

**State Water Resources Control Board
Division of Drinking Water
Emergency Response Plan Guidance
for
Public Drinking Water Systems
Serving a population of 3,300 or more
(approximately 1,000 SC or more)**

February 2015

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*State Water Resources Control Board
Division of Drinking Water*

SWRCB-DDW
Emergency Response Plan Guidance Outline

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Section 1 – INTRODUCTION

1.1 Purpose

In California, the State Water Resources Control Board (SWRCB), Division of Drinking Water (DDW) is the Drinking Water Primacy Agency for all public water systems serving over 200 service connections. For systems under 200 service connections, drinking water primacy may have been delegated by SWRCB to the respective County Health or County Environmental Health Department. However, some counties in California have chosen not to regulate public water systems and the SWRCB DDW is the Drinking Water Primacy Agency for all public water systems in those respective counties.

One of the operational requirements for a public water system is to “provide a reliable and adequate supply of pure, wholesome, healthful and potable water” (CA Health & Safety Code, Section 11655). Emergency Response Planning for both terrorist activities and natural disasters is an essential part of ensuring customers receive a reliable and adequate supply of potable water.

This document is designed to assist California public water systems in developing or revising an emergency response plan that will meet all state and federal requirements. More importantly, this document should assist public water systems in planning and preparing for both natural or man-made disasters.

1.2 Emergency Response Plan Requirements

There are several regulations associated with the legal requirements of preparing an Emergency Response Plan (ERP) in California, which are described below:

1. *California Government Code Section 8607.2 – Public Water System Plans*

“Requires public water systems with 10,000 or more service connections (approximately 33,000 population) to review and revise their disaster preparedness plans in conjunction with related agencies, including fire departments.”

“Also requires public water systems with 10,000 or more service connections to furnish the Legislature with an assessment of their emergency response.”

2. *United States Public Law 107-188 Public Health Security and Bioterrorism Preparedness and Response Act of 2002*

“All community water systems serving more than 3,300 population (1,000 service connections) shall prepare or revise an Emergency Response Plan that incorporates the results of vulnerability assessments (VA) that have been completed. The updated Emergency Response Plan shall be certified to EPA within 6 months of completing the vulnerability assessment.”

Directions on how to submit the VA and ERP Certification to EPA are provided on EPA's website at:

<http://water.epa.gov/infrastructure/watersecurity/lawsregs/bioterrorismact.cfm>

3. *California Health and Safety Code, Sections 116460, 116555 and 116750. Please refer to the current edition of the California Safe Drinking Water Act and Related Laws for the specific language.*

Section 116460 – Emergency Notification Plan Requirement

Section 116555 – Operational Requirements

Section 116750 – Tampering with Public Water Systems

4. *California Waterworks Standards, Section 64560.*

Documentation demonstrating that a well site control zone with a 50-foot radius around the site can be established for protecting the source from vandalism, tampering, or other threats at the site by water system ownership, easement, zoning, lease, or an alternative approach approved by the Department based on its potential effectiveness in providing protection of the source from contamination.

1.3 Frequently Asked Questions

How to use this Document?

An ERP takes time and resources to complete. **Continuous updating** is required to ensure that current information and contact phone numbers are provided. Therefore, this document needs to be updated frequently. We have tried to reduce the workload of continuous updates by placing commonly changed documents or lists in the Appendix so the whole document does not need to be replaced. Several tables are provided in the Appendix that may be used directly in your water systems ERP. These documents may also be downloaded from our website.

Is it required to hire a consultant to complete the ERP?

A water system is not required to hire a consultant to complete or update their ERP. Since water system personnel are familiar with system operation, personnel and local responders, they will be required to participate in completing the ERP with or without a consultant.

What to do with this document?

The ERP should be available to management, field and office staff for planning, training and use in an emergency. The last thing you want during an emergency is staff trying to locate a document they have only heard of or seen once. It may be helpful to provide copies in a 3-ring binder for easy access and updates. In addition, for easy identification, the utility may want to keep the ERP in a red or yellow binder.

A copy of your completed ERP should be provided to your local SWRCB DDW Drinking Water Field Operations Branch District Office. Whenever the ERP is changed or updated, a revised copy (or the specific revised documents) should be sent to the SWRCB DDW District Office. The local office will review the ERP and keep it on file in case of an

emergency. All ERPs on file at the District Offices are confidential documents under the California Public Records Act Section 6255(a) and will not be released for review to the public.

Do we include the vulnerability assessment (VA) results required by the Bioterrorism Act in the ERP?

According to the Bioterrorism Act (PL 107-188), the updated ERP should incorporate the results of the vulnerability assessments that were completed. “The emergency response plan shall include, but not be limited to: plans, procedures, and identification of equipment that can be implemented or utilized in the event of a terrorist or other intentional attack on the public water system. The emergency response plan shall also include actions, procedures, and identification of terrorist attacks or other intentional actions on the public health and the safety and supply of the drinking water provided to communities and individuals. Community water systems shall, to the extent possible, coordinate with existing Local Emergency Planning Committees established under the Emergency Planning and Community Right-to-Know Act (42 U.S.C. 11001, et seq.) when preparing or revising an emergency response plan under this subsection.”

Since the VA contain sensitive detailed information on the vulnerable points in a water system, the results of the VA should not be provided in detail in the ERP. The ERP should not be a confidential document, but one that is used by all water utility staff to prepare and plan for an emergency. SWRCB suggests two options. One option is to include only general information of the VA results (for example, terrorist event-contamination or terrorist event-destruction) with follow-up to that general event. Specific vulnerable points in the system are not specifically identified. Second option is to include detailed VA results, vulnerable points and specific actions in an Appendix that would only be provided to individuals on a need-to-know basis. If the utility uses the second option, it would be the utilities decision to include the confidential Appendix or Section in the copy of the ERP submitted to the SWRCB DDW District Office. There is no specific requirement that the utility must submit the VA results, summaries or confidential information to SWRCB DDW District Offices.

In California, the Local Emergency Planning Committees (LEPC) are not utilized due to the California Mutual Aide System or SEMS (Standardized Emergency Management System). In most states, there is a LEPC for each county and it functions similar to a County Office of Emergency Services (OES) in California. California only has six LEPCs, which function on a regional basis. California water systems should identify, coordinate and plan with the CA Mutual Aide System in place (SEMS or City OES, County OES, Regional OES and State OES).

This document was created with the assistance of other ERP documents available that may be reviewed in detail for more information. The list of ERP documents that were reviewed are listed below:

- “Emergency Planning Guidance Public and Private Water Utilities.” March 1999. CalOES and California Utilities Emergency Association. Available at CalOES website: http://www.caloes.ca.gov/PlanningandPreparedness/Documents/H2o_.pdf
- “Response Protocol Toolbox (RPTB) Interim Final: Planning for and Responding to Contamination Threats to Drinking Water Systems.” December 2003. United States

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Environmental Protection Agency (USEPA). Available at EPA's website:
<http://water.epa.gov/infrastructure/watersecurity/emergencyplan/upload/epa817d03007.pdf>.

- “Small and Medium Water System Emergency Response Plan Guidance to Assist Community Water Systems in Complying with the Public Health Security and Bioterrorism Preparedness and Response Act of 2002”. April 2004. USEPA. Available at EPA's website:
http://water.epa.gov/infrastructure/watersecurity/upload/2004_04_27_watersecurity_pubs_small_medium_erp_guidance040704.pdf
- “Water System Security and Emergency Response Planning”. DOH PUB. #331-199 Revised May 2011. Washington State Department of Health Environmental Health Programs, Division of Drinking Water. Available on their website:
<http://www.doh.wa.gov/Portals/1/Documents/Pubs/331-199.pdf>

Section 2 – EMERGENCY PLANNING PROCESS

2.1 General Information

To develop an effective emergency plan, a planning team approach should be utilized to establish roles and responsibilities prior to an incident or disaster. Typically, the planning team for the water utility should include the following entities within the utility: engineering and operations, water quality, emergency preparedness, security, safety, planning, customer service, administration, finance, training, and management. It is also important for water utilities to include public response agencies in the planning process because these agencies will be dispatched to the scene, or collaborated with, if an event or emergency occurs at the water utility and the water utility does not have the resources to resolve the problem on its own. The following public response agencies should be considered in the planning process as part of the team approach:

Public Response Agencies

- Local Emergency Management Agency (City or County OES)
- Local Fire Department
- Local Law Enforcement (police or sheriff)
- Local Health or Environmental Health Department
- California Public Utilities Commission (if water system is privately owned)
- Public Works Department
- County Health Department (Drinking Water Primacy Agency)
- Local Hazardous Materials Response Team (HAZMAT)
- Private and Public Health Laboratories
- Other Water Utilities with Inter-ties
- SWRCB – Division of Drinking Water (State Drinking Water Primacy Agency)
- Regional Water Quality Control Board
- Amateur Radio Operators
- Emergency Relief organizations such as Red Cross and Salvation Army
- Any other organizations located in the utility's service area involved in preparing for or responding to emergencies and disasters.

In California, public emergency response agencies are required to utilize the Standardized Emergency Management System (SEMS) to mitigate disasters or emergency incidents. A component of SEMS is the Incident Command System (ICS), which is implemented to manage resources in the **field** during an event. It is important for water systems to understand the use and terminology associated with the Incident Command System to adapt and integrate into the incident management structure when public response agencies are requested by the water utility for a disaster event. Requesting resources and SEMS are further discussed in the Section 4.

Discussions with response agencies should include: the role of water utility staff, in the field, under the Incident Command structure; the relationship and communication methods between field activities and any activations or preventive measures taken by the water utility's Emergency Operations Center (EOC) or Water Utility Emergency Response Manager (WUERM). Other planning items that should also be addressed:

- Vulnerability Assessment results and analysis of recommendations for improvements.
- Development of a field incident management structure (Water Utility Staff) for both prior to the arrival of public response agencies and after the arrival of response agencies (Water Utility Staff and Public agency personnel).
- Development of a Water Utility Emergency Operations Center (EOC) management structure.
- Development or update of existing Emergency Response Plan.
- Develop guidelines that identify various levels of plan activation and appropriate personnel to respond.
- Identify internal resources and capabilities.
- Development of Mutual Assistance agreements.
- Development of a communication strategy with the local Emergency Services agency (OES) to request resources during a disaster.
- Development of 24-hour interagency contact lists.
- Identify or develop alternate water sources, such as interties with other water agencies. Include contingencies for temporary emergency water supplies, such as water trucks or buffaloes, and bottled water.
- Conduct and maintain comprehensive mapping of all customer areas, facilities and pipelines.
- Prearranged contracts for water, food, and supplies for response staff.
- Development of resource lists for items expected to be needed during a response.
- Development of cost accounting and recovery systems that meet federal Federal Emergency Management Agency (FEMA) and state Office of Emergency Services (CalOES) reimbursement requirements, including how information will be collected during all phases of the emergency and how expenditures will be tracked.
- Development of plans to assist employees and their families during an event (home and work).
- Development of a plan to provide information to the local Joint Information Center, the media, the primacy agency and customers.
- Provide a schedule to regularly test emergency equipment (i.e. generators, radios, light, etc.).
- Training and exercising of the Emergency Response Plan with planning partners.
- Business recovery plan.

2.2 Disaster Events or Scenarios

A water system may be vulnerable to many natural and man-made disasters or emergency events. Understanding these vulnerabilities and planning for response is an important part of emergency planning. An efficient basic emergency disaster plan should be the foundation of the response to all hazards that may be encountered. The needs of the incident should drive the level of response required to mitigate the problem. Analyzing the impacts of an earthquake, flood, or fire may be important because they have occurred recently in California and will likely reoccur in the near future. Consider the probability of an event and its likely effect on the water system. Then focus on the actions needed to reduce impacts and respond in a timely and effective manner.

Natural Disasters

Consideration of common natural disasters when developing an emergency response plan, include:

Earthquakes: Emergency response plans should evaluate what facilities are at risk during an earthquake and what can be done to mitigate impacts. System should look at historical earthquake damage reports for an idea of the severity and probability in their service area. Consider structural damage to roads, bridges, water treatment facilities, distribution system, power outages, telemetry system and communication problems.

Floods: Floods can cause widespread contamination as turbid waters carry bacteria that can overflow sources, transmission lines, treatment facilities, and pumping facilities. Floods can also ruin electrical components and telemetry systems. Consider damage to roads and bridges where distribution or transmission lines are located.

Waterborne diseases: Organisms such as *Giardia* and *Cryptosporidium* can contaminate water supplies and cause waterborne diseases. The 1993 Milwaukee, Wisconsin *Cryptosporidium* outbreak killed more than 100 people and sickened more than 400,000. Another incident occurred in Walkerton, Ontario where an E. coli outbreak killed seven people and sickened over 2,300.

Drought: Droughts are an issue in California and can have devastating effects on water supplies. During normal years, peak summer demands can double and even triple water use. These same demands during low water years can lead to water shortages which can cause low pressure problems, boil-water advisories and possible need for hauled water.

Events Caused by Human-Intervention

Human-caused events that can result in a water system emergency include chemical spills, vandalism, terrorism, cyber-attack, fires, construction accidents, and basic neglect of water system infrastructure and maintenance.

Vandalism: Vandalism is generally a spur-of-the-moment act using materials at hand rather than pre-planned or pre-meditated activities. Vandals often break into systems, damage facilities, and paint graffiti. These acts are relatively easy to prevent by enhancing security, increasing lighting, installing locks on doors and hatches, and putting up security fencing.

Terrorism: Acts of terrorism are defined by the Code of Federal Regulation as "**...the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives.**" There are many potential threats to drinking water systems, including physical destruction of infrastructure (explosions), chemical, biological or radiological contamination as well as other physical types of damage to infrastructure and SCADA systems. Threats of, or contamination using biological, radiological or chemical agents are a major concern for a drinking water system.

The United States Environmental Protection Agency developed a "Response Protocol Toolbox" with a set of 6 modules to address potential contamination events. The Toolbox is entitled "Planning for and Responding to Contamination Threats to Drinking Water"

Systems". Drinking water systems can utilize these modules to address recommendations in their vulnerability assessments, evaluate initial threats, and prepare for response and precautionary actions. This guidance was developed to coordinate with the EPA Toolbox.

System neglect: System neglect, often referred to as deferred maintenance, is a major cause of emergencies. System components that are aging and need replacement go without attention causing an emergency situation. Drinking water systems need to continuously evaluate infrastructure and replace them before a failure occurs.

Cross Connections: A cross connection is an actual or potential physical connection between a public water system and any source of recycled water, non-potable liquid, solid, or gas that could potentially contaminate water supply through a backflow process. Cross connections usually occur unknowingly when someone makes a connection in the system or when conducting maintenance on the system.

Backflow conditions: Backflow is the reverse flow of water or other substances into the public water system. Under backflow conditions, unprotected cross-connections can provide a path for biological, chemical, or physical contaminants to enter the water supply. These contaminants can lead to waterborne disease outbreaks and chemical poisonings. Backflow usually occurs when there is a loss of pressure somewhere in the system causing water to reverse itself.

Construction accidents: Construction accidents sometime fall into the category of a routine operating emergency. The system may lose pressure, resulting in serious backflow incidents that contaminate the water. The utility must be aware of construction in and around the system and be prepared to respond quickly to an accident if it happens.

Chemical spills: Many chemicals that are routinely transported can harm humans directly or by contaminating air or water. Spills can come from motor vehicles, trains, airplanes, boats, or fixed containers. They can occur at any time without warning, and many solvents are able to leach through PVC pipes. Water systems should evaluate the potential for chemical spills in their SWAPs and use that information for emergency response planning.

Sewage Spills: These accidental discharges occur routinely in California. Breaches in raw and treated sewage lines and discharge areas can eventually affect sources of drinking water. Raw sewage can provide a path for biological, chemical or physical contaminants to enter the water supply

Power Outages: In recent years, the constant supply of electrical power for all facilities, in California and the Nation, has posed problems that should be considered in emergency planning. As noted, in the recent power failure on the east coast in August of 2003, many areas were without electricity for several days before it was restored. Alternate and back up power generation should be considered in emergency planning scenarios.

Fires: During the late spring through fall, wildfires pose a significant threat to large rural areas in California. These fires can cause significant damage to infrastructure as well as watershed areas within the state. Consider possible low pressure problems or water outages due to fires within or surrounding the water system service area.

2.3 The National Terrorism Advisory System

The National Terrorism Advisory System, or NTAS, replaces the color-coded Homeland Security Advisory System. This new system will more effectively communicate information about terrorist threats by providing timely, detailed information to the public, government agencies, first responders, airports and other transportation hubs, and the private sector.

It recognizes that Americans all share responsibility for the nation's security, and should always be aware of the heightened risk of terrorist attack in the United States and what they should do.

A description and details about the NTAS can be found on their webpage at <http://www.dhs.gov/national-terrorism-advisory-system>. A copy of this document is provided in the Appendix.

Section 3 – WATER SYSTEM INFORMATION

3.1 Water System Information

In an emergency situation, both the water system and SWRCB DDW staff need to have basic information readily available. The information should be clear and concise. The basic information should include: system's ID number, system name, system address and location, population served, number of service connections, source type, treatment provided, available storage and emergency contact numbers.

The water system should develop a one-page worksheet that would provide all the basic information required. If additional specific information is required for a particular water system, they should provide the information as needed.

3.2 General System Map/Service Area Map

The water system should have detailed drawings of the sources, water treatment plants, booster stations and distribution system. In the event of an emergency, it will be necessary to quickly locate sources and distribution system characteristics. Map(s) that includes the distribution system, system valves and sources should be provided in the Appendix of the water system's ERP.

3.3 Emergency Resources

In the event of a natural or man-made disaster, it may be necessary for the water system to use an emergency source of supply to maintain system pressure. Public water systems should evaluate different emergency sources of supply that could be used in a contamination or disruption of service event. Emergency sources of supply include: standby sources, inter-tie with another water system, or surface water source/spring. A standby source should also have a back-up power supply in case the emergency event includes a power outage. The water system and SWRCB should work together to approve emergency sources and conduct minimum water quality sampling and appropriate public notification prior to using the source during an emergency.

If a contamination event occurs, the only source of supply may be bottled water. The water system should evaluate the amount of bottled water that could be provided by the local bottled water industry. In addition, they should estimate the cost and time required to receive the bottled water, and how the water would be made available to customers.

3.4 Estimated Emergency Supply of Water

For planning purposes, the water system should estimate the amount of storage available under worse case conditions. The water system should also estimate the amount of back-up or emergency supply of water available. Using the general formula below, the water system should be able to estimate the amount of water available under emergency situations. The emergency

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supply of water may be calculated in units appropriate to the specific water system (gpm, gpd, MG or MGD etc), however, the correct units need to be used in the formula below.

$$\text{Emergency supply of water} = (\text{amount of storage} + \text{backup/emergency supply}) - (\text{system demand})$$

Depending on the emergency event, it may be possible for customers to conserve water if the message is sent out quickly and effectively. The formula above may be used several times based on different backup sources, emergency power sources or system demands (average day demand vs. maximum day demand).

Table 3.1 - “Example” Water System Information

System Identification Number	XXXXXXX (7 digit number)	
System name and address	Example Water System 1234 Anywhere Street Example, CA 9XXXX	
Directions to System Office	Located at the corner of First Avenue and Anywhere Street. Please enter specific directions, if difficult to find.	
Number of Service Connections/Population Served¹	1,000 service connections	3,300 population ¹
Type of Source	XX Groundwater Wells	XX Surface Water Treatment Plants
Type of Treatment Provided	Disinfection treatment is provided using XXX or Disinfection is not provided. GAC treatment is also provided at XX Wells (Wells Nos. X, X, X)	
Number of Storage Tanks	XX Raw Water Tanks	XX Treated Water Tanks
Average Water Demand	1,000 gpm	
Maximum and Peak Water Demand	2,500 gpm maximum	4,000 gpm peak
Emergency Contact Person(s)	John Doe Manager	(XXX) XXX-XXXX Office (XXX) XXX-XXXX Cell (XXX) XXX-XXXX Home Phone
	Jane Smith Assistant Manager	(XXX) XXX-XXXX Office (XXX) XXX-XXXX Cell (XXX) XXX-XXXX Home Phone

¹ If population is unknown, estimate using a factor of 3.3 persons per service connection.

Section 4 – SEMS/ICS INTEGRATION OR ORGANIZATION

The Governor's Office of Emergency Services webpage contains a document "Emergency Planning Guidance for Public and Private Water Utilities" which describes most of the following information in more detail. The information in this section has been summarized and/or enhanced to assist water systems in the development of an effective ERP. The complete document can be found at

http://www.caloes.ca.gov/PlanningandPreparedness/Documents/H2o_.pdf.

4.1 Standardized Emergency Management System (SEMS)

The Standardized Emergency Management System is the system required by Government Code §8607 (a) for managing response to multi-agency and multi-jurisdiction emergencies in California. The system was created for several purposes. First it allows rapid and effective coordination at the field level using the Incident Command System (ICS) to manage multi-agency response to an incident. Secondly, SEMS creates a common management structure at all levels of response, which allows entities to work with common terminology, staffing organizations, and facilities for more efficient interagency coordination. Thirdly, it creates an ordering process for requesting resources from the field through local government, to the County (Operational Area) to the state and eventually the federal government. It also allows each level of organization to track requests and resources that are dispatched to the incident or necessary for support. Local public agencies (cities, counties, special districts) must use SEMS to be eligible for State funding of certain response-related personnel costs resulting from a disaster. State agencies are required by the law to utilize SEMS during emergencies.

4.2 Five Levels of SEMS

There are 5 designated levels in the SEMS organization. When resources become depleted or are not available at the field or local level, requests for resources are moved up through these levels until they are filled. It is important for water systems to work with their local emergency management agencies to create protocols, as well as, relationships with these local agencies so that when requests are made, all parties have an understanding of where resources will be dispatched and how to receive them. The type and severity of the incident determines the extent of activation for each level.

For specific water utility requests, water systems are encouraged to enter into mutual assistance agreements with neighboring water systems to provide resources that may be necessary on case-by-case basis.

Field Response - The Field Response Level is where the Incident Command System is applied. At this level, emergency response personnel and resources are managed under ICS to carry out tactical decisions and activities in direct response to an incident or threat. The basic components of ICS are common terminology, modular organization, unified command structure, consolidated action plans, manageable span-of-control, predesignated incident facilities, comprehensive resource management, and integrated communications.

Local Government - Local Government includes cities, counties, school districts, or special districts (including most water utilities)

Operational Area - The Operational Area concept represents the intermediate level of the state's emergency organization, consisting of a **county and all political subdivisions**, including water districts and other special districts, within the county area.

Regional - Because of its size and geography, the state of California has been divided into six mutual aid regions by the Governor's Office of Emergency Services. In SEMS, the regional level manages and coordinates information and resources among operational areas within the mutual aid region, and also between the operational areas and the state level.

State - The state level manages and coordinates state resources in response to the emergency needs of the other levels. This level manages and coordinates mutual aid among the mutual aid regions and between the regional and state levels. The state level also serves as the coordination and communication link between the state and federal disaster response system.

***NOTE:** Depending on the circumstances of the incident, when a request is made by the water system to local first response agencies, such as Fire or Law Enforcement, ICS will be implemented by these first response agencies to manage the resources at the site. Water system personnel that will interface with these response agency personnel, in the field, should understand their role in the ICS structure. Water systems can and will provide tactical and precautionary measures through their Emergency Operations Center or the Water Utility Emergency Response Manager (WUERM). It will be important to coordinate these activities with the field (Incident) through an Agency Representative or Technical Specialist in the ICS structure. Prior to an incident, roles should be established, through the planning process, with response agencies. This will ensure that incident objectives and priorities to protect public health are supported. It is advantageous for water system personnel to understand the incident command system, so they can work within the system to provide the most efficient response. This circumstance will become particularly evident in an intentional water contamination scenario or act of terrorism.*

Water System Personnel may function in the ICS structure (Field Level) as an Agency Representative or Technical Specialist.

Agency Representative - is 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.

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.

4.3 Five Principle Functions of SEMS

There are **5 principle functions** within SEMS at each of the 5 organizational levels. They are **Management** ("Command" at the Field Level), **Operations**, **Planning/Intelligence**, **Logistics**, and **Finance/Administration**. These functions are modular in their design and can expand or contract depending on the needs of the incident. A general principle in the use of the 5 functions, is that no one person should directly supervise more than 5-7 staff. The organizational structure can be as small as one, or expand to include thousands. Again, the complexity of the incident dictates the type and size of resources necessary to mitigate the incident. As they relate to Water System Operations during an emergency, these functions are listed below

Management - In a Water System Emergency Operations Center (EOC), the EOC Director has overall responsibility for all emergency functions. This person may initially be designated as the Water Utility Emergency Response Manager (WUERM) prior to the activation of an EOC. The EOC Director may retain and/or delegate authority for functions listed below.

In the field, under ICS, an Incident Commander or Unified Command is established depending on statutory authorities for the Incident. The Incident Commander's responsibility is the overall management of the incident.

Operations - The Operations Section is responsible for the management of all operations directly applicable to the primary mission established for the response. The Operations Section Chief activates and supervises organization elements in accordance with the Incident Action Plan and directs its execution.

For water utilities, coordinates emergency response activities at the water utility EOC level and implements the priorities established by management or the Incident Command. Operation Section staff include field coordinators, as necessary, linked to water utility personnel at other fixed facilities or assigned to incidents within the water utility. The field coordinator should receive and pass information up the chain of command, as well as, receive and coordinate requests for services and support.

Planning/Intelligence - Oversees the collection, evaluation, verification, and display of current information related to the emergency. This section is also responsible for preparing action plans and maintaining documentation related to the emergency. The information collected is needed to 1) understand current situation 2) predict probable course of the incident events 3) prepare alternative strategies and control operations for the incident.

Logistics - Provides facilities, services, and material in support of the Incident. Oversees the acquisition, storing, and distribution of essential resources and support services needed to manage the emergency. It tracks the status of resources. Logistics provides services to all field units in terms of obtaining and meeting their personnel, materials and equipment needs including communications.

Finance/Administration - The Finance/Administration Section is responsible for all financial, administrative and cost analysis aspects of the incident. Finance/Administration prepares vendor contracts, maintains records of expenditures for personnel and equipment, and maintains records and processes claims. It also provides preliminary estimates of damage costs and losses.

General Staff - Each function listed above should have a delegated Chief to manage the Section. Depending on the nature and scope of the emergency each Section can have several branches, divisions, groups, or units.

Command Staff - These positions report directly to and are directly subordinate to the Incident Commander or EOC Director. They are the Public Information, Liaison and Safety Officers.

4.4 Water Utility Emergency Operations Center

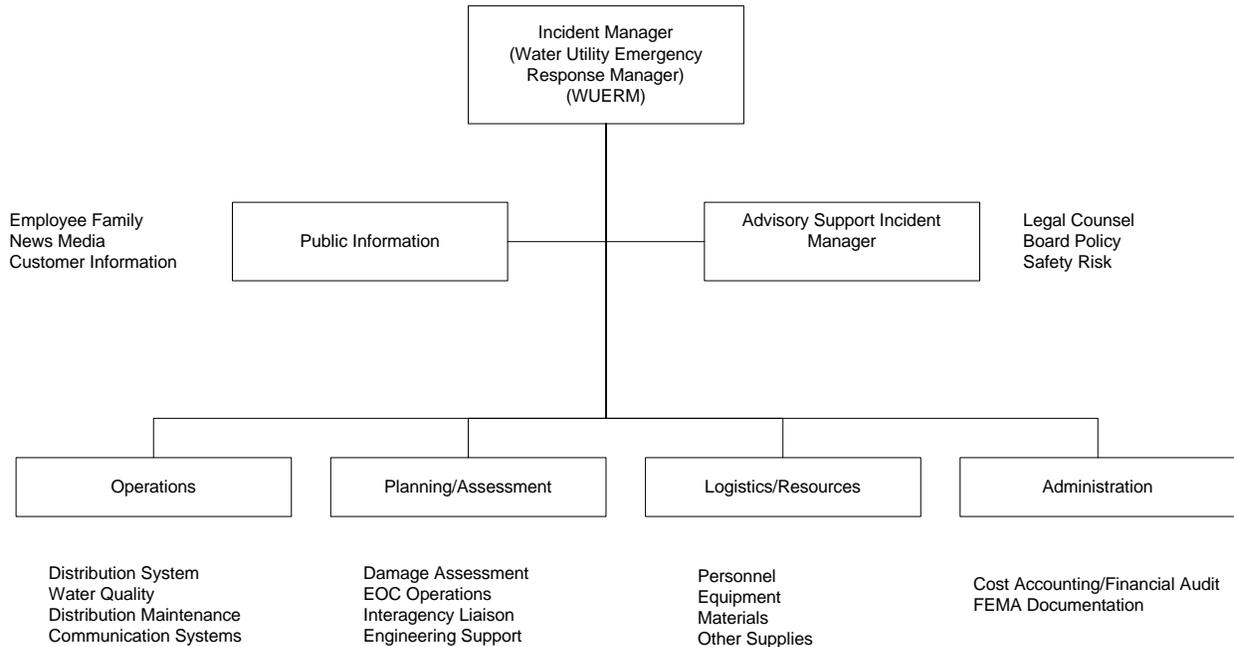
Depending on the Magnitude of the Incident, Water Utilities may have to establish an **Emergency Operations Center (EOC)** to manage its resources and coordinate with outside entities. An EOC is a physical location from which support for centralized emergency management can be performed. The essential functions necessary in the Water Utility EOC are described below:

- Establish an EOC Director to manage the Operations, Planning/Intelligence, Logistics, Finance/Administration Sections, and related sub-functions.
- Setting Priorities and developing Action Plans
- Coordination and support of all field level incident activities within the utility service area.
- Information gathering, processing, and reporting within the utility service area and to other levels of SEMS
- Coordination with local government, operational areas, or regional EOCs as appropriate.
- Requesting Resources from higher SEMS levels

Note: In general, at any level of activation, the Water Utility Emergency Response Manager (WUERM) should be aware of the following incident management principles:

- Establishing objectives and priorities for the incident
- Establish an Incident Action Plan (written or verbal)
- Awareness of his or her responsibility for the 5 primary functions of SEMS
- Management, Operations, Planning, Logistics and Finance/Administration
- Ensure an effective span of control (only supervise 5-7 staff directly on an incident)
- Delegate authority and activate organizational elements within an Incident Command Structure only as necessary
- Provide for personnel accountability and a safe environment for staff
- Ensure effective communications

Figure 4.1 Example of Small Water Utility Utilizing a SEMS Organization Chart

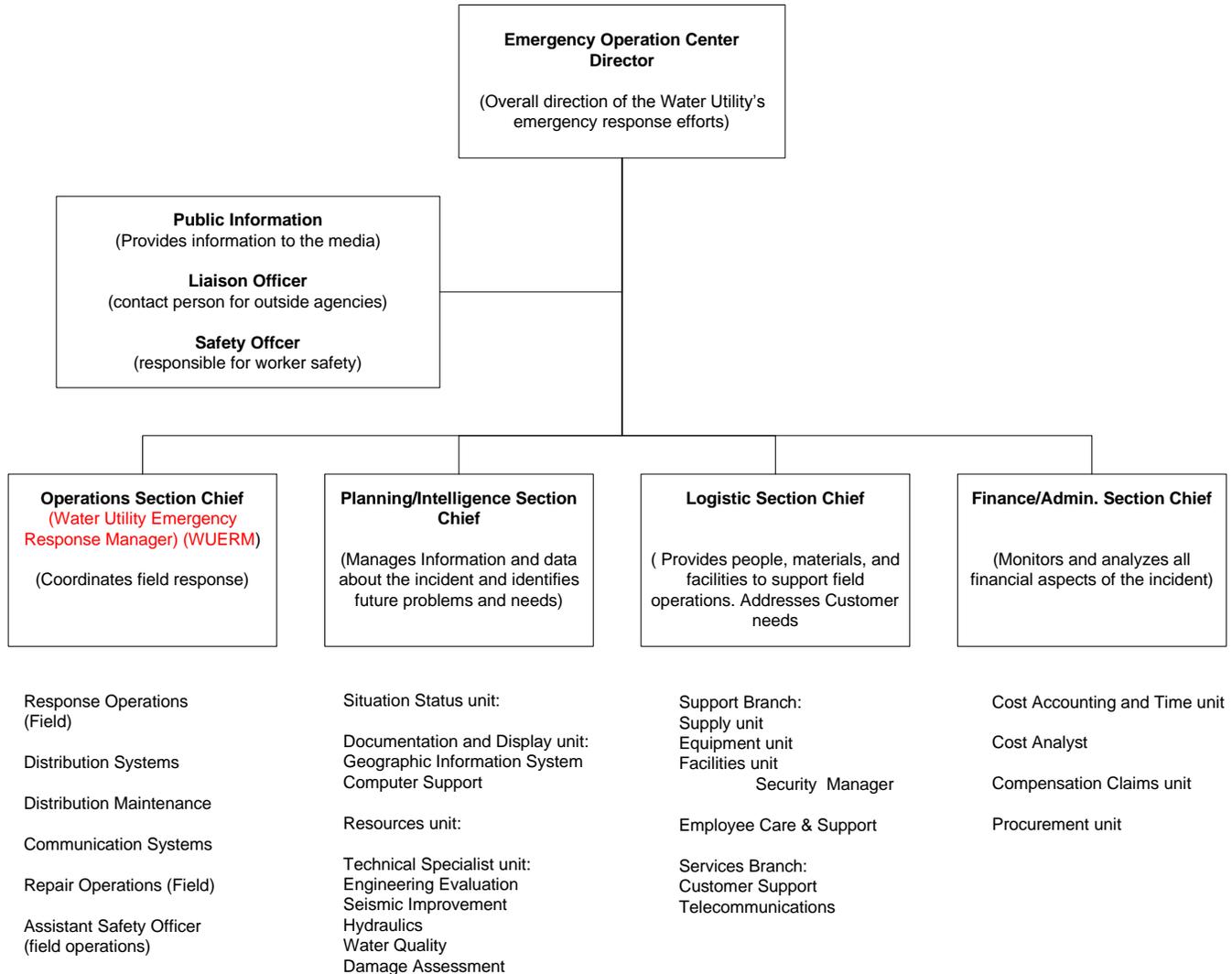


Section Leader Assignments

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

Figure 4.2 Example of a Large Utility Utilizing a SEMS Organizational Chart

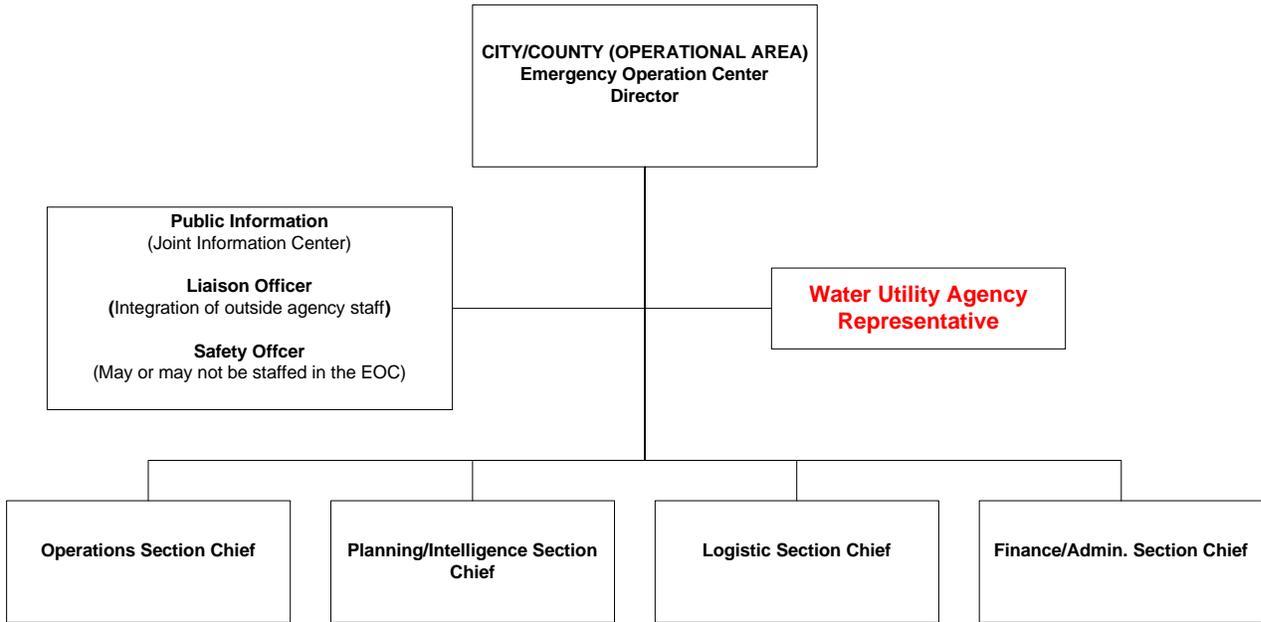
EXAMPLE OF A LARGE UTILITY UTILIZING A SEMS ORGANIZATIONAL CHART



Depending on the size and scope of the emergency, the **Water Utility Emergency Response Manager (WUERM)** may serve as the Emergency Operations Center Director until the position is delegated to a general manager or replacement for the duration of the incident.

Figure 4.3 Example of City/County (Operational Area) Emergency Operations Center with Water Utility Agency Representative.

EXAMPLE OF A CITY/COUNTY (OPERATIONAL AREA) EMERGENCY OPERATIONS CENTER WITH WATER UTILITY AGENCY REPRESENTATIVE



Fire & Rescue Branch
Coordinator

Law Enforcement Branch
Coordinator

Construction/Engineering Branch
Coordinator

Utilities Unit Leader
Damage/Safety Assessment
Unit Leader
Public Works Unit Leader

Medical & Health Branch
Coordinator

Care & Shelter Branch
Coordinator

Situation Analysis Unit Leader

Documentation Unit Leader

Advance Planning Unit Leader

Demobilization Unit Leader

Technical Services Unit Leader

Communications Unit Leader

Information Systems Unit Leader

Transportation Unit Leader

Personnel Unit Leader

Supply/Procurement Unit Leader

Facilities Unit Leader Resource

Time Keeping Unit Leader

Compensation and Claims
Unit Leader

Purchasing Unit Leader

Recovery Unit Leader

Water Utilities may be required to assign staff to the City or County (Operational Area) Emergency Operations Center (EOC) to coordinate with Public Health or any of the Sections that might need information or assistance. Typically, Water Utility Staff would report to the EOC as an **Agency Representative** and can move down, in the organization, to any of the sections as needed. Initially, the **Water Utility Agency Representative** would check in with the Liaison Officer, if one is not present, then he/she would report to the EOC Director.

Section 5 – CONCEPT OF OPERATIONS

The **concept of operations** is a description of the water utilities policies, procedures and plans to mitigate emergency incidents. The concept of operations should convey to the reader the flow of activities that will be implemented once the plan is activated. It should describe the following:

- Identify how priorities will be established
- The emergency response procedures that will be implemented under the plan
- The role of each designated unit within the Incident Management structure (EOC)
- How field activities will be integrated into the Incident Management structure (EOC)
- How supplemental resources will be requested or provided and how they will be integrated into the response
- Relationships and communication strategies with all the parties listed in section 2.1 including the media and the customers.

Section 6 – COMMUNICATION PROCEDURES

Good communication is vital to effective emergency response. When an emergency occurs-panic, confusion and fear start to take over and poor communication can quickly make the situation worse. Normal communication with wireless communication and system operation via SCADA systems may be out of service during an emergency or terrorist events. Back-up or alternative communication procedures should be evaluated and exercised.

During water system emergencies there are several agencies that need to be notified and consulted. Some notifications are initially made while other notifications are not made until later or depending on the emergency not at all. It is important for the utility to have a clear understanding of who from their agency makes the appropriate contacts to County, State or Federal Agencies.

6.1 Water System Chain-of-Command

First of all, the water system must identify the lines of authority or water system chain-of-command. A key element of the Incident Command System (ICS) is having a chain of command that identifies system personnel and their responsibilities in an emergency.

A lead person should be identified that will have the responsibility and authority for managing the utility's response to an emergency. Using the same terminology as EPA's Response Toolbox, this lead person may be referred to as the Water Utility Emergency Response Manager or WUERM. Larger utilities that may have several WUERMs involved in an emergency. Smaller systems, however, may only have one person who acts as WUERM, manager, and operator.

Below is a sample table that could be used to identify the Water System Chain of Command. This table may be modified by each water system to fit their staffing requirements. Sample responsibilities are listed in the table. Please modify the responsibilities for your water system staff as needed.

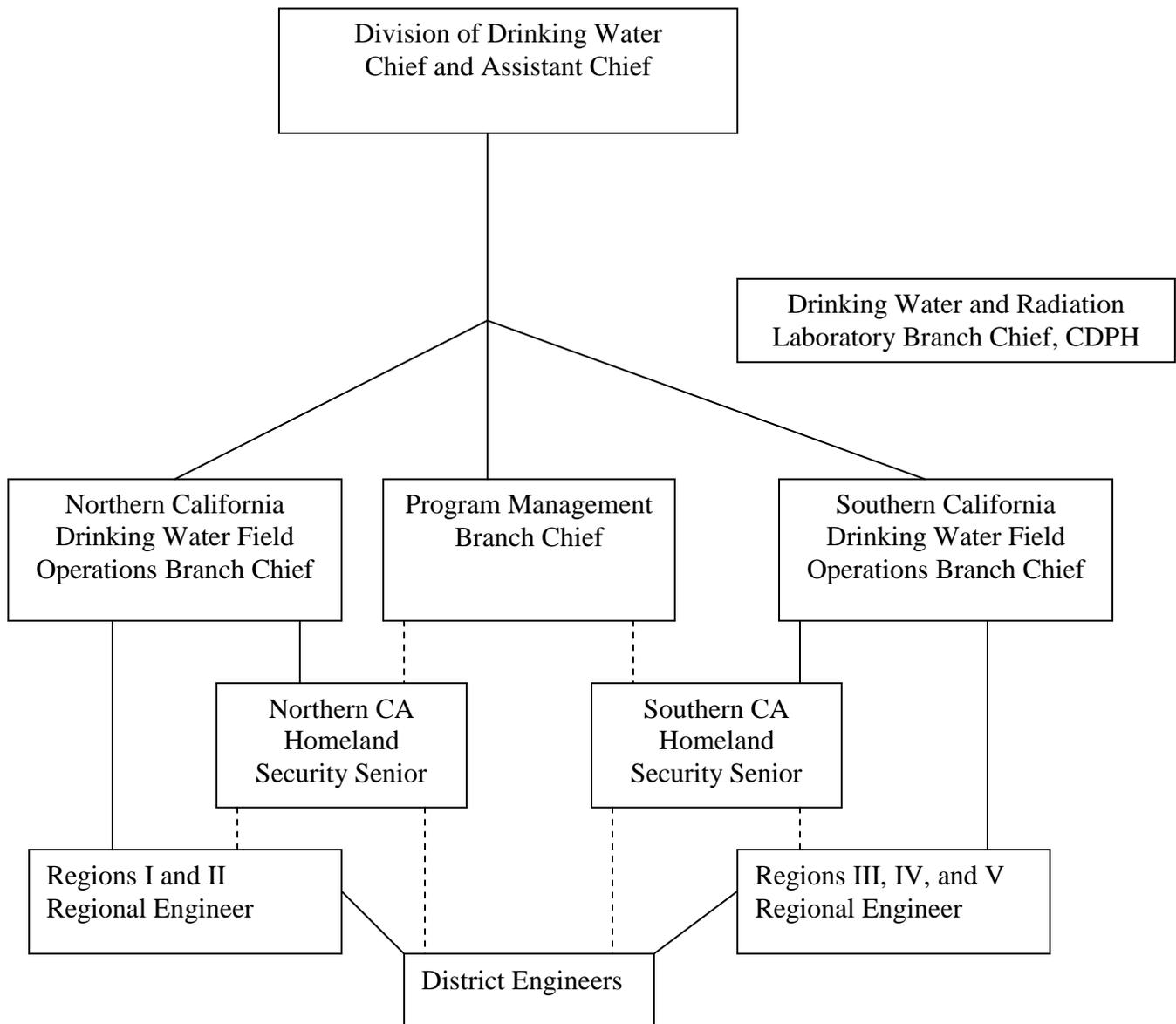
Table 6.1-“Example” Water System Chain of Command (Internal Notification)

Name and title	Responsibilities during an emergency	Contact numbers
John Doe Water System Manager WUERM	<ul style="list-style-type: none"> • Overall management and decision making for the water system. • WUERM is lead for managing the emergency and contacting the regulatory agencies. • WUERM contacts the public and news media • All communications to external parties are approved by the WUERM 	(XXX) XXX-XXXX Office (XXX) XXX-XXXX Cell (XXX) XXX-XXXX Pager (XXX) XXX-XXXX Home
Jane Smith Water System Operator	<ul style="list-style-type: none"> • In charge of operating the water system. • Performs inspections, maintenance, sampling of the system and relaying critical information to the WUERM. • Assess facilities, and provides recommendations to the WUERM. 	(XXX) XXX-XXXX Office (XXX) XXX-XXXX Cell (XXX) XXX-XXXX Home
Mark Jones Water Treatment Plant Operator	<ul style="list-style-type: none"> • In charge of running water treatment plant • Performs inspections, maintenance, sampling of the WTP and relaying critical information to the WUERM. • Assess WTP facilities and treatment provided and provides recommendations to the WUERM.. 	(XXX) XXX-XXXX Office (XXX) XXX-XXXX Cell (XXX) XXX-XXXX Home
Rick Rodriguez Water Quality Manager	<ul style="list-style-type: none"> • In charge of collecting samples, having samples analyzed by certified labs, receiving the results. • Determines the quality of the water being served meets all drinking water and public health requirements. 	(XXX) XXX-XXXX Office (XXX) XXX-XXXX Cell (XXX) XXX-XXXX Home
Beth Hunter Office Administrator	<ul style="list-style-type: none"> • Responsible for administrative functions in the office. • Receives customer phone calls and maintains a log of complaints and calls. • In an emergency , could provide a standard carefully pre-scripted message for customers who call with general questions. 	(XXX) XXX-XXXX Office (XXX) XXX-XXXX Cell (XXX) XXX-XXXX Home
Jack Taylor Field Staff	<ul style="list-style-type: none"> • Delivers water quality notices or door hangers • Provides backup to water system operator. • Conducts site inspections of all facilities. 	(XXX) XXX-XXXX Office (XXX) XXX-XXXX Cell (XXX) XXX-XXXX Home
Karen Conner Public Information Officer (PIO)	<ul style="list-style-type: none"> • Coordinate with all the other agencies PIOs. • Report and work with the joint information center (JIC) if more than one agency is involved. 	(XXX) XXX-XXXX Office (XXX) XXX-XXXX Cell (XXX) XXX-XXXX Home

6.2 Drinking Water Field Operations Branch - Chain of Command

The primary contact for the water system during any emergency is their District Engineer. Water Systems should contact their District Engineer in the event of any emergency. From the District Engineer, authority moves up the line to the Regional Engineer, Branch Chiefs, Assistant Division Chief, to finally the Chief of the Division. The following flow chart shows the chain of command structure within the State Water Resources Control Board, Division of Drinking Water. The SWRCB DDW website has a map showing all the contact information for each District Office and District Engineer.

http://www.waterboards.ca.gov/drinking_water/programs/documents/ddwem/DDWdistrictoffice_smap.pdf



6.3 External Notification Procedures

During an emergency it is important to contact and notify all the appropriate agencies and stakeholders that will be affected by the emergency. Some agencies will need to be notified immediately while others may be needed later in the incident, depending on the event. The following is a list of agencies and stakeholders that a water system should have updated contact information. Since this list has many contact names and phone numbers, this information should be reviewed annually to ensure that current information is provided.

The initial notification response to any emergency should be to “911” for the needed first responder and then to the SWRCB DDW. The SWRCB DDW is the Drinking Water Primacy Agency in California and has regulatory jurisdiction over all public water systems in the state.

Contact to the SWRCB-DDW should be to their District Engineer. If the water system is unable to contact the District Engineer (or one of their staff), the water system should use the California Office of Emergency Services (OES) Warning Center Phone Number: 1-800-852-7550, which is a 24/7 phone number. A second phone number for the OES Warning Center is 916-845-8911. A duty officer will answer the CA OES Warning Center phone call and refer to statewide emergency phone numbers. In order to assist the duty officer, it will expedite response if you request for the SWRCB DDW duty officer. The SWRCB DDW duty officer will then call management staff in the Drinking Water Program to respond to the emergency.

Initial Notifications

1. First Responders

911 - If the situation is an emergency that needs response from local fire, law enforcement, medical or hazardous materials team (HAZMAT), calling 911 should be the first immediate call.

Water system staff should be aware of where and how they are calling 911. If the water system staff call “911” from a cell phone, then the call is routed to the nearest California Highway Patrol Office, which may be in another city or county, and not in the immediate local 911 area. Typically a direct phone number for the local 911 can be provided to the water system-contact your local first responders to get this phone number for cell phones.

If a water system serves several cities or 911 areas, then the water system needs to obtain the 911 direct lines for each area they serve. The water system personnel should know the correct direct 911 phone numbers for the various areas in their service areas.

- a. **Local Police and Sheriffs** - Water systems should establish an ongoing relationship with the local police and sheriff offices that serve their service area. It is good practice to get them familiar with water system facilities. If they are called out to an

incident, they will then be familiar with some basic aspects of the water system. Water systems that have large service areas that cover several cities or large areas should have contacts for each police and sheriff agency in their service area.

- b. **Fire and Hazmat** - If the emergency incident involves an unknown substance and possible contamination of the water system, the first responders will more likely be the local fire department and/or HAZMAT team. Most Hazmat teams are part of the local fire department, but some may be special teams under county or city jurisdiction.

Like law enforcement agencies, water systems should know all the fire departments and/or HAZMAT teams that serve their service area and maintain contacts with those agencies. Contact your local county Office of Emergency Services to obtain the local HAZMAT teams that have jurisdiction in your area.

2. State of California Agencies

- a. Drinking Water Primacy Agency - The SWRCB DDW has regulatory jurisdiction for public water systems and should be one of the first agencies to be contacted in almost all emergency events. Contact should be to the District Engineer. In most emergency events, it is not appropriate to leave a message on the District Engineers voicemail. If the water system is not able to contact the District Engineer, they should call the State Warning Center 24/7 phone number as described in Section 6.3. The District Engineer will be able to assist the water system in:
- Inspections of water treatment plants, storage facilities, watersheds (chemical contamination, sewage spills, erosion, and drainage diversions).
 - Water Quality Sampling.
 - Consulting with water system staff/operators.
 - Providing technical assistance.
 - Documenting the disaster's effect on the water system through photographs and reports.
 - Keeping local officials advised of the current drinking water situation.
 - Review plans and specifications for reconstruction projects, and issue amended permits as needed.
 - Laboratory Sampling Analysis
- b. Depending the magnitude of the event, the following state agencies may also need to be contacted:
- i. Office of Emergency Services (OES) Warning Control Center.
 - ii. Department of Water Resources.
 - iii. Department of Fish and Game.
 - iv. Regional Water Quality Control Board.
 - v. Department of Toxic Substances Control.
 - vi. California Public Utilities Commission (if privately owned water system).

3. Federal Agencies

- a. **Federal Bureau of Investigation (FBI) - If the event is a known terrorist incident or a direct written or phone threat against the water system, the FBI is to be contacted as soon as possible.** There are four regional offices that have Key Asset Coordinators/Special Agents that should be contacted. The water system should report an emergency by calling the 24/7 phone numbers, which are listed below for each of the four regional offices in California. A link to the regional offices is also provided to allow water systems to check what region they should report an event.

San Francisco - (415) 553-7400	http://sanfrancisco.fbi.gov/
Los Angeles - (310) 477-6565	http://losangeles.fbi.gov/
Sacramento - (916) 481-9110	http://sacramento.fbi.gov/
San Diego - (858) 565-1255	http://sandiego.fbi.gov/

- b. USEPA - The US Environmental Protection Agency Drinking Water Program is not a direct response agency. US EPA, through its “Superfund Response Program” has emergency response resources for incidents related to environmental chemical releases. These resources are not “first response” resources and should be requested through the SEMS process.

4. Local County Health Department

- a. County Health Department- The County Public Health Officer is responsible for all public health issues within their county. They should be notified of any event that could affect public health within their county. **In the event of an emergency that will require financial and technical assistance through the CA Mutual Aide System, the County Public Health Officer will be one of the officials that can declare a “State of Emergency” and request assistance from the Regional and State OES.** The County Public Health Officer also will have access to disease surveillance data within the county. If you do not have the contact information of the current County Health Officer, contact your District Engineer.
- b. County Environmental Health Departments-Many County Environmental Health Departments have been delegated primacy for the small water systems serving less than 200 service connections within the county. The Environmental Health Departments have contacts with the CDPH as well as many county HAZMAT teams. If you do not have the contact information of the current County Director of Environmental Health Department, contact your District Engineer.

5. Local Agencies/Facilities

- a. County and State Offices of Emergency Services - The County and State Offices of Emergency Services (OES) provide support and coordination of resources during an emergency. Water systems should work with their County OES to establish requesting protocols for State OES resources utilizing SEMS. If additional or specialized resources are needed during an emergency, OES should be able to dispatch those resources to the emergency.

- b. Hospital and Critical Care Facilities - It is important to know location and contact information for all the critical care facilities and hospitals in your service area. An emergency or contamination event in the water system can effect the operations of these facilities.
- c. Customers - It is important that a water system be able to communicate with their customers. All means of communication need to be explored to effectively communicate with customers. The Water Quality Emergency Notification Plan (WQENP), as required under Section 116460, California Health and Safety Code, is a significant part of a water system plan to communicate with their customers. The WQENP should be included in the Appendix of the ERP. The WQENP is a standard form that contains specific information for the SWRCB District Engineer and the County. Contact your District Engineer for the current WQENP form.

SWRCB-DDW ERP Guidance

Table 6.2 - “Example” External Water System Contact List

Organization	Name	Contact numbers
Police, Fire, HAZMAT		Call - 911 (XXX) XXX-XXXX Direct
SWRCB District Engineer	District Engineer’s Name If can’t get a hold of “DE”, call the CA Warning Center’s 24/7 phone number and ask for the SWRCB Duty Officer. A SWRCB manger will be contacted and call the water system	(XXX) XXX-XXXX Office (XXX) XXX-XXXX Cell (XXX) XXX-XXXX Home (XXX) XXX-XXXX 24/7
FBI Regional Office	Name of Regional FBI Office	(XXX) XXX-XXXX 24/7
County Public Health Officer	Name of County Public Health Officer, M.D.	(XXX) XXX-XXXX Office (XXX) XXX-XXXX Cell (XXX) XXX-XXXX Home
County Director of Environmental Health Department	Name of Director of Environmental Health Department	(XXX) XXX-XXXX Office (XXX) XXX-XXXX Cell (XXX) XXX-XXXX Home
County OES	Contact Name	(XXX) XXX-XXXX 24/7
CA OES (State OES)	Warning Center (Ask for SWRCB Duty Officer-Drinking Water Program)	(800) 852-7550 24/7 (916) 845-8911 24/7
Regional WQ Control Board	Name of Regional Board	(XXX) XXX-XXXX 24/7
CA Dept. of Fish and Wildlife		(XXX) XXX-XXXX 24/7
CA PUC (if privately owned water system)		
WQ Laboratory		(XXX) XXX-XXXX 24/7

6.4 Public Notice Procedures

Public notice procedures should be developed before the disaster and not during the event. Public notices are a significant part of communicating with customers. Standard public notifications for a water outage/low pressure problems, Boil Water Notice (BWN), Unsafe Water Alert (UWA), Do Not Drink or Do Not Use Notices have been developed by SWRCB for use during an emergency. Each utility will need to modify the standard forms with specific contact information and guidance to customers depending on the nature of the emergency event. In addition, water systems need to have copies of public notices in the appropriate languages used in their service areas.

A BWN, UWA, Do Not Drink or Do Not Use Notice can be issued by one, or a combination of the following agencies:

- SWRCB – Division of Drinking Water (Designated personnel-District Engineer, Regional Engineer or Branch Chief).
- Local County Health Department (Designated personnel-County Health Officer or Director of Environmental Health Department for small water systems under county jurisdiction).
- Affected Water System (Designated personnel-responsible person in charge of the affected water system, i.e., Director of Water Quality, Manager, Director of Water Department, Director of Public Works, Owner, etc. The water systems ERP should identify the designated personnel in their ERP).

All public notifications (BWN, UWA Do Not Drink or Do Not Use Notices) should be coordinated with the SWRCB District Engineer, County Environmental Health Department and the County Health Officer prior to issuing a public notice. However, any one of the three agencies should act immediately to issue a BWN or UWA, if delays will jeopardize public health and safety. The SWRCB District Engineer or the water system must notify the County Health Department and the County Health Officer prior to or immediately after issuing a public notice. Notice must be given to a person, a message left on voicemail is not sufficient. Coordination of this notification should be identified in the ERP. Whenever a BWN/UWA has been issued, the SWRCB DDW also needs to notify two other CDPH Agencies - CDPH Food and Drug and CDPH Licensing and Certification. The SWRCB DDW District Engineer will notify the two CDPH agencies of the BWN/UWA issued.

The following standard public notices are provided in the Appendix of this report. The water system should provide a copy of these notices in their ERP Appendix.

Consumer Alert During Water Outages or Periods of Low Pressure – If a water system is experiencing power outages, water outages or low pressure problems, a consumer alert may be issued to the public. The notice provides consumers information on conserving water and how to treat the water with household bleach if the water quality is questionable.

Boil Water Notice (BWN) – A BWN should be issued when minimum bacteriological water quality standards cannot be reasonably assured. To assure public health protection a BWN should be issued as soon as it is concluded by the designated personnel that the water supply is or may be biologically unsafe. Examples of these situations include:

1. Biological contamination of water supply system, including but not limited to:
 - Positive total or fecal coliform bacteriological samples;
 - Prolonged water outages in areas of ruptured sewer and/or water mains;
 - Failed septic tank systems in close proximity to ruptured water mains;
 - Ruptured water treatment, storage, and/or distribution facilities in areas of known sewage spills
 - Known biological contamination;
 - Cross-connection contamination problems;
 - Illness attributed to water supply.
2. Unusual system characteristics, including but not limited to:
 - Prolonged loss of pressure;
 - Sudden loss of chlorine residual;
 - Severe discoloration and odor;
 - Inability to implement emergency chlorination.
3. Implemented due to treatment inadequacies.

Unsafe Water Alert (UWA)/“Do Not Drink” – In the event a water quality emergency due to known or suspected chemical (non-bacteriological) contamination to a water system a UWA or “Do Not Drink” should be issued. Water should not be used for drinking and cooking, but may be used for sanitation purposes. Examples of these situations include:

1. Known or suspected widespread chemical or hazardous contamination in water supply distribution, including but not limited to:
 - Ruptured water distribution system (storage tanks, mains) in area of known chemical spill coupled with loss of pressure;
 - Severe odor and discoloration;
 - Loss of chlorine residual;
 - Inability of existing water treatment process to neutralize chemical contaminants prior to entering the distribution system.
2. Threatened or suspected acts of sabotage confirmed by analytical results, including but not limited to:
 - Suspected contamination triggered by acts of sabotage or vandalism.
3. Emergency use of an unapproved source to provide a supplemental water supply.

Unsafe Water Alert (UWA)/“Do Not Use” – In the event a known or suspected contamination event to a water system, where the contaminate may be chemical, biological or radiological a UWA or “Do Not Use” should be issued. Water should not be used for drinking, cooking, or sanitation purposes. Examples of these situations include:

1. Known or suspected widespread chemical or hazardous contamination in water supply distribution, including but not limited to
 - Terrorist contamination event.

The public information officer for a water system needs to be assigned before an emergency occurs. The water system public information officer (PIO) will need to coordinate with all the other agencies PIOs. If more than one agency is involved in an emergency, a joint information center (JIC) will probably be established. **If a BWN or UWA is issued, the water system should notify the PIOs in the EOC immediately.**

Media Notification - Dealing with and notifying the media is one of the most significant communication tasks. Any dealing with the media during an emergency should come from one unified source-typically from the EOC. If more than one source communicates with the media, there will be conflicting information that will give the appearance all the agencies involved in the emergency do not know what they are doing. The media is a good way to communicate with water system customers. Boil Water Notices, Unsafe Water Alerts, and other public notices can be distributed through the media. Again this is only effective if the information is coordinated through one source (the JIC) and one message is delivered to the public.

6.5 Cancellation of Public Notification

Once a BWN/UWA is issued, the only agency that can rescind the public notice is the drinking water primacy agency. SWRCB DDW will not lift the BWN until two rounds, collected one day apart, of coliform bacteria samples have been analyzed and the results are negative. The two sets of sample results should be faxed to the SWRCB DDW District Office for final approval before rescinding the BWN. **Special chemical sampling will be required to rescind an UWA, please contact the SWRCB DDW District Office to determine required sampling.**

6.6 Water Quality Sampling

NOTE: Laboratory protocols and procedures identified in Section 6.6 are still under development by Federal and State Agencies. This section will continue to evolve and updates will be provided as necessary.

During an emergency, there are several types of water quality sampling that may need to be analyzed depending on the actual event. If it is natural disaster, flood or power outage, sampling will probably only include bacteriological samples, turbidity and chlorine residual samples if the system is chlorinated. However, if the event is a terrorist act or contamination event, the sampling will include a full scan of Weapons of Mass Destruction (WMD) chemical, radiological and microbiological (unless the actual contaminant used is known).

Laboratory Resources

In general there are four different types or ownership of laboratory facilities in California that can analyze drinking water samples, which are listed below:

1. Commercial/private laboratories
2. County Public Health Laboratories
3. State Department of Public Health Laboratories
4. Research Facility/Specialty Laboratories

In general, laboratories are grouped into two broad categories – chemical or biological. Chemical laboratories include: general environmental chemistry laboratories, radiological laboratories, and specialty laboratories that may be able to handle and analyze exotic contaminants, such as chemical weapons and radionuclides. Biological laboratories include: environmental microbiology laboratories and the Laboratory Response Network (LRN) that typically analyze clinical samples for pathogens and select biotoxins.

CDPH Laboratory

The CDPH Drinking Water and Radiation Laboratory (DWRL) is organized within the CDPH. DWRL is the State’s primary drinking water quality testing laboratory and is the only State laboratory capable of measuring environmental radiation. Its primary mission is to provide analytical services, reference measurements and technical support pertaining to the State’s Drinking Water and Radiologic Health Programs.

DWRL is located in Richmond, California and performs microbiological, inorganic and organic testing in various water matrices, carries out inorganic and organic analyses in water, and radiochemical testing in various environmental matrices in addition to water. The DWRL in conjunction with the CDPH Microbial Disease Laboratory (MDL) does microbiological analyses including biotoxins.

California Mutual Aid Laboratory Network (CAMAL Net)

The CDPH DWRL, in conjunction with the water utilities, USEPA Region IX laboratory in Richmond, Lawrence Livermore National Laboratory, and the California Department of Water Resources, have formed a laboratory network, CAMAL Net, to address laboratory capacity issues associated with possible drinking water related contamination events. CAMAL Net establishes a triage system to process samples when water systems or commercial laboratory methods are not available or the water system lacks capacity within their own lab. **The CAMAL Net system will not handle any samples where field screening indicates that the sample may contain a CDC listed WMD agent.** The list of WMD agents can be found on the Centers for Disease Control and Prevention webpage at <http://www.bt.cdc.gov/>. **Any request for analysis through the CAMAL Net system needs to be approved by the SWRCB DDW District Engineer in your jurisdiction prior to collection of water quality samples to be processed.**

Chemical Analysis Classification

The SWRCB along with its stakeholders and federal partners developed an algorithm to assist California water systems, public health agencies, law enforcement, and first responders with the identification of possible chemical agents in drinking water contamination events. A draft final version has been developed and is an appendix to this document.

Biological Analysis Classification

The LRN for Bioterrorism has ranked laboratories (Level A, B, C or D) based on the type of safety procedures they practice.

- Level A Lab uses a Class II biosafety (BSL) cabinet
 - Level B Lab is a BSL-2 facility + BSL-3 safety practices
 - Level C Lab is a BSL-3 facility
 - Level D Lab is a BSL-4 facility
-
- Level A Labs are used to rule out and forward organisms.
 - Level B Labs are used for limited confirmation and transport.
 - Level C Labs are used for molecular assays and reference capacity.
 - Level D Labs are used for the highest level of characterization.

In California there are: 28 Level A labs, 10 Level B labs, 2 Level C labs. The two Level C laboratories are the LA County Public Health Laboratory, Los Angeles, CA and the CDPH MDL in Richmond, CA. Lawrence Livermore National Laboratory is also a Level C laboratory, but access to them is restricted. The only Level D laboratories available in the LRN are the national laboratories, such as those at the Center for Disease Control and Prevention (CDC) and the Department of Defense. These laboratories test and characterize samples that pose challenges beyond the capabilities of the Level A, B, and C reference labs, and provide support for other LRN members during a serious outbreak or terrorist event. The most dangerous or perplexing pathogens are handled only at the Bio-Safety Level 4 laboratories at CDC and the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID).

Natural Disaster

During a natural disaster, flood, earthquake, fire etc., sample collection and analysis will be available to the water system by their normal laboratory resources. Sampling will primarily consist of regulatory bacteriological samples and turbidity to show that the system has been flushed out. The water system may also be collecting chlorine residual samples throughout the system with a field chlorine test kit.

Terrorist Event/Contamination Event

Once a threat warning has occurred and the utility has deemed the threat confirmed, it will be necessary to collect water quality samples. The decisions made from the time of the threat warning to the time the threat is confirmed is specific to each individual event. This “credibility stage” as referred to in the EPA Response Toolbox may take the utility between 2 – 8 hours and should involve consultation with local first responders, SWRCB DDW (Drinking Water Primacy Agency), local Health Department and regional FBI office.

Assuming the threat is confirmed and credible enough to warrant water quality sampling, several state and federal agencies are involved to collect samples, transport the samples to appropriate laboratory and analyze the samples. **The water system’s first step in this process is to contact**

the SWRCB-District Engineer so they can notify the CDPH-DWRL of the incoming samples. The following steps are described in more detail below:

- Emergency Water Quality Sampling Kit (EWQSK)
- Sample Collection
- Laboratory Required for Analysis
- Sample Transport
- Sample Analysis

Emergency Water Quality Sampling Kit – contains sample bottles need for chemical, radiological and microbiological analysis (that could be split into 3 complete sample sets). The original sample kit was developed by Metropolitan Water Department to be used during a terrorist or contamination event. EPA reviewed the sample kit and provided a list of the sample bottles in the EPA Toolbox. The California Mutual Aid Laboratory Network (CAMAL Net) has also reviewed this kit and made some minor changes that will allow water quality samples to be collected under all conditions. The CAMAL Net version of the sample kit has been finalized for deployment. This kit will continue to evolve as the US EPA develops sampling protocols for these new constituents in drinking water. A complete list of the CAMAL Net version of the EWQSK is provided in the Appendix. The estimated cost of one kit is approximately \$200. The EWQSK should remain sealed before the sample is collected. **Since some of the sample bottles contain reagents that expire, the bottles in each kit should be replaced annually.**

SWRCB-DDW purchased the supplies to create enough EWQSK to supply 3 in each DDW District Office. If water systems do not want to purchase and maintain their own kits, then the DDW will provide one of these kits in the event of an emergency. **Requests for these kits should be made to the District Engineer when the water system reports the incident. Travel time from the District Office to the water system should be incorporated in the water system's emergency response plan.**

Sample Collection – Several types of samples may need to be collected depending on the event. The FBI will collect samples for the crime scene investigation. The water system needs to collect samples for public health to determine if the water is safe for consumption using the EWQSK for public health. The Department does not recommend that water system staff collect samples for the EWQSK due to liability issues. Several responding agencies are available for EWQSK sample collection – local HAZMAT, FBI, California National Guard Civilian Support Team (CST) or USEPA. Each agency has the proper personal protection material to minimize exposure to any possible agent. In addition, each agency has field screening kits that will provide a preliminary screen for several WMD agents that will help identify the required laboratory resources needed.

Laboratory – Depending on the results of the field screening and actual event, the required laboratories need to be notified and prepared to accept the samples. If an EWQSK (supplied by water system or SWRCB DDW) is used, the CAMAL Net and the LRN need to be notified and involved in the process for laboratory selection. The first step in this process is for the District Engineer working with the water system to contact SRL.

Sample Transport – Depending on the responding agencies, field screening, the ICS will decide how the samples will be transported to the appropriate lab. Since the samples may be used for the crime investigation, proper chain-of-custody must be maintained. The possible agencies and field screening, depending on the event, are: local HAZMAT, CHP, FBI, CST, or US EPA.

Sample Analysis – Once the samples are delivered to the appropriate laboratory, they may be split for analysis to different laboratories. The transport and laboratory testing protocols will be handled by the CDPH DWRL laboratory. Sample results will be shared through the ICS. Please note that sample analysis may take days to weeks to complete depending on the complexity of analysis.

Section 7 – RESTORATION AND RECOVERY

7.1 Restoration and Recovery

A Restoration and Recovery plan will need to be developed in preparing for any emergency. Some of the key elements of this plan/section should include the following:

1. Return to Service
 - a. Level of quality of return
 - b. Criteria
2. Treatment Options
 - a. Technologies applicable
 - b. Change in existing treatment
 - c. On-site treatment options
 - d. Monitoring
 - e. Staff safety
 - f. Human and environmental impacts
3. Disposal Options
 - a. Human and environmental impacts
 - b. Pretreatment requirements
 - i. Technologies
 - ii. Equipment and supplies
 - iii. Personnel
 - iv. Power requirements
 - c. Approval/Permitting Requirements
4. Rehabilitation Options
 - a. Simple flushing
 - b. Cleaning
 - c. Disinfecting
 - d. Swabbing or pigging
 - e. Sandblasting
 - f. Relining
 - g. None- replacement
 - h. Disposal
 - i. Monitoring and analysis
5. Public Information
 - a. Information on progress to reduce panic
 - b. May be difficult if threat still exists

The CA OES “Emergency Planning Guidance, Public and Private Water Utilities”, Section 12 is a good reference for restoration and recovery. The following excerpt was taken from the "Emergency Planning Guidance for Public and Private Utilities", March 1999. The entire document can be found on the Governor's Office of Emergency Services Website at: http://www.caloes.ca.gov/PlanningandPreparedness/Documents/H2o_.pdf.

The recovery process begins during the response phase. It is important to start damage inspections, reporting, and recordkeeping as soon as the plan is activated. The items below may assist the water utility in recovery activities.

Initial Recovery Activities

- Designate a disaster recovery coordinator (may or may not be EOC director) and notify all appropriate regulatory agencies.
- Complete detailed evaluations of all affected water utility 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 untag 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 water utility.
- 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.
- 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. Complete reports within six months of the event (90 days for public utilities which are part of a city or county government.).
- Identify recommendations

Long Term Recovery Activities

- Initiate permanent reconstruction of damaged water utility facilities and systems.
- Restore water utility operations and services to full pre-event levels.
- Continue to maintain liaison as needed with external agencies.

Assistance Programs - The State of California Office of Emergency Services administers several programs designed to assist victims of a disaster. They include Public Assistance, Individual Assistance, and Hazard Mitigation Public Assistance (PA) administers state disaster relief programs under the Natural Disaster Assistance Act, and federal disaster assistance programs under various federal laws and regulations, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-288 as amended), the Code of Federal Regulations (CFR), and the State Administrative Manual. These regulations designate the State of California as “grantee” for all federal public assistance funding available to agencies of state government, local governments, and certain private non-profit organizations that provide essential services of a governmental nature to the general public, including water utilities. As

grantee, the state is responsible for the processing of sub-grants to public assistance applicants in accordance with 44 CFR, parts 13, 14, and 206, and its own policies procedures. PA works closely with the Federal Emergency Management Agency to process Damage Survey Reports. It dispatches inspection teams and conducts applicant briefings. This unit is led by OES, with support drawn from other state agencies. Under the Public Assistance Program, public and private non-profit water utilities may be eligible for public assistance to reimburse the work and associated costs of responding to and recovering from a disaster if the costs:

- Are a direct result of the declared event and not a pre-disaster condition or result of some other event;
- Are located within the area designated by FEMA as eligible for assistance;
- Are the legal responsibility of the eligible applicant; and
- Are not eligible for assistance under another federal program (this applies to permanent restoration work only).

Individual Assistance - Individual Assistance (IA) performs a wide variety of functions and involves many state agencies to ensure individual, family, business, and farm recovery from disasters. Private, for profit water utilities may be eligible for disaster assistance in the form of low interest loans or grants to restore damaged structures, or replace inventories. Individual Assistance of this type is generally made available to private businesses when the ability to continue operations is terminated or impaired by a disaster. In addition, employees of a water utility may be eligible for disaster assistance in the form of funds for temporary housing, individual and family grants to meet disaster-related expenses, and loans to individuals for repair or replacement of real and personal property.

Hazard Mitigation - Following a presidential disaster declaration, the Hazard Mitigation Grant Program is activated. The program's purpose is to fund projects which are cost-effective and which substantially reduce the risk of future damage, hardship, loss, or suffering from a major natural disaster. Virtually all types of hazard mitigation projects are eligible provided they benefit the declared disaster area and meet basic project eligibility requirements. Types of eligible projects will be identified from those mitigation measures identified in the State Hazard Mitigation Plan, hazard mitigation team reports, and issues unique to the disaster event. The priorities of funding will be established and the program administered by OES.

Expenditure Documentation - One of the critical aspects of any major emergency or disaster is collecting information on the costs related to response and recovery. The ability of the utility to recover costs or receive disaster assistance from the state and federal governments is predicated on its eligibility and ability to document its costs.

Section 8 – EMERGENCY RESPONSE TRAINING

8.1 Recommended Training

Training provides the means for staff involved in a response to acquire the skills necessary for them to fulfill their role during an emergency. Not only is training on the water utility's emergency response plan critical for effective implementation, individual training to perform certain functions expected in the plan is just as important. It is important for Water Utility management to create a training policy that emphasizes plan implementation, emergency management, and employee health and safety. The training policy can be an independent policy or part of an overall emergency preparedness policy for the utility. Individual roles established in the emergency response plan should dictate the type and level of training that is necessary.

The OES document "Emergency Planning Guidance for Public and Private Utilities", March 1999, has information on emergency management training. A table from this document is provided in the Appendix. The California Specialized Training Institute (CSTI) has a contract with OES to provide SEMS and emergency response training. A list of the current classes offered by CSTI is provided on the OES webpage at:

<http://www.caloes.ca.gov/CSTI/Pages/CSTI.aspx>.

It should also be noted that for field staff, Title 8, Division 1, Article 109, Section 5192 of the California Health and Safety Code has specific training requirements for staff that may work in potentially hazardous environments.

8.2 Recommended Exercises and Drills

The water system's training program should also include routine training drills, tabletop exercises and possibly functional exercises, depending on the utilities resources. Simple tabletop exercises could be developed and exercised with little or no cost to the utility. The water system should include all the key players in the training exercises so everyone is familiar with emergency policies and procedures. Review the lessons learned after an exercise and modify the ERP or notification lists as necessary.

Section 9 – SAMPLE ERP FORMAT

9.1 Recommended ERP Format

In order to assist public water systems in developing or updating their Emergency Response Plans, the SWRCB DDW has developed a general ERP outline. While it is not required to follow this outline, the SWRCB DDW is continuously asked to provide a recommended outline. A recommended ERP outline is provided below.

- Section 1 – Introduction
- Section 2 – Emergency Planning Process
- Section 3 – Water System Information
- Section 4 – SEMS/ICS Integration and Organization
- Section 5 – Concept of Operations
- Section 6 – Communication Procedures
- Section 7 – Restoration and Recovery
- Section 8 – Emergency Response Training

APPENDIX

- Maps of treatment plants, sources, distribution system and service area
- Emergency Notification Plan
- Public Notices (Boil Water Notice, Unsafe Water Alert or Consumer Alert for Water Outages)

DEFINITIONS AND ACRONYMS

The definitions provided below are specific to California Emergency Response Plan Guidelines, however, the SWRCB DDW has tried to coordinate terminology with standards used nationally. Where possible, definitions were provided by the USEPA.

Agency Representative - is 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.

Bioterrorism Act: Public Law 107-188 – the Public Health Security and Bioterrorism Preparedness and Response Act of 2002.

Civil Support Team (CST): California National Guard Civilian Support Team. Two are located in California- 95th CST in Alameda, CA and the 9th CST in Los Alamitos, CA.

SWRCB DDW: State Water Resources Control Board Division of Drinking Water has regulatory jurisdiction of all public drinking water systems in California.

CAMAL Net: California Mutual Aid Laboratory Network.

Chain of Command: Lines of Authority for an agency.

District Engineer: Each public water system has a SWRCB DDW Senior Engineer assigned regulatory authority.

Drinking Water Primacy Agency: The Agency that has primary enforcement responsibility for national drinking water standards, namely the Safe Drinking Water Act as amended. In California, the State Water Resources Control Board (SWRCB), Division of Drinking Water (DDW) is the Drinking Water Primacy Agency for all public water systems serving over 200 service connections. For systems under 200 service connections, drinking water primacy may have been delegated by SWRCB to the respective County Health or County Environmental Health Department. However, some counties in California have chosen not to regulate public water systems and the SWRCB DDW is the Drinking Water Primacy Agency for all public water systems in those respective counties.

Emergency Operations Center (EOC): Typically, 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 water system that describes the actions that the water system would take in the event of a natural disaster, contamination event or terrorist activity.

Water Quality Emergency Notification Plan (WQENP): A two page document that lists the emergency contact phone numbers for the water system personnel and SWRCB personnel. The WQENP also has a description of the public notification methods for the water system.

Emergency Water Quality Sampling Kit (EWQSK): During a credible threat, a water quality sampling kit to be used that contains sample bottles for chemical, radiological and microbiological analysis.

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, environment and/or property. In California, the minimum standards and types, for these teams, are discussed in the "Fire Service - Field Operations Guide (ICS-420-1)" manual.

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.

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

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.

Public Information Officer (PIO): 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 Public Information Officer per incident.

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.

Office of Emergency Services (OES): The Governor's Office of Emergency Services coordinates overall state agency response to major disasters in support of local government. The office is responsible for assuring the state's readiness to respond to and recover from natural, manmade, and war-caused emergencies, and for assisting local governments in their emergency preparedness, response and recovery efforts.

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.

Standardized Emergency Management System (SEMS): The Standardized Emergency Management System (SEMS) is the system required by Government Code §8607(a) for managing response to multi-agency and multijurisdiction emergencies in California.

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 that a harmful incident, such as contamination of the drinking water supply may have occurred. The threat may be direct, such as verbal or written threat, or circumstantial, such as a security breach or unusual water quality.

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 a contamination 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.

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.

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

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

APPENDIX

- Appendix A - Chain of Command (Word)
- Appendix B - Contact List (Word)
- Appendix C - Water Outage Public Notice (Word)
- Appendix D - Boil Water Notice in English (Word)
- Appendix D - Boil Water Notice in Spanish (Word)
- Appendix E - Do Not Drink Notice (Word)
- Appendix E - Do Not Use Notice (Word)
- Appendix F - Statewide Emergency Notification Plan (Word)
- Appendix G - DDW Emergency Water Quality Sampling Kit List (PDF)
- Appendix H - Recommended Emergency Response Training (Word)
- Appendix I - USEPA Threat Guide Recommendations (dated, but still useful) (PDF)
- Addendum - Boil Water Notice Cancellation (in English and Spanish) (Word)