Source Water Protection Plan
Clarksburg Water Board

PWSID: WV3301705

Harrison County

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In cooperation with Clarksburg Water Board

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

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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 Clarksburg Water Board 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, Clarksburg Water Board 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 Clarksburg Water Board 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

CLARKSBURG WATER BOARD 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 CLARKSBURG WATER BOARD

Administrative office location:	1001 S. Chestnut St., Clarksburg, HARRISON, WV, 26301		
Is the system a public utility, according to the Public Service Commission rule?	Yes		
Date of Most Recent Source Water Assessment Report:	4/4/2003		
Date of Most Recent Source Water Protection Plan:	4/4/2019		
Population served directly:	18006		
Bulk Water Purchaser Systems:	System Name	PWSID Number	Population
	Greater Harrison PSD	WV3301719/ WV3301727/ WV3301713	8300
	City of Stonewood	WV3301724	1900
	City of Salem	WV3301720	1586
	Town of Nutter Fort	WV3301717	1686
	Summit Park PSD	WV3301725	1200
	East View PSD	WV3301736/ WV3301737	367
	City of Shinnston	WV3301741	6700
	Enlarged Hepzibah PSD	WV3301709	1977
	Sun Valley PSD	WV3301739/ WV3301726	2923
	Shortline PSD	WV3301722	4600
	Town of Anmoore	WV3301701	1208
	City of Bridgeport	WV3301703	8100
Total Population Served by the Utility:	18006		
Does utility have multiple Source Water Protection Areas(SWPAs)?	No		
How many SWPAs does the utility have?	1		

5.0 WATER TREATMENT AND STORAGE

As required, Clarksburg Water Board 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 Clarksburg Water Board 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. Clarksburg Water Board Water Treatment Information

CLARKSBURG WATER BOARD	
Water treatment processes (in order of occurrence) includes:	PERMANGANATE, RAPID MIX, COAGULATION, FLOCCULATION, ACTIVATED CARBON, POWDERED, SEDIMENTATION, GASEOUS CHLORINATION, PRE, FILTERED, CLEARWELL, 4-LOG TREATMENT OF VIRUSES, PHOSPHATE, GASEOUS CHLORINATION, POST, PH ADJUSTMENT, POST, FLUORIDATION, SLUDGE TREATMENT, SULPHUR
The treatment capacity is approximately (GPD):	12,000,000
Current average production is approximately (GPD):	7,500,000
Maximum gallons of water treated and produced at that plant in one day during the past year was:	11,000,000
Minimum gallons of water treated and produced at that plant in one day during the past year was:	6,000,000
Plant is operated an average of hours a day:	24
Maximum number of hours of operation in one day at that plant during the past year was:	24
Minimum number of hours of operation in one day at that plant during the past year was:	24
How many storage tank(s) are maintained on systems distrbution system:	8
Total gallons of treated water storage:	10,627,000
Total gallons of raw water storage (GALs):	0

Table 3. Clarksburg Water Board 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)
INTAKE-WEST FORK	1940329	WEST FORK RIVER	30” ductile iron conduit	IN001		Permanent	Active

Table 4. Clarksburg Water Board 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)

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

Well / Spring Name	West Fork River
Size of WSDA (Square Miles)	383
River Watershed Name (8-digit HUC)	West Fork - 05020002
Size of Zone of Critical Concern (Acres)	7273
Size of Zone of Peripheral Concern (Acres) (Include ZCC area)	10328
Do you blend with ground water	No
Do you have an intake or well/spring missing from the list?	No

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 Clarksburg Water Board 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.

Clarksburg Water Board 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
Jason L. Myers	Clarksburg Water Board	General Manager
Robert W. Davis	Clarksburg Water Board	Chief Operator
	Clarksburg Water Board	
	Clarksburg Water Board	
	Clarksburg Water Board	
	Clarksburg Water Board	
Paul Howe III	Clarksburg Water Board	Board Representative
Paul Bump	Harrison County Bureau of Emergency Services	Bureau Chief
John Keeling PE,CIH, CSP, QEP	LEPC, MSES Counsultants, Inc	Harrison Co. LEPC Chairman
Doug Smith	The Thrasher Group	Consulting Engineer
Date of First Protection Team Meeting:		Protection Team Meeting was held Thursday, October 29, 2015 at Clarksburg Water Board. 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		A protection team meeting was held August 3rd, 2023 to allow protection team members an opportunity to review and revise the source water protection plan. Changes were made to update the communications plan, the management strategies, emergency management contacts, and protection team members. Recommended stakeholders are not included due to historic lack of interest and participation. A public meeting was August 9th as part of a regularly scheduled board meeting. No comments were made by the public. Notification of the meeting was posted at the billing offices and on the Water Board website.

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 Clarksburg Water Board 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 Clarksburg Water Board 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 Clarksburg Water Board 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 Clarksburg Water Board 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

Clarksburg Water Board 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. Clarksburg Water Board 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
Yearly Windshield Survey	1	n/a
Public and Private Sewer	2	There are private individual septic systems and combined sewer systems located upstream in the protection watershed. Failing private septic systems can leach into surrounding soils or run off into surface water and potentially contaminate the water supply. Combined sewer overflow (CSO) permitted discharges, accidental releases or line breaks may allow untreated sewage to contaminate the surface water source. Untreated sewage contains total coliform, particularly E. coli, along with other bacteria and parasites that could negatively impact human health if treatment processes are not adjusted to address the contamination.
Highway Traffic	3	The highway runs parallel to and crosses the source through the SWPA. If an accident were to occur on or along the river, it may be difficult to contain spill materials and these could potentially contaminate the surface water.
Hazardous Materials Transportation	4	The hazardous materials storage facilities are located in or near the SWPA. Transportation of these materials occurs in the SWPA. Accidents could result in contamination of the source water. The railroad runs parallel to and crosses the source through the SWPA. If an accident were to occur on or along the river, it may be difficult to contain spill materials and these could potentially contaminate the surface water.
Storage Tanks	5	There is a specific active facility with above-ground storage tanks located across from the intake that may pose a threat. If these tanks remain, they could contaminate the source if they were to leak or be swept into the river during a flooding event. These storage tanks potentially contain materials that if released would pose a risk to public health.
Oil and Gas Wells	6	Gas wells, when properly drilled in accordance with their permits, do not pose an imminent danger. However, brine and recovered fracturing fluids from the wells must be collected and handled properly to prevent contamination to the surface and ground waters. There are several methods to dispose of this fluid, such as deep injection and trucking the fluid to a treatment facility. The water system is concerned about fracturing water migrating or being spilled into the source water from above ground storage tanks. Road cuts to access gas well sites may create erosion issues that can cause increased sediment and turbidity in surface waters. Chemicals are transported and stored at the well sites. In addition to drilling at the permitted well sites, many staging and equipment storage areas have been established throughout the source water protection areas. Storage containers, mobile above ground storage tanks, and heavy machinery occur at these sites, with what appears to be few best management practices to control erosion and spills from these areas. Because these are temporary in nature, there is not a permitting process to ensure that proper notification is given in case of a spill incident. The system is also concerned about water withdraw upstream of the water intake.
Yearly Source Water Protection Team Meetings	7	n/a

Dam Removal	8	There is a project currently to remove three dams from the West Fork River, including West Milford Dam, Two-Lick Dam, and Highland Dam. CWB has cooperated with the US Fish and Wildlife service to plan the remove and restore natural flow of the river to improve endangered species habitat. The removal of the dams may release sediments and solid waste into the stream; however the release is unlikely because of the pace of the removal. The operating staff are aware that the removal of the dams will change the condition of the West Fork River following major storm events and this could mean that they will adjust how they treat water.
Existing Threats to Water Quality and Quantity	9	CWB has a single intake with no backup. While CWB has almost a day and a half of treated water storage at average use, closing the intake for a contamination event and using this water could result in significant damage to the distribution system. It could introduce a significant lack of pressure or air in the lines and result in water hammer, causing extreme breakages.
Regular Coordination with Emergency Managers	10	n/a
Treatment facility	11	The water treatment facility is considered a threat to water supply due to the antiquated nature of the generator that serves the entire plant and operates the intake pump.

Table 9. Priority PSSC Management Strategies

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
Hazardous Materials Transportation	CWB staff communicates with emergency responders to prepare to react quickly to any spills and initiate cleanup activities. In the event that contaminants do find their way into the public water supplies, the system will monitor and react according to emergency response plans and communication plans that have been prepared with the emergency planners.	Source Water Protection Team	Ongoing	Emergency responders are regularly invited to attend coordination meeting but do not participate. However Jason Myers has extensive NIMS training as a former EMS dispatcher, hazard mitigation training, and is a certified flood plain manager.	Minimal cost associated with time.
Hazardous Materials Transportation	n/a	n/a	Not Started		
Storage Tanks	Identify the responsible party to remove or maintain Bear Construction fuel storage tanks.	Jason Myers	Completed	CWB members have conducted business with Bear Contracting owner and intend to negotiate possibilities for relocation, removal, or secondary containment.	

Table 9. Priority PSSC Management Strategies

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
Storage Tanks	Contact the WVDEP to determine if Groundwater Protection Plans were prepared for the sites. Groundwater Protection Plans may contain BMPs and other requirements that also act to protect surface water. Contact the WVDEP Division of Water and Waste Management at 304-926-0499. May receive their assistance to inspect the facilities and recommend if cleanup is needed.	Jason Myers	No Longer a Concern	Investigate the approximate 500-gallon fuel tanks across river from the intake.	
Existing Threats to Water Quality and Quantity	Establish a secondary intake on Elk Creek	Source Water Protection Team	Ongoing	CWB has taken samples from Elk River to determine that the water is treatable for consumption. CWB could develop a 1-mile water line along the existing rail trail. CWB has sold the Buffalo Lake property rendering the former secondary intake site useless.	Currently under investigation
Treatment facility	Replace the existing generator.	Source Water Protection Team	Ongoing	CWB built the existing treatment plant around the 1,000-kW generator. The system needs a new generator or several small generators for redundancy.	Under investigation
Regular Coordination with Emergency Managers	Collaborate with EMS to include a source water protection section in updates of regional Emergency Operations Plans	Jason Myers	Ongoing		Minimal cost associated with staff time
Regular Coordination with Emergency Managers	CWB staff will continue to communicate with these emergency services groups on a regular basis, especially when there is not an ongoing emergency. They will meet yearly as part of the Source Water Protection Team and are invited to the monthly board meetings.	Water utility staff emergency personnel	Ongoing	Emergency responders are regularly invited to attend coordination meetings but do not participate.	Minimal cost associated with staff time

Table 9. Priority PSSC Management Strategies

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
Oil and Gas Wells	CWB monitors raw water for bromides, chlorides, and conductivity. CWB has acquired monitoring technology for installation on the raw water that will allow 15 minutes lead time to close the intake or prevent contamination including oil and gas. In addition, water systems downstream may benefit from the alert when the equipment is synced and fully functioning.	Water Utility Staff	Ongoing		Probe $18,000
Yearly Source Water Protection Team Meetings	CWB will invite the protection team to meet on a a three year basis concurrent with plan updates to discuss any changes that might have occurred within the watershed or to find replacements for members who can no longer participate.	Source Water Protection Team	Ongoing	Met in 2023	Minimal cost associated with staff time
Yearly Windshield Survey	CWB staff regularly perform “windshield surveys” as a regular course of business and are familiar with the land uses and local development of the zone of critical concern. Changes in land use and other developments that may impact the system are indicated on SWPP maps and updated when warranted changes occur during the SWPP update cycle.	Water utility staff	Ongoing	n/a	Minimal cost associated with staff time
Highway Traffic	CWB staff communicates with emergency responders to prepare to react quickly to any spills and initiate cleanup activities. In the event that contaminants do find their way into the public water supplies, the system will monitor and react according to emergency response plans and communication plans that have been prepared with the emergency planners.	Water Utility Staff	Ongoing	Emergency responders are regularly invited to attend coordination meeting but do not participate. However Jason Myers has extensive NIMS training as a former EMS dispatcher, hazard mitigation training, and is a certified flood plain manager	Minimal cost associated with staff time.

Table 9. Priority PSSC Management Strategies

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
Dam Removal	CWB staff will continue to monitor the removal schedule and possible releases of materials that could impact treatment. In addition, operators will investigate the changes in the source water turbidity after the removal of the dams to inform the treatment process.	Clarksburg Water Utility Staff	Ongoing	U.S. Fish and Wildlife and American Rivers are in the process of a feasibility study and will build a new intake.	Minimal cost associated with staff time.
Public and Private Sewer	Staff will continue to coordinate with the Clarksburg Sanitary Board to stay informed of the status of the CSO location upstream of the intake. Should consider shutting down intake pumps during flash flooding events that may result in the release of raw sewage from the CSO when the system is overwhelmed by stormwater runoff or adjust chemical treatment accordingly. The United Hospital Center has changed uses and is now the site of Highland Hospital. There are fewer patients and less concerns with the lift station being overwhelmed. There is direct communication any time that the station overflows. Staff will continue to communicate with the public sewer system personnel to raise awareness of the source water vulnerability to contamination from leaking lines. The General Manager has expressed concern relative to failing septic systems and unmaintained home aeration units to the county health department. CWB will continue to contribute discussions and initiatives aimed at reducing contaminant discharge from private and public wastewater systems.	Water utility staff	Ongoing	Staff regularly coordinates with the Sanitary Board. A formal schedule is not required.	Minimal cost associated with 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. Clarksburg Water Board 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
Plant Tours	CWB staff provide tours of the water plant to interested organizations such as watershed groups, schools, and civic organizations. When school children visit the plant, the CWB has a mascot, AquaDuck that attends the visits. CWB also conducts an annual safety seminar with local Emergency Responders to make them familiar with the facilities in the event of an emergency.	Water utility staff	Ongoing	Last tour requested April 2023.	Activities are annual events and included in budget.
Plant Tours	n/a	n/a	Not Started		
Public Meeting	CWB has discussed and presented the source water protection plan in the board meetings in September 2015, April 26, 2016, July, 2019, and August 9, 2023. These meetings were open to the public and advertised specifically to solicit information and questions from the public. The CWB actively participates in other opportunities to engage and inform the public.	CWB	Ongoing	CWB posted notices, ran a notice in the newspaper and added source water protection to their agenda to communicate the meeting to the public. Monthly board meetings are open to the public.	Minimal cost associated with staff time.
Brochures, Pamphlets, and Letters	CWB distributes brochures during National Drinking Water Week. These will alert the recipients of the need for source water protection and conservation. If needed the CWB will send letters to residents or businesses to communicate specific concerns. See Appendix E for example letters and an additional brochure that can be customized. Funding for the brochures may be available through the Wellhead and Source Water Protection Grant Program.	Water utility staff	Ongoing	May 5-11, 2019. Water Week activities have been on hold since COVID but will resume potentially in 2024.	Minimal cost associated with staff time, postage, and printing.
Brochures, Pamphlets, and Letters	n/a	n/a	Not Started		

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	n/a	n/a	Not Started		
Brochures, Pamphlets, and Letters	n/a	n/a	Not Started		
Brochures, Pamphlets, and Letters	n/a	n/a	Not Started		
Websites	CWB distributes information on its website relative to source water, including the public facing version of the source water protection plan, CCR, and meeting minutes.	Water utility staff	Completed		Minimal cost associated with staff time
Consumer Confidence Report	CWB publishes a Consumer Confidence Report (CCR) annually, as required by the Safe Drinking Water Act, which is sent to all water customers and posted on the CWB website. Information concerning the Source Water Assessment is included in the CCR.	Water utility staff	Ongoing	Posted on the CWB website	Minimal Cost associated with staff time
Consumer Confidence Report	n/a	n/a	Not Started		

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 Clarksburg Water Board 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. Clarksburg Water Board 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:	Contamination is diverted by turning off pumps.
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:	n/a
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?	1.4 days on average and 0.96 days at max demand
Describe the process to close the intake:	Close the raw water intake valve.
Describe the treated water system's storage capacity of the water system:	Eight (8) water storage tanks and clear well totaling 12,225,000 gallons of treated water. At the time of this report, CWB was operating at 100% treated water storage capacity.
Gallons of storage capacity (raw water)	0
Gallons of storage capacity (treated water)	12,225,000
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:	n/a

11.2. OPERATION DURING LOSS OF POWER

Clarksburg Water Board 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?:	Yes
Please provide a scenario that best describes your system:	Yes, the utility has a generator at the treatment plant that provides full power service to the intake.
What do you have (KW)?	1000.00
What do you need (KW)?	0.00
Can you connect to a generator at the treatment facility?:	Yes
Please provide a scenario that best describes your system:	Yes, the utility has a generator at the treatment plant that provides full power to the plant.
What do you have (KW)?	0.00

What do you need (KW)?		0.00	
Can you connect to a generator at the distribution system?:		Yes	
Please provide a scenario that best describes your system:		Yes, the utility has a generator at the treatment plant that can provide full power service to the high service pumps	
What do you have (KW)?		0.00	
What do you need (KW)?		0.00	
Does the utility have fuel on hand for generator?:		Yes	
Hours:		50	
Gallons:		2,500	
Provide a list of suppliers and alternate suppliers that could provide fuel in the event of an emergency:		Supplier	Phone Number
	Fuel	BFS	(304)291-6980
Does the utility test the generator(s) periodically?:		Yes	
Does the utility routinely maintain the generator(s)?:		Yes	
If the Utility does not have generator or the ability to connect to a generator, describe plans to respond to power outages:		n/a	

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. Clarksburg Water Board 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 Clarksburg Water Board

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:	We are currently able to meet demand and population projections do not indicate a significant rise.

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 Clarksburg Water Board PSC Annual Report.

Table 14. Water Loss Information

Water pumped - Total Gallons:		2,594,519,000
*Water purchased - Total Gallons:		0
Total gallons of water pumped and purchased:		2,594,519,000
Total gallons of water loss accounted for except main leaks:	Mains, plaint, filters, flushing, etc - Total Gallons:	145,163,000
	Fire department - Total Gallons:	3,579,000
	Back washing - Total Gallons:	37,739,000
	Blowing settling basins - Total Gallons:	7,095,000
Total Accounted for Water Loss		193,576,000
Unaccounted for lost water - Total Gallons:		389,466,000
Water sold - Gallons:		1,898,142,000
Water Lost From Main Leaks:		113,335,000
Total Gallons of Unaccounted for Lost Water and Water Lost from Main Leaks:		502,801,000
Total percent unaccounted for water		19
Describe the measures to correct water loss greater than 15%:	Increased inspection and leak detection. 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.

Clarksburg Water Board 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?	The utility receives spill notifications from the WVDHHR Fairmont District Office.	
Are you aware of any facilities, land uses, or critical areas within your protection areas where chemical contaminants could be released or spilled?	Yes	
Are you prepared to detect potential contaminants if notified of a spill?	Yes	
List laboratories (and contact information) on whom you would rely to analyze water samples in case of a reported spill.	Laboratories	
	Name	Phone Number
	ALS Global	(304)573-2130
	WV Office of Laboratory 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:	Grab samples are taken every three hours.	

Provide or estimate the capital and O&M costs for your current or proposed early warning system or upgraded system.	Capital Cost:	75,000
	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?		Yes
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

Clarksburg Water Board 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. Clarksburg Water Board 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 Clarksburg Water Board 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 Clarksburg Water Board'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.

APPENDICES

All Appendices redacted for security purposes