FOR PUBLIC RELEASE

Source Water Protection Plan
Central Hampshire Psd Green Spring

PWSID: WV3301412

Hampshire County

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Prepared By:

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In cooperation with Central Hampshire Psd Green Spring

WV Bureau for Public Health, Source Water Assessment and Protection Program

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I Certify the information in the source water protection plan is complete and accurate to the best of my knowledge.

Responsible party of designee authorized to sign for water utility is on file:

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Name of Authorizing Signatory:

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Title of Authorizing Signatory:

7/7/2021

Date of Submission (mm/dd/yyyy):

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SOURCE WATER PROGRAM ACRONYMS

AST	Aboveground Storage Tank
BMP	Best Management Practices
ERP	Emergency Response Plan
GWUDI	Ground Water Under the Direct Influence of Surface Water
LEPC	Local Emergency Planning Committee
OEHS	EED Office of Environmental Health Services/Environmental Engineering Division
PE	Professional Engineer
PSSCs	Potential Source of Significant Contamination
PWSU	Public Water System Utility
RAIN	River Alert Information Network
RPDC	Regional Planning and Development Council
SDWA	Safe Drinking Water Act
SWAP	Source Water Assessment and Protection
SWAPP	Source Water Assessment and Protection Program
SWP	Source Water Protection
SWPA	Source Water Protection Area
SWPP	Source Water Protection Plan
WARN	Water/Wastewater Agency Response Network
WHPA	Wellhead Protection Area
WHPP	Wellhead Protection Program
WSDA	Watershed Delineation Area
WVBPH	West Virginia Bureau for Public Health
WVDEP	West Virginia Department of Environmental Protection
WVDHHR	West Virginia Department of Health and Human Resources
WVDHSEM	West Virginia Division of Homeland Security and Emergency Management
ZCC	Zone of Critical Concern
ZPC	Zone of Peripheral Concern

1.0 PURPOSE

The goal of the West Virginia Bureau of Public Health (WVBPH) source water assessment and protection (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. Many aspects of source water protection may be best addressed by engaging local stakeholders.

The intent of this document is to describe what Central Hampshire Psd Green Spring has done, is currently doing, and plans to do to protect its source of drinking water. Although this water system treats the 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 this plan, Central Hampshire Psd Green Spring acknowledges that implementing measures to minimize and mitigate contamination can be a relatively economical way to help ensure the safety of the drinking water.

1.1. 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 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.
- Providing more opportunities for funding to improve infrastructure, purchase land in the protection area, and other improvements to the intake or source water protection areas.

2.0 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 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 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. Information regarding assessment reports for Central Hampshire Psd Green Spring can be found in **Table 1**.

3.0 STATE 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 the amended and new codes each existing public water utility using surface water or ground water influenced by surface water as a source must have completed or updated a source water protection plan by July 1, 2016, and must continue to update their plan every three years. Existing source water protection plans have been developed for many public water utilities in the past. If available, these plans were reviewed and considered in the development of this updated plan. Any new water system established after July 1, 2016 must submit a source water protection plan before they start to operate. A new plan is also required when there is a significant change in the potential sources of significant contamination (PSSC) within the zone of critical concern (ZCC).

The code also requires that public water utilities include details regarding PSSCs, protection measures, system capacities, contingency plans, and communication plans. 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.

4.0 SYSTEM INFORMATION

CENTRAL HAMPSHIRE PSD GREEN SPRING is classified as a state regulated public utility and operates a community public water system. A community public water system is a system that regularly supplies drinking water from its own sources to at least 15 service connections used by year round residents of the area or regularly serves 25 or more people throughout the entire year. For purposes of this source water protection plan, community public water systems are also referred to as public water utilities. Information on the population served by this utility is presented in **Table 1** below.

Table 1. Population Served by CENTRAL HAMPSHIRE PSD GREEN SPRING

Administrative office location:	18540 Northwestern Pike, Augusta, HAMPSHIRE, WV, 26704		
Is the system a public utility, according to the Public Service Commission rule?	Yes		
Date of Most Recent Source Water Assessment Report:	11/1/2002		
Date of Most Recent Source Water Protection Plan:	7/1/2019		
Population served directly:	1046		
Bulk Water Purchaser Systems:	System Name	PWSID Number	Population
Total Population Served by the Utility:	1046		
Does utility have multiple Source Water Protection Areas(SWPAs)?	Yes		
How many SWPAs does the utility have?	2		

5.0 WATER TREATMENT AND STORAGE

As required, Central Hampshire Psd Green Spring has assessed their system (e.g., treatment capacity, storage capacity, unaccounted for water, contingency plans) to evaluate their ability to provide drinking water and protect public health. **Table 2** contains information on the water treatment methods and capacity of the utility.Information about the surface sources from which Central Hampshire Psd Green Spring draws water can be found in **Table 3.** If the utility draws water from any groundwater sources to blend with the surface water the information about these ground water sources can be found in **Table 4.**

Table 2. Central Hampshire Psd Green Spring Water Treatment Information

Central Hampshire PSD Green Spring	
Water treatment processes (in order of occurrence) includes:	Raw Water Intake, Filtration, Chlorination, Clear Well, High Service Pumps
The treatment capacity is approximately (GPD):	132,000
Current average production is approximately (GPD):	98,000
Maximum gallons of water treated and produced at that plant in one day during the past year was:	130,000
Minimum gallons of water treated and produced at that plant in one day during the past year was:	80,000
Plant is operated an average of hours a day:	10
Maximum number of hours of operation in one day at that plant during the past year was:	13
Minimum number of hours of operation in one day at that plant during the past year was:	8
How many storage tank(s) are maintained on systems distrbution system:	5
Total gallons of treated water storage:	365,940
Total gallons of raw water storage (GALs):	0

Table 3. Central Hampshire Psd Green Spring Surface Water Sources

Intake Name	Facility #	Local Name	Describe Intake	State Id Code	Date Constructed / Modified	Frequency of Use (Primary / Backup / Emergency)	Activity Status (Active/Inactive)

Table 4. Central Hampshire Psd Green Spring Ground Water Sources

Well/Spring Name	Facility #	Local Name	Date Constructed / Modified	Completion Report Available (Yes/No)	Well Depth (ft)	Casting Depth (ft)	Grout (Yes/No)	Frequency of Use (Primary / Backup / Emergency)	Activity Status (Active/Inactive)
SPRINGFIELD #2	-			No	0	0	Unknown	Emergency	Active
GREEN SPRING	-			No	0	0	None	Permanent	Active
SPRINGFIELD #1	-			No	0	0	Unknown	Permanent	Active

6.0 DELINEATIONS

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) are 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-quarter mile below the water intake. The width of the zone of critical concern is 1,000 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. Ohio River ZCC delineations are based on ORSANCO guidance and extend 25 miles above the intake. The Ohio River ZCC delineations include 1,320 feet (1/4 mile) measured from the bank of the main stem of the Ohio River and 500 feet on a tributary.

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, which are developed for supplies identified as groundwater under the direct influence of surface water, or GWUDIs. 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.

Information and maps of the WSDA, ZCC, ZPC and Wellhead Protection Area for this public water supply were provided to the utility and are attached to this report. See **Appendix A. Figures.** Other information about the WSDA is shown in **Table 5.**

Table 5. Watershed Delineation Information

Intake Name	
Method of Delineation for Groundwater Sources	Groundwater Modeling
Area of Wellhead Protection Area (Acres)	1,858
Intake Name	
Method of Delineation for Groundwater Sources	Groundwater Modeling
Area of Wellhead Protection Area (Acres)	812
Intake Name	
Method of Delineation for Groundwater Sources	Groundwater Modeling
Area of Wellhead Protection Area (Acres)	1,858

7.0 PROTECTION TEAM

One important step in 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 make every effort to inform and engage the public, local government, local emergency planners, the local health department and affected residents at all levels of the development of the protection plan. WVBPH recommends that the water utility invite representatives from these organizations to join the protection team, which will ensure 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, other local stakeholders may be invited to participate on the team or contribute information to be considered. These individuals may be emergency response personnel, local decision makers, business and industry representatives, land owners (of land in the protection area), and additional concerned citizens.

The administrative contact for Central Hampshire Psd Green Spring is responsible for assembling the protection team and ensuring that members are provided the opportunity to contribute to the development of the plan. The acting members of the Protection Team are listed in **Table 6**.

The role of the protection team members will be to contribute information to the development of the source water protection plan, review draft plans and make recommendations to ensure accuracy and completeness, and when possible contribute to implementation and maintenance of the protection plan. The protection team members are chosen as trusted representatives of the community served by the water utility and may be designated to access confidential data that contains details about the local PSSCs. The input of the protection team will be carefully considered by the water utility when making final decisions relative to the documentation and implementation of the source water protection plan.

Central Hampshire Psd Green Spring will be responsible for updating the source water protection plan and rely upon input from the protection team and the public to better inform their decisions. To find out how you can become involved as a participant or contributor, visit the utility website or call the utility phone number, which are provided in **Table 6**.

Table 6. Protection Team Member and Contact Information

Name	Representing	Title	Phone Number	Email
James Hoffman	Central Hampshire Psd Green Spring	General Manager	(304)813-0371	central.water77@yahoo.com
Derrick Staggs	Central Hampshire Psd Green Spring	Chief Operator	(304)813-0991	central.water77@yahoo.com
WV	Central Hampshire Psd Green Spring	WV		
	Central Hampshire Psd Green Spring			
Terry Lively	Central Hampshire Psd Green Spring	Executive Director	(304)257-2448	tlively@regioneight.org
	Central Hampshire Psd Green Spring			
Stacey C. Heavner	Region 8 Planning & Development Council	Executive Assistant	(304)257-2448	sheavner@regioneight.org
Pam Slocum	Green Spring Elementary	Principal	(304)496-8162	pslocum@k12.wv.us
Jean Shoemaker	Hampshire County BOE	President	(304)496-8162	jshoemaker@k12.wv.us
Steve Slonaker	Hampshire County Commission	Commissioner	(304)856-3149	
Eileen Johnson	Hampshire County Development Authority	Executive Director	(304)822-4320	hampcodo@frontiernet.net
Date of First Protection Team Meeting:		Protection Team Meeting was held Thursday, June 25, 2015 at Central Hampshire Psd Green Spring. Meeting minutes attached in Appendix E.		
Efforts made to inform and engage local stakeholders (public, local government, local emergency planners, local health department, and affected residents) and explain absence of recommended stakeholders		Advertised public meetings held July 27, 2019 at 4:00pm		

8.0 POTENTIAL SOURCES OF SIGNIFICANT CONTAMINATION

Source water protection plans should provide a complete and comprehensive list of the PSSCs contained within the ZCC, based upon information obtained from the WVBPH, working in cooperation with the West Virginia Department of Environmental Protection (WVDEP) and the West Virginia Division of Homeland Security and Emergency Management (WVDHSEM). A facility or activity is listed as a PSSC if it has the potential to release a contaminant that could potentially impact a nearby public water supply, and it does not necessarily indicate that any release has occurred.

The list of PSSCs located in the SWPA is 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 source water assessment reports and source water protection plans. Regulated PSSCs are derived from federal and state regulated databases, and may include data from WVDEP, US Environmental Protection Agency, WVDHSEM, and from state data sources.

8.1. CONFIDENTIALITY OF PSSCS

A list of the PSSCs contained within the ZCC should be included in the source water protection plan. In the event of a chemical spill, release or other related emergency, information pertaining to the contaminant shall be immediately disseminated to any emergency responders reporting to the site. The designees for Central Hampshire Psd Green Spring are identified in the communication planning section of the source water protection plan.

PSSC data from some agencies (ex. WVDHSEM, 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 in Tier II reports), water utilities should contact the local emergency planning commission (LEPC) or agencies, directly. While the maps and lists of the PSSCs and regulated sites are to be maintained in a confidential manner, these data are provided in **Appendix A. Figures** for internal review and planning uses only.

8.2. LOCAL AND REGIONAL PSSCS

For the purposes of this source water protection plan, 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 is that 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 ZPC and WSDA 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 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.

The Central Hampshire Psd Green Spring reviewed intake locations and the delineated SWPAs to verify the existence of PSSCs provided by the WVBPH and identify new PSSCs. If possible, locations of regulated sites within the SWPA were confirmed. Information on any new or updated PSSCs identified by Central Hampshire Psd Green Spring and not already appearing in datasets from the WVBPH can be found in .**Table 7**.

Table 7. Locally Identified potential Sources of Significant Contamination

Please see Appendix A to view this information.

8.3. PRIORITIZATION OF THREATS AND MANAGEMENT STRATEGIES

Once the utility has identified local concerns, they must develop a management plan that identifies specific activities that will be pursued by the public water utility in cooperation and concert with the WVBPH, local health departments, local emergency responders, LEPC and other agencies and organizations to protect the source water from contamination threats.

Depending on the number identified, it may not be feasible to develop management strategies for all of the PSSCs in the SWPA. 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 should 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 the purposes of this source water protection plan, a critical area is defined as an area that is identified by local stakeholders and can lie within or outside of the ZCC. Critical areas may contain one or more PSSCs which would require immediate response to address a potential incident that could impact the source water.

A list of these priority PSSCs was selected and ranked by the Central Hampshire Psd Green Spring Protection Team. This list reflects the concerns of this specific utility and may contain PSSCs not previously identified and not within the ZCC or ZPC. **Table 8** contains a description of why each critical area or PSSC is considered a threat and what management strategies the utility is either currently using or could use in the future to address each threat.

9.0 IMPLEMENTATION PLAN FOR MANAGEMENT STRATEGIES

Central Hampshire Psd Green Spring reviewed the recommended strategies listed in their previous source water protection plan, to consider if any of them should be adopted and incorporated in this updated plan. **Table 9** provides a brief statement summarizing the status of the recommended strategies. **Table 9** also lists strategies from a previous plan that are being incorporated in this plan update.

When considering source management strategies and education and outreach strategies, this utility has considered how and when the strategies will be implemented. The initial step in implementation is to establish responsible parties and timelines to implement the strategies. The water utility, working in conjunction with 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. A system of regular updates 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. Central Hampshire Psd Green Spring has developed an implementation plan for priority concerns listed in **Table 8**. The responsible team member, timeline, and potential cost of each strategy are presented in **Table 9**. Note: Because timelines may change, future plan updates should describe the status of each strategy and explain the lack of progress.

Table 8. Priority PSSCs or Critical Areas

PSSC or Critical Area	Priority Number	Reason for Concern
All	1	n/a
Physical impacts	2	Fence Well
Wastewater treatment plant	3	n/a
Railroad	4	n/a

Table 9. Priority PSSC Management Strategies

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
Railroad	Railroad outreach Central Hampshire PSD will contact railroad companies that operate within and around the SWPA to determine the average number of daily (or weekly) trains passing near the SWPA and what types of materials these trains are transporting. The will identify what track maintenance activities are performed within the SWPA. Central Hampshire PSD will work with the railroad company to create an emergency response plan should any contamination of the source water occur. The Central Hampshire PSD Green Spring is particularly concerned about shipments of anhydrous ammonia through the SWPA. Railroad carriers can be contacted to request a list of hazardous chemicals transported through a particular community by protocol established by the Association of American Railroads Circular OT-55 (http://www.boe.aar.com/boe-download.htm)	Central Hampshire PSD Green Spring employees	Not Started		Moderate staff time

Table 9. Priority PSSC Management Strategies

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
Wastewater treatment plant	Communicate with Public Wastewater Plant Central Hampshire PSD Green Spring does not manage the wastewater treatment plant. They are, however, currently in communication with Central Hampshire County PSD's wastewater treatment plant. Central Hampshire PSD Green Spring staff will meet with the local sewer system operator to review the systems' standard operating and emergency procedures. The drinking water and wastewater plants share some staff, and therefore there is constant communication between the two plants. The water plant General Manager communicates with wastewater treatment plant staff on a daily basis.	Central Hampshire PSD Green Spring employees, James Hoffman	Ongoing		Minimal staff time
Physical impacts	Fence Well The Green Spring well is currently fenced and water system staff will routinely inspect the well to ensure that the fence is intact.	Central Hampshire PSD Green Spring employee	Ongoing		Minimal

Table 9. Priority PSSC Management Strategies

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
All	Develop Emergency Response Plan The Central Hampshire County PSD Green Spring System will update their Emergency Response Plan (ERP). An ERP is a requirement of the 1996 Safe Drinking Water Act Amendments and the 2002 Bioterrorism Act. The process includes describing the system and determining the strengths and vulnerabilities. The plan describes detailed actions to take during specific emergency situations, including communication networks and contact lists. The following link provides information helpful in preparing an emergency response plan: http://www.nesc.wvu.edu/plan_ahead4.cfm	Central Hampshire PSD Green Spring employee employees and local emergency responders	Ongoing		Moderate staff time to update plan

Table 9. Priority PSSC Management Strategies

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
All	Emergency planning and coordination The Central Hampshire PSD will communicate with the local fire department, county emergency services, and the county health department concerning potential threats to the source water from highway spills and other potential material releases. Communication will occur on a regular basis so that these agencies are aware of the boundaries of the SWPA, are in frequent communication with one another, and are prepared in the event of an emergency. The local emergency responders will also play an active role in the creation and management of the ERP. Coordination between the two entities is well established and the relationship will be continued.	Central Hampshire PSD Green Spring employees and local emergency responders	Ongoing		Minimal
All	Flood Hazard The Central Hampshire County PSD Green Spring System will ensure that the system operation measures are taken to prevent introduction of contaminated surface water during flood periods. During a heavy precipitation event, spring water may mix with overland flow, which can carry contaminants from chemicals to fecal matter with it. Operators are aware of this and will take the necessary precautions during heavy precipitation events to avoid contamination of the source water.	Central Hampshire PSD Green Spring employees	Ongoing		Moderate staff time during flood periods

Table 9. Priority PSSC Management Strategies

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
All	Future Development and Land Use Changes Future development and land use changes The Central Hampshire County PSD Green Spring System will continue to monitor proposed land use changes to determine if any adverse effects on short- or long-term water quality may occur. Careful observation of the spring and assessing sampling data can determine if land use changes that have occurred are impacting water quality or quantity. The Central Hampshire PSD will communicate with anyone planning new development in the WHPA to educate them on the location of the WHPA and best management practices that can be used to reduce the risk of impact to the drinking water source. An example of a letter that can be sent to make initial contact with entities proposing development is included in Appendix F.	Central Hampshire PSD Green Spring employees, primarily PSD office staff	Ongoing		Minimal staff time

Table 9. Priority PSSC Management Strategies

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
All	Participation in Statewide Initiatives Statewide initiatives for emergency response, including source water related incidents, are being developed. The Central Hampshire Public Service District Green Spring Water System is a member of two of these initiatives – the West Virginia Water/Wastewater Agency Response Network (WV WARN, http://www.wvwarn.org/) and the Rural Water Association (WVRWA) Emergency Response Team (http://www.wvrwa.org/). WV WARN promotes statewide emergency preparedness, disaster response, and mutual assistance matters for public and private water and wastewater utilities. The WV WARN website maintains an emergency equipment database called the Tool Bucket that matches utility resources to a member's needs during an emergency. A member can locate emergency equipment and trained personnel that they may need in an emergency. WVRWA provides technical assistance and training to small water systems in West Virginia. The Emergency Response provides support during emergency situations and maintains a portable water treatment plant.	Central Hampshire PSD Green Spring employees	Ongoing		Minimal staff time
All	Backup Generators	Central Hampshire PSD Green Spring	Ongoing		Minimal maintenance cost

Table 9. Priority PSSC Management Strategies

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
All	Source Water Monitoring Program	Central Hampshire PSD Green Spring employees	Not Started		Moderate staff time

10.0 EDUCATION AND OUTREACH STRATEGIES

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 ensure 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. Central Hampshire Psd Green Spring has created an Education and Outreach plan that describes activities it has either already implemented or could implement in the future to keep the local community involved in protecting their source of drinking water. This information can be found in **Table 10.**

Table 10. Education and Outreach Implementation Plan

Education and Outreach Strategy	Description of Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
Brochures, pamphlets, and letters	The Central Hampshire PSD Green Spring will send material providing educational information to residences and businesses to alert the recipients of the need for source water protection and conservation and provide steps that home and business owners can take to protect source water.	Central Hampshire PSD Green Spring office staff	Ongoing		Staff time and mailing costs
Plant Tours	The Central Hampshire PSD Green Spring will provide tours of the water plant to interested organizations such as watershed groups, schools, and civic organizations. The PSD will organize tours with local emergency responders to make them familiar with the facilities in the event of an emergency.	Central Hampshire PSD Green Spring employees	Ongoing		Moderate staff time as needed
Agricultural Land Fact Sheets	The Central Hampshire PSD Green Spring will work with the West Virginia University Hampshire County Extension Service, the West Virginia Conservation Agency, and the Natural Resources Conservation Service to provide information and fact sheets covering best management practices (BMPs) for nutrient management, pesticide use, pest management, waste oil disposal, and safe chemical handling and storage.	Central Hampshire PSD Green Spring office staff	Not Started		Staff time and printing cost

Table 10. Education and Outreach Implementation Plan

Education and Outreach Strategy	Description of Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
Consumer Confidence Report	The Central Hampshire PSD Green Spring publishes a Consumer Confidence Report (CCR) annually, as required by the Safe Drinking Water Act. The CCR is available to all water customers. Information about the source water protection program will be included.	Central Hampshire County PSD Green Spring office staff	Ongoing		Minimal staff time
Public meeting	The Central Hampshire PSD Green Spring held a public meeting in July 2015 introducing the SWPP and soliciting feedback for this management plan.	Central Hampshire PSD Green Spring employees	Completed		Moderate staff time around the event

11.0 CONTINGENCY PLAN

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. During contingency planning, utilities should examine their capacity to protect their intake, treatment, and distribution system from contamination. They should also review their ability to use alternative sources and minimize water loss, as well as their ability to operate during power outages. In addition, utilities should report the feasibility of establishing an early warning monitoring system and meeting future water demands.

Isolating or diverting any possible contaminant from the intake for a public water system is an important strategy in the event of an emergency. One commonly used method of diverting contaminants from an intake is establishing booms around the intake. This can be effective, but only for contaminants that float on the surface of the water. Alternatively, utilities can choose to pump floating contaminants from the water or chemically neutralize the contaminant before it enters the treatment facility.

Public utilities using surface sources should be able to close the intake by one means or another. However, depending upon the system, methods for doing so could vary greatly and include 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 contaminant plume and allow for maximum pumping time before shutting down an intake (See Early Warning Monitoring System). The amount of time that an intake can remain closed depends on the water infrastructure and should be determined by the utility before an emergency occurs. The longer an intake can remain closed in such a case, the better.

Raw and treated water storage capacity also becomes extremely important in the event of such an emergency. Storage capacity can directly determine how effectively a water system can respond to a contamination event and how long an intake can remain closed. Information regarding the water shortage response capability of Central Hampshire Psd Green Spring is provided in **Table 11**.

11.1. RESPONSE NETWORKS AND COMMUNICATION

PSSC data from some agencies (ex. WVDHSEM, 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 in Tier II reports), water utilities should contact the local emergency planning commission (LEPC) or agencies, directly. While the maps and lists of the PSSCs and regulated sites are to be maintained in a confidential manner, these data are provided in **Appendix A. Figures** for internal review and planning uses only.

Table 11. Central Hampshire Psd Green Spring Water Shortage Response Capacity

Can the water utility isolate or divert contamination from the intake and groundwater supply?	Yes
Describe the results 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:	Close gate valve
Describe the results of an examination and analysis of the public water system's existing ability to switch to an alternative water source or intake in the event of contamination of its primary water source:	The Green Spring system maintains multiple wellheads.
Is the Utility able to close the water intake in the event of a spill?	Yes
How long can the Utility keep the intake closed?	3.6 days based on average usage
Describe the process to close the intake:	Close the valve at the spring
Describe the treated water system's storage capacity of the water system:	The system currently has five (5) treated water storage tanks totaling 359,500gallons. At the time of this report, the Green Spring Water System was operating at 100% treated water storage capacity.
Gallons of storage capacity (raw water)	0
Gallons of storage capacity (treated water)	0
Is the Utility a member of WVRWA Emergency Response Team?:	Yes
Is the Utility a member of WV-WARN?:	Yes
List other agreements to provide receive assistance in case of emergency:	none

11.2. OPERATION DURING LOSS OF POWER

Central Hampshire Psd Green Spring analyzed its ability to operate effectively during a loss of power. This involved ensuring a means to supply water through treatment, storage, and distribution without creating a public health emergency. Information regarding the utility's capacity for operation during power outages is summarized in **Table 12.**

Table 12. Generator Capacity

Can you connect to a generator at the intake/wellhead?:	No
Please provide a scenario that best describes your system:	
What do you have (KW)?	
What do you need (KW)?	
Can you connect to a generator at the treatment facility?:	No
Please provide a scenario that best describes your system:	
What do you have (KW)?	

What do you need (KW)?			
Can you connect to a generator at the distribution system?:		No	
Please provide a scenario that best describes your system:			
What do you have (KW)?			
What do you need (KW)?			
Does the utility have fuel on hand for generator?:		No	
Hours:			
Gallons:			
Provide a list of suppliers and alternate suppliers that could provide fuel in the event of an emergency:		Supplier	Phone Number
	Fuel	RT Rogers	(304)466-1733
	Generator	Cummins	(304)769-1012
Does the utility test the generator(s) periodically?:		No	
Does the utility routinely maintain the generator(s)?:		No	
If the Utility does not have generator or the ability to connect to a generator, describe plans to respond to power outages:		During a power outage the utility does not have a backup source of power. The utility has inquired about procuring emergency generators for the pump station and treatment facility. The emergency capacity for the treatment facility is 135kW and the largest booster station is 24kW.	

11.3. FUTURE WATER SUPPLY NEEDS

When planning for potential emergencies and developing contingency plans, a utility needs to not only consider their current demands for treated water but also account for likely future needs. This could mean expanding current intake sources or developing new ones in the near future. This can be an expensive and time consuming process, and any water utility should take this into account when determining emergency preparedness. Central Hampshire Psd Green Spring has analyzed its ability to meet future water demands at current capacity, and this information is included in **Table 13.**

Table 13. Future Water Supply Needs for Central Hampshire Psd Green Spring

Is the Utility able to meet water demands with the current capacity for the next five years?	Yes
Explain how you plan to do so:	Yes, based on population trends there is no need for an increase in capacity to meet water demands. If population trends change, an upgrade to the plant would be needed at that time.

11.4. WATER LOSS CALCULATION

In any public water system there is a certain percentage of the total treated water that does not reach the customer. Some of this water is used in treatment plant processes such as back washing filters or flushing piping, but there is usually at least a small percentage that goes unaccounted for. To measure and report on this unaccounted for

water, a public utility must use the method described in the Public Service Commission's rule, Rules for the Government of Water Utilities, 150CSR7, section 5.6. 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, metered usages are most often those that are distributed to customers. Non-metered usages that are being estimated include usage by fire departments for fires or training, un-metered bulk sells, flushing to maintain the distribution system, and water used for backwashing filters and cleaning settling basins. By totaling the known metered 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 for purposes of the source water protection plan. The data in **Table 13** is taken from the most recently submitted Central Hampshire Psd Green Spring PSC Annual Report.

Table 14. Water Loss Information

Water pumped - Total Gallons:		52,753,000
*Water purchased - Total Gallons:		97,306,000
Total gallons of water pumped and purchased:		150,059,000
Total gallons of water loss accounted for except main leaks:	Mains, plaint, filters, flushing, etc - Total Gallons:	0
	Fire department - Total Gallons:	0
	Back washing - Total Gallons:	0
	Blowing settling basins - Total Gallons:	0
Total Accounted for Water Loss		0
Unaccounted for lost water - Total Gallons:		55,529,000
Water sold - Gallons:		86,853,000
Water Lost From Main Leaks:		7,677,000
Total Gallons of Unaccounted for Lost Water and Water Lost from Main Leaks:		63,206,000
Total percent unaccounted for water		42
Describe the measures to correct water loss greater than 15%:	Increased inspection and leak detection, and making necessary repairs.	

11.5. EARLY WARNING MONITORING SYSTEM

Public water 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 water quality conditions. This would require utilities to analyze the data to establish what condition is indicative of a contamination event. Continuous monitoring will provide results for a predetermined set of parameters. The more parameters that are being

monitored, the more sophisticated the monitoring equipment will need to be. When establishing a continuous monitoring system, the utility should consider the logistics of placing and maintaining the equipment, and receiving output data from the equipment.

Alternately, or in addition, a utility may also pull periodic grab samples on a regular basis, or in case of a reported incident. 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 to 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. Establishing 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 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.

Central Hampshire Psd Green Spring has analyzed its ability to monitor for and detect potential contaminants that could impact its source water. Information regarding this utility's early warning monitoring system capabilities is provided in **Table 15** and in **Appendix B.**

Table 15. Early Warning Monitoring System Capabilities

Does your system currently receive spill notifications from a state agency, neighboring water system, local emergency responders, or other facilities?	Yes	
From whom do you receive notices?	Yes, the utility receives spill notifications from the WV Health Department.	
Are you aware of any facilities, land uses, or critical areas within your protection areas where chemical contaminants could be released or spilled?	No	
Are you prepared to detect potential contaminants if notified of a spill?	No	
List laboratories (and contact information) on whom you would rely to analyze water samples in case of a reported spill.	Laboratories	
	Name	Phone Number
	REI Consultants	(304)255-2500
	WV Office of Lab Services	(304)558-3530
Do you have an understanding of baseline or normal conditions for your source water uality that accounts for seasonal fluctuations?	Yes	
Does your utility (aside from turbidity monitoring) currently monitor your raw water through continuous monitoring at the surface water intake or groundwater source to detect changes in water quality that could indicate contamination?	Yes	

Does your utility collect periodic grab samples (ex. possess reserved sample bottles, on-call laboratory services, and trained personnel) in response to a spill notification or to investigate changes in water quality that could indicate contamination?		Yes
Please explain:		n/a
Provide or estimate the capital and O&M costs for your current or proposed early warning system or upgraded system.	Capital Cost:	50,000
	O&M Cost:	750
Do you serve more than 100,000 customers?		No
Does your system currently receive spill notifications from a state agency, neighboring water system, local emergency responders, or other facilities?		Yes
Are you prepared to detect potential contaminants if notified of a spill?		No
Please describe the methods you use to monbitor at the same technical levels utilized by ORSANCO:		

12.0 SINGLE SOURCE FEASIBILITY STUDY

If a 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 source water protection plan must 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 that 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, an interconnection with neighboring systems, or other options identified on a local level. Note: a suitable secondary intake would draw water supplies from a substantially different location or water source.

To accomplish this requirement, utilities should examine all existing or possible alternatives and rank them by their technical, economic, and environmental feasibility. To have a consistent and complete method for ranking alternatives, WVBPH has developed a feasibility study guide. This guide provides several criteria to consider for each category, organized in a Feasibility Study Matrix. By completing the Feasibility Study Matrix, utilities will demonstrate the process used to examine the feasibility of each alternative and document scores that compare the alternatives. The Feasibility Study matrix and summary of the results are presented in an alternatives feasibility study attached as **Appendix D**.

13.0 COMMUNICATION PLAN

Central Hampshire Psd Green Spring has also developed a Communication 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 the initial spill or contamination event and provide updated information related to any contamination or impairment of the system's drinking water supply. The initial notification to the public will 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. A copy of the source water protection plan and the Communication Plan has been provided to the local fire department. Central Hampshire Psd Green Spring will update the Communication Plan as needed to ensure contact information is up to date.

Procedures should be in place to effectively react to the kinds of catastrophic spills that can reasonably be predicted 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. The comprehensive Communication Plan for Central Hampshire Psd Green Spring is attached as **Appendix C** for internal review and planning purposes only.

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.

14.0 EMERGENCY RESPONSE

A public water utility must be prepared for any number of emergency scenarios and events that would require immediate response. It is imperative that information about key contacts, emergency services, and downstream water systems be posted and readily available in the event of an emergency. Elements of this source water protection plan, such as the contingency planning and communication plan, may contain similar information to the utility's emergency response plan. However, the emergency response plan is to be kept confidential and is not included in this source water protection plan. An Emergency Short Form is included in **Appendix C** to support the Communicate Plan by providing quick access to important information about emergency response and are to be used for internal review and planning purposes only.

15.0 CONCLUSION

This report represents a detailed explanation of the required elements of Central Hampshire Psd Green Spring's Source Water Protection Plan. Any supporting documentation or other materials that the utility considers relevant to their plan can be found in **Appendix E.**

This source water protection plan is intended to help prepare community public water systems all over West Virginia to properly handle any emergencies that might compromise the quality of the system's source water supply. It is imperative that this plan is updated as often as necessary to reflect the changing circumstances within the water system. The protection team should continue to meet regularly and continue to engage the public whenever possible. Communities taking local responsibility for the quality of their source water is the most effective way to prevent contamination and protect a water system against contaminated drinking water. Community cooperation, sufficient preparation, and accurate monitoring are all critical components of this source water protection plan, and a multi-faceted approach is the only way to ensure that a system is as protected as possible against source water degradation.

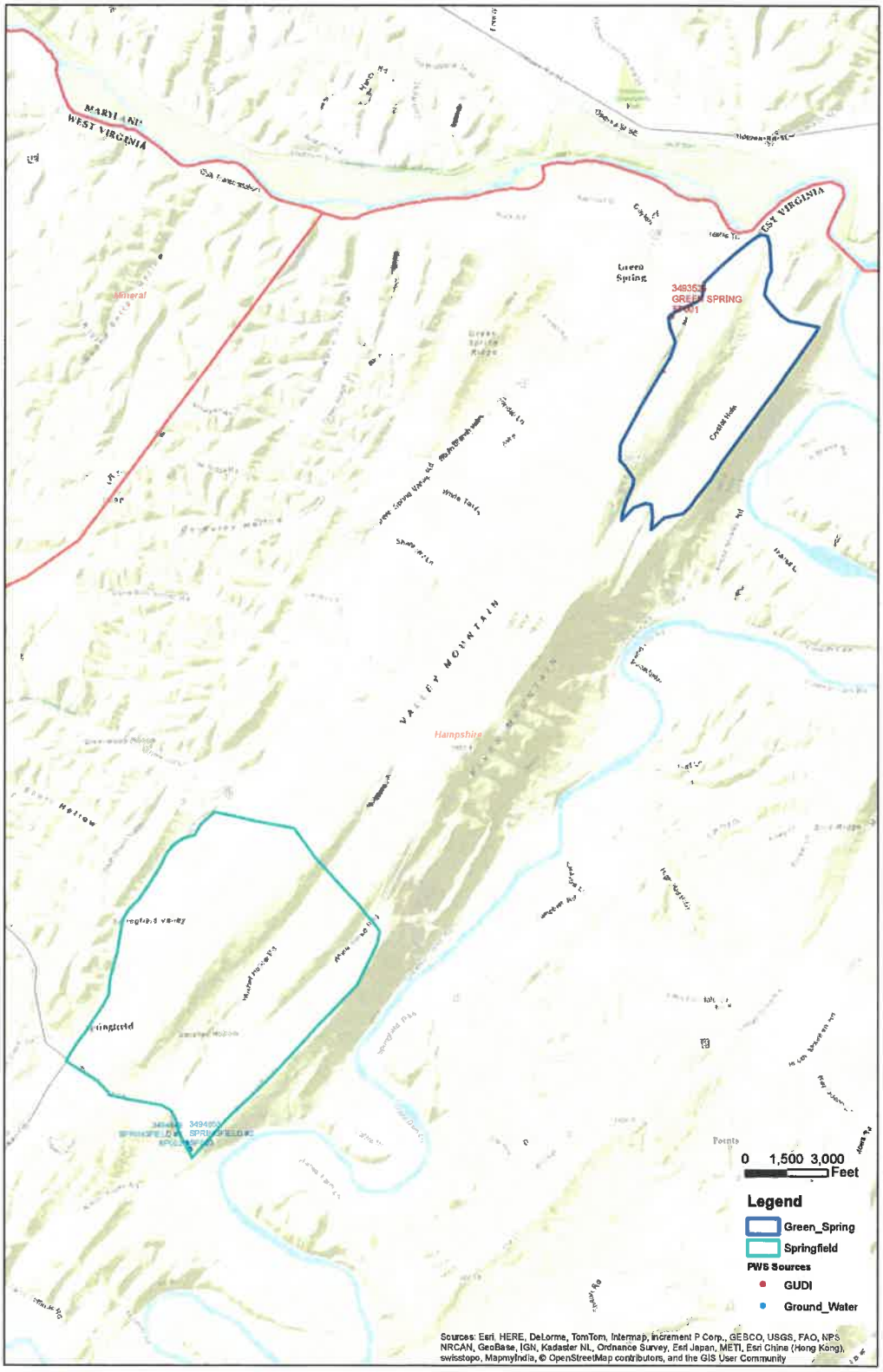
APPENDIX A. FIGURES AND TABLES

Water Source / Delineation

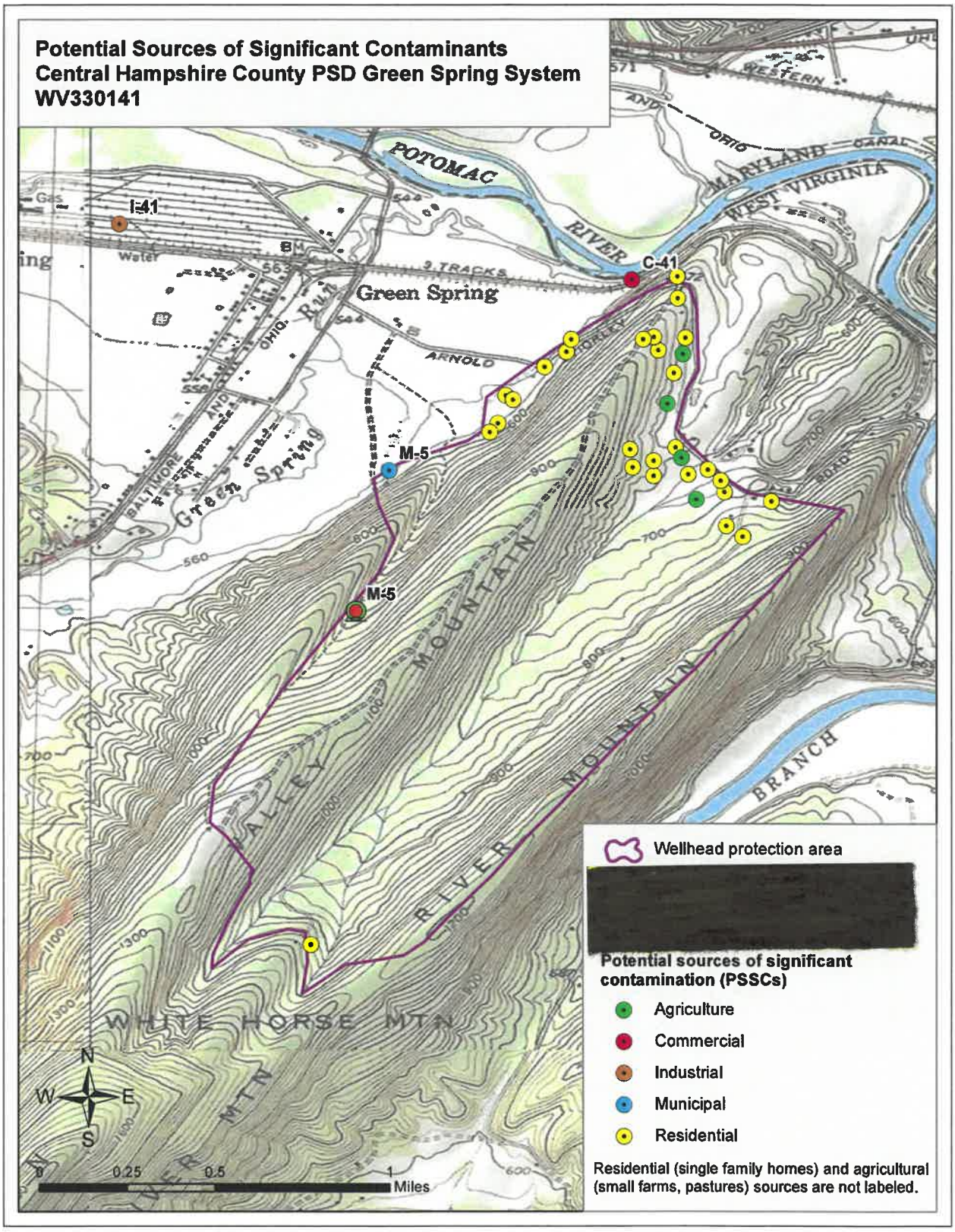
Ground Water Sources

Intake: SP003

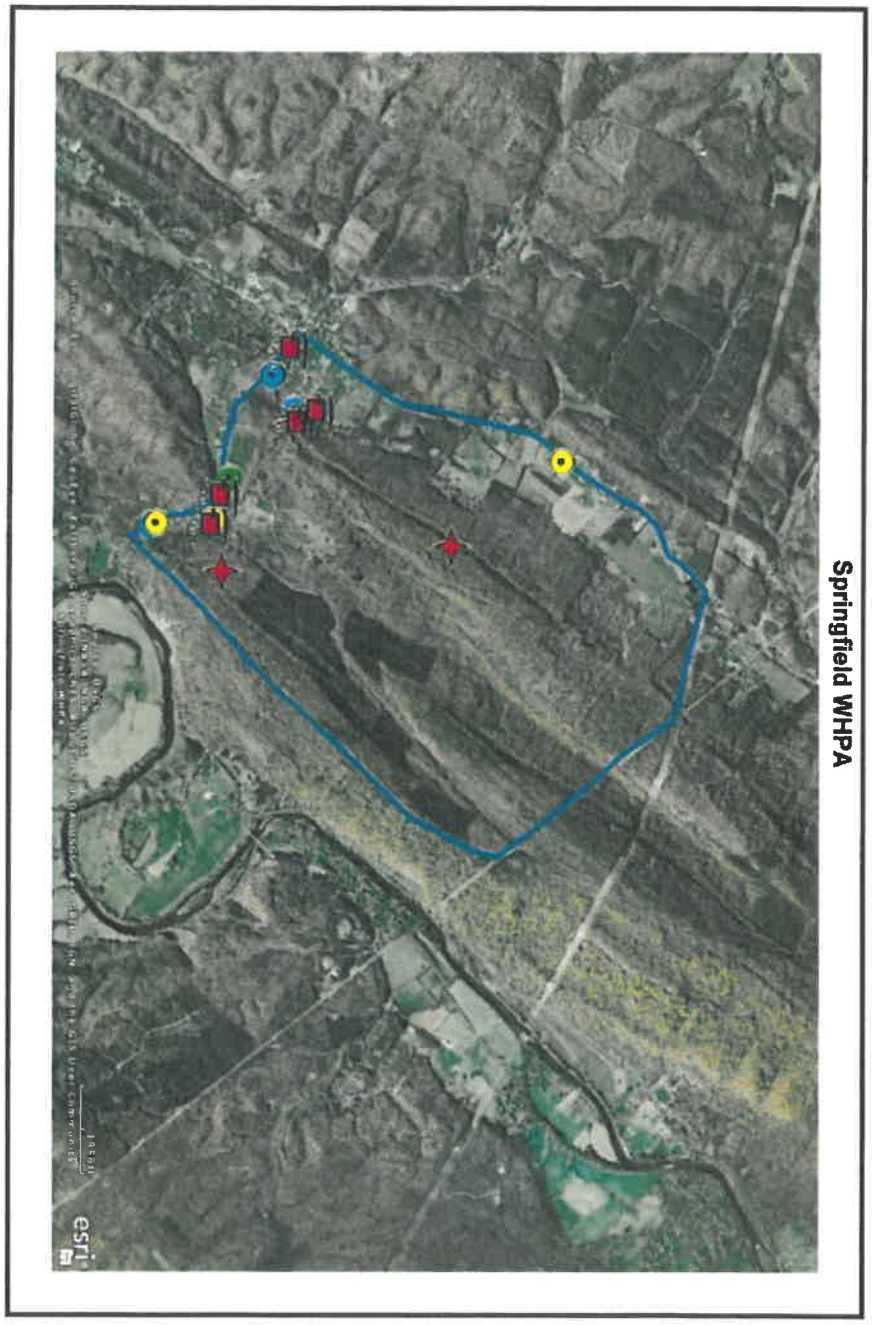
Map of wellhead protection



PSSC Maps


Potential Sources of Significant Contaminants
Central Hampshire County PSD Green Spring System
WV330141
POTOMAC
RIVER
MARYLAND
WEST VIRGINIA
OHIO
CANAL
I-41
C-41
M-5
M-5
Green Spring
ARNOLD
MOUNTAIN
VALLEY
RIVER
BRANCH
WHITE HORSE MTN
N
W
E
S
0
0.25
0.5
1
Miles
Wellhead protection area
[redacted]
Potential sources of significant contamination (PSSCs)
Agriculture
Commercial
Industrial
Municipal
Residential
Residential (single family homes) and agricultural (small farms, pastures) sources are not labeled.

Regulated PSSC Map



PSSC Lists

Local and Regional PSSC List

List of Potential Significant Sources of Contamination

Locally Identified PSSCs

Map Code	PSSC Count	Site name	Site Description	Comments
C-41	1	Railroad	Railroad tracks	Railroad tracks run parallel to the wellhead protection area. An accident on the railroad or leaks from standing train cars may result in spills into the water supply.
I-41	1	Industrial	Koppers railroad tie production facility	Located outside of the Wellhead Protection Area
M-5	1	Municipal	Green Spring Water Treatment Plant	[redacted]
NA	27	Residential	Un-sewered residences	Surrounding residents have individual septic systems, that if not properly maintained may allow untreated waste water to runoff into the reservoir.
NA	4	Agriculture	Small-scale agricultural facilities	May include small cattle farms, small poultry farms, pastures

SWAP PSSCs

System	Site Name	Site Description	Map Code	Source Type	Associated Chemicals	Threat to	
						GW	SW
Spring Field	Robert Woodson Farm	Animal Feedlots	A-2	Agriculture	NN, MP, TO	H	H
Spring Field	Fire Station	Underground Storage Tanks	C-48	Commercial	PH, VOC	H	L
Spring Field	Walnut Lane Estates	Wastewater Treatment Plant	M-29	Municipal	MP, D	L	M
Spring Field	Fire Station	Fire Stations	M-6	Municipal	PH, VOC	L	L
Spring Field	RT 3	Highway	M-7	Municipal	PH, VOC, M	M	H
Spring Field	Trailer House	Septic Systems discharging to stream	R-5	Residential	MP, TO, NN	H	H
Spring Field	House	Septic Systems (leach field)	R-6	Residential	MP, VOC, SOC, TO, NN	M	M
Spring Field	House	Septic Systems (leach field)	R-6	Residential	MP, VOC, SOC, TO, NN	M	M
Green Spring	Fenced area on farm currently w/o livestock	Confined Animal Feeding	A-3	Agriculture	NN, MP, TO	H	H
Green Spring	Pump house at Green Spring Community Park	Drinking Water Treatment Plants	M-5	Municipal	D	L	L
Green Spring	Green Spring Pump House	Drinking Water Treatment Plants	M-5	Municipal	D	L	L
Green Spring	Yellow house with septic	Septic Systems (leach field)	R-6	Residential	MP, VOC, SOC, TO, NN	M	M
Green Spring	Gray rancher on septic	Septic Systems (leach field)	R-6	Residential	MP, VOC, SOC, TO, NN	M	M
Green Spring	Small wooden house on septic	Septic Systems (leach field)	R-6	Residential	MP, VOC, SOC, TO, NN	M	M
Green Spring	Rancher on septic	Septic Systems (leach field)	R-6	Residential	MP, VOC, SOC, TO, NN	M	M
Green Spring	Tan house on hill near farm on septic	Septic Systems (leach field)	R-6	Residential	MP, VOC, SOC, TO, NN	M	M
Green Spring	Run-down house, possibly abandoned	Septic Systems (leach field)	R-6	Residential	MP, VOC, SOC, TO, NN	M	M
Green Spring	Yellow house with septic	Septic Systems (leach field)	R-6	Residential	MP, VOC, SOC, TO, NN	M	M
Green Spring	Private residence on septic	Septic Systems (leach field)	R-6	Residential	MP, VOC, SOC, TO, NN	M	M
Green Spring	Private residence on septic	Septic Systems (leach field)	R-6	Residential	MP, VOC, SOC, TO, NN	M	M
Green Spring	Private residence on septic	Septic Systems (leach field)	R-6	Residential	MP, VOC, SOC, TO, NN	M	M
Green Spring	House	Septic Systems (leach field)	R-6	Residential	MP, VOC, SOC, TO, NN	M	M
Green Spring	House	Septic Systems (leach field)	R-6	Residential	MP, VOC, SOC, TO, NN	M	M
Green Spring	Private residence on septic	Septic Systems (leach field)	R-6	Residential	MP, VOC, SOC, TO, NN	M	M
Green Spring	Private residence on septic	Septic Systems (leach field)	R-6	Residential	MP, VOC, SOC, TO, NN	M	M
Green Spring	Private residence on septic	Septic Systems (leach field)	R-6	Residential	MP, VOC, SOC, TO, NN	M	M

OWRNPDES

System	Site Name	Site Description	Responsible Party
Spring Field	T & S Market	Sewage General	T & S Market
Spring Field	N/A	Septic Seal Permit	Bristol Springs, LLC.
Spring Field	N/A	Septic Seal Permit	Malone, Carl
Spring Field	Walnut Lane Estates	Sewage General	Roberts, Lorilee G
Spring Field	N/A	Septic Seal Permit	Payton, Barbara
Spring Field	N/A	Septic Seal Permit	Bristol Springs, LLC.

OWRNPDES OUTLETS

System	Site Name	Site Description	Responsible Party
Spring Field	T & S Market	Sewage General	T & S Market
Spring Field	Walnut Lane Estates	Sewage General	Roberts, Lorilee G

Regulated PSSCs Superfund/RCRA

System	Source Name	Location	Permit Type
Spring Field	White Horse Mountain River Ret	Unknown	ICIS
Spring Field	Walnut Lane Estates	Springfield Grade Road	NPDES
Spring Field	Wolfie's Place	Unknown	ICIS
Spring Field	T & S Market	P.O Box 351	NPDES

APPENDIX B. EARLY WARNING MONITORING SYSTEM FORMS

Select and Attach the Appropriate Form for Your System

Form A - Complete if you currently have an early warning monitoring system for a groundwater source.

Form B - Complete if you currently have an early warning monitoring system installed for a surface water source.

Form C - 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, complete this form.

Form D - 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, complete this form.

Note: You may need to fill out and attach more than one form to your Protection Plan, depending on your current situation.

Appendix B - Form D
Proposed Ground Monitoring Worksheet

Describe the type of ground water monitoring network that could be installed, including the design and location:
The design of this network would be based on an additional more in-depth study.
How many monitoring (sentinel) wells would need to be established?:
One monitoring (sentinel) well would need to be established for every existing groundwater well.
What is the expected rate of travel of a contaminant through the groundwater system?:
An additional study would need to be completed to determine the geologic characteristics of the area.
Provide the distance from the contaminant source to the monitoring wells:
An additional study would need to be completed to determine the geologic characteristics of the area.
What is the distance of the proposed monitoring equipment to the well head?:
The proposed monitoring equipment would be located in the spring's wet well.
What would the maintenance plan for the monitoring equipment entail?:
The maintenance plan for the monitoring equipment consists of annual cleaning and/or exchanges of the probe(s) for the controller. Periodic calibration of the unit may also be required.
Describe the proposed sampling plan at the monitoring site:
Sampling of water quality data occurs every fifteen (15) minutes. The Green Spring Water System would need to retrieve data from the "History" of the controller data collector twice per month.
Describe the proposed procedures for data management and analysis:
Data management for the early warning monitoring system consists of data points (up to 500 points or approximately six months per probe) being recorded in the "History" of the controller data collector. To access the "History", the probe has to be plugged into the controller. Data is able to be removed via USB or through a local SCADA system.

APPENDIX C. COMMUNICATION PLAN TEMPLATE

Central Hampshire Psd Green Spring

PWSID: WV3301412

Authorizing Signature: Richard C. Wood

Contact Phone Number: (304)496-8882

Contact Email Address: central.water77@yahoo.com

Plan Developed On: July 2021

ACKNOWLEDGMENTS:

This plan was developed by [insert name, title of person completing plan, and who they work for] to meet certain requirements of the Source Water and Assessment Protection Program (SWAPP) and the Wellhead Protection Program (WHPP) for the State of West Virginia, as directed by the federal Safe Drinking Water Act (SDWA) and state laws and regulations.

INTRODUCTION

Legislative Rule 64CSR3 requires public water systems to develop a Communication Plan that documents how public water suppliers, working in concert with state and local emergency response agencies, shall notify state and local health agencies and the public in the event of a spill or contamination event that poses a potential threat to public health and safety. The plan must indicate how the public water supplier will provide updated information, with an initial notification to the public to occur no later than thirty minutes after the supplier becomes aware that the spill, release or potential contamination of the public water system poses a potential threat to public health and safety.

The public water system has responsibility to communicate to the public, as well as to state and local health agencies. This plan is intended to comply with the requirements of Legislative Rule 64CSR3, and other state and federal regulations.

TIERS REPORTING SYSTEM

This water system has elected to use the Tiered Incident / Event Reporting System (TIERS) for communicating with the public, agencies, the media, and other entities in the event of a spill or other incident that may threaten water quality. TIERS provides a multi-level notification framework, which escalates the communicated threat level commensurate with the drinking water system risks associated with a particular contamination incident or event. TIERS also includes a procedural flow chart illustrating key incident response communication functions and how they interface with overall event response / incident management actions. Finally, TIERS identifies the roles and responsibilities for key people involved in risk response, public notification, news media and other communication.

TIERS provides an easy-to-remember five-tiered **A-B-C-D-E** risk-based incident response communication format, as described below. Table 1 provides also associated risk levels.

A = Announcement. The water system is issuing an announcement to the public and public agencies about an incident or event that may pose a threat to water quality. Additional information will be provided as it becomes available. As always, if water system customers notice anything unusual about their water, they should contact the water system.

B = Boil Water Advisory. A boil water advisory has been issued by the water system. Customers may use the water for showering, bathing, and other non-potable uses, but should boil water used for drinking or cooking.

C = Cannot Drink. The water system asks that users not drink or cook with the water at this time. Non-potable uses, such as showering, bathing, cleaning, and outdoor uses are not affected.

D = Do Not Use. An incident or event has occurred affecting nearly all uses of the water. Do not use the water for drinking, cooking, showering, bathing, cleaning, or other tasks where water can come in contact with your skin. Water can be used for flushing commodes and fire protection.

E = Emergency. Water cannot be used for any reason.

Tier	Tier Category	Risk Level	Tier Summary
A	Announcement	Low	The water system is issuing an announcement to the public and public agencies about an incident or event that could pose a threat to public health and safety. Additional information will be provided as it becomes available.
B	Boil Water Advisory	Moderate	Water system users are advised to boil any water to be used for drinking or cooking, due to possible microbial contamination. The system operator will notify users when the boil water advisory is lifted.
C	Cannot Drink	High	System users should not drink or cook with the water until further notice. The water can still be used for showering, bathing, cleaning, and other tasks.
D	Do Not Use	Very High	The water should only be used for flushing commodes and fire protection until further notice. More information on this notice will be provided as soon as it is available.
E	Emergency	Extremely High	The water should not be used for any purpose until further notice. More information on this notice will be provided as soon as it is available.

COMMUNICATION TEAM

The Communication Team for the water system is listed in the table below, along with key roles. In the event of a spill or other incident that may affect water quality, the water system spokesperson will provide initial information, until the team assembles (if necessary) to provide follow-up communication

Water system communication team members, organizations, and roles.

Team Member Name	Organization	Phone	Email
Richard C. Wood	Central Hampshire Psd Green Spring	(304)496-8882	central.water77@yahoo.com
James Hoffman	Central Hampshire Psd Green Spring	(304)813-0371	central.water77@yahoo.com

In the event of a spill, release, or other incident that may threaten water quality, members of the team who are available will coordinate with the management staff of the local water supplier to:

- Collect information needed to investigate, analyze, and characterize the incident/event
- Provide information to the management staff, so they can decide how to respond
- Assist the management staff in handling event response and communication duties
- Coordinate fully and seamlessly with the management staff to ensure response effectiveness

COMMUNICATION TEAM DUTIES

The communication team will be responsible for working cooperatively with the management staff and state and local emergency response agencies to notify local health agencies and the public of the initial spill or contamination event. The team will also provide updated information related to any contamination or impairment of the source water supply or the system's drinking water supply.

According to Legislative Rule 64CSR3, the initial notification to the public will occur no later than thirty minutes after the public water system becomes aware that the spill, release or potential contamination of the public water system poses a potential threat to public health and safety.

As part of the group implementing the Source Water Protection Plan, team members are expected to be familiar with the plan, including incident/event response and communication tasks. Specifically, team members should:

- Be knowledgeable on elements of the Source Water Protection Plan and Communication Plan
- Attend team meetings to ensure up-to-date knowledge of the system and its functions
- Participate in periodic exercises that "game out" incident response and communication tasks
- Help to educate local officials, the media, and others on source water protection
- Cooperate with water supplier efforts to coordinate incident response communication
- Be prepared to respond to requests for field investigations of reported incidents
- Not speak on behalf of the water supplier unless designated as the system's spokesperson

The primary spokesperson will be responsible for speaking on behalf of the water system to local agencies, the public, and the news media. The spokesperson should work with the management staff and the team to ensure that all communication is clear, accurate, timely, and consistent. The spokesperson may authorize and/or direct others to issue news releases or other information that has been approved by the system's management staff. The spokesperson is expected to be on call immediately when an incident or event which may threaten water quality occurs. The spokesperson will perform the following tasks in the event of a spill, release, or other event that threatens water quality:

- Announce which risk level (A, B, C, D, or E) will apply to the public notifications that are issued
- Issue news releases, updates, and other information regarding the incident/event
- Use the news media, email, social media, and other appropriate information venues
- Ensure that news releases are sent to local health agencies and the public
- Respond to questions from the news media and others regarding the incident/event
- Appear at news conferences and interviews to explain incident response, etc.

INCIDENT / EVENT COMMUNICATION PROCEDURE

The flow chart in this section illustrates how the water system will respond when it receives a report that a spill, release, or other contamination event may have occurred. Key elements of the flow chart are described below.

Communication with agencies, the public, and the media during threat incidents

Upon initial notification of the incident/event, system managers and staff will collect information and verify the need for further investigation. Only properly trained personnel will perform onsite investigations if permitted by emergency responders. If further investigation is warranted, and the initial facts support it, the water system spokesperson will issue a public communication statement consistent with the threat level. In addition, water system personnel and partners will be dispatched to conduct reconnaissance, a threat assessment, and a threat characterization, if present. This work may include:

- Verification of the incident/event type (spill, release, etc.)
- Location of incident/event
- Type of material(s) involved in spill, release, etc.
- Quantity of material involved
- Potential of the material to move, migrate, or be transported
- Relevant time factor(s) in the risk assessment (e.g., downstream movement rate)
- Overall level of risk to water system, whether low, moderate, high, or very high
- Development of the initial risk characterization

As the flow chart indicates, several iterative cycles will occur after the initial threat assessment, including communication with local agencies and the public, further investigation of the incident, possible implementation of

the water system's contingency plan, and eventual elimination of the threat and a return to normal operations. Communication activities during this period will include:

- The initial release (i.e., Announcement, Boil Water Advisory, Cannot Drink, Do Not Use, or Emergency)
  - Sent to local health agencies, the public, and the news media within 30 minutes
- Notification of the local water system's source water protection and communication teams
  - If warranted by initial findings regarding the spill, release, or incident
- Notification of the WV Bureau of Public Health
  - As required
- Periodic information updates, as incident response information is received
- Updates to the applicable A-B-C-D-E advisory tier, as necessary

If time permits and the need arises, after the threat level is reduced, and operations return to normal, the water system staff, the communication and source water protection teams, and their partners may conduct a post-event review and assessment. The purpose of the review is to examine the response to the incident, relevant communication activities, and overall outcomes. Plans and procedures may be updated, altered, or adapted based on lessons learned through this process.

EMERGENCY SHORT FORMS

Emergency Communication Information

	Name	Phone	Email
Designated spokesperson:	Richard C. Wood	(304)496-8882	central.water77@yahoo.com
Alternate spokesperson:	James Hoffman	(304)813-0371	central.water77@yahoo.com
Designated location to disseminate information to media:	18540 Northwestern Pike Augusta, WV 26704		
Method of Contact:	word of mouth newspaper posted notices radio		

Media Contacts:	Name	Title	Phone Number	Email
	Sallie See Hampshire Review	Editor	(304)822-3871	news@hampshirereview.com
WFRB		(301)689-8871		Alleghany Radio Corporation

Emergency Service Contacts

	Name	Emergency Phone	Alternative Phone	Email
Police	Hampshire County Sheriff	(911)___-____	(304)822-3834	
Fire	August Fire Dept.	(911)___-____	(304)496-7971	
Ambulance	Hampshire EMS	(911)___-____	(304)496-8223	
Hazmat	August Fire Dept.	(911)___-____	(304)496-7971	
Other				
Other				
Other				

Sensitive Populations

Other Communities that are served by the Utility:	None				
Major User/Sensitive Population Notification	Name	Emergency Phone	Alternative Phone	Email	
	Green Spring Elementary	(304)496-8162		pslocum@k12.wv.us	
EED District Office Contact	Name	Phone	Email		
	Allan Marchum	(304)725-9453	alan.f.marchun@wv.gov		
OEHS Readiness Coordinator	Lee Orr	(304)356-4290			
Downstream Water System Contacts	Water System Name	Contact Name	Emergency Phone	Alternate Phone	Email
	Paw Paw	Steve Bowers			bowersbackflow @gmail.com
Are you planning on implementing the TIER Communications plan?:	Yes				

Emergency Service Key Staff Members

	Name	Title	Phone	Email
Key Staff Responsible for Coordinating Emergency Response Rrocedures:	James Hoffman	General Manager	(304)813-0371	central.water77@yahoo.com
Staff Responsible for Keeping Confidential PSSC Information and Releasing to Emergency Responders.	James Hoffman	General Manager	(304)813-0371	central.water77@yahoo.com

Emergency Response Information

List Laboratories available to perform sample analysis in case of emergency.	Name	Phone
	REI Consultants	(304)255-2500
	WV Office of Lab Services	(304)558-3530
Has utility developed a detailed Emergency Response Plan in accordance with the Public Health Security Bioterrorism preparedness and Response Plan Act of 2002 that covers the following areas?:		Yes
When was the emergency response plan developed or last updated?:		2016

EMERGENCY CONTACT INFORMATION

State Emergency Spill Notification

1-800-642-3074

Office of Emergency Services

http://www.wvdhsem.gov/

Charleston, WV- (304) 558-5380

WV Bureau for Public Health Office of Environmental Health Services (OEHS)

www.wvdhhr.org/oehs

Readiness Coordinator - Lee Orr

Phone: 304-356-4290

Cell: 304-550-5607

E-mail: Lee.E.Orr@wv.gov

Environmental Engineering Division Staff

Charleston, Central Office (304) 558-2981

Beckley, District 1 (304) 256-6666

St. Albans, District 2 (304) 722-0611

Kearneysville, District 4 (304) 725-9453

Wheeling, District 5 (304) 238-1145

Fairmont, District 6 (304) 368-2530

National Response Center - Chemical, Oil, & Chemical/Biological Terrorism

1-800-424-8802

WV State Fire Marshal's Office

1-800-233-3473

West Virginia State Police

1-304-746-2100

WV Watch – Report Suspicious Activity

1-866-989-2824

DEP Distance Calculator

http://tagis.dep.wv.gov/pswicheck/

PRESS RELEASE ATTACHMENTS

TIERS Levels A, B, C, D, and E

UTILITY ISSUED NOTICE – LEVEL A

PUBLIC WATER SYSTEM ANNOUNCEMENT

A WATER SYSTEM INVESTIGATION IS UNDERWAY

On _____ at ___:____ AM/PM, the _____ Water System began investigating an incident that may affect local water quality.

The incident involves the following situation at this location:

_____

_____

_____

There are no restrictions on water use at this time. As always, if water system customers notice anything unusual about their water – such as abnormal odors, colors, sheen, etc. – they should contact the water system at _____.

At this time there is no need for concern if you have consumed or used the water.

Regular updates will be provided about this Announcement as water system staff continue their investigation. Again, there are no restrictions on water use at this time.

State Water System ID# _____ Date Distributed: _____

UTILITY ISSUED NOTICE – LEVEL B

BOIL WATER ADVISORY

A BOIL WATER ADVISORY IS IN EFFECT

On _____ at ___:____ am/pm, a water problem occurred causing contamination of your water. The areas that are affected are as follows:

□ Entire Water System or □ Other: _____

_____

CONDITIONS INDICATE THERE IS A HIGH PROBABILITY THAT YOUR WATER IS CONTAMINATED. TESTING HAS NOT OCCURRED TO CONFIRM OR DENY THE PRESENCE OF CONTAMINATION IN YOUR WATER.

What should I do?

- **DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST.** Bring all water to a boil, let it boil for one minute, and let it cool before using, or use bottled water. Boiled or bottled water should be used for drinking, making ice, brushing teeth, washing dishes, bathing, and food preparation until further notice. Boiling kills bacteria and other organisms in the water.

What happened?

- **The problem is related to** _____

What is being done?

- **The water system is taking the following action:** _____

  _____

What should a customer do if they have consumed or used the water?

- _____

We will inform you when you no longer need to boil your water. We anticipate resolving the problem within _____ hours/days. For more information, please contact _____ at _____ or _____ at _____.

General guidelines on ways to lessen the health risk are available from the EPA Safe Drinking Water Hotline at 1 (800) 426-4791.

Please share this information others who use this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice was distributed by _____

State Water System ID# _____ Date Distributed: _____

UTILITY ISSUED NOTICE – LEVEL C

"CANNOT DRINK" WATER NOTIFICATION

A LEVEL C WATER ADVISORY IS IN EFFECT

On _____ at ___:____ am/pm, a water problem occurred causing contamination of your water. The areas that are affected are as follows:

□ Entire Water System or □ Other: _____

_____

CONDITIONS INDICATE THERE IS A HIGH PROBABILITY THAT YOUR WATER IS CONTAMINATED. TESTING HAS NOT OCCURRED TO CONFIRM OR DENY THE PRESENCE OF CONTAMINATION IN YOUR WATER.

What should I do?

- **DO NOT DRINK THE WATER.** You can't drink the water, but you can use it for showering, bathing, toilet-flushing, and other non-potable purposes.
- **BOILING WILL NOT PURIFY THE WATER.** Do not drink the water, even if it is boiled.

What happened?

- **The problem is related to** _____

What is being done?

- **The water system is taking the following action:** _____

  _____

What should a customer do if they have consumed or used the water?

- _____

We will inform you when the water is safe to drink. We anticipate resolving the problem within _____ hours/days. For more information – or to report unusual water conditions such as abnormal odors, colors, sheen, etc. – please contact _____ at _____ or _____ at _____.

General guidelines on ways to lessen the health risk are available from the EPA Safe Drinking Water Hotline at 1 (800) 426-4791.

Please share this information others who use this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice was distributed by _____

State Water System ID# _____ Date Distributed: _____

UTILITY ISSUED NOTICE – LEVEL D

"DO NOT USE" WATER NOTIFICATION

A LEVEL D WATER ADVISORY IS IN EFFECT

On _____ at ___:____ am/pm, a water problem occurred causing contamination of your water. The areas that are affected are as follows:

□ Entire Water System or □ Other: _____

_____

CONDITIONS INDICATE THERE IS A HIGH PROBABILITY THAT YOUR WATER IS CONTAMINATED. TESTING HAS NOT OCCURRED TO CONFIRM OR DENY THE PRESENCE OF CONTAMINATION IN YOUR WATER.

What should I do?

- **DO NOT DRINK THE WATER.** The water is contaminated.
- **DO NOT SHOWER OR BATHE IN THE WATER.** You can't use the water for drinking, showering, or bathing. It can be used for toilet flushing and firefighting.
- **BOILING WILL NOT PURIFY THE WATER.** Do not use the water, even if it is boiled. The type of contamination suspected is not removed by boiling.

What happened?

- **The problem is related to** _____

What is being done?

- **The water system is taking the following action:** _____

  _____

What should a customer do if they have consumed or used the water?

- _____

We will inform you when the water is safe to drink. We anticipate resolving the problem within _____ hours/days. For more information – or to report unusual water conditions such as abnormal odors, colors, sheen, etc. – please contact _____ at _____ or _____ at _____.

Please share this information others who use this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice was distributed by _____

State Water System ID# _____ Date Distributed: _____

UTILITY ISSUED NOTICE – LEVEL E

EMERGENCY WATER NOTIFICATION

A LEVEL E WATER ADVISORY IS IN EFFECT

On _____ at ___:____ am/pm, a water problem occurred causing contamination of your water. The areas that are affected are as follows:

□ Entire Water System or □ Other: _____

_____

CONDITIONS INDICATE THERE IS A HIGH PROBABILITY THAT YOUR WATER IS CONTAMINATED. TESTING HAS NOT OCCURRED TO CONFIRM OR DENY THE PRESENCE OF CONTAMINATION IN YOUR WATER.

What should I do?

- **DO NOT DRINK THE WATER.** The water is contaminated.
- **DO NOT USE THE WATER FOR ANY PURPOSE!** You can't use the water for drinking, showering, or bathing, or any other use – not even for toilet flushing.
- **BOILING WILL NOT PURIFY THE WATER.** Do not use the water, even if it is boiled. The type of contamination suspected is not removed by boiling.

What happened?

- **The problem is related to** _____

What is being done?

- **The water system is taking the following action:** _____

  _____

What should a customer do if they have consumed or used the water?

- _____

We will inform you when the water is safe to drink. We anticipate resolving the problem within _____ hours/days. For more information – or to report unusual water conditions such as abnormal odors, olors, sheen, etc. – please contact _____ at _____ or _____ at _____.

Please share this information others who use this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice was distributed by _____

State Water System ID# _____ Date Distributed: _____

APPENDIX D. SINGLE SOURCE FEASIBILITY

Water Source Alternative:

Back up intake	
Name of Alternative:	North Branch Potomac River
Brief Description of the Alternative:	North Branch Potomac River
Feasible?:	Yes
Provide Cost Estimate:	$656,502
Would this alternative supply 100% of your needs?:	No
Economic Criteria - Operation and Maintenance Costs:	3
Economic Criteria - Capital Cost:	3
Technical Criteria - Permitting:	3
Technical Criteria - Flexibility:	3
Technical Criteria - Resilience:	2
Technical Criteria - Institutional Requirements:	2
Environmental Criteria - Environmental Impacts:	3
Environmental Criteria - Aesthetic Impacts:	3
Environmental Criteria - Stakeholder Issues:	2
Final Score:	90.11%
Interconnection	
Name of Alternative:	Frankfort PSD
Brief Description of the Alternative:	Frankfort PSD
Feasible?:	Yes
Provide Cost Estimate:	$536,258
Would this alternative supply 100% of your needs?:	No
Economic Criteria - Operation and Maintenance Costs:	3
Economic Criteria - Capital Cost:	3
Technical Criteria - Permitting:	3
Technical Criteria - Flexibility:	3
Technical Criteria - Resilience:	2
Technical Criteria - Institutional Requirements:	2
Environmental Criteria - Environmental Impacts:	3
Environmental Criteria - Aesthetic Impacts:	3
Environmental Criteria - Stakeholder Issues:	3
Final Score:	94.67%
Treated water storage	
Name of Alternative:	Treated water storage

Brief Description of the Alternative:	Treated water storage
Feasible?:	Yes
Provide Cost Estimate:	$0
Would this alternative supply 100% of your needs?:	Yes
Economic Criteria - Operation and Maintenance Costs:	3
Economic Criteria - Capital Cost:	3
Technical Criteria - Permitting:	3
Technical Criteria - Flexibility:	3
Technical Criteria - Resilience:	3
Technical Criteria - Institutional Requirements:	3
Environmental Criteria - Environmental Impacts:	3
Environmental Criteria - Aesthetic Impacts:	3
Environmental Criteria - Stakeholder Issues:	3
Final Score:	100.00%
Tank for Raw Water Storage	
Name of Alternative:	Raw Water Storage
Brief Description of the Alternative:	Raw Water Storage
Feasible?:	Yes
Provide Cost Estimate:	$654,375
Would this alternative supply 100% of your needs?:	No
Economic Criteria - Operation and Maintenance Costs:	3
Economic Criteria - Capital Cost:	3
Technical Criteria - Permitting:	3
Technical Criteria - Flexibility:	3
Technical Criteria - Resilience:	3
Technical Criteria - Institutional Requirements:	3
Environmental Criteria - Environmental Impacts:	3
Environmental Criteria - Aesthetic Impacts:	3
Environmental Criteria - Stakeholder Issues:	2
Final Score:	93.78%

Feasibility Study Narrative

SINGLE SOURCE FEASIBILITY STUDY

If a 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 source water contingency protection plan must 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 raw or treated water storage, interconnections with neighboring systems, or other options identified on a local level.

In order to accomplish this requirement, utilities should examine all existing or possible alternatives and rank them by their technical, economic, and environmental feasibility. To have a consistent and complete method for ranking alternatives, WVBPH has developed a feasibility study guide. This guide provides several criteria to consider for each category, organized in a scoring matrix. By completing the matrix, utilities will demonstrate the process used to examine the feasibility of each alternative and document scores that compare the alternatives. The scoring matrix is then summarized in the Feasibility Study matrix which is weighted to display the most suitable alternative for the utility. Analysis of the evaluated alternatives and summary of the results are presented in an alternatives feasibility study attached as **Appendix D.**

In the event that the primary water source is contaminated, the Green Spring Water System currently has one (1) alternative source available in the form of existing treated water storage. Based on the evaluation of the water system, the Green Spring Water System is compliant with Senate Bill 373 due to the abundance of existing treated water storage. In accordance with Senate Bill 373, The Green Spring System evaluated the following alternatives to continue water service in the event Big Spring is detrimentally affected by contamination, release, spill event or other reason.

Backup Intake

The North Branch Potomac River was considered as for a backup intake site. The North Branch, located approximately 4,500 feet from the existing Green Spring treatment plant, has adequate supply to provide the average water demand of the Green Spring Water System. The intake would be located adjacent to County Route 1 (Greenspring Valley Road) and require 6,400 LF of 6" water line. The backup intake on the North Branch Potomac River was considered during feasibility analysis.

* *A secondary water source would draw water supply from a substantially different location or water source.*

Interconnection

The Green Spring Water System is not currently interconnected with another utility. Frankfort Public Service District (PWSID# 3302928) is the nearest water system able to supply the Green Spring Water System average water demand. The Frankfort PSD system is located approximately 6,800 feet from the Green Spring system. An interconnection with Frankfort Public Service District was analyzed in the feasibility analysis.

Treated Water Storage

The Green Spring Water System currently has a combined system water storage of 365,940 gallons distributed between five (5) treated water storage tanks. Senate Bill 373 requires that each utility maintain two (2) days of storage based on the maximum amount of water produced. The Green Spring Water System peak production experienced within the past year is 180,000 gallons, therefore 360,000 gallons of total water storage is required to comply with Senate Bill 373.Therefore, the system meets the minimum required water storage capacity. The use of existing treated water storage was considered during feasibility analysis.

Raw Water Storage

As described above the total storage capacity of the Green Spring Water System is 365,940 gallons, and to satisfy the two (2) day storage requirement described in Senate Bill 373, the utility needed 360,000 gallons of total system storage. The system meets the minimum required storage capacity; however, if evaluated independently of treated water storage, the system's raw water storage does not satisfy the two (2) day minimum storge capacity. The addition of raw water storage to independently satisfy the storage requirement was considered during feasibility analysis.

COMMUNICATION PLAN

The Green Spring System has also developed a Communication 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 the 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. The initial notification to the public will 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. A copy of the source water protection plan and the

The Central Hampshire Public Service District Green Spring currently has sufficient treated water storage to temporarily supply the water demand.

1. **Backup Intake**

   The utility currently draws water from three groundwater springs. If the primary spring, Green Spring, were to become compromised, the two (2) Springfield streams would not be able to sustain the average water demand of the Green Spring Water System.

   The North Branch Potomac River located approximately 4,500 feet north of the Green Spring treatment plant was selected as a potential backup intake source. The stream flow of the North Branch was found using the WV DEP database. The data is calculated below:

   $$100\ cubic\ feet\ per\ second \times \frac{448.83\ gallons\ per\ minute}{1\ cubic\ feet\ per\ second}) = 44{,}883\ gallons\ per\ minute$$

   The minimum required capacity for the treatment facility is 150 gallons per minute, which is satisfied by North Branch. The construction of a backup intake located on the North Branch Potomac River along and approximately 6,400 feet of six (6) inch water line from the proposed intake to the existing Green Spring treatment plant was considered during the feasibility analysis.

2. **Interconnection**

   Frankfort Public Service District was considered as a possible alternative. The Frankfort system is located approximately 6,800 feet from the end of the Green Spring system. Frankfort PSD has a design capacity of 1,000,000 gallons per day producing an average of approximately 620,000 gallons per day. The Green Spring Water System treatment facility currently produces an average of 103,000 gallons per day. The following calculation shows the required production from Frankfort PSD based on average production:

   $$620{,}000\ gallons\ per\ day\ +\ 103{,}000\ gallons\ per\ day\ =\ 723{,}000\ gallons\ per\ day$$

   Therefore, the Frankfort Public Service District is capable of sustaining the Green Spring Water System. Accordingly, an interconnection with the Frankfort system was be considered during the feasibility analysis.

3. **Treated Water Storage**

The Green Spring Water System total system storage is 365,940 gallons, consisting of five (5) treated water storage tanks and two (2) clearwells. According to the most recent monthly operating reports provided by the utility, the water treatment facilities produce an average of 103,000 gallons per day and the maximum quantity produced in a twenty-four (24) hour period was 180,000 gallons per day.

Senate Bill 373 requires utilities to maintain a minimum system storage capacity equal to two (2) days of system plant's maximum level of production experienced within the past year. The minimum required storage capacity for the system would be:

$$180{,}000\ gallons\ per\ day \times 2\ days = 360{,}000\ gallons$$

Therefore, the system currently meets the minimum required water storage capacity. The use of existing treated water storage was considered during feasibility analysis.

4. **Raw Water Storage**

As mentioned above, to satisfy the two (2) day storage described in Senate Bill 373, the utility needed 360,000 total gallons of storage capacity. The system currently meets the minimum required water storage capacity. However, if evaluated independently of treated water storage, the system's raw water storage does not satisfy the Senate Bill's minimum storge capacity. Currently, the system does not retain any raw water storage. The addition of raw water storage to independently satisfy the minimum storage requirement was considered during feasibility analysis.

Matrix Document

Matrix Explanation

The alternative analysis matrix evaluates the utility's ability to implement each of the additional sources outlined. Alternative sources are evaluated for economic, technical, and environmental feasibility. The matrix uses a zero (0) to three (3) rating system, with three (3) being very feasible and zero (0) being not feasible. Each category has sub questions to develop an average for the alternative. Once all areas are evaluated, a final feasibility score is given for each of the alternatives for use in determining which option will best suit the utility's needs.

Economic factors evaluated in the matrix include all information needed to fund the alternative source. The matrix considers the current utility budget available per the latest annual report, operation and maintenance costs for each alternative, and the capital cost needed to construct each alternative. Supporting documentation is included in **Appendix E** of the report, which provides a breakdown of costs for each alternative that are used as capital costs in the matrix. The economic feasibility of each alternative is compared on a cost per gallon ratio. This ratio is determined by dividing the capital cost of the improvements by the total number of gallons of water produced per year. An average of the economic feasibility factors is then calculated and entered into the overall feasibility matrix found in **Appendix D**.

Technical criteria evaluated include permitting, flexibility, institutional and resilience factors. Permitting costs are included in all supporting documentation for each alternative source. The permitting factors included the permits that would be needed to construct the alternative source for the utility. An additional environmental factor is the feasibly of obtaining each permit. Permits were rated from zero (0) to three (3) based on the difficulty of obtaining the permits for the project. Depending on the project area, some permits may be very difficult and costly to obtain. Flexibility factors evaluate the ability of the alternative to be used as a permanent source of water or if it can only be used on a temporary basis.. The intake and interconnections can be used as both temporary and permanent sources. The alternatives' ability to help the utility during seasonal or population increases is also evaluated in the resilience factors. The alternatives that can produce additional water were rated as very feasible (3). Additional criteria evaluated are easements and rights-of-ways that will need to be acquired to construct the alternative source. For interconnections and intakes rights-of-ways would be needed to lay the new water line. The feasibility of obtaining the rights-of-ways was evaluated. All technical criteria was averaged and entered into the feasibility summary in **Appendix D**.

Environmental aspects for each alternative include impacts, aesthetics and stakeholders. Environmental impacts included any areas in the proposed alternative source area that are protected. Areas that are protected would have a low feasibility because the impacts could be large if the project were constructed. Aesthetics factors include noise, visual impacts, and mitigation measures that could affect the project's feasibility. The aesthetic factors relate to the stakeholder factors. The stakeholders' portion of the environmental criteria involves the community and their acceptance of the new source alternative and the structures that will be constructed.

Feasibility Matrix **Central Hampshire Public Service District** **PWSID#: WV 33014012** **Date: October 2015** **Completed By: Project Engineer - The Thrasher Group, Inc.**

Criteria	Question	Backup Intake	Feasibility	Interconnect	Feasibility	Treated Water Storage	Feasibility	Raw Water Storage	Feasibility	Other	Feasibility
Economic Criteria											
What is the total current budget year cost to operate and maintain the PWSU (current budget year)?		$219,155.00		$219,155.00		$219,155.00		$219,155.00		$219,155.00	
O and M Costs	Describe the major O&M cost requirements for the alternative?	Labor, power, materials for maintenance	3	Labor, power, materials for maintenance	3	Labor, materials for maintenance	3	Labor, materials for maintenance	3	N/A	–
	What is the incremental cost ($/gal) to operate and maintain the alternative?	$0.00	3	$0.00	3	$0.00	3	$0.00	3	–	–
	Cost comparison of the incremental O&M cost to the current budgeted costs (%)	0.00%	3	0.00%	3	0.00%	3	0.00%	3	–	–
O and M-Feasibility Score			3.0		3.0		3.0		3.0		–
Describe the capital improvements required to implement the alternative.		Construction of raw water pump station, plant upgrades & water line		Construction of pump station & water line		Construction of additional treated water storage		Construction of a additional raw water storage		–	
Capital Costs	What is the total capital cost for the alternative?	$656,502.50	2	$536,258.00	3	$0.00	3	$654,375.00	2	–	–
	What is the annualized capital cost to implement the alternative, including land and easement costs, convenience tap fees, etc. ($/gal)	$0.06	3	$0.05	3	–	3	$0.06	3	–	–
	Cost comparison of the alternatives annualized capital cost to the current budgeted costs (%)	0.00%	3	0.00%	3	0.00%	3	0.00%	3	–	–
Capital Cost-Feasibility Score			2.7		3.0		3.0		2.7		–
Technical Criteria											
Permitting	Provide a listing of the expected permits required and the permitting agencies involved in their approval.	WV DEP, WV DNR, ACOE, WV SHPO, US FWS, WV DOH and County Floodplain	3	WV DEP, WV DNR, ACOE, WV SHPO, US FWS, WV DOH and County Floodplain	3	–	3	WV DEP, WV DNR, ACOE, WV SHPO, US FWS, WV DOH and County Floodplain	3	–	–
	What is the timeframe for permit approval for each permit?	WV DEP (90 days), WV DNR (60 days), ACOE (90 days), WV SHPO (60 days), US FWS (60 days), WV DOH (90 days) and County Floodplain (90 days)	3	WV DEP (90 days), WV DNR (60 days), ACOE (90 days), WV SHPO (60 days), US FWS (60 days), WV DOH (90 days) and County Floodplain (90 days)	3	–	3	WV DEP (90 days), WV DNR (60 days), ACOE (90 days), WV SHPO (60 days), US FWS (60 days), WV DOH (90 days) and County Floodplain (90 days)	3	–	–
	Describe the major requirements in obtaining the permits (environmental impact studies, public hearings, etc.)	Environmental impact studies, water sampling	2	Environmental impact studies.	3	–	3	Environmental impact studies.	3	–	–
	What is the likelihood of successfully obtaining the permits?	Good	3	Good	3	–	3	Good	3	–	–
	Does the implementation of the alternative require regulatory exceptions or variances?	No	3	No	3	–	3	No	3	–	–
Permitting-Feasibility Score			2.8		3.0		3.0		3.0		–
Flexibility	Will the alternative be needed on a regular basis or only used intermittently?	Intermittently, but can be used permanently	3	Intermittently, but can be used permanently	3	–	3	Intermittently	2	–	–
	How will implementing the alternative affect the PWSU's current method of treating and delivering potable water including meeting Safe Drinking Water Act regulations? (ex. In the case of storage, will the alternative increase the likelihood of disinfection byproducts?)	Treatment plant will require upgades	3	Current treatment methods will not be required	3	–	3	No impact	3	–	–
Flexibility-Feasibility Score			3.0		3.0		3.0		2.5		–
Resilience	Will the alternative provide any advantages or disadvantages to meeting seasonal changes in demand?	Yes	1	Yes	3	–	3	Yes	3	–	–
	How resistant will the alternative be to extreme weather conditions such as drought and flooding?	Drought may limit availability of water	2	Drought may limit availability of water	2	–	3	Drought may limit availability of water	2	–	–
	Will the alternative be expandable to meet the growing needs of the service area?	Yes	3	Yes	2	–	3	Yes	3	–	–
Resilience-Feasibility Score			2.0		2.3		3.0		2.7		–
Institutional Requirements	Identify any agreements or other legal instruments with governmental entities, private institutions or other PWSU required to implement the alternative.	None	3	Frankfurt Public Service District	3	–	3	None	3	–	–
	Are any development/planning restrictions in place that can act as a barrier to the implementation of the alternative.	No	3	No	3	–	3	No	3	–	–
	Identify potential land acquisitions and easements requirements.	None	1	Property acquisition for pump station and easements for waterline	1	–	3	Property acquisition for tank site	3	–	–
Institutional Requirements-Feasibility Score			2.3		2.3		3.0		3.0		–
Environmental Criteria											
Environmental Impacts	Identify any environmentally protected areas or habitats that might be impacted by the alternative.	None	3	None	3	–	3	None	3	–	–
Environmental Impacts-Feasibility Score			3.0		3.0		3.0		3.0		–
Aesthetic Impacts	Identify any visual or noise issues caused by the alternative that may affect local land uses?	Fencing and control panel for pump station	3	Fencing and control panel for pump station	3	–	3	Water tank on a hill	3	–	–
	Identify any mitigation measures that will be required to address aesthetic impacts?	Clearance from Culture and History and Local Zoning Commission will be obtained	3	Clearance from Culture and History and Local Zoning Commission will be obtained	3	–	3	Clearance from Culture and History and Local Zoning Commission will be obtained	3	–	–
Aesthetic Impacts-Feasibility Score			3.0		3.0		3.0		3.0		–
Stakeholder Issues	Identify the potential stakeholders affected by the alternative.	Water Customers	3	Water Customers	3	–	3	Water Customers	3	–	–
	Identify the potential issues with stakeholders for and against the alternative.	Rate increase may be needed to implement construction	1	Rate increase may be needed to implement construction	2	–	3	Rate increase may be needed to implement construction	1	–	–
	Will stakeholder concerns represent a significant barrier to implementation (or assistance) of the alternative?	No	3	No	3	–	3	No	3	–	–
Stakeholder Issues-Feasibility Score			2.3		2.7		3.0		2.3		–
Comments		100% backup to the primary water source with majority of construction in rights-of-way		100% backup to the primary water source with majority of construction in rights-of-way		The utility currently meets the two (2) day minimum requirement stated in Senate Bill 373.		Supplement existing storage to meet two (2) day requirement stated in Senate Bill 373 without regard to treated water storage.		–	

Feasibility Matrix | **Central Hampshire Public Service District** | **PWSID#: WV 3301403?** | **Date: October 2015** | **Completed By: Project Engineer - The Thrasher Group, Inc.**

Alternative Strategy Description	Economic Criteria					Technical Criteria							Environmental Criteria					Final Score	Total Capital Cost	Comments
	Operation & Maintenance Costs	Capital Costs	Total	Total %	Weighted Total	Permitting	Flexibility	Resilience	Institutional Requirements	Total	Total %	Weighted Total	Environmental Impacts	Aesthetic Impacts	Stakeholder Issues	Total	Total %	Weighted Total		
Backup Intake	3.0	2.7	5.7	94.4%	37.8%	2.8	3.0	2.0	2.3	10.1	84.4%	33.8%	3.0	3.0	2.3	8.3	92.6%	18.5%	90.1%	$656,502.50	100% backup to the primary water source with majority of construction in rights-of-way
Interconnect	3.0	3.0	6.0	100.0%	40.0%	3.0	3.0	2.3	2.3	10.7	88.9%	35.6%	3.0	3.0	2.7	8.7	96.9%	19.5%	94.8%	$536,259.00	100% backup to the primary water source with majority of construction in rights-of-way
Treated Water Storage	3.0	3.0	6.0	100.0%	40.0%	3.0	3.0	3.0	3.0	12.0	100.0%	40.0%	3.0	3.0	3.0	9.0	100.0%	20.0%	100.0%	$0.00	The utility currently meets the two (2) day minimum requirement stated in Senate Bill 373.
Raw Water Storage	3.0	2.7	5.7	94.4%	37.8%	3.0	2.5	2.7	3.0	11.2	93.1%	37.2%	3.0	3.0	2.3	8.3	92.6%	18.5%	93.5%	$654,375.00	storage to meet two (2) day requirement stated in Senate Bill 373 without regard to treated water storage.
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Scoring:

0 - Not feasible. Criterion cannot be met by this alternative and removes the alternative from further consideration.
1 - Feasible but difficult. Criterion represents a significant barrier to successful implementation but does not eliminate it from consideration.
2 - Feasible. Criterion can be met by the alternative.
3 - Very Feasible. Criterion can be easily met by the alternative.

APPENDIX E. SUPPORTING DOCUMENTATION