PUBLIC WATER SYSTEM EMERGENCY RESPONSE PLAN
INTRODUCTION TO THE MODEL PLAN

Why should a public water system have an Emergency Response Plan?

In addition to the regulatory requirements, there are a number of reasons including the following:

- The plan prepares the water system for all kinds of emergencies – natural disasters, man-made events, and terrorist activities.
- The plan gives specific instructions about who to call if there is an emergency situation that may affect the water system.
- The plan helps you develop procedures for responding to events that affect the drinking water, such as a contaminated water source or reservoir.
- The emergency response plan addresses security measures for the water system.
- The plan organizes a number of important management and operations procedures into one document.

How is an emergency response plan incorporated into water system operations?

The emergency response plan should be an integral part of the water system routine operations. For example, water system security is an ongoing plan element that should include daily inspection of the system's facilities, a procedure that could be done along with other tasks. When the operator checks the stock of regular supplies, the operator should include an inventory of emergency supplies and equipment. Also, ongoing training of water system staff should cover the actions outlined in the emergency response plan.

Keep the emergency response plan active. Update the plan at least annually (especially contact information), and replace outdated copies of the plan immediately. Consider putting the emergency response plan on the computer – it can be easily updated and the current version shared with staff.

About this model emergency response plan…

This model emergency response plan is designed to provide the operator of a public water system with the basic information and tools to develop a plan specifically for the water system. The plan includes information that the US Environmental Protection Agency, Centers for Disease Control and Prevention, National Rural Water Association, Association of State Drinking Water Administrators, Oregon Department of Human Services Drinking Water Program, and various water utilities.

All the contact information and procedures in this model plan are important elements and should be included in the water system emergency response plan. If the current emergency response plan for your water system lacks any of these elements, please amend the emergency response plan to include them. Please feel free to organize the plan to best suit your needs.

How to use this Emergency Response Plan Packet

This model emergency response plan is organized into the following sections:

Section 1. Communications and Authority – who to call to report an emergency event, authority and responsibilities of water system personnel, notifying agencies, users, and the media.

Section 2. Water System Security – ongoing measures to safeguard the water system.

Section 3. Annual Water System Hazard Review – identifying and assessing the hazards that could affect the water system.

Section 4. Emergency Equipment and Water Supplies – providing safe drinking water after a natural disaster or intentional harm to the water system

Section 5. Emergency Response Procedures – control the impact of disasters by isolating areas of the water system from contamination, disinfecting the water system, and providing notice to affected users.

Each section consists of:

- A check-sheet that provides a guide through the each section. The check-sheet enables you to record each completed task by checking the appropriate box.
- A narrative explaining the "what and the why" for the material in that section.
- Tools to help you complete the critical components of that section.

Each section of the plan is "self-contained" – one section can be completed at a time by using the checklist, narrative, and tools in that section. The following sections should be completed immediately:

Section 1. Communications and Authority
Section 2. Water System Security

Please complete the emergency response plan by proceeding with Sections 3-5 as soon as possible. Since each section is "self-contained", you may choose to assign sections to other water system staff. Only those staff that will be trained in the water system security program should work on the water system security section.

It is recommended that the emergency response plan be placed in a three-ring binder or notebook, with tabs, to organize and store it along with related materials.

If an emergency event affects the water system, the regulatory agency will be working with you to safeguard the water supply and return the water system to normal operation as soon as possible.

It is essential that the following components of the emergency response plan be completed:

- Section 1 – Communications and Authority Check-sheet
- Tool 1A – Emergency Phone Numbers
- Tool 1B – Authority and Responsibility Form
- Tool 1C – Emergency Contacts List
- Section 2 – Water System Security Check-sheet
- Section 3 – Annual System Hazard Review Check-sheet
- Tool 3A – Annual System Hazard Review Form
- Section 4 – Emergency Equipment and Water Supplies Check-sheet
- Section 5 – Emergency Response Procedures Check-sheet

When the emergency response plan for your water system has been completed, please send a notice to the Drinking Water Program that the emergency response plan has been completed as required.

Also, please be prepared to review the emergency response plan with the local health department staff or Drinking Water Program staff during periodic sanitary surveys or other site visits.

Section 1 – Communications and Authority

Check-sheet

Part 1A Who to Call in an Emergency

- Read the narrative for Part 1A "Who to Call in an Emergency".
- Complete Tool 1A –Emergency Phone Numbers ❑
- Post at the following locations: Office ❑ Pump room ❑ Treatment Facility ❑
  Other _____ ❑
  Provide one copy in each vehicle ❑
  Place a copy in Emergency Response Plan notebook ❑

Part 1B Water System Authority and Responsibility

- Read the narrative for Part 1B "Water System Authority and Responsibility".
- Complete Tool 1B -- Authority and Responsibility Form for each water system management and staff person ❑
- Provide each person with a copy of each form ❑
- Place a set of copies in the Emergency Response Plan notebook ❑

Part 1C Emergency Contacts

- Read the narrative for Part 1C "Emergency Contacts".
- Complete Tool 1C "Emergency Contacts List". In the Water System Chain of Command, the person in charge of the system should be at the top of the list, the next person in line as number two, and so on. Please ensure that you list the names and numbers of vendors for critical equipment and supplies. ❑
- Post at the following locations: Office ❑ Pump room ❑ Treatment Facility ❑
  Other _____ ❑
  Provide one copy in each vehicle ❑
  Place a copy in the Emergency Response Plan notebook ❑

Section 1 – Communications and Authority

Narrative

Part 1A Who to Call in an Emergency

Events requiring an immediate response by the police or fire departments may involve public water systems and pose a threat to the quality or quantity of drinking water. Examples of events of this kind include a chemical spill near a water source or a fire in a pump house. In these cases, **the person(s) observing the event should call 9-1-1 any time day or night**.

Other events not requiring an immediate response by the police or fire departments could affect public drinking water. Examples of these events are suspected water-borne disease outbreaks or disruptions of water system treatment/supply due to equipment failure. **Whether or not the event requires an immediate response by the fire or police departments, if there is a known or suspected threat to a public water system, the person observing the event should contact the emergency phone numbers as soon as possible after contacting any emergency services.**

If the caller cannot contact any of the emergency phone numbers, the caller should contact the Oregon Department of Human Services, Drinking Water Program:

Oregon Dept. of Human Services – Drinking Water Program (971) 673-0405
(8:00 am to 5:00 pm, Monday through Friday)

To contact the Oregon Dept. of Human Services – Drinking Water Program after normal business hours or on weekends and holidays, call the following emergency number:

Oregon Emergency Response System (800) 452-0311

The Oregon Emergency Response System staff will contact the appropriate Drinking Water Program personnel.

The person observing the event should be prepared to give the following information when they call:

A. The name, address, phone number, and present location of the person(s) observing the event.
B. Type of incident (i.e., toxic spill, radiological incident, ruptured main, interruption of treatment, or other emergency disruption of a public water supply.), substance spilled (if spill), magnitude of incident, and number of injured or contaminated persons.
C. The exact location of the incident.
D. The time frame between the incident and the point when it was recognized.
E. The date of the incident.
F. The recognized or perceived threat to the water system and/or user.

Contacting the emergency phone numbers or the Drinking Water Program as soon as possible is critical because technical assistance to protect your drinking water can be provided until the situation returns to normal.

Part 1B Water System Authority and Responsibility

Many public water systems have more than one operator, and in some cases there is a chain of command for the water system staff. The emergency response plan should be clear about each operator/staff person authority and responsibilities in an emergency. The plan should include:

- Emergency response actions each staff member can perform independently. For example, the plan states that the staff person on duty has the authority to shut off water from the source if notified of real or potential contamination affecting the source.

- Emergency response actions requiring approval from a supervisor. For instance, if a chemical spill contaminates the source, the water system supervisor may want to make the decision regarding resuming normal operation of the system. The plan should clearly state that only the supervisor has the authority to make this decision.

Lines of authority and responsibility are not limited to municipal water systems with full-time staff. For example, in some water systems serving mobile home parks, the manager on site and the park owner both participate in operating the water system. In these situations as well, the emergency response plan should clearly define the decision-making responsibility for each person.

Operators and staff members will need to contact each other quickly in an emergency. Therefore, key personnel should have access to critical phone and pager numbers both on and off duty. Remember to keep these numbers up to date.

Part 1C Emergency Contacts

The person in charge of the water system is responsible for designating a spokesperson and notifying:

1. Water System Users: Water system operators should have a complete and current list of all users' names, addresses, and phone numbers in their emergency response plans so that users can be contacted as quickly as possible. Likewise, each user should have the name, address, and phone number of the operator(s). There should be one "spokesperson" for the water system so that messages are communicated clearly and consistently.

2. Regulatory Agencies: Emergency response plans should clearly state how to contact the appropriate public water system regulatory agency. This is an especially important for persons who do not usually operate the system and are relying on the plan to guide them through an emergency situation. See the emergency phone numbers list for the phone number, contact names, and alternate contact information.

3. The Media: Notifying customers through newspaper, radio, or television announcements may, in some cases, be the most efficient means of communication. The emergency response plan should include basic information for contacting the media, including phone numbers and contact persons.

1A-Emergency Phone Numbers

FOR EMERGENCIES: DIAL 9-1-1

FIRE – POLICE – MEDICAL

TO REPORT A DRINKING WATER SYSTEM EMERGENCY:

Oregon Dept. of Human Services – Drinking Water Program

(M-f) 8:00am-5:00pm (971) 673-0405

Oregon Emergency Response System (800) 452-0311

INFORMATION TO REPORT

1. YOUR NAME, ADDRESS, PHONE NUMBER, CURRENT LOCATION
2. TYPE OF INCIDENT
3. EXACT LOCATION OF INCIDENT
4. THE DATE AND TIME THE INCIDENT OCCURRED
5. NATURE OF THREAT TO THE WATER SYSTEM

1B- Authority and Responsibility Form

WATER SYSTEM AUTHORITY AND RESPONSIBILITY

NAME _____

POSITION _____

PHONE NUMBERS: ON DUTY EMERGENCY

_____ _____

IN AN EMERGENCY THE FOLLOWING ACTIONS CAN BE TAKEN INDEPENDENTLY:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

THE FOLLOWING ACTIONS REQUIRE APPROVAL BY A SUPERVISOR:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

EMERGENCY CONTACTS

WATER SYSTEM CHAIN OF COMMAND

Name	Position	Emergency Phone
1. _____		_____
2. _____		_____
3. _____		_____
4. _____		_____
5. _____		_____

UTILITY COMPANIES – EMERGENCY PHONE

Phone Company _____

Power Company _____

Gas Company _____

Other: _____

ALTERNATE WATER SUPPLIERS – PHONE

_____ _____

_____ _____

_____ _____

1C- Emergency Contacts List (page 2)

EQUIPMENT/SUPPLIES VENDORS – PHONE

_____ _____

_____ _____

MEDIA CONTACTS – PHONE

Newspaper _____

Radio Station _____

TV Station _____

_____

_____

OTHER IMPORTANT CONTACTS – PHONE

_____

_____

_____

_____

_____

Section 2 – Water System Security

Check-sheet

- Read the narrative “Water System Security”.
- Complete Tool 2A – Annual System Security Assessment Form ❑
- Correct deficiencies noted in the Annual System Security Assessment ❑
- Place a copy of the Annual Security Assessment Form in a secure location ❑
- Develop a Water System Security Program ❑
- Place a copy of the Water System Security Program in a secure location ❑
- Develop a schedule for periodic Water System Security Program training for management and staff ❑
- Develop a system for evaluating the Water System Security Program ❑

Section 2 – Water System Security

Narrative

Water systems must be prepared for the threat of deliberate acts of destruction, including terrorist activities meant to contaminate the water supply or destroy the water system itself. The following steps are the basis for developing and maintaining a security program:

1. Each water system must conduct a security vulnerability assessment as part of their emergency response plan to determine if there are areas needing improved security measures. Sometimes use of a qualified consultant may be appropriate depending on the complexity of the water system. The Security Assessment Form 2A included in this guidance template is a general checklist only. More detailed guidance and minimum requirements are outlined in step 2 of this section.

2. Vulnerability Assessment guidance tools are available and water systems should evaluate them and choose a tool appropriate to their needs.

At a minimum, the Oregon Department of Human Services-Drinking Water Program requires the use of the **ASDWA/NRWA Security Vulnerability Self-Assessment Guide for Small Drinking Water Systems** serving populations of 3,300 or less. At the end of this document is a "Certification of Completion" form that can be submitted to the County or State as verification that the assessment was done.

Community Water Systems with populations greater than 3,300 are required by the Federal Public Health and Security Bioterrorism Preparedness and Response Act of 2002 to:

- Conduct a vulnerability assessment (using EPA approved assessment tools);
- Certify completion and submit a copy of the assessment to the EPA;
- Prepare or revise an emergency response plan that incorporates the vulnerability assessment ; and
- Certify to EPA, within 6 months of completing the vulnerability assessment, that the system has completed or updated their emergency response plan.

Information on these resources and requirements are available through the Department of Human Services-Drinking Water Program.

The following are common elements of security vulnerability assessments and any evaluation method should incorporate these points:

- Characterization of the water system, including its mission and objectives;
- Identification and prioritization of adverse consequences to avoid;
- Determination of critical assets that might be subject to malevolent acts;
- Assessment of the likelihood of such malevolent acts from adversaries;
- Evaluation of existing countermeasures; and
- Analysis of current risk and development of a prioritized plan for risk reduction.

3. Correct all security deficiencies identified in your security assessment as soon as possible. You may have to prioritize this work, investing in the most obvious and cost-effective security improvements immediately and budgeting to complete others afterward.

4.Complete a written Security Program. This document should provide a complete description of your security program, including such details as procedures for daily checks of the water system infrastructure and information about alarm systems. The

written security program should be available only to those who need this information to ensure the security of the system, and should be stored in a secure location. The following are basic components of a security program:

Security management:

- Assign security responsibilities to qualified individuals.
- Encourage staff to be alert to any signs of suspicious activity.
- Immediately investigate all information about suspicious activity and alert local law enforcement when appropriate.
- Conduct a daily check of the water system for signs of tampering or other unusual activity.

Physical activity:

- Establish procedures for restricting entry to authorized personnel, contractors, vendors, and visitors only – require proof of identity and check-in and check-out.
- Restrict access to necessary areas of the water system; accompany visitors as needed.

Physical security:

- Protect wells, intake structures, reservoirs, etc. with fencing.
- Secure doors, windows, hatches, etc. using locks, seals, alarms, motion sensors, and other appropriate means (remember to consult federal, state, and local fire and occupational safety codes before making any changes).
- Account for all keys to all areas of the system.
- Use video surveillance and security guards where appropriate.
- Provide adequate interior and exterior security lighting.
- Implement a system of controlling vehicles authorized to park on the premises (e.g. using placards, decals, etc.)

Storage and use of chemicals:

- Secure chemical storage areas and limit access to authorized personnel.
- Keep track of hazardous chemicals.
- Use only known, properly labeled chemicals.
- Inspect incoming chemicals for signs of tampering or counterfeiting.

Personnel:

- Screen prospective employees (references, background checks, etc.).
- Monitor employee activity through daily work assignments.
- Establish a system of identification – photo identification badges, etc.
- Restrict personnel items allowed in facility and establish a policy for inspecting employee lockers and other storage spaces for personal items.
- Collect identification badges, keys, and other security items when employees terminate.

Computer Systems:

- Restrict access to computer process control and data systems to those with appropriate clearance.
- Eliminate computer access immediately when employees terminate (deleting their passwords, etc.).
- Establish a system to trace computer activity by individuals.
- Develop and maintain adequate critical computer-based data systems.
- Acquire and maintain a virus protection program for all computers that have internet access or can be accessed off-site.

Evaluation:

- Evaluate the lessons learned from past tampering or terrorist events.

- Annually review and test the effectiveness of the security program by:
- Doing an annual water system security assessment (Use Tool 2A)
- Using mock tampering or terrorist events, computer system security challenges, etc.
- Using a third-party expert to periodically evaluate your security program
- Revising the program as needed

4. Ask the local police/sheriff to include your facility in their routine patrols and provide them with a map of the system with the critical components highlighted.

5. Involve everyone in routine surveillance. Ask all water system users to watch for suspicious or unusual activity around water system facilities and provide them with phone numbers to report their observations.

2A- Annual System Security Assessment Form

ANNUAL SYSTEM SECURITY ASSESSMENT

SYSTEM NAME _____ PWS # 41 __ __ __ __ __

DATE OF REVIEW_____

ASSESSMENT BY_____

WELL/SPRING/INTAKE PROTECTIVE STRUCTURES, PUMPHOUSES, OFFICES, TREATMENT PLANTS

	Yes	No	Comments	Initials
Locks on all doors	❑	❑	_____	
All windows secured	❑	❑	_____	
Adequate alarms, motion sensors, video cameras	❑	❑	_____	
Adequate security lighting	❑	❑	_____	
Entry restricted to authorized personnel	❑	❑	_____	
"Employee only" signs posted	❑	❑	_____	

RESERVOIRS

Fenced area around reservoir	❑	❑	_____	
Locked gate	❑	❑	_____	
Ladder guard locked	❑	❑	_____	
Access hatches locked	❑	❑	_____	
Adequate security lighting	❑	❑	_____	
"Employee only" signs posted	❑	❑	_____	

DISTRIBUTION SYSTEM

Manholes, hydrants, and other access points secured	❑	❑	_____	

PROCEDURES

All facilities locked and alarms set during prescribed times	❑	❑	_____	
Background checks before hiring employees	❑	❑	_____	
Employees regularly trained/drilled regarding security program	❑	❑	_____	
Access restricted to authorized persons	❑	❑	_____	
Visitors and contractors checking in and out	❑	❑	_____	
Passcode/keys/access cards changed when an employee is dismissed	❑	❑	_____	
Keys never stored in equipment or vehicles	❑	❑	_____	

Section 3 – Annual System Hazard Review

Check-sheet

- Read the narrative
- Complete Tool 3A – Annual System Hazard Review Form ❑
- Place a copy in the Emergency Response Plan notebook ❑
- Place copies of these related documents in the Emergency Response Plan notebook with your Annual System Hazard Review Forms
    - Cross-Connection Program records ❑
    - On-site sewage disposal records (if applicable) ❑

Section 3 – Annual System Hazard Review
Narrative

Disasters can't be kept from happening, but you can prepare the water system for them by providing a properly constructed and maintained water system. The emergency response plan should include an annual complete inspection of the water system infrastructure to:

- Identify and immediately correct any construction deficiencies.
- Eliminate potential hazards to the system.
- Ensure the system is receiving proper maintenance

This part of the plan can be organized by looking at the water system from the starting point – the source – and following it through to the "end of the line" – the last connection, fixture, or hydrant in the distribution network. Then document the findings on Tool 3A – Annual System Hazard Review Form.

Source: There are two basic types of sources – groundwater wells and surface water intakes.

- Construction: If wells and intake structures do not meet minimum construction standards, the entire water system may be at increased risk in a disaster. Review the most recent water system sanitary survey and immediately correct any well or intake structure deficiencies. If you have questions, contact the public water system regulatory agency.
- Identifying potential hazards: Are there activities near the source that could create an emergency affecting the water? Examples of such activities are chemical storage and public roads (spill risk). Water systems should maintain control of the area within a 100 ft. radius of the source and ensure this area is completely protected from hazards.

Storage: Storage facilities for public water systems range from one pressure tank with thirty gallons of storage to several reservoirs holding millions of gallons of water.

- Construction: Review the most recent water system sanitary survey and immediately correct any deficiencies. All storage facilities should have bypass plumbing in case they must be temporarily taken out of service. Larger reservoirs in particular should be evaluated for earthquake vulnerability.
- Identifying potential hazards: There should be a zone around all reservoirs controlled by the water system and free of any potential hazards to the integrity of the structure.

Distribution: While not as visible as other parts of the water system, the distribution network may be the most vulnerable to damage and contamination. An accurate, complete map or schematic of the distribution system is essential, and a copy should be part of the emergency response plan. See Section 5, Part 5A regarding isolating areas of the distribution system from contamination and use of the distribution system schematic.

- Construction: Larger distribution systems should have valves to isolate areas of the system, and the valves should be "exercised" once a year to ensure they are working. Hydrants or "blow-offs" are required on all dead end lines to adequately flush the system after contamination, disinfection, or repair. Again, review the most recent water system sanitary survey and correct any deficiencies.
- Identifying potential hazards: The distribution system should be protected by a strong cross-connection program to safeguard against accidental or deliberate backflow contamination.

This program should be reviewed annually to ensure that backflow prevention devices are tested as necessary and the program is kept current.

This part of the emergency response plan involves gathering and applying a significant amount of information. Please contact the public water system regulatory agency if assistance is needed with the annual system hazard review.

3A- Annual System Hazard Review Form

ANNUAL SYSTEM HAZARD REVIEW

SYSTEM NAME _____

PWS # 41 __ __ __ __ __

DATE OF REVIEW_____

REVIEWED BY: _____

SOURCE

	Yes	No	Comments	Initials
Uncorrected sanitary survey deficiencies	❑	❑		
Minimum 100 ft. control zone	❑	❑		
Chemical storage within 100 ft.	❑	❑		
Pesticide application within 100 ft.	❑	❑		
Sewage system within 100 ft.	❑	❑		
Fuel tanks within 100 ft.	❑	❑		
Animal grazing/housing	❑	❑		
Risk of flooding	❑	❑		
Roads/driveways	❑	❑		
Solid waste storage/disposal	❑	❑		
Earthquake vulnerability	❑	❑		

RESERVOIRS (WATER STORAGE TANKS)

Uncorrected sanitary survey deficiencies	❑	❑	
Zone of control around reservoir	❑	❑	
Earthquake vulnerability	❑	❑	

DISTRIBUTION SYSTEM

Uncorrected sanitary survey deficiencies	❑	❑	
Adequate valving provided	❑	❑	
Valves exercised annually	❑	❑	
Blowoffs/hydrants provided	❑	❑	
Blowoffs/hydrants exercised	❑	❑	
Cross-connection program current	❑	❑	

Section 4 – Emergency Equipment and Water Supplies

Check-sheet

Part 4A Emergency Power

- Read the narrative for Part 4A "Emergency Power".
- Provide an emergency power supply capable of maintaining minimum water system operations ❑
- List name and number of emergency power rental companies (if rental needed) on Tool 1C ❑
- Provide a log to document a monthly check of emergency power supply operation ❑

Part 4B Redundancy

- Read the narrative for Part 4B "Redundancy".
- Develop a list of redundant equipment and supplies needed to maintain minimum water system operations ❑
- Arrange with an approved water testing lab to do after hours/weekend testing as needed ❑
- Store the redundant equipment and supplies in a secure area of the water system ❑
- Provide a log to document a monthly inventory of redundant equipment and supplies ❑

Part 4C Stored Emergency Water

- Read the narrative for Part 4C "Stored Emergency Water".
- Provide each household on the water system with information, such as a fact sheet, regarding emergency water storage ❑

Part 4D Water Rationing Plan

- Read the narrative for Part 4D "Water Rationing Plan".
- Prepare a water rationing plan ❑
- Prepare a fact sheet with water rationing instructions for households and other users ❑

Part 4E Alternative Water Supplies and Mutual Aid

- Read the narrative for Part 4E "Alternative Water Supplies".
- Contact water haulers in the area regarding their services ❑
- List suppliers' names and phone numbers on Tool IC Emergency Contacts List ❑
- Place a copy of drinking water guidelines in the emergency response plan notebook
- Investigate establishing mutual aid agreements with neighboring water suppliers to share critical resources, including equipment, supplies, and water ❑
- List the contact name and number for each water system with which a mutual aid agreement has been established on Tool IC Emergency Contacts List ❑

Part 4F Water Distribution Plan

- Read the narrative for Part 4F "Water Distribution Plan".
- Prepare a plan for alternate water distribution methods ❑

Section 4 – Emergency Equipment and Water Supplies

Narrative

A natural disaster or intentional attack could interrupt the normal power supply to the water system, and vital equipment and supplies may be damaged or destroyed. Preparations should be made to continue water system operations by having emergency power capability and an adequate inventory of extra equipment, parts and supplies. See Part 4A (Emergency Power) and Part 4B (Redundancy) below.

An emergency event may cause an unavoidable interruption of water system operations. While emergency preparedness can shorten the interruption, the emergency response plan should make provision for providing an alternative potable water supply for basic drinking, cooking, and sanitation needs. See Part 4C **(**Stored Emergency Water), Part 4D (Water Rationing Plan), and Part 4E (Alternative Water Supplies and Mutual Aid) below.

Part 4A Emergency Power

Natural disasters or intentional harm to a public water system may cause loss of electrical power, thereby shutting down well pumps, booster pumps, treatment systems, and possibly alarms. Some areas have a history of power outages, usually due to windstorms. All water systems should prepare for power outages by providing auxiliary power. Typically, this is a portable generator that is capable of supplying the minimum electrical power the system requires. The generator and other emergency power equipment should be checked at least monthly to ensure that they remain in good operating condition. If there is no auxiliary power on site, identify one or more rental companies that have the equipment needed and list their names and phone numbers on Tool 1C – Emergency Contacts List.

Part 4B Redundancy

Redundancy means the water system has adequate "backup" for the essential equipment and supplies it needs to maintain normal operation. Here are a few key points:

- Redundant equipment needs may include complete units -- spare pumps, filter assembles, testing devices – or spare parts and supplies.
- Be sure to have an extra supply of parts that need regular replacement, such as filters, and always stock enough chemicals to maintain operations for at least 30 days.
- Maintain a list of after-hours phone numbers for suppliers/technical assistance people.
- Arrange with at least one water testing lab (approved for Public Water System work) to provide after-hours/weekend testing services on an as-needed basis.
- Water systems using computerized system control/data acquisition (SCADA) programs should provide manual backup in case the automated systems fail or are sabotaged.

Part 4C Stored Emergency Water

Every household is responsible for it's own disaster preparedness and should have an emergency supply of potable water. A good rule of thumb: each household should store a minimum of one gallon of water per person per day for fourteen days. Households with animals should add adequate stored water supplies for their animals. The American Red Cross has detailed information about potable water storage at their website www.redcross.org . An adequate emergency supply of drinking water in each household is a tremendous asset to the water system.
Operators should encourage every household to properly store enough potable water to meet their emergency needs.

Part 4D Water Rationing Plan

Water system operators should be prepared to implement water rationing if an emergency limits the normal water supply. Many existing water rationing plans use various levels of water rationing that correspond to the current water supply. Here are some general considerations for water rationing plans:

1. Plan ahead -- develop the fundamental framework for water rationing plans before faced with the actual crisis.
2. Keep the public well informed on the water supply situation.
3. Make every effort to develop a fair and equitable system for allocating water to the customers. The extra effort required to develop a more sophisticated system will generally be rewarded with better customer cooperation and fewer variance requests.
4. Provide information on what customers can do to conserve and prepare for a large number of inquiries.

Part 4E Alternative Water Supplies and Mutual Aid

The State of Oregon Drinking Water Program does not regulate hauling water for drinking purposes. The Drinking Water Program has published guidelines for those hauling drinking water to help them provide safe water, and these guidelines are available on-line at http://oregon.gov/DHS/ph/dwp/docs/haulguide.pdf. Download a copy of these guidelines and place it in the emergency response plan notebook.

The emergency response plan should provide the names and phone numbers of haulers capable of delivering bulk quantities of drinking water. Review the guidelines to become familiar with the recommended procedures for hauling drinking water.

Part 4F Water Distribution Plan

A natural or man-made disaster could damage all or part of the distribution system while leaving the source and storage facilities intact and operational. The emergency response plan should make provisions for using alternate methods of distributing the water. Examples of such methods include temporary distribution piping and central access points to stored water.

Section 5 – Emergency Response Procedures

Check-sheet

Part 5A Isolating Areas of the System

- Read the narrative "Isolating Areas of the System".
- Place a copy of the distribution system schematic in a readily accessible area of the pump house or treatment facility ❑
- Place a copy of the distribution system schematic in the emergency response plan notebook ❑

Part 5B Emergency Disinfection

- Read the narrative "Emergency Disinfection".
- Complete Tool 5A Disinfection Procedure ❑
- Place a copy of the Disinfection Procedure in a readily accessible area of the pumphouse or treatment facility ❑
- Place a copy of the Disinfection Procedure in the emergency response plan notebook ❑

Part 5C Boil Water Advisory

- Read the narrative "Boil Water Advisory".
- Place Appendices A, B, and C in your emergency response plan notebook ❑

Part 5D Waterborne Disease Outbreak

- Read the narrative "Waterborne Disease Outbreak".
- Establish a complaint procedure for water system users ❑

Section 5 - Emergency Response Procedures

Narrative

Since disasters or attacks on water systems cannot be eliminated completely, operators must be prepared to control the impact of such events on the water source and system infrastructure. Emergency response measures include isolating the contaminated area of the system, disinfecting the system, and boil water advisories. Systems should have basic chemicals, equipment, and procedures ready for response to an emergency.

Part 5A Isolating Areas of the Water System

Operators should be prepared to isolate contaminated areas of the water system to prevent further spread. For example, if a chemical spill is approaching the wellhead, shutting off the well pump and closing a gate valve in the inlet line to the reservoir will protect the water in the reservoir from contamination. The emergency response plan should clearly describe how to isolate the source, storage, and distribution components of the system, and should include maps and diagrams to indicate where switches and valves are located.

Part 5B Emergency Disinfection

Water system disinfection uses relatively high levels of chlorine in the water to kill microorganisms that have contaminated the water system. Situations that require water system disinfection include flooding at a wellhead, water system repair, and a positive coliform (bacteria) test. Preparations should be made to disinfect the system by having the necessary equipment and procedures in place. Use Tool 5A – Disinfection Procedure, to develop a disinfection procedure for the water system. The sheet titled "Chlorine Dosage Calculator" provides data to calculate the amount of chlorine needed to disinfect the reservoir. Be sure that the water system has the necessary fittings, and that the required equipment and tools are stored in a central location, such as the pump house.

In some situations, it may be necessary to temporarily maintain a chlorine residual in the distribution system using an on-line chlorinator. Preparations should be made to do this by making prior arrangements with a local water system service vendor to install a chlorinator on an emergency basis. Be sure to list the vendor's name and emergency phone number on the Emergency Contacts List (page 1C).

Part 5C Boil Water Advisory

Properly boiled water allows users to meet basic water requirements until microbiological problems are corrected and the water system returns to normal operation. A boil-water advisory is required when the water system has certain violations – E. coli/fecal coliform bacteria contamination or exceeding maximum turbidity levels – or is implicated in a waterborne disease outbreak. The boil water advisory is part of the public notification for these violations. Templates for these public notifications are found in Appendices A, B, and C. These materials are also available on the internet at http://www.epa.gov/safewater/pn.html. The local health department may also require the issuance of a boil-water advisory in other situations that threaten the quality of the water. These public notification templates should be part of the emergency response plan because, by law, the operator must issue them no later than 24 hours of learning of the violation. Since these violations are all potentially serious health risks, the public notification should be issued immediately. Be prepared to make sufficient copies of the appropriate template and have a plan for distributing, publishing, or posting the required public notice as quickly as possible.

Part 5D Waterborne Disease Outbreak

A waterborne disease outbreak is caused by contaminants in drinking water. They may be biological agents – bacteria, viruses, or microscopic parasites – or chemicals that cause an acute reaction. In a typical outbreak, some water users will develop similar signs and symptoms of illness within a few days of each other. Additional cases of disease may follow as other system users and visitors drink the water. An investigation that definitely links the cases of disease with exposure to the contaminated water will confirm a waterborne illness outbreak.

Here are important points to remember regarding waterborne illness outbreaks:

- The first indication of a waterborne disease outbreak may be the observation that an unusual number of water system users are experiencing symptoms of gastrointestinal illness. Since users could be the first persons to make this observation, it is important that they know to contact the water system operator at once. Establish a complaint procedure with your users so there are open lines of communication any time users have water quality concerns.

- Call the public water system regulatory agency immediately if it is suspected that the water system is involved in a waterborne illness.

A well-constructed and maintained water system can reduce the risk of a waterborne disease outbreak. Please see the Section 3 – Annual Water System Hazard Review, for more information.

DISINFECTION PROCEDURE

Disinfection is a procedure that uses chlorine to eliminate microorganisms that may have entered the water system. A chorine solution is introduced into the well and throughout the entire distribution system. This solution stands in the system for at least 12 hours; it is then removed by thoroughly flushing. The disinfection procedure is considered successful when a representative sample of the water tests "absent" for coliform bacteria. The water system should not be used as a source of potable water until it has an "absent" coliform test result. The disinfection procedure consists of the following steps:

1. **Notify all customers that you will be disinfecting the water system. They should use an alternate water source until notified that the system has resolved the microbiological contamination problem.**

2. **Determine the amount of chlorine needed:**

Needed to know are the depth and the diameter of the well:

<u>Depth</u>: check the well report (also known as a well "log") and find the depth under the heading "Depth of Completed Well". If you do not have a copy of the well report for each well supplying the water system, contact the regulatory agency.

<u>Well diameter</u>: the well diameter should be given under the heading "Casing diameter" in the well report. The casing diameter can also be determined by measuring the diameter of the sanitary seal (top of the casing).

Well diameter	Factor
4"	6
6"	3
8"	1.5

Use the following formula to determine the amount of chlorine solution to add to the well:

Depth of well = _____ feet divided by (factor) = _____ ounces of chlorine solution to use.

For example, a 4", 100 ft. deep well needs 100/6 = 16.7 ounces of bleach. If the well is 6" in diameter, 100/3 = 33.3 ounces would be required.

3. **Dilute the chlorine in 5 gallons of water and pour the bleach mixture into the well.**

5A-Disinfection Procedures (page 2)

4. **Circulate this mixture through the well and pressure tank(s) until thoroughly mixed. To do this, attach a food-grade hose to a hose bibb just downstream from the pressure tank(s), place the hose end in the well casing, and recirculate the water for at least 30 minutes. Be sure to wash down the walls of the casing.**

5. **Open all faucets in the distribution system until the chlorinated water can be smelled. Be sure the entire distribution system, including any dead end lines, have been chlorinated. Use a chlorine test kit to ensure that the water in the pipes has a minimum chlorine residual of 25 ppm.**

6. **Turn off the faucets and let the water sit undisturbed in the distribution system for 12 hours.**

7. **Open all the faucets (including any blow-offs for dead end lines) and flush all the chlorinated water out of the system. Let the water flow until all the chlorinated water has been flushed out of the distribution system. This can be checked with a chlorine test kit.**

8. **Wait 3-5 days, then collect a representative water sample in the distribution system and test for coliform bacteria.**

9. **The water system is considered free of bacterial contamination when the water sample is "absent" for coliform bacteria. Notify the water users that the system has resolved the bacterial contamination problem.**

							CHLORINE DOSAGE CALCULATOR																	
DESIRED PPM	1	1	1	1	5	5	5	5	25	25	25	25	50	50	50	50	100	100	100	100	200	200	200	200
STRENGH OF CHLORINE SOLUTION	5%	25%	70%	100%	5%	25%	70%	100%	5%	25%	70%	100%	5%	25%	70%	100%	5%	25%	70%	100%	5%	25%	70%	100%
NUMBER OF GALLONS TO BE CHLORINATED																								
50,000	128 oz.	27. 0 oz.	10 oz.	6.7 oz.	640 oz.	134 oz.	48 oz.	26 oz.	25 Gal	42 lb.	239 oz.	167 oz.	50 Gal.	84 lb	480 oz	334 oz.	100 Gal.	169 lb.	60 lb.	668 oz.	200 Gal.	334 lb.	119 lb.	83 lb.
25,000	64 oz.	13.5 oz.	5.0 oz.	3.3 oz.	320 oz.	67 oz.	24 oz.	17 oz.	12.5 Gal.	21 lb.	120 oz.	84 oz.	25 Gal.	42 lb.	240 oz.	167 oz.	50 Gal.	84 lb.	30 lb.	334 oz.	100 Gal.	169 lb.	60 lb.	42 lb.
10,000	25.0 oz.	5.5 oz.	2.0 oz.	1.3 oz.	128 oz.	27 oz.	9.6 oz.	6.7 oz.	5.0 Gal.	136 oz.	48 oz.	34 oz.	10 Gal.	267 oz.	128 oz.	67 oz.	20 Gal.	33 lb.	12 lb.	134 oz.	40 Gal.	69 lb.	382 oz.	267 oz.
5,000	12.5 oz.	2.8 oz.	1.0 oz.	0.6 oz.	64 oz.	14 oz.	4.8 oz.	3.4 oz	2.5 Gal.	68 oz.	24 oz.	17.0 oz	5 Gal.	134 oz.	48 oz.	34 oz.	10 Gal.	299 oz.	6 lb.	67 oz.	20 Gal.	34 lb.	191 oz.	134 oz.
2,000	5.0 oz.	1.1 oz.	0.4 oz.	0.3 oz.	26.0 oz.	6.0 oz	1.9 oz.	1.4 oz.	1.0 Gal.	27 oz.	10.0 oz.	6.7 oz.	2 Gal.	54 oz.	20 oz.	13.5 oz.	512 oz.	107 oz.	40 oz.	27 oz.	8 Gal.	214 oz.	76 oz.	54 oz.
1,000	2.5 oz.	0.6 oz.	0.2 oz.	0.2 oz	13.0 oz.	3.0 oz.	1.0 oz.	0.7 oz.	64 oz.	14.0 oz.	5.0 oz.	3.4 oz.	1 Gal.	27 oz.	10.0 oz.	6.8 oz.	256 oz.	54 oz.	20 oz.	13.5 oz.	512 oz.	107 oz.	38 oz.	27 oz.
500	1.3 oz.	0.3 oz.	0.1 oz.		6.5 oz	1.5 oz.	0.5 oz.	0.4 oz.	32 oz.	7.0 oz.	2.5 oz.	1.7 oz.	64.0 oz.	13.5 oz.	5.0 oz.	3.4 oz.	128 oz.	27 oz.	10.0 oz.	6.8 oz.	256 oz.	54 oz.	19 oz.	14 oz.
200	0.5 oz.	0.1 oz.			2.5 oz.	0.6 oz.	0.2 oz.	0.2 oz.	13.0 oz.	2.7 oz.	1.0 oz.	0.7 oz.	26.0 oz.	5.4 oz.	2.0 oz.	1.4 oz.	52 oz.	11.0 oz.	4.0 oz.	2.7 oz.	102 oz.	22 oz.	8.0 oz.	5.3 oz.
100	0.3 oz.				1.3 oz.	0.3 oz.	0.1 oz.	0.1 oz.	0.7 oz.	1.4 oz.	0.5 oz.	0.4 oz.	13.0 oz.	2.7 oz.	1.0 oz.	0.7 oz.	26 oz.	5.5 oz.	2.0 oz.	1.4 oz.	51 oz.	11 oz.	4.0 oz.	2.7 oz.
50	0.1 oz.				0.6 oz.	0.2 oz.			0.4 oz.	0.7 oz.	0.3 oz.	0.2 oz.	6.5 oz.	1.4 oz.	0.5 oz.	0.4 oz.	13.0 oz.	2.8 oz.	1.0 oz.	0.7 oz.	26 oz.	5.5 oz.	2.0 oz.	1.4 oz.
25					0.3 oz.	0.1 oz.			0.2 oz.	0.4 oz.	0.1 oz.	0.1 oz.	3.3 oz.	0.7 oz.	0.3 oz.	0.2 oz.	6.5 oz.	1.4 oz.	0.5 oz.	0.4 oz.	13 oz.	2.8 oz.	1.0 oz.	0.7 oz.
10					0.2 oz.				0.1 oz.	0.2 oz.			1.3 oz.	0.4 oz.	0.2 oz.	0.1 oz.	2.6 oz.	0.6 oz.	0.2 oz.	0.2 oz.	5.1 oz.	1.1 oz.	0.4 oz.	0.4 oz.
5					0.1 oz.					0.1 oz.			0.7 oz.	0.2 oz.	0.1 oz.		1.3 oz.	0.3 oz.	0.1 oz.	0.1 oz.	2.6 oz.	0.6 oz.	0.2 oz.	0.2 oz.

Appendix A

Template on Reverse (next page)

Since exceeding the fecal coliform or *E. coli* maximum contaminant level is a Tier 1 violation, you must provide public notice to persons served as soon as practical but within 24 hours after you learn of the violation (141.202(b)). During this time, you must also contact your primacy agency. You should also coordinate with your local health department. You may also have to modify the template if you also have high nitrate levels or other coliform MCL violations. You must use one or more of the following methods to deliver the notice to consumers (141.202(c)):

- Radio
- Television
- Hand or direct delivery
- Posting in conspicuous locations

You may need to use additional methods (e.g., newspaper, delivery of multiple copies to hospitals, clinics, or apartment buildings), since notice must be provided in a manner reasonably calculated to reach all persons served.

The notice on the reverse is appropriate for hand delivery or a newspaper notice. However, you may wish to modify it before using it for a radio or TV notice. If you do, you must still include all required elements and leave the health effects language in italics unchanged. This language is mandatory (141.205(d)). See Chapter 8 for a notice designed for posting. If you post or hand deliver, print your notice on letterhead, if you have it.

Population Served

Make sure it is clear who is served by your water system--you may need to list the areas you serve.

Corrective Action

In your notice, describe corrective actions you are taking. Listed below are some steps commonly taken by water systems with fecal coliform or *E. coli* violations. Use one or more of the following actions, if appropriate, or develop your own:

- We are chlorinating and flushing the water system.
- We are switching to an alternate drinking water source.
- We are increasing sampling for coliform bacteria to determine the source of the contamination.
- We are repairing the wellhead seal.
- We are repairing the storage tank.
- We are restricting water intake from the river/lake/reservoir to prevent additional bacteria from entering the water system and restricting water use to emergencies.

After Issuing the Notice

Send a copy of each type of notice and a certification that you have met all the public notice requirements to your primacy agency within ten days from the time you issue the notice (141.31(d)). It is recommended that you notify health professionals in the area of the violation. People may call their doctors with questions about how the violation may affect their health, and the doctors should have the information they need to respond appropriately. In addition, health professionals, including dentists, use tap water during their procedures and need to know of contamination so they can use bottled water. It is a good idea to issue a ‘problem corrected’ notice when the violation is resolved.

DRINKING WATER WARNING

[Date]
[System] water is contaminated with [fecal coliform] or [*E. coli*]

BOIL YOUR WATER BEFORE USING

Fecal coliform [or *E. coli*] bacteria were found in the water supply on [date]. These bacteria can make you sick, and are a particular concern for people with weakened immune systems.

What should I do?

- **DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST.** Bring all water to a boil, let it boil for one minute, and let it cool before using, or use bottled water. Boiled or bottled water should be used for drinking, making ice, brushing teeth, washing dishes, and food preparation **until further notice**. Boiling kills bacteria and other organisms in the water.

- *Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, and people with severely compromised immune systems.*

- The symptoms above are not caused only by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice. People at increased risk should seek advice about drinking water from their health care providers.

What happened? What is being done?

Bacterial contamination can occur when increased run-off enters the drinking water source (for example, following heavy rains). It can also happen due to a break in the distribution system (pipes) or a failure in the water treatment process.

[Describe corrective action.] We will inform you when tests show no bacteria and you no longer need to boil your water. We anticipate resolving the problem within [estimated time frame].

For more information, please contact [name of contact] at [phone number] or [mailing address]. General guidelines on ways to lessen the risk of infection by microbes are available from the EPA Safe Drinking Water Hotline at 1(800) 426-4791.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by [system]. State Water System ID#: _____

Appendix B

Template on Reverse (next Page)

If your primacy agency has designated this turbidity single exceedance as a Tier 1 violation (141.202(a)), you must provide public notice to persons served within 24 hours after it has been designated Tier 1 (141.202(b)). Turbidity violations are Tier 2 by default, but may frequently be elevated to Tier 1 by your primacy agency. In addition, violations are automatically elevated if you are unable to consult with your primacy agency within 24 hours. **In such cases, you must issue a notice within the next 24 hours.** You may elevate the violation to Tier 1 yourself as well. You should also coordinate with your local health department. One or both agencies should tell you whether to instruct consumers to boil water. You must use one or more of the following methods to deliver the notice to consumers (141.202(c)):

- Radio
- Television
- Hand or direct delivery
- Posting in conspicuous locations

You may need to use additional methods (e.g., newspaper, delivery of multiple copies to hospitals, clinics, or apartment buildings), since notice must be provided in a manner reasonably calculated to reach all persons served. If you post or hand deliver, print your notice on letterhead, if you have it.

The notice on the reverse is appropriate for hand delivery or a newspaper notice. However, you may wish to modify it before using it for a radio or TV notice or posting. If you modify the notice, you must leave the health effects language in italics unchanged. This language is mandatory (141.205(d)).

Population Served

Make sure it is clear who is served by your water system--you may need to list the areas you serve.

Corrective Action

In your notice, describe corrective actions you are taking. Listed below are some steps commonly taken by water systems with turbidity single exceedance. Use one or more of the following actions, if appropriate, or develop your own:

- We are adding chemicals that reduce turbidity.
- We are sampling both untreated and treated water for the presence of coliform bacteria.
- We are monitoring chlorine levels and will adjust them as needed to compensate for filtration problems.
- We are inspecting and cleaning the filters.

Source of the Problem

If you know why the turbidity is high, explain it in your notice. For instance, unusual conditions, such as heavy rains and flooding, can overburden the water plant, and treated water may therefore not meet the standards. In addition, run-off from parts of the watershed could contain increased concentrations of sediment and animal waste.

After Issuing the Notice

Send a copy of each type of notice and a certification that you have met public notice requirements to your primacy agency within ten days after you issue the notice (141.31(d)). It is a good idea to issue a •problem corrected• notice when the violation is resolved. It recommended that you notify health professionals in the area of the violation. People may call their doctors with questions about how the violation may affect their health, and the doctors should have the information they need to respond appropriately. In addition, health professionals, including dentists, use tap water during their procedures and need to know of potential microbiological contamination so they can use bottled water.

DRINKING WATER WARNING

[system] has high turbidity levels

BOIL YOUR WATER BEFORE USING

We routinely monitor your water for turbidity (cloudiness). This tells us whether we are effectively filtering the water supply. A water sample taken [date] showed turbidity levels of [number] turbidity units. This is above the standard of [standard] turbidity units. Because of these high levels of turbidity, there is an increased chance that the water may contain disease-causing organisms.

What should I do?

- **DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST.** Bring all water to a boil, let it boil for one minute, and let it cool before using, or use bottled water. Boiled or bottled water should be used for drinking, making ice, washing dishes, brushing teeth, and food preparation until further notice.

- *Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease causing organisms. These organisms include bacteria, viruses, and parasites, which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.* People with severely compromised immune systems, infants, and some elderly may be at increased risk. These people should seek advice about drinking water from their health care providers.

- The symptoms above are not caused only by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice.

What happened? What is being done?

[Describe reason for the high turbidity, corrective action, and when the system expects to return to compliance.]

We will inform you when turbidity returns to appropriate levels and when you no longer need to boil your water.

For more information, please contact [name of contact] at [phone number] or [mailing address]. General guidelines on ways to lessen the risk of infection by microbes are available from the EPA Safe Drinking Water Hotline at 1(800) 426-4791.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by [system]. State Water System ID#: _____
Date distributed: _____

Appendix C

Template on Reverse (next page)

Since a waterborne disease outbreak is a Tier 1 situation, you must provide public notice to persons served as soon as practical but within 24 hours after you learn of the situation (141.202(b)). You must also contact your primacy agency during this time. You should coordinate with your local health department as well. **You must issue a public notice if you are experiencing a waterborne emergency other than a waterborne disease outbreak, such as one caused by flooding or treatment failure. In such cases, you may be able to modify this template to apply to your situation.** Check with your primacy agency for more direction. More information on waterborne disease outbreaks and emergencies is available from the Centers for Disease Control and Prevention (www.cdc.gov/health/diseases.htm, 1 (800) 311-3435). For a waterborne disease outbreak or other emergency, you must use one or more of the following methods to deliver the notice to consumers (141.202(c)):

- Radio
- Television
- Hand or direct delivery
- Posting in conspicuous locations

You may need to use additional methods (e.g., newspaper, delivery of multiple copies to hospitals, clinics, or apartment buildings), since notice must be provided in a manner reasonably calculated to reach all persons served. If you post or hand deliver, print your notice on letterhead, if available. The notice on the reverse is appropriate for hand delivery or a newspaper notice. However, you may wish to modify it before using it for a radio, TV notice, or posting.

Describing the Outbreak

If known, list any organisms detected, the number of affected people, any water treatment problems contributing to the waterborne disease outbreak, and any sources of contamination, such as flooding.

Potential Health Effects

No mandatory health effects language exists for waterborne disease outbreaks. You may wish to use the sentence below, if appropriate, or contact your primacy agency or health department. These symptoms are common to many diseases caused by microscopic organisms:

- Symptoms may include nausea, cramps, diarrhea, jaundice, and associated headaches and fatigue.

Population at Risk

Some people who contract waterborne diseases can be affected more severely than others, as described on the reverse page. The specific language on the reverse is not mandatory, but you must provide information on the population at risk. In addition, make sure it is clear who is served by your water system--you may need to list the areas you serve.

Corrective Action

In your notice, describe the corrective actions you are taking. Listed below are some steps commonly taken by water systems with waterborne disease outbreaks. Use one or more of the following actions, if appropriate, or develop your own:

- We are repairing our filtration system.
- We are increasing sampling for disease-causing organisms.

Make sure to send a copy of each type of notice and a statement certifying that you've met all public notification requirements to your primacy agency within ten days after issuing the notice (141.31(d)). It is a good idea to issue a 'problem corrected' notice when the waterborne disease outbreak is under control.

It is recommended that you notify health professionals in the area of the outbreak. People may call their doctors with questions about how the situation may affect their health, and the doctors should have the information they need to respond appropriately. In addition, health professionals, including dentists, use tap water during their procedures and need to know of contamination so they can use bottled water.

DRINKING WATER WARNING

BOIL YOUR WATER BEFORE USING

Disease-causing organisms have entered [system's] water supply.

These organisms are causing illness in people served by [system]. We learned of a waterborne disease outbreak from [agency] on [date].

What should I do?

- **DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST.** Bring all water to a boil, let it boil for one minute, and let it cool before using, or use bottled water. Boiled or bottled water should be used for drinking, making ice, brushing teeth, washing dishes, and food preparation until further notice. Boiling kills bacteria and other organisms in the water.

- [Describe symptoms of the waterborne disease.] If you experience one or more of these symptoms and they persist, contact your doctor. People with severely compromised immune systems, infants, and some elderly may be at increased risk. These people should seek advice about drinking water from their health care providers.

What happened? What is being done?

[Describe the outbreak, corrective action, and when the outbreak might end.]

We will inform you when you no longer need to boil your water.

For more information, please contact [name of contact] at [phone number] or [mailing address]. General guidelines on ways to lessen the risk of infection by microbes are available from the EPA Safe Drinking Water Hotline at 1(800) 426-4791.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by [system]. State Water System ID#: _____

Date distributed: _____