Source Water Protection Plan

West Virginia American Water
Huntington Water System

PWSID WV3300608
Cabell County

WVBPH Submittal
Public Version

June 2019

WEST VIRGINIA
AMERICAN WATER

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ACRONYMS

AST	Aboveground Storage Tank
AAR	After Action Report
DWMAPS	Drinking Water Mapping Application to Protect Source Waters
ERP	Emergency Response Plan
GAC	Granular Activated Carbon
GC/MS	Gas Chromatograph / Mass Spectrometer
GIS	Geographic Information System
GPD	Gallons Per Day
LEPC	Local Emergency Planning Committee
MG	Million Gallons
MGD	Million Gallons Per Day
NIMS	National Incident Management System
NPDES	National Pollutant Discharge Elimination System
NRW	Non-Revenue Water
ORSANCO	Ohio River Sanitation Commission
PSC	West Virginia Public Service Commission
PSSC	Potential Source of Significant Contamination
PWSID	Public Water System Identification
RCRA	Resource Conservation and Recovery Act
SDS	Safety Data Sheet
SDWA	Safe Drinking Water Act
SDWIS	Safe Drinking Water Information System
SWAP	Source Water Assessment Program
SWPP	Source Water Protection Plan
TIERS	Tiered Incident / Event Reporting System
UFW	Unaccounted for Water
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
WSDA	Watershed Delineation Area
WTP	Water Treatment Plant
WVAW	West Virginia American Water
WVBPH	West Virginia Bureau for Public Health
WVDEP	West Virginia Department of Environmental Protection
WVDHHR	West Virginia Department of Health and Human Resources
WVDHSEM	Division of Homeland Security and Emergency Management

1.0 INTRODUCTION

Source water protection is an important component of a multi-faceted approach – along with effective treatment, distribution, and monitoring – to provide high quality drinking water for the public. This Source Water Protection Plan (SWPP) Update has been developed in accordance with applicable regulations as part of an overall program to continue to provide reliable, quality drinking water for our customers. The program involves identifying potential risks that could affect the drinking water supply and seeking to manage those risks, when possible, to maintain supply quantity and quality.

Certain components of the plan cannot be shared publicly or are protected from public disclosure for safety and security purposes. These components are not included in the public SWPP; they will be submitted to West Virginia Bureau for Public Health (WVBPH) separately.

This public version of the SWPP includes program goals and objectives (Section 2.0), the regulatory framework (Section 3.0), specific plan components (Section 4.0), plan implementation and updates (Section 5.0), and stakeholder engagement activities (Section 6.0). The tables, figures, and appendices referenced throughout the plan text are included in later sections of the document.

2.0 PROGRAM GOALS

West Virginia American Water (WVAW) has established a mission and goals for source water protection that aligns with our Company vision of *clean water for life* and our commitment to our customers and the communities we serve.

Mission: We are dedicated to providing reliable, quality drinking water for our customers. We value source water protection as an important part of this process and are committed to be the industry leader in working with regulators and the community on efforts to sustain drinking water sources.

Goals: Our source water protection program goals are public protection, community leadership, resource stewardship, and operational efficiency. Each includes a series of objectives shown below.

PUBLIC PROTECTION

Identify and understand risks to source water
Monitor for potential contaminant impacts
Prepare for and respond to events

RESOURCE STEWARDSHIP

Promote sustainable use & quality of drinking water
Maintain excellent regulatory compliance record
Support environmental programs and activities

COMMUNITY LEADERSHIP

Promote public awareness and education
Engage stakeholders in source water protection
Collaborate to share ideas and practices

OPERATIONAL EFFICIENCY

Develop and implement cost-effective solutions
Manage operational risks related to water supply
Optimize treatment based on source conditions

3.0 REGULATORY FRAMEWORK

The Safe Drinking Water Act (SDWA) is the federal law passed in 1974 to protect public health by regulating public drinking water supplies. The original SDWA focused primarily on treatment to provide safe drinking water at the tap. The law was amended in 1986 and 1996 to include actions to protect drinking water at its sources. The amendments encourage states to establish a Source Water Assessment Program (SWAP) to delineate protection areas for each public water system, inventory potential contaminant sources, and establish susceptibility ratings.

In 1999, the WVBPH published the West Virginia Source Water Assessment and Protection Program, which was endorsed by the United States Environmental Protection Agency (USEPA). Over the next few years, WVBPH staff and contractors completed an assessment for all public water systems in West Virginia. The assessment for the Huntington Water System was completed in June 2003 and is available upon request from the West Virginia Department of Health and Human Resources (WVDHHR).

In 2014, the West Virginia Legislature passed Senate Bill 373, which amended §16-1-9 of the West Virginia Code with specific requirements for public water utilities that draw water from a surface water source or a surface water influenced groundwater source.

The amended law requires public water utilities to complete a SWPP that includes specific components by July 1, 2016, and update the plan at least every three years or when there is a substantial change in the potential sources of significant contamination within the identified zone of critical concern. WVBPH has 180 days from receiving a SWPP to approve, reject or modify the plan and must consult with the local public health officer and conduct at least one public hearing when reviewing the plan.

The Huntington Water System SWPP was submitted to WVBPH on June 29, 2016 and subsequently approved on October 24, 2016. The public SWPP documents are posted on our website at https://amwater.com/wvaw/water-quality/source-water-protection/source-water-protection-plans. This SWPP version is an update to the original plan developed in 2016.

Senate Bill 373 also included a preliminary Aboveground Storage Tank (AST) Act, which was later repealed and amended with the passage of Senate Bill 423 in March 2015. The revised version amended and reenacted §22-30 of the West Virginia Code with requirements for owners and operators of ASTs to register tanks and meet certain design and operation standards.

In the context of source water protection, AST owners and operators are required under §22-30-10 to provide notice ***directly*** to the public water system and to emergency response organizations of the type and quantity of fluid stored in regulated ASTs and the location of the safety data sheets (SDS) associated with the fluids in storage.

West Virginia Code §16-1-9c requires public water utilities to maintain information about the location, characteristics and approximate quantities of potential sources of significant contamination in a confidential manner. Senate Bill 625, which was passed on March 11, 2016 and became effective 90 days later, amends §16-1-9c to clarify that public disclosure of certain information regarding potential sources of

contamination within a zone of critical concern is permitted to the extent it is in the public domain through a federal or state agency.

Table 1 provides the definitions of regulatory terms used throughout this SWPP.

4.0 PLAN COMPONENTS

The SWPP includes various components required by West Virginia Code §16-1-9c. These are presented by topic within this section.

4.1 System Operational Information

The Huntington Water System is a regulated water utility that provides drinking water to the public from a surface water source. Table 2 provides updated information about the system including the population served, water treatment process, production statistics, storage capacities, and source of supply.

WVAW has reviewed production and storage capacity for the Huntington Water System to evaluate the ability to provide drinking water and protect public health. The ability to utilize available storage to mitigate the impacts of a contamination event will vary depending on the actual amount of finished water in storage and system demand at the time an event occurs. Detailed analysis for the Huntington Water System is included in the complete Alternate Supply Source Feasibility Report submitted to WVBPH. Storage calculations have been updated using 2018 information for this SWPP.

Water loss is another factor to consider when evaluating operational conditions because it contributes to the total system demand. Unaccounted for Water (UFW) is defined by the Public Service Commission (PSC) as the volume of water introduced into the distribution system minus the total of all metered usage and reasonably estimated non-metered usage. The target UFW rate identified by the PSC is 15%.

Utilities typically account for known water main breaks by estimating the amount of water lost for annual PSC reports. They are therefore not included in the UFW rate.

Table 3 presents updated water loss calculations for the Huntington Water System in 2018, including the total percentage of UFW as defined by the PSC as well as the combined percentage of UFW and water lost from main leaks. A description of measures that WVAW is actively taking to reduce the level of water loss experienced throughout the system is also included in Table 3.

4.2 Source Water Delineation and Characterization

Delineation is the process used to identify and map the area contributing water to the supply intake. Characterization involves describing conditions in the delineated areas that may impact water quantity and/or quality.

The delineation zones for surface water supplies are defined for regulatory purposes as the zone of critical concern (ZCC) and the zone of peripheral concern (ZPC). The watershed delineation area (WSDA) extends beyond these zones for planning purposes. See Table 1 for detailed definitions.

Figure 1 shows delineation zones for the Huntington Water System based on map data provided by WVBPH. Table 4 summarizes characteristics of the watershed and delineated zones including size, land use, and description of watershed conditions. There were no changes to the delineation zones from the original SWPP submitted in 2016.

4.3 Potential Sources of Significant Contamination

Potential sources of significant contamination (PSSCs) are facilities or activities that have the potential to release materials that could impact a drinking water supply. PSSCs can be identified by various methods such as regulatory data and local assessments.

WVBPH has provided PSSC data, working in cooperation with the West Virginia Department of Environmental Protection (WVDEP) and the Division of Homeland Security and Emergency Management (WVDHSEM), to public water utilities. WVAW has also identified additional PSSCs based on geographic information system (GIS) data, aerial imagery analysis, windshield surveys and local knowledge.

Some sources of data for this information are available to the public via federal and state databases. The USEPA has developed a tool called Drinking Water Mapping Application to Protect Source Waters (DWMAPS) available at https://www.epa.gov/sourcewaterprotection/dwmaps that allows users to select and view federal regulatory data for a given area on a map. WVBPH now has a similar public interface called the Source Water Protection Map Viewer available at https://oehsportal.wvdhhr.org/wvswap/index.html that shows state data for certain regulatory programs such as oil and gas, mining and discharge permits. This map can be searched by name or PWSID for public water systems across West Virginia. However, it does not include any confidential information such as aboveground storage tanks.

Figures 2 and 3 show screen shots of federal (DWMAPS) and state (WVDEP) maps, respectively, for the area around the Huntington Water System. Note that these maps are provided directly as shown on the respective websites and may be subject to change at any time.

The complete PSSC lists for the Huntington Water System include the location, characteristics and/or approximate quantities of contaminants that are not in the public domain and must therefore be maintained in a confidential manner. This information is included in the submittal to WVBPH but is not provided here to maintain confidentiality, as required by law.

Table 5 summarizes PSSCs identified within the ZCC and ZPC based on the WVBPH map data. Table 5 also includes the number of registered ASTs by zone of concern (details are confidential). WVDEP manages the AST program and maintains the regulatory data, which is currently restricted due to its sensitive nature and has not been released to the public. The information included in Table 5 is up-to-date as of the end of 2018.

PSSCs are evaluated and prioritized based on proximity to the intake; size and type of facility or activity; and type of materials that may be present. WVAW referenced various sources of information, including data mentioned above and the assessments provided in WVBPH's Source Water Protection Plan and Supplemental Guides (2016), and sought input from stakeholders as part of this process.

Prioritization is not a formal risk assessment. It is instead intended to guide development and implementation of focused management strategies. Identified priorities are PSSCs that warrant further investigation or action; they may not necessarily correlate directly with risk and may evolve over time as additional information becomes available or conditions change.

Table 6 provides an overview of the types of PSSCs identified as priorities for the Huntington Water System. The names and locations of specific facilities and/or activities identified as priority PSSCs are considered confidential and are provided separately in the submittal to WVBPH.

4.4 Management Strategies

A management plan has been developed to identify specific activities that WVAW intends to pursue, in cooperation with appropriate agencies and emergency response organizations, to understand and mitigate potential impacts of contamination of the source water supply.

The management plan consists of five key strategies: source management, source water monitoring, contingency planning, outreach and education, and providing input on policies and regulations. These strategies include various activities identified to address priority PSSCs and prepare for emergency situations as well as to communicate with customers, regulators, and partner organizations.

Table 7 lists the management strategies and corresponding activities along with a brief description of cost type, responsibility, and schedule for each activity. The schedule is presented by time periods (e.g., monthly, annual, etc.) rather than specific dates because the action items are expected to be completed on an ongoing basis.

As part of this SWPP update, WVAW asked the Horsley Witten Group to review the existing management plan and implementation progress. Table 7 has been updated to include additional management activities and specificity, where applicable, based on their recommendations. Section 5.0 provides additional information about implementation of the management plan.

4.5 Source Water Monitoring

WVAW has evaluated the technical and economic feasibility of implementing a source water monitoring system and submitted a report on these findings to the Joint Committee on Government and Finance in 2014 (WVAW, 2014).

During a USEPA workshop held in August 2014, federal regulators and water industry experts recommended online, multi-panel source water quality monitoring devices located at the intake as an effective option for detecting the presence of a variety of contaminants (USEPA, 2014).

This type of equipment establishes baseline water quality data and then alerts water plant operators to certain changes in water characteristics. These devices are not intended to identify specific contaminants but can alert water systems of a potential change in water quality, spurring further investigative testing.

WVAW has developed a source water monitoring approach that combines online water quality measurement devices at each of its water treatment plant intakes along with centralized internal analytical capability to test for volatile organic compounds and semi-volatile organic compounds on gas chromatograph / mass spectrometer (GC/MS) devices. We have expanded these capabilities and developed a comprehensive Quality Management Plan since the original SWPP was submitted in 2016. The source water monitoring systems provide continuous water quality indicator data and advanced organics analyses to optimize treatment operations and to identify the presence of potential contaminants.

Table 8 provides updated information about our current source monitoring capabilities and support network.

4.6 Communications and Contingency

WVAW has developed a communications plan that documents how we will, in cooperation with appropriate emergency response agencies, notify local health agencies and the public of a spill or contamination event. This includes provisions for initial notification to the public within thirty (30) minutes of WVAW becoming aware that the spill, release or potential contamination of the public water system poses a potential threat to public health and safety.

Table 9 presents an updated summary of communication team roles, methods, and alert levels according to the Tiered Incident / Event Reporting System (TIERS) method. The complete communications plan is included as Appendix B to this plan. Contact details for team members are listed in our Facility Emergency Response Plan.

A contingency plan has also been developed to document the planned response to contamination of the source water supply. It consists of a phased approach that meets State regulatory requirements for public notification and is consistent with National Incident Management System (NIMS) and United States Environmental Protection Agency (USEPA) guidance. The contingency plan is reviewed, updated, and exercised on an annual basis. It was last updated in 2018 and is scheduled for review in 2019.

Table 10 provides an overview of the phases of a potential contamination event and typical considerations for investigating and responding to a threat. We take potential threats very seriously and work with a sense of urgency to investigate and address the situation. It is important to note that specific actions will depend on the circumstances and the severity of an event, and will be determined based on conditions as they occur.

The contingency plan summary in Table 10 also includes an evaluation of current water and power supply capabilities as well as resources for additional support. Certain information is maintained as confidential for security reasons. For example, specific information about intake operations is not detailed here, but was provided to WVBPH as part of the complete Alternate Source of Supply Feasibility Report.

WVAW has established a multi-year training and exercise plan for the Contingency and Communications Plans. The training and exercise plan is reviewed and updated on an annual basis. It includes three key priorities: (1) Educate and engage employees to build awareness of existing plans and procedures; (2) Communicate and manage resources effectively during water emergencies following NIMS and chain of command protocol; and (3) Evaluate plans and incorporate lessons learned from exercises and real

events. Each year, WVAW conducts training and exercises in each operating area in accordance with the plan. After Action Reviews (AARs) are conducted with participants and the lessons learned are incorporated into plans and future exercises.

WVAW's emergency response plan (Emergency Preparedness Manual) for the Huntington Water System also includes specific details about emergency capabilities along with contacts for emergency services, coordination, and supplies. WVBPH has indicated that emergency response plans should be kept confidential and should **not** be submitted with SWPPs. A certification form is provided in Appendix C to confirm that WVAW has an emergency response plan in place that includes this information.

4.7 Alternate Sources of Supply

A feasibility report has been completed to evaluate alternate supply options for WVAW systems in accordance with West Virginia Code §16-1-9c. Table 11 presents an overview of options identified for the Huntington Water System.

Each identified option was evaluated according to a ranking process that considers the comparative costs, risks and benefits of implementation. Results of this analysis are presented in the feasibility report summary included as Appendix D to this plan.

The 2018 total estimated cost to implement the alternatives with the highest benefit and/or benefit-to-cost ratio score for WVAW systems is expected to range from approximately $194M to $226M (million) based on updated engineering cost estimates. The corresponding rate increase, using the current rate structure, would be between 13.2% and 15.4% for all WVAW customers. This represents the combined cost of alternatives for each system due to single tariff pricing that would impact all customers equally.

Ultimately, the feasibility of alternative supply options would be based on WVBPH and PSC approvals of a project sponsored by the company. Preparations for additional feasibility studies, including treatability, are currently underway. The company has not made a final determination at this time to seek such approvals.

5.0 PLAN IMPLEMENTATION

SWPP implementation is an important consideration for the overall effectiveness of the source water protection program. This is an ongoing process that includes completion and documentation of action items; identifying and addressing implementation challenges; and periodically evaluating and updating the plan.

5.1 Implementation Progress

WVAW tracks progress on management activities on a regular basis to document implementation of action items. The documentation is maintained in a tabular format similar to that shown in the management plan (Table 7) to indicate the specific task, date, personnel involved, and notes for follow up actions.

Documentation also includes a chemical list, as identified in the management plan, which includes available information about PSSC materials. This information is currently linked in WaterSuite, a web-based tool that the company uses to manage PSSC data, so that it can be viewed along with a site report for a given location as well as independently by searching for the name of a substance. The WaterSuite database is updated with available data from various sources (e.g., regulatory data, Tier II reports, direct communications, etc.) and includes the material's physical properties, fate and transport, detection methods, treatability, health effects, and toxicity. The location and contact information for reference materials (e.g., SDS, permits, laboratories, sampling protocols, etc.) are linked to each site for additional information.

WVAW considers implementation status based on the documented progress on individual tasks for each activity identified in the management plan using the following indicators: on track (green), requires additional support (yellow), off track (red), or not applicable (gray). We have made substantial progress on each of the management activities and voluntarily reported that progress to WVBPH. A copy of the Source Water Protection Plan Implementation Progress Reports for 2017 (submitted on March 13, 2018) is provided in Appendix E.

5.2 Implementation Challenges

Certain challenges and/or limitations exist that may affect SWPP implementation. The following issues were identified in the latest Source Water Protection Plan Implementation Progress Report submitted to WVBPH in 2018.

- **Aboveground Storage Tank (AST) Notifications**: West Virginia Code §22-30-10 requires AST owners and operators to provide information about tank location and contents directly to water utilities. However, the estimated notification rate is only around 50% for AST owners and operators located upstream from our water systems. We encourage state health and environmental agencies to work together to enforce provisions of §22-30-10 requiring direct notification to water utilities.

- **Access to Updated PSSC Information**: WVAW maintains access to publicly available information through the WVBPH Office of Environmental Health Services portal. The user guide indicates the date that each layer was last updated; however, there does not appear to be a way to query this information for features within the layers. It is therefore difficult to track any changes that occur over time. We recommend building this capability into the tool.

- **PSSC Communications**: Water utilities do not have any regulatory authority to enforce PSSC communication requirements. There is no requirement for PSSC facilities to work with water utilities, aside from the AST notifications required by West Virginia Code §22-30-10. We have had some success in communications, but many others have not responded even after several contact attempts. We intend to continue outreach efforts while recognizing that some facility owners and operators may elect not to communicate with us on a voluntary basis.

Although these represent some of the significant challenges that exist at this time, additional issues may arise as implementation progresses and will be communicated to WVBPH accordingly.

5.3 Plan Evaluation and Updates

In accordance with West Virginia Code §16-1-9c-(f), this SWPP will be updated and submitted to WVBPH at least every three years or when there is a substantial change in the PSSCs within the ZCC. The management plan provided in Table 7 includes annual review of available information regarding PSSCs to identify whether substantial changes have occurred that may warrant a plan update.

WVAW will notify WVBPH and the public when full three-year SWPP updates are underway and provide information for how the public can provide input during the update process.

6.0 STAKEHOLDER ENGAGEMENT

We recognize that stakeholder engagement is an important part of source water protection planning and are committed to informing and engaging the public, local governments, local emergency planners, local health departments and area residents throughout the planning process.

WVBPH guidance includes the concept of a source water protection team, where the role of protection team members is 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 plan. Stakeholders that may be involved in these activities include representatives from local agencies, emergency response organizations, and the public.

6.1 Plan Development

WVAW developed a phased outreach approach to engage various groups during initial plan development. This included hosting a series of meetings to seek input and recommendations for the plans.

In February 2016, we invited public officials and representatives from state and local health agencies and emergency response organizations (e.g., fire, emergency services, LEPC) to participate in a group meeting for the Bluefield Water System. Agenda topics included an overview of SWPP concepts and specific discussion of PSSCs and contingency and communication plan coordination.

WVAW held two public meetings in March 2016 for the Bluefield Water System to provide an open forum for members of the public to review draft components of the plans, ask questions and provide feedback. The public meetings were advertised for several weeks prior to the event through various methods such as bill inserts, news releases, and social media.

Written comments submitted to WVAW through May 2016 were included as an Appendix to the original SWPP with the corresponding responses.

6.2 Plan Updates

WVAW engaged stakeholders in this SWPP update through a similar phased approach used during original plan development. We first reached out to representatives from emergency response organizations

and health agencies to request their input on potential threats. This information was incorporated into the SWPP updates.

The public outreach component consisted of two elements: a series of webinars in April 2019 followed by two public meetings for the Huntington Water System in May 2019. Participants had the opportunity to ask questions and provide feedback online, in person, and in writing throughout the months of April and May.

The Horsley Witten prepared report summarizing the public meetings and webinars, including stakeholder feedback received, is provided in Appendix A. Written comments specific to the Huntingtin Water System that were submitted to WVAW through May 30, 2019 are also provided in Appendix A. Table 12 provides the timing and description of engagement activities conducted to involve stakeholders in plan updates.

We encourage those who have further feedback and/or who would like to support implementation activities to submit their comments and contact information to us directly at any time on our website at www.westvirginiaamwater.com under the Water Quality > Source Water Protection > Source Water Protection Feedback Form menu. Direct link: https://amwater.com/wvaw/water-quality/source-water-protection/source-water-protection-feedback-form. Comments may also be submitted in writing to West Virginia American Water, Attn: Source Water Protection Lead, 1600 Pennsylvania Ave., Charleston, WV 25302.

7.0 REFERENCES

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Tables

Table 1:
Regulatory Definitions

AST	**Aboveground Storage Tank**	***West Virginia Code §22-30-3***

A device made to contain an accumulation of more than 1,320 gallons of fluids that are liquid at standard temperature and pressure, which is constructed primarily of non-earthen materials, including concrete, steel, plastic or fiberglass reinforced plastic, which provide structural support, more than 90% of the capacity of which is above the surface of the ground, and includes all ancillary pipes and dispensing systems up to the first point of isolation. The term includes stationary devices which are permanently affixed, and mobile devices which remain in one location on a continuous basis for 365 or more days.

PSSC	**Potential Source of Significant Contamination**	***West Virginia Code §16-1-2***

A facility or activity that stores, uses or produces substances or compounds with potential for significant contaminating impact if released into the source water of a public water supply.

WSDA	**Watershed Delineation Area**	***WVDHHR Legislative Rule §64-3-14***

The WSDA includes the entire watershed area upstream from a public water utility intake structure, up to the boundary of the state borders, a topographic boundary and is the perimeter of the catchment area that provides water to the water supply intake.

ZCC	**Zone of Critical Concern**	***West Virginia Code §16-1-2, §64-3-14***

A corridor along streams within a watershed that warrants detailed scrutiny due to its proximity to the surface water intake and the intake's susceptibility to potential contaminants within that corridor. The zone of critical concern is determined using a mathematical model that accounts for stream flows, gradient and area topography. The length of the zone of critical concern is based on a 5-hour time of travel of water in the streams to the water intake, plus an additional ¼-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 500 feet measured horizontally from each bank of the tributaries draining into the principal stream.

Exception: Ohio River ZCC delineations are based on ORSANCO guidance and extend 25 miles above the intake and ¼-mile below the intake, with a lateral extent ¼-mile on both sides of the river (WVBPH).

ZPC	**Zone of Peripheral Concern**	***West Virginia Code §22-30-3***

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 zone of peripheral concern 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 5-hour time of travel of water in the streams beyond the perimeter of the zone of critical concern, which creates a protection zone of 10 hours above the water intake. The width of the zone of peripheral concern is 1,000 feet measured horizontally from each bank of the principal stream and 500 feet measured horizontally from each bank of the tributaries draining into the principal stream.

Table 2:
Water System Information

WEST VIRGINIA AMERICAN WATER

System Name	Huntington Water System	**PWSID**	WV3300608
Address	Two 24th Street, Huntington, WV 25703	**County**	Cabell
Service Connections	35,673 residential	**Phone**	304-525-8193
Population Served Directly	83,475 (estimated)	**Type**	Community
Total Population Served	101,757 (estimated)		

	System Name	**PWSID**	**Population**
Bulk Water Purchasers	Lavalette PSD	WV3305006/WV3305012/ WV3305011	8,871 (estimated)
	Chesapeake Aqua Ohio	OH4400803	9,411 (estimated)

Note: The population served directly is calculated based on the number of residential service connections multiplied by the average number of persons per household in the county served as provided by WVBPH. The total population served includes the populations of bulk water purchaser systems as reported in SDWIS (February 2019).

Water Treatment Process	The Huntington plant has a rated treatment capacity of 24 million gallons per day (MGD) and includes the following processes (in order): sand removal, coagulation, flocculation, sedimentation, filtration, chlorination, corrosion control and fluoridation – with capability to add potassium permanganate and powdered activated carbon.

Avg Hours Operation	24 hours (2018)	**Avg Quantity Produced**	10.1 MGD (2018)
Min Hours Operation	24 hours (2018)	**Min Quantity Produced**	8.4 MGD (2018)
Max Hours Operation	24 hours (2018)	**Max Quantity Produced**	15.9 MGD (2018)
Number of Storage Tanks	20	**Raw Water Storage**	0
Treated Water Storage	11.7 million gallons (excluding clearwell)		
Capacity for 5-Yr Demand	The plant has sufficient production capacity to meet demand over the next five years based on population projections, but there is no guarantee of an uninterrupted supply.		

** Refers to the amount of water pumped through the high service pumps*

Intake ID	Intake Name	Intake Description	Water Source	Date Constructed	Frequency of Use	Activity Status
IN001	24th Street	Two screened intake pipes	Ohio River	1987 / 2000	Primary	Active
IN002	40th Street (Guyandotte)	Two screened intake pipes	Ohio River	1923	Occasional	Active

Table 3:
Water Loss Information

Total Water Pumped (gal)		3,653,149,000
Total Water Purchased (gal)		0
Total Water Pumped and Purchased (gal)		3,653,149,000
Water Loss Accounted for Except Main Leaks	**Operational Use (gal)**	79,389,000
	Fire Department (gal)	6,034,000
Total Water Loss Accounted for Except Main Leaks (gal)		85,423,000
Water Lost from Main Leaks (gal)		221,662,000
Total Amount of Water Sold (gal)		2,908,704,000
Total Unaccounted for Water (gal)		437,360,000
Total % Unaccounted for Water (%)		12.0%
Total Unaccounted for Water + Water Lost from Main Leaks (gal)		659,022,000
Total % Unaccounted for Water + Water Lost from Main Leaks (%)		18.0%

Note: The values provided above for this system were included in the 2018 totals reported to the PSC. The PSC defines unaccounted for water as the volume of water introduced into the distribution system minus the total of all metered usage and reasonably estimated non-metered usage. Unaccounted for water and known water main leaks are reported separately to the PSC in annual reports.

Measures to Reduce Water Loss

West Virginia American Water expends significant effort and resources to identify and correct issues leading to water loss. Our strategy focuses on leak prevention, pressure management, leak detection, metering programs, district metering zones, accounting for un-metered usages, and pipeline management. A standardized action plan and tracking mechanisms have been implemented to evaluate progress across all operational districts in the company. Each district utilizes a non-revenue water (NRW) activity report which tracks progress of practices and non-revenue usages. The following practices are generally implemented and tracked:

- Leak survey – manual and logger
- AMI and automatic leak detection
- Crossings/rights-of-way checked for leakage
- Pressure management for surge control
- Industrial site audits
- Customer large meter testing
- Efforts to reduce unauthorized water use and theft
- Replacement of leaking services
- Replacement of regulatory periodic meter changes
- System delivery meter testing/monitoring
- Retirement of parallel mains and service changeovers
- District metered area (DMA) to pinpoint water loss

In 2018, the unaccounted for water rate for the Huntington Water System was 12%. The target unaccounted for water rate is 15% as identified by the Public Service Commission.

Table 4:
Watershed Delineations

Watershed Name (8-digit HUC)	Lower Ohio (5090101)
Number of Source Water Protection Area(s)	2
Method of Delineation for Groundwater Sources	Not applicable; system only has surface water source(s)
Area of Wellhead Protection Area	Not applicable
Assessment and SWPP Dates	2002 & 2016

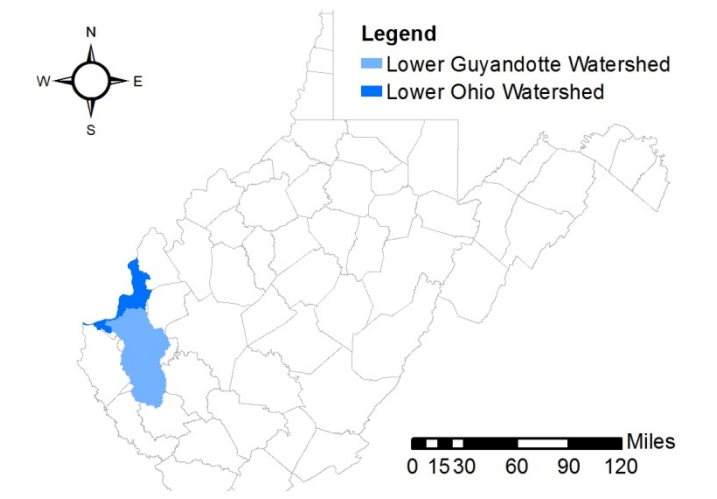
Intake	Size of ZCC	Size of ZPC	Size of WSDA
24th Street	66,795 acres (104 sq mi)	215,017 acres (336 sq mi)	55,499 sq mi
40th Street	34,991 acres (54.7 sq mi)	105,822 acres (165 sq mi)	53,741 sq mi

ZCC – Zone of Critical Concern; ZPC – Zone of Peripheral Concern; WSDA – Watershed Delineation Area

Watershed Description (HUC-8)

The Lower Ohio River Watershed extends from Wayne County in the southwest to Mason County in the northeast. The watershed has 546 miles of streams and rivers and contains the Ohio River mainstem, which flows southwesterly along the West Virginia-Ohio border from the confluence of the Kanawha River and Ohio River to the town of Kenova in Wayne County. The major tributaries include Crab Creek, Flatfoot Creek, Sixteenmile Creek, Eighteenmile Creek, Guyan Creek, Guyandotte River, Fourpole Creek and Twelvepole Creek,

Excerpt from West Virginia Watersheds: A Closer Look, WVDEP Water Use Section, November 2013



Land Use	ZCC	ZPC	WSDA
Barren Land	0.1%	0.1%	0.5%
Developed Land	16.5%	12.8%	9.6%
Forest / Shrub / Grass	59.5%	66.9%	68.3%
Pasture / Hay / Crops	16.6%	16.5%	19.7%
Wetlands	0.4%	0.2%	0.8%
Water	6.9%	3.5%	1.1%

Note: Land use calculated based on analysis of the latest available National Land Cover Dataset (Homer et al, 2015).

Table 5:
PSSC Inventory

WEST VIRGINIA AMERICAN WATER

Potential Sources of Significant Contamination (PSSC)

State regulations require water utilities to maintain specific details about PSSCs in a confidential manner, including the location, characteristics, and approximate quantities of contaminants within the zone of concern. We have received PSSC information from the West Virginia Bureau for Public Health (WVBPH) and Department of Environmental Protection (WVDEP) and have performed additional work to gather information about PSSCs upstream of the water supply.

The following summarizes the types of PSSCs identified in the Zone of Critical Concern (ZCC) and Zone of Peripheral Concern (ZPC) for this water system. Note that this does not necessarily represent the number of individual facilities, as a single location or facility may contain more than one type of PSSC.

Source Water Assessment Program and Regulated Data Provided by WVBPH

PSSC Type: State	ZCC	ZPC
Abandoned Mine Lands	1	17
Abandoned Mine Land High Wall	1	1
Abandoned Mine Land Problem Area	1	14
Abandoned Mine Land Shape	3	7
Horizontal Well Lateral	1	1
Leaking Underground Storage Tank	6	11
National Pollutant Discharge Elimination System (NPDES) Permit	804	1520
National Pollutant Discharge Elimination System Permit Outlet	186	302
Oil and Gas Wells	219	1128
Source Water Protection/Assessment PSSC Sites	265	342
Voluntary Remediation	3	6
PSSC Type: Federal	**ZCC**	**ZPC**
Toxic Substances Control Act	1	3
Toxic Release Inventory	3	5
Resource Conservation Recovery Act (RCRA)	84	152
National Pollutant Discharge Elimination System	187	304
All USEPA Federal Registry Service	286	493

Table 5:
PSSC Inventory

PSSC Type: State	ZCC	ZPC
Ohio Potential Contaminant Source Inventory Site Visit	40	39
Ohio Historic Hazardous Waste Site	1	2
Ohio Approved Bio-solid Application	0	21

Aboveground Storage Tanks (ASTs)

West Virginia Code §22-30 requires owners and operators of Aboveground Storage Tanks (ASTs) capable of storing more than 1,320 gallons, with certain exclusions, to register tanks and provide information about their contents to public water utilities and the Department of Environmental Protection. The following is the total number of ASTs registered through December 2018

Description	ZCC	ZPC
Total number of registered ASTs	63	123

Table 6:
Priority PSSCs

The following summarizes the types of PSSCs identified as priorities based on proximity to the intake; size and type of facility or activity; and type of materials that may be present. Priority PSSCs warrant further investigation or action; they do not necessarily indicate a specific level of risk.

Priority PSSC Type	Description and Considerations *(in alphabetical order)*
Agriculture	• Significant agricultural land use exists throughout the Ohio River valley • Few environmental permitting requirements typically apply to agricultural land use • Pesticides and other materials associated with agricultural land use could impact the source water directly if a release occurs and/or increase nutrient loading that contributes to the occurrence of algal blooms and associated quality issues
Commercial Facilities	• Includes service and supply companies with known or suspected potentially hazardous materials • Regulatory permits may include hazardous waste management (RCRA) and/or stormwater discharges (NPDES) • Commercial facilities may use and store substances such as petroleum hydrocarbons, volatile organic compounds, and other materials that could impact source water if a release occurs
Industrial Facilities	• Includes large manufacturing and distribution operations with known or suspected potentially hazardous materials • Regulatory permits may include hazardous waste management (RCRA) and/or wastewater discharges (NPDES) • Industrial facilities may manufacture, use, and store substances such as petroleum hydrocarbons, volatile organic compounds, synthetic organic compounds, heavy metals and other materials that could impact source water if a release occurs
Municipal / Military Facilities	• Includes a former federal munitions area and state and local facilities with fueling and/or deicing operations • Regulatory permits may include wastewater and/or stormwater discharges (NPDES) • Some municipal facilities may use and store substances such as petroleum hydrocarbons and deicing compounds that could impact source water if a release occurs
Oil & Gas Development	• Includes wells and/or fluid storage and transport associated with oil and gas development • Regulatory permits required for well drilling and operation and/or wastewater discharges (NPDES/UIC) • Oil & gas operations may include multiple locations with storage and transport of substances such as crude oil, brine mixtures, and other fluids that could impact source water if a release occurs

Table 6:
Priority PSSCs

Priority PSSC Type	Description and Considerations *(in alphabetical order)*
Power Plants	• Includes power generating facilities along the Ohio River and Kanawha River • Regulatory permits typically include air quality (Title V) and/or wastewater discharges (NPDES) • Power plants may use, store, and discharge substances such as heavy metals, bromides, nutrients, and other materials that could impact source water over time and/or if a significant release occurs
Recreation	• Includes several marinas and recreational activities along the Ohio River • Regulatory permits may include wastewater and/or stormwater discharges (NPDES) for commercial recreation facilities • Spills from recreational activities and/or fuel releases from marinas and boats could potentially impact source water
Transportation	• Includes roads, railroads, pipelines, and barge traffic throughout the area • Various potentially hazardous materials may be transported through the area at any given time • Potential for a spill due to a transportation accident exists and is difficult to predict timing or location

Note: We considered municipal wastewater discharges in prioritizing PSSCs and found that these systems do not generally pose a significant threat because water treatment plants are designed to effectively treat normal municipal wastewater.

Table 7:
Management Plan

The following tables identify specific management activities to pursue, in cooperation with appropriate agencies and emergency response organizations, to mitigate potential impacts of contamination of the source water supply. Action items will be documented and tracked on an ongoing basis.

PSSC Type	Management Activity	Cost Type	Responsibility	Schedule	Comments
Source Management					
Priority PSSCs	Communicate with identified PSSC facilities to understand their operations, materials used, and potential impacts to water system	O&M	Plant Team / SWP Lead	Annual	Prioritized based on proximity to intake, size, and type of materials
	Compile list of chemicals and identify sources of information for detection and treatment as well as information gaps and/or concerns	O&M	Plant Team / SWP Lead	Phased	Potential limitations based on data availability addressed in following action item
	Communicate any significant gaps and/or concerns identified with regulators	O&M	WQ/SWP Manager / SWP Lead	As Needed	Subsequent actions, if appropriate, to be identified and coordinated by regulators
	Continue to document communication methods and lessons learned	O&M	Plant Team / SWP Lead	Ongoing	
Company-Owned ASTs	Continue responsible management of treatment chemicals in internal operations	O&M	Plant Team	Ongoing	
Transportation	Request and review updated information about materials transported through area	O&M	Plant Team / SWP Lead	Annual	
Various	Perform annual review of available info and update priority list as appropriate	O&M	Plant Team / SWP Lead	Annual	

Table 7:
Management Plan

PSSC Type	Management Activity	Cost Type	Responsibility	Schedule	Comments
Source Water Monitoring					
Various	Continue process monitoring to identify changes in treatment characteristics	O&M	Plant Team	Daily	
Various	Continue source water quality indicator monitoring to identify significant changes	O&M	Plant Team	Daily	
Various	Implement event detection system to monitor changes in source water quality	O&M	Plant Team	Ongoing	
Bromide	Continue monthly bromide sampling and evaluate trends over time	O&M	Plant Team	Monthly	
HABs (Algae)	Maintain centralized capability to perform analyses for harmful algal bloom toxins	O&M	WQ Manager / SWP Lead	Ongoing	
Organics	Maintain centralized capability to perform advanced organics analyses	O&M	WQ Manager / SWP Lead	Ongoing	
Various	Partner with existing watershed monitoring networks to understand conditions	O&M	WQ Manager / SWP Lead	Ongoing	ORSANCO
Various	Continue to partner with local, state, multi-state, and federal agencies to obtain spill notification alerts	O&M	Plant Team / Management	Ongoing	
Various	Review laboratory capability support options	O&M	WQ Manager / SWP Lead	Annual	

Table 7:
Management Plan

PSSC Type	Management Activity	Cost Type	Responsibility	Schedule	Comments
Contingency Planning					
Various	Review and update contact information in emergency response plan	O&M	Plant Team / Management	Annual	
Various	Review and update multi-year training and exercise plan	O&M	Plant Team / Management	Annual	
Various	Conduct review and/or training exercise of emergency response procedures	O&M	Plant Team / Management	Annual	
Various	Maintain relationship with local emergency responders and/or LEPC	O&M	Plant Team / Management	Ongoing	

Table 7:
Management Plan

Management Activity	Cost Type	Responsibility	Schedule	Comments
Outreach and Education				
Include information about source water protection program in annual Consumer Confidence Report (CCR)	Included in annual budget	WQ Manager / SWP Lead	Annual	
Develop and distribute educational materials to customers on source water protection practices	O&M	External Affairs / SWP Lead	Ongoing	Print, website, social media
Continue to improve messaging around source water protection concepts	O&M	External Affairs / SWP Lead	Ongoing	"Drinking water supply"
Communicate contact information and good practices with upstream facilities with PSSCs	O&M	External Affairs / SWP Lead	Phased	Prioritized as described under source management
Provide ongoing mechanism for customer input on source water protection program activities	O&M	External Affairs / SWP Lead	Ongoing	
Continue to offer plant tours and/or open house events for local emergency responders, agencies, and the public	O&M	Plant Team / External Affairs	Ongoing	
Coordinate with educators to include source water and watershed management concepts in school curricula	O&M	External Affairs	Ongoing	
Continue outreach directed specifically to recreational and environmental groups	O&M	External Affairs / SWP Lead	Ongoing	
Encourage employees to participate in local activities and highlight the importance of clean water	O&M	External Affairs	Ongoing	

Table 7:
Management Plan

Management Activity	Cost Type	Responsibility	Schedule	Comments
Outreach and Education (cont.)				
Establish source water collaborative to share ideas and practices with other water utilities and industry	O&M	Management Team	Ongoing	
Support watershed organizations through grants, awards and participation in community outreach events	O&M / Grants	Management Team	Ongoing	

Management Activity	Cost Type	Responsibility	Schedule	Comments
Input on Policies / Regulations				
Review and provide feedback on applicable permits and proposed regulations of interest or concern	O&M	WQ/SWP Manager / SWP Lead	Ongoing	
Support state and local measures for policies and regulations that balance watershed management with economic growth	O&M	Management Team	Ongoing	
Provide input to the Public Water System Supply Study Commission as appropriate	O&M	Management Team	Ongoing	

Note: Operation and maintenance (O&M) costs to perform these activities are included in customer rates; SWP – Source Water Protection; WQ – Water Quality.

Table 8:
Source Water Monitoring

The following provides information related to the source water monitoring program that is currently implemented at our water treatment facilities.

Source Water Monitoring Program Overview

- Continuous raw water quality monitoring with online, multi-parameter devices
- Availability of gas chromatograph/mass spectrometer (GC/MS) and gas chromatograph/flame ionization detector (GC/FID) for volatiles, semi-volatiles, and diesel/oil range organics

Online Monitoring Equipment Installed

- Selected based on reliability, location, purchase price, operation and maintenance
- Measures seven (7) parameters: pH, temperature, conductivity, oxidation-reduction potential (ORP), turbidity, dissolved oxygen (DO), and dissolved organic carbon (DOC) via the UV254 method

Online Monitoring Data Management and Analysis

- Data stored locally on data recorder and transmitted real-time to cloud system for backup and analysis
- Baseline period accomplished to understand seasonal variations in water quality parameters
- Fully implementing advanced event detection system capable of identifying statistical changes in water characteristics from baseline water quality

Process to Determine Credibility of Contamination Event

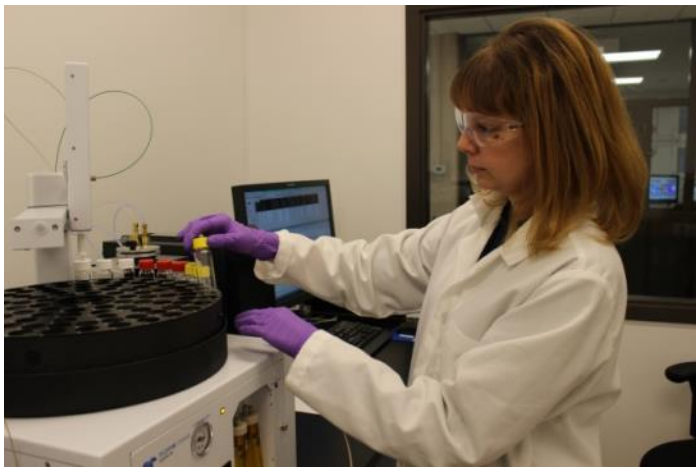
- Review data in context of conditions (e.g., equipment calibration and maintenance, weather, stream flow, etc.)
- Evaluate other information sources for signs of contamination (e.g., spill notifications, complaints, etc.)
- See Contingency Plan for additional details related to investigating and confirming contamination events

Internal Laboratory Analytical Capabilities

- Two GC/MS units at Kanawha Valley Treatment Plant to test for volatile and semi-volatile organic compounds
- GC/FID at Kanawha Valley Treatment Plant to test for diesel/oil range organics
- GC/MS unit at Huntington Treatment Plant integrated into ORSANCO network for volatile organics analyses
- Online process GC with near real-time monitoring for volatile organic compounds at Kanawha Valley and Huntington Treatment Plants. Kanawha Valley Treatment Plant utilizing alerts and integrated into ORSANCO network
- Ion chromatography unit capable of detecting both positively and negatively charged ions at Huntington Treatment Plant
- Fully automated assay system at Huntington Treatment Plant for cyanotoxins. Cyanotoxin strips, readers and emergency response kits at all WVAW water treatment plants

Monitoring System Component	Capital Investment	Est. Annual O&M
Online Monitoring Equipment (per facility)	$52,500	$6,700
Laboratory Equipment (at central location)	$400,000	$116,700
Laboratory Equipment Updates 2016-2018 (at Central and Western locations)	$616,000	$156,200

Table 8:
Source Water Monitoring



Technician operating GC/MS equipment at the Kanawha Valley Treatment Plant

Standard configuration for online monitoring equipment instrument bench at our facilities

Laboratory Support	• American Water Central Laboratory • Pace Analytical Services (formerly REIC) • Reliance Laboratories • Eurofins Eaton Analytical
Spill Notifications	• Direct contact from agency representatives and/or emergency responders • WVDEP spill notifications (via WVBPH District Office) • Upstream public water systems and/or facilities
Monitoring / Support Networks	• ORSANCO • WVRAIN • Other West Virginia American Water facilities

Note: Contact information for support resources is maintained in the emergency response plan.

Table 9:
Communications Plan Summary

TIERS - Tiered Incident / Event Reporting System (WVDHHR)		
A	Announcement	Announcement about an incident or event that may pose a threat to the public
B	Boil Water Advisory	System users advised to boil water for drinking or cooking
C	Cannot Drink	System users should not drink or cook with water until further notice
D	Do Not Use	Water should only be used for flushing commodes and fire protection
E	Emergency	Water should not be used for any purpose until further notice

Initial notification will be issued within 30 minutes of determination that a potential threat to public health and safety exists.

Role	Organization	Title
Designated Spokesperson	West Virginia American Water	External Affairs Manager
Supporting Team Member	West Virginia American Water	Area Operations Manager
Supporting Team Member	West Virginia American Water	External Affairs Specialist
Regulatory Health Agency	WVBPH - State	Office of Environmental Health Services Director
Regulatory Health Agency	WVBPH - District	Supervising Engineer

Note: Additional partner agency contact details are listed in the emergency response plan.

Designated location to disseminate information to media	• Primary: WVAW Corporate Office, Charleston, WV • Alternate: To be determined based on situation
Potential methods of contacting affected customers (based on situation)	• Emergency customer notification system (phone, email, text) • Local media (press release, press conference, updates) • County emergency alert system where available • Website and social media (Facebook, Twitter, Instagram) • Door-to-door/door hangers • Publicly posted notices
Media and other external contacts	• Company email list for media, public officials, emergency response, health department and other key contacts: WVAW – Kanawha Valley Updates – External • The Media Center (satellite news services)
Staff responsible for maintaining confidential contaminant information & releasing to emergency responders	• Primary: Source Water Protection State Lead Erica Pauken, erica.pauken@amwater.com • Alternate: Water Quality and Environmental Compliance Manager Billie Suder, billie.suder@amwater.com • Alternate: Source Water Protection Program Manager Jennifer Heymann, jennifer.heymann@amwater.com

Table 9:
Communications Plan Summary

Supplemental Contact Information

Bulk Water Purchasers

System Name	PWSID	Phone
Lavalette PSD	WV3305006	304-525-3771
Chesapeake Aqua Ohio	OH4400803	877-987-2782

Downstream Water System – None in West Virginia

System Name	PWSID	Phone
Ashland Kentucky Water System	KY0100011	606-327-2058

EED District Office

Office	Contact	Phone
St. Albans District Office	J. D. Douglas	304-722-0611

Table 10:
Contingency Plan Summary

We have developed a phased approach to respond to contamination of the surface water supply source for each of our water systems that meets the State regulatory requirements for public notification and is consistent with National Incident Management System (NIMS) and United States Environmental Protection Agency (USEPA) guidance.

The following provides an overview of the event response phases and various considerations that may be incorporated into the response. However, specific actions will depend on the circumstances and the severity of the event, and will be determined based on conditions as they occur.

Note: Additional information related to communication during an event is presented in the Communications Plan.

Initial Notification	• Company receives information about a potential contamination threat
Possible Phase	• Conduct initial investigation to evaluate threat and whether it poses a risk to public • Consider plans for operational response and communications
Credible Phase	• Communicate with appropriate agencies and notify the public within 30 minutes of determination that a threat to public health and safety exists • Continue investigation to characterize and confirm threat • Consider operational response • Determine whether threat can be confirmed through sampling or other evidence • Communicate updates to appropriate agencies and the public
Confirmed Phase	• Implement operational actions and support remedial actions to mitigate impacts • Consider resource needs and availability and seek support if appropriate • Determine whether threat continues to pose a risk to the public • Communicate updates to appropriate agencies and the public
Return to Normal	• Threat has been reduced or eliminated; return system to normal operations • Continue to monitor situation and modify course if appropriate • Communicate updates to appropriate agencies and the public

Typical Threat Investigation and Operational Response Considerations	
• Location of incident • Type and quantity of material(s) involved • Potential for the material(s) to move or migrate • Stream flow and weather conditions • Level of potential risk to public health and safety • Verification of threat from other information sources • Sampling and laboratory analysis results	• Current and predicted system conditions (e.g., demand, available storage, flow, etc.) • Contamination isolation or diversion • Treatment chemical or process adjustments • Alternative power and water supply options • Staff availability and scheduling • Resource availability and scheduling

Table 10:
Contingency Plan Summary

The following describes existing capabilities and support arrangements to consider in the case of a contamination event with potential impacts to the water supply. Certain details and contacts are considered confidential for security reasons and are addressed elsewhere, as indicated.

Water Supply
• Intakes located at different locations and depths along the Ohio River (upstream/downstream of Guyandotte River) • Potential to set up a temporary intake on the Guyandotte River (depends on situation and resource availability) • Total finished water storage capacity is approximately 11.7 million gallons (MG) • Average and maximum daily system demands in 2018 were 10.1 and 15.9 million gallons per day (MGD) • The ability to utilize storage to mitigate impacts of a contamination event will vary depending on the actual amount of finished water in storage and system demand at the time an event occurs The following information is provided to summarize intake capabilities. Additional details related to operations are included in the Alternate Source of Supply Feasibility Report. • Ability to isolate or divert contaminated waters from the surface water intake: Partial • Ability to close the intake in response to a contamination event: Typically yes. The amount of time that it can remain closed depends on system conditions. • Ability to switch to an alternative source: None readily available
Power Supply
• Dual substation power feeds from AEP • Mobile generators ranging from 30 to 300 kW are available to supply power to major booster stations • Maintenance is performed according to manufacturer recommendations by local personnel and approved vendors • Standby generators are automatically tested on a routine basis The following information is included in emergency response plans: • Specific generator capabilities, connections, and on-hand fuel storage • Local generator and fuel suppliers

Mutual Aid Agreements	• WVWARN • ORSANCO
Additional Support	• American Water Works Service Company and other affiliated companies

Table 11:
Alternative Sources of Supply

The following table provides an overview of alternative supply options specific to this water system. A feasibility report was prepared to evaluate each option based on comparative costs, risks and benefits of implementation. Estimated capital costs were updated to reflect 2018 pricing. Results of this analysis are included in the summary presented in Appendix D.

The 2018 total estimated cost to implement the alternatives with the highest benefit and/or benefit-to-cost ratio for all West Virginia American Water systems combined ranges from approximately $194 to $226 million (M) based on assumptions identified in preliminary engineering studies. Ultimately, the feasibility of alternative supply options would be based on WVBPH and PSC approvals of a project sponsored by the company. Preparations for additional feasibility studies, including treatability, are currently underway. The company has not made a final determination at this time to seek such approvals.

Type	Description	Est. Capital Cost	Considerations
Secondary Intake	Guyandotte River – New intake	$35.0M	• Assumes suitable water quality for treatment process • Potential influence of Ohio River on tributaries • Requires available property for new facilities and/or approval to use existing industrial intake • Requires permitting and approvals • Construction and traffic control required • Partial to fully redundant supply depending on option
	Guyandotte River – Industrial	$10.4M	
	Big Sandy River	$153.1M	
Raw Water Storage	120 MG reservoir – 5-day storage at plant capacity	$131.9M	• Requires available property for reservoir • Requires permitting and approvals for dam construction that may be difficult and time consuming to obtain • Potential safety / environmental risks associated with dam • Limited supply capacity
Interconnections	Kanawha Valley System	$324.8M	• Sufficient water may not be available to meet Huntington demands if one or both systems operating at maximum daily demand
Other (Groundwater)	Under Investigation	TBD	• More than 50 wells to meet demand • Variable groundwater quality / yield

Table 12:
Stakeholder Engagement

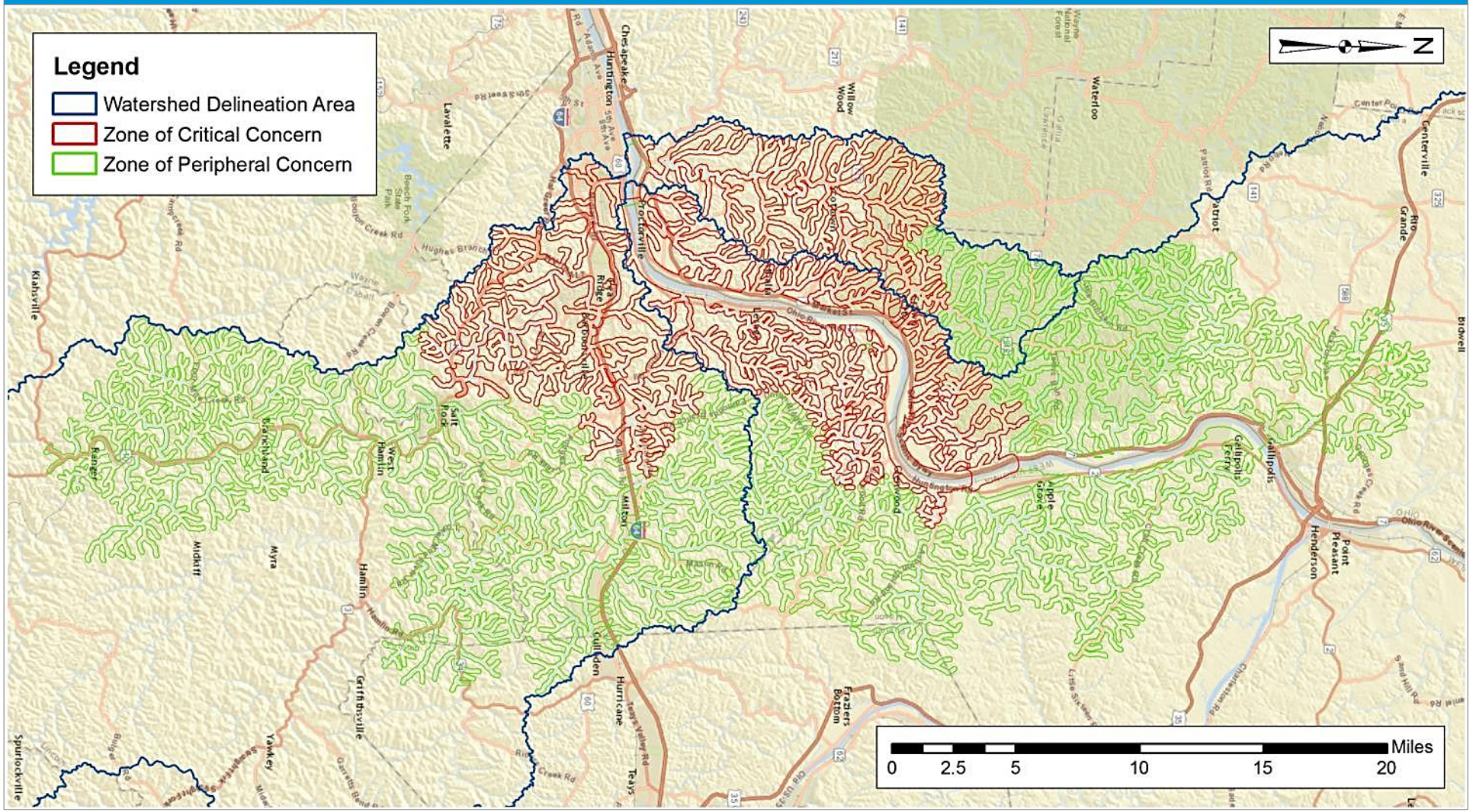
The following table lists stakeholder engagement activities relative to the 2019 Source Water Protection Plan updates for all West Virginia American Water systems.

Type	Date	Description of Stakeholder Engagement Activity
Public Input Opportunity	September 2018	Hosted *Clean Streams*, a hazardous waste collection event, to reduce nonpoint source pollution and provided the public an avenue to comment on the Kanawha Valley system SWPP and PSSC list
Targeted Outreach	February 2019-May 2019	Engaged local officials, emergency planners, health departments, and other agency / organization representatives for input on SWPPs and PSSC lists
Bill Insert & Image	April-May 2019	Included information in/on monthly customer bills about how to get involved in the update process and provide input on source water protection by online form, webinar, in person at meetings or in writing
Website Update	April 2019	Updated the section *Water Quality > Source Water Protection* informing stakeholders how they can get involved through the online feedback form, webinars, in person meetings, or in writing
Webinars	April 2019	Added online webinar meetings to provide convenient options for stakeholders to review SWPPs and provide input
Public Meetings	May 2019	Hosted facilitated meetings open to the public to provide feedback on updated source water protection plan drafts with a comment period to extend through May 30, 2019
Social Media	Various / Ongoing	Education and outreach related to source water protection activities and opportunities for community involvement posted via West Virginia American Water Facebook, Instagram and Twitter accounts

Figures

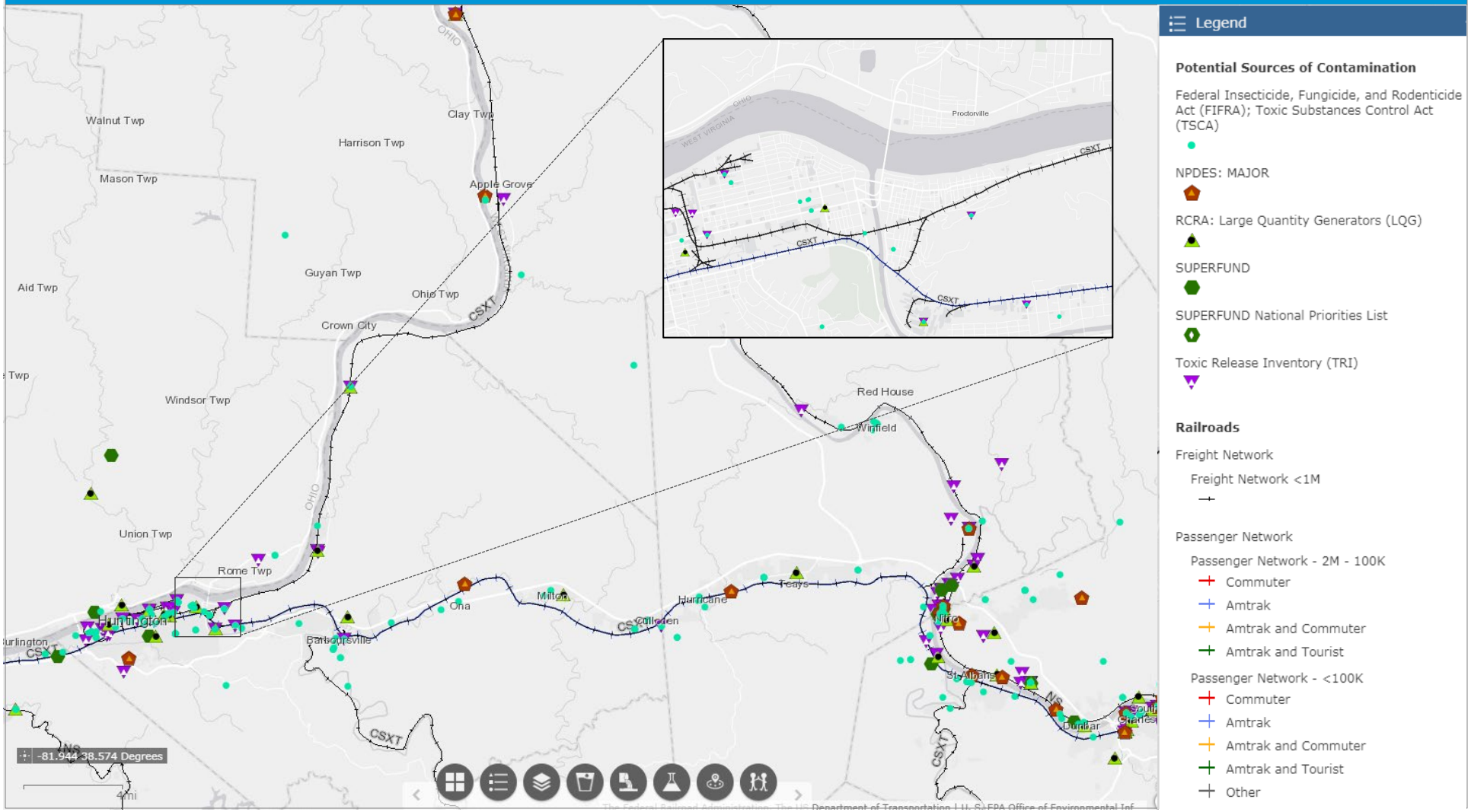
Figure 1:
Mapped Delineation Zones

WEST VIRGINIA
AMERICAN WATER



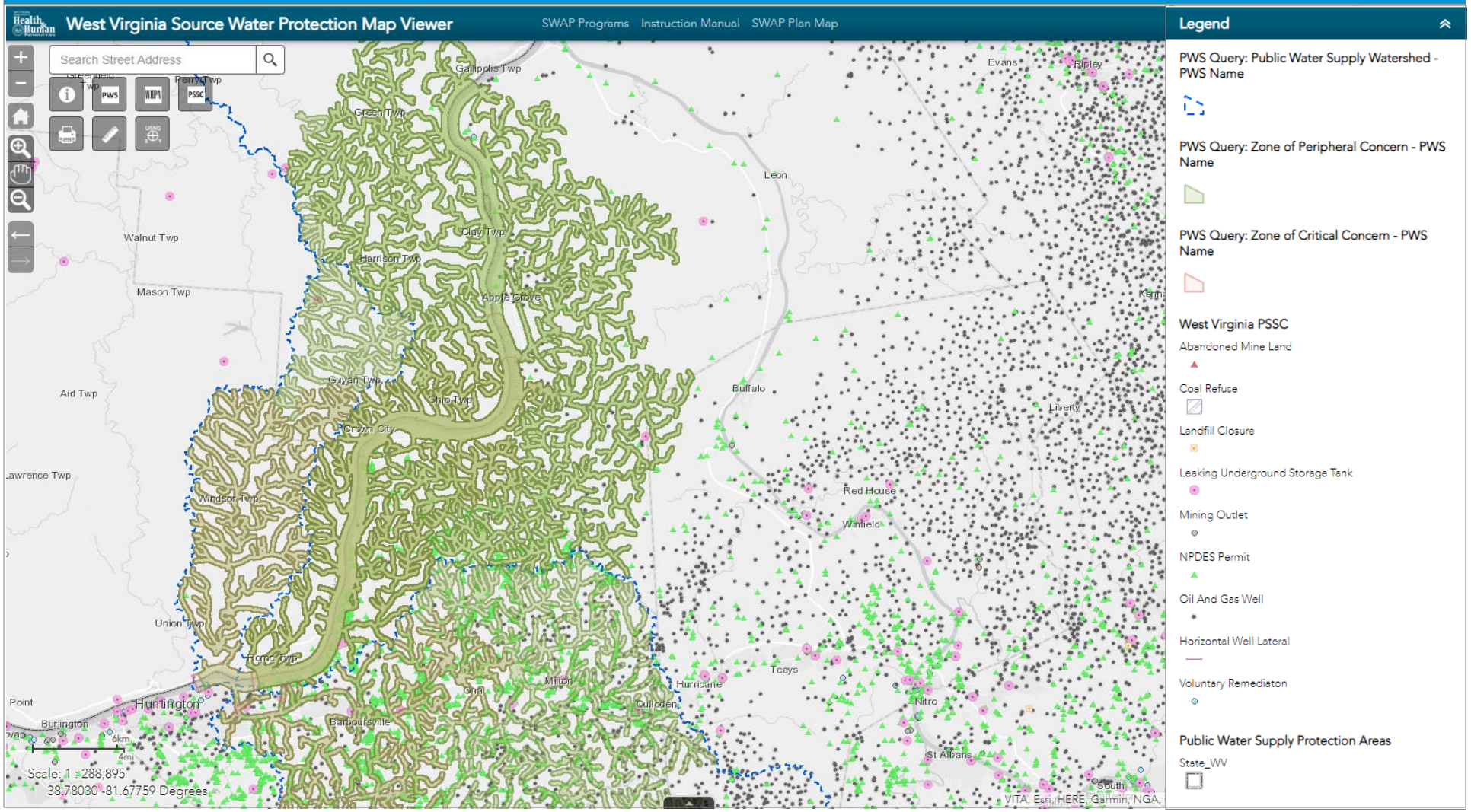
Basemap Source: Esri World Street Map. Delineation zones were provided by WVBPH.

Figure 2:
Federal PSSC Data (DWMAPS)



Source: Screen shot accessed from https://geopub.epa.gov/DWWidgetApp/ on March 14, 2019.

Figure 3:
State PSSC Data (WVBPH)



Source: Screen shot accessed from https://oehsportal.wvdhhr.org/wvswap/index.html on March 14, 2019.

Appendices

Appendix A

Stakeholder Engagement & Feedback

West Virginia American Water
Updated 2019 Source Water Protection Plans
Public Engagement Activities

Summary

As part of West Virginia American Water's (WVAW) continuing efforts to engage the public on source water protection concepts and management activities, two sets of public engagement activities were conducted. The purpose of these engagement activities was to share information about the updated 2019 Draft Source Water Protection Plans ("SWPPs" or "Plans") and obtain feedback from the public on suggested changes or potential sources of contamination. The Draft SWPPs were made available to the public on WVAW's website in early-April 2019. Updates to the SWPPs meet requirements set forth in West Virginia Senate Bill 373. WVAW plans to submit the plans in June 2019.

Four webinars were held on April 23 and 24, 2019 during the afternoons and evenings, respectively (see Section 1). In May 2019, WVAW held eight in-person public meetings to discuss the updated SWPPs for each of the eight WVAW systems. The meetings were advertised by WVAW using customer bill inserts, social media (i.e., Facebook and Twitter), press releases, news media announcements (e.g., Metro News) and targeted stakeholder email invitations. Public meeting attendance was minimal despite outreach efforts to encourage public participation (see Section 2).

Suggested changes to the SWPPs based on verbal feedback from participants are below. Attendance numbers and questions and answers for each session are also included below.

Section 1 – Webinars

Tuesday, April 23, 12:00 – 1:00 pm Webinar

No participants joined the webinar.

Tuesday, April 23, 6:00 – 7:00 pm Webinar
Total Participants: 1

Participant joined the webinar by phone only

No poll questions were answered

No questions were asked during the question & answer session

Wednesday, April 24, 12:00 – 1:00 pm Webinar
Total Participants: 4

2 participants joined the webinar by phone only

Participants that joined the webinar virtually:

- Justin Hannah, justin.hannah1@yahoo.com
- Paul McDanald, pmcdanald@huntingtonsb.com
- Billie Suder, billiesuder@amwater.com

Poll 1

1. Where do you get your drinking water?

A. Bluefield	0/6 (0%)
B. Bluestone	0/6 (0%)
C. Gassaway	0/6 (0%)
D. Huntington	1/6 (17%)
E. Kanawha Valley	1/6 (17%)
F. New River	0/6 (0%)
G. Webster Springs	0/6 (0%)
H. Weston	0/6 (0%)
No Answer	4/6 (67%)

Poll 2

2. How did you find out about today's webinar?

A. Social Media (Facebook, Twitter)	2/6 (33%)
B. Bill Insert	0/6 (0%)
C. From a Friend	0/6 (0%)
D. Newspaper	0/6 (0%)
E. Other	0/6 (0%)
No Answer	4/6 (67%)

Poll 3

3. What component of the source water protection plan is most important to you?

A. Operational Information	0/8 (0%)
B. Potential Sources of Contamination	2/8 (25%)
C. Contingency/Communications Plan	1/8 (13%)
D. Management Initiatives	0/8 (0%)
E. Alternative Source Analysis	0/8 (0%)
No Answer	5/8 (63%)

Q&A

Paul McDanald: As natural gas becomes less expensive per BTU than coal do you expect to see any impact on source water quality?

Response:
So Paul, what I think what you're getting at here is any impact associated with pollution that could be related to increased production of natural gas, and if I'm wrong you can correct me when we open up the phone lines in just a moment. From my perspective, I'm not necessarily sure. But what I do know is that West Virginia American Water considers all of these operations when they're determining priority PSSCs. So what that means is that they're taking a look at the expansion of various natural gas operations when determining which facilities would be on the list of potential sources of significant contamination and working with those folks so that they understand potential source water quality impacts. In addition, West Virginia American Water utilizes federal and state databases to gather information relating to pipeline operations, and they've have had some success with direct contact including participation in pipeline safety training. And so I hope that that answers your question. In addition, any pipeline related spill notifications are reported to the West Virginia DEP spill hotline, and they would be received directly by West Virginia American Water.

Paul McDanald: Yes, it does answer my question. Thanks.

Wednesday, April 24, 6:00 – 7:00 pm Webinar

No participants joined the webinar.

Section 2 – In-person public meetings

May 20th 11:30 am – 1:00 pm – Southern Operating Area

Participants

Steve Lipscomb, Summers County Emergency Management

Tim Farley, Mercer County Emergency Management

Discussion/Questions

- General discussion about people who drive vehicles into the reservoir – specifically Key Reservoir.
- Have there been any changes to the Bluestone plant recently?
    - There has been normal routine maintenance and upgrades, such as upgrades to the plant's SCADA system.
- Are there any plans for line replacements or expansion?
    - There are a lot of replacements occurring. WVAW provided examples.

Other

A participant worked with a WVAW representative to identify a Potential Source of Significant Contamination (PSSC) using the ArcGIS based WVAW Source Water Protection Plan Contaminant Locator App.

May 20th 6:00 pm – 7:30 pm – Southern Operating Area

No public participation.

May 21st 11:30 am – 1:00 pm – Kanawha Valley

Participants

Keith Morris, WV Department of Health and Human Resources

Kathryn Miller, Kanawha County Emergency Management

Pam Carte, Kanawha County Emergency Management

David Armstrong, Kanawha County Emergency Management

Jake Flatley, Metro News

Discussion/Questions

- Who maintains and operates the Elk River stream gauge and what does it monitor?
  - USGS maintains and operates the gauge. It measures stream gauge and velocity.
- Can the public access the data?
  - The data are available publicly online through USGS' website.
- Kanawha County Emergency Management expressed interest in using the gauge. They did not know that it existed.
  - WVAW provided the USGS website for the Elk River gauge and mentioned that they could set-up a tour if there was interest.
- Will today's presentation be available?
  - It will be posted on WVAW's website, and WVAW will send a copy to Dave Armstrong at the Kanawha County Emergency Management.
- Kanawha County Emergency Management expressed appreciation for the relationship they have developed with WVAW and specifically, how Jeff Ferrell makes himself available and maintains open communication with the County staff.
  - WVAW reciprocated the appreciation and enjoys working closely with the County.

May 21st 6:00 pm – 7:30 pm – Kanawha Valley

Participants

Krista Scott, Citizen

Alex Thomas, Metro News

Discussion/Questions

- Who calls you or notifies you about PSSCs and potential spills?
  - Some people call WVAW directly. Notifications also come through the Department of Environmental Protection (DEP) Spill Hotline.
- Do you monitor the National Guard and other facilities in the hills? Citizens are concerned with what may be discharged from the hills.
  - WVAW has a good working relationship with the National Guard and the airport.
- Discussion of Chem-Kleen and general concerns of how to respond if a citizen notices a potential event.
  - WVAW recommends that citizens report potential events to the DEP Spill Hotline.
- Do you adjust your source water protection efforts based on changes in state water quality regulations?

- WVAW must provide drinking water that meets federal and state regulations. WVAW will communicate any gaps in standards or science to regulators if needed. WVAW also comments on NPDES permits.

May 22nd 11:30 am – 1:00 pm – Huntington

Participants

Lewis Baker, WV Rural Water Association

Henry Hunt, Hydro Group, Inc.

Skip Edwards, Cabell Huntington Hospital

Discussion/Questions

- What is the likelihood/feasibility of providing 5-day raw water storage?
  - Feasibility is fairly low since it would require WVAW to provide a 120-million-gallon reservoir at a cost of $131.9 million.
- The groundwater alternative is described as not being feasible, however, Lewis Baker noted that they have not seen any groundwater exploration studies and no cost has been provided. The participant suggested that WVAW change the designation from "not feasible" to "ongoing investigation" and suggested WVAW explore the following questions: what would it cost to install Ranney collector wells; what are the cost savings to treat groundwater instead of surface water; would 30 years of these cost savings offset the installation cost of the Ranney wells.
- Discussions took place regarding the practice of riverbank filtration with the following key points:
  - WVAW is exploring this idea with their counterparts in other states. The counterparts mention that other state primacy agencies are scrutinizing riverbank filtration and there is now an extra burden of testing and documentation.
  - Other utilities use riverbank filtration: Louisville, Parkersburg, Heckler
  - The Ohio River has cleaned up a lot over the past few years.
  - If the source changes, WVAW would need to review the current treatment process to investigate whether it needs to be altered to treat groundwater (e.g., treatment procedures for increased manganese).
  - Louisville shut down their wells when there was a potential contamination event on the river but only for public perception.
  - WVAW looked at a pre-Ranney system for use in Huntington prior to 1988. It was determined that the sandy soil could not support the system.
    - Henry Hunt was a part of that process and he will check his correspondence as he remembers that the decision may have been due to a constraint of the well production compared to WVAW's build-out capacity.

Other

A participant worked with a WVAW representative to identify Potential Sources of Significant Contamination (PSSC) using the ArcGIS based WVAW Source Water Protection Plan Contaminant Locator App.

May 22nd 6:00 pm – 7:30 pm – Huntington

Participants

Robin Blakeman, Ohio Valley Environmental Coalition

Discussion/Questions

- Is this presentation the same as what was given during the webinars? Are the presentations available?
    - It is generally the same information. The presentation during the in-person meetings have system-specific information. A recording of the webinar presentation will be available on WVAW's website.
    - WVAW will email Robin the link to the webinars. Robin mentioned she will distribute the website link to her network.
- How did you advertise for these meetings?
    - WVAW released four press releases, advertised through Metro News, bill inserts, paid advertising, and sent out personalized emails to stakeholder groups.

May 23rd 11:30 am – 1:00 pm – Northern Operating Area

Participants

Randal Conrad, Braxton County Memorial Hospital

Discussion/Questions

- A commodity study was conducted approximately two or three years ago that found the highest material on the list being transported through Braxton County is flammable liquid (e.g., gasoline, diesel fuel). There is approximately 80,000 – 100,000 gallons of these materials being transported per day. The study was done on I-79, Route 19, and Route 5. Randal will forward a copy of the commodity study to Erica. If Erica does not receive an email in a few days, she is encouraged to check back in with him.
- John Hoffman with Braxton County is leading an emergency response drill. The drill has not yet been scheduled. It will most likely be a full-scale functional drill. Erica is on Randal's distribution list, so she will receive information as soon as it has been scheduled.
- Discussion about storage tanks next to the Go-Mart and what they may store.
- Is the town of Burnsville discussing acquisition plans with WVAW?
    - WVAW met with the town regarding a potential acquisition but WVAW has not heard anything since this meeting.
- Hospital has plans in place to conduct maintenance on shower and other water-using systems within the hospital. They have always had positive interactions with WVAW.
- WVAW is researching field test kits to detect for legionella, which causes legionnaires disease.
- The fire hydrant located closest to the emergency room may need service. The hospital runs three exercises each year that includes briefly opening and closing the hydrant. They find it very difficult to open and would appreciate if WVAW could send someone out to check on it.
    - WVAW will send someone to check on it.
- There was discussion regarding the Local Emergency Planning Committees and changes in eligibility requirements for Department of Homeland Security grant funding.

May 23rd 6:00 pm – 7:30 pm – Northern Operating Area

Participants

John Ciesla, Guardians of the West Fork Watershed

Sally Egan, Guardians of the West Fork Watershed

Discussion/Questions

- What are the alternative sources of supply identified for Weston? Are any of these alternatives under construction?
    - WVAW looked into secondary intakes, raw water storage, and interconnection with Buckhannon. WVAW is currently conducting additional feasibility and treatability studies and will need to get BPH involved before we make any decisions regarding alternative sources. There is currently no alternative source in Weston. WVAW can shut the intake if needed and they use activated carbon to bolster treatment if needed.
- Discussion regarding how the interstate is the largest threat to the Weston plant. WVAW has looked into using Stonewall Lake as a source.
- When is the plan update due?
    - June 30th. These public meetings are being held as one way to get more public input.
- Does WVAW test for bromides? Do you test at the intake or upstream?
    - Yes, we check all systems monthly. We test at the intake. We are trying to get a baseline.
    - Guardians of the West Fork Watershed monitors water quality at the Stonewall Lake.
- Discussion about WVAW's long-term plans to provide water to Webster Springs from Weston and provide service to additional areas.
- What is the biggest problem the Weston treatment plant faces in terms of water quality issues?
    - There have not been any water quality concerns the Weston plant has not been able to handle. We just won the best taste award at the AWWA sectional conference.
- WVAW offered the Guardians a tour of the Weston plant and mentioned that they look forward to working with the organization as they have common goals.
- Guardians has a few staff/volunteers and partners that help take care of 75 river miles. Partners include Fairmont State's Water Research Institute and WV Fish and Wildlife.
- Discussion regarding the Weston dam and who owns it. It would be helpful to place signage to warn boaters and to provide an area for boaters to portage their boats around the dam. There have been several dams removed around Clarksburg and they have seen water quality improvements since the removals.
- The Guardians mentioned that Lewis County First is a local non-profit that may be a worthwhile partner for WVAW.
- Do you conduct outreach with citizens?
    - WVAW conducts outreach including attending community events, sponsoring contests, developing and delivering watershed education at schools.
- Discussion regarding take-back programs and how to stop people from dumping trash.
- Are there any CSOs in Weston?
    - The Weston plant has not seen any issues related to CSOs.

The following source water protection feedback was received through our online submission form. It relates to the West Virginia American Water (WVAW) Huntington Water System. The Source Water Protection Feedback Form can be accessed on our website at https://amwater.com/wvaw/water-quality/source-water-protection/source-water-protection-feedback-form.

Comment: The Huntington SWP Plan did not include groundwater as an alternate source. Riverbank wells benefit from natural filtration, which reduces treatment costs. Riverbank Filtration (RBF) also greatly reduces risks from spills. American water uses RBF in some cities larger than Huntington.

Paducah KY is currently switching from intakes to RBF at cost of $6 million, and will not increase rates due to reduced treatment costs. Huntington may be able to locate wells somewhere upriver towards Green Bottom, sending treated water to Huntington and into Teays Valleys.

Response: Groundwater has been evaluated as an alternate source for the Huntington system. However, it is not considered a feasible option due to the number of wells that would be required to meet system demand at anticipated aquifer yields. This evaluation was discussed in detail in the full report provided to the West Virginia Bureau for Public Health in 2016.

We are looking into this further prior to making a decision on feasibility

Comment: As all life depends on water, the protection of water is critical. Please defend ORSANCO regulations on the Ohio river, which is the source water for around 5 million people.

Response: We believe ORSANCO plays an important role in implementing pollution control standards that help protect this source of supply for our customers and many others. In February and August of 2018, West Virginia American Water submitted comments on the ORSANCO Pollution Control Standards for Discharges to the Ohio River. Our comments were to reinforce the importance of ORSANCO's involvement in maintaining pollution control standards across jurisdictional boundaries.

Comment: I have reviewed the current (2019) Source Water Protection Plan updates for my district. On behalf of myself (Huntington resident), and the organization I work with: Ohio Valley Environmental Coalition, I want to file these comments.

First of all, thanks for the efforts you made to inform the public via webinars and public meetings. I realize this was a fairly extensive effort.

Secondly, I am still highly concerned about the lack of a back-up system for my district. The Ohio River is becoming an increasingly risky source water supplier, in my opinion,

due primarily to Oil and Gas Industry build up along the main-stem and multiple important tributaries to our north. This will only be exacerbated by increased amounts of pipeline and other O&G infrastructure developments along and near the River. We desperately need a backup system that is both reliable and less polluted to start with. I realize these systems are costly and take time, but I also realize that WVAW and American Water are very profitable industries. Thus, please invest the necessary resources in an effective and reliable back up system as soon as possible. Do not put the entire burden of cost for this system on rate payers; we have already incurred a substantial rate increase in the past couple of years.

3) The existing infrastructure is still crumbling; we see water main breaks very frequently in the Huntington area; sink holes in our roadways are not uncommon, and usually seem to have a broken water line or sewage line as the cause. Please invest the necessary resources in fixing and replacing our very aged infrastructure!

4) Please lobby ORSANCO, WVDEP, Army Corps and whomever else necessary to obtain a testing station in between Pt Pleasant and Huntington - preferably at least 2 hours upstream of the Huntington area. The Robert C. Byrd Lock and Dam system may be a viable location. This is necessary to ensure more rapid identification of pollutant plumes emerging from the Kanawha River and/or other sources to the north. We did not find out about the MCHM plume in time to warn Huntington residents, I have been told numerous times by your officials. Therefore, we need another water monitoring station to our North that would notify us with enough time to avoid that kind of problem again. The next spill may be far more toxic than MCHM.

Response: We understand your concerns related to back-up resources for our source in Huntington. We have evaluated the feasibility of alternate sources of supply for each of our water systems. Additional details can be found in Appendix D of the Source Water Protection Plan. Preparations for next steps toward an alternate supply, including treatability, are currently underway. We are in the process of contracting with a local environmental firm to conduct a detailed water quality analysis of the Guyandotte River. The purpose of this study is to evaluate its suitability as a reliable, quality alternate source.

We agree that much of the water infrastructure across the country is aging and in need of repair or replacement. We invested $69.5 million in capital upgrades to our water and wastewater infrastructure and system operations in 2018. Over the past few years, we've dramatically accelerated our water main replacement program. Today, we're investing at about a 100-year replacement rate. See how we're putting your water bill to work in Huntington in 2019 by utilizing our Infrastructure Upgrade Map following the link below.

https://amwater.com/wvaw/water-quality-system-updates

WVAW recognizes the value of monitoring stations upstream of our Huntington Water Treatment Plant. Our Huntington Water Treatment Plant is a long-standing (~40 year)

member of the ORSANCO Water Users Advisory Committee and has been an active site in the ORSANCO Organic Detection System (ODS). We will continue to support efforts related to source water monitoring that mitigate risks to our local water supply. WVAW personnel are also members of an ORSANCO work group tasked with reviewing the ODS network. We will bring your comments and concerns before this group for their consideration.

Appendix B

Communications Plan

B-1 INTRODUCTION

B-1.1 Purpose

This plan provides guidance for West Virginia American Water (also referred to as "Company") to communicate with agencies and the public in case of a spill, contamination event, or other situation that poses a potential threat to public health and safety.

The procedures and responsibilities described in this plan apply to all West Virginia American Water public water systems. Specific contact details for individual systems are provided in the corresponding Facility Emergency Response Plan.

B-1.2 Regulatory Requirements

West Virginia Code §16-1-9c requires public water systems to develop a "communications plan that documents the manner in which the public water utility, working in concert with state and local emergency response agencies, shall notify the local health agencies and the public of 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, with an initial notification to occur in any event no later than thirty minutes after the public water system becomes aware of the spill, release or potential contamination of the public water system."

The West Virginia Bureau for Public Health (WVBPH) clarified this requirement through rulemaking (§64-3-14.6) for "initial notification to the public to occur in any event 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***."

On July 1, 2002, the WVBPH adopted the federal public notice rule, which requires "…notice to the public for violations and other situations with significant potential to have serious adverse effects on human health as a result of short-term exposure." The West Virginia Department of Health and Human Resources has developed the following guidelines in the Manual of Environmental Health Procedures for public notification:

- DW-23: Boil Water Notices for Public Water Systems
- DW-37: Public Notices for Public Water Systems

In general, public notices are required for three types of situations: (1) acute violations or violations of water quality standards that are of an immediate concern; (2) other water quality violations; and (3) monitoring and/or reporting violations. The method and timing of public notification varies by situation, as detailed in DW-37. Procedure DW-23 provides specific guidance for Boil Water Notices (BWN) and Do Not Use (DNU) water notices.

B-2 ROLES AND RESPONSIBILITIES

The communication team listed in the attached summary for each water system will be responsible for working cooperatively with the Company management team and partner agencies to notify the public in a situation that poses a potential threat to public health and safety. The team will also provide updated information related to the situation as appropriate.

B-2.1 Designated Spokesperson

The Designated Spokesperson (or Designee) serves as the Public Information Officer (PIO) for the Company and is authorized to speak on behalf of the Company to partner agencies, the public, and the news media. The Company President or Designated Spokesperson may authorize and/or direct others to issue information that has been approved by the management team.

Additional responsibilities include:

- Announce risk level (using Tiers system) that applies to public notifications
- Issue news releases, updates, and other information regarding the incident/event using appropriate information venues (e.g., emergency notification systems, local news outlets, social media, website, etc.)
- Ensure that news releases are sent to local health agencies and the local news media in the affected area
- Respond to questions from the news media and others regarding the incident / event
- Participate in news conferences and interviews to provide information and updates, as available and appropriate

B-2.2 Supporting Roles

Other members of the communication team are expected to be familiar with the plan and provide support throughout the public notification and event response process, including coordinating with the management team to:

- Collect information needed to investigate, analyze, and characterize the incident / event
- Provide information to the management staff to support response decisions and actions
- Assist the management staff in handling event response and communication duties

Supporting team members are not authorized to speak on behalf of the Company unless designated by the Designated Spokesperson or President.

B-2.3 Interagency Coordination

The Designated Spokesperson, President and other members of the communication team will coordinate with PIOs from other agencies on statements, updates, joint press conferences, etc. as needed. Message coordination between emergency response agencies, health agencies and water utilities is important when responding to an incident/event.

B-3 COMMUNICATION PROCEDURES

B-3.1 TIERS Reporting System

West Virginia American Water intends to use the *Tiered Incident / Event Reporting System* (TIERS) as established by WVBPH for communicating with agencies and the public in situations 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 incident or event. The five-tiered **A-B-C-D-E** risk-based incident response communication format is summarized in the following table.

TIERS Reporting Categories

Tier	Category	Risk Level	Tier Summary
A	**A**nnouncement	Low	The water system is issuing an announcement to the public and public agencies about an incident or event that may pose a threat to public health and safety. Additional information will be provided as it becomes available.
B	**B**oil 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	**C**annot 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. More information on this notice will be provided as soon as it is available.
D	**D**o 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	**E**mergency	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.

The terminology used in the above table is based on that used by WVBPH. Risk levels for each TIERS category are general in nature and do not represent the actual risk level for a specific incident. Communication templates for each TIERS category are attached and discussed in Section 3.3.

B-3.2 Communication Flow Chart

The attached flow chart illustrates how the Company plans to respond when it receives a report that a spill, release, or other contamination event may have occurred.

Upon initial notification of the incident/event, managers and operators will collect information and verify the need for further investigation. If there is an indication that the incident/event poses a risk to public health and safety, and the initial facts about the incident support it, the Company will issue a public notification consistent with the threat level based on available information. The initial notification will be provided by the Designated Spokesperson (or Designee) to the public and local health agencies within thirty (30) minutes of determining that the incident/event poses a potential risk to public health and safety.

In addition to issuing a notice, Company personnel and partner agencies will continue to investigate and characterize the threat and communicate updates as appropriate. Several iterative cycles may occur after the initial threat assessment including further investigation, response actions, and elimination or mitigation of the threat resulting in a return to normal operations. Communication activities during this period will include:

- Initial notification using TIERS advisory levels
- Notification to the Company's source water protection and communication teams
- Periodic information updates for agencies and the media/public as information becomes available
- Modifications to the applicable advisory tier, as necessary

After the threat level is reduced and operations return to normal, the Company will review communications regarding the incident/event and modify the plan, if appropriate.

B-3.3 Core Messages and Actions

Clear, consistent, and timely messages are important for effectively communicating information about an incident/event with the public. These messages should include only relevant information and clear actions presented in positive terms (e.g., "stay calm" instead of "don't panic"). Repeating a message often helps the audience retain the information.

<u>Message Development</u>

- What happened? (who, what, where, why, when, how)
- What is being done to address it?
- What are the health impacts, if any?
- What are customers instructed to do, if anything?
- When and where will information updates be available?
- When will the problem be resolved?

WVBPH has developed a series of templates for developing messages associated with each TIERS advisory level. The Center for Disease Control (CDC) has also developed a template that can be used in

any type of emergency and includes guidelines for risk communication principles and message components. These templates are attached for reference; however, messages will be developed based on the circumstances present at the time.

Message coordination between emergency response agencies, health agencies and water utilities is important when responding to an incident/event. As often as possible, announcements and updates should be made jointly by the Company and its local, regional, state and/or federal partners.

Key points when communicating during an incident/event include the following:

- The health and safety of our customers and our employees is our number one priority.
- We appreciate the patience of our customers as we work to understand and resolve the situation.
- Our team is working on the matters we have identified so far, with the information available to us at this time.
- Our source water protection team and our employees are working very hard to investigate the situation and will help provide possible resolutions to matters we find during the investigation.
- We are working with our partners at the local, state, and federal level to resolve the situation as quickly and as safely as we can.
- We are focused on dealing with the situation based on the facts available to us at this time; we are not in a position to speculate about a variety of possible scenarios that do not exist presently.
- We welcome any information people may have on the situation we are investigating today.

B-3.4 Communication Methods

Communications with the public may be provided by several different methods depending on the situation. The Company will notify customers potentially affected by an incident/event using one or more of the following options:

- Emergency customer notification system (phone, text and email)
- Local media (press release, press conference, updates)
- County emergency alert system where available
- Website and social media (Facebook, Twitter)
- Door-to-door/door hangers
- Posted notices

Primary and alternate designated locations for media interviews and/or press conferences are identified in the attached summary for each water system. The location(s) selected may vary based on the circumstances of an incident/event and will be communicated to the media as a situation develops.

B-4 ACRONYMS

BWN	Boil Water Notice
CDC	Center for Disease Control
DNU	Do Not Use

PIO	Public Information Officer
TIERS	Tiered Incident / Event Reporting System
WVBPH	West Virginia Bureau for Public Health

B-5 ATTACHMENTS

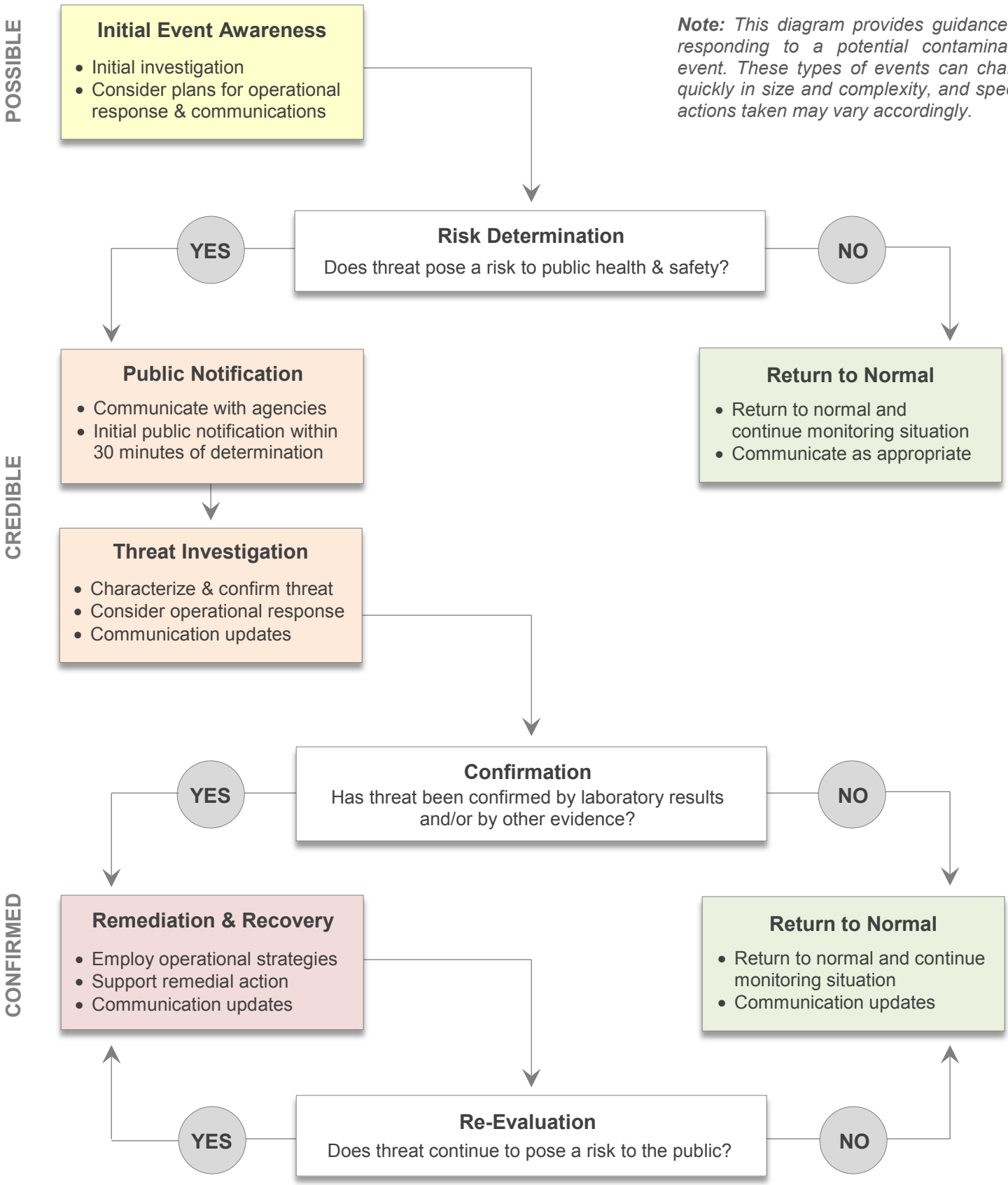
The following attachments to this Communications Plan provide additional resources:

- Attachment B-1: Event Response Flow Chart
- Attachment B-2: Core Message Templates

Communications Plan Attachment B-1

EVENT RESPONSE FLOW CHART

WEST VIRGINIA AMERICAN WATER



Note: *This diagram provides guidance for responding to a potential contamination event. These types of events can change quickly in size and complexity, and specific actions taken may vary accordingly.*

Communications Plan Attachment B-2

PUBLIC NOTIFICATION PHONE MESSAGE SCRIPT

The following is an important message from West Virginia American Water. A possible contamination event has occurred and poses a potential threat to your local water system. West Virginia American Water was notified of a [description of incident] that has entered the [source water name], which is the source of your local water supply. Public water systems are required by state law to notify the public within 30 minutes after determining that the incident poses a risk to public health and safety. We are working with [emergency responders/state health officials/agency names] to gather critical information needed to determine the risk to the water system and the appropriate response actions, if necessary. We will provide an update as soon as more information is available. No drinking water advisories have been issued at this time. Thank you for your attention to this message as we work to ensure the quality of your water. No additional information is available at our customer service center at this time.

Communications Plan Attachment B-2

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: _____

Reference: TIERS Advisory Templates, WVBPH, January 2016

Communications Plan Attachment B-2

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.

State Water System ID# _____ Date Distributed: _____

Reference: TIERS Advisory Templates, WVBPH, January 2016

Communications Plan Attachment B-2

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. 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.

State Water System ID# _____ Date Distributed: _____

Reference: TIERS Advisory Templates, WVBPH, January 2016

Communications Plan Attachment B-2

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.

State Water System ID# _____ Date Distributed: _____

Reference: TIERS Advisory Templates, WVBPH, January 2016

Communications Plan Attachment B-2

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, 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.

State Water System ID# _____ Date Distributed: _____

Reference: TIERS Advisory Templates, WVBPH, January 2016

Message Development for Communication

First, consider the following:

Audience:	Purpose of Message:	Method of delivery:
❑ Relationship to event ❑ Demographics (age, language, education, culture) ❑ Level of outrage (based on risk principles)	❑ Give facts/update ❑ Rally to action ❑ Clarify event status ❑ Address rumors ❑ Satisfy media requests	❑ Print media release ❑ Web release ❑ Through spokesperson (TV or in-person appearance) ❑ Radio ❑ Other (e.g., recorded phone message)

Six Basic Emergency Message Components:

1. **Expression of empathy:** _____

_____

2. **Clarifying facts/Call for Action:**

Who _____

What _____

Where _____

When _____

Why _____

How _____

3. **What we do not know:** _____

4. **Process to get answers:** _____

5. **Statement of commitment:** _____

6. **Referrals:** _____

For more information _____

Next scheduled update _____

Finally, check your message for the following:

Positive action steps Honest/open tone Applied risk communication principles Test for clarity Use simple words, short sentences	Avoid jargon Avoid judgmental phrases Avoid humor Avoid extreme speculation

Reference: Center for Disease Control, Crisis and Emergency Risk Communications, Version 15.0908

Appendix C

Emergency Response Plan Certification

WEST VIRGINIA
AMERICAN WATER

Emergency Response Plan Certification Statement

I certify that the West Virginia American Water Huntington Water System (PWSID WV3300608) has an emergency response plan[1] in place in accordance with the Public Health Security Bioterrorism Preparedness & Response Act of 2002 that was last updated in January 2016.

The plan covers the following areas identified by WVBPH: emergency response team, emergency communications, list of sensitive populations, list of major users, personnel and property protection measures, training, resource inventory, repair and supply providers, and procedures for specific emergency incidents.

Signature of Responsible Party or Designee	Robert Burton Name of Authorized Signatory
6-18-2019 Date Signed	President Title of Authorized Signatory

[1] West Virginia American Water refers to this document as an Emergency Preparedness Manual.

Appendix D

Summary of Alternate Source of Supply Feasibility Report

APPENDIX D SUMMARY OF ALTERNATE SOURCE OF SUPPLY FEASIBILITY REPORT

On March 8, 2014, West Virginia's Senate passed Senate Bill No. 373 which was an act to amend and reenact sections under Chapter 16 of the Code of West Virginia which deals with Public Health. West Virginia American Water (WVAW) solicited the support of American Water's Business Services Engineering group in meeting some of the requirements in the Bill, specifically the following sections:

§16-1-9c. Required update or completion of source water protection plans.

(a) On or before July 1, 2016, each existing public water utility which draws and treats water from a surface water supply source or a surface water influenced groundwater supply source shall submit to the commissioner an updated or completed source water protection plan for each of its public water system plants with such intakes to protect its public water supplies from contamination. Every effort shall be made to inform and engage the public, local governments, local emergency planners, local health departments and affected residents at all levels of development of the protection plan.

(b) The completed or updated plan for each affected plant, at a minimum, shall include the following:

2) 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, and the amount of raw water storage capacity for the public water system's plant;

3) 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;

4) An analysis and examination of the public water system's existing ability to close its water intake in the event the system is advised that its primary water source has become contaminated due to a spill or release into a stream, and the duration of time it can keep that water intake closed without creating a public health emergency;

5) The following operational information for each plant receiving water supplies from a surface water source:

A. The average number of hours the plant operates each day, and the maximum and minimum number of hours of operation in one day at that plant during the past year; and

B. The average quantities of water treated and produced by the plant per day, and the maximum and minimum quantities of water treated and produced at that plant in one day during the past year;

6) An analysis and examination of the public water system's existing available storage capacity on its system, how its available storage capacity compares to the public water system's normal daily usage and whether the public water system's existing available storage capacity can be effectively utilized to minimize the threat of contamination to its system;

9) If the public water utility's water supply plant is served by a single-source intake to a surface water source of supply or a surface water influenced source of supply, the submitted plan shall also include an examination and analysis of the technical and economic feasibility of each of the following options 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:

   A. Constructing or establishing a secondary or backup intake which would draw water supplies from a substantially different location or water source;

   B. Constructing additional raw water storage capacity and/or treated water storage capacity, to provide at least two days of system storage, based on the plant's maximum level of production experienced within the past year;

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

   D. Any other alternative which is available to the public water utility to secure safe and reliable alternative supplies during a period its primary source of supply is unavailable or negatively impacted for an extended period; and

   E. If one or more alternatives set forth in paragraphs (A) through (D) of this subdivision is determined to be technologically or economically feasible, the public water utility shall submit an analysis of the comparative costs, risks and benefits of implementing each of the described alternatives.

The requirements described above were evaluated for each of the following WVAW systems:

- Kanawha Valley
- Huntington
- New River
- Bluestone
- Bluefield
- Weston
- Webster Springs
- Gassaway

Note that §16-1-9c-(b)-(1), (7), (8), and (10) through (13) are not included here because these sections are addressed separately in the source water protection plan.

Responses to §16-1-9c-(b)-(2) through (6) for each system include specific operational information that is considered confidential for security reasons. These details are not included in this summary but will be submitted to WVBPH. In general, each WVAW system can typically prevent contamination from reaching the water treatment plants by closing valves on intake pipes and/or shutting off the raw water pumps. The duration of time that the water intake could be closed before the system would run out of clean water depends on the amount of finished water storage available in each system at the time of a plant shutdown. The actual amount of storage that may be used at any given time can vary based on location, water quality conditions, and other operational considerations.

In response to the requirements under §16-1-9c-(b)-(9), an analysis of alternative sources of supply was conducted for each system. In general, each system was evaluated to determine if there were feasible alternatives for the following supply sources:

- Alternate intake;
- Interconnection with nearby water systems;
- Raw water storage; and
- Groundwater.

For the raw water storage evaluation, the feasibility of installing sufficient raw water storage to be able to supply five (5) days of plant capacity to the treatment plant was assessed instead of the two days required by §16-1-9c. This approach was taken due to the potential amount of time that a plant could be out of service in the event of a chemical spill or catastrophic event. In general, finished water storage was not considered in the evaluation due to the amount of storage this would entail and the water quality concerns associated with a high water detention time of finished water in the system.

For each system, a high level preliminary design was developed for each alternative, when feasible. Over the past several years, WVAW has been considering interconnecting the Bluestone system with the Bluefield system and retiring the Ada WTP which serves the Bluefield system. Similarly, the interconnection of the Weston system with the Webster Springs system and retirement of the Webster Springs WTP has been under consideration. These projects have multiple benefits to the company and its customers. Therefore, for the purposes of the alternative supply analysis, it was assumed that these systems would be interconnected as noted and the alternative supply was sized to be sufficient to supply both interconnected systems.

The preliminary design included sizing calculations for equipment and pipes, identification of potential locations for new facilities, and layouts for potential pipeline routes. Conceptual level capital and O&M cost estimates were prepared for each alternative.

The alternatives were then ranked using a quantitative evaluation method developed by American Water. The purpose of this evaluation process was to rank the available alternatives against each other, not necessarily to identify a single feasible solution. Criteria for the evaluation were selected to evaluate each

alternative based on the West Virginia Bureau of Public Health (WVBPH) Feasibility Study Guidance Document and American Water's prior experience with alternatives evaluations.

A pair-wise comparison was performed to develop a weighting from 1 to 10 for each criterion with 10 being the most important. For each system, each potentially feasible alternative was given a score from 1 to 5 for each criterion with 5 representing the most favorable rating. The score was multiplied by the weight for each criterion and these were added together to develop a benefit score for each alternative. It should be noted that the benefit score does not include cost of the project. Each benefit score was then divided by an annualized life cycle cost to determine the benefit/cost score for each alternative. The advantage of this method of evaluation is that it allows for the alternatives with the highest benefits to be identified without the bias of costs.

The alternatives with the highest benefit and/or benefit/cost score for each system are presented in Attachment D-1 along with the estimated costs and the benefits and risks associated with the selected alternative. For the Huntington and Gassaway systems, two alternatives are presented because the feasibility of implementing the lowest cost alternative for each is unknown.

Attachment D-1 also shows the rate impact as a percentage of rate increase to customers for each of the selected alternatives based on WVAW's 2019 rate structure. Since WVAW has single tariff pricing the impact of the projects were evaluated together to determine the impact to customers. If all of the projects that are discussed in the table were to be implemented, this would result in an estimated rate increase between 13.2% and 15.4% for all WVAW customers.

In 2018, WVAW filed an expanded version of the Kanawha Valley Alternate Source of Supply Feasibility Report. The expanded report incorporated Potesta & Associates' findings in the Raw Water and Sediment Study Report for the Kanawha River and considered feasibility of finished water storage as a potential alternative, in addition to the previously identified alternatives. Project costs were updated from 2015 to 2018 dollars. Accordingly, the rate impact to the customer was also updated to reflect the new costs.

Preparations for additional feasibility studies, including treatability, are currently underway.

Attachment D-1: Summary of Alternative Supply Analysis

System	Alternative with Highest Feasibility or Benefit/Cost Score	Estimated Capital Cost (millions)	Estimated O&M Cost (annual)	Rate Impact (%)	Benefits	Risks
Bluestone and Bluefield[1]	37.5 MG Raw Water Storage	$42.9	$46,631	2.9%	• Alternative supply would be available with minimal operator effort • No additional treatment facilities required • Land appears to be available near the Bluestone WTP for reservoir so minimal environmental and customer impacts	• Land identified for raw water storage may not be available for use • Higher water table than anticipated could add to the costs for dewatering and/or elevation of the tanks • Limited supply capacity (5 days) with limited capability of expansion
Gassaway	3.9 MG Raw Water Storage	$9.2	$17,791	0.6%	• Alternative supply would be available with minimal operator effort • No additional treatment facilities required • Land appears to be available at Gassaway WTP for raw water storage so minimal environmental and customer impacts • Low safety risk since tank will be on plant site	• Higher water table than anticipated could add to the costs for dewatering and/or elevation of the tanks • Limited supply capacity (5 days) with limited capability of expansion
	Develop Groundwater Wells	$1.1	$16,591	0.08%	• Alternative supply would be available with minimal operator effort • No additional treatment facilities required • Land appears to be available at Gassaway WTP for wells so minimal environmental and customer impacts • Low safety risk since wells will be on plant site	• Groundwater availability is unknown without extensive groundwater investigations • Long term availability of supply is not known • Permitting for groundwater allocation may be a lengthy process
Huntington	New Intake on Guyandotte River	$35.0	$109,858	2.4%	• Alternative supply would be available with minimal operator effort • No additional treatment facilities required • Low safety risk • Minor environmental impacts • Fully redundant supply with opportunity for capacity expansion • Guyandotte River was approved for temporary supply in 2015	• Outfalls and other obstacles along river bank not identified; may require additional time and cost to avoid conflicts • Survey of the river bottom was not yet completed for this feasibility study • Availability of property for intake and raw water pump station could affect the cost of this alternative • Upgrades may be required if the source water is not found to be suitable for treatment at the existing WTP
	Industrial Intake	$10.4	$0	0.7%	• Alternative supply would be available with minimal operator effort • No additional treatment facilities required • Low safety risk • Minor environmental impacts • Relatively low customer impact during construction • Guyandotte River was approved for temporary supply in 2015	• Owner of intake may not be amenable to a connection with their intake and pump station or agreement for use may become invalid if ownership changes hands in the future • Existing raw water pumps may not be sufficient for transferring water to the Huntington WTP • Alternate pipeline route may be required due to construction or permitting issues • Owner of intake may require the use of their intake during the time it is needed by WVAW • Upgrades may be required if the source water is not found to be suitable for treatment at the existing WTP • Intake not owned by WVAW so may not be expandable if additional supply is needed in the future

Attachment D-1: Summary of Alternative Supply Analysis

Continued from previous page

System	Alternative with Highest Feasibility or Benefit/Cost Score	Estimated Capital Cost (millions)	Estimated O&M Cost (annual)	Rate Impact (%)	Benefits	Risks
Kanawha Valley	Intake on Kanawha River	$62.8	$420,823	4.4%	• Alternative supply would be available with minimal operator effort • No additional treatment facilities required • Low safety risk • Minor environmental impacts • Fully redundant supply with opportunity for capacity expansion • Sampling program is underway to assess water quality	• Outfalls and other obstacles along river bank not identified; may require additional time and cost to avoid conflicts • Survey of the river bottom was not yet completed for this feasibility study • Availability of property for intake and raw water pump station could affect the cost of this alternative • Significant traffic control may be required for the microtunneling trench excavations • Kanawha River sediment may be contaminated; dredging and barge traffic may disturb the sediment and release it into the river • Upgrades may be required if the source water is not found to be suitable for treatment at the existing WTP
New River	20 MG Raw Water Storage	$25.0	$76,245	1.7%	• Alternative supply would be available with minimal operator effort • No additional treatment facilities required	• Land identified for raw water storage may not be available for use • Higher water table than anticipated could add to the costs for dewatering and/or elevation of the tanks • Limited supply capacity (5 days) with limited capability of expansion
Weston and Webster Springs[2]	20 MG Raw Water Storage	$51.4	$31,382	3.4%	• Alternative supply would be available with minimal operator effort • No additional treatment facilities required • Land appears to be available near the Weston WTP for reservoir so minimal environmental and customer impacts	• Land identified for raw water storage may not be available for use • Higher water table than anticipated could add to the costs for dewatering and/or elevation of the tanks • Limited supply capacity (5 days) with limited capability of expansion
Total Estimated Cost[3]		$193.6 to $226.2	$591,672 to $702,730	13.2% to 15.4%		

Notes:
1 – Cost includes interconnection of Bluestone and Bluefield systems
2 – Cost includes interconnection of Weston and Webster Springs systems
3 – Cost represents range with two alternatives for Gassaway and Huntington because the feasibility of implementing the lowest cost alternative for each is unknown

Appendix E

Implementation Progress Report

WEST VIRGINIA
AMERICAN WATER

1600 Pennsylvania Avenue
Charleston, WV 25302
P 304.533.1523
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www.westvirginiaamwater.com

March 13, 2018

Source Water Protection Unit
West Virginia Bureau for Public Health
Office of Environmental Health Services
350 Capitol Street, Room 313
Charleston, WV 25301-3713

RE: Source Water Protection Plan Implementation Progress Report – 2017

Dear Colleagues:

West Virginia American Water (WVAW) has prepared this report to provide you with an update on Source Water Protection Plan (SWPP) implementation activities conducted in 2017 for the eight systems with surface water intakes that we operate across the state:

- WV3300406 – Gassaway Water System (SWPP approved October 24, 2016)
- WV3300608 – Huntington Water System (SWPP approved October 24, 2016)
- WV3301046 – New River Water System (SWPP approved December 19, 2016)
- WV3302016 – Kanawha Valley System (SWPP approved December 19, 2016)
- WV3302104 – Weston Water System (SWPP approved October 24, 2016)
- WV3302835 – Bluefield Water System (SWPP approved October 27, 2016)
- WV3304513 – Bluestone Water System (SWPP approved October 27, 2016)
- WV3305104 – Webster Springs Water System (SWPP approved October 24, 2016)

Although status reports are not required by W.Va. Code §16-1-9c, we consider it important to share our progress to date in the interest of transparency and open communication of successes and challenges related to source water protection. The following report covers the 2017 calendar year, which represents the first full year of implementation since our plans were approved by West Virginia Department of Health and Human Resources (WVDHHR).

IMPLEMENTATION STATUS

Each WVAW SWPP includes a management plan that identifies specific activities that we are pursuing, in cooperation with appropriate agencies and emergency response organizations, to understand and mitigate potential impacts of contamination of source water supplies. The types of activities are the same for all of our systems; however, the details and implementation vary by location based on site-specific risks and resources.

The management plans consist of five key strategies: source management, source water monitoring, contingency planning, outreach and education, and providing input on policies and regulations. The corresponding activities listed under these strategies are all **On Track** for each of our systems. See the following summary and attached tables for more information about our progress on these activities.

Source Management (Potential Sources of Significant Contamination or PSSCs)

- Conducted outreach to priority PSSC facilities and tracked responses in geospatial database. See Table 1 for progress on PSSC communications. Example flyer provided (Attachment A).
- Compiled and reviewed reference information for substances reported to exist at upstream facilities based on regulatory records (e.g., aboveground storage tank notifications).
- Communicated progress and challenges related to source water protection with regulatory agencies through this update and other direct means (email, phone, meetings).
- Effectively managed chemicals in our own operations through implementing Standard Operating Procedures, third-party inspections, and employee training programs.
- Met with local emergency management agencies in each operating area to review potential hazards and available information about material transport (e.g., commodity flow studies).
- Reviewed priority PSSC list for each system. Resulting updates are shown in Table 1. Note that PSSC names are considered confidential and can be provided separately upon request.

Source Water Monitoring

- Continued online source water panel monitoring, daily treatment process monitoring, and monthly bromide sampling to evaluate water quality conditions.
- Developed and piloted automated event detection system to identify anomalies from baseline conditions observed for online source water quality indicator parameters.
- Maintained centralized capability to perform advanced organics analyses at Kanawha Valley (GC/MS, GC/FID) and Huntington (GC/MS); and algae monitoring at Huntington.
- Installed Inficon CMS5000 for online monitoring of organics at Kanawha Valley Treatment Plant and joined the ORSANCO Organics Detection System network.
- Conducted siting study, preliminary design, and endangered species habitat survey for potential upstream monitoring stations for Kanawha Valley Treatment Plant on the Elk River.
- Participated as active members of watershed monitoring networks including the ORSANCO Organics Detection System and River Alert Information Network (RAIN).

Contingency Planning

- Revised and updated Facility Emergency Response Plan contact information for each system.
- Distributed SWPP Contingency and Communication Plans and provided training for employees.
- Facilitated tabletop exercise for Kanawha Valley System on October 5, 2017. External partners included representatives from state and county health departments, Public Service Commission staff and consumer advocate, emergency management agencies, and environmental agencies.
- Participated in full-scale emergency preparedness exercise for Huntington area hosted by Cabell-Wayne Local Emergency Planning Committee on September 23, 2017.
- Hosted regional seminars with discussion-based emergency preparedness exercise for our Northern Operating Area (Gassaway, Webster Springs, Weston) on December 6, 2017 and Southern Operating Area (Bluefield, Bluestone, New River) on December 7, 2017. External partners included representatives from state and county health departments, emergency management agencies, US Army Corps of Engineers, and local public service districts.
- Coordinated and participated in various meetings with representatives from Local Emergency Planning Committees throughout the year on emergency preparedness and coordination efforts.

SWPP Implementation Effectiveness – Case Study Example
Cargo Plane Crash at Yeager Airport in Charleston, WV

On May 5, 2017, a cargo plane crashed in a wooded area at Yeager Airport in Charleston, West Virginia, which is located approximately two miles upstream of the intake for the Kanawha Valley Water Treatment Plant. West Virginia American Water worked closely with emergency responders, airport personnel, and health officials to identify potential routes where spilled fuel from the plane could possible enter the Elk River. Utility staff collected samples for analysis of fuel components and were able to confirm that the fuel did not impact water quality at the intake.

Source water protection planning and implementation efforts contributed to the effectiveness of the response. The airport had already been identified as a potential source of contamination, so WVAW was able to quickly access information related to jet fuel and the requirements for sampling, analysis, and treatment. The team was also familiar with airport and local emergency management contacts and procedures, which helped with the coordinated response. There were no impacts to the water supply due to this event.

Outreach and Education

- Provided information about source water protection through Consumer Confidence Reports, WVAW website, and bill inserts. Customers are encouraged to provide feedback on the program anytime at https://amwater.com/wvaw/water-quality/source-water-protection/source-water-protection-plans/source-water-protection-feedback-form.
- Created new page on website about how to contact us with information for aboveground storage tank notifications: https://amwater.com/wvaw/water-quality-source-water-protection-above-ground-storage-tank-notifications.
- Communicated directly with upstream PSSCs (see Source Monitoring, above, and attached flyer)
- Hosted numerous plant tours and community events with a watershed component, such as Make It Shine Earth Day (4/20), Water Day at the Clay (11/20).
- Provided annual support for watershed activities through Environmental Grant Program.
- Visited schools and hosted Protect Our Watersheds art contest to educate children about the importance of protecting sources of supply for drinking water.
- Presented results of the Kanawha River Study nationally at the American Water Works Association (AWWA) Annual Conference and Exposition in June.
- Participated in collaborative industry groups to share ideas and practices (e.g., AWWA Source Water Protection Committee and Technical Advisory Work Group, United States Environmental Protection Agency Online Water Quality Monitoring Forum, ORSANCO, RAIN).
- Submitted and received request for WVDHHR grant to coordinate a regional community-based household hazardous waste collection event in 2018.

Input on Policies and Regulations

- Supported Public Water System Supply Study Commission and contributed recommendations.
- Participated in policy conversations with legislators during 2017 General Legislative Session related to bills with potential to impact water quality for drinking water sources.
- Provided input on ORSANCO's role in establishing and enforcing Pollution Control Standards.
- Reviewed West Virginia Department of Environmental Protection regulatory enforcement actions and communicated concerns regarding potential water quality issues.
- Served as Technical Advisory Group member for AWWA Government Affairs committee that provides national policy recommendations on drinking water issues.

IMPLEMENTATION CHALLENGES

The SWPPs identified certain challenges and/or limitations that could affect implementation. We have encountered several of these over the past year as detailed below.

Aboveground Storage Tank (AST) Notifications

West Virginia Code §22-30-10 requires AST owners and operators to provide information about tank location and contents directly to water utilities. The West Virginia Department of Environmental Protection has posted information about this requirement: https://dep.wv.gov/WWE/ee/abovegroundstoragetanks/Documents/NotificationtoWaterUtilityRequirementsGuidance.pdf. WVAW has also provided information on how to contact us with these notifications both on our website and through direct outreach to upstream facilities.

However, the estimated notification rate is only around 50% for AST owners and operators located within our upstream zones of critical concern and peripheral concern (ZCC and ZPC, respectively). Table 2 provides a summary of AST notifications by system. We encourage state health and environmental agencies to work together to enforce provisions of §22-30-10 requiring direct notification to water utilities. WVAW is willing to provide information upon request as appropriate to support these efforts.

Access to Updated PSSC Information

WVAW maintains access to the West Virginia Source Water Protection Program Map Viewer to access public and confidential data through the WVDHHR Office of Environmental Health Services portals. This tool has the capability to view and download PSSC data. The user guide indicates the date that each layer was last updated; however, there does not appear to be a way to query this information for features within the layers. It is therefore difficult to track any changes that occur over time. There is also limited information accessible in the data viewer and attribute table compared to what is available in the full record. We request that WVDHHR consider adding these fields and incorporating a method for users to query recent updates to each of the data layers.

PSSC Communications

Water utilities do not have any regulatory authority to require PSSCs to communicate directly with us. There is no requirement for them to do so, aside from the AST notifications required by W.Va. Code §22-30-10. We have had some success in establishing open lines of communication with priority PSSCs, as shown in Table 1. However, some have not responded even after several contact attempts. We intend to continue outreach efforts while recognizing that some facility owners and operators may elect not to communicate with us on a voluntary basis.

WVAW has also reached out to the West Virginia Department of Highways regarding road signage related to watershed protection and received a response that this type of signage would not be permitted (Attachment B).

CLOSING

Please feel free to contact us if you have any questions or would like to discuss. We appreciate any feedback you may have on our SWPP implementation progress to date.
Sincerely,

Erica Pauken
Source Water Protection Lead

Jennifer Heymann
Source Water Protection Manager

Table 1: Potential Source of Significant Contamination (PSSC) Communications Summary

PSSC Information – Water System		Bluefield	Bluestone	Gassaway	Huntington	Kanawha Valley	New River	Webster Springs	Weston
PSSC Priorities									
Priority	Priority A	1	1	2	5	4	5	1	4
	Priority B	1	3	3	7	7	4	3	6
	Priority C	0	7	4	7	14	2	2	9
	Priority D	0	4	0	16	16	0	0	3
	Priority E or other	0	0	0	20	6	0	0	0
PSSC Facility Type									
Facility Type	Industrial/Comm.	0	8	5	31	21	2	4	0
	Mining	0	0	0	0	1	2	0	1
	Municipal	1	0	3	5	6	2	2	2
	Oil & Gas	0	1	0	13	18	5	0	18
	Other/Recreation	1	6	1	1	1	0	0	1
	Power	0	0	0	5	0	0	0	0
Total Number of PSSC Facilities		**2**	**15**	**9**	**55**	**47**	**11**	**6**	**22**
WVAW initiated contact to PSSCs (#)		1	15	9	51	46	11	5	22
WVAW initiated contact to PSSCs (%)*		50%	100%	100%	93%	98%	100%	83%	100%

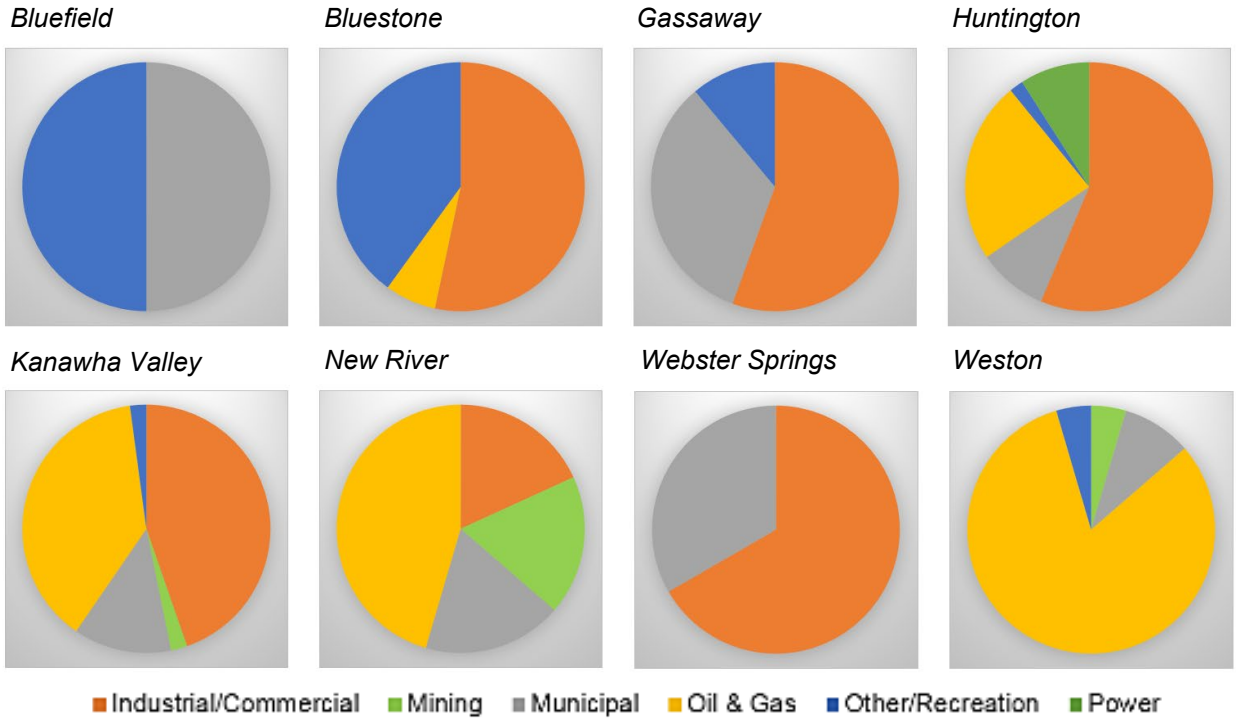
**Certain PSSCs not contacted because no contact information was available or applicable for site.*

Two-Way Communication WVAW & PSSCs (%)								
Priority A	100%	100%	50%	100%	100%	60%	100%	100%
Priority B	0%	33%	67%	57%	57%	50%	67%	50%
Priority C	---	14%	50%	43%	36%	0%	0%	22%
Priority D	---	25%	---	44%	25%	---	---	67%
Priority E or Other	---	---	---	45%	50%	---	---	---

PSSC Priority List Changes – 2017 Review								
PSSCs added to priority list (#)	0	0	1	3	2	0	0	0
PSSCs modified name on list (#)	0	0	0	6	5	0	0	1
PSSCs removed from list (#)	0	0	0	2	2	0	1	0

Note: Table represents communications with stationary (fixed) PSSC facilities as of date of this report. Specific details about individual PSSCs are not provided here for confidentiality and security reasons. These can be provided to WVDHHR upon request.

Fixed Priority PSSC Facility Types



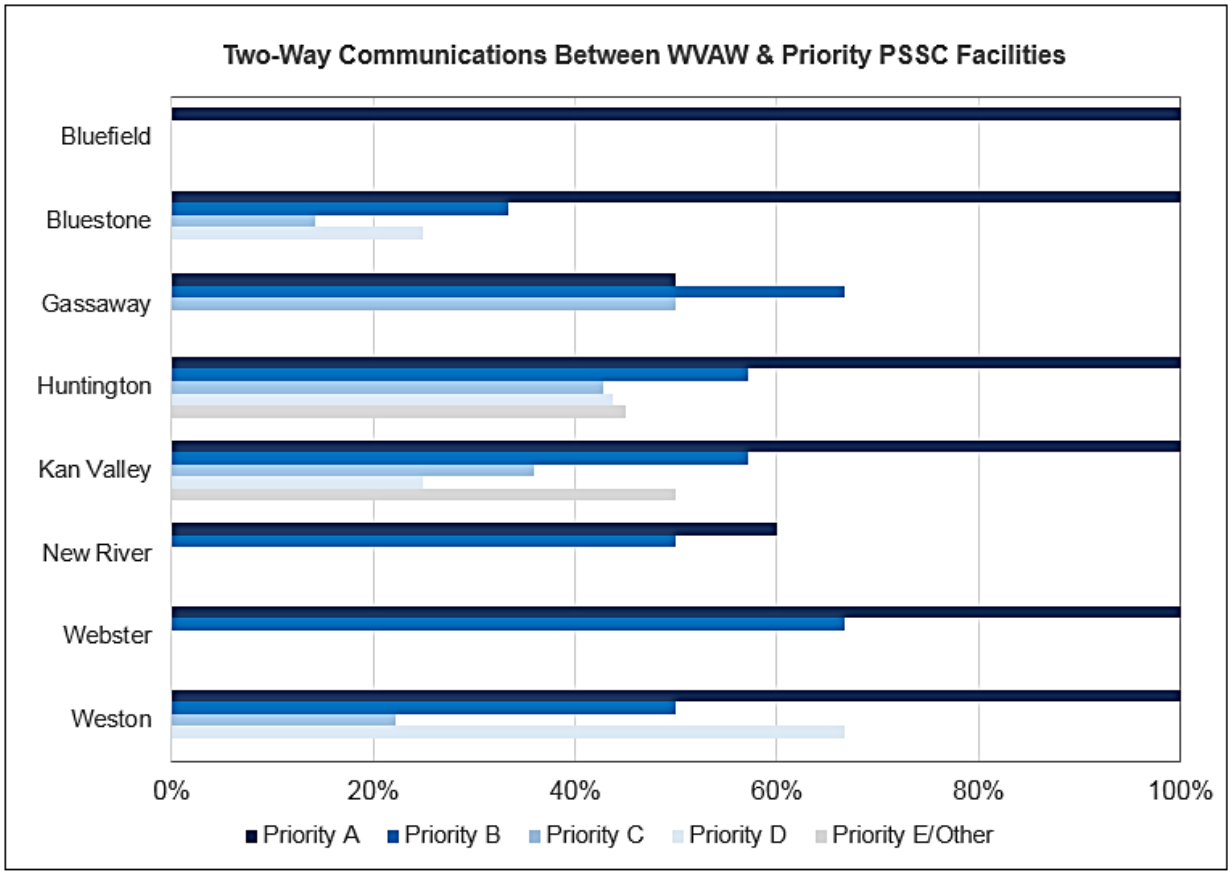


Table 2: Aboveground Storage Tank (AST) Notification Summary

AST Information – Water System	Bluefield	Bluestone	Gassaway	Huntington	Kanawha Valley	New River	Webster Springs	Weston
AST Notifications in Zone of Critical Concern (ZCC) & Zone of Peripheral Concern (ZPC)								
Total number of owners/operators listed	1	8	9	25	29	8	3	18
AST notifications received	1	4	6	15	16	4	2	5
Safety data sheet – provided copy	0	2	3	4	6	4	2	0
Tier II report – provided copy	0	0	2	2	1	1	0	1
Estimated Notification Rate*	**100%**	**50%**	**67%**	**60%**	**55%**	**50%**	**67%**	**28%**

**Based on 2017 registration list for ASTs registered in combined ZCC and ZPC (OEHS Data Portal)*

AST Notifications Outside Zone of Critical Concern (ZCC) & Zone of Peripheral Concern (ZPC)								
AST notifications received	1	1	0	48	3	7	0	0
Safety data sheet – provided copy	0	0	0	14	2	4	0	0
Tier II report – provided copy	0	1	0	13	2	1	0	0