EMERGENCY RESPONSE PLAN GUIDANCE FOR WASTEWATER SYSTEMS

2004

In Collaboration with U.S. EPA

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ABSTRACT

Emergency response planning is an essential part of managing a wastewater system, and a process by which wastewater system managers and staff explore responses to vulnerabilities, make improvements, and establish procedures to follow in an emergency. It is also a process that encourages people to form partnerships and better understand support capabilities. Preparing an emergency response plan and practicing it can save lives, prevent illness, enhance system security, minimize property damage and environmental impact, and lessen liability.

Results from research regarding the current status of emergency response planning within the wastewater community indicates that most systems would welcome guidance with the emergency planning process, and are receptive to information regarding what should be included in an emergency response plan. This document is intended to provide wastewater systems with voluntary guidance on development of emergency response plans for natural or manmade (i.e., terrorist related) events, and to provide a reference for the types of information and data that should be included in an emergency response plan.

This Document :

- Supports the development of wastewater system emergency response plans by providing suggestions regarding content material, plan structure and organization, and additional informational sources.
- Illustrates important emergency planning concepts in a wastewater system context such as chain-of-command, communication and notification plans, personnel safety provisions, plan initiation and decision making process, emergency operations centers, emergency response training, and plan evaluation.
- Provides a starting point for the development of Action Plans that can be used by a wastewater system to address specific vulnerabilities or high-risk threat scenarios identified in the system's vulnerability assessment, and to provide a specific response to a given incident.
- Enables wastewater systems to save time and money by utilizing the guidance document as a template for their emergency response plan.
- Provides guidance regarding man-made or terrorist related threats that historically have not been addressed in wastewater system emergency response planning efforts.

Keywords: Incident command, threat, recovery, mutual aid agreement, action plans, notification

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AP	Action Plan
ASDWA	Association of State Drinking Water Administrators
ATSDR	Agency for Toxic Substances and Disease Registry
AWWA	American Water Works Association
CDC	Center for Disease Control
CEMP	Comprehensive Emergency Management Plan
CERT	Computer Emergency Response Team
CST	Civilian Support Team
DAT	Damage Assessment Team
DHS	Department of Homeland Security
EOC	Emergency Operations Center
ERP	Emergency Response Plan
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
GM	General Manager
GPM	Gallons per Minute
HAZMAT	Hazardous Materials Response Team
HHS	Health and Human Services
IC	Incident Commander
ICS	Incident Command System
IO	Information Officer
LD	Laboratory Director
LEPC	Local Emergency Planning Committee
LO	Liaison Officer
LPoC	Laboratory Point of Contact
MSDS	Material Safety Data Sheet
NIMS	National Incident Management System
NRWA	National Rural Water Association
OES	Office of Emergency Services

OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
RMP	Risk Management Plan
SCADA	Supervisory Control and Data Acquisition
SD	Security Director
SO	Safety Officer
SEMS	Standardized Emergency Management System
SPCC	Spill Prevention Control and Countermeasures
U.S. EPA	United States Environmental Protection Agency
VA	Vulnerability Assessment
WERF	Water Environment Research Foundation
WMD	Weapons of Mass Destruction
WWTP	Wastewater Treatment Plant
UERM	Utility Emergency Response Manager
UOCM	Utility Emergency Operations Center Manager

EXECUTIVE SUMMARY

This Emergency Response Plan Guidance Document is a tool to assist wastewater systems in the preparation of their Emergency Response Plans (ERPs). It is intended to help wastewater systems to organize their planning efforts, and to provide a reference for the types of information and data that should be included in an emergency response plan.

The Guidance Document was prepared under the auspices of an ongoing Cooperative Agreement (R-83075101) between the Water Environment Research Foundation (WERF) and the United States Environmental Protection Agency (U.S. EPA). This Document was reviewed by the members of the Project Subcommittee and wastewater utilities stakeholders. The specific purpose of the Guidance Document is to assist wastewater systems in developing and updating their emergency preparedness, response and recovery plans and procedures. In addition to the Document, an ERP software module will be developed under the Agreement that will provide improved functionality to vulnerability assessment tools such as VSAT™.

Recognizing that the development of an ERP can be a challenging effort, the primary goal of the Guidance Document is to make the job easier and help wastewater systems to create a plan that works for their wastewater system. The document is intended for use by all wastewater systems regardless of the size of the system or the stage of completion of the system's vulnerability assessment. The intent is for the suggested content and format to be modified to fit the specific needs of each wastewater system. Larger systems will likely use it as a starting point, because the complexity of larger systems requires a more detailed ERP. Smaller wastewater systems should consider each section and use only what is relevant for the type, size, and complexity of the system.

The Guidance Document does not implement any specific statutory directive and it does not establish any requirements. It contains guidance only in the form of suggestions that may be adopted by wastewater systems on a voluntary basis. As such, including all the items in the guidance document will not guarantee that the wastewater system's ERP will be fully compliant with all regulations or cover all events that may occur. Some areas will require discussion and coordination with system management, legal counsel, local law enforcement, or other government agencies to assure that local requirements are met and proper resource allocation, program design, and planning are achieved. Before beginning any emergency planning, with or without the use of this guidance document, wastewater system managers would be well advised to collaborate with their legal counsel to assure compliance with the many local, state, and federal laws and regulations that may affect the system's emergency response planning program.

Overview of the Emergency Response Plan Guidance Document

The Guidance Document is organized into eight sections that follow the suggested outline for a wastewater system's Emergency Response Plan. Each section provides an explanation of the purpose of the section, and provides suggestions for content, the type of information to include, and example formats showing how the information might be presented. The document also includes an appendix with a sample Action Plan and some sample press releases.

The eight sections that constitute the Guidance Document are:

Section 1: Introduction: This section describes the purpose, goals, access control protocol and overall organization of an ERP.

Section 2: General Emergency Planning Information: This section describes emergency planning partnerships, mutual aid agreements with others in the community, and the relationship between the ERP and the wastewater system's other emergency response policies, procedures and documents.

Section 3: Emergency Response Plan – Core Elements: This section provides suggestions for specific information to include about the wastewater system, presents emergency response roles and responsibilities and chain-of-command information, and describes communication procedures, personnel safety provisions, and emergency wastewater storage and disposal provisions. This section also provides information and suggestions regarding emergency equipment, property protection, and sampling and monitoring.

Section 4: Decision Process and ERP Activation: This section explains how threats may be received into the wastewater system as well as what types of events might call for activation of the Emergency Response Plan and/or the Emergency Operations Center.

Section 5: Emergency Response, Restoration and Recovery: This section describes the three phases of an emergency: response, recovery and termination. General actions and guidance is provided for each phase, and these suggested procedures could be used in conjunction with specific Action Plans that the wastewater system might develop to respond to its high-risk threat scenarios.

Section 6: Action Plans: This section presents a summary of the incident specific Action Plans that the wastewater system may create to respond to and recover from threats that have been categorized as high risk in the vulnerability assessment. There are also suggested action plans for natural disasters and significant events.

Section 7: Emergency Plan Approval, Update, and Training: This section describes the ERP review, approval and update process, discusses evaluation of the effectiveness of the ERP, and provides general information on ERP training programs.

Section 8: Additional Resources: This section provides references and web links to additional emergency planning information for wastewater systems.

CHAPTER 1.0

INTRODUCTION

This guidance document is intended to provide wastewater systems[1] with information to assist in the preparation, update and revision of their Emergency Response Plans (ERPs). Included in the guidance are discussions and content suggestions for the elements that are typically included in an ERP as well as the rational for including them. The guidance document is organized into chapters, which correspond to the main components of an ERP, starting with the introduction.

The introduction of an Emergency Response Plan (ERP) should present the purpose, goals, access control policy, and a plan overview. The following sections provide considerations for each of these areas.

1.1 Purpose

The overall purpose of an ERP is to provide a wastewater system with a standardized response and recovery protocol to prevent, minimize, and mitigate injury and damage resulting from emergencies or disasters of man-made or natural origin.

The ERP also provides a description of how a wastewater system will respond to potential threats or actual terrorist scenarios identified in the vulnerability assessment (VA), as well as additional emergency response situations. Specific Action Plans (APs) should also be included in the ERP, which will be utilized to respond to events and incidents.

1.2 Goals

The goals of an Emergency Response Plan (ERP) are to document and understand the steps needed to:

- Rapidly restore wastewater service after an emergency.
- Minimize wastewater system damage.
- Minimize impact and loss to customers.
- Minimize negative impacts on public health and employee safety.
- Minimize adverse effects on the environment.
- Provide emergency public information concerning customer service.
- Provide wastewater system information for first responders and other outside agencies.

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[1] *The term wastewater management systems (wastewater systems) is used throughout this document and includes publicly owned treatment works (POTWs), privately owned treatment works, and all subsystems. Subsystems include collection, raw influent storage, treatment, treated wastewater storage, discharge/effluent, monitoring system, and supervisory control and data acquisition (SCADA) systems.*

- Ensure effective communication between all those involved in an emergency.

The wastewater system should also examine its organizational goals and mission statements to see if there are any additional objectives that apply to the ERP.

1.3 Access Control

Because of the sensitive nature of the information contained in the ERP, the wastewater system may want to establish an access control protocol. As part of this protocol, distribution of the ERP could be limited to those individuals who are directly involved in the wastewater system's emergency planning and response activities. The wastewater system may also want to consider a tiered access policy, where employees are given access to select portions of the plan corresponding to the specific actions relevant to their position. If the plan is placed on the wastewater system's intranet, access control can be accomplished by requiring passwords specific to the appropriate level of access.

Another method to control access to the ERP is to number the ERP copies prior to distribution, along with a requirement for recipients to sign and date a statement that includes their ERP number, and their agreement not to reproduce the ERP without permission. Additionally, a secure copy of the ERP should be maintained in an off-premises location, known to wastewater system management, in the event that the wastewater system's primary copies cannot be accessed.

1.4 ERP Organization

The ERP should be organized into several logical sections, so that information is easy to find. Appendices should be utilized for supplementary material such as site and system drawings, phone contact lists, forms and checklists, pre-written press releases, and incident specific Action Plans. The specific ERP organization and format chosen by the wastewater system needs to reflect the wastewater system's usual documentation approach and format standards. Provided below is a suggested section order along with key elements that might be included in the ERP.

Section 1: Introduction: Describes the purpose, goals, access control protocol and overall organization of the ERP.

Section 2: General Emergency Planning Information: Describes emergency planning partnerships, mutual aid agreements with others in the community, and the relationship between the ERP and the wastewater system's other emergency response policies, procedures and documents.

Section 3: Emergency Response Plan—Core Elements: Provides specific information about the wastewater system, presents emergency response roles and responsibilities and chain-of-command information, and describes communication procedures, personnel safety provisions, and emergency wastewater storage and disposal provisions. This section also provides information and procedures regarding emergency equipment and chemical supplies, property protection, and sampling and monitoring.

Section 4: Decision Process and ERP Activation: Explains how threats may be received into the wastewater system as well as what steps to take in order to activate the Emergency Response Plan and/or the Emergency Operations Center (EOC).

Section 5: Emergency Response, Restoration and Recovery: Describes the three phases of an emergency: response, recovery and termination. General actions and guidance is provided for each phase, and these procedures should be used in conjunction with the specific Action Plans in the Appendix.

Section 6: Action Plans: Presents a summary of the incident specific Action Plans that the wastewater system has created to respond to and recover from threats that have been categorized as high risk in the vulnerability assessment. There may also be action plans for natural disasters and other significant events. The actual Action Plans are typically found in the Appendix of the ERP.

Section 7: Emergency Plan Approval, Update, and Training: Describes the ERP review, approval and update process, discusses evaluation of the effectiveness of the ERP, and provides information on the wastewater system's ERP training program.

Section 8: Additional Resources: Provides references and web links to additional emergency planning information for wastewater systems.

Appendices: Contains specific Action Plans, forms, worksheets, press releases, and other information that will be used to respond to emergencies.

CHAPTER 2.0

GENERAL EMERGENCY PLANNING INFORMATION

This section of the ERP should present the wastewater system's planning partnerships and mutual aid agreements, and discusses the relationship between the ERP and other related plans.

2.1 Planning Partnerships

Wastewater systems should consult with outside agencies, including local first responders and emergency response organizations, during the ERP development process. The purpose of the consultation is to form partnerships. Through these partnerships, each party comes to know and understand their roles and responsibilities in emergency situations. Partnerships may also be formed with neighboring utilities. In such cases, an important issue to address is the location and capabilities of the other utilities including available equipment, excess capacity, and ease of connection to your treatment and collection system. In addition, the interconnection agreements that your partners have in place should also be understood, as well as potential issues that could arise if multiple utilities are affected. The wastewater system emergency response manager should be heavily involved in forming these partnerships.

A list of the agencies with which the wastewater system has established a partnership, and a brief description of their emergency capabilities, should be included in the ERP.

2.2 Mutual Aid Agreements

In addition to establishing partnerships, the wastewater system may wish to establish more formal mutual aid agreements with other wastewater and possibly other water utilities to address any deficiencies in equipment, parts, or chemicals needed during emergency conditions. Other wastewater and water utilities may also be able to provide the wastewater system with knowledgeable staff and other resources such as administrative support.

The wastewater system should also consider establishing mutual aid agreements with surrounding communities, industries, utilities, and contractors as appropriate. For example, the wastewater system may contract with a Computer Emergency Response Team (CERT)[2] to assist in the event of a cyber attack on either the IT network or SCADA systems. Other common examples include arrangements with a commercial fuel supplier for priority access to diesel fuel,

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[2] *A Computer Emergency Response Team (CERT) is a team of professionals trained in responding to and analyzing security incidents. The Department of Homeland security created US-CERT in September 2003 to be the "Computer Emergency Readiness Team" with national responsibility for protecting the nation's information infrastructure by coordinating defense against and response to cyber attacks. US-CERT utilizes the CERT Coordination Center "CERT/CC" capabilities of Carnegie Mellon University, a major reporting center for Internet security problems and the first computer security incident response team, to: help prevent cyber attacks, protect systems, and respond to the effects of cyber attacks across the Internet. For more detailed information about the CERT/CC, see Meet the CERT/CC at http://www.cert.org/meet_cert/meetcertcc.html*

as a precaution in the event that the wastewater system is forced to utilize backup power generation for an extended period, and an arrangement with the local electric utility for priority power restoration.

It is interesting to note that participation in a shared national database of mutual aid amongst utilities is mandatory in the United Kingdom. The database not only catalogs existing resources, but also commits some percentage to neighbors. Thus, a wastewater system in need can find what they require and make a demand (as opposed to a request) without prior arrangement, and with the confidence that the resource is available and has been maintained.

If the wastewater system has existing mutual aid agreements, the nature of the agreement should be noted in the ERP, and the actual agreement itself could be placed in the Appendix.

2.3 Relationship Between ERP and Other Plans

In an emergency situation, there may be more than one set of guidelines to follow, and care must be taken to ensure that responders are clear on which documents or procedures govern their particular situation. In order to avoid confusion, it is a good idea to list all of those documents/rules/guidelines that may be applicable to the wastewater system during an emergency situation and note their relationship to the ERP.

Examples of other guidelines and plans that may be present at a wastewater system include:

- Pretreatment or Industrial Discharge Sampling Plans—provide sampling procedures and protocol that can be used on suspect wastewater.
- Risk Management Plans—contain responses to hazardous chemical releases.
- Material Safety Data Sheets—standard data sheets that contain specific information regarding chemical characteristics and responses to chemical releases and exposures.
- Sample Chain of Custody Procedures—ensure that samples are protected and properly handled so as to preclude contamination from the sampling process.
- RCRA Hazardous Waste Contingency Plans—contain responses to hazardous waste spills and incidents for Large Quantity Generators of hazardous waste.

CHAPTER 3.0

EMERGENCY RESPONSE PLAN—CORE ELEMENTS

This section of the ERP can be used by the wastewater system to present information relevant to the six core elements that are recommended by the EPA as well as many state and local regulatory organizations. The six core elements are system specific information, roles and responsibilities in an emergency, communication procedures, personnel safety, emergency equipment and chemical supplies, and property protection.

This section can also be used to present additional information such as the wastewater system's current response capabilities as identified in the vulnerability assessment, emergency storage and disposal provisions for contaminated wastewater and biosolids, and sampling and monitoring provisions.

3.1 System Specific Information

During an emergency, basic technical information needs to be available for wastewater system personnel, first responders, repair contractors/vendors, the media, and others. The information needs to be clearly documented and readily accessible so staff can find and distribute it quickly to those who may be involved in responding to the event. It is likely that much of this information has already been collected and reviewed in preparation of a vulnerability assessment or for other response plans and system assessments.

This section should contain the wastewater system names and system owners for the systems that are covered by the ERP, as well as administrative contact information, population served, and a general description of the wastewater system.

3.1.1 System Names, Owners and Administrative Contact Information

A wastewater system may be comprised of several different sub-systems that operate independently, or the wastewater system may be divided into zones according to geographical location or treatment facility. In the ERP it is important to provide contact information for each of the systems that is covered by the ERP. Examples of the types of information that could be included in this section are shown in Table 3-1 below.

Table 3-1. System Identification and Contacts.

System Name	System ID or Permit No.	Contact Information (Regular Business Hours)	Contact Information (Emergency or After Hours)
West County Wastewater System	XXX-XXX	Primary: Alternate:	Primary: Alternate:
East Bay Wastewater System	XXX-XXX	Primary: Alternate:	Primary: Alternate:
Northern Communities Wastewater System	XXX-XXX	Primary: Alternate:	Primary: Alternate:

3.1.2 Population Served and Service Connections

It is a good idea to identify the number of people served, and the number of service connections maintained for each wastewater system in the ERP to give emergency responders an idea of how many people, households and/or facilities would be affected by a loss of service. If the population of the service area is unknown, a factor of 3.3 persons per service connection can be used to estimate the population.

3.1.3 General Description of the Wastewater System

In an emergency, basic technical information about the wastewater system needs to be available for system personnel and external agencies such as law enforcement, first responders, repair workers, the media, and others. The information needs to be presented in a manner that is easy to understand, and it needs to be readily accessible so wastewater system staff can find and distribute it quickly. Graphics, maps, drawings, schematics and photographs could all be used to help describe the system and its components.

Examples of the types of information that may be presented in this section include the following items. Note that much of this information may also be available from the wastewater system's vulnerability assessment.

- Number and location of treatment facilities
- Number and location of pump and lift stations
- Locations of main trunks and major system access points
- Description of wastewater collection and treatment system, including communities served, type of collection system (gravity flow, force mains, combined sewers), type and level of treatment, average and peak flows into treatment plants, and effluent discharge locations
- Collection system maps
- Process flow diagrams
- Site plans and facility "As-Built" engineering drawings
- Operating procedures and system descriptions, including back-up systems
- SCADA system/process control system schematics

3.1.4 Critical System Components

As part of a vulnerability assessment that the wastewater system may have performed, there may be certain assets or system components identified that are critical to wastewater operations in terms of their impact on personnel safety, facility and equipment damage, process loss, environmental impact, and community impact.

The wastewater system should include a list of the critical system components in the ERP, along with a brief description of the asset itself and its location. An example of a critical

system component might be a major sewer trunk that is co-located with data lines that are providing essential telemetry to the main control room.

The list of critical system components will serve as a useful planning tool during emergency response discussions with outside agencies and during training exercises, and it will help the wastewater system to prepare for a "worst case" scenario by focusing attention on the parts of the system that have the potential to cause the most damage if they were taken out of operation.

3.2 Roles and Responsibilities

In this section of the ERP the wastewater system should describe its philosophy and general approach to the command structure for an incident response. One common reason why ERPs fail or are ineffective is the lack of a clearly established leader. It is important to establish a command structure that identifies the key individuals and clearly defines their roles and responsibilities, so that they may effectively manage the emergency situation. It is equally as important to establish a structure that can be easily adapted if the emergency evolves into a multi-agency or multi-jurisdictional response, where the wastewater system response personnel become agency representatives on a larger response team or organization.

This guidance document provides information and examples on the use of the Incident Command System (ICS)[3] structure, but wastewater systems may or may not choose to use ICS depending on local emergency response agency requirements, and the size and complexity of the wastewater system. The ICS can be used to help organize the wastewater system's ERP and define the roles of the emergency response team members, however it is not necessary to have an intricate command structure in place. It is more important to use a command structure that works effectively, and reflects the capabilities of the wastewater system.

As an early step in the emergency planning process, wastewater systems should talk to their local emergency responders and government agencies to see what command structure they use and recommend.

3.2.1 Incident Command System

The Incident Command System (ICS) is a widely recognized model for command, control, and coordination of an emergency response, and it provides a means to coordinate the efforts of first responders as they work toward the common goal of stabilizing a major event and protecting life, property, and the environment. ICS uses a well-defined command structure in order to define roles and responsibilities in responding to a major event. In ICS, the main contact person and decision-maker is the Incident Commander.

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[3] *The Incident Command System (ICS) is a component of the Department of Homeland Security's National Incident Management System (NIMS). The NIMS system provides a consistent nationwide template to enable Federal, State, local and tribal governments and private-sector and nongovernmental organizations to work together effectively and efficiently to prepare for, prevent, respond to, and recover from domestic incidents, regardless of cause, size or complexity, including acts of catastrophic terrorism. Additional information on NIMS can be found at http://www.dhs.gov/interweb/assetlibrary/NIMS-90-web.pdf.*

First responders may use ICS when responding to a major event. States may also have adopted ICS to respond to major events and the wastewater system may be required to abide by this command structure. If the wastewater system is not required to use ICS, it is still a good idea to become familiar with ICS terms and command structure.

Table 3-2 shows the ICS Chain of Command terminology and provides position descriptions for each role. More detailed training information on the ICS can be obtained from FEMA at http://training.fema.gov/EMIWeb/IS/is195.asp.

Table 3-2. ICS Chain of Command and Position Descriptions.

Name and Title	Responsibilities During an Emergency
Incident Commander IC	Sets incident objectives and priorities. Responsible for management of incident. Coordinates all emergency response activities between agencies. Communicates with all participants including those outside wastewater system.
Utility Emergency Response Manager UERM	Overall management and decision making for the wastewater system during an emergency. Usually serves as IC during early stages of response or for smaller incidents. Decides when and to what extent to activate Emergency Operations Center (EOC). Directs and approves all communications to external parties, including government and regulatory agencies.
Alternate Utility Emergency Response Manager AUERM	Takes over for primary Utility Emergency Response Manager if primary Utility Emergency Response Manager is unavailable.
Utility Emergency Operations Center (EOC) Manager UOCM	Heads wastewater system's EOC. Provides operational and resource management during an emergency.
Information Officer IO	Member of the command staff and reports directly to the IC. Interfaces with media and disseminates public information. Plans the information strategy.
Liaison Officer LO	Member of the command staff. On-scene contact for representatives from other agencies.
Laboratory Point of Contact LPoC	Designated person at laboratory with whom Utility Emergency Response Manager or IC communicates. Coordinates analytical activities and reports analytical results to the Utility Emergency Response Manager or IC.
Safety Officer SO	Develops and recommends measures for assuring personnel safety. Assess and anticipates hazardous and unsafe conditions. Provides direction on use of PPE and other safety equipment.
Agency Representatives	Assigned to an incident by outside agency or jurisdiction to assist in coordination efforts. Delegated authority to make decisions on matters affecting his or her agency's participation in the incident. Reports to the Liaison Officer, or to the Incident Commander in the absence of a LO.
Technical Specialist Example 1: Wastewater Treatment Plant Operator	In charge of running wastewater treatment plant. Performs operations, inspections, and maintenance, of the WWTP and relays critical information to the Utility Emergency Response Manager. Assess WWTP facilities and operational capability, and provides recommendations to the Utility Emergency Response Manager.
Technical Specialist Example 2: Collection System Maintenance Supervisor	In charge of maintaining the collection system. Performs inspections and maintenance on the system, and relays critical

Name and Title	Responsibilities During an Emergency
	information to the Utility Emergency Response Manager. Assess status of facilities and equipment, and provides recommendations to the Utility Emergency Response Manager.
Technical Specialist Example 3: Field Staff	Delivers public notices or door hangers. Conducts site inspections of all facilities as directed.

The identity of the Utility Emergency Response Manager (UERM), Utility Emergency Operations Center Manager (UOCM), Information Officer (IO), Liaison Officer (LO), Laboratory Point of Contact (LPoC), and other designated individuals and alternates should be determined by wastewater system management, and should be based on the size, needs and service responsibilities of the wastewater system. Large systems may need to designate multiple Utility Emergency Response Managers so that one is always available. Small utilities may have an abbreviated version of the command structure, and one individual may fill multiple roles simultaneously. In a small wastewater system, individuals from outside of the wastewater system (e.g., local government) may also fill some of the positions.

Regardless of the size of the wastewater system, it enhances the response process for large-scale events if the wastewater system is familiar with and understands ICS because the wastewater system will likely need to coordinate with a larger multi-jurisdictional organization such as a state or federal entity.

3.2.2 Wastewater System Structure for Incident Command

The following graphics are intended to show model ICS structures, and point out the changing role of the wastewater system in the command structure. They also depict the expanding nature of an incident.

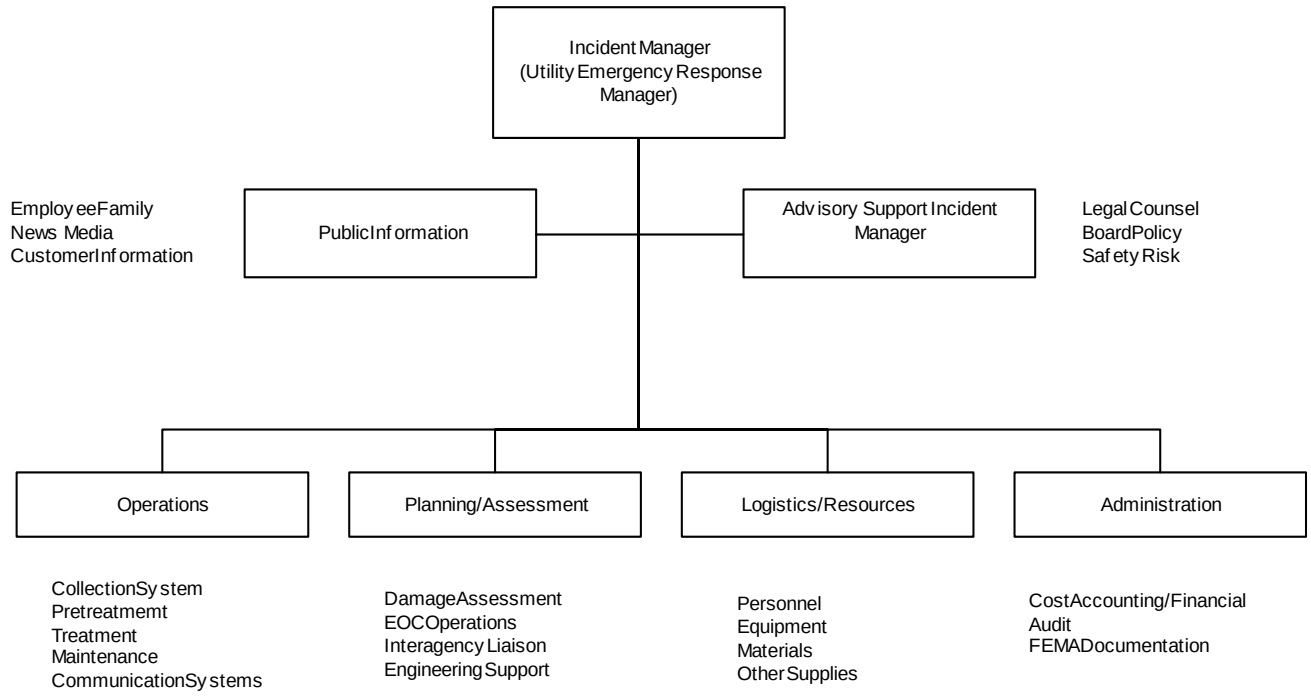
In actual practice, the command structure should be customized for each wastewater system and each particular situation, and should be expanded and contracted as necessary to provide the best fit for a particular incident.

Regardless of the size and shape, the command structure operates most efficiently if each person in an organization reports to only one designated individual. This concept is known as unity of command. It is also important to ensure that communication outside of the command structure is made only through designated individuals (i.e., information officers, liaison officers, or agency points of contact) to eliminate the confusion inherent to most emergency situations.

Figures 3-1 to 3-3 below include three different command structures that may be utilized by different size wastewater systems for different levels of emergencies[4]. The figures also provide examples of wastewater system staff member titles and departments, and show the command structure positions that they would fill in an emergency.

[4] *Figures 3-1, 3-2 and 3-3 are adapted from the California Emergency Response Plan Guidance for Public Drinking Water Systems, December 2003, Version 1.0.*

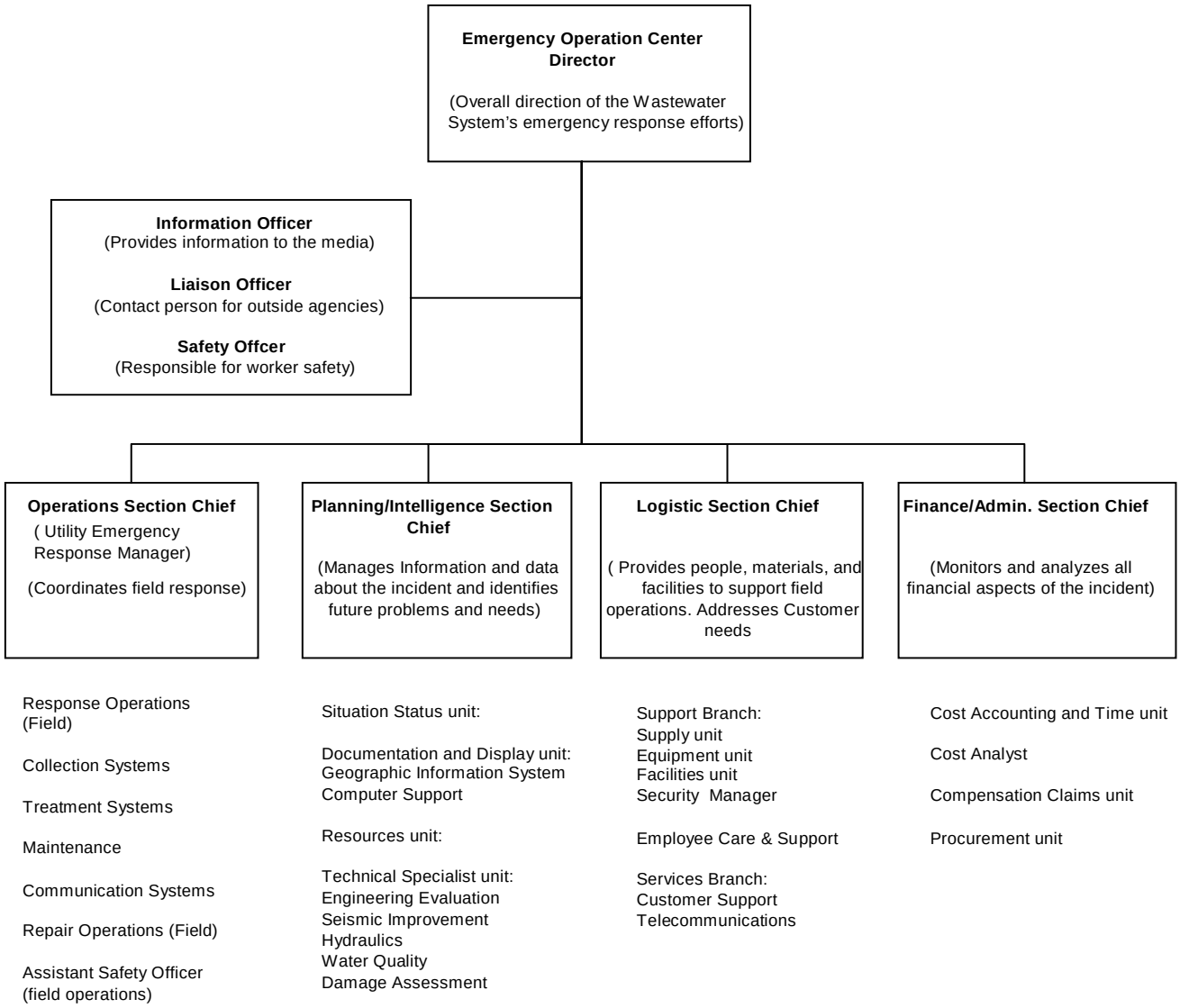
Figure 3-1. Example of a Small Wastewater System Utilizing an ICS Organization Chart.



Section Leader Assignments

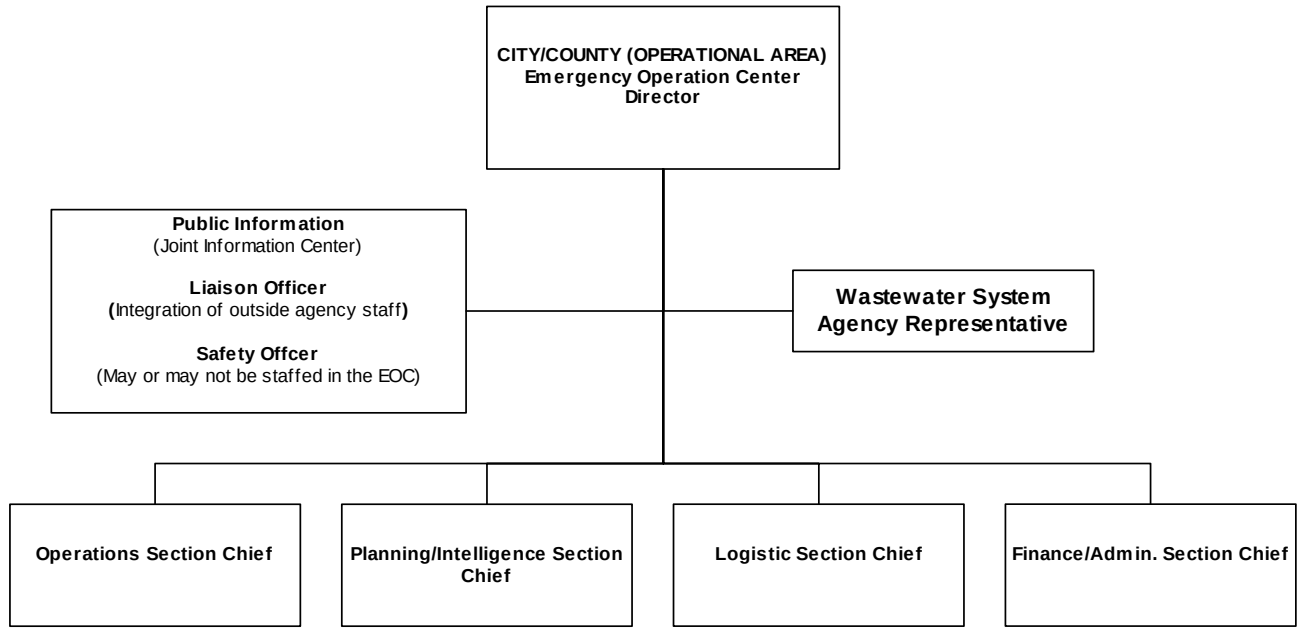
SECTION	PRIMARY	ALTERNATE
Incident Manager	General Manager or Utility Emergency Response Manager	Chief Engineer
Operations	District Superintendent or Utility Emergency Response Manager	Field Main. Superintendent
Planning/Asssessment	Head of Engineering Services	Principal Engineer
Logistics/Resources	Asst. Field Maintenance Superintendent	Field Supervisor
Administration	Admin. Manager Accounting	Personnel Administrator Human Resources
COMMAND STAFF	**PRIMARY**	**ALTERNATE**
Public Information	Public Education Coordinator	Customer Service Admin.
Advisory Support	Safety Coordinator	Assistant Safety Coordinator

Figure 3-2. Example of a Large Wastewater System Utilizing an ICS Organization Chart.



Depending on the size and scope of the emergency, the Utility Emergency Response Manager may serve as the Emergency Operations Center (EOC) Director until the position is delegated to the General Manager or to another designated individual for the duration of the incident.

Figure 3-3. Example of a City/County Emergency Operations Center with a Wastewater System Agency Representative.



Wastewater systems may be required to assign staff to the City or County Emergency Operations Center (EOC) to coordinate with Public Health or any of the other sections that might need information or assistance. Typically, wastewater system staff would report to the EOC as an Agency Representative and would move down, in the organization, to any of the sections as needed. Initially, the Wastewater System Agency Representative would check in with the Liaison Officer, or if one is not present, then he/she would report to the EOC Director.

3.3 Communication Procedures

Appropriate and timely communication is vital to effective emergency response. When an emergency occurs, it is easy for panic and confusion to lead to a chaotic response effort, so it is imperative for the wastewater system to have previously established communication procedures in place, and it is also crucial for the wastewater system to practice its communication and notification procedures on a regular basis to ensure that the procedures are actually effective during a real emergency.

An effective communication plan is more than just a telephone directory of wastewater system employees and external contacts. Planning communications involves developing a notification hierarchy for reporting threat warnings and other critical information to appropriate individuals at each stage of the response. Notification plans should include wastewater system staff and personnel, external non-wastewater system entities, and the public and media as appropriate. In general, communications and notifications should proceed along the chain of command. The number of people notified will increase as the incident expands and decrease as it contracts towards its conclusion. Depending on the nature of the situation, some of these notifications should be made immediately, while other notifications are not made until a later time, or not at all. The exact persons notified should be left to the discretion of the Incident Commander (IC) with interaction from the Information Officer (IO), and the methods of notification should be planned in advance. Local requirements may influence the required communications and notifications at the various stages of an incident. In summary, it is important for wastewater system response personnel to understand who has the responsibility and authority to make the appropriate contacts to outside agencies and what the procedures are for communications and notifications.

As part of the wastewater system's ERP, internal and external notification lists should be maintained that contain the names of all appropriate entities to be contacted, including their names, titles, addresses, all applicable landline and cellular phone numbers, and pager numbers. These lists should be updated on a frequent basis as necessary. The wastewater system should also maintain a contact list in the ERP for its critical customers. Each of these notification lists is described in more detail in Sections 3.3.2-3.3.5.

3.3.1 Role of the Information Officer (IO)

As described in Table 3-2, the Information Officer (IO) is a member of the command staff who interfaces with media, disseminates information to the public, and plans the overall information strategy. Because of the importance of this position regarding the overall success of the wastewater system's emergency communications procedures, the wastewater system management should choose an IO who is knowledgeable, credible, and, if possible, not a key person needed for implementing other wastewater ERP response actions during an event. The wastewater system should also consider special training for the IO, including media and customer relations training and broadcast training to prepare for television and radio appearances.

3.3.2 Internal Notification

In general, communications during an emergency response will proceed along the chain of command of the ICS. The number of people notified will increase as the incident expands and decrease as the incident contracts toward its conclusion.

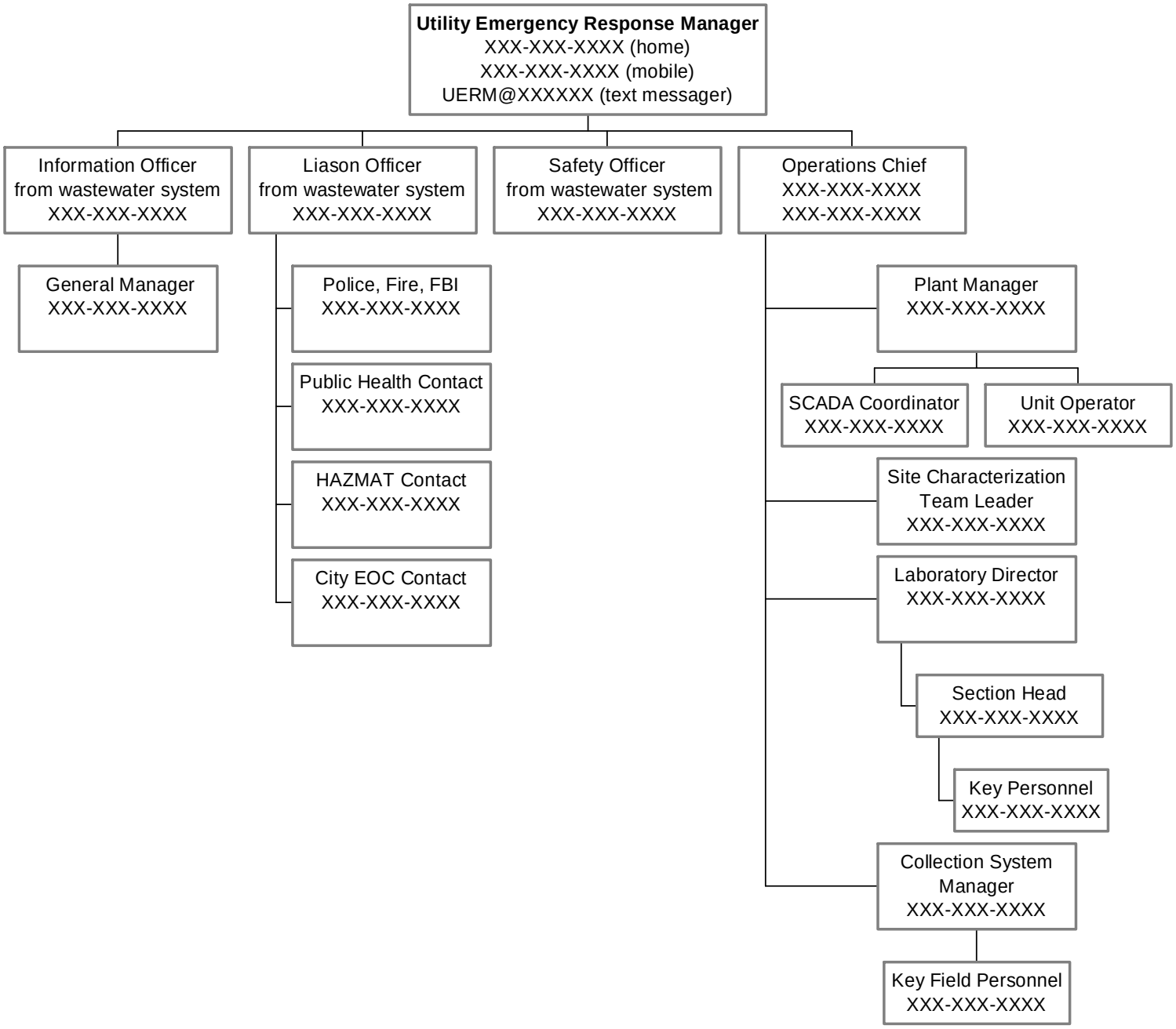
The type and extent of the incident will dictate the normal and/or alternative methods of communication that will be used. The possibility of a coordinated attack that targets the water, wastewater, power, and communications systems must be considered. In this case, it would be reasonable to assume that some methods of communication will either be unavailable or limited to certain areas during an emergency. It is anticipated that employees will know upon arrival at their duty stations which communication systems are functional and which are not. This information should be relayed to the wastewater system's Information Officer upon discovery.

The ERP should include information on the order in which individuals will be notified, and should describe who will make the notifications. The ERP should also address how the individuals will be contacted (radio, phone, mobile phone, pager, etc.). Examples of methods that can be used to contact individuals and to disseminate information include the following:

- Regular Hours—Plant manager calls other supervisors and wastewater system General Manager.
- After Hours— On-call supervisor calls individuals listed in ERP.
- Supervisor initiates automatic dial-out sequence that calls pre-programmed numbers.
- 24-hour incoming number (Individuals can call in to hear recorded information.)

Figure 3-4, taken from the U.S. EPA's Response Protocol Toolbox, shows an example of a notification order hierarchy that could be used by a wastewater system. A notification hierarchy should be included in the ERP as a guide, and wastewater system personnel should understand that it might not define the exact path under which notifications are made in all cases. The exact persons notified will be at the discretion of the Utility Emergency Response Manager with interaction from the IO, depending on the needs during the actual emergency.

Figure 3-4. Sample Emergency Notification Hierarchy.



3.3.3 External Notification

The external non-wastewater system notification list should ensure that all appropriate first responders, local, state, and federal agencies, as well as any vendors or contractors for which a mutual aid agreement exists are notified. Procedures should also be established as to

who should be notified, when they should be notified, and who is responsible to make the notifications from the wastewater system.

An external contact list, such as the one shown in Table 3-3 below, should be included in the ERP. The list should contain contact information for the local and national agencies that the wastewater system may need to notify. The Utility Emergency Response Manager will likely be the one to make the decision as to which of these agencies needs to be notified, and at what point in the threat evaluation the calls should be made. The Information Officer or Liaison Officer will serve as the wastewater system point of contact for these agencies.

Table 3-3. Sample External Notification List.

Local Agencies	Name of Contact	Contact Numbers
Local Police		
Fire Department		
HAZMAT Team		
Local Emergency Planning Committee (LEPC)		
Hospital / Critical Care Facility		
Power Company		
Elected Official		
Downstream Users of Receiving Water		
Local Labor Unions		
Citizen Advisory Boards and Non Profit Groups		

County Agencies	Name of Contact	Contact Numbers
County Public Health Officer		
County Director of Environmental Health Department		
County OES		
County HAZMAT Team		

State Agencies	Name of Contact	Contact Numbers
Department of Health		
Department of Water Resources		

State Agencies	Name of Contact	Contact Numbers
Department of Fish and Game		
Department of Toxic Substances Control		
Regional Water Quality Control Board		
Office of Emergency Services		
Public Utilities Commission		

Federal Agencies	Name of Contact	Contact Numbers
FBI		
EPA		
Department of Homeland Security (DHS)		
Health and Human Services (HHS)		
Center for Disease Control (CDC)		
Water ISAC		

Vendors / Contractors	Name of Contact	Contact Numbers
Internet Service Provider		
Equipment Vendor		
Fuel Supplier (backup generator)		
Computer Emergency Response Team		

3.3.4 Critical Customer Notification

When the wastewater system is identifying the list of groups to be notified during a major event, critical users (e.g., large commercial, industrial or government entities who discharge into the wastewater system and who may not have a means to store wastewater on-site) should also be considered, and a list of critical customers should be maintained as part of the ERP. Specific notification procedures should be developed for these customers. The wastewater system should also meet with these customers to discuss emergency storage or conservation provisions in the

event that the wastewater collection system is temporarily unable to receive their discharges due to an emergency event. The Utility Emergency Response Manager will likely be the one who will decide if the IO needs to notify some or all of these customers in the event of an emergency involving the wastewater system.

Table 3-4 below shows an example contact list for large and/or critical wastewater customers.

Table 3-4. Sample Critical Customer Contact List.

Customer Name	Primary Contact Information	Secondary Contact Information
Landmark Food Processing Co.	Contact Person 1: Office Phone: Cell Phone:	Contact Person 2: Office Phone: Cell Phone:
Fort Campbell Army Base	Contact Person 1: Office Phone: Cell Phone:	Contact Person 2: Office Phone: Cell Phone:
Brickstone Manufacturing Plant	Contact Person 1: Office Phone: Cell Phone:	Contact Person 2: Office Phone: Cell Phone:

3.3.5 Public/Media Notification

An effective public and media communications plan is a key element of an ERP. The wastewater system should designate in advance who the wastewater system spokesperson/ Information Officer will be during a major event. In order to reduce confusion and avoid giving the wrong impression or an incorrect message, the IO should be the only member of the wastewater system staff who talks to the public and the media. It is a good idea for the wastewater system to have a communication plan or strategy, including pre-written press releases, in place ahead of time since the IO may be called upon to support another lead agency in crafting a message for the public. All wastewater system personnel, especially field and customer service staff should be trained to respectfully defer questions to the IO. The wastewater system's communication plan or strategy should present general guidelines so the IO can craft clear and concise messages for the public and the media.

The public and media communication plan should be targeted to reach several audiences, such as customers (both residential and business), local health professionals, and others. Press releases and discharge restriction (do not flush) notices can be drafted in advance. The key is to ensure that the message is clear, accurate, and easily understood by all audiences.

Table 3-5 provides an example of a contact list that could be used for the various media agencies that the wastewater system IO might use to disseminate information to the public.

Table 3-5. Sample Media Contact List.

Media Type	Contact Information
Name of Local Newspaper	Contact Person: Office phone: Mobile phone: Pager:
Name of Local Television Station	Contact Person: Office phone: Mobile phone: Pager:
Name of Local Radio Station	Contact Person: Office phone: Mobile phone: Pager:

As part of this guidance document, a selection of sample press releases for use during various wastewater emergency situations has been prepared. These press releases can be found in the Appendix.

3.4 Personnel Safety

Protecting the health and safety of everyone in the wastewater system as well as the surrounding community is a key priority during an emergency. This section of the ERP should provide direction to wastewater system staff and others on how to safely implement a variety of response actions. It should also provide basic safety information and protocols to be followed during emergency situations.

The wastewater system's personnel safety procedures should focus on and comply with standard Occupational Safety and Health Administration (OSHA) regulations, Spill Prevention Control and Countermeasures (SPCC), the Risk Management Program (RMP), and State workplace safety procedures. Wastewater system staff should understand when to evacuate, when and how to use Personal Protective Equipment (PPE), and how to rapidly locate additional safety information, such as chemical-specific Material Safety Data Sheets (MSDS).

Other basic safety provisions that should be included in this section are; a description of the wastewater system's alarm system (if there is one) and how to respond if an alarm is triggered, identification of the locations where people should meet after an evacuation, and a discussion on first aid response, including identification of the location of first aid and emergency medical treatment supplies.

If the wastewater system's in-house safety and emergency response capabilities are limited, it may be prudent to ask adjacent utilities for stand-by help and/or arrange for assistance from the local or state first responders. Suggested sub-topics for the Personnel Safety section of the ERP include the following: Evacuation and Shelter Planning, Off-site Protective Actions, and Emergency First Aid Procedures.

3.4.1 Evacuation and Shelter Planning

3.4.1.1 Initial Evaluation

When an incident occurs at or near a location or facility that is occupied by personnel, protective actions include evacuation, sheltering-in-place and a combination of the two. A wastewater system manager, safety director, or supervisor should make the decision as to which action is appropriate. As part of the decision making process, the following issues should be considered:

- If a hazardous material is involved, its characteristics, amount, release rate, physical state, ambient temperature, and location.
- The present location of the employees at risk, relative to the location of the hazardous conditions.
- The time factors involved regarding the arrival of first responders, and how quickly the emergency situation can be mitigated.
- The effect of the present and predicted meteorological conditions (wind direction and speed, storm warnings, flood stage level, etc.).
- The capability to communicate with both the employees at risk and emergency response personnel before, during and after the emergency.

3.4.1.2 Evacuation Procedures

The wastewater system should develop an evacuation plan for each of its facilities and operating locations. The plan should designate primary and secondary evacuation routes and exits and ensure that the routes and exits are clearly marked, well lit, unobstructed at all times, and unlikely to expose evacuating personnel to additional hazards. The plan should also identify post-evacuation assembly areas and shelter locations. Staff and other personnel who frequently visit wastewater facilities need to be trained regularly in these evacuation procedures.

The on-site or off-site Incident Commander will determine which areas should be evacuated, and if the evacuation areas need to be expanded as the incident progresses. If the incident results in off-site consequences (for example, with a hazardous materials release), the Incident Commander shall determine evacuation requirements in conjunction with appropriate external agencies.

Decisions regarding evacuation are incident-specific, and must be made at the time of the incident. Estimated zones of impact that may be provided by Risk Management Plans or incident specific checklists should be used for planning purposes only and should not be used peremptorily in an emergency response situation.

If the decision is made to evacuate, then specific guidelines, such as the ones shown below, should be developed by the wastewater system and listed in the ERP:

- Facility personnel should be notified of the need to evacuate using the public address or alarm system, or by person-to-person word of mouth.
- Facility evacuation should follow pre-designated evacuation routes from buildings and plant grounds, and maps should be created to clearly show the routes.

- The evacuation routes should be posted at the entrance to all buildings and within employee break areas.
- Once an evacuation is ordered, all employees should report to the pre-designated assembly areas for each facility or location, as shown on the evacuation plans, to be accounted for by their supervisor, assembly area coordinator, other pre-designated individual.
- Supervisors are responsible to assure their disabled employees are provided with adequate assistance during an evacuation.
- Once an area has been evacuated, the wastewater system's Security Director or another designated individual should secure the area to ensure that all individuals have been evacuated and that public access is restricted. Security personnel operating in or around an evacuated area must be cautious of hazardous or potentially hazardous conditions that would necessitate the use of personnel protective clothing or place them in an unsafe condition.

3.4.1.3 Shelter Procedures

Evacuation during emergency incidents is not always necessary, or the emergency situation could escalate so rapidly that there would be no time to safely evacuate personnel. For example, during hazardous weather conditions, a prudent course of action for the protection of facility personnel might be to remain inside with the doors and windows closed. There may also be a need for a skeleton crew to remain in the facility to perform critical operations.

Additionally, for some emergencies the best means of protection may be to take shelter in a building away from the wastewater system facilities. It is a good idea to include possible off-site shelter locations in this section of the ERP. If the off-site shelter locations are not owned by the wastewater system, then the wastewater system should consider talking to nearby property owners to prearrange for the use of their property as a shelter in an emergency situation.

The General Manager, Safety Officer, or another designated individual should be responsible for determining whether sheltering-in-place or off-site sheltering is the most appropriate response to protect the at-risk employees. If the decision is made to shelter, then specific guidelines, such as the ones shown below, should be developed by the wastewater system and listed in the ERP:

- Employees should be trained to provide information and directions to wastewater system staff and visitors via the facility public address system.
- All doors and windows to the outside should be closed and locked, and as many internal doors as possible should be closed.
- Personnel should assemble at a pre-designated location (preferred locations are windowless rooms).
- If an outdoor explosion is possible, drapes, curtains, and shades over windows should be closed and personnel should be directed to stay away from windows to prevent potential injury from flying glass.
- Shelter locations should be equipped with emergency medical supplies and food and water provisions.

- Medical unit should be notified of the shelter locations and be provided with information on any injuries or the type of hazardous material and any known exposures.

3.4.1.4 Personnel Accountability

Obtaining an accurate account of personnel after the evacuation or shelter has been ordered requires planning and practice. The wastewater system should develop procedures for taking a head count and identifying personnel.

Primary and secondary assembly areas must be pre-designated for each wastewater system facility. Larger facilities may require more than one assembly area. Depending upon the conditions and requirements for the particular emergency, the Incident Commander may move or modify assembly area locations. All possible locations for the assembly areas should be clearly listed in the ERP with maps and site plans provided as necessary.

Each manager/supervisor should be responsible for head counts, assembly security and safety, and communications with the Incident Commander to obtain support for various needs, such as food, water, medical aid, or transportation.

Specific guidelines regarding personnel accountability, such as the ones listed below, should be developed by the wastewater system and listed in the ERP:

- All designated assembly areas should be indicated on the facility evacuation plans.
- All personnel are responsible to report to their designated assembly area.
- Supervisors are responsible to assure all their personnel have reported after an ordered evacuation or shelter.
- Personnel who are not accounted for at the assembly area must be reported to the General Manager, Security Director, or another designated individual to assure that a proper response or search is coordinated. This response may include checking with other assembly areas, trying to reach the individual by radio communication, or organization of a formal search.

3.4.2 Off-site Protective Actions

Some hazardous material releases have the potential to affect off-site personnel and the local response agency may request support from the wastewater system in making protective action decisions for the general public surrounding the wastewater facility.

The wastewater system should respond to requests from the local agencies for recommendations, or protective actions for the general population surrounding the facility, including information on the type of hazardous material, its characteristics, amount released, release rate, physical state, ambient temperature, and the location of the source.

3.4.3 First Aid and Emergency Medical Treatment

The ERP should include first aid and emergency medical treatment procedures for employees and others who are onsite at the wastewater system, including standard safety precautions for victims as well as more detailed information for medical professionals. The ERP should also indicate who is likely to be responsible for providing the appropriate treatment in

different types of situations (i.e., an employee with specialized training or a medical professional).

First aid and medical care procedures, such as the ones listed below, should be developed by the wastewater system to be followed in the event of an emergency:

- Personnel should call (911) for medical assistance.
- Personnel should attempt to administer emergency first aid to injured persons, as necessary until off-site medical personnel arrive.
- An individual should be designated to coordinate off-site ambulance and medical assistance.
- Decontamination procedures should be developed in the event that wastewater system personnel and other responders need to be decontaminated if the emergency involves hazardous material. Such procedures may include; removing wet or exposed clothing, flushing affected skin and hair with water, and using soap or shampoo for oily substances.
- Provide post-emergency medical evaluations for all employees, as required by OSHA.

3.5 Emergency Storage and Disposal Provisions for Contaminated Wastewater And Biosolids

In the event that the wastewater stream becomes contaminated with biological, chemical or radiological materials at some point in the collection system or at the treatment facility, there may be an immediate need to stop the spread of the contamination and to contain the liquids and solids, if possible, to allow for safe testing and disposal.

As part of the ERP, the wastewater system should identify the alternate storage and treatment options available during a contamination episode. Doing so requires a comprehensive understanding of the current system configuration in terms of extra collection system capacity (lift station basins, CSOs, etc.) and the ability to isolate portions of the system and access them for sampling.

The wastewater system should also establish planning partnerships with contractors or other wastewater and water utilities who may have storage facilities and equipment such as portable tanks or pumper trucks that could be used to assist during a contamination episode.

Information on the wastewater system's emergency storage, treatment and disposal options for contaminated wastewater and biosolids may be presented in the ERP in a format similar to Tables 3-6 to 3-8 below.

Table 3-6. Alternate Storage Options for Contaminated Liquid Stream.

Location	Emergency Storage Capacity
Lift Station #4	15,000 gallons – Wet Season 25,000 gallons – Dry Season
Baker Tanks at WWTP	Three 10,000 gallon roll-off tanks
CSO Overflow	Depends on storm water flow

Table 3-7. Alternate Treatment and By-Pass Options for Contaminated Liquid Stream.

Emergency Action	Type of Contamination	Decision Process
Bypass Secondary Treatment (Primary Treatment Only)	Biological—Concentration high enough to kill activated sludge process.	Treatment Supervisor gets OK from Dept. of Environmental Protection.
Divert flow to 91st Avenue WWTP for greater dilution	Chemical—Concentration low enough to be diluted by additional flow into larger plant.	Treatment Supervisor issues diversion order.

Table 3-8. Alternate Options for Contaminated Solids.

Level of Contamination	Storage and/or Disposal Option
Toxicity, ignitability, corrosivity, or reactivity over hazardous waste limit.	Storage: Off-line aeration basins Disposal: 21st Street Hazardous Waste Landfill
Non-hazardous waste – contaminant levels of finished sludge over land application limits.	Storage: Empty Digester #1 Disposal: Municipal Landfill

3.6 Interconnects and Agreements with Other Utilities

The wastewater system may have interconnections and piping in place whereby the wastewater system can send wastewater to a neighboring wastewater system for storage or treatment. Alternatively, if system interconnections have not already been constructed, it might be possible for the wastewater system to make an arrangement with the neighboring wastewater system to construct a temporary connection in the event that sending wastewater to the other wastewater system proved to be the best solution in an emergency situation.

If the wastewater system does have such interconnections or agreements, this information should be provided in the ERP. Some specific suggestions regarding the type of information that might be included are as follows:

- Number of other wastewater systems within the regional area.
- Number and description of interconnections currently in place between the wastewater system and other utilities (indicate if the connection is one-way or two-way flow).
- Maintenance status of interconnections, and designation of which wastewater system is responsible for maintenance.

3.7 Equipment and Chemical Supplies

The ERP should identify equipment (e.g. Personal Protective Equipment (PPE), telephone, radios or construction tools) and chemical supply provisions that can significantly reduce the impact of a major event on the public and on the environment. In the sections that follow, examples are provided regarding the identification of emergency response equipment and procedures for its use and maintenance.

3.7.1 Emergency Equipment List

The wastewater system should identify the emergency equipment in the ERP that it may need to respond to emergencies. Equipment should be included that the wastewater system does not have at its immediate disposal on a daily basis, such as heavy construction equipment and replacement parts that are not normally kept on hand. The decision regarding what type and quantity of additional equipment to have available should be based on the results of the specific scenarios and critical assets identified in the wastewater system's vulnerability assessment.

The wastewater system should create the emergency equipment list in conjunction with their planning partnerships and vendor agreements to include equipment that the wastewater system can acquire from outside sources in an emergency. For equipment that will be supplied by contractors or other utilities, the required lead-time for each type of equipment or chemical request should be noted in the ERP.

Table 3-9 below shows a sample format for an emergency equipment list that the wastewater system may choose to include in its ERP.

Table 3-9. Sample Emergency Equipment List.

Equipment/ Supply Description	Source / Location	Responsible Person / Title	Telephone Number	Inventory / Restocking Frequency
Heavy Equipment:				
Dump Trucks				
Skip Loaders				
Backhoes				
Dozers				
Water Trucks				
Portable Chemical Feed Trucks				
Communication Equipment:				
Portable Radios				
Radio Batteries				
Cell Phone Rentals				
General Equipment:				
Air Compressors				
Fans and Blowers				
Generators				
Shop Vacuums				

Equipment/ Supply Description	Source / Location	Responsible Person / Title	Telephone Number	Inventory / Restocking Frequency
Pumps				
Personnel Protective Equipment:				
SCBA				
Tyvek Suits				
Boots				
Respirators				
Cartridges				
Gloves				
Bulk Supplies:				
Sand				
Absorbents				
Emergency Chemical Supplies:				

3.7.2 Personnel Protective and Other Emergency Equipment

This section of the ERP can be used to describe the wastewater system's procedures for using, testing, and maintaining emergency response equipment, and should include equipment to detect toxic chemicals, alarm and communications systems, and Personal Protective Equipment (PPE) not used as part of normal operations. Some examples of the types of procedures to include are listed below.

- How and when to use the equipment properly.
- How and when the equipment should receive routine maintenance.
- How and when the equipment should be inspected and tested for readiness.

3.7.3 Telephone Equipment

Normal methods of voice and data communication, including land-based telephones, wireless phones and system operation via SCADA may be out of service during an emergency or terrorist event. Back-up or alternate communication methods and procedures should be evaluated and exercised as part of the wastewater system's emergency planning process, including practice of SCADA-free operations.

Some wastewater systems may have installed emergency telephones to serve as a critical connection during a business disruption or an emergency. Emergency telephones of this kind should connect directly the wastewater system's security desk, and their use should be restricted to safety and security purposes only. If emergency phones are installed, their locations should be noted in the ERP.

In an extreme major event (e.g., a terrorist attack), it may not be advisable to use normal channels of communication even if they are working properly. For example, during a bomb threat the use of cell phones may be unwise, since compatible frequencies can be used to

detonate certain types of bombs. Provisions need to be made for an efficient, secure and fail-safe form of communication to be available during conditions when the use of normal means may not be possible.

3.7.4 VHF Radio Communications

When radio communication is possible and practicable it is important to have a pre-established protocol as well as pre-determined channels over which to communicate. Radio communications are not secure and if sensitive information must be conveyed it may be necessary to implement an in-house courier service.

During an emergency, specific instructions should be provided by the wastewater system's Command Center on the use of the wastewater system's two-way radios. It is important to note that radio communications are not secure, and therefore radios must not be used to transmit sensitive messages or data that is not ready for public release, or would give advantage to an attacker. For this reason, it is anticipated that radios will be of limited use during an attack on the wastewater system, unless there is a loss of off-site power or other event affecting the land-based and cell phone service.

Tables such as the ones below can be included in the ERP to provide information on the wastewater system's radios and usage procedures. If the wastewater system has access to CB radios and/or military radios, either through direct ownership or mutual aid agreements, the equipment should also be listed in the ERP as well as the channels over which communication will occur.

Table 3-10. VHF Radio Communications.

Channel	Use Group / Frequency	Type of Usage
		Routine Operations
		Emergency Operations

Table 3-11. Trunked Radios (Mobile) Communications.

Serial Number	Storage Location	EOC Designation
Trunked Radio serial #	Indicate Trunked Radio Storage Location	Trunked Radio Emergency Operations Center (EOC) Designation

3.8 Property Protection

Protecting the wastewater system's facilities, equipment and vital records is essential to restoring operations once a major event has occurred. The ERP should identify measures and procedures that are aimed at securing and protecting the wastewater system following a major event. Procedures can be included to implement the following property protection measures following a major incident:

- Facility lock down and/or access control and restrictions, including vehicle access control.
- Cancellation of facility tours.
- Establishment of a security perimeter around the facility or incident site.
- Consideration of the possibility of a secondary event, in case the initial terrorist act is meant to be a diversion.
- Protection of evidence protection for law enforcement (should the major event also be declared a crime scene).

For additional guidance on property protection measures, the wastewater system can refer to the EPA document, "Guarding Against Terrorist and Security Threats", which references the national threat levels (red, orange, yellow, blue, and green). This document can be found at the following web site. http://www.krwa.org/docs/EPAGuardingDW.pdf

3.9 Response Capabilities

If a vulnerability assessment was conducted on the wastewater system, emergency response capabilities, or countermeasures already existing within the system were likely identified. The wastewater system's existing response capabilities can be listed in the ERP to provide wastewater system personnel and responders with an idea of what types of procedures, equipment and other resources are currently available to assist in an emergency response.

Table 3-12 below shows four examples of response countermeasures that may be present within a wastewater system.

Table 3-12. Response Countermeasures.

Response Countermeasure Class / Type	Countermeasure Title	Countermeasure Description
Response / Policies and Procedures	Emergency Operating Procedures	A set of procedures that define employee responses to specific types of emergency events.
Response /Policies and Procedures	Coordination with Local Police Force	An agreement with local law enforcement units regarding the support the wastewater system can expect from the agency and the type of training and support the wastewater system will provide to responding police agencies.
Response / Communication	Public Address or Other Warning System	Used to notify people within a facility of an incident. Should a building or entire facility need to be evacuated, it is important to have a means by which everyone can be notified.
Response / Mitigation	Fire Brigade at the Plant	Training and equipping a group of first responders from the plant population.

3.10 Sampling and Monitoring

Procedures to describe the actions that will be taken if contamination is suspected or detected in the wastewater system should be an integral part of the ERP. Items to consider include sampling procedures for different types of contaminants, quantity of required samples, staff responsibilities for sampling, laboratory capabilities, and interpretation or monitoring of lab results.

Since it is impractical to identify a procedure for every type of possible contaminant, try to identify a list of contaminant groups, which may have similar properties. Flammable substances and biological agents are two key groups to consider. A table such as Table 3-13 below might be created in this section of the ERP to note the procedure number and or title, and where the procedure is located (i.e., laboratory manual). The number of samples that must be taken as well as the individual who is responsible for collecting and analyzing the data should also be noted. If outside laboratories are used, they can also be listed in the last column.

Table 3-13. Contaminant Sampling Procedures.

Contaminant	Sampling/Monitoring Procedures	Quantity of Required Samples	Responsible Individual
Enter contaminant	Identify Procedure	Indicate # here	List names of individuals

Other types of information that might be included in the sampling and monitoring section of the ERP include a description of the wastewater system laboratory's analytical capabilities, a list of the utilities current sampling and monitoring protocol, and a list of outside laboratory facilities that are available to assist the wastewater system to analyze wastewater samples. Tables such as Table 3-14 and 3-15 below can be used to present such information in the ERP.

Table 3-14. Sampling and Monitoring Protocol.

Process Stage	Current Sampling/Monitoring	Frequency	Extra Testing for Emergency Events
Intake	LEL	Continuous	Dissolved Oxygen
	PH	Continuous	Chlorine Demand
	Turbidity	Daily	Conductivity
	Temperature	Daily	Radioactivity
	Odor	Weekly	

Table 3-15. Outside Laboratory Information

Outside Laboratory Name	Contact Number	Capabilities
Enter name of outside lab	Regular hrs: After hrs:	List capabilities here

CHAPTER 4.0

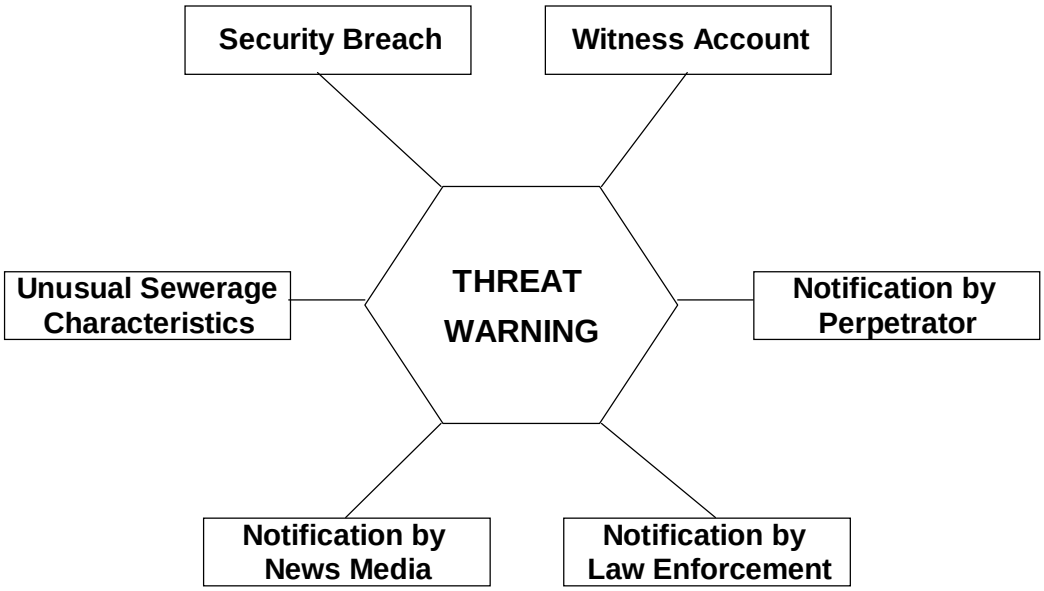
DECISION PROCESS AND ERP ACTIVATION

Knowing when to activate the ERP is as important as having the plan in place. In the past, emergency response plans focused on natural disasters and accidents, but now, a wastewater system must be prepared to respond to terrorist attacks as well. This section discusses ways in which the wastewater system may learn about a threat, the threat decision process, and activation of the ERP.[5]

4.1 Threat Warning

Notification of a threat may come to the wastewater system in a variety of methods. A threat warning is an occurrence or discovery that indicates a threat, or problem, and triggers an evaluation of the threat. The wastewater system should pay attention to any threat warning. These warnings must be evaluated in the context of typical activity and previous experiences for the wastewater system in order to avoid false alarms. Described below are the most likely threat warnings, but this listing is by no means comprehensive of all possibilities, and the wastewater system should edit this list as appropriate for the local conditions.

Figure 4-1. Summary of Threat Warnings.



[5] *Several elements in this section have been drawn from the EPA's Response Protocol Toolbox, Modules 1 and 2. Although the EPA Toolbox was initially developed for use by water systems to respond to a water contamination threat, there are many elements of the Toolbox that are applicable to an emergency response for wastewater systems. Additional information on the threat warning and decision process is available at http://cfpub.epa.gov/safewater/watersecurity/home.cfm?program_id=8 - response_toolbox.*

As previously stated, the "threat warning" is the initial occurrence or discovery that triggers an evaluation of whether or not to activate the ERP. A description of the possible threat warnings that a wastewater system may encounter is provided below. If any of these conditions are met, then the wastewater system General Manager, or another designated individual, should issue a Threat Warning.

Security Breach. Physical security breaches caused by relaxed operations, such as unsecured doors or criminal acts such as trespassing are probably the most common threat warnings.

Witness Account. Employees or neighbors may see suspicious activity, such as trespassing, breaking and entering, and other types of tampering, that they report to local law enforcement or to the wastewater system.

Notification by Perpetrator. A threat may be made directly to the wastewater system, either verbally or in writing. Historical incidents would indicate that verbal threats made over the phone are more likely than written threats.

Notification by Law Enforcement. The wastewater system may receive notification about a threat directly from law enforcement. Such a threat could be a result of a report of suspicious activity or gathered by law enforcement intelligence.

Notification by News Media. A threat to damage or contaminate the wastewater system might be delivered to the news media, or the media may discover a threat. A conscientious reporter should immediately report such a threat to the police, and either the reporter or the police would immediately contact the wastewater system.

Unusual Sewage Characteristics. All unusual changes in wastewater characteristics (appearance, odor, oily sheen, visible emissions, LEL alarms, etc.) should be reported and investigated. Field staff and/or customers will probably be the first to encounter any unusual characteristics.

4.2 ERP Activation

The threat decision process begins once a threat warning is received. The threat decision process is considered in three successive stages: possible, credible, and confirmed. As the situation escalates through these three stages, the actions that might be considered also change. The following paragraphs describe the stages, actions that might be considered, and activation of the ERP.

Stage 1, Possible: Is the threat possible? If the wastewater system is faced with a threat, it should first evaluate the available information to determine whether or not the threat is possible (i.e., could something have actually happened based on the warning and staff's knowledge of the system?). If the threat is possible, some precautionary response actions might be implemented. Knowing the findings from the VA could possibly help the wastewater system to determine whether a certain threat is possible.

Stage 2, Credible: Is the threat credible? There must be information or evidence to corroborate the threat in order for it to be considered credible. For example, the information

source may be highly credible, field staff may be reporting encounters with suspect wastewater, or there may be alarms or monitoring results that are unusual. At this stage, the wastewater system may activate portions of the ERP, such as initiating internal and external notifications, sampling and analysis, or considering isolation of part of the system. At this point, the wastewater system is not sure whether a major event has occurred, but it is preparing to respond should the threat actually lead to a major event.

Stage 3, Confirmed: Has the major event been confirmed? Confirmation implies that definitive evidence and information has been collected to establish that the event has occurred. Some threats are obviously confirmed, such as structural damage to the wastewater system in which case Stages 1 and 2 are omitted. Upon confirmation of the major event, the wastewater system should fully implement the ERP. The ERP should contain Action Plans (see Section 6) that address specific major events, and these Action Plans should also be implemented immediately.

Table 4-1 below shows the actions that should be taken by the wastewater system, during each of the three stages, as well as when to activate the ERP. The Utility Emergency Response Manager has the responsibility to work through the threat decision process and implement the ERP as needed.

Table 4-1. Three Stages of Threat Decision Process.

Decision Process Stage	Actions Taken	ERP Activation Level
Stage 1 Possible Threat	Evaluate available information Review findings from VA. Determine if threat is possible. (Could something have actually happened?)	Implement precautionary response actions.
Stage 2 Credible Threat	Determine that threat is credible by establishing corroborating information. • Highly credible source • Staff reports of unusual wastewater • Unusual alarms or monitoring results	Activate portions of ERP. • Initiate internal and external notifications. • Consider isolation of portion of system. • Initiate sampling and analysis. Consider partial or full activation of the wastewater system EOC.
Stage 3 Confirmed Major Event	Confirm threat by verifying definitive evidence and information that establishes the major event. Perform sampling and analysis.	Fully implement ERP. Immediately initiate appropriate Action Plans (APs). Fully activate the wastewater system EOC.

In determining whether or not to activate the ERP, the wastewater system should also consider what is going on in the rest of the community regarding threat levels or any large scale

events that my affect the drainage area. Examples of events that may necessitate partial or full activation of the wastewater system's ERP include the following:

- Overturned gasoline truck.
- Plane crash.
- LEL alarm at treatment plant head works.
- Notification from FBI that there is a known threat that may occur.
- Security guards see suspicious activity during perimeter checks.
- Change in local or national threat level.

4.3 Emergency Operations Centers

4.3.1 Wastewater System Emergency Operations Center

An Emergency Operations Center (EOC) is a pre-designated facility that can act as a command center to coordinate the wastewater system's overall response and support to an emergency. A large wastewater system may have a dedicated EOC facility that was constructed especially for this purpose and contains workstations for wastewater system emergency response personnel, redundant phone and data connections, an emergency power source, and other emergency response equipment and supplies. A small wastewater system may simply use the control room at the treatment plant or a training room at the administration building as the EOC. An EOC can also be set up as a mobile facility in a truck or trailer.

The wastewater system should designate a primary EOC location and an alternate EOC location that can be used in the event that the primary EOC is not available or rendered unusable by the emergency. Both of the EOC locations and their capabilities (communications equipment, emergency supplies, emergency power, etc.) should be described in the ERP.

In addition to communications equipment and emergency supplies, the EOC should also contain one or more copies of the ERP, copies of all engineering and operational plans and procedures for the wastewater system, chalk or white boards and tables and chairs sufficient to meet the needs of any emergency situation.

Specific activities that will be performed by the EOC and its personnel during an emergency are as follows:

- Establish an EOC Director to manage the Operations, Planning/Intelligence, Logistics, Finance/Administration Sections, and related sub-functions.
- Set priorities and develop/execute Action Plans.
- Coordinate and support all field level incident activities within the wastewater system service area.
- Gather, process, and report information within the wastewater system service area and to other involved agencies regarding the magnitude and potential impact of the event on the community, as well as information on specific damages and planned response and recovery actions.
- Coordinate with local government, operational areas, or regional EOCs as appropriate.

- Request resources from internal and external sources.
- Provide food, water and other emergency supplies for wastewater system operators who are not able to leave their posts during an emergency.

The conditions under which the Emergency Operation Center will be activated will be unique for each wastewater system and for each emergency situation. As part of the wastewater system's emergency response training program, staff members should be made aware of the different types of events that might trigger activation of the EOC, including activation by an agency outside of the wastewater system. The wastewater system should also establish procedures regarding who will staff the EOC, how staff will be notified to report to the EOC, how long individual shifts will be, who will be allowed to access the EOC, and the level of security that will be assigned to the EOC during an emergency.

4.3.2 Local Government EOC

Most states and local governments have a Comprehensive Emergency Management Plan (CEMP), or a similar emergency management program, which is implemented any time a major incident occurs within their jurisdiction. The CEMP includes response activities such as initial damage assessment, emergency and short-term medical care, and the return of vital life-support systems to minimum operating standards.

According to the CEMP, when any local government agency receives information about a potential emergency or disaster, it will conduct an initial assessment, determine the need to alert others, and set in motion the appropriate actions to reduce risk and potential impacts. Emergency response activities will be conducted as described in agency policies, procedures, and instructions, and may involve activating the City or State Emergency Operations Center for coordination and support.

In the event that the City or State's EOC is activated, the Utility Emergency Response Manager and other wastewater system staff may be called upon to staff the City or State EOC as agency representatives. Depending on the nature of the emergency, the wastewater system may choose to activate the Wastewater system EOC and provide staff for the City/State EOC at the same time. Additionally, if an emergency originates within the wastewater system, or the wastewater system is the first to discover the situation, the Utility Emergency Response Manager may make a recommendation to activate the City/State EOC to assist the wastewater system with the response and provide additional resources.

CHAPTER 5.0

EMERGENCY RESPONSE, RECOVERY AND TERMINATION

In addition to the specific Action Plans (described in detail in Section 6) that the wastewater system may create to respond to specific types of incidents and threats, there are some general response and recovery activities that can be applied to most, if not all emergency situations. This section presents guidelines and procedural checklists for general emergency response and recovery actions as the wastewater system progress through the three different stages of an incident: response, recovery, and termination. The wastewater system can use the suggested activities and steps within each of these phases as the basis for its Action Plans, and/or edit the text below to customize this section as part of the main ERP document.

5.1 Response Phase

5.1.1 Initial Response

When a situation occurs that is judged to be of an emergency, "out of the ordinary", or suspicious nature, the person who first notices the situation should determine whether an immediate response by police, fire, or emergency medical services is necessary. If so, the individual should immediately call 911 to report the incident. Next, the incident should be reported to a supervisor.

General information to be reported from wastewater system facilities (or incident sites) includes:

- What has happened?
- What can be done about it?
- What is needed?
- An assessment of whether the situation calls for activation of the wastewater system's Emergency Operations Center (EOC) and/or activation the Local Government's EOC.
- The current status of the wastewater system's personnel, equipment, vehicles, communications capabilities, facilities, and other resources.

The employee who first noticed the incident and the Supervisor that responded should:

1) Notify the Utility Emergency Response Manager or the Alternate as soon as possible, and

2) Remain in a safe location in the vicinity to meet and assist medical, fire, and police personnel and other first responders as necessary.

5.1.2 Damage Assessment

Damage assessment is used to determine the extent of the damage, estimate repair or replacement costs, and identify the resources needed to return the damaged system to full operation. This assessment is accomplished during the emergency response phase of the event, before the recovery phase is implemented.

The Utility Emergency Response Manager should be designated as the individual who is responsible for establishing a Damage Assessment Team (DAT). The wastewater system DAT should be led by an operations or maintenance supervisor, with representatives from engineering and procurement. Team composition may vary, however, depending upon the nature and extent of the emergency.

Damage assessment procedures should follow the guidelines established for system operability checks and standard determinations of operability/serviceability. At a minimum, the damage assessment team should complete the following activities:

- Conduct an initial analysis of the extent of damage to the system or facility.
- Estimate the repairs required to restore the system or facility; the estimate should consider supplies, equipment, rental of specialized equipment (e.g., cranes), and additional staffing needs.
- Provide the list of repairs to the procurement representative so a cost estimate to conduct the repairs can be developed.

5.2 Recovery Phase

5.2.1 Recovery Planning

During emergency response operations, the Incident Commander or Utility Emergency Response Manager should appoint a Recovery Manager. The Recovery Manager will be responsible for selecting a recovery team and developing a recovery strategy prior to emergency termination.

The wastewater system Recovery Manager should be a senior operations representative familiar with the systems that may be affected by the emergency. He/she will have the responsibility and authority to coordinate recovery planning; authorize recovery activities; protect the health and safety of workers and the public; and initiate, change, or recommend protective actions. Additional responsibilities may include the following:

- Facilitate the transition from emergency to recovery operations.
- Develop, implement, and maintain a recovery plan.
- Coordinate all vendor and contractor activities that occur onsite.
- Ensure that the appropriate safety inspections have been completed.
- Coordinate the completion of emergency repairs and schedule permanent repairs.
- Notify key agencies of emergency repair status and the scheduled completion of system repairs.

- Complete permanent repair and/or replacement of system facilities.
- Review press releases prior to distribution.
- Release repaired facilities and equipment for normal use.
- Replace, or authorize the replacement of materials and supplies used in the emergency.
- Document all recovery activities.

The Recovery Manager determines the expertise and selects the personnel necessary for the recovery team. In general, the composition of the recovery team is based on the nature and extent of the emergency and includes:

- Technical advisors to the Recovery Manager, which may include external experts such as industrial hygienists or fire protection specialists.
- Wastewater system personnel with the technical expertise to direct post-incident assessment activities and to analyze the results. Maintenance, operations, and engineering staff are expected to fill these positions.
- Information Officer to respond to inquiries or concerns from employees, the public, the news media, and outside agencies. The Information Officer should be prepared to provide information regarding the results of the incident investigation, the extent of onsite and offsite impacts, and the status of recovery operations.

5.2.2 Recovery Activities

The following are examples of activities that might be directed by the Recovery Manager and executed by the recovery team as required following an incident or emergency situation:

- Notify all appropriate regulatory agencies that recovery phase is underway.
- Install warning signs, barriers and shielding as needed.
- Take measures to protect workers and the public from hazardous exposures.
- Complete detailed evaluations of all affected wastewater system facilities and determine priorities for permanent repair, reconstruction, or replacement at existing or new locations.
- Begin repair activities design and make bids for contractor services.
- Make necessary repairs to the system and un-tag repaired facilities and equipment.
- Restore all telecommunications, data processing, and similar services to full operation.
- Complete assessment of losses and costs for repair and replacement, determine approximate reimbursements from insurance and other sources of financial assistance, and determine how residual costs will be financed by the wastewater system.
- Define needs for additional staff, initiate recruitment process, and adopt temporary emergency employment policies as necessary.
- Execute agreements with vendors to meet service and supply needs.

- Address needs for handling and disposing of any hazardous waste generated during recovery activities.
- Control discharges as a result of recovery activities within regulatory and environmental compliance limits.
- Reevaluate need for maintaining the emergency management organization; consider returning to the normal organizational structure, roles, and responsibilities when feasible.
- Collect cost accounting information gathered during the emergency and prepare request for Emergency Disaster Funds (follow FEMA and State OES requirements).
- Debrief staff to enhance response and recovery efforts in the future by identifying lessons learned, developing action plans and follow-up mechanisms, and providing employee assistance programs if needed.
- Prepare After-Action Reports as required.

5.3 Termination and review phase

The Recovery Manager should officially terminate the recovery phase when normal operations are resumed at all facilities affected by the emergency. Termination and review actions may include the following:

- Initiate permanent reconstruction of damaged wastewater system facilities and systems.
- Obtain inspections and/or certifications that may be required before facilities can be returned to service.
- Restore wastewater system operations and services to full pre-event levels.
- Determine how emergency equipment and consumable materials should be replenished, decontaminated, repaired or replaced.
- Identify operational changes that have occurred as a result of repair, restoration, or incident investigation.
- Document the recovery phase, and compile applicable records for permanent storage.
- Continue to maintain liaison as needed with external agencies.
- Update training programs, the wastewater system ERP, and standard operating procedures, as needed, based upon "lessons learned" during the emergency response and recovery phases of the event.

CHAPTER 6.0

ACTION PLANS

An Action Plan (AP) is the specific set of actions that will be used to address specific vulnerabilities or high-risk threat scenarios identified in the wastewater system's vulnerability assessment and to provide a specific response to a given incident. Typically, the APs complement actions already initiated under the wastewater system's ERP. Only one to two pages may be needed to cover specific response information since the wastewater system has likely already addressed basic emergency response steps in the other sections of the ERP.

An AP is an accessible (i.e., "rip and run") document that can be detached and taken to the field by the Utility Emergency Response Manager or any other emergency responder. An AP includes the following basic information:

- Special notification requirements,
- Special response steps to be taken upon ERP activation,
- Recovery actions to bring the wastewater system back into operation, and
- Remediation actions aimed at long-term restoration of the wastewater system.

Because the APs may contain sensitive information that should not be made available to the public, the wastewater system should consider making the APs general in nature, or providing sensitive information in a confidential attachment that is made available on a need-to-know basis.

This section presents guidance regarding the different types of APs that a wastewater system may want to create. A sample AP is provided in the Appendix of this document to show utilities an example format that can be used.

6.1 Man-made Threats

At a minimum, the wastewater system should make sure that there are APs to address each one of the high-risk threats identified by the wastewater system's vulnerability assessment. Examples of man-made threats that may affect a wastewater system are contained in Table 6-1 below.

It is important to note that one AP may not be sufficient to address a threat. In these cases, the wastewater system may choose to activate additional APs to supplement the primary AP. For example, the wastewater system may be responding to a high concentration of gasoline discovered in a force main, for which the primary AP might be "Flammable Substance Put into Collection System", however a side result may be a loss of local power from an explosion, which would be covered in a separate Action Plan.

Table 6-1. Examples of Man-Made Threats[6].

Event / Threat
Unknown Contaminant Put into Wastewater System
Flammable Substance Put into Collection System
Flammable Substance Put into Plant
Harmful Biological Contaminants Put into System
SCADA System Intrusion
IT System Intrusion
Intentional Chlorine or SO2 Release from On-Site Location
Unexpected Loss of Critical Facility and/or Equipment
Decontamination
Bomb Threat

6.2 Natural Disasters

The wastewater system should also consider the threats posed by natural events and weather related phenomena. As with the threats outlined in Section 6.1, specific APs can be developed to guide a timely and prudent response to a natural disaster or severe weather event. Examples of natural disasters that they wastewater system may consider covering in their APs are shown in Table 6-2 below.

Table 6-2. Examples of Natural Disasters.

Natural Disaster
Earthquakes
Floods
Winter Storm / Snow Event
Hurricane / Wind Storm / Tornado
Wild Fire
Mud Slide

6.3 Significant Events

The wastewater system may also want to consider developing action plans for significant events such as the ones shown below in Table 6-3.

[6] The threats in Table 6-1 are consistent with those in the *Wastewater Threat Document* developed in August 2004 for the US EPA in conjunction with the Water Environment Federation. The *Wastewater Threat Document* provides guidance for managers and operators of wastewater management systems to better understand and address potential vulnerabilities of, and threats to, their facilities.

Table 6-3. Examples of Significant Events.

Event / Threat
Significant Event in Drainage Area with Potential for Harmful Contaminants or Evidence to end up in Sewer System
Large Scale Decontamination Event in the Community – Wash Down Water is Sent to Sewer System
Electrical Power Outage
Large Scale Transportation Disruption or Communications Outage

CHAPTER 7.0

EMERGENCY PLAN APPROVAL, UPDATE, AND TRAINING

The ERP should be considered a living document and as such, it must be reviewed and updated periodically as people, systems, and situations change. Equally important to creating the plan is training personnel on its content and how to use it.

This section of the ERP should be used to describe the plan review, approval, and update process, provide a plan for assessment of ERP effectiveness, and give information regarding the wastewater system's ERP training program.

7.1 Plan Review, Approval, and Update

The ERP should be reviewed and approved on regular basis by the Utility Emergency Response Manager, the General Manager, and other personnel as appropriate. When the plan is first written, it should go through an initial review and approval process. Then, after each revision, it should be reviewed and signed off by the wastewater system management. A revision log should be kept in the front of the ERP document. The wastewater system may also want to provide the local government and other agencies that are mentioned in the ERP with the opportunity to review the plan for coordination and consistency with other emergency planning programs.

Updates should occur to the ERP if there are changes in wastewater system staff, internal and external contacts, or roles and responsibilities of anyone involved in response activities. Updates should also be considered whenever there is an operational change at the wastewater system. For example, an expansion of the wastewater system, or a switch in chemical types may necessitate changes to the ERP. Some suggested triggers and timeframes for review and update of the ERP are as follows:

- Annually, with contact lists updated every three months.
- Upon update of the Vulnerability Assessment.
- Following an ERP exercise, or an actual activation of the ERP.
- Within two months of any significant plant modification or wastewater system change.
- Immediately when there is a wastewater system staff change where the staff member was named in the ERP.
- Immediately when there is a change in the roles and responsibilities of anyone involved in response activities.
- Immediately upon changes in internal and external contact information.

It is important for the wastewater system to designate a specific process to perform the ERP updates. For example, the update process might include a document control procedure

where old paper copies are traded for new and then destroyed, or electronic copies are deleted from the intranet system as soon as the new version is posted.

7.2 Assessment of ERP Effectiveness

To evaluate the effectiveness of the ERP and to ensure that procedures and practices developed under the ERP are adequate and are being implemented properly, the wastewater system staff should perform audits of the program on a periodic basis. One method of audit could be through exercises and drills. Members of wastewater system management would act as observers during the exercises, and evaluate the staff's performance in responding to emergency incidents as well as the overall effectiveness of the ERP in accomplishing the wastewater system's goals. The wastewater system management would then review the results of the evaluation, and the ERP and APs would be updated as appropriate to incorporate any lessons learned from the exercises.

Another suggestion is for the ERP program to be discussed as an agenda item during the General Manager's meeting each time the Vulnerability Assessment is updated. At this time, wastewater system management and staff would discuss the need to update or augment the ERP based on new information regarding threats or critical asset vulnerability.

7.3 Training, Exercises, and Drills

One reason that emergency response plans fail is lack of training and practice. Training provides the necessary means for everyone involved to acquire the skills to fulfill their role during an emergency. Training on the ERP will also help to determine what works and what does not so that revisions to the plan can be made accordingly. During an incident is not the time to discover flaws in the ERP.

This section of the ERP can be used by the wastewater system to identify the types of drills, exercises, and training that will occur for its employees, and also to describe training activities that the wastewater system may be involved in that are organized by others, such as the City or State Emergency Operations Center. The wastewater system should identify who will receive emergency response training, and how often each type of training will be conducted. The wastewater system may also want to identify the training resources that may be required.

It is a good idea for all wastewater system personnel who may be required to respond to emergencies to receive initial and refresher training class on the ERP. The training can be conducted annually or when any of the following occurs:

- New employees are hired.
- Special emergency assignments are designated to operations staff.
- New equipment or materials are introduced.
- Procedures are updated or revised.

The utilities ERP training program may consist of one or more of the following types of training:

Orientation Sessions: Orientation Sessions should include basic instruction and explanation of the ERP and Action Plan procedures. Written tests may be used to ensure some level of comprehension by the attendees.

Table Top Workshop: Table Top Workshops involve developing scenarios that describe potential problems and providing certain information necessary to address the problems. Employees will be presented with a fabricated major event. Next they will verbally respond to a series of questions and then evaluate whether their responses match what is written in the ERP.

Functional Exercises: The Functional Exercise is designed to simulate a real major event. A team of simulators is trained to develop a realistic situation. By using a series of pre-scripted messages, the simulation team sends information in to personnel assigned to carry out the ERP procedures. Both the simulators and personnel responding to the simulation are focused on carrying out the procedures to test the validity of the ERP.

Full Scale Drills: Emergency response personnel and equipment are actually mobilized and moved to a scene. A problem is presented to the response personnel, and they respond as directed by the ERP and the Incident Commander or Utility Emergency Response Manager at the scene.

For the Functional Exercises and Full Scale Drills, the wastewater system may want to invite outside agencies such as first responders and other affected entities to participate. The process should begin with a joint meeting between all of the participating parties to refine the details and schedule for the exercises or drills. During the exercise, all of the participating parties should provide observers to monitor the implementation of the ERP and the ability of the organizations to work together. After the exercise, a second joint meeting should be held where the observers are given an opportunity to provide feedback regarding the effectiveness of the ERP, the success of each organization in contributing to the team, and the overall performance of the emergency response.

Additional information on the content and format for training exercises is available from State agencies, Federal agencies, and the consulting industry. For example, several online training courses relevant to emergency management are available from FEMA (http://training.fema.gov/EMIWeb/IS/crslist.asp). These courses cover a range of topics including community disaster exercises and emergency manager orientation. The U.S. EPA is currently in the process of developing additional exercise materials for wastewater systems.

CHAPTER 8.0

ADDITIONAL RESOURCES

The following is a list of references and Internet links that provide additional wastewater system security and ERP information.

Department of Homeland Security (DHS): DHS is the overall lead agency for homeland security issues. DHS will become involved in incident response if needed.

- General information is available at http://www.dhs.gov/dhspublic.
- Information on the DHS National Incident Management System (NIMS) can be found at http://www.dhs.gov/interweb/assetlibrary/NIMS-90-web.pdf.

Environmental Protection Agency: EPA has numerous resources available. The following are key sources:

- Water Infrastructure Security information, guidance, and training information can be found at http://www.epa.gov/safewater/security/index.html.
- Information on Local Emergency Planning Committees (LEPCs) can be found at http://www.epa.gov/ceppo/lepclist.htm.
- Information on the EPA's Homeland Security Research Programs can be found at http://www.epa.gov/NHSRC.

The primary emphasis of the Water Security Research Program is on water supply, treatment, and distribution infrastructures in U.S. communities. Key research areas are detection and characterization of contaminants, response and mitigation, and prevention and protection. A secondary emphasis of the Water Security Research Program is on wastewater treatment and collection infrastructures, which include collection (sanitary and storm sewers, or combined sanitary-sewer systems) and impacts on receiving waters such as rivers, estuaries, or lakes.

The Center for Disease Control and Prevention (CDC): The CDC develops resources to assist hospital staff, clinics, and physicians in diagnosing diseases related to terrorism, reporting incidences of disease, and controlling the spread of infection. Information on emergency preparedness and response can be found at http://www.bt.cdc.gov.

- To assist in the development of a Public Health Response Plan, the CDC published a planning guidance document entitled The Public Health Response to Biological and Chemical Terrorism: Interim Planning Guidance for State Public Health Officials (July 2001), which can be found at http://www.bt.cdc.gov/Documents/Planning/PlanningGuidance.pdf
- Interim Recommended Notification Procedures for Local and State Public Health Department Leaders in the Event of a Bioterrorist Incident can be found at http://www.bt.cdc.gov/EmContact/Protocols.asp.

Federal Emergency Management Agency (FEMA): FEMA's mission is to reduce loss of life and property and protect our nation's critical infrastructure from all types of hazards through a comprehensive, risk-based, emergency management program of mitigation, preparedness, response and recovery. FEMA takes the lead if an incident is assigned to DHS. General information can be found at http://www.fema.gov./In addition, several online training courses relevant to emergency management are available on-line from FEMA at http://training.fema.gov/EMIWeb/IS/crslist.asp.

The American Water Works Association (AWWA): EPA training developed through partnership with AWWA covers the entire spectrum of security issues including assessing vulnerabilities, emergency response plans and risk communication. AWWA information can be accessed at their website, http://www.awwa.org/. Specific AWWA resources and documents, such as *Emergency Planning: The Big Picture for Water Utilities and Water Utilities,* and *Emergency Planning for Water Utilities (M19)* can be found at http://www.awwa.org/bookstore/ProductList.cfm?cat=12.

The Association of State Drinking Water Administrators (ASDWA): ASDWA has information on water security planning, training, and links to state programs and other information sources. Go to the security link at http://www.asdwa.org./

National Rural Water Association (NRWA): NRWA developed the "Security and Emergency Management System" (SEMS) Software Program, which can be loaded on a personal computer. It is based on NRWA/ASDWA's *Security Vulnerability Self-Assessment Guide for Small Drinking Water Systems Serving Populations Between 3,300 and 10,000*. You can find more information at http://www.nrwa.org./

Agency for Toxic Substances and Disease Registry (ATSDR): ATSDR is directed by congressional mandate to perform specific functions concerning the effect on public health of hazardous substances in the environment. These functions include public health assessments of waste sites, health consultations concerning specific hazardous substances, health surveillance and registries, response to emergency releases of hazardous substances, applied research in support of public health assessments, information development and dissemination, and education and training concerning hazardous substances. You can find more information at http://www.atsdr.cdc.gov./

AP-2A - Threat of or Actual Introduction of a Flammable Substance into the Wastewater System

AP Summary:

This Action Plan applies to the intentional introduction of a flammable substance into the wastewater system. A flammable substance is any gasoline, benzene, naptha, solvent, fuel oil, kerosene or any liquid, solid, or gas that would cause or tend to cause flammable or explosive conditions to result in the wastewater collection or treatment system. The flammable substance could be introduced at any point within the system, including sewage lines, treatment facilities, or pump stations. The adversary may or may not give notice, identify the flammable substance, or provide the location where the substance was put in the system. Introduction of the flammable substance may have actually occurred or it may be a hoax.

Initiation and Notification:

1. Initiate this AP if any of the following has occurred:

Witness Account:

- A witness reports that he or she has seen someone put a large quantity of a flammable substance into the system.

Direct Notification by Perpetrator:

- Verbal Threat
- Threat in Writing

Notification by Law Enforcement:

- Suspicious Activity
- Threat Made
- Law enforcement agencies have discovered crucial evidence or apprehended a suspect that has provided information about a flammable substance being put into the wastewater system.

Notification by News Media:

- Threat Delivered to News Media
- Media Discovers Threat

Unusual Wastewater Monitoring Parameters:

- LEL or other combustible gas monitoring system alarm (if plant is equipped for on-line monitoring)
- Unexpected monitoring or sampling results
- Strange odor (gasoline, kerosene, alcohol, acetone, other volatiles), color or appearance (an oily sheen on the surface of the wastewater)

2. Notify the fire department by calling 911 if the situation presents an immediate danger to the public.
3. Notify the Utility Emergency Response Manager or Alternate immediately.
4. If a threat has been made to the utility, or if a witness has seen suspicious activity that has been reported to the utility, the Utility Emergency Response Manager or Alternate will report the incident to local law enforcement.
5. Initiate sampling to determine extent of problem.

Use this AP if you receive any incident warning (see types of warnings to left) indicating possible introduction of a flammable substance into the wastewater system.

The individual who first notices or receives the threat warning should immediately contact police and / or the fire department by calling 911. After the proper emergency response authorities have been contacted, the Utility Emergency Response Manager-should be alerted.

Equipment Identified:

Equipment	Location
Lower Explosive Limit (LEL) Meter / Combustible Gas Detector or Organic Vapor Analyzer Composite Liquid Waste Sampler (Coliwasa) Grab Sampling Device (one liter	

This equipment is available to assist in the execution of this AP.

	caged bottle sampler) Laboratory-supplied sample containers (clean 250 ml. Glass wide-topped containers) Ice chests / ice for sample storage / shipping Equipment and PPE for confined space entry Equipment to open sewer manholes Sample logs Chain-of-Custody forms		
Specific Activities:			
I. Assess the Problem	A. Complete the following **Threat Warning Report Forms *(found in Appendix X)*** according to the type of Threat Warning received: • **Security Incident Report Form** • **Witness Account Report Form** • **Phone Threat Report Form** *(to be filled out during actual phone call)* • **Written Threat Report Form** B. Complete **Threat Evaluation Worksheet *(found in Appendix XX*).** C. Evaluate **Threat Evaluation Worksheet** and determine if threat is possible. If YES, perform Response Steps 1 – 4 below. If NO, return to normal operations. D. If the threat is possible and poses significant danger to public safety, activate the ERP and consider initiating partial or full activation of the utility's Emergency Operations Center (EOC).	*Threat Warning Report Forms help document, organize and summarize information about a security incident. The individual who discovers the incident warning, the Utility Emergency Response Manager, or another designated individual may complete the form. Only the form that corresponds to the type of threat warning needs to be completed. Completion of the form should not distract emergency responders from more urgent matters.*
II. Isolate and Fix the Problem	1. Do not disturb site if location could be a possible crime scene. Consult **Maintaining Crime Scene Integrity Form *(found in Appendix XXX)*.** 2. Alert appropriate staff and emergency response personnel about threat. 3. Consider containment / isolation, retention, and/or bypass of suspect wastewater. 4. Determine if sampling of the wastewater collection system is necessary. If YES, perform Steps 5a – 5t below. If NO, perform 6 - 10 below.	*Notification phone numbers can be obtained from the Organization Contact List in Appendix X.* *The immediate operational response actions are intended to determine if immediate sampling of the wastewater collection system is necessary, determine the locations to be sampled, and record important information about any threats that have been received.*

AP-2A - Threat of or Actual Introduction of a Flammable Substance into the Wastewater System

III. Monitoring	5. Initiate Site Characterization Activities: a. Determine sampling locations. b. Designate sampling team members. c. Calibrate sampling meters if necessary. d. Conduct preliminary assessment of potential site hazards. e. Approach sampling sites and carefully to detect any hazards to the characterization team. f. To the extent possible, consistent with the safety of the sampling team and with ensuring that samples are collected quickly, search for physical evidence (discarded containers, evidence that a manhole has been opened, etc.). Consult **Maintaining Crime Scene Integrity** Form. g. Ensure that potential ignition sources are eliminated (cigarettes are out, cell phones are off, engines are off, etc.). h. Use an LEL / Combustible Gas Meter or Organic Vapor Analyzer (OVA) to determine if flammable substances are present and if an explosive atmosphere exists (20% of the LEL). Take the measurements at 2-inches below the manhole lip and again by lowering the probe to just above the wastewater's surface. i. If the LEL, Combustible Gas Meter and / or OVA indicate that flammable materials are present in sufficient concentration to produce an explosive atmosphere and confirm that a flammable substance has been added to the system, immediately alert the Utility Emergency Response Manager, Fire Department and Police Department (if the origin of the flammable substance is the result of an intentional attack on the utility) by telephone (stepping away and upwind of the sampling location). j. The results of the air sampling with the meter(s) should be recorded in a bound sampling log in ink with the date, time, location, and names of the sampling personnel. The supervisor of the sampling team should sign each page of the log as the sampling results are recorded. k. If flammables are present, liquid wastewater samples should be collected for evidentiary purposes. l. Confirm whether the act of entering the sampling location is a confined space entry (note that lowering a sample probe may be considered a confined space entry by your wastewater system). m. Do not enter a confined space unless absolutely necessary to sample. If confined spaces must be entered, your wastewater system's confined space entry procedures **must** be followed, and only qualified personnel may enter a confined space to collect the samples. n. Samples should be collected using the Coliwasa sampler	*Site Characterization is intended to gather critical information to determine whether a flammable substance has entered the system, and, if so, how far it has spread.* *The determination as to whether or not the threat is 'credible' and the decision to start sampling activities should be made **in less than one hour** from the time the threat is deemed 'possible'.* *If signs of a hazard are evident during the site approach, the sampling team should halt their approach and immediately inform the Utility Emergency Response Manager of their findings. The site may then be turned over to the HAZMAT Team.* *The Utility Emergency Response Manager may initiate action to remove and / or limit the spread of flammable material through the system before the site characterization has been completed.* *After the initial analysis is complete, the laboratory should store the wastewater samples for a pre-determined period of time (such as 2 weeks) in case additional analysis or evidence gathering is required.*

AP-2A - Threat of or Actual Introduction of a Flammable Substance into the Wastewater System		
	for wastewater depths > 1 foot and the grab sampling apparatus for wastewater depths < 1 foot. o. As soon as the samples are collected, they should be placed in laboratory-supplied, laboratory cleaned sample containers, the samples should be held on wet ice and chain-of-custody should be initiated. p. Sample numbers and appearance (including the presence of multiple phases) should be recorded in the sample log. q. Close the sampling area. r. Samples should be transported to the laboratory for analysis the same day they are collected. s. Ensure that Chain-of-Custody is maintained. t. The Laboratory Director should discuss the sampling results with the Utility Emergency Response Manager, and provide recommendations to continue or end the sampling process.	
IV. Recovery and Return to Safety	6. If the utility has a system capable of diverting the wastewater from the sewer to a pond or other holding vessel until the combustible level falls below 20% of the LEL, this should be done immediately. (or) 7. If the utility has a bypass system, this system should be activated until the combustible level falls below 20% of the LEL. 8. Ventilate the system until the combustible level falls to below 20% of the LEL. 9. Return to normal operations.	
V. Report of Findings	10. File incident reports as required.	*The wastewater system's Security Director should file an internal report for the system's files, and also provide information as requested to Local Law Enforcement.*
VI. AP-11 Revision Dates		

NEWS RELEASE

New River Wastewater Utility

August 21, 2004

KNOWN CONTAMINANT HAS ENTERED NEW RIVER'S SEWER SYSTEM

New River Residents Should Refrain From Non-Essential Water Use and Remain Clear of Barricaded Areas

A hazardous solvent material called Trichloroethylene (TCE) has entered the New River wastewater collection system at two known locations in the downtown area of the City.

New River Wastewater Utility (NRWU) has issued a "Minimize Non-Essential Water Usage" notice and shut down a portion of the sewer system. City Officials ask that all residents, businesses and industries refrain from non-essential water use or activities that result in discharges to the sewer system (such as unnecessary toilet flushing, washing machine usage and dishwashing) until further notice.

TCE is a colorless liquid, which is used as a solvent for cleaning metal parts. Breathing high levels of TCE may cause nervous system effects, liver and lung damage, abnormal heartbeat, coma, and possibly death. New River Residents are advised to avoid contact with all sanitary sewer pipes, manholes, and lift stations in the grater New River Area.

The City Emergency Operations Center is activated, and actions are underway to remove the TCE from the sewer system.

The "Minimize Non-Essential Water Usage" order will remain in effect until officials from NRWU and the City of New River have cleared the wastewater system for normal operations.

The City of New River has set up a 24-hour Hotline for residents to obtain updated information regarding this matter. The Hotline number is (XXX) XXX-XXXX.

NEWS RELEASE

Brighton Beach Wastewater Utility

August 21, 2004

SEWER FORCE MAIN BREAKS IN SUNSET PALISADES AREA

Brighton Beach Residents in the vicinity of Sunset Palisades Should Refrain from Non-Essential Water Use

Brighton Beach Utility repair crews arrived at Pump Station 302 located at 400 Main Street at 10:30 AM today in response to a submerged 12-inch sewer force main break. The sewage spill was mostly contained as of this afternoon at 3:15 PM, and repairs to the pipeline are underway.

Residents of the affected areas have not lost sewer services, but officials have asked that all residents in the Sunset Palisades area of town, refrain from non-essential water use, such as unnecessary toilet flushing, washing machine usage and dishwashing until further notice.

Caution signs have been posted at North Brighton Beach asking residents to refrain from all recreational uses of the water in including wading, fishing and swimming, until further notice.

Brighton Beach Wastewater Utility has notified the State Department of Health and the State Department of Environmental Protection. The County Board of Health is monitoring the potential water quality impacts. Officials will notify the public and remove the warning signs when North Brighton Beach is safe for recreational use.

For more information, please contact Brighton Beach Wastewater Utility's Information Officer at (XXX) XXX-XXXX.

NEWS RELEASE

Greenwood Valley Wastewater Utility

August 21, 2004

NOTICE OF DISCHARGE OF UNTREATED SEWAGE

The Town of Greenwood Valley had a discharge of untreated sewage from a pump station located at 1450 Main Street of approximately 30,000 gallons. The discharge was first discovered on December 7, 2004 at 2:00 p.m. and lasted for approximately 5 hours. The untreated wastewater entered Bear Lake through a seasonal streambed. The discharge was the result of an electrical explosion that caused the lift station pump motor to become inoperative. The electrical wiring and pump motor were repaired to prevent further discharge.

Greenwood Valley Wastewater Utility contacted health and regulatory agencies about the discharge. The Greenwood Valley Parks and Recreation Department has posted signs at the Bear Lake Beach and Boat Launch Area warning people not to come in contact with the water. Utility staff is analyzing water samples taken from Bear Lake. The warning signs will be removed when the water is determined to be safe for swimming and boating.

For more information, please contact Greenwood Valley Wastewater Utility's Public Information Officer at (XXX) XXX-XXXX.

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Water System Emergency Response Plan; Anchorage Water and Wastewater Utility: Anchorage, AK; September 2003.

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Interview with Mike Yates, Severn Trent Utility, Birmingham, UK, June 2004.

GLOSSARY OF TERMS

The definitions provided below are specific to the *Emergency Response Plan Guidance for Wastewater Systems*; however, the authors have tried to coordinate terminology with standards used nationally. Where possible, definitions were provided by the U.S. EPA.

Action Plans: Specific plans designed to be used during the response to a threat or incident. Action plans should be easy to use and contain forms, flow charts, and simple instructions to support staff in the field or decision officials during management of a crisis.

Agency Representative: An individual assigned to an incident from an assisting or cooperating agency who has been delegated authority to make decisions on matters affecting that agency's participation at the incident. "Agency Representatives" report to the Liaison Officer or Incident Commander in the absence of a Liaison Officer.

Chain of Command: A clear and definitive structure of authority.

'Confirmed': A stage in the threat evaluation process in which there is definitive evidence and information to establish that an incident or major event has occurred.

'Credible': A stage in the threat evaluation process in which there is information to corroborate a threat.

Emergency Operations Center (EOC): A pre-designated facility established by an agency or jurisdiction to coordinate the overall agency or jurisdictional response and support to an emergency. However, the EOC may be located at any location based on the disaster event.

Emergency Response Plan (ERP): A document developed by the wastewater system that describes the actions that the wastewater system would take in the event of a natural disaster, significant event or terrorist activity.

Hazardous Materials Response Team (HAZMAT): The acronym generally refers to a Hazardous Materials Response Team. A specially trained group of personnel that are equipped to deal with spills or releases of hazardous materials. A hazardous material is any substance or material that when released in an uncontrolled manner in sufficient quantities, poses a risk to public health, the environment and/or property.

Incident Commander (IC): The individual responsible for the management of all incident operations.

Incident Command System (ICS): A standardized on-scene emergency management concept specifically designed to allow its user(s) to adopt an integrated organizational structure equal to the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries.

Information Officer (IO): The individual responsible for interfacing with the public and media or with other agencies requiring information directly from the incident. Under the ICS, there is only one Information Officer per incident.

Jurisdiction: The range or sphere of authority. Public agencies have jurisdiction at an incident related to their legal responsibilities and authority for incident mitigation. Jurisdictional authority at an incident can be political/geographic (e.g., city, county, State, or Federal boundary lines) or functional (e.g., police department, health department, etc.).

Laboratory Response Network (LRN): A network of laboratories developed by the CDC, APHL, and FBI for the express purpose of dealing with bioterrorism threats, including pathogens and some biotoxins.

Liaison Officer (LO): The individual who is the on-scene contact for representatives from other agencies assisting with the incident.

Local Emergency Planning Committee (LEPC): Established by the Emergency Planning and Community Right-to-Know Act, LEPCs have the job of increasing community hazardous materials safety through public education, emergency planning, responder training, conducting exercises, and reviewing actual responses to releases.

Major Event: A domestic terrorist attack, major disaster, or other emergency (from Homeland Security Presidential Directive/HSPD-8). (http://www.whitehouse.gov/news/releases/2003/12/20031217-6.html)

Multi-jurisdiction Incident: An incident requiring action from multiple agencies that have a statutory responsibility for incident mitigation. In ICS, these incidents will be managed under Unified Command.

Notification: The process of communicating information to interested parties.

Personal Protective Equipment (PPE): Equipment and supplies designed to protect employees from serious injuries or illnesses resulting from contact with chemical, radiological, biological, or other hazards. PPE includes face shields, safety glasses, goggles, laboratory coats, gloves, and respirators.

'Possible': A stage in the threat evaluation process in which available information indicates there is an opportunity for an incident (i.e., the threat is possible).

Response Decisions: Part of the threat management process in which decisions are made regarding appropriate response actions that consider 1) the conclusions of the threat evaluation, 2) the consequences of the suspected incident, and 3) the impacts of the response actions on customers and the wastewater system.

Security Breach: An unauthorized intrusion into a secured facility that may be discovered through direct observation, an alarm trigger, or signs of intrusion (e.g., cut locks, open doors, cut fences). A security breach is a type of threat warning.

Technical Assistance Provider: Any organization or individual that provides assistance to wastewater systems in meeting their mission to provide adequate and safe wastewater collection and treatment for their customers.

Technical Specialist: Certain incidents or events may require the use of "Technical Specialists" who have specialized knowledge and expertise. "Technical Specialists" may function within the Planning Section, or be assigned wherever their services are required.

Threat: An indication of possible violence, harm, or danger. The threat may be direct, such as verbal or written threat, or circumstantial, such as a security breach or unusual wastewater characteristics.

Threat Evaluation: Part of the threat management process in which all available and relevant information about the threat is evaluated to determine if the threat is 'possible' or 'credible', or if an incident has been 'confirmed.' This is an iterative process in which the threat evaluation is

revised as additional information becomes available. The conclusions from the threat evaluation are considered when making response decisions.

Threat Warning: An occurrence or discovery that indicates a threat of a malevolent act and triggers an evaluation of the threat.

Unified Command: A unified team effort which allows all agencies with responsibility for the incident, either geographic or functional, to manage an incident by establishing a common set of incident objectives and strategies. This is accomplished without losing or abdicating agency authority, responsibility, or accountability.

Unity of Command: A chain of command concept where each person in an organization reports to only one designated individual.

Utility Emergency Response Manager (UERM): The individual(s) within the wastewater system management structure that has the responsibility and authority for managing certain aspects of the wastewater system's response to an emergency particularly during the initial stages of the response. The responsibilities and authority of the UERM are defined by wastewater system management and will likely vary based on the circumstance of a specific wastewater system.

Vulnerability Assessment (VA): A systematic process for evaluating the susceptibility of critical assets to potential threats and identifying corrective actions that can reduce or mitigate the risk of serious consequences associated with these threats.