (AWIA) became law in 2018.
- AWIA requires each community water system serving more than 3,300 people to assess the risks to and resilience of its system to malevolent acts and natural hazards.
- AWIA has a list of water system components that the risk assessment must include, but AWIA does not require the use of a specific method to conduct the assessment.
- Water systems must submit a certification to EPA that the system conducted the assessment.
Water Resilience

Small System Risk and Resilience Assessment Checklist

This guidance is intended for small community water systems (CWSs) serving greater than 3,300 but less than 50,000 people to comply with the requirements for risk and resilience assessments under America's Water Infrastructure Act of 2018 (AWIA). For larger CWSs, EPA recommends the Vulnerability Self-Assessment Tool (VSAT) Web 2.0 or an alternate risk assessment method. CWSs serving 3,300 or fewer people are not required to conduct risk and resilience assessments under AWIA. EPA recommends, however, that very small CWSs use this or other guidance to learn how to conduct risk and resilience assessments and address threats from malevolent acts and natural hazards that threaten safe drinking water.

Why is EPA providing this document?
Incident Action Checklists for Water Utilities

Drinking water and wastewater utilities can use these twelve "rip & run" style checklists to help with emergency preparedness, response and recovery activities.

You may need a PDF reader to view some of the files on this page. See EPA's About PDF page to learn more.

- Pandemic Incident Action Checklist (PDF) (8 pp, 827 K, 3/28/2020)
  Provides preparedness, response and recovery actions water utilities can take during a pandemic incident.

- Power Outage Incident Action Checklist (PDF) (8 pp, 2 MB)
  Provides preparedness, response and recovery actions water utilities can take in a power outage.

- Harmful Algal Bloom Incident Action Checklist (PDF) (8 pp, 1 MB)
EPA Incident Action Checklists

- Pandemic
- Power Outage
- Harmful Algal Bloom
- Cybersecurity
- Extreme Cold
- Earthquake
- Drought

- Extreme Heat
- Hurricane
- Tornado
- Tsunami
- Volcanic Activity
- Wildfire

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Maintaining Water Service: How to Identify Risks and Respond to Emergencies

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