



Source Water/Wellhead  
Assessment  
&  
Protection Program

*Planning Guide*

Department of Environment and Natural Resources  
Division of Environmental Services  
Ground Water Quality Program



*Protecting South Dakota's Tomorrow ... Today*

***Month Year***

## **Source Water/Wellhead Protection Plan**

Included is a generic document describing the general process that a public drinking water system may use to develop a source water/wellhead protection plan. It is very important to note that development of such a plan is entirely voluntary in South Dakota. The document is designed to be used as guidance for communities in developing a protection program should they wish to do so.

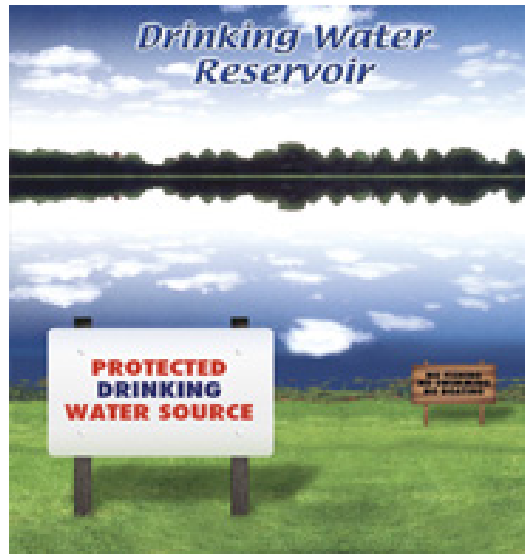
The topics and suggestions made will not be applicable to all PWSS. Each community can use the relevant information that most closely fits their particular needs. The complexity of any formulated plan would be expected to vary greatly depending upon the needs and resources of each community or PWSS.

Wellhead protection for ground water public water supply systems was authorized by the 1986 Safe Drinking Water Act Amendments, and Source Water protection which covered both surface water and ground water public water supply systems, was authorized by the 1996 Safe Drinking Water Act Amendments.

Although source water protection and wellhead protection are very similar, it is very important to note that only wellhead protection is authorized by state law in regard to municipalities or counties adopting ordinances to protect public ground water supplies from pollution.

**Public Water Supply System Name**

**Source Water/Wellhead Protection Plan**



**County(s) Name, South Dakota**

**Month Year**

**Prepared by:**

**Contact Name and Information**

# Table of Contents

## EXECUTIVE SUMMARY

## INTRODUCTION

- Purpose of a Source Water/Wellhead Protection Plan
- Public Participation in the Planning Process
- Protection Plan Development
- Public Outreach
- Steering Committee Members

## OVERVIEW OF SOUTH DAKOTA'S SOURCE WATER/WELLHEAD PROTECTION PROGRAM

- Source Water Assessment
- Source Water/Wellhead Protection

## WATER SUPPLY INFORMATION

- Description of the Water Supply Source
- Description of the Water Supply Distribution System

## SYSTEM SOURCE WATER ASSESSMENT RESULTS

- Source Water Assessment Area Delineation
- Contaminant Source Inventory
- Susceptibility Analysis
- Source Water/Wellhead Protection Priority Strategy

## SOURCE WATER/WELLHEAD PROTECTION MEASURES

- Contingency Planning and Security
- Management Measures
  - Regulatory Approaches
  - Land use / Land Acquisition
  - Education
  - Best Management Practices
- Protection Measures for Potential Sources of Contamination
  - Commercial and Industrial Sources
  - Residential and Municipal Sources
  - Agricultural and Rural Sources

## LEGAL & FINANCIAL INFORMATION

## PLAN UPDATES

## CONCLUSION

## REFERENCES

## APPENDICES

- Contingency Plan
- Source Water Assessment Report
- Public Outreach Materials
- Funding Sources for Source Water/Wellhead Protection

**Acronyms (Possible list for a Source Water/Wellhead Protection Plan – edit as needed)**

BASINS	Better Assessment Science Integrating Point and Nonpoint Sources
BMP	Best Management Plan
CRP	Conservation Reserve Program
DENR	Department of Environment and Natural Resources
EHS	Extremely Hazardous Substance
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
GPS	Global Positioning System
MCL	Maximum Contaminant Level
MGD	Million Gallons per Day
NA	Not Applicable
PWSS	Public Water Supply System
RF	Risk Factor
SARA	Superfund Amendments and Reauthorization Act
SD	South Dakota
SDWA	Safe Drinking Water Act
SDWIS	Safe Drinking Water Information System
SWAP	Source Water Assessment Program
TMDL	Total Maximum Daily Load
US	United States
USGS	United States Geological Survey
WHP	Wellhead Protection

## **Executive Summary**

Provide an overview of the main points of the Source Water/Wellhead Protection Plan. In this section you may briefly summarize items such as:

- The State developed source water assessment for your community, including the water source(s), delineated area and potential risks
- The group(s) or committees that are responsible for developing and implementing the plan
- General protection measures
- The contingency plan if contamination or disruption of service occurs
- How you are tracking and evaluating the plan

**This summary need only be about a page in length.**

## **Introduction**

This section should provide an introduction defining the purpose and need of the Source Water/Wellhead Protection Plan. This section may also include information about the level of public participation in the planning process, the steps taken to develop the plan, the effort made to inform the public about the plan, and a description of the person or persons (group, committee or local government) charged with developing the plan.

This could include information on items such as how many public meetings were held, what groups were involved, how public notices were given, and how the plan is implemented.

## **Overview of South Dakota's Source Water/Wellhead Program**

A major aspect of any source water/wellhead protection plan involves the utilization of the public water supply system's source water assessment. This information, in conjunction with earlier wellhead protection processes, is needed to understand where the system's drinking water comes from, what constitutes the potential contaminant risks to that water supply, and how to manage the potential loss of a water supply. The protection plan should include and use that information to develop specific protection measures for your system. Listed below is a review of the source water assessment process.

## **Source Water Assessment**

South Dakota Codified Law 34A-2 directs the South Dakota Department of Environment and Natural Resources (DENR) to conserve the waters of the state and to protect, maintain, and improve the quality of water for drinking water supplies and other uses. Additionally, amendments to the federal Safe Drinking Water Act specifically required the States to prepare source water assessments for all public water supply systems in the nation. A source water assessment is a three-step process including delineation of the watershed or groundwater area contributing water to the water supply, identifying the significant potential sources of drinking water contamination in those areas, and rating the water supply's susceptibility to contamination from those sources.

Source water delineations protect and benefit the public water supply system (PWSS) by identifying the critical area contributing water to the system, thereby defining the area where management efforts should be focused at the local level. Locating potential contaminant sources in source water areas informs the local community of potential threats to their water supply. Determining the susceptibility of the water supply to each potential contaminant source provides the community leaders and planners a system to

prioritize their management measures by identifying contaminant source risks and evaluating the system's susceptibility to contamination.

### **Source Water/Wellhead Protection**

The 1986 and 1996 Safe Drinking Water Act Amendments required States to develop a PWS drinking water protection process and the performance of source water assessments. The laws also encouraged but did not require the implementation of protection and management practices. As a result, at this time, source water /wellhead protection and management measures are not required elements of South Dakota's Source Water /Wellhead Protection Program. However, preventing contamination is the key to keeping South Dakota's drinking water supplies safe. Once a drinking water supply becomes contaminated, a community must face the difficult and costly task of installing treatment facilities or locating an alternative water source.

South Dakota promotes protection of its public water supply sources and encourages management strategies through its wellhead protection and source water protection programs. The process of managing potential contaminant sources in these valuable water production areas is the most important aspect of prevention of contamination of drinking water sources.

### **Water Supply Information**

You may wish to provide information describing the PWSS water supply source. Information may include a description of the aquifer or surface water body used, including information, if known, on recharge, precipitation, geology, water quality, water quantity and water usage.

Also include information describing the PWSS's distribution system such as number of wells and their depths, description of the surface water intake, water treatment technologies, and general description of the system's infrastructure.

The PWSS may choose to keep this information confidential to protect the integrity of their system.

### **System Source Water Assessment Results**

Provide a summary of the PWSS source water assessment results. This section should include details on the source water area delineation, the results of the contaminant source inventory, details on the systems susceptibility analysis and a strategy for prioritizing the system's source water protection needs based on their susceptibility to specific contaminant sources.

### **Source Water/Wellhead Protection Measures**

The primary function of a source water/wellhead protection plan centers around the specific protection measures a PWSS employs to safeguard its drinking water supply. The measures used can vary widely depending upon the susceptibility of the system to contamination, the financial and personnel resources available to the PWSS and the willingness of the community to embrace the protection measures. Thus, it is understood that with the limited resources available to many communities, the measures referenced below will not be applicable to many PWSS. Actions listed in a protection plan should be actual tasks to be accomplished and measured, not simply recommended activities.

Note DENR does not advocate one particular measure over another. These are voluntary actions by local communities designed to help protect their water supplies. All actions should be balanced against other needs and wishes of the community.

### **Contingency Planning and Security**

Provide information on the PWSS vulnerabilities based on the contaminant source inventory from the source water assessment, and the system's vulnerability to natural disasters or man-made emergencies. As described in the wellhead protection documents, in this section the PWSS should provide a generalized plan for how it would notify the community if contaminants (man made or natural) made the water unsafe to drink, and how it would provide drinking water to its constituents should there be a disruption in service regardless of the cause. Ideas developed in this section could be used as an outline for the development of a stand alone contingency plan. If the PWSS already has a contingency plan in place, describe the plan in this section and include a copy of the entire contingency plan in the Appendix.

### **Management Measures**

The following items are some of the measures a PWSS may use to protect its drinking water supply, but are not meant to be all inclusive of methods that can be used. What will work best for an individual community depends upon the local conditions. In your plan provide information about the general source water area and/or area-wide management measures in place or planned to protect the PWSS's drinking water supply. Possible measures can be generally sub-divided into the four categories shown below.

- Regulatory Approaches – these management options involve using regulations and local zoning ordinances to protect critical source water/wellhead areas. Again, recall that only ground water based PWSS (or counties protecting ground water) have the authority under state wellhead protection laws to enact specific drinking water protection zoning ordinances. Examples include:
  - Wellhead Protection Districts
  - Land use restrictions like subdivision and growth controls
  - Land use restrictions controlling the location of activities using dangerous substances or materials
  - Implementation of construction and operation standards including operation and maintenance practices and waste disposal procedures
  - Where regulations already exist for certain activities, an increase in inspections and training may help protect source water areas
- Land Use / Land Acquisition – this includes the purchase of land or conservation easements to serve as a protection zone near or in source water or wellhead protection areas.
- Education – public education can increase awareness of potential threats, encourage voluntary source water/wellhead protection and build support for other measures. One way for a PWSS to communicate to their customers is through their annual Consumer Confidence Report. Other means to provide education for the community include items such as brochures, newsletters, community events, demonstration projects and informational meetings.
- Best Management Practices – these are the standard operating procedures businesses and individuals can implement on their own to reduce the threat to water supplies. These practices can be structural such as the use of constructed wetlands or vegetation buffers. Alternatively, they can be good housekeeping practices such as proper equipment operation and maintenance, appropriate



product storage, use and handling, and proper waste storage and disposal. Best management practices can be enforced with regulations but most often are more successful when implemented through public involvement and education. Examples of these activities include an area wide paint exchange or fertilizer/pesticide collection event, collection of used electronics or pharmaceuticals, plugging abandoned wells and water conservation methods. Conservation methods can include promoting use of low flow toilets and shower heads, better management of lawns and landscaping, and use of gray water on parks and golf courses.

### **Protection Measures for Potential Sources of Contamination**

In some cases requirements can be placed on specific potential contaminant sources of concern. Provide information on the types of protection measures in-place or planned for specific potential contaminant sources already located near the source water/wellhead protection area. These will vary by PWSS depending on the types of contaminant sources near the source water/wellhead protection area. In general, these potential contamination sources are sub-divided into the three groups shown below.

- Commercial and Industrial Sources – for example, a PWSS may install and monitor sentinel wells between their water supply well and an above ground storage tank farm as an early warning system to notify them of a possible contamination threat to their well.
- Residential and Municipal Sources – for example, a PWSS may implement increased inspection and maintenance requirements for existing septic systems near the source water/wellhead protection area. If the existing septic systems are frequently inspected and properly maintained the risk to the water supply is reduced.
- Agricultural and Rural Sources – for example, a PWSS in a heavily agricultural area may conduct regular training sessions to educate farmers and homeowners on available best management practices to reduce non-point source pollution from improper fertilizer and pesticide application.

### **Legal and Financial Information**

Other factors in determining what measures can be undertaken by the PWSS involve the legal authority to conduct activities (such as zoning ordinances or other restrictions) and the funding available. As noted previously, specific drinking water protection zones can only be state authorized under wellhead protection rules. Funding sources available to a PWSS to carry out the various types of protection measures whether regulatory or non-regulatory are important considerations.

The source water/wellhead protection plan should include information regarding the legal authority to conduct the protection measures as well as a discussion and identification of the funding used to implement the plan.

### **Plan Updates**

A protection plan is most effective if it is implemented and periodically updated by the local community. The PWSS may include interim steps in the plan to make it easier to measure progress in specific areas. Realistic achievable goals should be established that balance water protection with economic development. Time lines or milestones can be set up to see if projected goals are being met.

Changes and upgrades to the plan can occur as local conditions change and progress is reviewed.

### **Conclusion**

In this section summarize the main aspects of your specific source water/wellhead protection plan and re-emphasize the purpose and need for the plan.

### **References (include as needed)**

### **Appendix (include as available, examples below)**

Contingency Plan

Source Water Assessment Report

Public Outreach Materials

Funding Sources for Source Water/Wellhead Protection