

DEPARTMENT OF HEALTH  
DRINKING WATER PROGRAM

GUIDELINES FOR THE ISSUANCE OF PRECAUTIONARY BOIL WATER NOTICES

**I. AUTHORITY AND INTENT**

Pursuant to section 381.006, Florida Statutes (F.S.), the Florida Department of Health (DOH) is responsible for conducting an environmental health program consistent with the state's public health mission of preventing illness within our community. An integral component within this function is the conductance of human health risk assessments of exposure to contaminants in food, air and water.

Of major importance are risk assessments involving microbiological contaminants of waterborne origin. Through natural and manmade means, Florida's population and visitors may be subjected to microbiological contaminants in their drinking water supply. Large outbreaks involving bacteria, viruses, and protozoa have been documented throughout the country, thus arousing a high degree of awareness to these hazards. Additionally, per subsection 381.006(3)(c), F.S., the DOH is further responsible for providing guidance and technical assistance to the Florida Department of Environmental Protection (DEP) and other governmental agencies regarding actions necessary to prevent exposure to drinking water contaminants that present an imminent and substantial threat to the public's health.

As required by the Florida Legislature and as provided within s. 381.0062(3), F.S., this instrument will serve as guidelines regarding the authorization of, and applicability for, the issuance of precautionary boil water notices during instances of imminent or substantial threat of microbiological contamination. The DOH's State Health Office and its units, the county health departments, in coordination with DEP, will have the final authority in ensuring that precautionary boil water notices are issued and rescinded when appropriate, and in a manner consistent with the degree of hazard encountered. In counties where DEP has regulatory authority over all public drinking water systems, the DEP district office shall have the full authority to issue and rescind all precautionary boil water notices, and when doing so shall coordinate with the applicable county health departments. Additionally, this document serves to outline particular instances when precautionary boil water notices shall be issued, the verbiage and content of such notices, and the monitoring and clearance activities, which must be conducted prior to rescinding such notices.

These notices should be issued in a prudent manner and only when there is sufficient justification for this emergency action. Inordinate issuance of the notices will cause needless alarm and may result in the public paying less attention to future notices.

**II. IMPLEMENTATION AND INTERDEPARTMENTAL COORDINATION**

Under emergency conditions that require the issuance of a precautionary boil water notice, or following confirmation of the presence of microbiological pathogens within a public water supply, the public water system, as required within s. 403.857, F.S. shall

notify the local county health department, the DEP, and the affected public as soon as possible, but not later than 24 hours after the occurrence. In response, the DOH will coordinate with DEP, other state and local governmental agencies, and the public water system, immediate actions which are to be taken (including the issuance of a precautionary boil water notice) to minimize danger to the public. Adequate communication between DEP, the DOH, and the public water system is essential to ensure that all agencies are fully informed prior to the issuance of a precautionary boil water notice. Whichever department issues the notice will also be responsible for rescinding it. The DEP district offices and local county health departments shall coordinate these activities.

The public water system can issue its own precautionary boil water notice using these guidelines if it determines it is necessary. However, the DOH shall be notified as soon as possible in such a case, and a copy of the notice submitted to the DOH. Within those counties that the DEP has full regulatory authority over all public water systems, the public water system shall also notify the DEP district office as soon as possible. Public water systems that issue their own precautionary boil water notices shall also be responsible for rescinding them; however concurrence by the DEP district office or applicable county health department is required prior to rescission of such.

All precautionary boil water notices shall be issued and delivered to the general public in a manner consistent with the public notification requirements contained in Chapter 62-560.410(1)(a) 1., Florida Administrative Code (FAC), telephoned, or hand-delivered to all affected residences and businesses as soon as possible, but in no case later than 24 hours after the water system learns of the violation, exceedance, situation or failure.

Additionally, the DOH shall take the lead role in cooperating with other governmental agencies and all contacts with the media regarding emergency notices involving any and all imminent threats to public health involving private and public water supply systems.

### III. TYPES OF INCIDENTS

#### A. Microbiological Contamination.

1. A precautionary boil water notice shall always be issued in cases where confirmatory water samples indicate the presence of fecal coliform bacteria, *E. coli*, or other waterborne pathogens. The presence of such indicates an acute threat to the public's health and warrants immediate action by the public water system and public health officials to alert consumers.

2. The rules contained in 62-550.817, F.A.C., "Requirements for Subpart H Surface Water Systems were developed to ensure the removal or inactivation of *Cryptosporidium*, *Giardia* and viruses. Finished water turbidity levels exceeding 1.0 NTU in conjunction with the failure of a public water system to maintain adequate disinfection to achieve the required removal/inactivation of *Cryptosporidium*, *Giardia*, and viruses would warrant the issuance of a precautionary boil water notice.

3. With the continuing threat of drinking water contamination via emerging microbial contaminants such as *Cryptosporidium*, all water utilities utilizing surface water and/or groundwater under the direct influence of surface water as their source for drinking water, should also carefully monitor certain critical water process parameters. Abrupt changes in process parameters such as turbidity, particle counts, and disinfectant

residuals may indicate a compromise in the water treatment process and a potential of increased microbial risk for consumers. Abrupt changes in the quality of the source water which cannot be accommodated by the existing treatment processes, a disruption in filtration processes, and the presence of pathogenic microbes in finished water are factors which should be considered in determining action by the public water system. Such action should be made upon the evaluation of all available water quality data (i.e. raw and finished water turbidity, the presence of fecal coliform or E. coli, particle counts, turbidity measurements on individual filters, treatment plant effluent and epidemiological information which confirms increases in gastrointestinal disease in the target community) by a task force comprised of local public health officials, public water system personnel, and health care professionals.

**B. Zero or Negative Pressure.** A precautionary boil water notice shall be issued in cases where pressure in any part of the water distribution system has been reduced to zero, or a negative pressure, unless the zero pressure is due to an isolated water main break and the public water system can demonstrate that the integrity of the water system has been maintained as specified in III.D below. Special attention must be given where there are multi-story buildings, or critical use facilities such as: schools, child day care establishments, assisted living facilities, nursing homes, dialysis centers, hospitals or other health care centers, or food establishments.

**C. Low Water Pressures.** A drop in water pressure in a water distribution system is a signal of the existence of conditions which could allow contamination to enter the public water system through backflow by back-pressure or back-siphonage. Water pressure falling below the regulated service level of 20 psi does not, in the absence of other aggravating factors, necessarily constitute an imminent health hazard, unless determined by the DOH or DEP district office. Aggravating factors include the presence of multi-story buildings not adequately protected against backflow where the static head exceeds the residual main pressure, a historical record of inadequate disinfectant maintenance in the water distribution system, analytical records indicate recurring microbiological or turbidity problems, or the water system lacks an approved cross-connection control program. The decision to issue the precautionary boil water notice would be made on a case by case basis and based upon professional judgment of the entity issuing the boil water notice, and upon the review of all available data that may indicate the extent of the problem such as type of facilities affected, duration of the low pressure condition, and possibility of infiltration into the potable water system. If however, the water pressure falls below 20 psi and affects critical use facilities such as: schools, child day care establishments, assisted living facilities, nursing homes, dialysis centers, hospitals or other health care centers, or food establishments, a boil water notice is required. Microbiological samples shall be collected immediately within the area affected at several locations, and measures shall be taken expeditiously to restore the integrity of the water system.

**D. Water Main Breaks/Interruptions.** Precautionary boil water notices must be issued in cases of water main breaks, or planned distribution system interruptions, which are deemed an imminent public health threat by the DOH state health office, local county health department or DEP district office, or will affect the bacteriological quality of the drinking water unless the public water system can demonstrate, by sound engineering judgment that the integrity of the water system has been maintained. Assurance from the public water system that a positive pressure has resulted in a continuous outflow of water prior to the repair, that applicable best management practices have been used

during the repair as outlined in Attachment C, and that no non-potable water, soil or other potentially contaminated material has entered, or may enter the broken water main during the repair, will serve to demonstrate that the integrity of the water system has been maintained. Water mains repaired with a clamping device while remaining full of pressurized water as required per Rule 62-555.340(1)(d), F.A.C., would not require the issuance of a precautionary boil water notice. (See Attachment C for Best Management Practices for Water Main Breaks and Repairs.) Even in cases where the public water system can demonstrate that the integrity of the water system has been maintained, the affected water main should be repaired, flushed, disinfected, sampled, and monitored for chlorine residual according to ANSI/AWWA Standard C651, as soon as possible.

**E. Flooding of Wells.** Precautionary boil water notices shall be issued in all cases where surface water inundation of a water supply well has occurred. The presence of disinfectant resistant strains of protozoa such as *Giardia* or *Cryptosporidium* warrant special precautions to be taken until the microbiological integrity of the water system is verified or restored. Seasonal and storm related flooding warrant special attention from public water utilities as well as private well owners.

#### **IV. DISASTER RELATED EVENTS:**

Responding to natural and man-made disasters offers unique challenges in addressing potential microbiological contamination of public drinking water supplies. Public water systems may experience a total loss of water pressure, increases in turbidity, or there may be evidence of isolated water main breaks or areas where there is a loss of pressure from detached service connections.

During a hurricane most community public water systems are able to utilize an auxiliary power source to maintain water pressure when significant power interruptions occur. However, when auxiliary power is not available or cannot be maintained, a total loss of water pressure may occur, thus resulting in the potential for contaminants to enter the water distribution system.

##### **A. Addressing A System-wide Loss of Pressure or Increase in Turbidity:**

A system-wide pressure loss or increase in turbidity exceeding the maximum contaminant level requires a degree of assurance that the water system is microbiologically safe once water pressure is restored. For all events of this nature, the respective public water system shall take the following measures:

1. Alert the affected public to only consume water that has been boiled or disinfected according to paragraph D below. Note: Increases in water turbidity at Surface Water source or UDI water plants, or flooded wells could introduce contamination by protozoa such as *Cryptosporidium*. In these cases, only boiling water or the utilization of bottled water should be advised to the affected population. Chlorination requires an inordinate amount of chemical concentration and time to adequately kill *Cryptosporidium* oocysts.
2. Elevate the disinfection residual within the entire water distribution system to no less than 1.0 mg/L free chlorine, or 3.0 mg/L total chlorine.
3. Adequately flush the water distribution system. With the most concentration at dead- ends, or areas where there is limited water flow.

4. Restore water pressure to the system, such that all service connections possess a minimum pressure of 20 psi.
5. Conduct microbiological monitoring at various sample points within the water distribution system according to the water system's approved microbiological sampling plan.

**B. Addressing Isolated Water Main Breaks and Areas of Low Water Pressure:**

During a hurricane or other disaster, public water systems may only lose pressure to isolated portions of their water distribution system. In response to such events, public water systems should address each water main break or isolated area as a separate point of attention, to prevent potential microbiological contamination. In responding to each water main break or area of pressure loss, the specific boundaries of the area(s) affected must first be determined.

Once the boundaries of the isolated area(s) are established, the water system shall implement the appropriate provisions described within section III above, and immediately alert the affected public via a precautionary boil water notice.

**C. Non-community (NC) Public Water Systems:**

A prolonged loss of electrical power at establishments served by NC public water systems can have a negative consequence on the water systems' ability to maintain the microbiological integrity of its finished water. During these events, the disinfection capacity is generally lost, and there is also an inability to maintain water pressure within the water distribution system.

Following the restoration of power, the system's water shall not be consumed until necessary repairs are completed, the water system has been properly flushed, water pressure has been restored to 20 psi or more, there is a minimum chlorine residual of 1.0 mg/L free chlorine within all portions of the water distribution system, and the water has been analyzed and determined to be free of microbiological contamination.

**D. Chemical Disinfection of Drinking Water During Power Outages:**

During natural or man-made disasters the boiling of water may not be possible due to the lack of power within water system's service area. If there is no power, residents and businesses should be instructed to disinfect their drinking water as follows:

Tap water can be disinfected by adding 8 drops of unscented household bleach (4 – 6 % active ingredients) to each gallon of water, then mixing the water and allowing it to stand for a minimum period of 30 minutes. Note: Cloudy water requires 16 drops of bleach and a 30 minute contact time. Also, other approved chemical disinfectants are available at stores that sell camping and hiking supplies.

**V. CONTENT AND DELIVERY OF PRECAUTIONARY BOIL WATER NOTICES**

The content of precautionary boil water notices shall include the following information: name of the public water system, geographical area affected, statement of the problem, date of occurrence, consumer corrective measures to be taken, and action being taken by the public water system to correct the problem. A statement indicating that consumers will be officially notified when the boil water notice is lifted following receipt of satisfactory microbiological sample results, and a telephone number directing consumer questions to an appropriate party shall also be included.

Note: The Centers for Disease Control (CDC) and the EPA have indicated that a rolling boil for a period of one minute is sufficient to render drinking water microbiologically safe, free of bacteria, viruses, and protozoa.

All precautionary boil water notices shall be issued and delivered to the general public in a manner consistent with the public notification requirements contained in Chapter 62-560.410(1)(a) 1., Florida Administrative Code (FAC), telephoned (such as reverse 911 calling for large scale incidents), or hand-delivered to all affected residences and businesses as soon as possible, but in no case later than 24 hours after the water system learns of the violation, exceedance, situation or failure.

(SEE ATTACHMENT A FOR SAMPLE NOTICE)

#### **VI. RESCISSION OF BOIL WATER NOTICES**

It shall be the responsibility of the entity issuing the precautionary boil water notice to also rescind it, following receipt of a minimum one day of representative bacteriological sample results (for water main breaks, a minimum of two representative samples shall be collected; one sample upstream and one sample downstream of the break), supplemented by appropriate disinfection residual levels and other water quality parameters indicating that the water is safe to drink and with the concurrence of the DOH, or jurisdictional DEP district office. However, even if a precautionary boil water notice is rescinded after one day of satisfactory bacteriological sample results, a second day of bacteriological samples still must be collected in accordance with Rule 62-555.340, F.A.C., following water main repairs. If unsatisfactory bacteriological levels are detected during the one day initial sampling event, the water system shall provide two consecutive days of satisfactory bacteriological sample results prior to rescission of the precautionary boil water notice. If unsatisfactory bacteriological levels are detected during the second day of sampling following water main repairs, the precautionary boil water notice shall be reissued if it was rescinded after the initial one day sampling event, and the water system shall provide two consecutive days of satisfactory bacteriological sample results prior to rescission of the precautionary boil water notice. As is required during the issuance of such, all parties involved, including DEP, other governmental agencies, the public water system, and the media, must be adequately informed of the rescission of the precautionary boil water notice.

(SEE ATTACHMENT B FOR SAMPLE RESCISSION NOTICE)

All inquiries regarding this policy should be directed to Edward A. Bettinger, R.S., M.S., Environmental Health Program Consultant in the Bureau of Water Programs, 4052 Bald Cypress Way, Bin # C22, Tallahassee, Florida 32399-1742, Suncom 205-4240 or (850) 245-4240.

**ATTACHMENT A**

(DATE)

PRECAUTIONARY BOIL WATER NOTICE

TO: RESIDENTS OF (NAME OF CITY, TOWN, TRAILER PARK, SUBDIVISION OR COUNTY) LIVING IN THE AREA BOUNDED BY (STREET, AVENUE, CANAL OR OTHER DESCRIPTIVE BOUNDARY)

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(BRIEF DESCRIPTION OF EVENT SUCH AS: BACTERIOLOGICAL ANALYSES OF SAMPLES OBTAINED FROM YOUR WATER DISTRIBUTION SYSTEM HAVE SHOWN POSSIBLE CONTAMINATION OF THE WATER, OR A WATER MAIN BREAK HAS OCCURRED AT \_\_\_\_\_, OR A LOSS OF WATER PRESSURE HAS BEEN EXPERIENCED DUE TO \_\_\_\_\_)

THEREFORE, AS A PRECAUTION, WE ADVISE THAT ALL WATER USED FOR DRINKING, COOKING, MAKING ICE, BRUSHING TEETH, OR WASHING DISHES BE BOILED. A ROLLING BOIL OF ONE MINUTE IS SUFFICIENT. AS AN ALTERNATIVE BOTTLED WATER MAY BE USED.

(\* WHERE THERE IS A LOSS OF POWER, DRINKING WATER UTILITIES SHOULD INCLUDE LANGUAGE OUTLINED IN PARAGRAPH IV D. OF THESE GUIDELINES DESCRIBING THE CHEMICAL DISINFECTION OF DRINKING WATER.)

THIS "PRECAUTIONARY BOIL WATER NOTICE" WILL REMAIN IN EFFECT UNTIL THE PROBLEM HAS BEEN CORRECTED AND A BACTERIOLOGICAL SURVEY SHOWS THAT THE WATER IS SAFE TO DRINK.

IF YOU HAVE ANY QUESTIONS YOU MAY CONTACT (NAME OF PERSON, AGENCY) AT (PHONE NUMBER).

( \_\_\_\_\_ SIGNATURE \_\_\_\_\_ )  
(NAME, TITLE AND AGENCY OF  
OFFICIAL ISSUING THE NOTICE)

**ATTACHMENT B**

(DATE)

RESCISSION OF PRECAUTIONARY BOIL WATER NOTICE

TO: RESIDENTS OF (NAME OF CITY, TOWN, TRAILER PARK, SUBDIVISION OR COUNTY) LIVING IN THE AREA BOUNDED BY (STREET, AVENUE, CANAL OR OTHER DESCRIPTIVE BOUNDARY)

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THE (DATE) "PRECAUTIONARY BOIL WATER NOTICE" IS HEREBY RESCINDED FOLLOWING THE (ACTION TAKEN TO CORRECT THE PROBLEM) AND THE SATISFACTORY COMPLETION OF THE BACTERIOLOGICAL SURVEY SHOWING THAT THE WATER IS SAFE TO DRINK.

IF YOU HAVE ANY QUESTIONS, PLEASE CALL (NAME, AGENCY) AT (PHONE NUMBER).

(           SIGNATURE           )  
(NAME, TITLE AND AGENCY OF  
OFFICIAL RESCINDING THE NOTICE)

# **Best Management Practices For Water Main Breaks and Repairs**

<b>ATTACHMENT C</b>
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## **1. Interruption of Service**

Whenever possible, repair work shall be performed without interruption of service. If an interruption is necessary, the repair plan shall include considerations to minimize the length of time for the outage. These considerations include measures to assure all equipment and supplies to effectuate the repair are available at the site to expedite the repair once service is interrupted.

## **2. Pipe Conditions**

If pipe cannot be repaired under pressure by use of a repair clamp, the pipe should not be completely depressurized until the pipe is exposed and the pit meets the conditions described in 8 below. After the pipe is unpressurized, a continuous outflow of water from the pipe on each side of the repair should be maintained during the repair process to eliminate the potential for the introduction of contaminants, and to facilitate ongoing flushing action. Precautionary boil water notices shall be issued when these conditions cannot be maintained.

## **3. Magnitude of Area Impacted**

Consideration shall be given to the relative size of the area impacted not only with regard to geographic size but also to the number of customers affected. A broken water main encompassing a small area, and a limited number of customers still could have negative consequences on the health of those affected. It is thus important that precautionary measures are undertaken by the water utility.

## **4. Potential Hazards**

A survey of potential hazards in the vicinity of the work area shall be completed. Potential sources of contamination such as septic systems or underground storage tanks may be cause to issue a precautionary boil water notice regardless of safeguards implemented at the work site. Due consideration should be given to this potential on a case-by-case basis.

Service connections within the area of consideration should also be surveyed. Any connection without the proper type of backflow prevention device, and, or the presence of multi-story buildings shall be factored into the decision-making relative to potential for contamination.

## **5. Flushing**

Whenever possible, unidirectional or bi-directional flushing towards the work site should be done before, during, and subsequent to a water main break or repair activity.

As a measure of flushing effectiveness, chlorine residuals shall be evaluated in the immediate and surrounding areas around the repair site. Flushing should be continued until system residuals are resumed and stabilized within the water distribution system, to achieve the minimum required disinfectant residual throughout the system.

#### **6. Isolation of Area**

In an effort to localize drops in service pressure, minimize impacts to service, and reduce opportunities for contamination, valves should be closed or throttled as needed to isolate the repair area as much as possible. The length of pipe(s) with a reduction in pressure or less than full pipe conditions should be minimized.

#### **7. Service Connections**

Consideration to backflow and the presence of multi-story buildings should be given in order to reduce the potential for the water main to have contaminants introduced, thus it may be prudent to valve off applicable service connections in the area impacted.

#### **8. Pit Considerations**

Standing surface, ground, or potable water in the pit of a water main break should not be allowed to remain during periods of unpressurized pipe conditions, less than full pipe flow, or whenever flow is not being maintained. Portable dewatering pumps shall be utilized to keep the hole dewatered below the pipe inverts during all repair activities. Additionally, soil should be excavated to a minimum depth of 12 inches below the pipe inverts. Precautionary boil water notices shall be issued when these conditions cannot be maintained.

#### **9. Disinfection and Bacteriological Testing**

All repair items, piping, and appurtenances shall be properly disinfected or swabbed in accordance with Rule 62-555.340, F.A.C., and AWWA Standard C651.

As a record of procedural BMP effectiveness, a minimum of one bacteriological sample should be collected on either side of the repair area for two consecutive days. In the case of precautionary boil water notices, they may be lifted after receipt of one day of satisfactory analytical results. However, if the analytical results are positive, two consecutive days of satisfactory water quality analyses are required prior to rescinding the boil water notice. The utility shall coordinate this activity with the local FDEP and/or DOH representatives.

#### **10. Type of Event**

Unplanned repair or outages have an inherently higher risk of potentially impacting public health than planned or "controlled" events. Hence, this should be duly weighted into decisions regarding issuance of precautionary boil water notices. As such, coordination between the DEP or DOH/CHD office and the affected utility is important to determine the necessity for the issuance of a precautionary boil water notice. It is important that the actions of the affected utility comply with Rule 62-555.340, F.A.C.