Noncommunity Small Water System Management Program Guide

An operations and management tool for owners of nonresidential water systems

Washington State Department of Health
Environmental Public Health
Office of Drinking Water

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For people with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TDD/TTY call 711).

Introduction

> *By failing to prepare you are preparing to fail.*
> -Benjamin Franklin

A noncommunity water system provides water to a nonresidential population. If you own a small noncommunity water system, this guide is for you. It will help you develop a tailored management program you can use to ensure your water system remains capable of meeting your business and customer needs. **Do not underestimate the value of your water system or the responsibility that comes along with owning, operating, and maintaining it.**

Whether you own or operate a small business, school, RV Park, or campground, your customers' health and the viability of your enterprise depend on the proper functioning and reliability of your water system. This guide will direct you to collect information, evaluate it, and determine the best action to take. Although it's a big job to assemble such a wide array of information, don't delay this important task.

The program you develop can be as comprehensive or basic as you need. If you've done some of this work already, take time to review your past work, update it as needed, and maintain it in one place to serve as your one-stop water system planning and management resource.

There are two types of noncommunity systems:

1. Transient noncommunity systems (TNC) serve a population that changes day to day, such as campgrounds, hotels, rest areas, and restaurants with their own water supplies.
2. Nontransient noncommunity systems (NTNC) serve a nonresidential population that does not change day to day, such as schools, day care centers, or hospitals with their own water supplies.

Your water monitoring and other requirements will depend on the type of system you are operating. To find out whether it is a TNC or NTNC, check your *Water Facilities Inventory Form* (WFI) (The bottom of Page 7 explains how to access your current WFI).

Our Publications

This guide references many publications to help you manage your water system. To access them, just click the title or visit us online at the links below.

Publications: http://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/PublicationsandForms.aspx

Forms http://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/PublicationsandForms/Forms.aspx

Website http://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater.aspx

For example, you can get this ***Noncommunity Small Water System Management Program Guide*** (331-474) in CD format, by clicking the title or following the publication link above.

New owners of water systems can find advice about getting started, helpful tips, and information on their responsibilities in ***Owning and Managing a Drinking Water System*** **(331-084).**

Using this Guide

This guide recognizes that your function as a business or service provider is likely your highest priority. Operating a public drinking water system is not your primary function, but it is an integral part of your business. This guide is a tool to create the most appropriate management program for your water system regardless of the nature of your primary business.

> *One step at a time is good walking.*
> -Chinese Proverb

As you follow the steps in this guide, the planning document you develop is a Small Water System Management Program (SWSMP) (WAC 246-290-105). **All noncommunity public water systems must develop and implement a SWSMP.**

If your system primarily serves seasonal residences or a second home development, consider using the ***Small Water System Management Program Guide*** (331-134) instead of this guide. Though similar, that publication is for *community* systems and it addresses additional topics such as water rates, service policies, and financial planning.

Try to involve your certified operator, vendors, contractors, and technical assistance providers as you develop your SWSMP. **The key is to tackle the effort one step at a time and to keep making progress.** Your SWSMP will be most valuable when you make it a "living" document by continually updating it with relevant information.

This guide has five chapters. Each chapter covers a major aspect of owning and operating a public water system and contains sections that describe separate elements of public drinking water regulations. This information will help you determine whether you should take action, and if so, what action to take. Don't be alarmed if you discover that you have future work to do. The purpose of this guide is to create a program plan that positions you to successfully manage and maintain your water system. It is not a compliance report. Some sections will be a higher priority for you than others. **Focus on your highest priorities first.** Keep track of your progress and plan future action based on your system's specific needs.

The last chapter has only one section, but it is one of the most important. It will be your list of future activities. Use this section to prioritize and keep track of unaddressed items and planned actions. **If your latest sanitary survey identified items to correct, include them as a high priority in your list of future activities.**

Some sections have fill-in tables so you can create complete operational programs. Some of the tables have check boxes.

☒ You can fill-in the check boxes by double clicking on the box and selecting "Checked" as the default value.

Noncommunity Water System Planning

Active planning is essential for all types of water systems. Here's why:

1. Safe and reliable drinking water doesn't happen by itself. Appropriate planning, design, operation and maintenance, and the financing all of these aspects make it happen.

2. Public water system owners and operators have giant responsibilities.
   a. **Critical operations.** One unanticipated event in the system can result in serious illness.
   b. **Economic considerations.** The value of any entity served by its own water system is connected to the safety and reliability of that water system.
   c. **Serious legal obligations.** There are serious legal and financial liabilities associated with owning and operating a public water system.

3. Most noncommunity system owners don't see themselves as guardians of public health. We do. All public water system owners have a role and responsibility to provide safe and reliable drinking water.

4. Maintaining a public water system and complying with drinking water regulations are costly, but deferred maintenance and noncompliance cost even more. Most noncommunity systems don't have customers that pay monthly water bills, so owners must fund system operations and improvements themselves. It's better to stay informed of system needs and regulatory requirements and to plan ahead for how to meet them in order to avoid expensive surprises later.

We may require you to submit your SWSMP <u>for our review and approval</u> for any of these reasons:

- Significant noncompliance with drinking water regulations.
- Significant operational, technical, managerial, or financial problems.
- To obtain existing system approval—if your operating permit is BLUE, your water system may not be approved.
- To satisfy a condition for a Drinking Water State Revolving Fund (SRF) application.

If you intend to submit your SWSMP for approval, contact your DOH regional office (see next page) to set up a "preplan meeting." This meeting is your opportunity to discuss your plan's focus and level of detail and to answer questions.

Technical Assistance Providers

Evergreen Rural Water of Washington P.O. Box 2300 Shelton, WA 98584 360-462-9287 http://www.erwow.org/

Washington State Department of Health Office of Drinking Water http://www.doh.wa.gov/ehp/dw/default.htm	
Headquarters Town Center 3 243 Israel Road SE, Tumwater P.O. Box 47822 Olympia, WA 98504-7822 360-236-3100 or 800-521-0323 http://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/OfficesandStaff/Headquarters.aspx **Eastern Regional Office** 16201 E Indiana Ave, Suite 1500 Spokane Valley, WA 99216 509-329-2100 (Adams, Asotin, Benton, Chelan, Columbia, Douglas, Ferry, Franklin, Garfield, Grant, Kittitas, Klickitat, Lincoln, Okanogan, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman and Yakima) http://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/OfficesandStaff/EasternRegionalOfficeStaff.aspx	**Northwest Regional Office** 20425 72nd Ave. S., Suite 310 Kent, WA 98032 206-395-6750 (Island, King, Pierce, San Juan, Skagit, Snohomish and Whatcom) http://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/OfficesandStaff/NorthwestRegionalOfficeStaff.aspx **Southwest Regional Office** Town Center 3 243 Israel Road SE, Tumwater P.O. Box 47823 Olympia, WA 98504-7823 360-236-3030 (Clallam, Cowlitz, Clark, Grays Harbor, Jefferson, Kitsap, Lewis, Mason, Pacific, Skamania, Thurston and Wahkiakum) http://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/OfficesandStaff/SouthwestRegionalOfficeStaff.aspx

Small Water System Management Program

(Water System Name)

(Water System Owner Name)

(Water System ID#)

(Date)

Chapter 1: Information and Records

This chapter will help you organize basic system information and maintain it in one central location. Keeping important system documents together creates a water system history and compliance record you can refer to during your sanitary survey, or anytime you need to communicate about your water system.

CHAPTER TOPICS

This chapter addresses your:

- *Water Facilities Inventory* (WFI) Form
- Annual Operating Permit
- Facilities Map
- Other Documents

Each section offers a purpose statement, background on the requirement, and instructions. Most sections contain links to more information or resources.

1.1 Water Facilities Inventory Form

Purpose

To document current information on the *Water Facilities Inventory (WFI)* Form.

Background

DOH sends a WFI form, and instructions for completing it, to all Group A water systems each year. The WFI form provides contact information, including current names, addresses, and telephone numbers of system owners and emergency contact persons.

The WFI form also contains information about your system's source of supply, water treatment, type and number of connections, and population served. When you receive your WFI, review it, make necessary changes, and return a copy to your DOH regional office. We will update our data system to reflect your changes and send a new copy to you.

All water systems must notify us within 30 days of changes to the system name, category, ownership or management responsibility, or adding source or storage facilities (WAC 246-290-480(2)(e)).

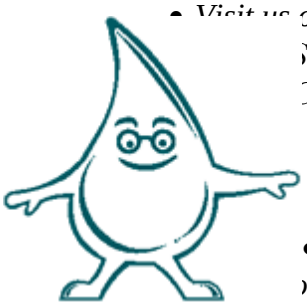
How to complete this section

Follow the steps below.

Step 1 **Confirm that your current WFI has accurate information.** If a change to your system affects your WFI information, make the necessary changes and send the updated WFI form to your DOH regional office.

Step 2 **Attach a copy of your current (or corrected) WFI**. Consider keeping copies of previous WFI forms in this section to create a historical record.

How to review your current WFI form



- *Visit us online to download your WFI*
- *Scroll down. Click "I accept" and then "Submit."*
- *Click "Water Facilities Inventory Report (WFI)"*
- *Type your 5-digit water system ID number, scroll down and click "Submit"*
- *Review your WFI*
- *If you have changes, print it, write in the corrections and mail it to your DOH regional office.*

1.2 Annual Operating Permit

Purpose

To document the system's compliance status by including a copy of the most current operating permit.

Background

All Group A water systems must obtain an annual operating permit from DOH. Your operating permit has a designated color (green, yellow, red, or blue) that signifies your system's compliance status. The permit color may change if the compliance status of your system changes. Refer to your operating permit for specific information about your water system.

You can find more information on operating permits in these publications:
Operating Permits for Drinking Water Systems (331-168)
Operating Permit Program Plan Adequacy Table (331-257)

How to complete this section

Follow the steps below to complete Table 1-2.

Step 1 **Attach a copy of your current operating permit.** Contact your DOH regional office if you don't have your permit. Consider keeping your past operating permits in this section to create a historical compliance record.

Step 2 **Identify the color of your current operating permit**. If your permit is red, yellow, or blue, identify the condition(s) on the permit. Next, list the corrective action you plan to take and a target completion date. If you are unclear what corrective action you need to take, your DOH regional office can help.

Step 3 Transfer the corrective action you list below to your list of future activities (Section 5.1). If there is a cost, transfer the cost into your list of future system expenses (Section 4.3).

Table 1-2
Annual Operating Permit

Current Permit Color	**Permit Condition(s)** *If your permit is red, yellow, or blue, list the conditions for returning to substantial compliance.*	**Corrective Action** *List the actions you intend to take to return your system to substantial compliance*	**Target Completion Date**

1.3 Facilities Map

Purpose
To document the location of critical system facilities.

Background
A map showing the location of your system facilities will help you or your contract service providers conduct operational activities, such as making repairs or taking samples.

How to complete this section

Follow the steps below to create a water system facilities map.

Step 1 **Get a copy of your system map.** Your final engineering documents or "as-built drawings" should have a system map. If you don't have as-built drawings, simply draw your system's general layout on a sheet of paper.

Step 2 **Identify the location of the facilities listed below on your map.** It is likely that your system does not have all of these facilities.

- Sources (well name, DOH source #)
- Storage facilities (name and capacities)
- Treatment facilities (capacities)
- Pressure zones
- Booster pumps (name and capacities)
- Fire hydrants
- Distribution lines (include type of material and diameter of pipe)
- Valves (pressure reducing, isolation, air relief, or blow off)
- Sampling points (source and distribution)

Step 3 **Attach a copy of the map.**

Municipal Water Law. Some nontransient noncommunity water systems are "municipal water suppliers." Municipal water suppliers may expand the place-of-use boundary in their water right(s) to match their service area in a DOH-approved planning document. For information about this benefit, see our Municipal Water Law webpage at http://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/WaterSystemDesignandPlanning/MunicipalWaterLaw.aspx

1.4 Other System Documents

Purpose

To store historical or other important system documents in one central location.

Background

Use this section as a "catch-all" for other correspondence and important water system documents. Water system owners **must** maintain some water quality and other records for a specified amount of time. See our ***Records retention reminder*** **(331-431)** for guidance. You can decide whether to maintain the records in your SWMSP, but you should know what to keep and how long to keep it.

Note: Some local permits and business licenses require an approved public water supply to operate the primary business. Common examples are local food permits or liquor licenses. If your business operates under such a permit or license, the documents you keep in this section will help you talk with permitting authorities (including DOH) about your system's compliance and approval status.

How to complete this section

Attach copies of your system records. Here are some recommendations.

- System approval letters from DOH or local health jurisdiction.
- Return to compliance documentation from DOH.
- Sanitary survey correspondence and survey follow-up report.
- Contract with a certified operator or satellite management agency.
- Public notice documents and certification forms.
- Well logs (well log information is on Ecology's website at http://apps.ecy.wa.gov/welllog/).

Chapter 2: Water Quality

This chapter will help you understand and meet your obligation to monitor and report on the quality of water your system provides to your employees and customers. It will also guide you through short- and long-term steps to develop programs to protect your water supply source and your distribution system from potential sources of contamination.

CHAPTER TOPICS

This chapter addresses your:

- Water quality monitoring program
- Cross-connection control program
- Source water protection program

Each section offers a purpose statement, background on the requirement, and instructions. Most sections contain links to more information or resources.

2.1 Water Quality Monitoring Program

Purpose

To identify the type, frequency, and location of required water quality monitoring (sampling).

Background

Federal drinking water regulations set water quality standards for public water systems. State rule establishes:

- Maximum contaminant levels (WAC 246-290-310).
- Water quality monitoring requirements (WAC 246-290-300).
- Follow-up requirements (WAC 246-290-320).

Water quality monitoring requirements differ for TNC and NTNC systems. This is because TNC systems provide water to a population that changes day-to-day and NTNC systems serve the same people (such as employees or students) for most of the year.

The frequency of your required sampling depends on your system's size, months of operation, and past sampling results. Be sure to keep a copy of all sampling results.

TNC Water Systems

Your coliform and nitrate monitoring requirements are in your *Water Facilities Inventory (WFI) Form*. Your water quality monitoring program can be as simple as a Coliform Monitoring Plan (CMP) that describes when and where to take coliform samples and the nitrate sampling schedule from your WFI form.

Preparing a Coliform Monitoring Plan **(331-036)** explains how to create a CMP for your noncommunity system.

NTNC Water Systems

NTNC systems **must** routinely sample for a host of potential contaminants in drinking water, including coliform, nitrate, lead and copper, disinfection by-products, inorganic chemicals, volatile organic chemicals, and synthetic organic chemicals. These samples are collected either at the source(s) or from the distribution system. If you add chlorine to disinfect your water supply, you also must sample and report chlorine residual results.

Your distribution and source monitoring requirements for the calendar year and current three-year compliance period are in your Water Quality Monitoring Schedule (WQMS). The WQMS identifies required sampling based on your system's type, its source(s), and sampling history. If we grant a waiver for a source or change a monitoring requirement, we will notify you and update your WQMS.

Refer to your WQMS to create a sampling schedule for your water quality monitoring program. A water quality monitoring program helps you track the frequency and location of all your required sampling. If you don't have a water quality monitoring program, begin with a Coliform Monitoring Plan (CMP). Refer to your WQMS for the rest of your monitoring requirements.

Preparing a Coliform Monitoring Plan **(331-036)** explains how to create a CMP for your noncommunity system.

How to complete this section

Follow the steps below to complete Table 2-1. This section provides instructions and other resources to help you develop a Water Quality Monitoring Program.

Step 1 **TNC systems:** Attach a copy of the coliform and nitrate sampling schedule from your WFI form in this section. If you have a CMP, attach a copy. If you don't have a CMP, develop one now. See the link above.

NTNC systems: Attach a copy of your WQMS in this section. If you have a CMP, attach a copy. If you don't have a CMP, develop one now. See the link above. For guidance on developing monitoring plans for additional contaminants, see the resources listed at the end of this section.

Step 2 Attach any DOH correspondence on increased monitoring or follow-up monitoring requirements in this section to keep it current. If you treat to address chemical contamination (such as arsenic, nitrate, lead or copper corrosion) or microbiological contamination (surface water, shallow and vulnerable groundwater supplies, springs) special sampling and reporting requirements apply.

Step 3 Transfer all estimated testing costs into your list of system expenses (Section 3.3)

Step 4 Revise your testing schedule if additional follow-up testing is required, or you receive a waiver for a specific monitoring requirement.

Table 2-1
Water Quality Monitoring Program

Completed	Task	Completion Date
☐	**Step 1: TNC systems:** Attach a copy of the coliform and nitrate sampling schedule from your WFI and a copy of your Coliform Monitoring Plan. **NTNC systems:** Attach a copy of your WQMS and a copy of your Coliform Monitoring Plan.	
☐	**Step 2:** Attach any DOH correspondence on increased or follow-up monitoring requirements.	
☐	**Step 3:** Transfer testing costs into your list of system expenses.	
☐	**Step 4:** Revise testing schedule if monitoring requirements change.	Ongoing

For more information

Our Group A transient noncommunity water systems webpage offers information and resources to help TNC water system owners understand and comply with drinking water requirements. NTNC owners may also benefit from this resource.

The following publications are online at https://fortress.wa.gov/doh/eh/dw/publications/publications.cfm

- ***Coliform Distribution System Sampling Procedure*** **(331-225)** explains how to collect a coliform sample. Also available in Spanish.
- ***Nitrate Sampling Procedure*** **(331-222)** explains how to collect a nitrate sample. Also available in Spanish.
- ***Records Retention Reminder*** **(331-431)** explains how long public water system owners must keep water system records.
- ***Coliform Information Packet*** **(331-258)** coliform is, how to test for it, and what to do if you find it in your water system.

Visit Department of Ecology for a list of accredited drinking water labs. http://www.ecy.wa.gov/programs/eap/labs/search.html

2.2 Cross-Connection Control Program

Purpose
To develop a Cross-Connection Control (CCC) Program to protect the water system from contamination.

Background
A cross connection is any actual or potential physical connection between a public water system and any source of nonpotable liquid, solid, or gas that could contaminate the potable water supply by backflow. Noncommunity water systems may be at greater risk from contamination due to cross connections than community (residential) systems because noncommunity systems often serve commercial or industrial users.

All noncommunity system owners must develop and implement a CCC program to protect the distribution system from contamination from cross connections (WAC 246-290-490). The 10 "elements" that comprise a CCC program are in WAC 246-290-490(3). The elements that apply to your system and the complexity of your CCC program depend on whether you own the buildings served and their degree of hazard.

Cross-connection control responsibilities for noncommunity systems	
Number of buildings or connections served	**Elements of WAC 246-290-490 that apply**
My system serves only one building	You must implement a Cross-Connection Control Program that protects the public water system from contamination and keep associated records. The water system includes facilities under the control of the water system owner up to the point of delivery (buildings or facilities). Owners of public water systems that serve only one building typically own the building and the property it's built on. Therefore, they have control over the plumbing and any external fixtures or auxiliary systems on the property. The Uniform Plumbing Code (UPC) amended for Washington State applies in these cases. The UPC amended for Washington establishes backflow prevention requirements for plumbing fixtures and equipment. It requires properly installed approved backflow preventers and annual assembly testing. If you have questions, contact your city or county building official. Information on the UPC Washington State amendments is online at https://fortress.wa.gov/ga/apps/sbcc/page.aspx?nid=4
My system serves multiple buildings or connections	You must implement the following cross-connection control requirements: **Element 4:** Obtain the services of a cross-connection control specialist (CCS) to develop and implement your CCC program. You can hire a contract CCS or have your certified operator (if you have one) become DOH-certified as a CCS rather than keeping a CCS on staff. **Element 1:** Establish the legal authority, policies, and corrective measures needed to carry out cross-connection control. If you own all buildings connected to the system, you don't have to complete this element because you already have legal access into the premises.

	Element 2: Provide for a CCS to conduct initial and periodic hazard surveys to determine whether the connections it serves pose any risk to your water system. The CCS must also determine whether the premises isolation requirements apply (WAC 246-290-490(4)) or if you may rely on the state plumbing code to protect your system. **Element 3:** The CCS must ensure that DOH-approved backflow preventers are properly installed where required (WAC 246-290-490(4)). **Element 5:** Provide for a DOH-certified backflow assembly tester (BAT) to conduct annual testing of all backflow assemblies installed for premises isolation. **Element 7:** Develop procedures for responding to a backflow incident (such as notifying state and local health officials, flushing and sampling procedures, and public notice). **Element 9:** Maintain records of hazard surveys the CCS produces, and assembly inventory and testing information the BAT produces for backflow assemblies and backflow incident reports. You also must meet the requirements of the Uniform Plumbing Code (UPC) amended for Washington within buildings or facilities that you own. It establishes backflow prevention requirements for internal plumbing fixtures and equipment and external fixtures or auxiliary systems on the property. The UPC amended for Washington includes requirements for properly installed approved backflow preventers and annual assembly testing. If you have questions, contact your city or county building official. Information on the UPC Washington State amendments is online at https://fortress.wa.gov/ga/apps/sbcc/page.aspx?nid=4

The cross-connection control regulations apply from your source of supply to the point of water delivery (connection) to the consumer's premises (buildings or facilities). Table 9 in WAC 246-290-490 describes typical severe and high-hazard premises. Examples include wastewater treatment plants and lift stations, hospitals and medical centers, labs, car washes, commercial laundries, and mortuaries.

If your system serves any severe and high-hazard premises, you must control or eliminate the high hazard by ensuring that a DOH-approved reduced pressure principle backflow assembly (RPBA) or an air gap is installed at the point of service. The most **severe** hazard facilities require a RPBA and an in-premises air gap.

How to complete this section

Follow the instructions below to develop and implement a complete CCC program. Use Table 2-2 to track your progress and identify target completion dates for remaining steps.

The CCC program requires initial and ongoing tasks. You can separate the tasks into three steps.

1. **CCC program development**
   a. Retain qualified personnel.
   b. Establish legal authority (if you serve premises that you don't own).
   c. Prepare a response plan for a backflow incident.

2. **CCC program initial implementation**
   a. Develop a recordkeeping and reporting system.
   b. Conduct initial hazard evaluations.
   c. Ensure assembly installation.

3. **CCC program ongoing implementation**
   a. Ensure assembly testing occurs and keep appropriate records.
   b. Evaluate new service connections and reevaluate existing service connections (if you serve premises that you don't own)

Developing a CCC program can feel overwhelming. If you haven't already developed and implemented a complete CCC program, begin by establishing the framework of a CCC program (Steps 1a through 1c below).

CCC Program Development

Step 1a. Retain an experienced DOH-certified cross-connection control specialist (CCS) to conduct initial hazard assessments. Depending on the results, your CCS can facilitate satisfying the required elements of WAC 246-290-490. If your system has a certified operator, find out whether he or she is a CCS. If you need to hire a contract CCS, see Section 7.1.1 in ***Cross-Connection Control for Small Water Systems*** **(331-234).**

Check the DOH cross-connection control and backflow prevention webpage for a public list of CCSs available to help small systems.

Step 1b. Establish legal authority and policies necessary to implement an effective CCC program. Your CCS must develop a CCC program plan that includes detailed technical and administrative policies and procedures (WAC 246-290-490(3)). Complete this step only if you serve facilities that you don't own.

Step 1c. **Develop a response plan to a backflow incident.** Describe how you will respond to a backflow incident. Your response plan must include direction to call DOH, the local building official, and the local health department as soon as possible.

CCC Program Initial Implementation

Step 2a. Develop a recordkeeping and reporting system. Develop a CCC recordkeeping system to track:

- Hazard evaluation results (by connection).
- Inventory information for backflow preventers that protect your system.
- Test report information for backflow preventers that protect your system.

See a sample of a completed CCC program in Appendix A of ***Cross-Connection Control for Small Water Systems*** **(331-234).**

If a backflow incident occurs, you must submit a completed ***Backflow Incident Report Form*** **(331-457)** to DOH.

Step 2b. **Conduct initial premises hazard evaluations.** After you set up your recordkeeping system:

Your CCS must:

- Evaluate each service connection to determine whether it is subject to the premises isolation requirement in WAC 246-290-490(4).
- Determine the type of protection needed, if any.

You must:

- Notify your customers of the results of the evaluations.

Step 2c. **Ensure assembly installation.** Ensure installation of DOH-approved backflow preventers on any premises requiring premises isolation.

CCC Program Ongoing Implementation

Step 3a. **Ensure assembly testing occurs and keep appropriate records.** You must ensure a DOH-certified BAT tests assemblies:

- Upon installation, repair, or relocation.
- Annually thereafter.
- After a backflow incident.

Step 3b. **Evaluate new and reevaluate existing connections.** If your system serves facilities that you don't own, periodically reevaluate the connections (without RPBAs) for changes in water use or plumbing.

Note: Be sure to keep copies of all CCS hazards surveys and BAT test or inspection reports.

Table 2-2
Cross-Connection Control Program

Identify steps that you have completed and target completion dates for remaining tasks.

Completed	Task	Completion Date
☐	**For systems that serve only one building:** Determine applicable state plumbing code requirements and ensure the level of cross-connection control within the premises is appropriate.	
☐	**Step 1a**: Retain the services of a CCS.	
☐	**Step 1b:** Establish legal authority and policies (if needed) to implement a CCC program.	
☐	**Step 1c:** Develop a response plan to a backflow incident.	
☐	**Step 2a:** Develop a recordkeeping and reporting system.	
☐	**Step 2b:** Conduct initial hazard evaluations.	
☐	**Step 2c:** Ensure assembly installation where required for premises isolation.	
☐	**Step 3a:** Ensure assembly testing and recordkeeping.	
☐	**Step 3b:** Evaluate connections.	Ongoing

Further action

- Include required tasks not yet completed in Section 1.7 (Next Steps).

For more information

- See our cross-connection control webpage for guidance, backflow incident report and annual summary report forms, and other resources at http://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/WaterSystemDesignandPlanning/CrossConnectionControlBackflowPrevention.aspx

2.3 Source Water Protection Program

Purpose
To develop a Source Water Protection (SWP) Program to protect the groundwater sources supplying the system.

Background
The watershed or drainage basin surrounding your drinking water source is the source water protection area. All drinking water sources are at some risk of contamination and loss of supply if not carefully protected. Source water protection focuses on safeguarding and improving the quality and quantity of your system's source of supply. Prevention is far less costly than responding to problems after they occur.

Source water protection requirements are in WAC 246-290-135. A successful SWP program is short, straightforward, and has a schedule for implementation. Still, developing a complete SWP program is a comprehensive process. As you progress beyond the first two steps, consider seeking help from your DOH regional office or a third-party technical assistance provider (see Page 3 of this guide).

If your system is supplied by surface water, contact your DOH regional office for help developing an appropriate SWP program.

How to complete this section
Follow the steps below to develop a SWP program. **Focus on Steps 1, 2, and 6 because they have the most immediate effect on the quality of your source of supply.** Use Table 2-3 to document your progress and set target completion dates for the remaining tasks.

Note: Some steps direct you to maintain copies of relevant documents in this section so that your SWSMP contains minimum SWP program information. You may also build your entire SWP program in your SWSMP.

Step 1 **Complete a susceptibility assessment form for each groundwater source and return it to your DOH regional office if you haven't already done so.** This form (available from your regional office) helps determine how susceptible your well is to contamination. If you need help completing the form or cannot find your copy, contact your DOH regional office.

- Maintain a completed susceptibility assessment form in this section.

Step 2 **Secure control of your sanitary control area.** You must maintain sanitary control around each groundwater source to protect it from contamination. The sanitary control area radius must be at least 100 feet for wells or 200 feet for springs, unless written documentation shows DOH reduced the distance. For guidance on sanitary control area protection, see ***Sanitary Control Area Protection*** **(331-453).** For guidance on protective covenants, see ***Covenants for public water supply protection*** **(331-048).**

- Maintain a copy of deeds, declarative or restrictive covenants, or written agreements in this section.
- Maintain a map that shows all sources and sanitary control areas in this section.

Step 3 **Define your source water protection area and create a map.** Many water systems have defined source water protection areas in our Source Water Assessment Program database. Visit the site, turn on the appropriate layers, check for accuracy, and print the map. If your source protection zones (time-of-travel zones) are not shown, you can define them yourself using the calculated fixed radius (CFR) method. Start with the 6-month and 1-year time-of-travel zones. For help, see our ***Wellhead Protection Program Guidance Document*** **(331-018).**

- Maintain a copy of your source water protection area in this section.

Step 4 **Conduct contaminant source inventory.** Survey your source protection area for activities that may pose a contamination threat to your source(s). You can do this by driving or walking around the area and noting land uses that may pose a threat of contamination. For examples of what to look for, see Page 85 of our ***Wellhead Protection Program Guidance Document*** **(331-018).**

- Maintain a copy of your list of potential contaminants (inventory) in this section.

Step 5 **Notify local governments, landowners, and facility operators.** Local agencies make decisions about where to allow certain land uses, activities, or facilities. Owners and facility operators of possible contaminant sources might alter their practices if they know the location of your source water protection area.

- Write letters to owners and operators of possible contaminant sources to let them know of your source water protection area and to encourage them to protect your drinking water supply. See sample letters in our ***Wellhead Protection Program Guidance Document*** **(331-018).** Focus on the 6-month and 1-year time of travel zones first.

- Write letters to local governments with authority over land use decisions and local emergency responders to inform them that activities they regulate occur within your source water protection area. Sample letters and agency contact information are in our ***Wellhead Protection Program Guidance Document*** **(331-018).**

- Maintain copies of notification letters in this section.

Step 6 **Develop a contingency plan.** You should know what you'll do in the short-term if you are unable to use your source(s) for any reason. How you handle such an event will depend on your business needs and those of the population your system serves. Develop your contingency plan as part of your emergency response plan (Section 3.2). For guidance, see our ***Emergency Response Planning Guide for Public Drinking Water Systems*** **(331-211).**

Table 2-3
Source Water Protection Program

Identify the steps you have completed and set target completion dates for remaining tasks.

Completed	Task	Completion Date
☐	**Step 1:** Complete a susceptibility assessment form for each source and submit to DOH.	
☐	**Step 2:** Secure control of your sanitary control area through legal documents and create a map showing each source and its sanitary control area.	
☐	**Step 3:** Define your source water protection area and create a map showing the boundaries.	
☐	**Step 4:** Survey your source water protection area to identify contaminant sources and develop a contaminant inventory list.	
☐	**Step 5:** Notify local governments with land use decision authority, owners of possible contaminant sources, and local emergency responders of your source water protection area.	
☐	**Step 6:** Develop a source water contingency plan as part of your emergency response plan.	
☐	**Continuous:** Update your inventory of contaminants every two years and resend notification letters as needed.	Ongoing

For more information

- See the ***Wellhead Protection Program Guidance Document*** **(331-018).**
- See our **SWAP database** for information about potential contaminant sources in your area.
- See our **Source Water Protection** website for links to other information.

Chapter 3: System Operations

This chapter will help you develop preventive maintenance and other operational programs to keep your system running smoothly and effectively. You can refer to this information to establish expectations for your certified operator or other staff who may be responsible for system operations or water quality sampling.

CHAPTER TOPICS

This chapter addresses:

- Operations and maintenance program
- Emergency response program
- Water production and consumption
- Water right self-assessment
- Water use efficiency program (for nonmunicipal suppliers)

Each section includes a purpose statement, background on the requirement, and instructions. Most sections have links to more information or resources.

3.1 Operations and Maintenance Program

Purpose

To identify operations and maintenance duties to maintain effective operations.

Background

The best way to keep your water system running effectively is to document the operational activities, schedule preventive maintenance activities, and keep the information easily accessible. This section is useful for defining expectations for the system's operator or other staff and when ownership or responsibility for the water system changes.

All water systems **must** operate under a comprehensive operations and maintenance program (WAC 246-290-415).

How to complete this section

Follow the steps below to complete Table 3-1. You can use Table 3-1 as your operations and maintenance (O&M) program. If you already have an O&M program, maintain a copy in this section rather than completing the table. Be sure to review the activities in Table 3-1 to ensure your O&M program covers all aspects of system operations.

Your sanitary surveyor may review your maintenance schedule and can help you determine whether it is complete.

Step 1 Summarize the current maintenance activities and how frequently you perform them.

Step 2 Indicate normal settings, positions, or readings for pump controls, electrical switches, valves, and gauges. If you make seasonal adjustments, record the adjustments and the approximate period (or other trigger) to make them.

Step 3 Develop a list of supplies and spare parts that must be kept on-hand. Include the name and phone number of the supplying vendor.

Step 4 Develop a list of specialty service providers. This includes electricians, excavators, pipe fitters, welders, tank inspectors, and well pump and control valve vendors.

Table 3-1
Operations and Maintenance Program

Section 1 – Routine Maintenance Schedule

Maintenance and operational activity	Applicable? (check box)		Responsible party	Frequency
	Yes	No		
Measure and record production from each source	☐	☐		
Recalibrate source meters	☐	☐		
Measure water level in each well (static and pumping level)	☐	☐		
Measure chlorine residual	☐	☐		
Flush dead ends	☐	☐		
Exercise main line valves	☐	☐		
Record use of treatment chemicals (disinfection, iron or manganese removal)	☐	☐		
Maintain chemical feed pumping equipment	☐	☐		
Recalibrate water quality monitoring instruments	☐	☐		
Inspect reservoir hatches, vents, and overflow outlets for tight seals and intact screens	☐	☐		
Inspect and clean reservoir interior	☐	☐		
Inventory spare parts, chemcial supplies, and equipment.	☐	☐		
Check air-water level in hydropneumatic tank(s)	☐	☐		
Test cross-connection control devices (by a backflow assembly tester)	☐	☐		Must be completed once a year

Maintenance and operational activity	Applicable? (check box)		Responsible party	Frequency
	Yes	No		
Review water system security features and processes (fencing, locks)	☐	☐		
Test all alarm functions	☐	☐		
Others?	☐	☐		

Section 2 - Control Position for Valves, Switches, Relays, and Timers

Indicate normal settings, positions, or readings for pump controls, electrical switches, valves, or gauges. Describe any seasonal differences in pump, reservoir, and valve control settings.

Type of switch, valve or control	Normal and seasonal settings

Section 3 - Suppliers List

Develop a list of supplies you periodically order and include the supplier's name and phone number.

Type of supply, spare part, or specialty service	Name of supplier or contractor	Phone number(s)

For more information

Preventive maintenance program: Guide for small public water systems using groundwater **(331-351)** provides a schedule of routine O&M tasks for small drinking water systems using groundwater.

3.2 Emergency Response Plan

Purpose

To identify and document responses to routine and nonroutine emergencies that may affect system operations.

Background

Most water systems have routine operating emergencies such as pipe breaks, pump malfunctions, and power outages. Less common emergencies result from chemical spills, floods, earthquakes, windstorms, or droughts. The key is to think about what you'll do ahead of time and document those activities in an emergency response plan so that you can respond quickly and efficiently.

Each emergency has unique effects on a water system. Floods can cause bacterial contamination. Earthquakes can damage sources and pipes. Storms can disrupt power supplies resulting in contamination due to a loss of system pressure. What is common among these emergencies is the threat to the system's ability to deliver safe and reliable drinking water.

All water systems must take reasonable security measures to protect raw water intake facilities, water treatment facilities, storage facilities, pump houses, and distribution systems from possible damage or intruders (WAC 246-290-415).

How to complete this section

Table 3-2 is a template to create an emergency response plan. If you already have an emergency response plan, maintain a copy in this section rather than completing the template.

Table 3-2
Emergency Response Plan

Section 1 – System Information
Document basic system information.

Basic system description *For example: ABC Water System has 1 well that is 180 feet deep. The well pumps through a pump house and disinfection facilities into a 2,000-gallon concrete storage reservoir.*	

Section 2 – Taking Action
List the person responsible for taking the following actions during an emergency.

Name	Responsibilities during an emergency	Contact numbers
	Notifying DOH.	
	Assessing facilities and operations.	
	Making repairs or contacting contractors.	

Section 3 – Emergency Reference List
List important parties to contact.

Emergency contact	Phone Number(s)	Emergency contact	Phone number(s)
County emergency services		Certified operator(s)	
Local health jurisdiction		System engineer or engineering consultant	
Department of Ecology spill response		Electrician	
Water testing lab		Electric utility	
DOH water quality contact		Pump service	
Neighboring water system		Equipment rental	
DOH emergency after hours contact	1-877-481-4901	Other	

Section 4 – Response Actions for Specific Events
Identify action to take in the following events.

	Immediate actions to take *(assess damage, contact DOH, contact repair service)*	**Who should be notified** *(DOH, customers, repair service, county)*
Power outage		
Line break		
Chlorine treatment failure		
Source pump failure		
***E. coli* MCL violation**		
Severe reduction or loss of source		
Other:		

Section 5 –Alternative Water Supplies
Identify alternative water supplies that may be available if your supply becomes unexpectedly unavailable.

Note: Alternative supplies can include emergency sources and emergency interties or the temporary use of bottled water or tanker trucks. You must obtain DOH approval before putting any emergency source or alternative supply of water into service. Requirements for using and maintaining emergency drinking water are in ***Emergency drinking water sources*** **(331-317).**

Emergency sources
List available emergency sources.

Emergency source name	**WFI source number**	**Maintained in operable condition?**	**Availability** *How much water can be produced each day, how soon can it begin?*	**Is the water safe for drinking?**

For more information

- ***Truck Transportation: Emergency water supply for public use*** **(331-063)** provides guidance for water systems that truck or receive potable water for the public during emergencies.

- ***Emergency Disinfection of Small Systems*** **(331-242)** explains when you need emergency disinfection and how to do it. Tables show how much chlorine bleach to use for disinfecting wells and storage reservoirs.

3.3 Water Production

Purpose

To document how much water the system's sources produce.

Background

A record of source water pumped can tell you if your system is functioning properly. It will also help determine whether your system's water usage is within allowed water right limits.

Water systems must measure and record total water produced by each source (WAC 246-290-496). This section allows you to record monthly production totals in your SWSMP as required by WAC 246-290-105(4)(h).

If you do not have a source meter installed on each source, include your plan and schedule to install one in Chapter 5 (Next Steps) and in Section 4.2 (Component Replacement and Other Planned Improvements).

How to complete this section

Follow the steps below to complete Table 3.3. You will need to convert your raw source production values into gallons. You can use the conversion table below.

Step 1 Insert the year for the data you are recording. Try to use the most recent full year of water production data.

Step 2 Insert the DOH source number (well # from WFI) for each source in the second row.

Step 3 Insert the source production value (in gallons) for each month for each source. Then, add each source's monthly production values together and insert the combined total in the bottom row under "***Total Water Produced.***"

Conversion Table

Convert from	To	By
Cubic feet of water	Gallons of water	Multiplying the number of cubic feet by 7.485 to arrive at gallons
Acre-ft of water	Gallons of water	Multiplying the number of acre-ft by 325,851 to arrive at gallons
Gallons of water	Acre-ft of water	Divide the number of gallons by 325,851 to arrive at acre-ft

Table 3-3
Total Water Production

Reporting Year			
	Source No. _____	**Source No.** _____	**Source No.** _____
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			
Total Water Produced			

3.4 Water Consumption

Purpose

To document the amount of water users connected to the system consume.

Note: **Skip this section if:**

- Your water system serves only one connection.
- Your system provides water service to multiple connections but the connections are not metered.

If your system is a municipal water supplier, you must have service meters installed on all service connections by January 22, 2017. A noncommunity system is a municipal water supplier if it provides water for residential-type uses to at least 25 people for at least 60 days a year. Most noncommunity water systems are not municipal water suppliers and, therefore, are not required to install service meters. See our Municipal Water Law webpage for more information.

Background

Knowing how much water your customers use on an annual basis will help you ensure that your supplies and distribution facilities can meet the demand. All water systems must include consumption data as part of a SWSMP.

Knowing the difference between how much water your source produced and how much your customers used will help you determine how much water your system is losing to leaks. We call this "distribution system leakage" or DSL. When you consider water pumping and treatment costs, DSL is more expensive than you may think. See our Water Use Efficiency webpage for more information.

How to complete this section

Follow the steps below to complete Table 3.4

Step 1 Insert the year for the data you are recording at the top of the table. Try to use the most recent full year of water consumption data. The 12-month reporting period does not need to match the calendar year. However, to measure DSL, you must use the same 12-month period that you used to record source production data.

Step 2 Determine total consumption for all nonresidential connections for the 12-month reporting period. Convert the total into gallons using the conversion table provided in Section 3.3. Insert this total under ***"Nonresidential consumption."***

Step 3 Determine total consumption for all residential connections (if you serve any) for the 12-month reporting period. Convert the total into gallons. Insert this total under ***"Residential consumption."***

Step 7 Determine the total water consumed by adding the total annual consumption for each customer class. Insert this total under ***"Total consumption."***

Table 3-4
Total Water Consumption

Reporting Year	
Customer class	**Total combined consumption (gallons)**
Nonresidential consumption (business or other facilities)	
Residential consumption (homes)	
Total consumption	

For more information

See our Water Use Efficiency webpage for comprehensive guidance, fact sheets, and resources.

3.5 Water Rights Self-Assessment

Purpose

To document that the system can legally withdraw and use water consistent with the system needs.

Background

Water can only be put to use after a person has a water right permit from Ecology (state water code, 1917 for surface water and 1945 for groundwater). All public water systems using surface water or groundwater with wells pumping 5,000 or more gallons per day, or irrigating one-half or more acres, must have a water right. After water is put to use according to the permit conditions, Ecology will issue a water right certificate.

If you have a water right permit or certificate, you must include a water right self-assessment in your SWSMP (WAC 246-290-105). A water right self-assessment is a DOH form that allows you to compare your water right's allowable quantities of water against the amount of water you are using.

How to complete this section

Table 3.5 is a water right self-assessment form. The items below describe a field on the form. You'll find all requested information on your water right permit or certificate, except for Item 11 (existing consumption). You must know how much water your source produced for the year (withdrawn from ground) to complete this item. Refer to the annual water production total you identified in Section 3.3 of your SWSMP.

Water Right Permit and Certificate Inventory

1. **Permit or certificate number**: This is the number Ecology assigns upon receipt of a water right permit application. It's usually at the top of the permit or certificate.

2. **Name of right holder**: This person obtained the original water right permit or certificate. Use the name listed on the permit or certificate, even if it isn't the name of the current permit or certificate owner.

3. **Priority date**: This is the date at the top of the permit or certificate (next to the permit or certificate number).

4. **Source name and number**: If any permits or certificates are for multiple sources, identify the individual sources used (well 1, well 2) as it appears on water right documents. Use a separate line for each source. Do not use DOH-assigned source numbers.

5. **Maximum instantaneous flow rate (Qi):** This is the amount of water that can be taken from the source during a peak operation period. For surface water, the flow rate is expressed in

cubic feet per second (cfs). For groundwater, the flow rate is expressed in gallons per minute (gpm). One cfs equals 448.8 gpm. Indicate the units of measurement you are using for each source. You must note any situations where the allowed flow rate will be limited.

6. **Maximum annual quantity (Qa):** This is the amount of water that can be taken from the source on an annual basis. It is expressed in terms of acre-feet. One acre-foot equals 43,560 cubic feet or 325,851 gallons of water.

7. **Primary or supplemental**: Use this column to indicate whether a particular source is for primary or supplemental use. This information is usually in the "quantity, type of use, period of use" section.

8. **Water obtained through interties**: You must account for water obtained through interties (where a separate purveyor holds the water rights) for nonemergency supply purposes. This is to ensure consideration of all supply sources when evaluating water right adequacy. Identify the maximum volume of water allowed for purchase through such interties. You must account for any limiting conditions or temporary agreements that affect the long-term use of the intertie.

9. **Other information**: Include any other supporting information or materials related to your water right as necessary. This may include written materials needed to describe any water right limiting parameters.

10. **Water right totals**: Identify the total maximum instantaneous and annual withdrawal rates specified on system water rights. Make sure you fully understand how your rights relate to one another. In many cases supplemental water rights are not issued in addition to existing rights (not all such rights are additive). Contact your Ecology regional office if you aren't sure how to quantify your water right permits and certificates.

11. **Existing consumption:** This is the total amount of water that all your sources produced for the year. Refer to your total source production values in Section 3.3. Divide the total gallons produced from all sources by 325,851 to determine total acre-feet pumped. If your system is using more water on an annual basis than allowed under your water right, contact the Department of Ecology to explore changing your water rights.

Table 3-5
Water Rights Self-Assessment – Existing Status

Permit certificate or claim number	Name on document	Priority Date (List oldest first)	Source Name and Number	Any portion supplemental? (If yes, explain in footnote)	Existing Water rights		Existing consumption		Current water right status (Excess/Deficiency)	
					Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)	Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)	Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)
Permits/ Certificates 1.										
2.										
3.										
4.										
Claims 1.										
2.										
3.										
4.										
TOTAL										

Intertie name or Identifier	Name of purveyor Providing water	Existing limits on intertie use		Existing consumption through intertie		Current intertie supply status (Excess/Deficiency)	
		Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)	Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)	Maximum Instantaneous Flow Rate (Qi)	Maximum Annual Volume (Qa)
1.							
2.							
3.							
4.							
TOTAL							

Pending water right application (New/Change)	Name on application	Date submitted	Any portion supplemental? (If yes, explain in footnote)	Pending water rights	
				Maximum Instantaneous Flow Rate (Qi) Requested	Maximum Annual Volume (Qa) Requested
1.					
2.					
3.					
4.					

3.6 Water Use Efficiency Program

Purpose

To develop the system's Water Use Efficiency Program.

Background

Using water efficiently improves the lifespan of your system facilities and reduces your pumping and treatment costs. Developing a Water Use Efficiency (WUE) Program is the foundation for using water wisely.

All water systems must include a WUE program as part of their SWSMP (WAC 246-290-105). A WUE program is a plan you develop and follow to increase water supply and water demand efficiency. If you supply water to other connections, your WUE program should focus on 1) having service meters on all customer connections, so you know how much water they use, and 2) encouraging customers to use water efficiently.

If you don't serve other connections, your WUE program needs only to focus on having a source meter installed on each active source, so you know 1) how much water your well is producing and 2) you are using that water responsibly.

The WUE program described in this section is appropriate for nonmunicipal water suppliers. Most noncommunity systems do not qualify as municipal water suppliers, although there are some exceptions. If you believe your system is a municipal water supplier, see our Water Use Efficiency webpage.

Our ***Water Use Efficiency Guidebook*** **(331-375)** will help you develop a WUE program that meets the Water Use Efficiency Rule (WAC 246-290-810).

Note: Contact our DOH regional office before you start developing a WUE program as a municipal water supplier.

A noncommunity system is a municipal water supplier if it provides a "residential use" of water to a nonresidential population of 25 or more people for at least 60 days a year.

How to complete this section

Table 3-6 is a template to develop a short WUE program. Complete the three sections. If you already have a WUE program, maintain a copy in this section.

Section 1 - Your source of water supply.

Do you have a source meter installed on each active groundwater source?		If no, include your plan and schedule to install a source meter on each active source in Chapter 5(Next Steps) and Section 4.2 (Planned Improvements and Replacements). All water systems **must** measure and record total water produced by each source (WAC 246-290-496).
If you have a source meter, do you read it regularly?		If no, start reading your source meter on a monthly basis and calculating the annual totals. Record the results in Section 3.3 (Water Production). Periodically review for drastic increases (sudden leaks), gradual declines (declining well productivity), and to ensure that annual usage is within water right limits.
		If yes, record the results in Section 3.3 (Water Production). Periodically review for drastic increases (sudden leaks), gradual declines (declining well productivity), and to ensure that annual usage is within water right limits.

Section 2 - Your customers.

Do you provide water to residential or other service connections?		If no, focus on knowing how much water your source produces annually and what you can do to use water efficiently. Visit our Water Use Efficiency webpage for water saving tips and other resources.
		If yes, focus on encouraging your customers to use water efficiently. Visit our Water Use Efficiency webpage for educational brochures and other resources.

If you serve other connections, do you have service meters installed on all connections?		If no, consider installing service meters. Service meters allow you to charge based on water use. Charging for water based on the amount used encourages efficient use of the resource, prolongs the lifespan of your facilities, and helps you to cover system expenses and future improvement costs.
		If yes, start reading the meters (even if you don't charge based on amount of water used) and record the results in Section 3.4 (Water Consumption). Knowing how much water is consumed and comparing that to the amount of water your source produced during the same period tells you how much water is being lost to leaks, called distribution system leakage (DSL). See our Water Use Efficiency webpage to learn how to determine DSL and ways to reduce it.

Section 3 – Encouraging efficient water use.

List action you took, or plan to take, to reduce your water use or to encourage your customers to use water more efficiently. Be sure to include future actions in Chapter 5 (Next Steps).	**Completion Date**

For more information

Visit our Water Use Efficiency webpage for comprehensive guidance, fact sheets, and resources.

Chapter 4: Financial Planning

This chapter will help you document the age and condition of your system components and to keep track of the components that will need repair or replacement and when. It also contains a short expense table for you to identify your system's current and estimated future costs of operations, maintenance, and improvements.

CHAPTER TOPICS

This chapter addresses:

- Component Inventory and Assessment
- Planned Improvements and Replacements
- Water System Expenses

Each section offers a purpose statement, background on the requirement, and instructions. Most sections have links to more information or resources.

4.1 Component Inventory and Assessment

Purpose
To inventory each system component (infrastructure), assess its remaining useful life, and create a list of planned improvement projects.

Background
The inventory is a list of your system's components. The assessment is an evaluation of each component to determine whether you need to replace it within the next six years. If you can, include the estimated replacement cost for each component and include the outcome of this exercise in your financial planning activities (Section 4.3). The cost to replace system components will depend on many factors. For instance, it will cost more to replace pipe if you have to tear up a road to reach it. Contact a local contractor for estimates based on your specific system infrastructure.

You **must** submit installation or construction documents for facilities involving source, storage, treatment, or distribution to DOH (WAC 246-290-110 and -120). A professional engineer must prepare these documents. Contact your DOH regional office for assistance.

How to complete this section
Follow the steps below to complete Forms 4-1A (short-lived components) and 4-1B (long-lived components). Here are some things to consider:

- Just because a component is approaching (or has passed) the life expectancy listed, does not mean you will have to replace it in the near future. Consult with an experienced professional if you believe you can continue to operate an existing component that has reached or passed its expected useful life.
- A relatively new component might be causing trouble and may need replacement even if it is not near its life expectancy. Over time, continued maintenance and emergency repair often costs more than replacement.
- Keep current design documentation for your infrastructure, such as pump specifications, treatment designs, and as-built drawings together in a single chapter of your SWSMP, such as the "system information" chapter.

Step 1 **Short-lived components.** Take an inventory of each short-lived system component. These facilities have a service life of about **six years or less**. In the space provided in Table 4-1A, list each component's size, length, or capacity, the number of such components, the year installed or its current age, and the estimated replacement cost.

Step 2 **Long-lived components.** Take an inventory of each long-lived system component. These facilities have a service life of about **seven years or more**. In the space provided in Table 4-1B, list each component's size, length or capacity, the number of such components, the year installed or its current age, and the estimated replacement cost.

If you do not know the specifics of your system (size or capacity of storage tank), call your DOH regional office to arrange a time to review your system's files.

Step 3 **Decide which components to replace.** Compare each component's age to the estimated life expectancy shown in the table. Decide which (if any) components you should replace in the next **six years**. Check YES or NO for each component. If you check YES, write the year that you expect to make the improvement in the space provided.

Step 4 **Plan for future improvement projects.** Transfer each component (short- and long-lived) that you need to replace in the next **six years** into Table 4-2 (Planned Improvements and Replacements). This will create a record of future projects to use as you budget for current and future system expenses (Section 4-3).

Table 4-1 A
Short-Lived Component Inventory (service life is 6 years or less)

Short-Lived Asset Component	**Size, Length, Diameter, and/or Capacity** Where necessary, list each component separately	**Year Constructed or Installed**	**Estimated Life Expectancy**	**Current Age**	**Estimated Cost to Replace**	**Replace in Next 6 Years?**
Hypo-Chlorination System			3-5 Years			☐ No ☐ Yes If Yes, Year
UV Light			1 Year			☐ No ☐ Yes If Yes, Year
Software (SCADA, cross-connection control)			5-9 Years			☐ No ☐ Yes If Yes, Year
Filters and Filter Media			5-9 Years			☐ No ☐ Yes If Yes, Year
Pressure Tanks (bladder)			6-9 Years			☐ No ☐ Yes If Yes, Year
Building Heat and Cooling			5-9 Years			☐ No ☐ Yes If Yes, Year
Instrument Switches and Gauges			5-9 years			☐ No ☐ Yes If Yes, Year
Other			years			☐ No ☐ Yes If Yes, Year

Table 4-1B
Long-Lived Component Inventory (service life is 7 years or longer)

Long-Lived Component	**Size, Length, Diameter, and/or Capacity** Where necessary, list each component separately	**Year Constructed or Installed**	**Estimated Life Expectancy**	**Current Age**	**Estimated Cost to Replace**	**Replace in Next 6 Years?**
EXAMPLE Well	Well 1 8-inch diameter and 200 feet deep	Drilled 1924	50-100 years	87 years		☐ No ☒ Yes (Well #1) If Yes, Year 2014
	Well 2 12-inch diameter and 145 feet deep	Drilled 1986		25 years		
EXAMPLE Submersible Well Pump	Well 1 10 hp	Installed 1996	10-15 years	15 years		☒ No ☐ Yes If Yes, Year ____
	Well 2 25 hp	Installed 2006		5 years		
Well			50-100 years			☐ No ☐ Yes If Yes, Year
Submersible Well Pump			10-15 years			☐ No ☐ Yes If Yes, Year
Turbine Well Pump			25-50 years			☐ No ☐ Yes If Yes, Year
Source Meter			15-30 years			☐ No ☐ Yes If Yes, Year
Well and Pump House			25-100 years			☐ No ☐ Yes If Yes, Year
Reservoirs			50-100 years			☐ No ☐ Yes If Yes, Year

Long-Lived Component	**Size, Length, Diameter, and/or Capacity** List each individual component separately	**Year Constructed or Installed**	**Estimated Life Expectancy**	**Current Age**	**Estimated Cost to Replace**	**Replace in Next 6 Years?**
Pressure Tanks (hydropneumatic)			50 years			☐ No ☐ Yes If Yes, Year
Booster Pumps			10-20 years			☐ No ☐ Yes If Yes, Year
Back-up Power Generator			15-30 years			☐ No ☐ Yes If Yes, Year
Electrical Service/Breaker			20 years			☐ No ☐ Yes If Yes, Year
Motor Starter/Control Relays			10-20 years			☐ No ☐ Yes If Yes, Year
Other			years			☐ No ☐ Yes If Yes, Year

4.2 Planned Improvements and Replacement Projects

Purpose

To document all system components that need replacement within the next six years and any other planned improvement projects.

Background

Water systems must include a list of planned (or future) improvements in their SWSMP (WAC 246-290-105). Your list should describe the project, anticipated start date, and estimated cost. In Section 4.1, you evaluated your system components and determined which ones you need to replace in the next six years. You can draw on that exercise to create your list of future projects. When you have a list of projects, make sure you have or can obtain the funds to complete them.

How to complete this section

Follow the steps below to complete Table 4-2. This will be your list of future improvements and replacement projects.

Step 1 Refer back to Tables 4-1A and 4-1B. Transfer all short- and long-lived components you need to replace in the next six years to Table 4-2. Include the estimated cost and the anticipated year.

Step 2 Identify any other improvement projects you intend to complete that are not part of your replacement strategy. Include the estimated cost and anticipated year.

Table 4-2
Planned Improvements and Replacement Projects

Water System Improvement or Replacement Project	Estimated Cost	Anticipated Year	Financing Method *Bank loan, public loan, cash on hand*
	$		
	$		
	$		
	$		
	$		
	$		
	$		
	$		
	$		

4.3 Water System Expenses

Purpose

To document current and future water system expenses.

Background

Noncommunity water systems need to maintain sufficient funds or have the ability to secure sufficient funds to support the operation, maintenance, and infrastructure replacement needs of the system. Because most noncommunity water systems do not have paying water customers, it's important for you, as the owner of a noncommunity system, to know how much it currently costs to maintain the system and how much you'll need to spend in the future.

All water systems must demonstrate that they are and will continue to be financially viable (RCW 70.119A.100). Financial viability is the ability to obtain sufficient funds to develop, construct, operate, maintain, and manage a public water system on a continuing basis, in full compliance with all applicable requirements.

Owners of qualifying nonprofit noncommunity water systems may apply for a low-interest Drinking Water State Revolving Fund (DWSRF) loan to make capital improvements to resolve a public health issue. For information on eligibility requirements, see our DWSRF webpage.

How to complete this section

Follow the steps below to complete Table 4-3. This will be your list of current and projected system expenses. The template includes suggested items.

Step 1 Complete the expense table by filling in the information for each applicable item. Keep the following in mind:

- Apply an inflation factor (such as 3 percent per year) to expenses that would not otherwise change.
- Include sanitary survey fees and the cost of any additional required water quality sampling following an unsatisfactory sample.

Step 2 The table begins with your actual spending in the current year **("*Current Year*")** and continues with the next five years in columns **(*"CY+1"*** through ***"CY+5"*).**

Step 3 Calculate your annual totals by adding the values together for each year. This table will be your list of total annual system expenses.

Table 4-3
System Expense Table

Water System Operating Expenses and Payments						
	Current Year (CY)	**CY +1**	**CY +2**	**CY +3**	**CY +4**	**CY +5**
Contract operator						
System insurance						
Water quality sampling						
Water treatment chemicals						
Engineering services						
Legal services						
DOH fees: sanitary survey fees and annual operating permit fees						
Training and travel expenses						
Planned Improvements and Replacements						
Debt payments						
Other expenses:						
Total System Expenses						

Chapter 5: Next Steps

Considering all the responsibilities that come with maintaining your business, it's easy to lose track of the activities that you planned for your water system. This chapter is to keep a list of those activities, to set target start and completion dates, and to track your progress. It's your opportunity to commit to the future action you decided you need to take while completing the previous sections. **If your last sanitary survey report listed any deficiencies, make sure to include the corrective action in this section.**

CHAPTER TOPICS

This chapter has only one section and one purpose: To help you keep track of activities that you plan to do for your water system.

5.1 List of Future Activities

Purpose

To document and track future water system activities.

How to complete this section

Complete Table 5-1 by listing all the future activities you identified in the previous sections. Include the estimated cost, if you can, so you can prioritize and plan for the activity. After you determine the start date, include the activity and its cost in your list of future expenses (Section 4.3).

Table 5-1

Future Activities

Item to address	Priority (H, M, L)	Estimated cost	Target start date	Target completion date	Actual completion date