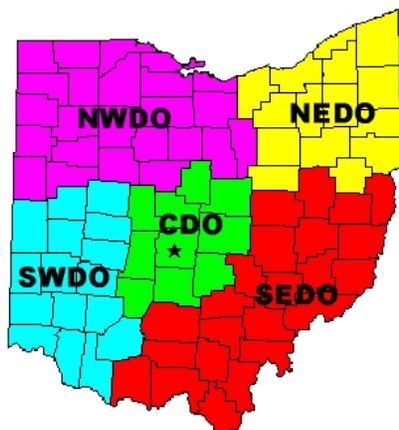


Ohio EPA District Contacts

Who should I contact if I have questions?

The Ohio EPA district offices are available to answer any questions regarding engineering design/approval and water quality monitoring requirements for water systems. Please contact the Ohio EPA district office that serves your region:



Central District Office
PO Box 1049
Columbus, OH 43216
614-728-3778

Southeast District Office
2195 Front St.
Logan, OH 43138
740-385-8501

Northeast District Office
2110 East Aurora Rd.
Twinsburg, OH 44087
330-963-1200

Southwest District Office
401 East Fifth St.
Dayton, OH 45402
937-285-6357

Northwest District Office
347 N. Dunbridge Rd.
Bowling Green, OH 43402
419-354-8461

Preparing for a Sanitary Survey

Information to Help Small Public Water Systems

This booklet is intended to be used by the owners and operators of small public water systems.



Division of Drinking and Ground Waters
P.O. Box 1049
Columbus, OH 43216-1049

April 2009

Ted Strickland, Governor
Chris Korleski, Director

This booklet is based on Washington State's Department of Health booklet of the same title. We thank Washington State for their permission to adapt and reprint this information for Ohio's public water systems.

Table of Contents

Introduction & Terminology pgs. 3–5

Public water system
Human consumption
Public water system type flow chart

Sanitary Survey Inspection Process pgs. 5–6

Regulatory requirement
What is a routine sanitary survey?
Notification and inspection
Fees
Next steps
Potential enforcement actions

Minimum Components of a Sanitary Survey pgs. 7–10

Discussion and review of records
Inspection of water system
Safe inspections

Common Deficiencies Inspectors Hope NOT to Find pgs. 11–15

Inspections reveal poor housekeeping

Water System Operations pgs. 16–21

Reliability
Operations and maintenance manual
Operations and maintenance schedule
Continuity of service

Water System Approval Process pgs. 22–23

System approval status
Approval process
Construction documentation

Annual License to Operate pg. 23

Ohio EPA District Contacts pg. 24

Water System Plan Approval Process

Construction documentation

After I receive written plan approval to construct or modify my water system, what must be done to get my new water system or modifications into operation?

- Step 1. Upon approval, construct the water system or make modifications according to approved construction plans and specification documents.
- Step 2. It is recommended to have your system designer or PE inspect the system construction and certify that the construction is in compliance with the approved construction documents. Ohio EPA district staff may also conduct construction audits or post construction inspections.
- Step 3. Once construction is complete, collect the required microbiological samples and have them analyzed in an Ohio EPA certified lab.
- Step 4. Contact your Ohio EPA district office once you have received your sample results to ensure all requirements have been met to place the system into operation.
- Step 5. Place your system into operation.

Annual License to Operate

What does the license to operate (LTO) mean for my water system?

If you operate a public water system, you must apply for an annual LTO fee for Safe Drinking Water regulatory oversight. Public water systems that are owned by churches, church owned campground, and schools accredited by the state board of education are exempt from LTO requirements.

The LTO must be posted in a conspicuous area, certifying the system is licensed with the state and signifying to consumers the status of the license. A green license or license renewal shall be issued to a public water system licensed without conditions. A yellow license or license renewal shall be issued to a public water system licensed with conditions. A red sign shall be issued to a public water system not licensed due to the denial of a renewal, suspension or revocation of the license.

Water System Plan Approval Process

System plan approval status

How do I know if my water system has ever received Ohio EPA plan approval?

Your system is approved if you have a copy of the plan approval letter from Ohio EPA.

If you have an existing water system that has not received written plan approval from Ohio EPA, contact your Ohio EPA district office for any specific requirements for the existing system.

Approval process

What if I am constructing a new water system or making modifications to my existing system?

If you propose to construct a new water system or make modifications to an existing public water system, a professional engineer (PE) licensed in the state of Ohio may be required to complete the required documentation and submit it to your Ohio EPA district office for written approval. Contact your district office for guidance on the plan approval process public water systems and requirements for a PE. You may also refer to the Ohio EPA guidelines and policies for PWS approval at www.epa.ohio.gov/ddagw/



Introduction

A safe and reliable drinking water supply is of fundamental importance to our health and well-being. Through proper operation and maintenance of your water system, you assure that safe and reliable drinking water is served to the public.

The purpose of this booklet is to help you prepare for a routine sanitary survey of your water system. While this guidance covers a broad range of topics, it is not an in-depth technical manual. It will, however, address the fundamental concepts of a routine sanitary survey and provide basic information to help you prepare for a survey.

The booklet includes the following:

- ◆ Sanitary survey inspection process;
- ◆ Minimum components of a routine sanitary survey;
- ◆ Common deficiencies inspectors hope NOT to find; and
- ◆ Information to help you operate and maintain your water system.

The components of a routine sanitary survey discussed in this guide mirrors the eight major elements required in a survey of a water system by U.S. EPA. The eight major elements reviewed in a sanitary survey include: source, treatment, distribution, finished water storage, pump facilities, monitoring/data verification, management/operation, and operator compliance. Each section summarizes the information that can be found in the regulations, policies, or guidelines. Users of this booklet should consult the Ohio drinking water regulations contained in Ohio Administrative Code Chapter 3745 and Ohio's guidance and policies for public drinking water systems for additional information. (www.epa.ohio.gov/ddagw/)

Terminology

Public water system

Is a system which provides water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least sixty days out of the year, and any water supply system serving an agriculture labor camp, as defined in section 3733.41 of the Ohio Revised Code.

Terminology

Human consumption

All drinking water should be suitable for human consumption. This applies to all water intended for human uses including drinking, hand washing, bathing, showering, oral hygiene, cooking, and dishwashing.

Water system type

Determining which rules to follow

In order to determine which requirements are applicable for your system, you need to know if you are a community, nontransient noncommunity (NTNC), or a transient noncommunity (TNC) public water system.

Community Systems

You are a community system if you serve at least 15 service connections used by year-round residents or regularly serve at least 25 year-round residents.

Noncommunity Systems

You're a nontransient noncommunity (NTNC) water system if:

- ◆ You are not a community water system and regularly serve at least 25 of the same persons over 6 months per year.

You're a transient non-community (TNC) water system if:

- ◆ You are not a community or NTNC water system and provide access to water for 25 or more different people each day for 60 or more days within a calendar year.

**Private systems, as seen in the chart on the next page, are regulated by local health departments.*

Water System Operations

Type of Record	Length of Time
Copies of project reports, construction documents, drawings, inspection reports, and Ohio EPA correspondence (i.e., approval letter, operating permit, etc.)	Life of system
Chemical analysis, copies of any reports or communication relating to Ohio EPA inspections performed or water system compliance	10 years
Records of daily operation, including chlorine residual, fluoride levels, iron and manganese levels, water treatment plant performance as applicable (i.e., types of chemicals used and quantity, amount of water treated, etc.), backflow prevention assembly testing, complaint log, incident reports, and any other useful records	5 years
Bacteriological laboratory reports	5 years
Records of public notification for violations of primary drinking water standards	3 years
Consumer Confidence Report (CCR)	3 years
Operator log books	3 years

What do I need to report to Ohio EPA?

Unless you are instructed otherwise, the information that should be reported to Ohio EPA on a routine basis is:

- ◆ Monthly Operational Reports (MOR) as directed by Ohio EPA;
- ◆ All water quality analysis;
- ◆ Violations, service disruptions or emergencies;

Water System Operations

Backflow Prevention and Cross-Connection Control

What is a cross connection?

A cross-connection is an actual or potential connection between the distribution piping of a public water system and customer plumbing or on-site piping which may contain liquid or gas. Reversal of normal flow in the water system through a cross-connection is referred to as backflow and can allow contaminants into drinking water either through back pressure or back siphonage. One example of a cross-connection is a hose with one end attached to a water line and the other end lying in a sewer drain. Other potential cross-connections can occur in automatic dishwashers, ice makers, commercial coffee urns, and post mix beverage dispensers using carbon dioxide (CO₂). All public water systems are required to develop a cross-connection control program.

What is a cross-connection control program?

A cross-connection control program protects the health of the people drinking your water and the quality of the water in the system and is required of all public water systems. The complexity of a cross-connection control program will vary depending on the size of your system and the potential risk. Ohio EPA will review your cross connection-control program during the sanitary survey.

Ohio EPA may request documentation that all facilities required to have backflow prevention devices have been surveyed as required by regulation and that these devices are properly tested. Staff may request to see the record of inspection of certain facilities and testing results of backflow preventers.

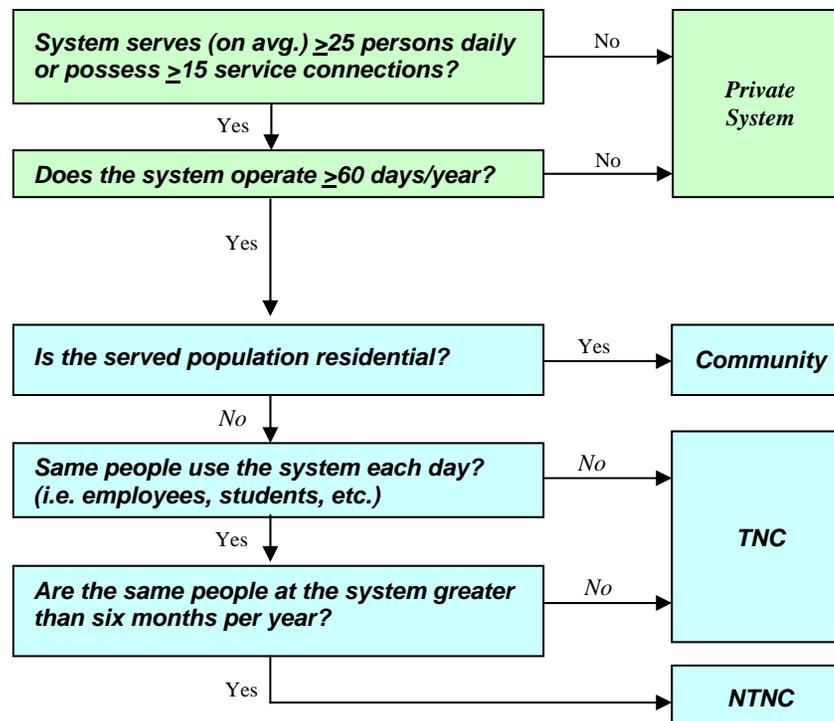
A good place to keep your cross-connection control policies and procedures is with your O & M manual.

Record keeping and reporting

What records do I need to keep and for how long?

As the owner of a water system you should keep the following records of operation and water quality analyses.

Public Water System Type Flow Chart



Sanitary Survey Inspection Process

Regulatory requirement

The federal Safe Drinking Water Act (SDWA) calls for a sanitary survey of all public drinking water systems. Ohio conducts sanitary surveys for community systems at least once every three years. Non-community water system sanitary surveys are conducted at least once every five years.

What is a routine sanitary survey?

A sanitary survey is a periodic inspection of a water system's facilities, operations, and record keeping. The inspections identify conditions that may present a sanitary or public health risk.

Sanitary Survey Inspection Process

Notification and inspection

How will I be notified?

When a sanitary survey is required, the Ohio EPA inspector will contact you to make arrangements for conducting the survey. They will work cooperatively with you to meet individual scheduling needs when possible. Ohio EPA may also conduct unannounced or limited notice inspections.

Who will conduct the survey?

Sanitary surveys are conducted by Ohio EPA Division of Drinking and Ground Waters district office staff.

Fees

There is no specific charge for Ohio EPA to conduct a sanitary survey of your facility.

Next steps

What happens after the survey is completed?

After the survey is done, the inspector will discuss with you any observed deficiencies. A completed sanitary survey report and letter with findings, recommendations and requirements will be mailed to you. Please read the letter and report carefully, as it describes any observed deficiencies found during the inspection. It is your responsibility to correct these deficiencies promptly. The letter may specify a formal written response to specific sanitary deficiencies be submitted to Ohio EPA within 45 days.

Potential enforcement actions

What happens if I do not follow the requirements?

The primary reason for following the requirements is to ensure the water you serve people is safe to drink. Failing to meet your legal responsibilities to correct deficiencies promptly may result in enforcement action being taken by Ohio EPA.

Water System Operations

Distribution system	
As Needed	Flushing
	Repair leaks
	Investigate consumer complaints
Monthly	Flush dead end mains if needed
	Read and inspect service meters
	Determine percentage of unaccounted water
	Test run emergency generator
Yearly	Exercise valves and fire hydrants
	Yearly flushing
	Perform meter maintenance
	Service emergency generator
	Update distribution system map if needed

Seasonal water systems

If my system is a seasonal water system, what are the important steps recommended for opening and shutting down my system?

You should follow the steps contained in Ohio EPA's "Seasonal Noncommunity Public Water Systems Start-up and Shut-down Checklist" to help ensure you can provide safe and reliable drinking water to your customers. This Seasonal Checklist can be found on Ohio EPA's web site at: www.epa.ohio.gov/ddagw/.

Continuity of service

What if I sell the water system?

System owners need to be sure to inform Ohio EPA before transferring the system to a new owner. The individual transferring ownership needs to ensure that the new owner has received adequate training regarding operation of the utility, as well as ensuring that water quality and service are not compromised during the transfer. Customers should be informed of any ownership transfer. Contact your Ohio EPA

Water System Operations

Operations and maintenance schedule

Is there a recommended O & M schedule to help keep my water system in good working condition?

Well & Treatment	
<i>Daily</i>	Check overall function
	Check sound of motors
	Check system pressure
	Read source meter
	Check hydro pneumatic tanks (charge with air as necessary)
	Treatment chemical monitoring as directed by Ohio EPA
	Conduct filter backwashes and softener regenerations (as necessary)
<i>Monthly</i>	Check levels in chemical feed tanks
	Inspect well head and sanitary isolation area
<i>Yearly</i>	Test run emergency generator
	Check pressure at flow rate
	Measure water level in the well

Storage tank	
<i>Daily</i>	Check tank level
	Conduct site inspection and security check
<i>Quarterly</i>	Inspect vent, hatch, overflow, etc.
<i>Yearly</i>	Test low water level alarms
<i>Every 3-5 Years</i>	Reservoir cleaning

Minimum Components of a Sanitary Survey

Discussion and review of records

When the inspector arrives to conduct the routine sanitary survey, the first thing they will do is go over the water system records with you. You can help prepare for the inspection by gathering, reviewing, and organizing these records to easily share them with the inspector. Examples of documentation that may be needed for discussion and review include:

1) Water facilities inventory and records – A review of the water facilities inventory and records is done to make sure all the information listed for your water system is correct. This includes information on primary contacts, population served, number of connections, and storage capacity. The inspector may send you a Pre-Sanitary Survey Questionnaire when they contact you to schedule the survey to facilitate the collection of this information. An accurate water facilities inventory and record is critical to properly classify a water system and to provide Ohio EPA with emergency contact information.

2) Distribution system plans and maps – The inspector may want to look at your distribution system plans and maps to see how often the maps are updated and if locations of the lines, valves, meters, tanks, sources, sampling sites, and treatment facility locations are accurate. Recommended items to show on a map are the size of the main line, the type of pipe installed, depth of bury, and even when the pipe was installed.

3) Routine operation and maintenance records – The inspector will review your routine operation and maintenance records for the necessary practices that will ensure your system is capable of supplying safe and reliable water. Tips on how to develop an operations and maintenance manual and recommended maintenance schedules can be found in the Water System Operations chapter located in this booklet.

Minimum Components of a Sanitary Survey

4) Monitoring history and sample siting plans – A review of your chemical, operational and microbiological monitoring history and sample siting plan(s) may be conducted to ensure compliance with monitoring requirements. To view your monitoring requirements for entry point and distribution sampling points visit our web site at: www.epa.ohio.gov/ddagw/.

Operational parameter monitoring requirements are not contained on the sampling schedules sent to public water systems. These requirements are based on your source type and treatment. Operational monitoring requirements are established by Ohio Administrative Code and you will be notified by Ohio EPA of the requirements for your system and of any changes in writing. Typically you will be notified in a detail plan approval letter/report or in a sanitary survey letter/report.

5) Backflow prevention program and records – A review of your backflow prevention program and cross connection control records will be conducted to determine effectiveness of the program.

6) Emergency contingency plan - A review of your water system's emergency contingency plan will be conducted to ensure all required emergency conditions are addressed and that the plan is up to date.

7) Upgrades/modifications to the water system – The inspector will want to review any upgrades or modifications to the public water system to ensure they are completed consistent with the approved plans and to assist in determining the water system capabilities.

8) Additional components – Depending on the complexity of the water system, the inspector may ask about additional components, such as the status of other management, operation, and maintenance documents. These could include:

- ◆ Water supply security measures;
- ◆ Capital improvement/asset management planning; and
- ◆ Operator certification status.

Water System Operations

3) Management or ownership – Another critical element of the manual is a section on the management of the system. This section should describe who owns and/or operates your system. It is also advisable to list an emergency contact with a 24-hour phone number so that your customers, Ohio EPA, or the local health department may contact you in the event there are water service complaints, customer concerns, or an emergency.

4) Financial arrangements – A section should be about finances and your water system. Sufficient revenues should be available to meet or exceed the expenses the system incurs. In order to monitor the revenues and expenses, you should develop and use an operating budget and the budget should be included in the O & M manual.

5) Water quality monitoring – There should be a section in the O & M manual for water quality monitoring and testing. This section should include a copy of your most recent monitoring schedule(s) and all water quality lab reports for your system. If your water system requires monitoring for special treatment or operational parameters, the sampling schedule should also include information about this additional testing.

6) Emergency response plan and procedures – A section of the O & M manual should contain your contingency plan that outlines the actions to be taken to provide safe drinking water under emergency conditions. By planning and preparing for emergency conditions, you will be able to resolve problems more quickly when they arise enhancing the safety of the water that you provide. You will have less business interruptions or closures due to water quantity or quality concerns. You may also describe how you will safeguard your system's components and protect against vandals. Contingency plans are required for all community water systems and have certain content requirements outlined in Ohio Administrative Code rule 3745-85-01, which can be viewed on Ohio EPA's web site at: www.epa.ohio.gov/ddagw/.

Water System Operations

Reliability

What are my responsibilities for operating my system properly?

As the owner or operator of a public water system, your system must be able to reliably provide an adequate quantity and quality of water at all times. One way to be sure you can do this is by keeping and using an operations and maintenance (O & M) manual.

Operations and maintenance manual

What is the purpose of an O & M manual?

An O & M manual should be developed in order to ensure that your system is capable of supplying an adequate quantity and quality of water at all times. This manual should be set up so that all of the information necessary to operate and maintain your system is located in one place. A three ring binder is recommended, since it allows updates of the manual easily.

What information should be included in the O & M manual?

There are several pieces of information that should be included in this manual. The manual should include the following sections:

- 1) System components – The first section of the O & M manual should be an inventory of system components. This inventory could include as-built drawings, distribution lines, pipe lengths, pipe diameters, materials, valves, blow-offs, pressure tanks and sizes, storage tank capacity, pumps, etc. Also include the age and condition of all of the system components and estimate their useful life and replacement dates. This is a good place to keep manufacturer's literature and warranties on your pumping equipment, pressure tanks, and other equipment. Keeping a copy of invoices in this section is also recommended.
- 2) Preventive maintenance schedule – Along with an inventory of system components, a predetermined preventive maintenance schedule should be included in the manual. The purpose of this section is to help ensure that inspections, repairs, cleanings and other maintenance are performed regularly.

Minimum Components of a Sanitary Survey

If you have not developed water supply security measures or a cross connection control program, guidelines are available from Ohio EPA to assist you in developing your programs. Additional discussion about these programs can be found in the Water System Operations chapter located in this booklet.

Inspection of water system

After the water system records have been discussed and reviewed, the inspector will then take a tour of the water system. Be sure to arrange for the appropriate system personnel to be available on the survey date so they can show the inspector around the system. The tour will include an inspection of:

- 1) Drinking water source and source protection area - The inspector will look at each drinking water source and source protection area, including emergency or seasonal sources, to see that they are properly secured and protected from possible sources of chemical or biological contamination. On the wellhead they will check for several items, such as: the well casing is 8-12 inches above the floor or pad; a sanitary seal (the seal between the wellhead and the pump) or well cap; a raw water sampling tap; and an inverted screened vent. They will also look for any obvious holes into the wellhead for mice or bugs to crawl into and/or fall into the well and contaminate the water.
- 2) Treatment equipment - Next they will look at your treatment equipment, including chlorination. They will check that your equipment is working properly, check dosage rate calculations, and go over required chlorination reporting, including the daily residual readings and how they are taken and recorded.
- 3) Pumps, pumping facilities, and controls - They will look at pumps, pumping facilities, and controls to make sure they are in good working order and the facilities are clean.

Minimum Components of a Sanitary Survey

4) Finished water storage - Each finished water storage tank is looked at individually for structural soundness (interior and exterior damage and rust), access hatch lids are properly gasketed and secured, vents are adequately screened, the overflow and drain pipes are screened with a proper air gap, and the area is properly secured. If these are not protected, birds, bats, insects, rainwater, and dust can enter and contaminate the stored water.

5) Distribution system – Finally, they will tour the distribution system to better understand the system layout, the pressure zones, elevations, and dead ends. They may request to check your cross connection records to see if the system is adequately protected from high health hazard facilities.

Safe inspections

What if the inspector can't safely inspect your water system?

Situations arise in the field where the inspector can't proceed with part or all of an inspection due to unsafe work conditions. They will let you know why they can't proceed and either point out what is needed before they can safely proceed or request that you get the information for them.

Things to remember to provide accessibility

- ◆ Have keys needed to open buildings, gates, well enclosures, hatches, etc.
- ◆ Special tools may be needed to open manholes or heavy lids.
- ◆ Clear brush or other vegetation around wells or buildings.
- ◆ Have available documentation of the last time elevated storage tank hatches, vents, and overflow screens and gaskets were checked, so the inspector can verify there are no unprotected openings.

Common Deficiencies



Poor Water System Control and Oversight
Tower is covered with ice.

Common Deficiencies



Unscreened Storage Tank Vent



Lack of a Watertight Cap on a Well

Common Deficiencies Inspectors Hope NOT to Find

Inspections reveal poor housekeeping

Sanitary surveys are a key component to protecting drinking water from contamination. Many deficiencies commonly found during a survey are often the result of poor housekeeping or maintenance. This possible route of contamination can be easily eliminated with simple improvements in housekeeping and maintenance practices. The following is a list of commonly found deficiencies inspectors hope not to find:

- ✘ Lack of a screened vent or holes in the well casing.
- ✘ Lack of a watertight cap on a well.
- ✘ Poor sanitary control of area around drinking water source.
- ✘ Lack of an operable meter to determine water production.
- ✘ Treatment chemicals not certified as meeting ANSI/NSF Standard 60.
- ✘ Poor choice of water sampling tap.
- ✘ Drinking and wastewater piping not clearly labeled.
- ✘ Lack of a screen or a damaged screen on storage tank vents.
- ✘ Storage overflow tanks without screens.
- ✘ Old piping, treatment units or tanks not properly deactivated (not just "valved off").
- ✘ Improper flushing and disinfection techniques after construction or repairs.
- ✘ Deficiencies noted on a previous survey have not been corrected.

On the next few pages are some photos of poor housekeeping habits or maintenance practices inspectors will be looking for when they visit your water system.

Common Deficiencies



Improper Well Cap



Poorly Maintained Treatment Units

The cracked lid on the salt softener tank allows dirt and insects to enter increasing the chance for contamination.

Common Deficiencies



Poorly Maintained Storage Tank



Treatment Chemicals (Bleach) Not Acceptable