

Emergency Planning for Water and Wastewater Utilities

Fifth Edition



**American Water Works
Association**

Manual of Water Supply Practices — M19, Fifth Edition

Emergency Planning for Water and Wastewater Utilities

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Preface



Water and wastewater utilities, hereafter referred to as the *utility*, are responsible for providing adequate supplies of safe drinking water and for reliably collecting and treating wastewater. This manual addresses best practices for the prevention, mitigation, response, and recovery of utility operations during critical incidents and is intended for use by utilities of any size. The subject of this manual is closely tied with the AWWA management standards ANSI/AWWA G430, Security Practices for Operation Management; ANSI/AWWA G440, Emergency Preparedness Practices; and ANSI/AWWA J100, Risk and Resilience Management of Water and Wastewater Systems. This manual provides the reader with useful information and resources for satisfying the requirements set forth in the standards and related resources. Where applicable, the requirements of these standards are referenced in text box.

This fifth edition of AWWA Manual M19, *Emergency Planning for Water and Wastewater Utilities*, has been updated to align with current emergency planning best practices. Throughout the manual, the reader will find references to resources designed to support risk assessments as well as to develop mutual aid opportunities and mitigation activities.

This manual comprises the following chapters that discuss proven methodologies and best practices used by water utilities in emergency planning:

Chapter 1, Preparedness Culture, discusses how a preparedness culture increases the effectiveness of utility response to incidents as well as best practices for developing and promoting this response.

Chapter 2, Risk and Resilience Assessment, describes how water utility leaders can better understand risks to their mission and critical assets, how this assessment supports emergency planning by identifying and prioritizing utility-specific risks, and how to identify investments that can pay the greatest dividends during and after an incident.

Chapter 3, Developing an Emergency Response Plan, discusses the basic principles and elements of a preparedness plan, and highlights plan development, emergency procedures, organizational use of an incident command system, and maintenance.

Chapter 4, Mutual Aid and Partnerships, discusses the value in developing partnerships between utilities and other organizations and describes in detail the Water/Wastewater Agency Response Network (WARN), which provides mutual aid and assistance.

Chapter 5, Internal and External Communications, discusses the various modes and messages of communication with stakeholders that are critical to utility emergency response.

Chapter 6, Training and Exercises, describes how utility personnel can practice preparing for and responding to incidents to build skills that will minimize losses and expedite recovery.

Chapter 7, Mitigation, describes how to increase a utility's resilience and preparedness through risk-management activities including hazard mitigation.

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Chapter 1

Preparedness Culture

One mark of a utility that has the capacity to respond effectively to emergencies is a strong preparedness culture. This culture is evident when an emergency response plan (ERP) is kept current—staff are trained in their responsibilities as they relate to the plan; resources necessary to implement the ERP are supported by the budget; staff are aware of emergency preparedness activities and participate in them; an explicit organizational commitment to emergency planning is made; and a management process is in place for staff to take corrective action when necessary improvements are identified. Improvements are identified through risk assessments, plan updates, training, exercises, incident investigations, and other activities described in this manual. When a utility has a preparedness culture, the ERP “lives” as a resource that is adapted and updated whenever there are significant changes that affect the plan. Also, staff are empowered to speak up and constructively affect change that ultimately improves the utility’s level of preparedness. With this culture in place, preparedness is not a burden but an aspect of the utility that is valued and protected by staff, leadership, and other stakeholders due to its significant benefits.

Most utilities are very good at meeting their mission during normal operations, which include small and even routine process upsets. However, when upsets become nonroutine and large in scale or when emergencies arise, utilities with strong and effective preparedness cultures are better equipped to restore the critical lifeline services they provide each community. In contrast, those utilities that lack a strong preparedness culture struggle to restore services, which in some cases exacerbates the situation.

This chapter outlines and defines the concept of “culture” within an organization and presents the core components of a strong emergency preparedness culture within a utility. Organizational culture refers to a system of shared meaning that distinguishes the organization from other organizations. This shared meaning is held by organization members. A strong culture is characterized by the organization’s core values being both intensely held and widely shared (Wiener 1998). A preparedness culture, therefore, is one where being prepared for emergencies is highly valued. The core components of the preparedness culture cycle, as illustrated in Figure 1-1, include the following:



Figure 1-1 The Preparedness Culture cycle

- an explicit organizational commitment toward preparedness,
- development of the preparedness culture,
- support for the preparedness culture with tools and tactics, and
- evaluation of the “strength” of the preparedness culture.

ANSI/AWWA G440, Sec. 4.1.1:
Explicit and visible commitment of senior leadership to preparedness. The utility shall establish an explicit, visible, and easily communicated commitment to emergency preparedness.

The following sections provide examples of how a utility can address each component (Dwivedi).

DEVELOPING AN EXPLICIT ORGANIZATIONAL COMMITMENT TO EMERGENCY PREPAREDNESS

The utility’s general manager, public works director, or chief executive officer should demonstrate a genuine commitment to emergency preparedness. This commitment is most easily shown by participation and support for the planning effort. When senior leadership works with staff to develop and refine preparedness programs, policies, and procedures, it sends a strong message to staff, governing boards, public safety officials, and the community being served by the utility. Leading by example is a critical component of building team members’ trust, support, and commitment.

The establishment of an effective preparedness culture involves the shaping of enterprise-wide core values and promoting a “norm” of universal commitment to

emergency preparedness. The development of a culture of preparedness relies on a demonstrated commitment throughout the entire organization. Emergency preparedness should be elevated and acknowledged within the utility's core mission statement. Utility mission statements often include statements regarding the provision of "safe and reliable" drinking water and wastewater treatment. By definition, "safe and reliable" should include a component of emergency preparedness.

DEVELOPING THE PREPAREDNESS CULTURE

While the path to establishing a culture of preparedness begins with a commitment from senior leadership, it also relies heavily on the actions of key program stakeholders. Those tasked with preparing and maintaining the organization's ERP play a critical role in building and nurturing a culture of preparedness. Additionally, successful achievement of a true preparedness culture requires more than leadership's demonstration and statement of commitment. It also requires staff recognition of a genuine concern and consideration for responder safety and the safety and well-being of responders' families.

Examples of actions aimed at demonstrating and reinforcing a clear commitment to the emergency planning effort and development of a culture of preparedness include the following:

- inclusion of a statement that conveys a commitment to emergency preparedness in the organization's mission statement;
- direct participation and a verbal statement of support and agency commitment at preparedness planning meetings;
- attendance and direct participation with all staff during emergency preparedness response plan training and response exercises;
- promotion of printed materials and posted commitments of emergency preparedness throughout the organization;
- institution of a recognition award program for staff who demonstrate actions aimed at personal and family preparedness;
- promotion and attendance at annual all-staff events/workshops centered around promoting emergency preparedness and recognizing those staff who have shown an outstanding effort to embrace the culture of preparedness;
- adoption of awareness programs that are directed at employees and the general public; and
- adoption of some level of funding in the operating budget that is dedicated to supporting preparedness activities such as training and/or awards programs.

ANSI/AWWA G440, Sec. 4.2.1:
Promote emergency preparedness awareness. The utility shall promote a culture whereby management and personnel/employees understand and contribute to enhanced utility preparedness.

One of the most important elements in supporting and maintaining a strong preparedness culture is communication. People need to actively be reminded of the risks, purpose, and objectives of being prepared and their role in the overall plan. These messages can be delivered in many ways, including the following:

- regular emergency drills and exercises (e.g., tabletop exercises);
- annual employee preparedness fairs held onsite at the utility where the efforts to be prepared are recognized by top management and where employees can purchase discounted personal emergency preparedness supplies for themselves and their families; and

- recognition among staff for participation in emergency response activities or for actions that demonstrate they are better prepared for disaster. These include giving away t-shirts or coffee mugs that indicate the event response or preparedness actions taken.

Additional information on preparedness training and exercises can be found in Chapter 6.

Other efforts to communicate the need to prepare can be passive and done on an ongoing basis. The messaging of preparedness should be “branded” around the utility and within regular communications to staff. This can be accomplished in the following ways:

- Posting the utility’s statement of commitment to emergency preparedness (included in the mission statement) in and around both public access and employee-only areas at the utility. The more people are exposed to the official message of preparedness, the more it becomes a “norm” within the culture.
- Discussing emergency preparedness during staff meetings.
- Maintaining updated and current emergency-preparedness-themed bulletin boards around the utility.
- Single-line messages of preparedness in common areas of the utility (e.g., lunchroom, meeting rooms).
- Including a standard statement that relates the need to be prepared at the bottom or within the signature line of all e-mail messages from management to staff.

ANSI/AWWA G440, Sec. 4.3.1:
Identify employees responsible for emergency preparedness. The utility shall identify employees responsible for establishing and maintaining a level of emergency preparedness correlated with known or perceived risks. These employees shall also become an integral part of the overall security program.

SUPPORTING THE PREPAREDNESS CULTURE WITH TOOLS AND TACTICS

When updating an ERP, consider how the plan might support the preparedness culture. It is very important to focus the plan directly on the staff who need to be prepared. This can be done using the results of the risk assessment (see Chapter 2) to guide ERP updates on all hazards and the most vulnerable critical assets and by including policies and procedures that will make an impact in incident outcomes. Some questions to ask when updating an ERP include the following:

- Does this update support the utility’s commitment to emergency preparedness?
- Does this update provide the staff with information that they will need during an emergency?
- Is this update supportive of actual conditions that exist during an emergency (e.g., recognition of the need to secure the safety of family before responding)?

The planning process should be open and transparent. Regular solicitation of comments on plan updates should be supported with scheduled meetings. It should be communicated that staff review and participation are necessary for an effective plan and are therefore

ANSI/AWWA G440, Sec. 4.2.2:
Sustain focus on preparedness. The utility shall sustain focus on preparedness by maintaining it as a high priority.

ANSI/AWWA G440, Sec. 4.3.2:
Establish emergency preparedness expectations. The utility shall identify and disseminate emergency preparedness expectations for staff and periodically review employee performance and proficiencies.

expected. This supports the preparedness culture with a sense of plan ownership that extends throughout the utility. This culture may be further enhanced with the following activities:

- Leverage staff meetings to inform employees of the importance of emergency preparedness at the utility.
- Keep staff updated on milestones in emergency preparedness. One example is an emergency preparedness bulletin board, and another is inclusion of emergency preparedness as an agenda item for routine meetings.
- Manage preparedness activities through a committee or stakeholder review team composed of representatives from each aspect or department of the utility, including staff members who are most critical to emergency preparedness and response activities.
- Use small teams to manage specific preparedness activities to accomplish a specific goal such as planning for a functional exercise or updating a risk assessment.

EVALUATING THE “STRENGTH” OF THE PREPAREDNESS CULTURE

Ongoing evaluation to measure progress and set new goals will maintain a strong preparedness culture. Remember that even the very best written ERP will fail unless it remains current and is understood in purpose and process by all who are expected to participate in preparedness and response activities. Keeping the plan current requires keeping the preparedness culture strong. Ongoing evaluations typically occur whenever a risk assessment or ERP is updated, training and exercise results are reviewed, and responses to real incidents are investigated. Each evaluation in a utility’s preparedness program should be documented and include the evaluation results and recommendations for improvement. Within an active culture of preparedness, recommendations for improvement are inevitable due to the shared goal of an emergency preparedness program.

At least once per year, an objective person or group should evaluate the emergency preparedness program. The questions posed should be direct and aimed at the emergency planning effort’s core elements that have a direct impact on the culture. Standard questions may include the following:

- With the emergency preparedness efforts undertaken, do you feel you understand the organization’s need to be able to respond effectively?
- Do you feel as though you have been given the correct amount of information to respond effectively during an emergency?
- How can the organization better support your need to personally prepare for emergencies (e.g., family preparedness)?
- What would you like to see done to improve the utility’s overall preparedness?

The information gained from regular evaluations of the emergency planning effort and the related strength of the culture should provide a guide for adopting new ideas. It is important to acknowledge those who bring forward new ideas to strengthen the plan, as is using every opportunity to recognize and boost stakeholder participation. The preparedness culture of the organization will reap the benefit.

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