



PUBLIC HEALTH DEPARTMENT

Environmental Health Division

BACKUP WATER SUPPLY PLAN CHECKLIST

Address the following items in writing. The plan should be specific to your facility.

- ✓ **Are you going to evacuate your facility?** (How long are you going to wait before you move the residents? Where are you going to take the residents/patients? Do you have D.H.S.R. and D.S.S. approval to move the residents/patients?)
- ✓ **Potable Water Source (Drinking Water Supply)** (Who is your supplier?)
- ✓ **Amount of Drinking Water required for Total Resident/Patient Population**
(2 Liters of drinking water per Day/Per Resident).
- ✓ **Amount of Drinking Water required for Staff (Per Day)**
- ✓ **Non-Potable Water Source (Water can be used for flushing toilets)** (Where are you going to get it?)
- ✓ **Hand Washing Procedure** (What are you going to use? Hand sanitizer?)
- ✓ **Resident/Patient Bathing Procedure** (What are you going to use? Baby wipes? Dry bathing products?)
- ✓ **Laundry Procedure** (How much extra linen supply do you have? Where are you going to take the laundry? Is your laundry out-sourced?)
- ✓ **General Cleaning Procedure** (Are your cleaning products pre-mixed or concentrated? If they are concentrated products how are you going to mix your cleaners with water?)
- ✓ **Dish Washing Procedure.** (Are you going to use single-service/disposable products?)
- ✓ **Food Preparation Procedure** (What are you going to cook? Canned Goods? Frozen pre-made foods? How much do you need/per day?)
- ✓ **Toilet Flushing Procedure** (How will you transport the non-potable water to the toilets? How will you monitor toilet use?)
- ✓ **Boil Water Advisory Procedure** (See attached procedure in the guide book)
- ✓ **Notify Health Department if Water Outage Exceeds 4 Hours** (Place this statement at the beginning of your plan).

Planning for Water Supply Emergencies at Institutions

Background

The most serious health hazard after a disaster is the deterioration in environmental conditions, particularly water supply and disposal of human wastes. Health care facilities must have water to safely feed and shelter patients in the facility. To maintain sanitation and infection control during an emergency involving loss of the primary water supply, health care institutions in North Carolina with 13 or more residents or boarders are required to have a backup water supply plan. The requirement in Rule 15A NCAC 18A .1313(f) is to plan for providing a backup water supply of 2 Liters of drinking water per day for each resident and staff person and 25 gallons of water per day per resident for other uses if the primary water supply is lost. This document is to help facilities develop an emergency water supply plan.

Types of Water Supply Emergencies

Contamination

Occasionally water supplies are contaminated with microorganisms or chemicals or are presumed to be contaminated due to a break in a water main or other damage to the distribution system. When contamination of a public water supply is suspected, the water utility operator or the Public Water Supply Section of the NCDENR Division of Environmental Health may issue an advisory or warning concerning use of the water supply. A **boil water advisory** is issued if there is reason to suspect the water supply may have been contaminated, but samples of the water have not yet been tested. A **boil water notice** is usually issued after laboratory results have confirmed the water is contaminated with microorganisms.

Water suspected of being contaminated is usually tested for total coliform and fecal coliform bacteria. A boil water notice for total coliform bacteria indicates the water has been contaminated and is of questionable safety. A boil water notice for fecal coliform bacteria indicates the water is contaminated with feces from a warm-blooded animal and is presumed to contain harmful bacteria.

If a water supply is contaminated with chemicals, the Environmental Epidemiology Section of the NCDHHS Division of Epidemiology will likely be consulted to assess the potential health risk. If the water system is regulated by the Public Water Supply Section, a **do not use notice** will be issued by the Public Water Supply Section if the health risk is deemed unacceptable. See the appendix for suggested water use restrictions.

Loss Of Water

Water supplies can be lost due to problems with the water source such as chemical contamination or drought emergencies, or with the treatment and distribution systems such as floods, power outages and damaged pipes. If your facility loses its primary water source it will be necessary to find out why the water is off and how long it might take to restore water pressure. Repair and maintenance of the distribution system which can be completed in a few hours may only require an alternative source of drinking water, while

longer-term water losses may require an alternative water supply for flushing toilets, bathing, hand washing, cooking, dishwashing, cleaning and other purposes. Obtaining a backup water supply to avoid loss of essential services requires prior planning. Following are some of the elements necessary in a backup water supply plan.

Drinking Water

Water for drinking must be immediately available during a water supply failure. Facilities are not required to store drinking water on site, but should have a plan to obtain it quickly. The amount of water needed for drinking should be estimated based on two liters of water per person per day for all residents and staff. Canned or bottled soft drinks can be used for a short term, but bottled water will be needed for longer-term water losses.

Amount of water for 10 people = 20L, or 5.3 gal, or 21 qt, or 34 (20oz) bottles, or 42 pints per day

The emergency plan should identify several nearby sources able to supply sufficient quantities of bottled water and how the water will be transported. Possible sources may include bottled water companies, food stores and wholesalers, and beer or soft drink distributors. Bottled water companies are a good source for drinking water because they also have trucks used to transport their product. Local supplies are limited and can be quickly depleted in a large-scale emergency.

The NC Division of Crime Control and Public Safety, Division of Emergency Services maintains several warehouses with stocks of bottled water to be distributed by the National Guard during such emergencies. Requests for bottled water must be made through the county or local emergency management coordinator.

Flushing Toilets

Water used for flushing toilets does not need to be suitable for drinking and can be obtained from any available water source. Some possible sources are boilers, water heaters, swimming pools, fountains and ponds. Some means of moving water, such as buckets and carts will need to be available. Toilets can be flushed by dumping one to two gallons of water from a bucket into the toilet bowl. Do not place water in toilet tanks because they are connected to the potable water supply. The emergency plan should identify the source of water for flushing toilets and where to obtain containers and carts needed to move the water to the restrooms. If no water source is available, or toilets resist flushing, plastic trash bags can be placed in toilets to collect excrement for a very short time, but that is an undesirable solution.

Backup Water Supplies

A backup water supply will be needed to maintain essential functions such as food preparation, hand washing, bathing, cleaning, dishwashing, laundry and disposal of bodily waste whenever the primary water source is disrupted for more than one day. Generally the backup water supply should be planned to provide 25 gallons of water per day for each resident unless the plan includes alternatives to reduce the amount of water needed such as switching to single-service dinnerware to reduce dishwashing or outsourcing laundry operations.

Facilities regularly serving 25 or more patients and staff are regulated by the Public Water Supply Section and cannot switch to another water source without prior approval from NCDENR Division of Environmental Health, Public Water Supply Section. Smaller facilities connected to larger public water systems must obtain approval from the Public Water Supply Section and the water supplier before any physical connection is made to the building plumbing system.

The local health department must be notified of any water loss exceeding four hours. If it is necessary to switch to a backup water source, the regional engineer of the Public Water Supply Section must be notified as early as possible so they can get to the site to approve connections involving public water supplies.

On-site wells

Some facilities have on-site wells to provide backup water in an emergency. To serve as a backup water supply for a building connected to a public water supply, the backup well must meet all of the requirements of the *Rules Governing Public Water Systems* (15A NCAC 18C). For buildings not connected to a public water supply, backup water wells must be approved by a local environmental health specialist in accordance with *Rules Governing Protection of Water Supplies* (15A NCAC 18A .1700).

The backup well and storage tank must be purged and the pump run periodically to limit scale and corrosion and prevent the pump from seizing. Wells approved by the local health department must be tested for coliform bacteria at least annually and records maintained to avoid a delay getting approval to connect the well to the building plumbing. **Only wells which are approved community water supply wells can be physically connected to a building which has a public water supply connection.** Those wells must meet all requirements of the *Rules Governing Public Water Systems*.

Transported water

Facilities without a backup water well will have to rely on tanker trucks to transport water from an approved water source. Use of a tanker truck to move water from one public water supply system to another requires Public Water Supply Section approval of the water source, tanker, and connection to the facility. Permission will also be needed from the source water system from which the water will be obtained. The Public Water Supply Section Regional Engineer will need to be notified as early as possible to assist with the necessary approvals. Some considerations which should be included in the emergency plan are:

- **Where to obtain water** – You can expect some delay getting another water system to approve filling a tanker and identifying where the tanker can draw the water. Identifying another nearby water system and who to contact to provide permission and designate a filling point could help when an emergency arises. Watering points specifically designed for filling tanks are preferred over hydrants, which may allow contamination. During an emergency the Public Water Supply Section Regional Engineer should be able to help identify possible source water systems in your area.

- **Where to get a water tanker** – This can be the most difficult part of the process – particularly if a widespread emergency has created a demand for tankers. Food-grade tanker haulers are the best source of tankers because those haulers are used for carrying food products and have the ability to clean and sanitize a truck for delivery of water. Milk haulers may be able to provide a truck in an emergency. Potable water tanks available at most agricultural supply dealers can also be mounted on trucks to haul water. In an emergency you can request help finding a water hauler through the local Director of Emergency Management. The supply of food-grade tanker-haulers in North Carolina is too limited for all institutions to obtain pre-need contracts. We must recognize that hauling water may not be reliable in large-scale emergencies and facilities may still need to be evacuated.
- **Where to park the tanker** – Since the tanker will need to be connected to the building plumbing, it will need to be close to the building where connective piping can enter the system without crossing traffic areas. Knowing where the truck might be will also help with planning how much pipe will be needed to make a connection.
- **Isolating the building plumbing** – Before the building plumbing can be pressurized with water from the backup water supply, it will be necessary to close the connection to the primary water supply. Some hospitals and other large buildings have more than one service connection to the water system. The emergency plan should include a diagram or written description of where the shutoff valve(s) is(are) located. Usually it is a corporation stopcock at the water meter and may require a special tool to close.
- **How to make the connection** – Once a tank of water is on site, there will need to be equipment including a potable water pump, pressure bladder tank, pressure switch, pipes and fittings to make a connection to the building plumbing. Pipes and plumbing will have to meet *NSF/ANSI Standard 61 Drinking Water System Components*. Chlorine bleach will also be needed to chlorinate the equipment and water prior to opening a connection. Facilities are not required to purchase equipment before it is needed, but the emergency plan should include a shopping list of necessary parts and equipment and a list of suppliers in your area where the materials can be obtained.
- **Electricity** – Depending on the emergency, an electric generator may be needed to power the water pump. If water is introduced to a plumbing system which uses a sewage pump for wastewater disposal, that pump will also need electricity to avoid a sewage backup in the building. Since the water pump will generally have to be located at the tank, electrical wire should be included on the shopping list.
- **Limits on use** – Water which has been transported to a site is not usually recommended for drinking because the extra handling increases the risk of contamination and the water will have to receive extra chlorination. It may be necessary to label water fountains “Do Not Drink” and continue obtaining bottled water, and bagged ice until the primary water supply is restored and cleared for drinking.

Contact List

To save time during a water supply emergency it is helpful to keep a contact list of people who may need to be contacted. Following are some suggested contacts:

Contact	Name	Telephone	Reason to Contact
Water Utility Operator			Find out what is wrong and how long it may take to repair
Local Health Dept. Environmental Health Specialist			Must be notified of water loss lasting more than 4 hours
Public Water Supply Section Regional Engineer			To approve backup water source, tanker and connections
NC Dept. of Health and Human Services Licensing Agent			Must be notified if water is unfit for consumption
Plumber			To connect backup water supply to building plumbing
Local Emergency Management Coordinator			Coordinates all requests for state or federal emergency aid
Backup Water Supply Source Water Utility			To gain approval to obtain water and identify watering point

Recommended Water Use Restrictions for Institutions during Boil Water Advisory or Boil Water Notice

When public water systems have problems, which could cause the water supply to be contaminated with bacteria, water users may be advised or notified that the water should not be used for drinking unless it is first boiled or disinfected with chlorine. The notification can be made either by the water system operator or the NCDENR Division of Environmental Health, Public Water Supply Section. Users may also be notified not to use water which may have chemical contamination making it unfit for drinking. During such notifications, the Division of Environmental Health, Environmental Health Services Section recommends institutions use these guidelines for restricting water use.

Types of Notifications:

Boil Water Advisory means there has been a problem which may have increased risk for the water system to be contaminated. Advisories are generally issued if there has been a break in a water main or the system has lost pressure. An advisory does not mean bacteria have been found in the water. It is a precautionary statement issued before water testing has been completed.

Boil Water Notice is a notice to the public that tests show coliform bacteria are present in the water system. When coliform bacteria are found additional testing is conducted to see if the contamination includes fecal coliform bacteria. If fecal coliform bacteria are present a warning will be issued that the water is contaminated with fecal coliform bacteria. Total coliform bacteria are usually harmless, but do indicate the water has been contaminated. Fecal coliform bacteria can make you sick and are an indication that other harmful bacteria are likely to be in the water.

Do Not Drink The Water notifications can be issued for either bacteria or chemical contaminants which indicate the water is so contaminated it should not be consumed and boiling or disinfecting the water may not offer adequate protection.

Recommended Use Restrictions:

Consumption of Water

Discontinue consumption of tap water regardless of the type of advisory or notification. Turn off ice makers, soda fountains, drinking fountains, and any other water-using equipment which requires water which might be ingested. Label all remaining water sources "Do Not Drink". Provide bottled water or drinks for staff and patients. Use only bagged ice from an approved water source. During a Boil water advisory or notification of total coliform contamination, water from the water system can be used for drinking only if it is boiled or disinfected with chlorine before drinking. If possible, use bottled water for drinking. During a Boil Water

Notification of fecal coliform contamination water from the water system must be boiled before drinking. During a Do Not Consume notification, water from the water system should not be consumed.

Food Preparation

During a Boil Water advisory or a Boil Water Notice for total coliform contamination serve only food heated to at least 165° F as part of the cooking process, packaged foods, and fruit which is normally peeled before eating. Food service workers should use hand sanitizers after washing their hands.

During a Boil Water Notice due to fecal coliform contamination or a Do Not Consume Notice, discontinue food preparation and serve only pre-packaged foods obtained from approved commercial sources not affected by the boil water notice and fruit which is normally peeled before eating.

Dishwashing

During a Boil Water Advisory or a Boil Water Notice for total coliform contamination only commercial dishwashers equipped with hot water (180° F) sanitizing cycles should be used for washing dishes. Facilities not equipped with 180° dish machines should use only single-service eating and drinking utensils.

During a Boil Water Notice for fecal coliform contamination or a No Not Consume Notice discontinue use of multi-use utensils and use only single-service utensils and packaged foods.

Hand Washing

If contaminated water is used for hand washing, a further step must be taken to inactivate bacteria which the water might leave on your hands. For food service workers, the use of hand sanitizers is recommended as an extra step. For health care workers, it is recommended that hand decontamination include the use of alcohol-based hand antiseptic rubs. In situations where water is not available, health care workers can achieve hand antisepsis by using pre-moistened detergent towelettes for washing followed by an alcohol-based hand antiseptic.

Bathing

Bathing in contaminated water poses a much lower risk of infection than drinking or washing food. During a Boil Water Advisory or a Boil Water Notice for total coliform bacteria, people with healthy immune systems and intact skin should be able to use the water for bathing if care is taken not to ingest the water. During a Boil Water Notice for fecal coliform bacteria, bathing is not recommended. People who have weaker immune systems including those who are infected with HIV/AIDS, cancer and transplant patients taking immunosuppressive drugs, and people born with a weakened immune system should be more cautious and avoid contact with contaminated water if possible. Some elderly people and infants may also be at increased risk of infection. Care should be taken to avoid getting contaminated water on open wounds.