

Guidelines for Small Water Systems

Bureau of Water October 2000



South Carolina Department of Health and Environmental Control

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INTRODUCTION

This document is intended for use by South Carolina Department of Health and Environmental Control staff as guidance for small water systems added to the State's Water Supply Inventory. Each public water system is required to have and maintain up-to-date written standard operating procedures for the operation and maintenance of its system according to all applicable laws and regulations as published in the State Primary Drinking Water Regulations R.61-58. The document objective is to help small water systems with many record keeping requirements. Experienced staff members will find this document useful as a source of reference information concerning regulatory requirements for specific elements of the sanitary survey. Staff members who are new to the sanitary survey program will find this document to be a useful training tool for use in conjunction with on-site training received from the district and central office staff.

The completion of this document has been made possible by the Bureau of Water Drinking Water Committee 2000. Although many individuals contributed to the preparation and review of this document, the assistance of the individuals listed below is especially acknowledged for their efforts. The omission of any deserving name from this list is both unintentional and regrettable.

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SAMPLE COVER LETTER FOR SMALL WATER SYSTEMS

Bureau of Water

[Date]

[Name of public water system]

Attn: [Contact Name]

[Title]

[Mailing Address]

Re: [System Name]

[System Number] (to be assigned)

[County Served]

Dear [Contact Name]

The water system serving [serving area] in [county served] has been added to the State's Water supply Inventory. You are required to operate and maintain the aforementioned water system in accordance with all applicable laws and regulations as published in the State Primary Drinking Water Regulations R.61-58. Enclosed you will find some information that will assist you in many record keeping requirements. You should develop a Standard Operating Procedures (SOP) manual and Emergency Plan in accordance to **R.61-58.7** and **R.61-58.8**.

A sanitary survey will be conducted on this water systems on a routine basis. During the survey, Departmental personnel will review the condition of the well(s), distribution system, and storage tank(s). In addition to the inspection of the physical system and its infrastructure, the Department personnel will review all applicable paperwork and record keeping. Records to be reviewed will included (but not be limited to) the systems standard operating procedure manual, sampling results, sample siting plan, system map, valve maintenance program, flushing program, leak detection and repair program, and emergency plan.

If you have any questions or comments concerning this matter, please contact me at [district personnel's office number].

Sincerely,

[EQC District Personnel's Name]

[Title]

[EQC District Location]

HYDRANT MAINTENANCE PROGRAM

HYDRANT PROGRAM

Purpose:

The purpose of this item is to ensure that a system's hydrants are being maintained such that they may be located and operated as needed.

Guidelines**Hydrant Maintenance**

Properly operating hydrants are essential for fire protection and insurance purposes. In addition, a water system may be held liable if hydrants do not operate properly in emergency situations. A proper hydrant maintenance program will ensure that hydrants are operational, that adequate fire flow and pressure is available, and identify any necessary maintenance. At a minimum, a hydrant maintenance program must include the following components:

- An updated system map indicating the location and number of all hydrants
- A schedule for flow testing and performing routine maintenance
- Documentation of hydrant type, date of installation, and a record of maintenance work performed for each hydrant
- Documentation indicating that necessary maintenance is being performed

Usually the same system map is used for the valve and hydrant maintenance programs. A schedule for the regular inspection and flow testing of fire hydrants is also required. AWWA recommends color coding hydrant bonnets based on the available flow. The color code recommended by fire code is given in the table below.

BONNET COLOR	AVAILABLE FIRE FLOW
Black or Bagged	Out of Service Hydrants
Orange	500-1000 gpm @ 20 psi
Green	1000 - 1500 gpm @ 20 psi
Light Blue	> 1500 gpm @ 20 psi

Some systems use a different color scheme which is set forth by the local fire department. This is an acceptable alternative as long as it is consistent. There have also been many discussions as to how much of a hydrant should be color coded. Some water systems paint the entire hydrant, others paint the entire top/cap/bonnet, while still others paint only the rim around the cap. Any or all of these are acceptable. The color code that is used by the system should be documented and this documentation should be provided to the Fire Department. Like the valve maintenance program, certain documentation is required.

Records should be kept on hydrant type, date of installation, maintenance work, and most recent flow test results. Procedures for performing hydrant maintenance and flow tests should also be available.

HYDRANT INSPECTION AND MAINTENANCE

1. Install Traffic Control and Make Provisions for Adequate Drainage.
2. CLEAN UP AND EVALUATE THE HYDRANT
 - Remove any obstructions around the hydrant.
 - See if paint is needed.
 - See if hydrant needs to be raised because of a change in ground surface grade.
3. LOOK FOR MAIN VALVE LEAKS
 - Use a listening device and check for main valve leakage.
 - Remove outlet-nozzle cap. Check for water or ice in the hydrant barrel.
 - Replace cap and leave it loose enough for some air to escape.
 - Check breakaway device for damage before operating the hydrant.
4. LOOK FOR STEM-THREAD BUILDUP AND ANY ADDITIONAL LEAKS
 - Open hydrant slowly and allow air to vent from the loosened cap.
 - Tighten the outlet nozzle cap and open the hydrant all of the way.
 - Open and close the hydrant a few times to remove any hard water buildup on the stem threads. Check the lubrication before going on with the inspection.
 - Use a listening device to check for leaks in the upper barrel.
 - Check for leakage at the flanges, around outlet nozzles, at packing or seal and around the operating stem. Repair any leaks as needed.
 - Close the hydrant slowly and completely. Back off the operating nut enough to take pressure off the thrust bearing or packing.
 - Remove an outlet nozzle cap and get ready to flush the hydrant.
5. FLUSH AND CLEAN THE HYDRANT
 - While the hydrant is flowing, locate and test the isolation valve. If the water flow cannot be stopped, schedule repair of the isolation valve.

6. INSPECTION OF OUTLET-NOZZLE CAP CHAINS AND CABLES

- Remove all outlet nozzle caps, clean the threads, check the condition of the gaskets, and lubricate the threads.
- Check outlet nozzle cap chains or cables for free action of each cap.
- Adjust the main valve to make sure it's closed tightly and there are no leaks.
- Replace the caps and tighten them so that they can be removed by hand.
- Check the lubrication of operating nut threads.

7. FILL OUT THE HYDRANT INSPECTION AND MAINTENANCE REPORT

- Notify the fire department regarding any hydrants which need repair.

HYDRANT FLOW TESTING

1. INSTALL TRAFFIC CONTROL AND MAKE PROVISIONS FOR ADEQUATE DRAINAGE.
2. AT RESIDUAL HYDRANT :
 - Flush residual hydrant to eliminate sediment.
 - Install outlet-nozzle cap equipped with pressure gauge on outlet nozzle.
 - Open main valve slowly until air is vented. Close vent and open main valve fully.
 - Read the gauge. This is the static pressure.
3. AT FLOW HYDRANT:
 - Measure and record inside diameter (ID) of the outlet nozzle from which flow is to be measured.
 - Determine outlet nozzle coefficient based on the shoulder entrance. For a rounded shoulder, the coefficient is 0.9. For a square shoulder the coefficient is 0.8. For a nozzle which protrudes into hydrant barrel, the coefficient is 0.7.
4. CONDUCT THE FLOW TEST:
 - Station one observer at the residual hydrant and one observer at the flow hydrant.
 - Open flow hydrant slowly until fully opened.
 - When pressure at the residual hydrant has stabilized, the observer signals the person stationed at the flow hydrant to take the readings. The readings for residual pressure and Pitot-tube readings should be taken simultaneously.
 - Record residual and Pitot-gauge reading. Then, close flow hydrant slowly.

HYDRANT MAINTENANCE WORKSHEET

DATE / /

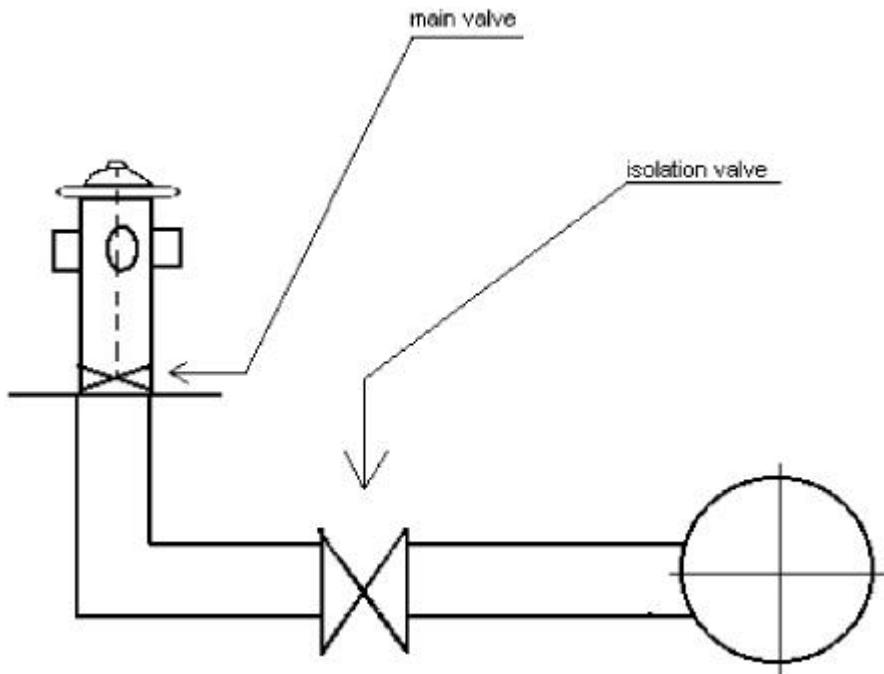
CREW _____

FLOW TESTING REMINDERS

When flow testing hydrants, use a nearby hydrant or home spigot to measure the residual pressure. If this is not feasible the residual pressure may be taken from the flow hydrant, but this is not recommended since the pressure at the flowing hydrant will almost always be less than the actual residual pressure in the line. If the flow hydrant is located on a radial (dead end) line, then the residual pressure should be taken at a home spigot or hydrant that is downstream since that is where the lowest (and therefore critical) residual pressures will be.

If the residual pressure in the line does not fall below 20 psi during a flow test, then the hydrant may be color coded with the color corresponding to its flow when the hydrant is "wide open". However, if the flow hydrant is capable of flowing, say 800 gpm but the residual pressure in the line drops below 20 psi, then the operator can choke (throttle) the flow by turning the hydrant's isolation valve, if there is one, to see if the residual pressure gets back to 20 psi. The isolation valve should be left in this position to prevent low pressures when the Fire Department opens the main valve during a fire. They should not touch the isolation valve. The flow rate when this occurs should be the flow rate that the color code is based on.

For example, consider a hydrant that will flow 1200 gpm with the main valve wide open (as if fighting a fire or flushing), but the residual pressure in the line is only 17 psi. Choke down on the isolation valve until the residual pressure stabilizes at around 21-22 psi. Then read the flow and color code accordingly. (See picture below)



If a hydrant is determined to be substandard (will not flow 500 gpm or maintain a residual pressure of 20 psi in the line), the bonnet should be marked, bagged, or painted the appropriate color (usually black for low residual or red for low flow). Such hydrants should then be repaired, removed, or used for flushing/engineering purposes only (like a post hydrant). The fire department should be informed of any substandard hydrants along with the associated color coding. They are not to use substandard hydrants.

VALVE MAINTENANCE PROGRAM

VALVE PROGRAM

Purpose:

The purpose of this item is to ensure that a system's valves are being maintained such that they may be located and operated as needed.

Guidelines:

Valve Maintenance

Properly operating valves are critical when a portion of the distribution system must be isolated, such as when a line break occurs. A valve maintenance program extends valve life and results in long term savings to the system. A water system must have a program for inspecting, exercising, and maintaining system valves. At a minimum the program should include the following components:

- An updated system map indicating the location and identification of all valves
- Documentation of valve type, date of last exercise, number of turns to close, and a record of maintenance work for each valve
- A schedule for regular exercise and routine maintenance
- Documentation that valves are being exercised in accordance with the valve maintenance plan and that necessary maintenance is being performed

An accurate and complete system map is essential to both the valve and hydrant maintenance programs. This map should indicate all distribution lines, line sizes, valve locations, hydrant locations and corresponding valve and hydrant numbers. The map is critical if valves are to be located in a timely manner during an emergency. The program should include a schedule for exercising valves and performing maintenance. This may simply be a statement of how often and in what order valves are to be exercised. A review of valve records will indicate whether the program is being executed according to the plan. Records of the size, type, date of last exercise, number and direction of turns to close, and maintenance work for each valve must also be maintained.

Many small systems simply devote a single page in a notebook to each valve which includes all pertinent information and a sketch of the valve location relative to intersection, hydrants, or property lines. Procedures for exercising valves and performing routine maintenance are also recommended to ensure consistency. These may include procedures for establishing traffic control, for notifying appropriate personnel if change-out is required, etc.

VALVE OPERATION WORKSHEET

VALVE DEFICIENCY REPORT

DATE ___/___/___

CREW _____

FLUSHING PROGRAM

FLUSHING PROGRAM

Purpose:

The purpose of this item is to ensure that the system's routine flushing program is adequate to help prevent customer complaints and water quality problems associated with stagnant, discolored, and sediment-laden water. An added benefit of an active flushing program is that it helps to maintain a disinfectant residual throughout the distribution system.

Guidelines:

There are two distinct types of flushing programs recommended for public water systems: 1) A system-wide flushing, where scouring velocities are maintained to clean the water line, and 2) The low velocity flushing used to maintain chlorine residuals in the distribution system. Both of these flushing programs are important for the water system and are required by the State Primary Drinking Water Regulations.

The flushing program should include a map of the distribution system and flushing records. These records should include the date, time, location, velocities, total flushing time, size of line, length of line, flow rate, time to clear, volume of water used, chlorine residuals, and other relevant information.

Another item that the water system should maintain and use with their flushing program is past water quality reports and complaint records. These two items are good indicators of whether or not an adequate flushing program is being conducted. However, a water system should not simply flush the system as a response to water quality complaints.

FLUSHING LOG

LEAK DETECTION AND REPAIR PROGRAM

LEAK DETECTION AND REPAIR & WATER AUDITS

Purpose:

The purpose of this item is to ensure that the water system is actively searching for water line leaks and using sanitary practices to repair those leaks.

Guidelines:

The water system should be carrying out a leak detection and repair program on a continuous basis. Depending on the size and complexity of the water system various components of this program could include the following:

Water Audit: A water audit is a comparison of the amount of water produced with the amount of finished water sold plus the amount of water used for flushing procedures, fire fighting activities, etc. Because some systems have staggered billing cycles, the consumption records may fluctuate from month to month. Therefore, an average loss should be calculated monthly over at least a one (1) year period. Water systems should strive for 10% or less unaccounted for (lost) water.

Visual Inspections: System personnel should report any leaks that are noticed during routine distribution maintenance. Low lying areas, are good places for system personnel to focus their attention on because line breaks are more apt to occur in lower areas in the distribution system where the pressure is greatest.

Audible Inspections: Listening devices can be placed on fire hydrants, valves or directly on the ground over a water line to determine if there are leaks. These devices can be as simple as a metal or wooden rod or as sophisticated as a hydro-phonic probe equipped with an amplifier. The water system may want to have an agreement with a neighboring utility or private contractor so they may lease more expensive equipment when the need arises.

Leak repair procedures must be fully documented, and various methods can be approved as long as adequate disinfection is achieved. The American Water Works Association recommends that a repaired section of pipe be filled with a solution containing a chlorine residual of 200 mg/L. This solution should be allowed to stand in the pipe for two (2) hours and then flushed out. For most water systems this method is not practical due to time constraints and system demands. An alternative method is to swab the inside of the pipe with the same chlorine solution.

The most common deficiency noted under this item is the lack of adequate record keeping. The leak repair form should include the date the repair was made, the location of the leak, the size line repaired, the disinfection method, the flushing procedures, and the resulting chlorine residual. A copy of the bacteriological monitoring results and the estimated amount of water lost due to the leak should also be included. Both the amount of water

lost due to the leak and the amount used to flush the line should be included in the water audit.

LEAK DETECTION/WATER USAGE/TANK INSPECTION/WELLHEAD INSPECTION LOG

SYSTEM MAP

SYSTEM MAP

Purpose:

Each system must have a current and accurate map of the distribution system to aid in the proper operation of the public water system and to be able to respond to emergency situations.

Guidelines:

System maps should include the following:

- all sources with source #
- treatment plants
- storage tanks
- distribution lines with sizes
- pumping facilities
- valves
- hydrants and blow-offs
- sampling sites

The complexity and level of detail required for the system map may vary depending on the size and type of water system. For most community water systems, a detailed map which is drawn to scale is required.

SYSTEM MAP

Draw map below (or attach a map). Be sure to include well(s) or master meter(s), storage tank(s), taps (buildings), valves, distribution lines and sizes, and blow-offs. Include sampling points if map is to be used for sample siting plan.

SAMPLING SITING PLAN

SAMPLE SITING PLAN

Purpose:

The purpose of this item is to evaluate the system's sample siting plan to determine if it is adequate to ensure that there are no places in the distribution system where microbiological contamination could persist indefinitely with little chance of detection.

Guidelines:

One of the requirements of the Total Coliform Rule is that each public water system (community and non-community) has a written sample siting plan to follow when collecting total coliform samples from the distribution system. The plan must include a map of the distribution system and a detailed description of how the sampling plan will be carried out. The distribution map must show the locations of all of the following: distribution water lines, water sources, storage tanks and sampling points.

The sample siting plan should be designed such that system coverage is accomplished with each month's samples. Systems which are required to take more than five (5) samples per month must take the samples at regular time intervals throughout the month. All major portions of the distribution system must be covered by the sampling plan. Each sample point in the plan must be sampled at least every three (3) months. The sample plan should avoid sampling points which are served by major transmission mains, and should target areas served by smaller pipes or dead end lines.

BACTERIOLOGICAL SAMPLE SITE PLAN FOR

SYSTEM # _____

_____ **COUNTY**

This potable water system is required to collect one total coliform sample per calendar quarter. A DHEC representative at the following location will collect the sample(s):

_____ (First Quarter).

_____ (Second Quarter).

_____ (Third Quarter).

_____ (Fourth Quarter).

Sample locations must be selected to ensure that there is no place in the distribution system where microbiological contamination could persist indefinitely with little chance of detection. Sample locations should also consist of outside spigots that are easily accessible by DHEC personnel, i.e., not under buildings. If the water system consists of one building, the same sample location can be used for each quarter.

If a quarterly sample is present for total and/or fecal coliform, then repeat samples will be collected in the following manner utilizing 200 ml bottles:

- 1.) One tap .Collect two (2) 200 ml bottles from the same tap.
- 2.) Two taps .Collect two (2) 200 ml bottles; one from each tap.
- 3.) Three taps .Collect three (3) 200 ml bottles; one from each tap.
- 4.) Four or more taps .Collect four (4) 200 ml bottles as follows:
 - A. One (1) sample from the original sample site.
 - B. One (1) sample within five service connections upstream.
 - C. One (1) sample within five service connections downstream.
 - D. One (1) sample anywhere in the distribution system.

If these repeat samples are absent of coliform, then DHEC will collect a total of five (5) samples during the following month. Four of these five sample sites should correspond to the original repeat sample sites as described above. If these five samples are absent of coliform, the water system may return to quarterly monitoring. Accordingly, if these five samples fall into the next compliance quarter, they will be considered as compliance sample(s) for that quarter.

If the repeat samples are present for total and/or fecal coliform, DHEC personnel will notify the owner to disinfect and flush the potable water system. After disinfection, a DHEC representative will collect another four repeat samples from the original set of repeat sample location(s). If these repeat samples are absent of coliform, then the procedures outlined in the previous paragraph apply. If these repeat samples are positive for coliform, DHEC will notify the water system of further requirements.

CROSS CONNECTION CONTROL PROGRAM

CROSS CONNECTION CONTROL PROGRAM

Purpose:

The purpose of this item is to ensure that the water system has a program in place to identify and eliminate cross-connections between the public water system and possible sources of contamination.

Guidelines:

There will be some difference in the complexity of cross-connection control programs for small systems. The term “small system” in this context means any system which has only residential customers, such as a trailer park or subdivision. The Department requires that a system’s cross-connection control program to be at least as stringent as our guidelines, but the system has the authority to establish more stringent guidelines as it deems necessary.

Small Systems

Small public water systems must also establish and maintain a viable cross-connection program. However, the necessity of a written program will depend upon the circumstances of the particular system. Many systems choose to protect themselves by installing a residential dual check at every service connection. This device requires no annual test, is easy to install, relatively inexpensive and is reliable. This program includes check valves located at the well head.

Lawn Irrigation Systems

Small water systems will have to deal with the use of residential or commercial lawn irrigation equipment used in their respective service areas.

For a simple underground lawn irrigation sprinkler system, several backflow prevention devices are acceptable: double check valve assembly (DCVA), pressure vacuum breaker (PVB) or the atmospheric vacuum breaker (AVB). If chemical concentrates are aspirated or injected into the lawn irrigation system or there is an unapproved auxiliary water supply (private well, irrigation well, etc.) tied into the lawn irrigation system, this type of system will be considered a high hazard or health hazard cross connection; therefore the only acceptable protective devices will be reduced pressure principle backflow preventer (RPPA) or an approved air gap separation. The residential dual check will no longer be acceptable for backflow prevention protection on any new lawn irrigation sprinkler systems.

The benefits of a proper cross-connection control program far outweighs the required investment. The system is ultimately responsible for the safety of its customers and the protection of its distribution system from contamination. If a system requires assistance in implementing or revitalizing a cross-connection control program, the Department has a program devoted to training certified testers and offering assistance to water systems.

**CROSS CONNECTION CONTROL PROGRAM
(For State and Small Community Systems with Only Residential Taps)**

Check All That Apply

- Check valves at the well head.
- Residential dual check valves have and/or will be installed as service connections are added and/or repaired.
- Vacuum breakers or similar device will be installed on all outside spigots.
- Other (please specify in space below).

WELLHEAD PIPING
(Check Valve, Blow-off, Sample Tap, Gate Valve)

WELLHEAD PIPING (Check Valve, Blow-off, Sample Tap, Gate Valve)

Purpose:

The purpose of this item is to ensure that the wellhead piping is configured in such a way as to minimize the potential for contamination of the source while also providing for proper testing and control of the well.

Guidelines:

Proper Order of Appurtenances

In order to ensure proper control and testing and to prevent contamination of the source, the wellhead appurtenances should be configured in the following order:

Air/Vacuum Release Valve - On Vertical Turbine Pumps, this should be the first appurtenance in order to allow air to escape and avoid entering the system during startup and to break the vacuum on the pump when the pump stops.

Check Valve - Should be the first appurtenance after the well pump, except as noted above. This will prevent any potentially contaminated water from entering the well when the well pump is not running. Not required on jet pumps.

Pressure Gage - Must be after check valve.

Flow Meter - Must be after the check valve and before the blow off such that all water discharged from the well will be routed through the meter. See item # 6 for requirements for flow meters.

Raw Water Sample Tap - For sampling the well before any treatment; must be located down stream of the check valve

Blowoff - Must be downstream of the check valve and meter (if applicable).

Isolation Valve - For isolating the well from the system when the blowoff is being utilized.

Chemical Injection Point(s) - (If applicable) Must be located down stream of the check valve, flow meter, raw water sample tap and blowoff. A separate injection point shall be provided for each chemical.

Finish Water Sample Tap - (if applicable) For sampling treated water if treatment is added.

Gate Valve - Located down stream of the previous sample tap and before any storage tank or tie to the distribution system. This gate valve may be located after the storage tank if the well is equipped with a jet pump (which could lose prime if valved off) as long as the blow-off and all sample taps are protected from cross connections.

Chemical injection points should never be buried, but rather should be enclosed in a chemical injection vault if not located inside the well house.

Protection from Freezing

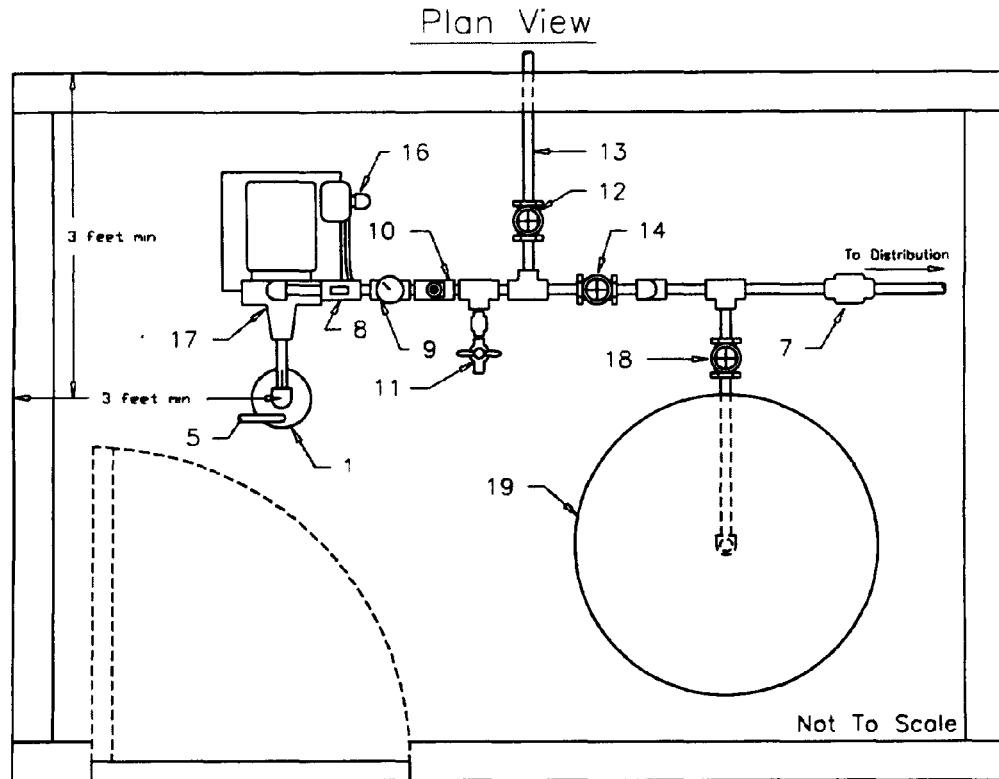
The well and the wellhead piping must be properly protected from freezing where necessary. Enclosure in a pump house may be the only protection required in some instances, however, additional measures may be required. This requirement is difficult to evaluate during an inspection and would generally not effect the overall rating unless continued operational problems have been experienced due to freezing.

Sample Taps

Sampling taps shall not be of the petcock type, shall not be of the mixing type, and shall not have a screen, aerator or other such appurtenances. In order to ensure a proper sampling point for taking Total Coliform samples, it is best to use a smooth-nosed type tap without interior or exterior threads, however an existing tap with threads is still acceptable if proper precaution is taken when collecting the sample. All taps must be easily accessible and located at least 12 inches above the floor or ground level.

WELLHEAD AND TANK INSPECTION LOG/WATER USAGE

Diagram 1: Jet Pump Well Head Diagram



Profile View

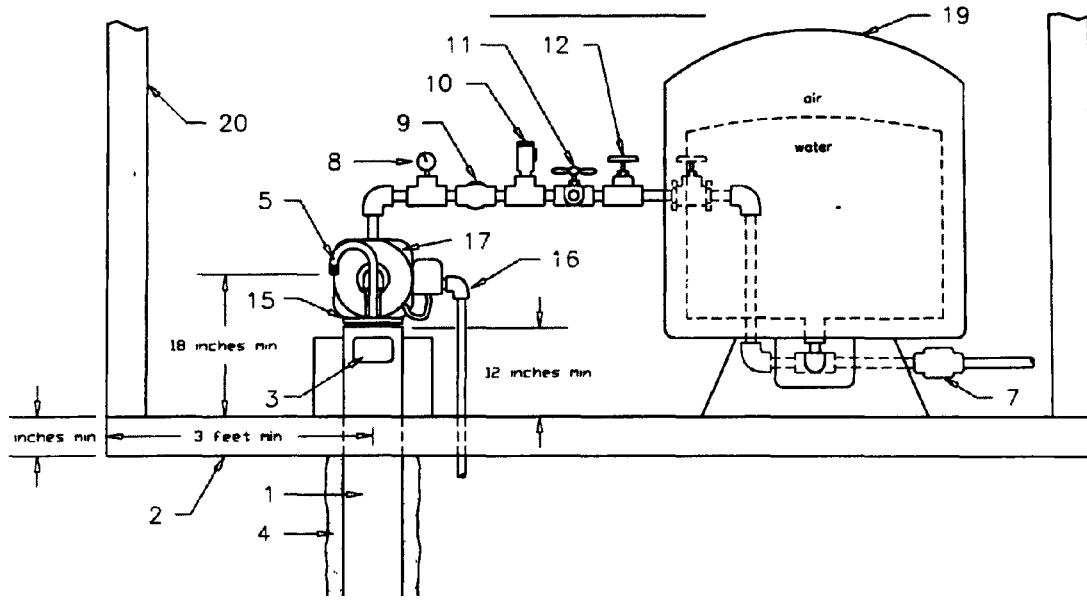
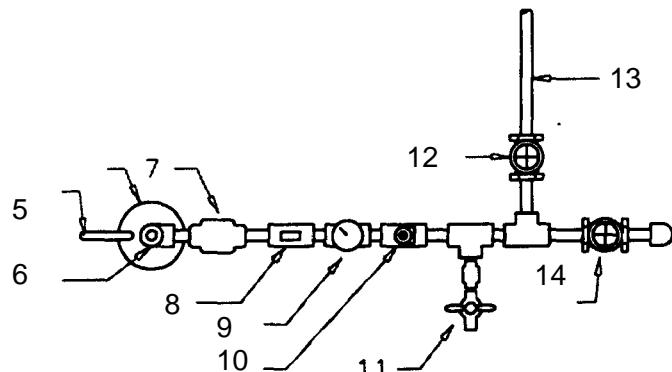


Diagram Key for Jet Pump and Submersible Pump Systems

Diagrams 1 and 2.

1. **Well Casing:** the top of the well casing shall extend at least twelve (12) inches above the concrete pad or pump house floor.
2. **Concrete Pad:** a minimum radius of three (3) feet from the center of the well casing and a minimum thickness of four (4) inches.
3. **Well Identification Plate:** must be permanently installed immediately after completion of drilling.
4. **Grout:** well must be grouted in accordance with the construction specifications of this permit.
5. **Screened Vent:** must face downward with the opening located a minimum of eighteen (18) inches above the concrete pad or well house floor. Screen must have an effective opening of .024 inches or smaller. *This item is not required on packer type jet pumps.*
6. **Air / Vacuum Valve (optional):** design of the system may require this valve. This item is not needed on a jet pump system.
7. **Check Valve**
8. **Pressure Gauge**
9. **Flow Meter:** must be located down stream of the check valve and before the blow-off. This item is required on any public water supply well where the yield of the well cannot be easily measured from the blow-off using a bucket and stopwatch or by other means acceptable to the Department. The flow meter must be capable of measuring both instantaneous and totalized flow.
10. **Pressure Relief Valve (optional):** may be installed anywhere along the well head piping prior to the gate valve (#14) and must be sized to discharge the total flow of the pump at a pressure less than or equal to the working pressure of the storage tank. This item is required whenever the pump is capable of operating at a pressure greater than the working pressure of the storage tank.
11. **Sample Tap:** must be located down stream of the check valve and before the gate valve isolating the well from the system (#14).
12. **Gate valve:** for blow-off.
13. **Blow-off:** must be located down stream of the meter (#9) and before the gate valve (#14) for isolating the well from the system.
14. **Gate Valve:** for isolating the well from the system.
15. **Sanitary Well Seal:** all openings other than the screened vent (#5) shall be effectively sealed against the entrance of water under all conditions.
16. **Electric Cable:** must be enclosed in conduit and meet the requirements of the National Electric Code.
17. **Jet Pump and Motor:** shown with pressure switch mounted on motor housing.
18. **Gate valve:** for isolating the tank from the distribution system.

19. **Bladder Tank:** this type of tank may be used on either jet pump or submersible pump systems although it is not shown on the Submersible Pump Well Head Diagram.
20. **Well Head Protection:** the well head must be protected from freezing and from vandalism by a lockable protective cover or pump house.

Diagram 2: Submersible Pump Well Head DiagramPlan View

Not To Scale

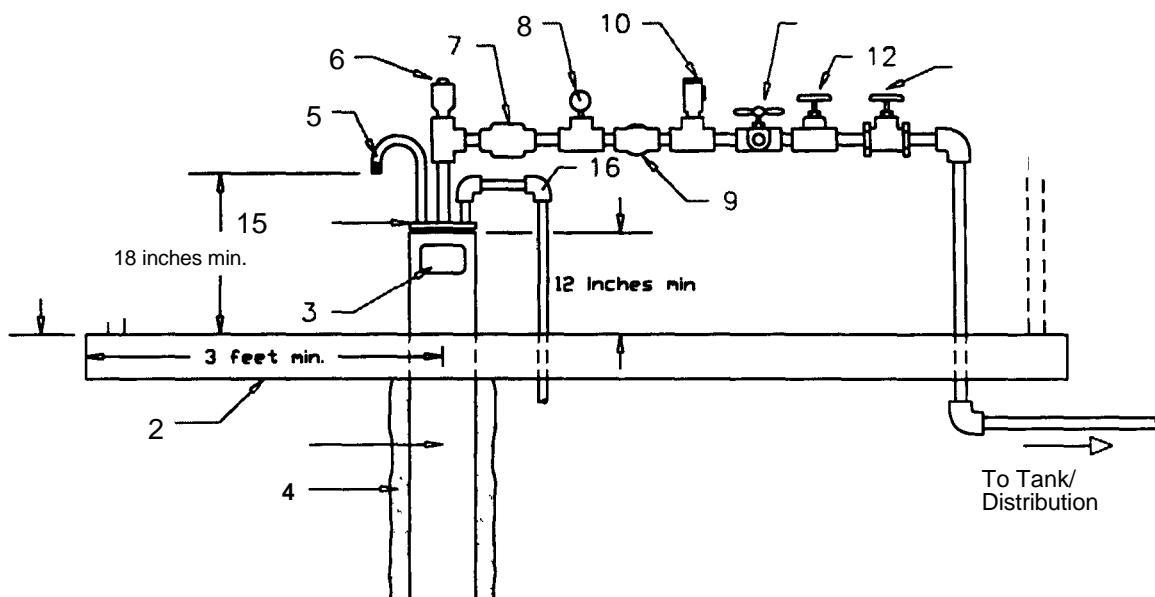
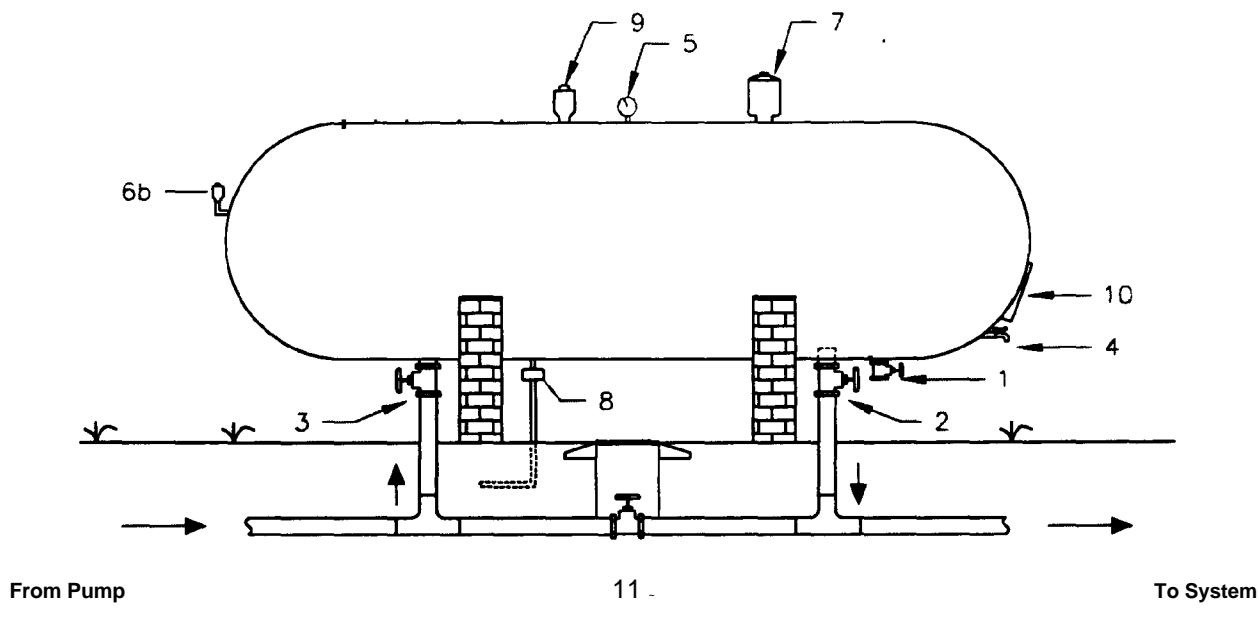
Profile View

Diagram 3: Typical Piping for Standard Hydro-Pneumatic Tank



Key

1. **Drain valve:** required on all standard (non-bladder) tanks. The drain must be a minimum of two (2) inches in diameter on tanks 500 gallons and larger.
 2. **Outlet w/ isolation valve:** a flow through arrangement is required on all standard (non-bladder) tanks. The outlet must be located on the opposite end of the tank from the inlet. An isolation valve is required on the outlet. Notice that the outlet piping extends slightly above the bottom of the tank to prevent sediment from entering the distribution system.
 3. **Inlet w/ isolation valve:** a flow through arrangement is required on all standard (non-bladder) tanks. The inlet must be located on the opposite end of the tank from the outlet. An isolation valve is required on the inlet.
 4. **Sample tap:** required on all storage tanks.
 5. **Pressure gauge:** required on all storage tanks. Can be located in the inlet or outlet piping on the tank side of the isolation valve.
 6. **Air makeup system:** required on all standard (non-bladder) tanks. The system shown is an air compressor (6a) and air volume control valve (6b). This type of system is required on tanks 2000 gallons and larger. A snifter valve (dry pipe) arrangement may be used on smaller tanks.
 7. **Pressure relief valve:** required on any tank, which is provided with an air compressor. This valve must be adjusted to fully open at or below the maximum working pressure of the tank.
 8. **Pressure switch:** may be located on the inlet piping or on the tank itself. If located in the inlet piping, it must be close enough to the tank so that the pump will not short cycle due to friction loss.
 9. **Vacuum relief valve:** required on tanks 500 gallons and larger.
 10. **Access manhole:** required on tanks 500 gallons and larger.

11. **Bypass piping:** required on tanks 500 gallons and larger. The purpose of this arrangement is to allow the tank to be repaired without removing the associated well or booster pump from service.

EMERGENCY OPERATION PLAN

EMERGENCY OPERATION PLAN

Purpose:

The purpose of this item is to ensure that the public water system has an up-to-date Emergency Preparedness Plan which addresses who to contact and any arrangements that would be necessary in the event that there is an emergency involving the treatment facility, the treatment process, or the distribution system.

Guidelines:

The system should have an emergency / contingency plan that outlines what action will be taken and by whom. The emergency plan should meet the needs of the facility, the geographical area, and the nature of the emergency likely to occur. Conditions such as storms, floods, and major mechanical failure should be considered. The emergency plan should be updated annually, and larger facilities should practice implementation of the plan annually.

It is very important that water systems have an up-to-date copy of the Emergency Preparedness Plan at a location that is readily accessible. The Emergency Preparedness Plan should address the critical parts of the water system (e.g., raw water source, treatment, storage, power source, and crucial areas such as hospitals or dialysis centers) and at a minimum, contain the following elements (if applicable):

- the telephone number of the Department's District office, the Department's Bureau of Water office and the Department' twenty-four (24) hour telephone number;
- the names and telephone numbers of current chemical suppliers;
- the names and telephone numbers of the electric power, natural gas, telephone and cable companies;
- the names and telephone numbers of the potential sources of spare parts, pipe sections and pipe repair parts;
- the names and telephone numbers of contractors to call for making any repairs beyond the capability of the system personnel;
- the names and numbers of well drillers;
- arrangements for obtaining emergency power;
- arrangements for obtaining potable water;
- an up-to-date distribution map showing line sizes, the location of larger valves, fire hydrants, blow-offs, and pumping, storage and treatment facilities;
- Procedures for notifying the public and media including a sample Boil Water Notice and a sample Boil Water Advisory; and,
- Emergency disinfection procedures for wells, water lines and storage tanks.

In addition to the above list, Emergency Preparedness Plans for community water

systems must also include the following (if applicable):

- the name and telephone numbers of the County Emergency Preparedness representative, the local law enforcement and highway patrol offices, and the local fire department(s) and Emergency Medical Service (EMS);
- the telephone number of the State Emergency Preparedness office;
- the names and telephone numbers of water system personnel who should be notified in the event of an emergency;
- the locations and telephone numbers of primary and secondary command posts that may be utilized in the event of an emergency;
- the names, addresses and telephone numbers of equipment suppliers and contacts for equipment repair, i.e., pump motors, pump shafts, etc.; and,
- a list of any mutual aid agreements among water systems, such as emergency connections, personnel, equipment supplies and chemical supplies.

If a water system is located in a coastal area, it should also include specific emergency procedures to handle hurricanes.

EMERGENCY INFORMATION FOR SMALL COMMUNITY WATER SYSTEMS

I. NAME, ADDRESSES AND PHONE NUMBERS OF STATE AND LOCAL OFFICIALS AND OTHERS CONTACTS

1. LOCAL ENVIRONMENTAL QUALITY CONTROL (EQC) OFFICE:

Name: _____
 Address: _____

Telephone: _____

2. BUREAU OF WATER:

S.C. Department of Health and Environmental Control
 2600 Bull Street
 Columbia, SC 29201
 Telephone: (803) 898-4300

3. DHEC 24-HOUR EMERGENCY RESPONSE TOLL-FREE TELEPHONE NUMBER:

Telephone: 1-888-481-0125

4. COUNTY EMERGENCY PREPAREDNESS OFFICE:

Name: _____
 Address: _____

Telephone: _____

5. STATE EMERGENCY PREPAREDNESS OFFICE:

Emergency Preparedness Division
 Rutledge Building
 1429 Senate Street
 Columbia, SC 29201
 Telephone: (803) 734-8020

6. _____ WATER SYSTEM

PERSONNEL:
 (add additional information if more than one person)

Name: _____
 Address: _____

Telephone: _____

7. PRIMARY AND SECONDARY EMERGENCY PREPAREDNESS COMMAND POSTS:

Name: _____

Address: _____

Telephone: _____

Name: _____
 Address: _____

Telephone: _____

8. CONTACT FOR OBTAINING ANY CHEMICALS NEEDED:

Name: _____
 Address: _____

Telephone: _____

9. ELECTRIC POWER COMPANY:

Name: _____
 Address: _____

Telephone: _____

10. EQUIPMENT SUPPLIER:

Name: _____
 Address: _____

Telephone: _____

11. CONTACT FOR OBTAINING EMERGENCY WATER SUPPLY:

Contact the County Emergency Preparedness Office
 (Refer to item 4)

EMERGENCY INFORMATION FOR SMALL COMMUNITY WATER SYSTEMS

12. LIST OF CONTRACTORS FOR MAJOR REPAIRS OR CLEANUPS:

Name: _____

Address: _____

Telephone: _____

Name: _____

Address: _____

Telephone: _____

II. PROCEDURES TO FOLLOW FOR VARIOUS TYPES OF EMERGENCIES

1. BREAK IN SERVICE DUE TO WELL PUMP OUT OF SERVICE, POWER OUTAGE, OR LINE BREAK

(A) Notify District Environmental Quality Control Office by phone. If this office can not be contacted, call the Bureau of Water or the DHEC 24 hour telephone number. (always notify if system pressure fails below 10 psi)

(B) Notify appropriate water system operators

(C) Contact electric power company, if power outage

(D) Issue boil water notice

(E) Contact contractor to make repairs (furnish specifications)

(F) Disinfect water system and flush

(G) Sample for BACTERIOLOGICAL CONTAMINATION (must have at least two samples free of contamination collected on consecutive days before system is placed in service)

2. CONTAMINATION FROM PETROLEUM PRODUCTS AND OTHER CHEMICALS

(A) Notify District Environmental Quality Control Office. If this office can not be contacted call Bureau of Water or DHEC 24 hour telephone number.

(B) Notify appropriate water system personnel

(C) Notify customers

3. DISASTER FROM HURRICANE, EARTHQUAKE ETC. WITH LINE BREAKS, FLOODING AND/OR LOSS OF POWER

(A) Notify District Environmental Quality Control Office by the fastest means available. If this is not possible, try to contact the Bureau of Water or the DHEC 24 hour telephone number

(B) Notify appropriate water system personnel

(C) Notify county and state emergency preparedness centers of your systems condition

(D) Issue boil water notice to be in effect until system is cleared of problems

(E) Notify customers by explaining situation and estimate specifications)

(F) Contact contractor by explaining situation and estimate time of return of service

(G) Flush and disinfect water system

(H) Sample for bacteriological contamination (must have at least two samples free of contamination collected on consecutive days before boil water notice is lifted)

(I) If necessary, do complete chemical analysis

NOTE: These emergency procedures are to be part of the operation and maintenance manual of the water system. Equipment specifications, instructions for disinfecting the various parts of the water system, sample boil water notice must be included in this manual.

BOIL WATER NOTICES AND ADVISORIES

INTRODUCTION

Customers of public water systems trust and depend on their providers and state officials to ensure that their drinking water is safe and to notify them when there is a problem concerning the safety of the water. The purpose of this document is to provide guidance on how to notify the customers of a public water system when there is a problem with their drinking water supply.

The words "Boil Water" used in the title of this document represents the action to be taken by a customer in the case of microbial contamination. This is the most common type of contamination problem that public water systems experience.

Although microbial contamination is the most common type of contamination problem, it is not the only one. Occasionally public water systems experience chemical contamination of the water supply as a result of a cross connection or a chemical or petroleum spill. During such events, the basic guidelines for notifying the customers are the same; however, the action to be taken will be different. The action to be taken during such events is often for the customer not to use the water for drinking or cooking, and in some cases bathing.

In the past, the South Carolina Department of Health and Environmental Control (Department) and other industry professionals have suggested the use of chlorine bleach as a means of disinfecting small quantities of water for drinking or cooking. However, since such treatment will not kill all parasitic organisms, the Department is no longer endorsing the use of such treatment in lieu of boiling the water.

DEFINITIONS

The difference between a "Boil Water Notice" and a "Boil Water Advisory" depends on the degree of certainty that a water system has been contaminated. The definition for each is as follows:

"Boil Water Notice" means a notice, whether written or verbal (i.e., media), issued by the Department, or the owner or operator of a public water system, notifying the users of the water system that the water is contaminated and to boil the water (vigorous rolling boil for at least one minute) prior to using it for drinking or cooking. The notice shall give the reason for its issuance and corrective actions being taken.

"Boil Water Advisory" means an advisory, whether written or verbal (i.e., media), issued by the Department, or the owner or operator of a public water system, notifying the users of the water system that the water may be contaminated and to boil the water (vigorous rolling boil for at least one minute) prior to using it for drinking or cooking. The advisory shall give the reason for its issuance and corrective actions being taken.

WHEN TO ISSUE A BOIL WATER NOTICE OR ADVISORY

A "Boil Water Notice" should be issued when sampling indicates that there is a threat to public health. The Department has identified some situations when such a notice is warranted. These situations are as follows:

- Any fecal positive routine sample followed by a fecal positive repeat sample. The sampling in this situation has confirmed that pathogenic organisms are in the drinking water.
- If the Department and/or the owner repeatedly collects total and/or fecal coliform positive samples from a well after shock disinfection and the well does not have continuous disinfection treatment. This is an indication that the well may be under the direct influence of surface water.

A “Boil Water Advisory” should be issued when an event has occurred which could have possibly contaminated the drinking water. The following are some situations where a boil water advisory may be warranted:

- Loss of pretreatment at a surface water treatment plant (i.e., no floc) and the untreated water reaches the distribution system. The finished water turbidities in this case may, or may not, be greater than 5 NTU. In this situation, it is likely that microbial contamination has reached the distribution system; however, it will be at least 24 hours before contamination can be confirmed through testing. Therefore, an advisory should be issued immediately.
- Loss of pressure in the entire distribution system or a significant portion of a distribution system.
- A line break where dirt and debris have entered the distribution piping.
- Prior to a hurricane making landfall.
- The use of emergency groundwater sources that have not been sampled or flushed on a regular basis.

Please note that the above situations are not the only times that a boil water notice/advisory should be issued. The Drinking Water and Recreational Water Compliance Section of the Bureau of Water can assist anyone in making a decision to issue a boil water notice/advisory, as well as assist in determining what actions should be taken to correct the problem and when to repeal the alert.

CONTENT AND FORMAT OF A BOIL WATER NOTICE OR ADVISORY

It is very important that a “Boil Water Notice or “Boil Water Advisory” include the following information:

- **Title of the notice/advisory** - The title must include the words “Boil Water Notice” or “Boil Water Advisory”, to whom the notice/advisory is being issued and the date issued.
- **A statement of who is issuing the notice/advisory** - This would be either the Department or the name of the water system. As a general rule, the owner of the water system should issue the notice/advisory, even if it is being issued as a result of sampling conducted by the Department. However, if a notice/advisory is deemed necessary for the protection of public health, and the owner of the water system is unavailable or unwilling to issue the notice/advisory, the Department will take the initiative of issuing the alert. Notices/advisories issued by the Department should only be issued by EQC District Directors or the Director of the Drinking Water and

Recreational Water Compliance Section or their designee. In the case of a hurricane or flood, the Department will take the initiative to issue a "Boil Water Advisory" to the affected areas. Such an advisory will also be addressed to private well owners.

- **A statement of what area of the water system the notice/advisory affects** - For example, the entire system, north west portion, southern portion, customers along a specific road, etc.
- **A statement that the residents should vigorously boil their water for at least one full minute prior to drinking or cooking.** In the past, there have been several values used for the length of time that water should be vigorously boiled prior to use. However, the latest information from the Center for Disease Control (CDC) indicates that vigorously boiling water for one full minute is more than adequate to kill any pathogens and make the water safe to drink.
- **An explanation of why the notice/advisory is being given** - This is where the difference in a "Boil Water Notice" and a "Boil Water Advisory" comes into play. In the case of a "Boil Water Notice", the notice is issued because bacteriological sampling indicates that the drinking water has become contaminated, or there has been a waterborne disease outbreak. In the case of a "Boil Water Advisory", the advisory is given because there has been an event which could have contaminated the water system, such as a line break, loss of pressure, high turbidity in the finished water, etc.
- **A statement reiterating that the water should be vigorously boiled for at least one full minute prior to drinking or cooking and that any ice made from water that has not been boiled should not be use for drinking purposes.**
- **A statement of what actions are being taken to correct the problem, and by whom.**
- **A statement that customers will be notified when the problem has been resolved and there is no longer a need to boil the water.**
- **Give the name of the office or person and phone number to contact for questions.**
- **Signature of responsible party at the bottom of the notice.**

An example of a notice and advisory is attached for reference.

DISTRIBUTION OF THE NOTICE OR ADVISORY

There are several means by which the notice or advisory may be distributed. If the water system or affected area of a water system is relatively small, a written notice/advisory may be hand delivered to the door of each residence. In addition to the door to door delivery a copy of the notice/advisory should be posted in places normally frequented by the residents, such as post offices, convenience stores, gas stations, etc.

The notice/advisory must never be placed in mail boxes because many of the residents may have already checked their mailbox for the day and thus may not receive the alert until the next day. Also, placing non-mailed items in a mailbox is a federal offense.

If the affected area is large, the notice/advisory should be made by electronic media such as local radio and television stations. In severe cases, such as waterborne disease outbreaks, the local Emergency Preparedness Division should be contacted to aid in getting the message to consumers through the emergency broadcast system.

COMMUNICATION WITH THE DEPARTMENT

The State Primary Drinking Water Regulations require that if a public water system issues a boil water notice or advisory, the Department must be notified immediately. The regulations further require that a copy of the notice/advisory be forwarded to the Department as soon as possible after it is issued.

The regulations also require that a system notify the Department when the boil water notice/advisory is repealed and a copy of the repeal notice forwarded to the Department as soon as possible after it is issued.

Generally, public water systems should coordinate with the Department's District Environmental Quality Control (EQC) offices. EQC District personnel will, in turn, coordinate activities with the Drinking Water and Recreational Water Compliance Section of the Bureau of Water (a list of telephone numbers for these offices and the Department's 24-hour number is attached). If the District EQC Office cannot be reached, the system should then call the Water Supply Permitting and Technical Assistance Division or the Department's 24-hour number.

SUGGESTED ACTIONS TO BE TAKEN FOLLOWING THE ISSUANCE OF A NOTICE/ADVISORY

In the event of a pressure loss to all, or a portion, of the distribution system, intense flushing should begin as soon as pressure is restored. After flushing the affected area, several coliform samples must be taken throughout the affected area to determine if the distribution system is free of any bacteriological contamination. If applicable, chlorine residual measurements should be taken to ensure that there is an adequate disinfectant residual. If possible, chlorine dosages should be increased by 1 to 2 parts per million during this period as a corrective and preventive measure. If the sampling indicates the absence of coliform bacteria, the advisory should be repealed. However, if the sampling indicates the presence of coliform bacteria, additional flushing should be conducted in the area where the positive coliform samples were collected and a second round of coliform samples collected from that area.

If a notice is issued as a result of positive bacteriological sample results, intense flushing and re-sampling (at least two sets of samples taken at least 24 hours apart) of the area should be conducted. Also, if possible, chlorine dosages should be increased as mentioned above. When at least two sets of samples, taken at least 24 hours apart, indicate the absence of coliform bacteria, the notice should be repealed.

The Department will issue a boil water advisory to the potentially affected area prior to any hurricane. Immediately following the hurricane, the public water systems and the Department will evaluate the systems for damage. If a system did not lose pressure and the water quality being pumped to the system was maintained (i.e., low turbidities,

adequate chlorine residual) during and after the storm, the advisory should be repealed. However, if the system lost pressure, the same action specified above should be taken.

REPEAL OF A BOIL WATER NOTICE OR ADVISORY

The repeal of any boil water notice or advisory should be distributed in the same manner as it was issued. The repeal of a notice or advisory should include the following information:

- **Title of the notice/advisory** - The title must include the words “Repeal of Boil Water Notice” or “Repeal of Boil Water Advisory”, to whom the repeal is being issued and the date issued.
- **A statement of who is issuing the repeal** - This would be the same as who issued the notice or advisory.
- **A statement of what area of the water system the repeal affects** - Generally this will be the same as mentioned in the notice or advisory; however, in certain cases the repeal may only apply to a portion of the area.
- **A statement that the residents no longer need to vigorously boil their water prior to drinking or cooking.**
- **An explanation of why the notice/advisory is being lifted** - Explain what actions have been taken to correct the problem to ensure that the water is safe to drink without boiling.
- **Give the name of the office or person and phone number to contact for questions.**
- **Signature of responsible party at the bottom of the repeal.**

BOIL WATER NOTICE**TO****THE RESIDENTS OF _____****_____ (Date)**

The _____ (Utilities/Water System Name) advises the residents of the _____ (Area Location), located in _____ County, to vigorously boil their water for at least one (1) full minute prior to drinking or cooking.

Analyses of recent bacteriological samples collected by the (Utilities/Water System Name) from the drinking water system serving the _____ (Area Location) indicate that the water system has become contaminated. Residents should continue to vigorously boil their water for at least one (1) full minute prior to drinking or cooking until otherwise notified by the _____ (Utilities/Water System Name). Also, any ice made from water which has not been boiled should not be used for drinking purposes.

The _____ (Utilities/Water System Name) is presently working to correct the problem.

If you should have any questions concerning this Notice, you may call the _____ (Utilities/Water System Name) at _____ (Telephone Number).

Owner/System Representative Name

cc: SC DHEC (Local Office)

Repeal of The BOIL WATER NOTICE

TO

THE RESIDENTS OF _____**_____ (Date)**

The _____ (Utilities/Water System Name) advises the residents of the _____ (Area Location), located in _____ County, that they no longer need to boil their water prior to drinking or cooking.

Following an intense flushing of the distribution system, bacteriological samples were collected and analyzed by the _____ (Utilities/Water System Name). The results of this sampling indicate that the system is now safe to use for drinking and cooking purposes.

If you should have any questions concerning this repeal of the Boil Notice, you may call the _____ (Utilities/Water System Name) at _____ (Telephone Number).

Owner/System Representative Name

cc: SC DHEC (Local Office)

Sample public notification to be used in the case of a Maximum Contaminant Level (MCL) exceedance (total coliforms):

PUBLIC NOTIFICATION

The _____(name of water system) reports that the maximum contaminant level for coliform bacteria as established by the State Primary Drinking Water Regulations was exceeded during the month(s) _____.

The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that the presence of total coliforms is a possible health concern. Total coliforms are common in the environment and are generally not harmful themselves. The presence of these bacteria in drinking water, however, generally is a result of a problem with water treatment or the pipes which distribute the water, and indicates that the water may be contaminated with organisms that can cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and any associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water, but may also be caused by a number of factors other than your drinking water. EPA has set an enforceable drinking water standard for total coliforms to reduce the risk of these adverse health effects. Under this standard, no more than 5.0 percent of the samples collected during a month can contain these bacteria, except that systems collecting fewer than 40 samples per month that have one total coliform-positive sample per month are not violating the standard. Drinking water which meets this standard is usually not associated with a health risk from disease-causing bacteria and should be considered safe.

The _____(name of water system) has taken the following action to correct this maximum level violation:

EXAMPLES:

The Water System has been disinfected and repeat samples show the water to be safe.

OR

The Water System is currently flushing water lines in an effort to clear the system.

OR

The Water System is working with the Department of Health and Environmental Control to correct the problem.

If you have any questions concerning this notice, please call _____(point of contact) at _____(area code and phone number) or write to _____(address of water system).

Sample public notification to be used in the case of an Acute Maximum Contaminant Level (MCL) exceedance:

PUBLIC NOTIFICATION

The _____(name of water system) reports that the maximum contaminant level for coliform bacteria as established by the State Primary Drinking Water Regulations was exceeded during the month(s) of _____.

The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that the presence of fecal coliforms or E. coli is a serious health concern. Fecal coliforms and E. coli generally are not harmful themselves, but their presence in drinking water is serious because they usually are associated with sewage or animal wastes. The presence of these bacteria in drinking water is generally a result of a problem with water treatment or the pipes which distribute the water, and indicates that the water may be contaminated with organisms that can cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and any associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water, but may also be caused by a number of factors other than your drinking water. EPA has set an enforceable drinking water standard for fecal coliforms and E. coli to reduce the risk of these adverse health effects. Under this standard, all drinking water samples must be free of these bacteria. Drinking water which meets this standard is associated with little or none of this risk and should be considered safe. Department and local health authorities recommend that consumers take the following precautions:

VIGOROUSLY BOIL WATER FOR AT LEAST ONE (1) FULL MINUTE PRIOR TO DRINKING OR COOKING UNTIL NOTIFIED OTHERWISE BY THIS DEPARTMENT.

The _____(name of water system) has taken the following action to correct this maximum level violation:

EXAMPLES:

The Water System has been disinfected and repeat samples show the water to be safe.

OR

The Water System is currently flushing water lines in an effort to clear the system.

OR

The Water System is working with the Department of Health and Environmental Control to correct the problem.

If you have any questions concerning this notice, please call _____(point of contact) at _____(area code and phone number) or write to _____(address of water system).

Pruebe la notificación pública a sea usado en el caso de un exceedance Máximo Agudo del Nivel de Contaminant (MCL):

La NOTIFICACION PUBLICA

El **(el nombre de sistema de agua)** los informes que el nivel máximo de contaminant para bacterias de coliform como establecido por el Estado las Regulaciones Primarias de Agua que Beben se excedieron durante el mes (s) de. Los Estados Unidos los conjuntos De Entorno de la Agencia (EPA) de la Protección bebiendo los estándares de agua y han determinado que la presencia de coliforms de fecal o E. coli es una salud grava concierne. Coliforms de Fecal y E. coli generalmente no es perjudicial sí mismos, pero su presencia a beber agua dice en serio porque ellos son asociados generalmente con desechos de agua residual o animal. La presencia de estas bacterias a beber agua es es generalmente un resultado de un problema con el tratamiento de agua o los tubos que distribuyen el agua, e indican que el agua se puede contaminar con los organismos que pueden causar la enfermedad. Los síntomas de la enfermedad pueden incluir diarrea, los calambres, nausea, y posiblemente jaundice, y algún dolor de cabeza y la fatiga asociados. Estos síntomas, sin embargo, no se asocian apenas con organismos de causa de enfermedad a beber agua, pero pueden ser causado también por varios factores de otra manera que su bebe agua. EPA ha puesto un estándar aplicable de agua que bebe para el coliforms de fecal y E. coli a reduce el riesgo de estos efectos adversos de la salud. Bajo este estándar, toda agua que bebe prueba debe ser libre de estas bacterias. El agua que bebe que reúne este estándar se asocia con pequeño o ninguno de este riesgo y se debe considerar caja fuerte. El departamento y las autoridades locales de la salud recomiendan que consumidores tomen las precauciones siguientes:

VIGOROSAMENTE AGUA de DIVIESO PARA POR LO MENOS UNO (1) REPLETO DIMINUTO ANTES DE BEBER O COCINA HASTA NOTIFICADO DE OTRO MODO POR ESTE DEPARTAMENTO.

El **(el nombre de sistema de agua)** ha tomado la acción siguiente a corrige esta infracción plana máxima:

Los EJEMPLOS:

El Sistema de la Agua se ha disinfected y repite la exposición de muestras el agua al ser seguro. O

El Sistema de la Agua limpía actualmente las líneas de agua en un esfuerzo a limpia el sistema. O

El Sistema de la Agua trabaja con el Departamento de la Salud y el Control De Entorno a corrige el problema. Si usted tiene cualquiera pregunta concerniendo esta nota, por favor llamada **(el punto del contacto)** en **(código de área y número de teléfono)** oescribe a **(la dirección de sistema de agua)**.

**La revocación de Agua de Divieso Consultor
a
(Entra el Nombre de Sistema)**

La fecha: _____

El (entra el nombre de sistema) avisa a los clientes del (identifica la subdivisión específica, el pueblo, etc.), Localizó en (no entra condado) Condado, que ellos necesidad más larga al divieso su agua antes de beber ni cocinar.

Limpiar intenso siguiente del sistema de la distribución, las muestras de bacteriológico se reunieron y fueron analizadas por el Departamento. Los resultados de este probar indican que el sistema es ahora seguro para propósitos de beber y cocinar.

Si usted debe tener cualquiera pregunta concerniendo la revocación del Divieso Consultor usted puede llamar (el nombre del contacto) en (el número de teléfono de contacto).

El Representante del sistema

**La REVOCACION DEL DIVIESO REGA "CONSULTOR" O "NOTA"
(ENTRA el NOMBRE de SISTEMA O AREA AFECTADA)**

Basado en resultados satisfactorios del bacteriological que prueba conducido por el S. C. El departamento de la Salud y el Control (departamento) De Entorno, el Departamento rescinding el Divieso Rega "CONSULTOR" O "NOTA" publicado en **(ENTRA la FECHA DE CONSULTOR O la NOTA)** para el **(ENTRA el NOMBRE de SISTEMA)** en **(ENTRA el NOMBRE de CONDADO)** Condado. El Departamento no más largo avisa que los residentes se hieven su agua antes de beberlo o la cocina consigo. La muestra satisfactoria resulta seguir un programa de **(las ACCIONES de la LISTA TOMADAS POR DUEÑO)** (ie. limpiar, la desinfección, etc.) por el dueño de sistema.

La "CONSULTOR" O "NOTA" se publicaron como resultado de **(DA la RAZON PARA CONSULTOR O la NOTA)** (e. g. una línea rota de agua que causó una pérdida de la presión en el sistema de agua). Este tipo de la situación produce las condiciones que son favorables para la contaminación de bacteriological en el sistema de agua.

Si usted tiene cualquiera pregunta, por favor contacto **(ENTRA el NOMBRE del CONTACTO)** en **(ENTRA el NUMERO de TELEFONO de CONTACTO)** o **(el CONTACTO de la OFICINA del DISTRITO de EQC)** en el **(la OFICINA del DISTRITO de EQC)** la Oficina de EQC.