Instructional Guidance Manual

Completing a Source Water Protection Plan

Version: 5/7/15
Contents

Introduction .................................................................................................................................................. 1
Background: WV Source Water Assessment and Protection Program ......................................................... 1
Regulatory Requirements ............................................................................................................................... 2
Requirement to File and Update the Plan ...................................................................................................... 2
Purpose of Source Water Protection Planning .............................................................................................. 2
Getting Started ............................................................................................................................................ 3
  Engaging Local Stakeholders and Forming a Protection Team ................................................................. 3
  Existing Source Water Protection Plans .................................................................................................... 4
Completing the Online Form .......................................................................................................................... 4
Accessing the Online Form ............................................................................................................................ 4
  System Information (Lines 1-14) .................................................................................................................. 6
  Treatment Processes (Lines 15-25) ............................................................................................................... 7
  Surface Water Sources (Lines 26-27) .......................................................................................................... 8
  Groundwater Sources (SWIGs and GWUDIs) (Lines 28) .......................................................................... 8
  Delineations (Line 32) .................................................................................................................................. 8
Forming the Protection Team/ Engaging Stakeholders (Lines 30-32) ......................................................... 10
Inventoried Potential Sources of Significant Contamination (Lines 33-34) ............................................... 11
Prioritization of Threats and Management Strategies (Line 35) ................................................................ 13
Implementation Plan for Management Strategies (Line 36) ..................................................................... 14
Education and Outreach Strategies (Line 37) .............................................................................................. 14
Contingency Plan (Line 38-45) ...................................................................................................................... 14
  Emergency Response Organizations (Line 46-48) .................................................................................. 16
  Operation during loss of power (Line 49-58) ............................................................................................ 16
  Future water supply needs (Lines 59-60) .................................................................................................. 17
  Water Loss Calculation (Lines 61-62) ....................................................................................................... 17
  Early warning monitoring system (Lines 63-71) ..................................................................................... 20
Single Source Feasibility Study (Lines 72-73) ........................................................................................... 21
Communications Plan (Lines 74-87) ........................................................................................................... 22
Emergency Response Short Forms (Lines 88-91) ....................................................................................... 23
Signature Page (Lines 92-98) ..................................................................................................................... 24
Technical Appendices

Appendix A  Engaging Stakeholders/Forming Protection Team
Appendix B  Delineations
Appendix C  Potential Sources of Significant Contamination
Appendix D  Early Warning Monitoring Systems
Appendix E  Feasibility Study Guide
Appendix F  Communication Plan Template
Appendix G  Emergency Response Plan Template

Acronyms

BMP  Best Management Practices
PCS  Potential Contamination Source
PWS  Public Water System
SDWA  Safe Drinking Water Act
SWAP  Source Water Assessment and Protection
SWP  Source Water Protection
WHPP  Wellhead Protection Program
WVBPH  WV Bureau for Public Health
Introduction

To provide guidance to public water systems in the development of source water protection plans and to collect required information in a feasible, standardized format, the West Virginia Department of Health and Human Resources, Bureau for Public Health Source Water Assessment and Protection Program (WVBPH SWAP Program) has prepared a number of guidance materials. These include a source water protection plan template; an online form to collect information and populate the plan; and this instructional guidance manual. The purpose of this manual is to:

- Provide background information and regulatory authority
- Explain the purpose of a source water plan and its importance to the health of the community
- Give specific instructions for completing the Source Water Protection Plan Online Tool
- List required elements of an approved source water protection plan
- Instruct on the process to obtain protection area delineations and a list of potential sources of significant contamination
- Provide recommendations for source water management strategies and public outreach
- Guide water systems through the development of a communication plan
- Communicate requirements of a contingency plan

Background: WV Source Water Assessment and Protection Program

Since 1974 the federal Safe Drinking Water Act (SDWA) has set minimum standards on the construction, operation, and quality of water provided by public water systems. In 1986, Congress amended the SDWA. A portion of those amendments were designed to protect the source water contribution areas around ground water supply wells. This program eventually became known as the Wellhead Protection Program (WHPP). The purpose of the WHPP is to prevent pollution of the source water supplying the wells.

The Safe Drinking Water Act Amendments of 1996 expanded the concept of wellhead protection to include surface water sources under the umbrella term of Source Water Protection. The amendments encourage states to establish source water assessment and protection (SWAP) programs to protect all public drinking water supplies. As part of this initiative states must explain how protection areas for each public water system will be delineated, how potential contaminant sources will be inventoried, and how susceptibility ratings will be established.

In 1999, the WVBPH published the West Virginia Source Water Assessment and Protection Program, which was endorsed by the United States Environmental Protection Agency. Over the next few years, WVBPH SWAP Program staff completed an assessment (i.e., delineation, inventory and susceptibility analysis) for all of West Virginia’s public water systems. Each public water system was sent a copy of its assessment report. The assessment reports recommended that communities develop protection plans as a voluntary action. Voluntary protection plans have been developed by approximately 200 systems with assistance from WVBPH SWAP Program staff and contractors across the state. These plans focused on updating threat information, preventing contamination through awareness and education, and providing basic emergency response and contingency information. These plans must be updated and enhanced to fulfill regulatory requirements described below.
Regulatory Requirements

On June 6, 2014, §16-1-2 and §16-1-9a of the Code of West Virginia, 1931, was reenacted and amended by adding three new sections, designated §16-1-9c, §16-1-9d and §16-1-9e. The changes to the code outlines specific requirements for public water utilities that draw water from a surface water source or a surface water influenced groundwater source.

Under §16-1-9c each existing public water utility which draws and treats water from a surface water supply source or a surface water influenced groundwater supply source shall submit to the commissioner an updated or completed source water protection plan for each of its public water system treatment plants with such intakes to protect its public water supplies from contamination on or before July 1, 2016. Any public water utility with a primary surface water source of supply or a surface water influenced groundwater source of supply that comes into existence on or after the effective date of this article shall submit prior to the commencement of its operations a source water protection plan satisfying the requirements of subsection (b) of §16-1-9c.

Subsequently, three chapters were promulgated for Title 64 Legislative Rules Series 3 (64CSR3) regulating public water systems describing the source water protection plan requirements (§64-3-14), authorizing grants with state funding (§64-3-15), and providing a schedule for plan submission (§64-3-16).

Requirement to File and Update the Plan

Any public water utility which treats water from a surface water source or surface water influenced groundwater source is required to submit an updated source water protection plan at least every three years or when there is a substantial change in the potential sources of significant contamination within the identified zone of critical concern, or more frequently as needed (such as major staff changes, new PCSs near the intake(s), major changes in water quality, and development and use of new sources that would trigger a plan review). If the water utility has questions about plan reviews, please contact the SWAP Program at eedsourcewaterprotection@wv.gov. Any public water utility required to file a complete or updated plan will review any source water protection plan it may currently have on file with the bureau and update it to ensure it conforms to the requirements of the rule on or before July 1, 2016.

Before a plan can be approved, the local health department and public will be invited to contribute information for consideration. In some instances, public water utilities may be asked to conduct independent studies of the source water protection area and specific threats to gain additional information.

Purpose of Source Water Protection Planning

The goal of the WVBPH SWAP Program is to prevent degradation of source waters which may preclude present and future uses of drinking water supplies to provide safe water in sufficient quantity to users. The most efficient way to accomplish this goal is to encourage and oversee source water protection on a local level. Every aspect of source water protection is best addressed by engaging local stakeholders.

The intent of a source water protection plan is to describe what a public water utility has done, is currently doing, and plans to do to protect its source of drinking water; as well as how a public water utility will respond in case of a source...
water related emergency. Although public water systems treat water to meet federal and state drinking water standards, conventional treatment does not fully eradicate all potential contaminants and treatment that goes beyond conventional methods is often very expensive. By completing a source water protection plan, a public water utility acknowledges that implementing measures to prevent contamination can be a relatively economical way to help ensure the safety of the drinking water.

What are the benefits of preparing a Source Water Protection Plan?

- Fulfilling the requirement for the public water utilities to complete or update their source water protection plan.
- Identifying and prioritizing potential threats to the source of drinking water; and establishing strategies to minimize the threats.
- Planning for emergency response to incidents that compromise the source water supply by contamination or depletion, including how the public, state, and local agencies will be informed.
- Planning for future expansion and development, including establishing secondary sources of water.
- Ensuring conditions to provide the safest and highest quality drinking water to customers at the lowest possible cost.
- Increasing opportunities for funding to improve infrastructure, purchase land in the protection area, and other improvements to the intake or source water protection areas, by documenting the need and benefits.

Getting Started

Engaging Local Stakeholders and Forming a Protection Team

The first step to preparing a source water protection plan is to organize a source water protection team, who will help develop and implement the plan. The legislative rule requires that water utilities inform and engage the public, local government, local emergency planners, local health department and affected residents during source water protection plan development. These individuals will be referred to as “local stakeholders” throughout this document. WVBPH recommends that the water utility invite representatives from these organizations to join the protection team, which will insure that they are given an opportunity to contribute in all aspects of source water protection plan development. Public water utilities should document their efforts to engage representatives and provide an explanation if any local stakeholder is unable to participate.

In addition to the local stakeholders mentioned above, protection team members may include business and industry representatives, land owners (of land in the protection area), emergency responders, and additional concerned citizens. The number of individuals on the protection team is often related to the size of the public utility. Larger utilities serving larger communities may have more individuals available to serve in this capacity than smaller utilities. The public utility will often have at least two representatives on the team, including the administrative contact (ex. general manager, public works director, city manager) and the designated operator. For more details on how to form a protection team and engage local stakeholders, please refer to Appendix A.
All members of the protection team should become familiar with the public water utility’s Source Water Assessment Report and existing source water protection plan.

**Existing Source Water Protection Plans**

The rule describes required components for a source water protection plan. Existing protection plans included many of these components, so they will form a good foundation for public water utilities. Source water protection programs and plans often center on preventing contamination. In the rule, emphasis has been placed on characterizing a system’s ability to respond to emergency incidents, such as a spill, to ensure protection of public health. For this reason, to update or develop their source water protection plans, public water utilities should be prepared to provide additional information regarding system capacities, water treatment processes, contingency plans, secondary source alternatives, and plans to communicate incidents to local stakeholders and state officials.

**Completing the Online Form**

WVBPH is making available an online form to compile data and guide public water utilities through source water protection plan development. The online form provides communities with a number of concise questions meant to gather much of the required elements of a source water protection plan. Information entered online will be stored and available for review by the water utility once the source water protection plan has been reviewed. The rule requires that communities update their source water protection plan at least once every three years. Many of the answers provided by the community may remain the same from one submission to the next. These answers will be stored, making updates more efficient. The online form also allows the WVBPH to manage the information from communities to better assess source water protection in the State of West Virginia and respond to needs in the communities.

During the development of the online tool, public water utilities may submit an updated source water protection plan in a report format (similar to existing source water protection plans). A template for the report format can be downloaded from [http://www.wvdhhr.org/oehs/eed/swap/](http://www.wvdhhr.org/oehs/eed/swap/). Once the online tool is operational all public water utilities will be required to enter their source water protection information online to obtain approval, even if they have previously submitted a document in the report format.

The following manual provides specific instructions for each question of the online form, line-by-line. Data provided online will be used to generate a document that can be distributed to educate the public on their community’s source water protection plans. For communities submitting their plan in the report format, the Word template follows the same flow as the online form with references to line-by-line instructions provided in this instructional guidance manual.

**Accessing the Online Form**

Other than WVBPH staff and contractors, only public water systems and their representatives (ex. contractors, consultants) will be permitted to access the online tool. An initial protected username and passcode will be created for each water system. The water system administrator will be able to create additional user accounts on the online form, enabling multiple users from the water system to access and contribute to the development of the plan.
Once logged into the online form, users will also have access to electronic resources, such as lists of potential sources of significant contamination and source water protection area mapping. A link will be provided to these and other websites. Specific instructions will appear throughout the form to assist with using the form. The main sections appear as separate files on the form and can be completed as the water system has available information. There is no specific order in which the sections must be completed.

In addition to providing specific answers in the online tool, water systems may choose to provide supporting documentation created during their source water protection plan development. If required to submit documentation (ex. communication plan, feasibility matrix) a water system will be prompted to “attach” a file. There will also be an option presented to attach supporting documentation in the online tool. Attaching required or supporting documents does not fulfill the requirement to answer the questions. Answers such as “see the attached document” will be rejected during review. These documents may be presented as an appendix in the report format.

Once all sections of the form are complete, a representative of the water system will sign and submit. Once the electronic submission is complete WVBPH staff will review the provided information and contact the water system if additions or changes are required. During the review, the online form may still be viewed, but cannot be edited, until the WVBPH releases the plan to the public water system for modification. Following a public hearing engaging the public and local health agencies, the WVBPH may approve, modify, or reject the source water protection plan.

The online form and report format are organized into the following sections:

- **System Information**
- **Surface Water Sources**
- **Groundwater Sources (SWIGs and GWUDI)**
- **Water Treatment Processes**
- **Protection Team**
- **Delineation**
- **Potential Sources of Significant Contamination**
- **Prioritization of Threats and Management Strategies**
- **Implementation Plan**
- **Education and Outreach Strategy**
- **Contingency Plan**
  - Emergency Response Organizations
  - Operation During Loss of Power
  - Future Water Needs
  - Water Loss
  - Early Warning Monitoring Systems
- **Single Source Feasibility Study**
- **Communication Plan**
- **Emergency Response Short Form**
- **Signature Page**
System Information (Lines 1-14)

System information collects basic details about the public water utility, including its existing source water protection reports, population served, and source(s) of water. By entering the PWSID, key questions throughout the online form will be automatically populated or answered. Information appearing in this form is generated from SDWIS. Public water utilities should review the contents of the form to ensure accuracy before authorizing the plan. If a public water utility identifies inaccuracies in system information automatically populated, they should contact the appropriate WVBPH Environmental Engineer Division District Office. For the most up to date contact information, visit: http://www.wvdhhr.org/oehs/eed/districtmap.asp

Line 1. System Name
Review the Public Water Supply Name. If completing report format, Replace text [System Name] with the full name of the public utility throughout the template.

Line 2. PWSID
Review the Public Water System Identification Number.

Line 3. County
Review the county where the utility is located.

Line 4. Physical Location Address
Provide the physical location of the administrative office. This may be a different location than the water treatment plant, such as a Public Service District office or Town Public Works office.

Line 5. Physical Location City
Provide the city in which the administrative office is located.

Line 6. Physical Location Zip Code
Provide the zip code for the administrative office.

Line 7. Classified as utility? Answer yes or no.
Public water utility means a public water system which is regulated by the West Virginia Public Service Commission pursuant to the provisions WV Code Chapter Twenty-four.

Provide the date of the most recent Source Water Assessment issued by the Bureau for Public Health for the utility.

Line 9. Provide date of the current Source Water Protection Plan
Provide the date of the most recent Source Water Protection Plan approved by the Bureau for Public Health for the utility.

Line 10. Population Served Directly
This information will be automatically provided. Verify the total population served by the utility directly.

Line 11. Bulk Water Purchaser Systems
List the community water systems that purchase bulk water from the utility and provide the PWSID number and an estimated population served by the water system.

Line 12. Total Population Served
Total population served directly and indirectly by the utility.
Line 13. Does the utility have multiple source water protection areas? Answer yes or no.

Line 14. How many source water protection areas does the utility have?
If the utility uses multiple sources with individually defined protection areas, provide the number of individual protection areas. Public water utilities will complete Delineation information for each source/protection area separately.

Treatment Processes (Lines 15-25)

Line 15. Water treatment processes
Select the treatment processes that are used by the utility to treat the source water in order of occurrence from a list provided in the form. The most common treatments are listed. If a utility treats the water with a method not listed, indicate the method in the blanks provided. An example of a common treatment process is: chemical coagulation, flocculation, sedimentation, membrane filtration, and disinfection.

Line 16. Treatment capacity
Provide the maximum amount of water in gallons per day that the treatment plant, in its current configuration without modifications, can produce while maintaining treatment standards for finished water (ex. take into account filter rates, contact time, pump capacities, and other possible limitations).

Line 17. Current average production
Provide the current average production in gallons per day based on the last year of Monthly Operating Reports (MOR).

Line 18. Maximum quantity of water treated and produced
Provide the maximum quantity of water treated and produced at the plant in a single day during the last year.

Line 19. Minimum quantity of water treated and produced
Provide the minimum quantity of water treated and produced at the plant in a single day during the last year.

Line 20. Average hours of operation
Provide the current average hours of operation per day based on the last year of Monthly Operating Reports (MOR).

Line 21. Maximum hours of operation in one day
Provide the maximum number of hours the plant operated in a single day during the last year.

Line 22. Minimum hours of operation in one day
Provide the minimum number of hours the plant operated in a single day during the last year.

Line 23. How many storage tanks are maintained?
How many treated water storage tanks are maintained in the distribution system?

Line 24. Total gallons of treated water storage
Provide the combined total treated water storage capacity of all storage tanks in gallons.

Line 25. Total gallons of raw water storage
Provide the combined total raw water storage capacity of all tanks, reservoirs, or any other storage facilities in gallons.
Surface Water Sources (Lines 26-27)

Line 26. Describe Surface Water Intakes

Characteristics for each intake will automatically appear when a utility accesses the online tool. Information appearing in this form is generated from SDWIS. Certain fields cannot be modified; including: Intake Name, SDWIS Code, SDWIS name, and Activity Status (inactive, active). Additional information should be provided by the public utility. These include: local name (what the intake is referred to locally), description of the intake, date of construction, and frequency of use (primary, backup, and emergency).

Contact the appropriate WVBPH EED District Office to report any inaccuracies in the data or for assistance. If completing a report format, a water utility may find this information from their records or sanitary surveys.

Line 27. Does the utility blend with ground water?

Does the utility supplement its surface water supply with a ground water supply from a well or spring?

Groundwater Sources (SWIGs and GWUDIs) (Lines 28)

Line 28. Describe each well or spring

Characteristics for each wellhead or spring will automatically appear when a utility accesses the online tool. Information appearing in this form is generated from SDWIS. Certain fields cannot be modified; including: Well/Spring Name, SDWIS Code, and Activity Status (inactive, active). Utilities should provide information about the source for the following: local name (what is the wellhead called locally), Date Constructed, Completion Report Available (yes/no), Well Depth (feet), Casing Depth (feet), Grout, and Frequency of Use (primary, backup and emergency).

Contact the appropriate WVBPH EED District Office to report any inaccuracies in the data or for assistance determining well construction specification. If completing a report format, a water utility may find this information from their records or sanitary surveys.

Delineations (Line 29)

For surface water systems, delineation is the process used to identify and map the drainage basin that supplies water to a surface water intake. This area is generally referred to as the source water protection area (SWPA). All surface waters are susceptible to contamination because they are exposed at the surface and lack a protective barrier from contamination. Accidental spills, releases, sudden precipitation events that result in overland runoff, or storm sewer discharges can allow pollutants to readily enter the source water and potentially contaminate the drinking water at the intake. The SWPA for surface water is distinguished as a Watershed Delineation Area (WSDA) for planning purposes; and the Zone of Peripheral Concern (ZPC) and Zone of Critical Concern (ZCC) defined for regulatory purposes.

The WSDA includes the entire watershed area upstream of the intake to the boundary of the State of West Virginia border, or a topographic boundary. The ZCC for a public surface water supply is a corridor along streams within the watershed that warrant more detailed scrutiny due to its proximity to the surface water intake and the intake’s susceptibility to potential contaminants within that corridor. The ZCC is determined using a mathematical model that accounts for stream flows, gradient and area topography. The length of the ZCC is based on a five-hour time-of-travel of water in the streams to the water intake, plus an additional one-fourth mile below the water intake. The width of the zone of critical concern is one thousand feet measured horizontally from each bank of the principal stream and five hundred feet measured horizontally from each bank of the tributaries draining into the principal stream. The ZPC
for a public surface water supply source and for a public surface water influenced groundwater supply source is a corridor along streams within a watershed that warrants scrutiny due to its proximity to the surface water intake and the intake’s susceptibility to potential contaminants within that corridor. The ZPC is determined using a mathematical model that accounts for stream flows, gradient and area topography. The length of the zone of peripheral concern is based on an additional five-hour time-of-travel of water in the streams beyond the perimeter of the zone of critical concern, which creates a protection zone of ten hours above the water intake. The width of the zone of peripheral concern is one thousand feet measured horizontally from each bank of the principal stream and five hundred feet measured horizontally from each bank of the tributaries draining into the principal stream.

For groundwater supplies there are two types of SWPA delineations: 1) wellhead delineations and 2) conjunctive delineations (developed for supplies identified as groundwater under the direct influence of surface water). A wellhead protection area is determined to be the area contributing to the recharge of the groundwater source (well or spring), within a five year time of travel. A conjunctive delineation combines a wellhead protection area for the hydrogeologic recharge and a connected surface area contributing to the wellhead. Conjunctive delineations have been created for groundwater sources determined to be groundwater under the direct influence of surface water (GWUDI).

Appendix B describes the different types of delineations and methodology used to determine the boundaries. Public water utilities can reference their Source Water Assessment Report or existing source water protection plan for more details on the delineation specific to their sources.

**Line 29. Delineations**

When using the online form, to obtain an electronic version of the delineations, utilities should click on the source button to be redirected to the WVBPH Source Water Delineation/PSSC Application. This application has been designed to allow utilities to generate a map showing the source water protection area delineation in the form of a PDF. Once the PDF is generated the utility will return to the online form. The delineation questions will also be automatically populated based on the generated delineation. The utility will receive instructions within the online tools to describe how to submit the PDF map.

Some water utilities have more than one intake or wellhead from which they obtain source water. Delineations are created for each source of drinking water. The process to obtain the PDF will be repeated for each active source. Multiple sources will be identified alphanumerically (ex. Line 29-A: Little River Intake, Line 29-B: Big Creek Intake, Line 29-C: Town Well #1). Utilities should review the delineation information and report any inaccuracies contacting: eedsourcewaterprotection@wv.gov.

If submitting in report format, or to obtain delineation information prior to completing the online form, utilities may request electronic files of the delineation by contacting: eedsourcewaterprotection@wv.gov. Depending upon the utility technological capacity, the map may be provided via an online mapping service. The delineation map may be used during field investigations or for community planning.

**Line 29-A: Source Prepopulated**

**Line 29-A-1 – Watershed Delineation Area (WSDA) map**

A PDF file of the source WSDA should be attach to the online form, following instructions provided in the online tools. For utilities submitting SWPP in a report format, a copy of the delineation maps should be attached to the
source water protection plan as an appendix. Utilities may contact eedsourcewaterprotection@wv.gov if experiencing difficulty accessing the map(s).

**Line 29-A-2 – Watershed Delineation Area size**

Review the area of the Watershed Delineation Area.

**Line 29-A-3 – River watershed name**

Review the USGS 8-digit Hydrologic Unit Code (HUC). To obtain the proper 8 digit HUC watershed name, see Appendix B.

**Line 29-A 4 – Zone of Critical Concern (ZCC) map and Zone of Peripheral Concern**

A PDF file of the source ZCC and ZPC should be attach to the online form, following instructions provided in the online tools. For utilities submitting in a report format, a copy of the delineation maps should be attached to the source water protection plan as an appendix. To obtain an electronic copy of the delineation contact eedsourcewaterprotection@wv.gov.

**Line 29-A-5 – Size of the ZCC**

Review the area of the Zone of Critical Concern in acres.

**Line 29-A-6 – Size of the ZPC**

Review the area of the Zone of Peripheral Concern in acres. Note that this area will include the ZCC area.

**Line 29-A-7 – Wellhead Protection Area (WHPA) map**

PDF of the source WHPA will automatically attach to the online form. For utilities submitting a report format, a copy of the delineation maps should be attached to the source water protection plan. To obtain an electronic copy of the delineation contact eedsourcewaterprotection@wv.gov.

**Line 29-A-8 – Method of delineation for groundwater sources**

Provide the methods of delineation for the groundwater sources. Methods may include a fixed radius, hydrogeologic mapping, analytic modeling, and numeric modeling. These delineation methods are described in Appendix B. This information will be automatically provided in the online form. For utilities submitting a report format, refer to the Source Water Assessment Report to determine the method of delineation or contact eedsourcewaterprotection@wv.gov.

**Line 29-A-9 – Area of WHPA**

Review the area of the Wellhead Protection Area in acres.

---

**Forming the Protection Team/ Engaging Stakeholders (Lines 30-32)**

**Line 30. Date of Initial Protection Team Meeting**

Provide the date that the protection team first met.
**Line 31. Protection Team Members**

The online form provides a table to list the names of the protection team members, their title, organization they represent, and contact information (phone/email). WVBPH recommends inclusion of specific local stakeholders on the protection team. These stakeholders are provided in a drop-down menu, including: water utility administrator, designated operator, County Local Emergency Planning Committee (LEPC), county health department, affected citizen/user, and government officials. If you are completing in paper format, please list the organization each team member is representing and the team member’s title. Utilities may include members not represented in the drop down menu of stakeholders by listing other organizations (such as business owners, watershed association, emergency responders, etc.). More than one representative may choose to participate from any one organization.

**Line 32. Efforts to Engage Stakeholders**

Please describe the methods used to engage local stakeholders (See Appendix A for ideas) and explain the reasons why a representative from each required stakeholder group is not participating.

**Inventorying Potential Sources of Significant Contamination (Lines 33-34)**

Source water protection plans should provide a complete and comprehensive list of the potential sources of significant contamination (PSSC) contained within the ZCC, based upon information obtained from the Department of Environmental Protection (DEP), the WVBPH, the Division of Homeland Security and Emergency Management. This PSSC information can be accessed at the WVBPH Source Water Delineation/PSSC Application by following the instructions provided below. A facility or activity is listed as a PSSC if it has the potential to release a contaminant based on the kinds and amounts of chemicals typically associated with that type of facility or activity. It does not necessarily indicate that any release has occurred. For a general list of PSSCs, associated chemicals and their threat levels to surface and ground water, and regulatory programs information see Appendix C.

Utilities will receive a list of PSSC located in their SWPA, organized into two types: 1) SWAP PSSCs, and 2) Regulated Data. SWAP PSSCs are those that have been collected and verified by the WVBPH SWAP Program during previous field investigations to form the source water assessment reports and source water protection plans. Water utilities will be able to manage these data in a process described below, meaning they can delete, make additions, and corrections to the dataset. Regulated PSSCs are derived from federal and state regulated databases, and may include data from WVDEP, US Environmental Protection Agency, Division of Homeland Security and Emergency Management, and out of state data sources. For questions regarding Regulated PSSCs and to report inaccurate locations, water utilities should contact individual programs listed in Appendix C.

**Confidentiality of PSSCs**

According to the legislative rule, a list of the PSSCs contained within the ZCC should be included in the source water protection plan. However, the location, characteristics and approximate quantities of contaminants shall be made known to one or more designees of the public water utility and maintained in a confidential manner. In the event of a chemical spill, release or related emergency, information pertaining to any spill or release of contaminant shall be immediately disseminated to any emergency responders responding to the site of a spill or release. The designee(s) will be identified in the communication plan section of the source water protection plan.

PSSC data from some agencies (ex. Division of Homeland Security and Emergency Management, WVDEP, etc.) may be restricted due to the sensitive nature of the data. Locational data will be provided to the public water utility; however, to obtain specific details regarding contaminants (such as information included on Tier II reports), water utilities should
contact the local emergency planning commission or regulatory agencies, directly. The specific information obtained from these agencies must be kept confidential and should not be reported in the source water protection plan.

**Local and Regional PSSCs**

For the purposes of the source water protection plans, local PSSCs are those that are identified by local stakeholders in addition to the PSSCs lists distributed by the WVBPH and other agencies. Local stakeholders may identify local PSSCs for two main reasons. The first, it is possible that threats exist from unregulated sources and land uses that have not already been inventoried and do not appear in regulated databases. For this reason each public water utility should investigate their protection area for local PSSCs. A PSSC inventory should identify all contaminant sources and land uses in the delineated ZCC. The second reason local PSSCs are identified is because public water utilities may consider expanding the PSSC inventory effort outside of the ZCC into the watershed if necessary to properly identify all threats that could impact the drinking water source. As the utility considers threats in the watershed, they may consider collaborating efforts with upstream communities to identify and manage regional PSSCs.

When conducting local and regional PSSC inventories, utilities should consider that some sources may be obvious like above ground storage tanks, landfills, livestock confinement areas, highway or railroad right of ways, and sewage treatment facilities. Others are harder to locate like abandoned cesspools, underground tanks, French drains, dry wells, or old dumps and mines.

Water utilities should verify the lists of PSSCs from the agencies and document those that are identified locally or regionally, according to the instructions below. Appendix C provides lists of known contaminant sources throughout the state.

**Line 33. Potential Sources of Significant Contamination (PSSC)**

To obtain an electronic version of the PSSC List, utilities should click on the source button to be redirected to the WVBPH Source Water Delineation/PSSC Application. This application has been designed to allow utilities to generate a maps showing the source water protection area delineation and PSSCs in the form of a PDF. Once the PDF is generated the utility will be automatically returned to the online form.

The WVBPH Source Water Delineation/PSSC Application will allow utilities to manage their PSSC data through edit and add functions, following the direction in the application. Public water utilities should field-verify the provided PSSC list and correct any inaccuracies by moving the PSSCs in the WVBPH Source Water Delineation/PSSC Application. Utilities will report Local PSSCs to the WVBPH by using the Add PSSC tool. In addition to location, utilities will be asked to provide information about Local PSSCs including site name, site description, map code, and date PSSC was added. Refer to Appendix C for a description and example of each of these attributes. If completing in the report format, utilities will attach the lists and maps provided by WVBPH as an appendix to the plan. In addition, inaccurate locations should be noted and correct locations should be provided in the written plan.

To obtain a list of PSSCs prior to completion of the online form or for the report format submission, utilities should contact eedsourcewaterprotection@wv.gov for assistance and further instructions.

**Line 34. Regulated Data**

Regulated data will be automatically populated. These data cannot be modified by the water utility in the source water protection plan. Water utilities should report inaccuracies to responsible agency.
Note: Many regulated data types may be permitted at the same facility, thus there could be multiple data points at the same location.

Prioritization of Threats and Management Strategies (Line 35)

It may not be feasible to develop management strategies for all of the PSSCs within the SWPA, depending on the total number identified. The identified PSSCs can be prioritized by potential threat to water quality, proximity to the intake(s), and local concern. The highest priority PSSCs can be addressed first in the initial management plan. Lower ranked PSSCs can be addressed in the future as time and resources allow. To assess the threat to the source water, water systems consider confidential information about each PSSC. This information may be obtained from state or local emergency planning agencies, Tier II reports, facility owner, facility groundwater protection plans, spill prevention response plans, results of field investigations, etc.

In addition to identifying and prioritizing PSSCs within the SWPA, local source water concerns may also focus on critical areas. For purposes of this source water protection plan, a critical area is defined as an area, identified by local stakeholders, within or outside of the ZCC, that may contain one or more PSSC(s), and/or within which immediate response would be necessary to address the incident and to protect the source water.

Once the utilities have identified local concerns, they will develop and implement source management strategies to protect the source water from protection, in cooperation with the WVBPH, local health departments, local emergency responders, local emergency planning committees, and other agencies and organizations. Source management strategies are any actions taken to protect the source water from specific PSSCs, types of sources, and critical areas. For example, prohibitions of certain land uses or facilities, design standards, best management practices, operating standards, and reporting requirements are typical source management strategies. Land purchases, conservation easements, and purchase of development rights are also included in the category of source management strategies.

Water utilities may also consider notification to and coordination with government agencies during a water supply impairment as a management strategy. Lastly, one strategy all water utilities should implement is period surveys of their protection areas to stay aware of threats.

It is advisable to focus source management strategies on high-priority PSSCs and especially any that are within the utilities jurisdiction. However, the utility can protect against contaminant sources outside its jurisdiction by working with the officials of the county in which the sources are located. Also, if watershed groups are active in the area of concern, the utility may be able to partner with them. Refer to Appendix C for example priority PSSCs and critical areas that have been identified by communities in the state previously, along with the reason for concerns and suggested management strategies.

Line 35. Description of high priority PSSCs or Critical Areas

The list of PSSCs and critical areas typically prioritized by communities as highest concerns is provided in the online form. Also provided is a general description of why each PSSC or critical area is considered a threat and a list of common source management strategies to address the threat. These threats and strategies may be selected and modified to best describe the specific utility concerns. Water utilities can also add PSSCs or critical areas to the list, by selecting “add new”. Utilities should number the threats from highest to lowest concern. If completing a report format, refer to Appendix C for examples of threats and sample language for concerns and strategies. This information can be used in the report format and modified if needed. Water systems should rank the selected priority threats by choosing to move them up or down the list.
Implementation Plan for Management Strategies (Line 36)

When considering source management strategies and education and outreach strategies, the utility should seriously consider how the strategies will be implemented. The initial step in implementation should be to discuss responsible parties and timelines to implement the strategies. The Protection Team members can determine the best process for completing activities within the projected time periods. Additional meetings may be needed during the initial effort to complete activities, after which the Protection Team should consider meeting annually to review and update the Source Water Protection Plan. Regular updates to the plan should be included in every implementation plan. Proposed commitments and schedules may change, but should be well documented and reported to the local stakeholders. If possible, utilities should include cost estimates for strategies to better plan for implementation and possible funding opportunities.

Line 36. Management of priority PSSC and critical areas

Summarize the priority PSSC management plan by providing responsible party, timeframe, and cost estimate (if known) for all source management strategies.

Education and Outreach Strategies (Line 37)

The goal of education and outreach is to raise awareness of the need to protect drinking water supplies and build support for implementation strategies. Education and outreach activities will also insure that affected citizens and other local stakeholders are kept informed and provided an opportunity to contribute to the development of the source water protection plan. Utilities should give an overview of education and outreach activities that they propose to implement.

Line 37. Education and Outreach Strategies

A list of recommended education and outreach activities are provided. Water utilities should select the activities that they plan to implement and modify as needed to suit the local goals. Utilities may also describe activities not listed by selecting “add new”. If completing a report format, refer to Appendix A for examples of threats and sample language for concerns and strategies. This information can be used in the report format and modified if needed. Summarize the education and outreach implementation plan by providing the responsible party, timeframe for implementation and cost estimate.

Contingency Plan (Line 38-45)

The goal of contingency planning is to identify and document how the utility will prepare for and respond to any drinking water shortages or emergencies that may occur due to short and long term water interruption, or incidents of spill or contamination. By answering the following questions utilities will examine their capacity to protect their intake, treatment, and distribution system from contamination; ability to use alternative sources; approach to minimizing water loss; and ability to operate during power outages. In addition, utilities will report the feasibility of establishing an early warning monitoring system and meeting future water demands.

Line 38. Can the water utility isolate or divert contamination from the intake and groundwater supply? Answer yes or no.

If yes, describe how the utility is able to isolate or divert contaminated waters from its surface water intake or groundwater supply.

Line 39. Describe the result of an examination and analysis of the public water system’s ability to isolate or divert contaminated waters from its surface water intake or groundwater supply.
Water utilities using surface water sources are generally located either on a larger stream, river or reservoir. The most likely means of isolating the intake or diverting contamination in these sources would be to shut down the intake and establish booms. Other measures may include pumping floating contaminants off of the water or attempting to neutralize the contaminant before entering the treatment facility.

Depending upon the spill/contamination event, the intake construction, and the water source, the use of booms to isolate and divert contaminants may have limited effectiveness. For instance, booms typically only divert and capture contaminants that float. Contaminants that disperse in the water column may not be controlled with booms. Instead water utilities should expect to shut the intake to successfully isolate from contaminants. Booms must also be anchored at the intake. Utilities should consider placing anchors to tie the booms prior to an event to insure that the booms can be quickly established to protect the intake. Booms may be more effective in reservoirs, due to low flows/velocities. Utilities may have preplanned boom deployment points if the reservoir has tributaries or a high risk contaminant location such as an adjacent highway or railroad.

If shutting down the intake is the only means to isolate the intake, utilities should be prepared to track the contaminant and determine how long it is safe to pump water from the stream, river or reservoir. To track a contamination plume in a reservoir, utilities may need access to a boat and sample collection equipment. Utilities may also plan in advance where to place stations to pump contaminants and identify if there are vacuum trucks available to assist.

For groundwater sources, containing or remediating spills at the ground surface is important. If not identified, contained and removed, releases at the surface can infiltrate into groundwater aquifers. Once contaminated, remediating the effects of contamination in an aquifer can be costly and may make the water source unusable. Utilities should have a plan in place to be notified of spills and insure that the spill is properly addressed. Utilities should keep record of spills that have occurred in the protection area.

Line 40. Is the utility able to switch to an alternative water source or intake? Answer yes or no.
Utilities should evaluate alternate raw sources and obtain approval for the new raw source use in advance. If alternate raw sources are found they could install permanent piping or be prepared with temporary means such as portable pumps and lines.

Line 41. Describe the result of an examination and analysis of the water system’s ability to switch to an alternative water source or intake in the event of a contamination of its primary water source.
If yes, describe how the utility can switch to an alternative water source or intake in the event of contamination of its primary water source. If there is no alternative source water utilities must provide additional information in Single Source.

Line 42. Is the utility able to close the water intake in the event of a spill? Answer yes or no.
Utilities using surface sources should be able to close the intake by one means or another. Although, depending upon the system, doing so could vary greatly from closing valves, lowering hatches or gates, raising the intake piping out of the water, or shutting down pumps. Systems should have plans in place in advance as to the best method to protect the intake and treatment facility. Utilities may benefit from turning off pumps and, if possible, closing the intake opening to prevent contaminants from entering the piping leading to the pumps. Utilities should also have a plan in place to sample raw water to identify the movement of a plume and allow for maximum pumping time before shutting down an intake (See Early Warning Monitoring System).

Line 43. If yes, how long can the utility keep the intake closed?
Utilities should evaluate different pressure zones, tank zones, tank storage, and water demands to determine the storage capacity in each zone. Utilities should preplan conservation measures and educate users prior to an event to lengthen the time a utility can keep an intake closed.
Line 44. Describe the process to close the intake.

Line 45. Describe Storage Capacity
The utility should provide an analysis and examination of its existing available storage capacity on its system, how its available storage capacity compares to the normal daily usage and whether the existing available storage capacity can be effectively utilized to minimize the threat of contamination to its system. The utility needs to consider all areas of its distribution system when determining the ability to utilize stored water.

Emergency Response Organizations (Line 46-48)
Statewide initiatives for emergency response, including source water related incidents, are being developed. These include the West Virginia Water/Wastewater Agency Response Network (WV WARN, see http://www.wvwarn.org/) and the Rural Water Association Emergency Response Team (see http://www.wvrwa.org/). List all applicable groups of which the utility is an active member.

Line 46. Is the utility a member of WVRWA Emergency Response Team
Line 47. Is the utility a member of WV WARN
Line 48. List other mutual aid agreements (formal or informal) to collaborate during emergencies?

Operation during loss of power (Line 49-58)
The utility should analyze and examine its ability to operate effectively during a loss of power including means to supply water through treatment, storage, and distribution without creating a public health emergency. Include a description of the type and capacity of each generator required, required cables, necessary wiring to accept the generator at the point of use (intake, well, lift station, etc.), availability of the correct amount and type of fuel, and periodic testing and routine maintenance to be instituted.

Line 49. What is the type and capacity of generators needed?
Describe the size, type, and number of generators needed to operate at full capacity during a loss of power.

Line 50. Does the utility have the ability to connect to a generator at the intake or wellhead?
Answer Yes/No. If yes, select from the following list of scenarios that best describe the system:
- Has standby or portable generator, hard-wired and ready to turn on
- Has standby or portable generator, but requires electrical work to connect
- Is fully wired for a generator that will be rented or borrowed in an emergency
- Requires electrical work to connect to a rented/borrowed generator
- Other: describe generator capacity in comment section below
- No capacity to connect to a generator

Line 51. Does the utility have the ability to connect to a generator at the treatment facility?
Answer Yes/No. If yes, select from the following list of scenarios that best describe the system:
- Has standby or portable generator, hard-wired and ready to turn on
- Has standby or portable generator, but requires electrical work to connect
- Is fully wired for a generator that will be rented or borrowed in an emergency
- Requires electrical work to connect to a rented/borrowed generator
- Other: describe generator capacity in comment section below
- No capacity to connect to a generator

**Line 52. Does the utility have the ability to connect to a generator at the distribution system?**
Answer Yes/No. If yes, select from the following list of scenarios that best describe the system:
- Has standby or portable generator, hard-wired and ready to turn on
- Has standby or portable generator, but requires electrical work to connect
- Is fully wired for a generator that will be rented or borrowed in an emergency
- Requires electrical work to connect to a rented/borrowed generator
- Other: describe generator capacity in comment section below
- No capacity to connect to a generator

**Line 53. Does the utility have adequate fuel on hand for generator?**

**Line 54. What is your on-hand fuel storage and how long will it last operating at full capacity?**
Provide both the total fuel storage capacity and the number of hours it will last operating at full capacity.

**Line 55. Provide list of generator and fuel suppliers and contact information.**
Provide the sources of generators and generator fuel that could be used in the event of an emergency.

**Line 56. Does the utility test the generator(s) periodically?**

**Line 57. Does the utility routinely maintain the generator(s)?**

**Line 58. If ability to connect to generator is not listed above or if utility does not have ability to connect to a generator, describe plans to respond to power outages.**

**Future water supply needs (Lines 59-60)**

The utility should analyze and examine its ability to meet future water supply needs by expanding a current source or developing a new one, including a description of current plant and pumping capacity and projections for growth over the next five years that would exceed current system capacity. This may require major expenditures and the need to acquire options on or secure relatively undeveloped land many years in advance.

**Line 59. Is the utility able to meet water demands with current capacity for the next five years?**

**Line 60. If not, describe the circumstances and plans to increase capacity.**

**Water Loss Calculation (Lines 61-62)**

Provide the level of unaccounted for water experienced by the public water system for each surface water intake. The public water utility shall use the same method used in the Public Service Commission’s rule, Rules for the Government of Water Utilities, 150CSR7, section 5.6., to determine and report on their unaccounted for water. The rule defines unaccounted for water as the volume of water introduced into the distribution system less all metered usage and all known non-metered usage which can be estimated with reasonable accuracy.

To further clarify, meter usages, are most often those that are distributed to customers. Non-metered usages that are being estimated include uses such as by the fire departments for fires or training, un-metered bulk sells, flushing
to maintain the distribution system backwashing filters and cleaning settling basins. By totaling the meter and non-metered uses the utility calculates unaccounted for water. Note: To complete annual reports submitted to the PSC, utilities typically account for known water main breaks by estimating the amount of water lost. However, for the purposes of the source water protection plan, any water lost due to leaks, even if the system is aware of how much water is lost at a main break, is not considered a use. Water lost through leaks and main breaks cannot be controlled during a water shortages or other emergencies and should be included in the calculation of percentage of water loss.

The following terminology is taken from the PSC Annual Report (see sample below). Utilities should provide the most recently reported information for each. The online form will automatically calculate the percentage of water loss. For utilities completing a report format, equations and an example PSC Annual Report are provided. Please use these materials to complete the equations. If errors are identified on the latest PSC Annual Report, utilities should report the most accurate information in the source water protection plan and make corrections to their water loss calculations in their next submitted annual report.

**Line 61. Provide the Water Loss, calculated using the Public Service Commission method.**

A. **Total Water Pumped (gal)**

Enter value as it appears in the PSC report.

B. **Total Water Purchased (gal)**

Enter value as it appears in the PSC report.

C. **Total Water Pumped and Purchased (gal)**

This value will be automatically calculate in the online form. (For report format: A+B=C)

D. **Water loss accounted for except main leaks (gal)**

Enter values as they appear in the PSC report for the following:

- **D1. Mains, plant**
- **D2. Fire department**
- **D3. Back washing**
- **D4. Blowing settling basins**

E. **Water Loss Accounted for Except Main Leaks (gal)**

This value will be automatically calculated in the online form. (For report format: D1 +D2+ D3 + D4 =E)

Note: This entry will not match that of the PSC report. The PSC report considers main leaks “accounted for” when a public water utility can estimate the flow and time of break. For purposes of the source water protection plan, main leaks should be counted as unaccounted for water when considering amount lost. The goal is to identify if improvements are needed in the distribution system.
F. Total Gallons Water Sold (gal)
Enter value as it appears in the PSC report

G. Unaccounted for lost water (gal)
This value will be automatically calculated in the online form. (For report format: G = C – (E+F))

H. Water lost from main leaks (gal)
Enter value as it appears in the PSC report

I. Total Gallons of Water Loss (gal)
This value will be automatically calculated in the online form. (For report format: I = G + H)

J. Total Percent Unaccounted for Water (%)
This value will be automatically calculated in the online form. (For report format: J = I/C X 100)

**POWER, PUMPING AND PURCHASED WATER STATISTICS**
Omit 000’s in reporting gallons of water.

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Gallons of Water Purchased (b)</th>
<th>Gallons of Water Pumped per Month by:</th>
<th>Total all Methods (e)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gal</td>
<td>Electric Power (c)</td>
<td>Others (d)</td>
</tr>
<tr>
<td>Gallons station pumping into distribution mains:</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>July</td>
<td>477</td>
<td>197,207</td>
<td>197,664</td>
</tr>
<tr>
<td>August</td>
<td>438</td>
<td>195,612</td>
<td>186,251</td>
</tr>
<tr>
<td>September</td>
<td>446</td>
<td>189,930</td>
<td>199,433</td>
</tr>
<tr>
<td>October</td>
<td>448</td>
<td>193,622</td>
<td>194,070</td>
</tr>
<tr>
<td>November</td>
<td>438</td>
<td>189,720</td>
<td>199,159</td>
</tr>
<tr>
<td>December</td>
<td>494</td>
<td>203,832</td>
<td>204,327</td>
</tr>
<tr>
<td>January</td>
<td>801</td>
<td>198,327</td>
<td>199,128</td>
</tr>
<tr>
<td>February</td>
<td>452</td>
<td>179,991</td>
<td>180,443</td>
</tr>
<tr>
<td>March</td>
<td>426</td>
<td>186,054</td>
<td>187,379</td>
</tr>
<tr>
<td>April</td>
<td>413</td>
<td>179,394</td>
<td>179,807</td>
</tr>
<tr>
<td>May</td>
<td>518</td>
<td>181,178</td>
<td>181,696</td>
</tr>
<tr>
<td>June</td>
<td>426</td>
<td>177,652</td>
<td>178,072</td>
</tr>
<tr>
<td>Total for year</td>
<td>5,766</td>
<td>2,273,683</td>
<td>-</td>
</tr>
<tr>
<td>Net Total Gallons</td>
<td>2,279,449</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gallons lost accounted for:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) mains, plant, filters, flushing, etc.</td>
<td>5,874</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) fire department use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) main leaks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) backwashing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) blowing settling basins</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total gallons lost accounted for</td>
<td>50,353</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gallons sold:</td>
<td>1,465,534</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Line 62. Describe measures to correct water loss greater than 15%
The public water system is to describe all of the measures it is actively taking to reduce the level of water loss experienced on its system. This may include leak detection, line upgrades, and meter replacement. WV Rural Water Association provides assistance with leak detection.
Early warning monitoring system (Lines 63-71)

The utilities are required to provide an examination of the technical and economic feasibility of implementing an early warning monitoring system. Implementing an early warning monitoring system may be approached in different ways depending upon the water utility’s resources and threats to the source water. A utility may install a continuous monitoring system that will provide real time information regarding the water quality conditions, requiring utilities to analyze the data in order to establish what condition is indicative of a contamination event. Continuous monitoring will provide results for a predetermined set of parameters. The more parameters being monitored, the more sophisticated the monitoring equipment will be. When establishing a continuous monitoring system, the utility should consider the logistics of placing the equipment, maintaining the equipment, and receiving output data from the equipment.

In addition, a utility may also pull grab samples on a regular basis, or in case of a reported incident as a response. The grab samples may be analyzed for specific contaminants. A utility should examine their PSSCs to determine what chemical contaminants could pose a threat to the water source. If possible, the utility should plan in advance how those contaminants will be detected. Consideration should be given for where samples will be collected, the preservations and hold times for samples, available laboratories to analyze samples, and costs associated with the sampling event. Regardless of the type of monitoring (continuous or grab), utilities should collect samples for their source throughout the year to better understand the baseline water quality conditions and natural seasonal fluctuations. Having a baseline will help determine if changes in the water quality are indicative of a contamination event and inform the needed response.

Every utility should establish a system or process for receiving or detecting chemical threats with sufficient time to respond in order to protect the treatment facility and public health. All approaches to receiving and responding to an early warning should incorporate communication with facility owners and operators that pose a threat to the water quality, with state and local emergency response agencies, with surrounding water utilities, and with the public. Communication plays an important role in knowing how to interpret data and how to respond. Appendix D provides an early warning monitoring fact sheet and helpful links to online sources for additional information concerning monitoring systems. These resources should be examined to determine possible early warning monitoring systems available to water utilities.

Line 63. Does your water system currently receive spill notifications from a state agency, neighboring water system, local emergency responders, or other facilities? If yes, from whom to you receive notices?

Line 64. Are you aware of any facilities, land uses, or critical areas within your protection areas where chemical contaminants could be released or spilled?

Line 65. Are you prepared to detect potential contaminants if notified of a spill?

Line 66. List laboratories (and contact information) on whom you would rely to analyze water samples in case of a reported spill.

Line 67. Do you have an understanding of baseline or normal conditions for your source water quality that accounts for seasonal fluctuations?

Line 68. Does your utility currently monitor raw water (through continuous monitoring or periodic grab samples) at the surface water intake or from a groundwater source on a regular basis?

Line 69. Provide or estimate the capital and O&M costs for your current or proposed early warning system or upgraded system.
   a. Capital Cost
b. O & M Cost

Line 70. Do you serve more than 100,000 customers? If so, please describe the methods you use to monitor at the same technical levels utilized by ORSANCO.

Public Service Commission rules governing public water utilities state that water systems providing water to more than 100,000 customers shall implement a regular monitoring system as specified to the same technical capabilities for detection as utilized by the Ohio River Valley Water Sanitation Commission (§24-2G-1).

Line 71. Select the early warning monitoring worksheet that applies to your system.

Water utilities will select from four early warning monitoring worksheets specific to the source water and monitoring program status. Depending upon the source and status, a utility may fill out more than one worksheet. Appendix D provides templates of the worksheets.

Form A-Complete if you currently have an early warning monitoring system installed for a surface water source
Form B- Complete if you do not currently have an early warning monitoring system installed for a surface water intake or are planning to upgrade or replace your current system.
Form C-Complete if you currently have an early warning monitoring system for a groundwater source.
Form D- Complete if you do not currently have an early warning monitoring system installed for a groundwater source or are planning to upgrade or replace your current system.

Single Source Feasibility Study (Lines 72-73)

If the public water utility’s water supply plant is served by a single-source intake to a surface water source of supply or a surface water influenced source of supply, the submitted plan shall also include an examination and analysis of the technical and economic feasibility of alternative sources of water to provide continued safe and reliable public water service in the event its primary source of supply is detrimentally affected by contamination, release, spill event or other reason. These alternatives may include a secondary intake, two days of additional raw or treated water storage, interconnection with neighboring systems, or other options identified on a local level.

In order to accomplish this requirements, utilities should examine all available alternatives and rank them by their technical, economic, and environmental feasibility. In order to have a consistent complete method for ranking alternatives, WVBPW has developed a feasibility study guide as Appendix E. This guide provides several criteria to consider for each category, organized in a scoring matrix. By completing the Feasibility Study utilities will demonstrate the process used to examine feasibility and compare alternatives.

Line 72. Complete the Feasibility Study Matrix for each alternative

The utility should complete the Feasibility Study Matrix following the instructions to link to the matrix worksheet. The worksheet will require that the public utility name the alternatives, score each category and criteria as 0-3, and identify those alternatives that are deemed feasible and will be subject to an alternative analysis study. The worksheet will sum criteria scores. These scores should be entered into the online form. All feasibility studies should include the following alternatives:

- Constructing or establishing a secondary or backup intake which would draw water supplies from a substantially different location or water source.
- Constructing additional raw water storage capacity and/or treated water storage capacity, to provide at least two days of system storage, based on the plant’s maximum level of production experienced within the past year.
NOTE: Studies examining the alternative of additional raw and/or treated water must comply with existing design standards regulating treated water storage, including minimum storage capacity and adequate turnover requirements (§64-77.9.1.a, §64-77.9.4). Storing two days of additional treated water based on maximum level of production, may not allow adequate turnover of the treated water during average production. Therefore, it is likely that all or a portion of the two days additional stored water will be raw water.

- Creating or constructing interconnections between the public water system with other treatment plants on the public water utility system or another public water system, to allow the public water utility to receive its water from a different source of supply during a period its primary water supply becomes unavailable or unreliable due to contamination, release, spill event or other circumstance.

- Any other alternative which is available to the public water utility to secure safe and reliable alternative supplies during a period its primary source of supply is unavailable or negatively impacted for an extended period. Water utilities can describe any other alternatives in the online form and in the report format.

**Line 73. Feasibility Study Narrative**

In addition to the Feasibility Study Matrix described in Line 72, water utilities should provide a Feasibility Study Narrative that identifies one or more feasible alternative, provides a summary of data used to make this determination, and briefly summarizes the results of the matrix.

**Communications Plan (Lines 74-87)**

Utilities must submit a communications plan that documents the manner in which the public water utility, working in concert with state and local emergency response agencies, shall notify the local health agencies and the public of an initial spill or contamination event and provide updated information related to any contamination or impairment of the source water supply or the system’s drinking water supply, with an initial notification to the public to occur in any event no later than thirty minutes after the public water system becomes aware of the spill, release or potential contamination of the public water system. The public water system is responsible for contacting the public and local health agencies.

Procedures should be in place for the kinds of catastrophic spills that can reasonably be expected at the source location or within the SWPA. The chain-of-command, notification procedures and response actions should be known by all water system employees. The WVBPH has developed a recommended communication plan template that provides a Tiered Incident communication process to provide a universal system of alert levels to utilities and water system managers (Appendix F).

Public water systems should coordinate all emergency response activities, including the communication plan with their county Office of Emergency Services to insure that incident responses are compliant with National Incident Management System (NIMS) guidelines. The communication plan does not necessarily replace existing incident response documents or procedures. Public water systems should invite representatives from their local emergency planning commission or Office of Emergency Services to participate on their source water protection team.

In addition, the West Virginia Department of Environmental Protection is capable of providing expertise and assistance related to prevention, containment, and clean-up of chemical spills. The West Virginia Department of Environmental Protection Emergency Response 24-hour Phone is 1-800-642-3074. The West Virginia Department of Environmental Protection also operates an upstream distance estimator that can be used to determine the distance from a spill site to the closest public water supply surface water intake.
Line 74. Designated spokesperson
Line 75. Alternate spokesperson
Line 76. Designated location to disseminate information to media
Line 77. Select methods of contacting affected residents
Line 78. Media contacts
Line 79. Emergency services contact name, emergency phone, alternate phone, and email address
Line 80. Who are the key staff responsible for coordinating emergency response procedures? (name, title, phone number, email) Keep confidential
Line 81. Provide the name and contact information for the staff responsible for keeping confidential PSSC information and releasing to emergency responders.
Line 82. Communities that are served.
Line 83. Major user/sensitive population notification
Line 84. EED District Office Contact
Line 85. Downstream water system contacts
Line 86. Are you planning on implementing the TIER system?
Line 87. Attach the communication plan

**Emergency Response Short Forms (Lines 88-91)**

Emergency Response Short Forms will be automatically populated from the information entered into the online form and provided to the water utilities. These short forms are intended to be posted in the treatment facility and water system office as a quick reference in the event of an emergency. If completing a report format, utilities will complete the forms in the template and post. While these forms provide a quick reference, they are not intended to take the place of a complete emergency response plan.

Many of the elements required for the source water protection plan, such as contingency and communication plans are included in emergency response plans. However, WVBPH recommends that all water systems develop a complete emergency response plan in accordance with the Public Health Security Bioterrorism Preparedness & Response Plan Act of 2002. **Appendix G** provides a template for an emergency response plan that will comply with the act. Public water utilities are encouraged to complete the template. By answering the following questions, public water utilities will document the status of their emergency response plan and if plans include all necessary elements. Utilities can request assistance with emergency response planning by contacting: eedsourcewaterprotection@wv.gov.

Line 88. List laboratories available to perform sample analysis in case of emergency.

Line 89. A detailed Emergency Response Plan in accordance with the Public Health Security Bioterrorism Preparedness & Response Plan Act of 2002 should cover the following areas?
   The following information should be documented in the emergency response plan: emergency response team, emergency communication equipment, list of sensitive populations, list of major users, personnel and property protection measures, planned training courses, resource inventory, repair and supply providers, and procedures for specific emergency incidents.

Line 90. When was the utility’s Emergency Response Plan developed or last updated?
In addition, public water systems should coordinate all emergency response activities, with their county Office of Emergency Services to insure that incident responses are compliant with National Incident Management System (NIMS) guidelines. The source water protection plan does not replace existing incident response documents or procedures. Public water systems should invite representatives from their local emergency planning commission or Office of Emergency Services to participate on their source water protection team.

Signature Page (Lines 92-98)

The public water utility may have assistance from consultants, local stakeholders, or state agencies to complete their source water protection plan. Even so, the public water system administrator assume full responsible for the content of the source water protection plan and complying with Legislative Rule 64CSR3. The public water system administrator may designate a representative to sign and certify that the source water protection plan is complete and accurate.

Line 91. Preparer’s name
Line 92. Title of the preparer
Line 93. Name of Contractor(s)/Consultant(s) assisting water utility (if applicable)—include all of them.

Line 94. Signature of responsible party or designee authorized to sign for the water utility
   By signing the report format or submitting the online protection plan, the responsible party or designee for the water utility agrees to the following statement: “I certify the information in the source water protection plan is complete and accurate to the best of my knowledge.”

Line 95. Print name of Authorized Signatory
Line 96. Title of Authorized Signatory
Line 97. Date of submission (mm/dd/yyyy)