

Introduction

What is wellhead protection?



Wellhead protection (WHP) is the process of managing the land area around your well to prevent contamination of your water supply. The State's WHP program is designed for communities that want to protect their drinking water. This program is administered by the Public Water Supply (PWS) Section of the North Carolina Division of Environmental Health. A key feature of this program is that each community develops its own local WHP program, based on local conditions and priorities.

In North Carolina, each community uses state guidelines to develop its own local WHP program, but members of the community decide which specific actions are the most important for protecting their own water supply. Therefore, both public participation and technical guidance from the state are important for developing a good program. Specifics of the local program are detailed in a WHP plan which the community submits to the state for review and approval.

The goal of WHP is to prevent contaminants from entering your public water supply wells. This is accomplished by identifying and managing potential sources of contamination that may impact your drinking water supply. The plan will identify a protection zone around each well called the WHP Area (WHPA). The WHPA is the area surrounding your public water supply well through which contaminants are reasonably likely to move toward and reach your water supply well. The WHP plan should also identify ways for the community to manage activities in the WHPA to minimize the risk that the water supply will be contaminated in the future. Contingency plans are also included so that corrective actions can be taken quickly in case of accidental spills or other emergencies.

This guidebook will lead you through the steps of developing a WHP plan that will help you protect your community's drinking water and meets state requirements for approval.

This guidebook will lead you through the steps of developing a WHP plan that addresses local needs and also meets state standards.

Why it is important

Because many people do not understand where their well water comes from, they often take it for granted. However, well water can become contaminated more easily than many people realize. The well your community currently depends on may not be able to provide an adequate supply of clean drinking water in the future.

The ground water that supplies your community's wells ultimately comes from rain and snow. This water seeps into the ground and moves toward your community's wells. Sometimes, pollutants can also seep into the ground and enter the water. In recent years, there have been many stories in the news about people who became ill because of contaminated water, or whose homes lost their value because of a contaminated private well. Wellhead protection is a preventive program to help maintain the quality of public drinking water supplied by wells. Wellhead protection planning is one way to help ensure that your community has a long-term source of clean water.



Wellhead protection is an investment in the future of your community. Your community can take a proactive step toward reducing the likelihood that your community’s wells will become contaminated.

Developing a local WHP program allows your community to put its own decisions into action. Your community can tailor the local WHP program to meet its specific circumstances and goals. The best time to plan the future of your community’s water supply is now, before there is a problem.

Wellhead protection is cost effective. A modest investment in a local WHP program can save a community tens to hundreds of thousands of dollars later, by preventing contamination. If your well becomes contaminated, your community may face costs associated with more frequent treatment of the water to meet drinking water standards, cleaning up the ground water, drilling a new well, and providing an alternate source of water to customers. There may also be less direct costs, such as temporary shutdowns in businesses and industry that rely on the water, or outbreaks of waterborne illness.

Wellhead protection fosters a positive climate for economic growth. A community with an active WHP program can avoid the adverse economic impacts of a contaminated water supply, which could lead to a loss of jobs or falling real estate values. Both current and future residents and businesses will know that efforts are being made to ensure a safe, adequate water supply well into the future. Other aspects of community planning may also benefit from the knowledge gained through the WHP planning process.

Because of its long-term economic benefit, the state also considers the presence of an approved WHP plan when awarding loans and grants to local governments for water and wastewater improvement projects. When a local WHP program is in place, the state knows its investment is going to a community that is less likely to face the financial impact of a contaminated water supply. Therefore, the current system for determining which communities get water and wastewater improvement loans and grants awards “priority points” to those communities with state-approved WHP plans.

By developing a local WHP program, your community can put its own decisions into action.

How to use the guidebook and develop your plan

"I would say to any town that's small like ours that this is the best thing they can do. Because we had our WHP plan, the extra points put us high enough on the list to get funding for our new sewage treatment plant. Without the points, we wouldn't have been awarded the funds, and our tax base is too small to handle it ourselves. I would advise any small town to do Wellhead Protection."

This Guidebook has been prepared by the State of North Carolina to help your community develop a local WHP program that satisfies state requirements and meets your community's needs. Each chapter of the book corresponds to a step in preparing your WHP plan. When you have completed these steps, you should have a comprehensive WHP plan that is tailored to your community and is ready to submit to the state for review and approval.

At the end of this introduction, you'll find a checklist to help you track your progress. You should complete the steps in order, because the information from each one is needed for the next. Also, notice that after you first determine the WHPA, you may want to submit it to the state for approval prior to completing the remaining steps. This is for your benefit. If the area needs to be revised, you can correct the boundaries before doing a lot of unnecessary work.

Each chapter has the following format, leading you from the beginning of the step to preparing the related part of your final plan. This includes:

- a description of the step and its purpose;
- information that will help you carry out this step;
- a list of additional resources that may help with this step;
- a checklist of items to be completed and included with your plan as a result of this step; and
- examples of the language that you may use when writing your plan.

In addition, a sample plan has been prepared for the fictional Town of Clearwater. The part of the plan that results from a given step has been included with that step. In some cases, examples are provided for various circumstances that may occur in different municipalities or in different parts of the state, and you can choose any that apply to you. When possible, a form or template has been provided so that you can fill in the information about your community, and then include the completed template in your plan.

The chapters correspond to the main activities that must be carried out to develop a WHP plan and obtain state approval for it. The following paragraphs provide a brief description of those steps.

Step 1. Forming a Planning Team



The most successful programs include public involvement from the earliest stages. Volunteers also reduce the workload for public works personnel. This chapter gives suggestions for identifying those people who should be included: those who will carry out the plan, those who will be affected by it, and those who will have the most impact on future water quality.

Step 2. Delineating the Wellhead Protection Area (WHPA)



The first step for the planning team is to identify the land area that will need to be managed to protect your community's water supply. This step involves collecting basic information including yield, depth, pumping period, and source of supply for each well. The water pumped from a well passes through the surface and subsurface land surrounding the well. This area, which may extend up to thousands of feet from the well, is called a Wellhead Protection Area (WHPA). The goal of delineation is to determine this area as accurately as possible. Methods that have been approved by the PWS Section for determining the size and shape of the WHPA are provided.

Step 3. Potential Contamination Source (PCS) Inventory



Once the WHPAs have been delineated, the next step is to identify and locate all potential contamination sources (PCSs) within these areas. A PCS is any substance or activity which could lead to the contamination of the ground water. There is a broad range of possible sources of contaminants, and they will be different for each community. Examples include such things as industrial or agricultural chemical storage and use, a highway or railroad track where accidents could occur, underground and above-ground petroleum storage tanks, and residential septic tanks. The purpose of the PCS inventory is to understand the nature and magnitude of potential threats to water quality and human health. The inventory must be as thorough and complete as possible.

Once the PCSs contained within the WHPAs are identified, they will be ranked in terms of relative risk to each public water supply well. In this way, the most serious concerns can be given priority, and limited resources can be applied to these first.

This chapter includes lists of PCSs to look for, ranking methods, and detailed instructions concerning the development of a PCS inventory.

Step 4. Management of PCSs

Once the area to be protected has been delineated, and the PCSs in it have been identified, the next step is to develop strategies for keeping contamination from entering the water supply. The planning team must decide upon methods for managing any threats that were identified in the PCS inventory. Some PCSs may not be a significant threat and may not require management. Others may not require active management because they are already regulated and monitored under existing federal and/or state programs.

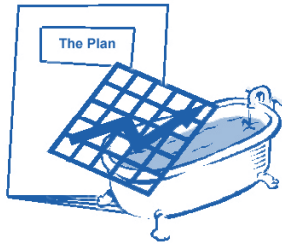


Examples of management strategies for many common PCSs are provided. These include both regulatory strategies (such as zoning or use permits) and non-regulatory strategies (such as education or household hazardous waste collection). The local planning team must decide what methods are appropriate in each WHPA. Public water system suppliers that have no regulatory authority must submit a plan for adequately managing any area they own around their wells.



Step 5. Contingency Plan

A vital aspect of a WHP plan is a contingency plan. A contingency plan ensures that a community has an alternative water supply if the primary source is contaminated. This chapter guides the planning team through the development of both short-term (less than 48 hours) emergency response plans and alternatives for long-term (when the source is permanently impaired) plans.



Step 6. Implementing and Updating the WHP Plan

When the plan is submitted, it must include a timeline for putting it into action. Once a wellhead protection program is in place, continued administration of the program is necessary in order for it to be successful. Administration includes the establishment of WHPAs for new wells, periodic well and well site inspection, periodic updating of PCS inventories, and the review and revision of WHP plan management strategies.



Step 7. Submitting the Plan

This guide includes instructions for preparation of the plan within each chapter. The finished plan is sent to the PWS Section, as instructed in this chapter. After the PWS Section reviews your WHP plan, it will be returned to you with suggestions for revisions, if needed. When the submitted plan is satisfactory, you will receive a letter of approval.

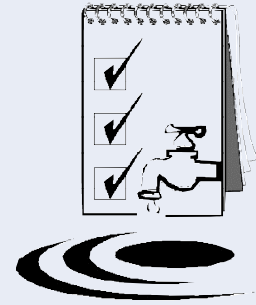


References

Why do Wellhead Protection? Issues and Answers in Protecting Public Drinking Water Supply Systems. May 1995. EPA 813-K-95-001. Office of Water, U.S. Environmental Protection Agency, Washington, DC.

Wellhead Protection Programs: Tools for Local Governments. April 1989. EPA 440/6-89-002. Office of Ground Water Protection, Office of Water, U.S. Environmental Protection Agency. Paper, 50 pages.

Progress checklist for WHP plan approval



Check when completed

Step in WHP plan approval process

- | | |
|-------|--|
| _____ | 1. Form a Planning Team
Identify participants
Identify resources
Identify goals |
| _____ | 2. Delineate WHPA: Define the area to be protected
*Submit WHPA Delineation to public water supply
*Obtain approval of WHPA before proceeding |
| _____ | 3. Conduct Potential Contamination Source Inventory
Collect physical data for each WHPA
Develop a preliminary inventory map of each WHPA
Conduct a windshield survey
Contact landowners
Complete inventory map for each WHPA and a questionnaire for each potential contamination source |
| _____ | 4. Develop Management Strategies |
| _____ | 5. Develop a Contingency Plan |
| _____ | 6. Prepare timeline for implementing and plans for updating WHP plan
(including provisions for any new wells added to system) |
| _____ | 7. Submit completed plan
Revise and resubmit if necessary
Implement and update |

*Recommended

