STATE OF WEST VIRGINIA
DEPARTMENT OF HEALTH AND HUMAN RESOURCES
Bureau for Public Health
Commissioner's Office

Bill J. Crouch
Cabinet Secretary

Catherine C. Slemp, MD, MPH
Commissioner & State Health Officer (Interim)

December 17, 2018

The Honorable Mitch Carmichael, President
West Virginia Senate
Room 229M, Building 1
State Capitol Complex
Charleston, West Virginia 25305

The Honorable Roger Hanshaw, Speaker
West Virginia House of Delegates
Room 228M, Building 1
State Capitol Complex
Charleston, West Virginia 25305

Dear President Carmichael and Speaker Hanshaw:

As required by West Virginia Code §22-31-2, please find enclosed the Public Water System Supply Study Commission Report to the Joint Committee on Government and Finance of the West Virginia Legislature.

If you have any questions or concerns, please feel free to contact the West Virginia Department of Health and Human Resources, Bureau for Public Health at 350 Capitol Street, Room 702, Charleston, West Virginia 25301 or call (304) 558-2971.

Sincerely,

Catherine C. Slemp

Catherine C. Slemp, MD, MPH
Commissioner and State Health Officer, Interim

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Enclosure

Report to the Joint Committee on Government and Finance of the West Virginia Legislature by the Public Water System Supply Study Commission

Catherine C. Slemp, MD, MPH
Chairman

December 17, 2018

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INTRODUCTION

This report represents the fifth report of the West Virginia Public Water System Supply Study Commission since its establishment pursuant to the passage of Senate Bill No. 373 (SB373) in 2014. The first meeting of the Commission commenced on September 22, 2014. The Commission filed its initial report to the West Virginia Legislature's Joint Committee on Government and Finance on December 15, 2014 followed by the second report filed on December 15, 2015, the third report on December 15, 2016 and the fourth report on December 15, 2017.

In 2015, following the passage of SB373 (2014), the West Virginia Legislature passed Senate Bill No. 423 (SB423) which amended the Aboveground Storage Tank Act to address and correct certain unintended consequences of the original enactment. Much of W.Va. Code §22-31 has been deleted although key provisions have been moved into W.Va. Code §22-30.

Additionally, SB423 modified the original membership of the Commission to add two representatives designated by the West Virginia Business Industry Council; and one representative designated by the West Virginia Rivers Coalition in addition to the previous members appointed by the Governor, one of whom to be a professional engineer experienced in the design and construction of public water systems; one a professional hydrologist and one an environmental toxicologist or other public health expert familiar with the impact of contaminants on the human body and one citizen representative. No longer included in the Commission are the appointees from the West Virginia House and Senate. The state agencies and other organizations that served previously under SB373 remain on the Commission. However, the position of Commission Chair transferred from the Director of the Division of Homeland Security and Emergency Management to the Commissioner of the Bureau for Public Health.

No further changes have been made to any portions of the statute related to aboveground storage tanks or the composition of the Commission. The purpose of the Commission has remained unchanged from its original charge to study source water protection plans; evaluate the effectiveness of the legislation as well as financing and funding alternatives available to public water systems; review of the recommendations of the U.S. Chemical Safety Board regarding the Bayer Crop Science incident in 2008; and provide recommendations or suggestions regarding public water system infrastructure. The following is a list of the current members of the Commission.

MEMBERS OF THE COMMISSION

Catherine C. Slemp, MD, MPH, Chair
Representing Bureau for Public Health

Vacant
Representing West Virginia Division of Homeland Security and Emergency Management

Tim Ball - Morgantown Utility Board
Representing the West Virginia Municipal League

David Acord (Designee)
Representing West Virginia Public Service Commission

Michael McCawley, PhD - West Virginia University School of Public Health
Representing an environmental toxicologist or other public health expert who is familiar with the impact of contaminants on the human body

Pam Nixon
Citizen Representative

Terry Polen, PhD (Designee)
Representing the West Virginia Department of Environmental Protection

Rick Roberts - E.L. Robinson Engineering
Representing a professional engineer experienced in the design and construction of public water systems

Amy Swann – Executive Director
Representing the West Virginia Rural Water Association

Evan Hansen - Downstream Strategies
Representing West Virginia Rivers Coalition

Vacant
Representing a hydrologist or other expert experienced in determining the flow characteristics of rivers and streams

Laura Martin - West Virginia American Water Company
Representing West Virginia Business Industry Council

Rebecca McPhail, President - West Virginia Manufacturers Association
Representing West Virginia Business Industry Council

ACRONYMS

AST	Aboveground Storage Tank
BPH	Bureau for Public Health
CSB	United States Chemical Safety Board
DEP	West Virginia Department of Environmental Protection
DHHR	West Virginia Department of Health and Human Resources
DHSEM	West Virginia Division of Homeland Security and Emergency Management
EWDS	Early Warning Spill Detection System
GIS	Geographic Information System
GPS	Global Positioning System
IJDC	West Virginia Infrastructure and Jobs Development Council
LEPC	Local Emergency Planning Committee
NOV	Notice of Violation
NPDES	National Pollution Discharge Elimination System
OEHS	Office of Environmental Health Services
PSC	Public Service Commission
PWS	Public Water System
PWSSSC	Public Water System Supply Study Commission
RAIN	River Alert Information Network
SB373	Senate Bill 373
SB423	Senate Bill 423
SDS	Safety Data Sheet(s)
SWIG	Surface Water Influenced Groundwater
SWPP	Source Water Protection Plan(s)

COMMISSION RECOMMENDATIONS

The Commission has been charged by SB423 with making recommendations related to five specific tasks. Recommendations were submitted to the Legislature in 2014, 2015, 2016 and 2017 in order to achieve the tasks set out through passage of SB373 in 2014. SB423 updated provisions of the previous bill.

The following is a compilation of the recommendations organized by the respective Work Groups and their assigned task. The recommendations have been approved by the full Commission and are being advanced as recommendations of the full Commission.

The minutes of the Commission's 2017 final meeting may be found in Appendix A. Appendix B-1 contains a list of all PWSs as defined by SB423 while Appendix B-2 contains a list of PWSs defined as potential SWIG supply sources. Appendix C contains the cost estimates for alternative water sources as identified by PWSs. The composition of the Work Groups is listed in Appendix D and Appendix E provides a status report of the DEP aboveground and underground storage tank programs. Appendix F is a brief listing of the recommendations and their current status. Appendix G is the final report as submitted by the consultant, Horsley Witten.

Work Group 1

(1) A review and assessment of the effectiveness and the quality of information contained in updated SWPPs required for certain public water systems by the provisions of section nine-c, article one, chapter sixteen of this code.

Recommendations of Work Group 1:

Recommendation 1.1
The Commission advances the recommendation to require either an annual evaluated and documented exercise of the SWPPs or a documented annual review, and update if necessary, of the SWPPs, with the utility reporting this information to the BPH.

Narrative
An annual exercise of the SWPPs would allow the PWS to review, refine and update the actions and goals identified in the plan. An exercise allows the opportunity for integral responding partners outside of the PWS to become more aware of the SWPPs and the water system. Exercises can benefit all parties in implementing plans, identifying deficiencies and/or weaknesses which can subsequently be addressed. The exercise would benefit the necessary first responders and parties that would be involved in an emergency event. This allows the public water utilities to have a better working relationship with the partners that would be responding outside of the utility and vice versa. Exercises could be conducted and maintain confidentiality, if that is desired, while still notifying BPH of the exercise. Exercises should be conducted in a format prescribed by the DHSEM that follows federal Homeland Security exercise guidelines. An alternative would be to have an annual review and update of the SWPPs. This would consist of bringing together emergency responders and other stakeholders to review and provide comments on the SWPPs as necessary. BPH is surveying the PWSs to determine if they are going to voluntarily participate in an annual exercise. The initial survey (based on 49 responses) indicated that approximately ninety-five percent (95%) will hold an annual plan review exercise with the protection team members.

Recommendation 1.2
The Commission advances the recommendation that DEP and/or DHHR notify downstream water utilities if there is a change in substance and/or a substantive change within an AST as outlined in W.Va. Code §22-30- 9 (b) 1-6. Such notification is to be made as soon as possible with as much detail as possible.

Narrative
As the owners of ASTs modify the tanks or contents, the downstream water utilities should be notified as soon as possible of the changes. The notifications would allow the water utilities to make any necessary adjustments to their SWPPs, thereby keeping the plans as current as possible. Notification also keeps the water utility knowledgeable of potential contaminants within the watershed. Work Group 1 discussed the online website application available at the DEP showing "Flow Distance Above Public Water Supplies" at http://tagis.dep.wv.gov/pswicheck/ and recommended that DEP and DHHR collaborate to possibly add additional contact information concerning the public utilities. DHHR and DEP have developed a method to update the database of potential contaminates on a quarterly basis. The PWSs can access the database through the portal. It would also be appropriate to notify downstream water systems of AST changes through multiple methods, such as emails and written communications.

Recommendation 1.3
The Commission advances the recommendation that the State contract with an outside organization to review and evaluate the effectiveness of SWPPs and practices.

The Commission endorses the **Recommendations** (only) in Table 1 of the Horsley Witten report that is attached as Appendix G. During 2019, the Commission will evaluate the **Implementation Actions** as part of the Horsley Witten report.

Narrative
The State needs better information about the effectiveness and the quality of information contained in updated SWPPs as well as the effects on surface water and groundwater resources. To help meet this need, BPH would procure a contractor to evaluate the effectiveness of the efforts to prevent the movement of contaminants into surface and groundwater systems from land uses. Outcomes from this study would enhance understanding of the effectiveness of key protection practices in preventing surface and groundwater degradation and guidance for refining and implementing practices to strengthen surface and groundwater protection effectiveness. The study could include an investigation of spill notification to PWSs as well as gathering information on insurance coverage related to impacts on public water utilities. The BPH contracted with Horsley Witten for the source water protection evaluation. This evaluation has been finalized and is included as Appendix G in the 2018 report.

Recommendation 1.4
The Commission advances the recommendation that the Legislature review the proposed alternative water sources (Appendix C) so that it will be aware of the scope of needs and funding necessary as it considers further guidance.

Narrative
Included as Appendix C is a listing of the primary initial alternative from each of the PWSs protection plans. This listing includes the alternative sources and an estimate for the necessary infrastructure improvement. These alternatives have not been fully studied and are only initial alternatives. The cost estimates for the alternative water sources was developed in 2016. These cost estimates have not been adjusted.

Work Group 2

(2) A review and assessment of the effectiveness of legislation enacted during the 2014 Regular Session of the West Virginia Legislature, as it pertains to assisting PWSs in identifying and reacting or responding to identified potential sources of significant contamination, and increasing public awareness and public participation in the emergency planning and response process.

Recommendations of Work Group 2:

Recommendation 2.1
The Commission advances the recommendation that additional funding be considered to continue implementation of electronic databases from BPH and DEP which will allow for more complete, efficient and error free analyses and reporting.

Narrative
These databases provide updated information for PWSs to update SWPPs. Therefore, it is recommended that this process be expedited to the extent possible and that funding for this process be implemented through the Legislature. Funding may be required for continual full implementation.

Recommendation 2.2
The Commission advances the recommendation that current and past Commission reports be used to craft future legislation.

Narrative
There has been concern that the PWSSSC reports have not been afforded the proper hearing.

Recommendation 2.3
The Commission advances the recommendation that the spill reporting hotline should collect information on whether spills came from an AST, and whether and when downstream public water systems were notified of the spill.

Narrative
Information is collected to know what spill is related to ASTs and relayed to the downstream water system. The spill reporting hotline collects information on spills that come from ASTs and could track as to whether and when downstream water systems are notified of the spill.

Recommendation 2.4
The Commission advances the recommendation that any future reduction in the number of tanks regulated by the Aboveground Storage Tank Act be based on sound science demonstrating that the tanks pose no threat to drinking water. In addition, all tanks currently required to register under the AST Act should continue to be required to register, in order to provide important information to downstream PWSs for use in source water protection.

Narrative
Since it was enacted in 2014, the AST Act has been amended twice, and both amendments significantly reduced the number of regulated tanks. Continuing to reduce the number of regulated tanks may threaten human health and the environment, unless it can be demonstrated with sound science that current regulated tanks pose no threat to drinking water. Further, even for tanks that are unregulated, information provided via the registration process is important for downstream PWSs to use in source water protection activities.

Work Group 3

(3) The extent of available financing and funding alternatives which are available to existing PWSs to pursue projects which are designed to create alternate sources of supply or increased stability of supply in the event of a spill, release or contamination event which impairs the water system's primary source of supply.

Recommendations of Work Group 3:

Recommendation 3.1
The Commission advances the recommendation that the Legislature should make a $2.0 million continuing appropriation to the DHHR, BPH in furtherance of its source water protection efforts. This funding shall also be used to provide grant monies to systems as they begin their statutorily required three year updates and to help fund the RAIN or other type of system. In addition, the BPH should commence an investigation of the RAIN, or other type systems, to determine if such a statewide network could be implemented.

Narrative
The West Virginia Legislature made a $1.7 million appropriation to the BPH in response to our recommendation last year, and we commend them for doing so. This year's recommendation for a $2.0 million annual appropriation recognizes the fact that water systems are now completing the adoption of their plans following approval of BPH, implementing the recommendations contained therein and beginning the process of updating the plans so they are compliant with the statutory mandate contained in SB373. All of this costs money. Any grant funds sent to the systems minimizes the rate impact to customers for statutorily mandated source water protection planning efforts.

Recommendation 3.2
The Commission advances the recommendation that the West Virginia Legislature amend West Virginia Code 16-1-9c to include a new subsection designated as subsection (i) to read as follows:

> (i) The Secretary is authorized to propose legislative rules for promulgation pursuant to article three, chapter twenty-nine-A to implement the provisions of this section that may include a schedule for the submission of Source Water Protection Plans by public water utilities pursuant to subsection (f) that staggers the schedule for the submission of Source Water Protection Plans, except that for the purpose of staggering the dates of submission of updated Source Water Protection Plans, the Secretary may designate a schedule of submission greater than three years from the initial submission required by a legislative rule promulgated pursuant to this subsection.

Narrative
The intent of this recommendation is to allow the DHHR Cabinet Secretary to propose legislative rules that stagger the statutorily required, updated SWPPs. The first statutory deadline in submitting SWPPs was met by all systems, except one. The outstanding SWPP was submitted shortly after the deadline. PWSs understand the importance of source water protection planning, but they also understand that the State of West Virginia has limited resources within the DHHR to review the plans, suggest changes and then review the updated plans; all while planning and conducting the statutorily required hearings.

This change will provide for more efficient processing of the SWPPs and should be adopted.

Recommendation 3.3
The Commission advances the recommendation that the IJDC amend their preliminary project ranking and/or scoring structures to add emphasis for source water protection projects. The BPH's Drinking Water Treatment Revolving Fund has made the change to their scoring system to give credit to source water protection projects.

Narrative
Currently, the IJDC does not give preference to source water protection projects. Public utilities have expended great resources in creating their SWPPs. Many of the SWPPs have proposed construction projects in order to fully implement their plans. If source water protection is to occur, the IJDC must have those projects in its project ranking and/or scoring structures. The BPH has included source water protection projects in the criteria for scoring for projects seeking Drinking Water Treatment Revolving Funds.

Recommendation 3.4
The Commission advances the recommendation that the Legislature maintain the appropriation of $40 million per year from the video lottery proceeds to the IJDC to allow the Council to play an active role in source water protection.

Narrative
For the past few years, the Legislature has reduced the amounts appropriated to the IJDC. This has caused a serious issue with the many projects seeking funding. As SWPPs are approved by the DHHR and move toward implementation, a shortage of funding could mean a lack of implementation of SWPPs. Lack of implementation means systems will not have the tools to further react if a spill occurs that threatens its water supply.

Work Group 4

(4) A review and consideration of the recommendations of the U.S. Chemical Safety and Hazard and Investigation Board after its investigation of the Bayer Crop Science incident of 2008.

Recommendation of Work Group 4:

The Emergency Planning Community Right to Know Act (EPCRA) Tier II information, as appropriate, should be required to be made available to water utilities within 30 days of receipt of the request of the information from a water utility.

Work Group 5

(5) Any recommendations or suggestions the study commission may offer to improve the infrastructure of existing PWSs, to provide safe and reliable sources of supplies, and to pursue other measures designed to protect the integrity of public water service.

Recommendations of Work Group 5:

Recommendation 5.1.A
Advance the recommendation that the Legislature should clarify that the utility doesn't have an implied duty to complete gaps in information on SDSs that are provided/submitted. SB373 previously required SDSs to be submitted with the Spill Prevention Response Plan, but changes made in SB423 the following year removed this requirement. It is our recommendation that the legislation be amended to require SDS information be provided with the Spill Prevention and Response Plans. If there is missing information, the entity submitting the SDS should have the

burden of providing additional information. Furthermore, a current web link shall be provided by DEP to ensure that SDS information is available at a central repository accessible to PWSs.

Recommendation 5.1.B
Advance a recommendation that WV Code §22-30-10(a) be modified to ensure that downstream PWSs are provided with the type and quantity of fluid stored in the regulated ASTs at the facility and the SDS associated with the fluids in storage.

Recommendation 5.1.C
Advance a recommendation that WV Codes §22-11-6 and §22-30-10 be modified to require direct notification to downstream PWSs of Notices of Violation (NOVs) and subsequent actions with the potential to impact water quality of a source of drinking supply. This would include violations related to the Water Pollution Control Act for discharges to waters of the state and the Aboveground Storage Tank Act.

Recommended modifications are as follows:

§22-30-10. Notice to local governments and water companies.

(a) The owner or operator of a regulated aboveground storage tank shall provide notice directly to the public water system and to state, county and municipal emergency response organizations of the type and quantity of fluid stored in the regulated aboveground storage tanks at the facility and the location of the safety data sheets (SDS) associated with the fluids in storage. Subject to the protections afforded in section fourteen of this article, the information required in this subsection shall be delivered to the specific public water system and to state, county and municipal emergency response organizations that are designated by the secretary to receive required notice.

(b) In lieu of the information required in subsection (a) of this section, the tank owner or operator may provide the inventory forms and applicable documents required by sections 311 and 312 of the Emergency Planning and Community Right-to-Know Act, subject to the protection of trade secrets and site security information allowed by section fourteen of this article.

(c) Any owner or operator of a regulated aboveground storage tank who is issued a Notice of Violation (NOV) and subsequent actions citing deficiencies related to the provisions of §22-30 and associated rulemaking shall provide notice directly to the downstream public water system within three (3) days of receipt. The notice shall include a copy of the violation citation and description of any corrective action measures planned or taken to address the observed condition.

(New section under Water Pollution Control Act after 22-11-6. Requirement to comply with standards of water quality and effluent limitations)

§22-11-6a. Notice to downstream water systems

(a) Any person affected by a National Pollutant Discharge Elimination System (NPDES) permit who is issued a Notice of Violation (NOV) and subsequent actions related to the discharge or disposition of any pollutant or combination of pollutants into waters of the state shall provide notice directly to the downstream public water system within three (3) days of receipt. The notice shall include a copy of the violation citation and description of any corrective action measures planned or taken to address the observed condition.

Narrative
DEP should communicate this responsibility to any recipients of a NOV related to a NPDES permit.

Recommendation 5.2
Advance the recommendation that the State contract with an outside organization to evaluate the effectiveness of, and to provide recommendations for, the Spill Reporting Hotline. This evaluation should consider the importance of reporting spills promptly and accurately to PWSs and the BPH in order to protect human health and the environment.

It is recommended that, upon reporting to the Spill Reporting Hotline, all spills must, as soon as possible, be reported to all potentially-impacted PWSs and to the BPH. It is further recommended that such notification be coordinated, where possible, with emergency response systems (e.g., county 911 systems) and should make use of existing GIS and databases (such as those operated by the DHSEM, county 911 systems and the DEP), if possible.

Additionally, it is recommended that steps be taken to capture accurate spill locations using latitude/longitude, where possible, which can be generated using GPS receivers or other tools. The material(s) released and the stream(s) potentially impacted must also be accurately captured. Additional training/scripts for those taking the calls is recommended to obtain accurate information for each event.

Furthermore, correction notices will be issued, as necessary, and confirmation of the response and of the resolution shall be distributed to potentially-impacted PWSs and to the BPH.

Narrative
The intent of the recommendations is to ensure the timeliest and most accurate information regarding spills that may enter the waterways is provided to the appropriate entities. At times, reports received related to spills are incomplete, are received too late, and in some cases, are inaccurate. Downstream PWSs and the BPH are not routinely notified when spills are responded to and pollution is addressed. Additional training/scripts provided to those receiving the spill notification calls would improve consistency and accuracy of the information obtained from the entity submitting the notification for the event.

Recommendation 5.3
Advance the recommendation that DHSEM and LEPC provide available information to the PWSs, that they are not statutorily prohibited from providing to the public, to assist PWSs in identifying mobile threats.

Narrative
The Work Group recommendation focuses on mobile threats which were not specifically addressed in SB373 or SB423. Mobile threats pose as great or greater threat to PWSs as fixed facilities. Due to the dynamic nature of chemicals moved in transportation, this presents a difficult challenge to having complete SWPPs. LEPCs and local emergency responders are an invaluable resource to PWSs and should be consulted in the development of SWPPs. LEPCs have information such as commodity flow studies, hazard analysis, transportation routes and other key information that is vital to PWS's SWPP development.

Recommendation 5.4
Advance the recommendation that the Legislature should consider legislation, should it be introduced, to establish income tax credits for landowners for source water protection.

Narrative

Similar programs have succeeded in many states, including Maryland (Md. Code § 10-723) and Virginia (Va. Code Ann. § 58.1-510-513) and provide incentives for landowners to protect source water. Any tax credits would be offset by other revenue sources.

Recommendation 5.5

Advance the recommendation that the BPH evaluate, and potentially implement, the RAIN, or another similar system, to establish a statewide network in West Virginia in coordination with water systems throughout the state.

Narrative

Currently, RAIN is in place and being used in the north central part of the state. The recommendation focuses on the importance that RAIN or a similar water quality system be evaluated for other areas of the state. RAIN appears interested in possible expansion if funding is available. In early 2012, West Virginia joined RAIN with ten active monitoring sites along the Upper Monongahela with the help of funding grants provided by the federal Environmental Protection Agency (EPA) and the BPH. The BPH is in the process of providing additional grant funding to RAIN aimed at providing technical support to help in the coordination and development of the current system and possible expansion of the Early Warning Spill Detection System (EWDS). The EWDS continuously monitors water quality on-line, in real time, to ensure the protection of public health for its member water suppliers. Also, RAIN will help conduct outreach and education related to the EWDS.

APPENDIX A
Public Water System Supply Study Commission Meeting Minutes

West Virginia Public Water System Supply Study Commission Meeting
December 8, 2017
10:00AM – 12:00PM
Office of the Cabinet Secretary – 1 Davis Square CR 93

Attendees

Commission Members Present:
Dr. Rahul Gupta, Chair; Tim Ball, Morgantown Utility Board; David Acord, Public Service Commission; Amy Swann, WV Rural Water Association; Laura Martin, WV-American Water Company; and Dr. Terry Polen, WV Department of Environmental Protection

Participated via conference call:
Ed Watson, Canaan Valley Institute; Dr. Michael McCawley, WVU School of Public Health; Pam Nixon; and Evan Hansen, Downstream Strategies

Commission Members Absent:
Jimmy Gianato, WV Division of Homeland Security and Emergency Management; Rick Roberts, E.L. Robinson Engineering Company; and Rebecca McPhail, WV Manufacturers Association

Community Members Present:
Patrick Murphy, Bureau for Public Health (BPH); Bill Toomey, BPH; Walt Ivey, BPH; Barb Taylor, BPH; and Brian Skinner, BPH

Welcome & Meeting Overview

Dr. Gupta, Chair welcomed everyone to the meeting. All Commission members introduced themselves.

November 27, 2017 meeting minutes were presented for approval. David Acord motioned to approve the November 27, 2017 minutes as presented. Amy Swann seconded motion. Vote was taken and all were in favor. **November 27, 2017 meeting minutes were approved as presented.**

Dr. Gupta, Chair, provided an overview of the meeting. Work Groups 2 and 4 to submit their respective recommendations to the Commission for approval/acceptance, and review the draft of the 2017 Legislative Report to be submitted on December 15, 2017.

Work Group Updates

Work Group 2
Dr. Polen provided the update for Work Group 2. Work Group 2 developed four recommendations. The recommendations have been formally voted/accepted within Work Group 2 and ready for submission to the full Commission.

Recommendations 2.1, 2.2, and 2.3 are the same as last year. Dr. Polen suggested to read these three recommendations together and then vote on by Board.

Dr. Polen read the recommendations:

Recommendation 2.1
The Commission advances the recommendation that additional funding be considered to continue implementation of electronic databases from BPH and DEP which will allow for more complete, efficient and error free analyses and reporting.

Recommendation 2.2
The Commission advances the recommendation that current and past Commission reports be used to craft future legislation.

Recommendation 2.3
The Commission advances the recommendation that the spill reporting hotline should collect information on whether spills came from an aboveground storage tank, and whether and when downstream public water systems were notified of the spill.

Tim Ball made a motion to vote on Recommendations 2.1, 2.2, and 2.3 as read. Dr. Gupta seconded motion. Vote was taken and all were in favor. **Recommendation 2.1, 2.2, and 2.3 are adopted as read and will be included in the 2017 Legislative Report.**

Recommendation 2.4
The Commission advances the recommendation that any future reduction in the number of tanks regulated by the Aboveground Storage Tank Act be based on sound science demonstrating that the tanks pose no threat to drinking water. Additionally, all tanks currently required to register under the AST Act should continue to be required to register, in order to provide important information to downstream PWSs for use in source water protection.

Tim Ball made a motion to vote on Recommendation 2.4 as read. Laura Martin seconded motion. Vote was taken and all were in favor. **Recommendation 2.4 is adopted as read and will be included in the 2017 Legislative Report.**

<u>Work Group 4</u>
Dr. McCawley provided the update for Work Group 4. Work Group 4 developed one recommendation. The recommendation has been formally voted/accepted within Work Group 4 and ready for submission to the full Commission.

Dr. McCawley read the recommendation:

The Emergency Planning Community Right to Know Act (EPCRA) Tier II information, as appropriate, should be required to be made available to water utilities within thirty (30) days of receipt of the request of the information from a water utility.

Laura Martin asked who has the responsibility to require the information be made available. Dr. Gupta, Chair, replied that would-be Homeland Security.

Terry Polen made a motion to vote on Recommendation 4 as read. Amy Swann seconded motion. Vote was taken and all were in favor. **Recommendation 4 is adopted as read and will be included in the 2017 Legislative Report.**

Dr. Gupta, Chair, explained to the Commission that a draft of the final report will be forwarded to the full Commission for review and approval prior to submission to the Legislature. The Bureau will make technical edits as appropriate.

A copy of the report prepared to date was provided to the Commission for review. Dr. Gupta, Chair, opened the floor for any questions the Commission may have regarding the report.

Dr. Polen commented that DEP will submit updated numbers for Appendix E.

Question was asked if the underline portion in Recommendation 5.1.C should be removed. Laura Martin replied no – keeping it underlined signifies new/added language.

Laura Martin asked if the minutes of today's meeting would be included. Dr. Gupta, Chair replied, yes.

Laura Martin suggested to forward a copy of the final report to all agencies that are referenced/included in the report. (i.e. IJDC, Water Development Authority, etc.)

Dr. Gupta, Chair, requested a motion to approve the draft report with technical edits as appropriate. Tim Ball made a motion. Amy Swann seconded motion. Vote was taken and all were in favor. **Draft report approved as presented.**

Public Comments

No public comments received.

Dr. Polen motioned to adjourn meeting. Tim Ball seconded motion. Commission meeting was adjourned at 10:32AM.

APPENDIX B-1
Public Water Systems as Defined by SB 423 (12/15/17)

System ID	System Name	County	Planning and Development Regions (1-11)	DEP Watershed Group (1-5)	Type System	Population
WV3300508	HAMMOND PSD	BROOKE	11	1	SW	2,186
WV3300512	FOLLANSBEE HOOVERSON HEIGHTS	BROOKE	11	1	SW	4,970
WV3300516	WEIRTON AREA WATER BOARD	BROOKE	11	1	SW	22,694
WV3301504	CHESTER	HANCOCK	11	1	SW	3,119
WV3301811	RIPLEY CITY OF	JACKSON	5	1	SW	5,078
WV3302603	CAMERON WATER	MARSHALL	10	1	SW	1,052
WV3303516	WHEELING WATER	OHIO	10	1	SW	29,899
WV3304307	HUGHES RIVER WATER	RITCHIE	5	1	SW	4,278
WV3304405	SPENCER WATER DEPT	ROANE	5	1	SW	4,521
WV3304802	MIDDLEBOURNE WATER WORKS	TYLER	5	1	SW	1,267
WV3304803	SISTERSVILLE MUNICIPAL WATER	TYLER	5	1	SW	1,892
WV3305205	PINE GROVE WATER	WETZEL	10	1	SW	593
WV3305402	CLAYWOOD PARK PSD	WOOD	5	1	SW	8,141
WV3300101	BELINGTON TOWN OF	BARBOUR	7	2	SW	2,107
WV3300104	PHILIPPI CITY OF	BARBOUR	7	2	SW	3,582
WV3300901	WEST UNION TOWN OF	DODDRIDGE	6	2	SW	1,895
WV3301705	CLARKSBURG WATER BOARD	HARRISON	6	2	SW	17,685
WV3301714	LUMBERPORT TOWN OF	HARRISON	6	2	SW	1,624
WV3301721	SHINNSTON CITY OF	HARRISON	6	2	SW	4,867
WV3302104	WVAW - WESTON	LEWIS	7	2	SW	13,026
WV3302502	FAIRMONT CITY OF	MARION	6	2	SW	29,179
WV3302503	FAIRVIEW TOWN OF	MARION	6	2	GU	1,083
WV3302515	MONONGAH TOWN OF	MARION	6	2	SW	3,214
WV3303111	MORGANTOWN UTILITY BOARD	MONONGALIA	6	2	SW	58,023
WV3303908	KINGWOOD WATER BOARD	PRESTON	6	2	SW	3,068
WV3303912	PRESTON COUNTY PSD 1	PRESTON	6	2	SW	3,562
WV3303914	ROWLESBURG WATER WORKS	PRESTON	6	2	SW	697
WV3303917	TERRA ALTA WATER WORKS	PRESTON	6	2	GU	1,750
WV3304204	HARMAN TOWN OF	RANDOLPH	7	2	GU	221
WV3304202	BEVERLY TOWN OF	RANDOLPH	7	2	SW	2,575
WV3304203	ELKINS CITY OF	RANDOLPH	7	2	SW	9,473
WV3304209	MILL CREEK WATER DEPT	RANDOLPH	7	2	SW	931

System ID	System Name	County	Planning and Development Regions (1-11)	DEP Watershed Group (1-5)	Type System	Population
WV3304605	TAYLOR COUNTY PSD	TAYLOR	6	2	SW	1,322
WV3304701	DAVIS WATER WORKS	TUCKER	7	2	SW	884
WV3304704	HAMRICK PSD	TUCKER	7	2	SW	1,629
WV3304707	PARSONS CITY OF	TUCKER	7	2	SW	1,533
WV3304709	THOMAS CITY OF	TUCKER	7	2	SW	702
WV3304711	TIMBERLINE FOUR SEASON RESORT MANAGEMENT	TUCKER	7	2	GU	581
WV3304902	BUCKHANNON WATER BOARD	UPSHUR	7	2	SW	8,470
WV3300202	BERKELEY CO P S W D-BUNKER HILL	BERKELEY	9	3	GU	27,531
WV3300212	MARTINSBURG CITY OF	BERKELEY	9	3	GU	15,652
WV3300218	BERKELEY COUNTY PSWD-POTOMAC RIVER	BERKELEY	9	3	SW	27,335
WV3301204	PETERSBURG TOWN OF	GRANT	8	3	SW	2,841
WV3301205	MOUNTAIN TOP PSD	GRANT	8	3	SW	2,072
WV3301405	ROMNEY WATER DEPT	HAMPSHIRE	8	3	SW	1,950
WV3301412	CENTRAL HAMPSHIRE PSD GREEN SPRING	HAMPSHIRE	8	3	GU	1,046
WV3301601	MOOREFIELD MUNICIPAL WATER	HARDY	8	3	SW	2,328
WV3301613	HARDY COUNTY PSD BAKER	HARDY	8	3	SW	182
WV3301979	Deerfield Village Subdivision	JEFFERSON	9	3	GU	118
WV3301905	CHARLES TOWN UTILITIES	JEFFERSON	9	3	SW	14,488
WV3301912	CORPORATION OF HARPERS FERRY	JEFFERSON	9	3	SW	2,122
WV3301933	CORPORATION OF SHEPHERDSTOWN	JEFFERSON	9	3	SW	4,300
WV3302915	KEYSER CITY OF	MINERAL	8	3	SW	5,202
WV3302921	PIEDMONT MUNICIPAL WTR WKS	MINERAL	8	3	SW	847
WV3302928	FRANKFORT PSD	MINERAL	8	3	SW	5,626
WV3303301	BERKELEY SPRINGS CITY OF	MORGAN	9	3	SW	2,702
WV3303308	PAW PAW WATER WORKS	MORGAN	9	3	SW	522
WV3303602	FRANKLIN MUNICIPALITY OF	PENDLETON	8	3	SW	1,402
WV3303611	PENDLETON CO PSD-UPPER TRACT	PENDLETON	8	3	GU	695
WV3303613	PENDLETON CO PSD(BRANDYWINE)	PENDLETON	8	3	SW	692
WV3300315	BOONE RALEIGH P S D	BOONE	3	4	SW	1,190
WV3300402	FLATWOODS CANOE RUN PSD	BRAXTON	7	4	SW	3,768
WV3300404	SUGAR CREEK PSD	BRAXTON	7	4	SW	1,396

System ID	System Name	County	Planning and Development Regions (1-11)	DEP Watershed Group (1-5)	Type System	Population
WV3300406	WVAW- GASSAWAY	BRAXTON	7	4	SW	2,049
WV3300408	BURNSVILLE PUBLIC UTILITY	BRAXTON	7	4	SW	1,258
WV3300701	GRANTSVILLE MUNICIPAL	CALHOUN	5	4	SW	571
WV3300801	CLAY WATER DEPT	CLAY	3	4	SW	1,084
WV3300806	CLAY-ROANE PSD (PROCIOUS DISTRICT)	CLAY	3	4	SW	1,953
WV3301004	ARMSTRONG PSD	FAYETTE	4	4	SW	2,208
WV3301024	MOUNT HOPE WATER	FAYETTE	4	4	SW	1,431
WV3301037	KANAWHA FALLS PSD	FAYETTE	4	4	SW	2,514
WV3301046	WVAWC NEW RIVER REGIONAL WTR TRTMT PLT	FAYETTE	4	4	SW	24,295
WV3301104	GLENVILLE UTILITY	GILMER	7	4	SW	2,266
WV3301307	LEWISBURG	GREENBRIER	4	4	SW	10,057
WV3301315	ALDERSON WATER	GREENBRIER	4	4	SW	2,458
WV3302009	CEDAR GROVE COMMUNITY OF	KANAWHA	3	4	SW	960
WV3302016	WVAWC-KANAWHA VALLEY DIST	KANAWHA	3	4	SW	200,679
WV3302031	ST ALBANS WATER	KANAWHA	3	4	SW	12,726
WV3302205	LINCOLN PSD	LINCOLN	2	4	SW	3,772
WV3302801	ATHENS TOWN OF	MERCER	1	4	SW	4,802
WV3302804	BLUEWELL PSD	MERCER	1	4	SW	6,216
WV3302813	GREEN VALLEY GLENWOOD PSD BULLTAIL	MERCER	1	4	SW	1,869
WV3302835	WVAWC BLUEFIELD DISTRICT	MERCER	1	4	SW	12,174
WV3302849	GREEN VALLEY GLENWOOD PSD GLENWOOD	MERCER	1	4	SW	5,775
WV3302852	POCAHONTAS WATER SYSTEM	MERCER	1	4	SW	1,933
WV3303206	RED SULPHUR PSD	MONROE	1	4	SW	5,352
WV3303401	RICHWOOD WATER DEPT	NICHOLAS	4	4	SW	2,389
WV3303402	CRAIGSVILLE PSD	NICHOLAS	4	4	SW	4,591
WV3303403	NETTIE LEIVASY PSD	NICHOLAS	4	4	SW	3,239
WV3303404	SUMMERSVILLE MUNICIPAL WATER	NICHOLAS	4	4	SW	5,574
WV3303405	WILDERNESS PSD	NICHOLAS	4	4	SW	4,475
WV3303802	CASS SCENIC RAILROAD	POCAHONTAS	4	4	SW	534
WV3303803	MARLINTON TOWN OF	POCAHONTAS	4	4	SW	1,408
WV3303808	CHEAT MOUNTAIN WATER SYSTEM	POCAHONTAS	4	4	SW	1,867
WV3303812	POCAHONTAS COUNTY PSD	POCAHONTAS	4	4	GU	515
WV3304005	HURRICANE CITY OF	PUTNAM	3	4	SW	8,248

System ID	System Name	County	Planning and Development Regions (1-11)	DEP Watershed Group (1-5)	Type System	Population
WV3304011	PUTNAM P S D	PUTNAM	3	4	SW	21,719
WV3304104	BECKLEY WATER COMPANY	RALEIGH	1	4	SW	49,058
WV3304407	WALTON PSD	ROANE	5	4	SW	2,012
WV3304507	BIG BEND PSD	SUMMERS	1	4	SW	1,338
WV3304513	WVAWC BLUESTONE PLANT	SUMMERS	1	4	SW	26,874
WV3305103	COWEN PSD	WEBSTER	4	4	SW	3,263
WV3305104	WVAW - WEBSTER SPRINGS	WEBSTER	4	4	SW	1,976
WV3300608	WVAWC - HUNTINGTON DIST	CABELL	2	5	SW	84,254
WV3300609	MILTON WATER	CABELL	2	5	SW	4,883
WV3302203	WEST HAMLIN CITY OF	LINCOLN	2	5	SW	2,285
WV3302331	LOGAN WATER BOARD CITY OF	LOGAN	2	5	SW	3,862
WV3302336	MAN WATER WORKS	LOGAN	2	5	SW	935
WV3302347	BUFFALO CREEK PSD	LOGAN	2	5	SW	2,770
WV3302357	LOGAN CO PSD-GREENVILLE SYSTEM	LOGAN	2	5	SW	4,652
WV3302364	LOGAN COUNTY PSD - NORTHERN REGIONAL	LOGAN	2	5	SW	16,949
WV3302434	MCDOWELL COUNTY PSD BARTLEY	MCDOWELL	1	5	GU	1,632
WV3302435	MCDOWELL COUNTY PSD BERWIND	MCDOWELL	1	5	GU	863
WV3303002	GILBERT WATER WORKS	MINGO	2	5	SW	1,629
WV3303003	KERMIT WATER WORKS	MINGO	2	5	SW	1,330
WV3303005	MATEWAN WATER WORKS	MINGO	2	5	SW	2,237
WV3303009	WILLIAMSON UTILITY BOARD	MINGO	2	5	SW	3,390
WV3303029	MINGO COUNTY PSD - NAUGATUCK	MINGO	2	5	SW	6,324
WV3305004	FORT GAY WATER WORKS	WAYNE	2	5	SW	2,287
WV3305007	WAYNE WATER TOWN OF	WAYNE	2	5	SW	5,684
WV3305009	KENOVA MUNICIPAL WATER	WAYNE	2	5	SW	9,094
WV3305516	OCEANA COMMUNITY OF	WYOMING	1	5	SW	2,672
WV3305517	PINEVILLE MUNICIPAL	WYOMING	1	5	SW	2,945
WV3305407	PARKERSBURG UTILITY BOARD	WOOD	5	1	SWIG	34,251

APPENDIX B-2
Public Water Systems Defined as Potential SWIG Supply Sources

System ID	System Name	County	Planning and Development Regions (1-11)	DEP Watershed Group (1-5)	Type System	Population
WV3300502	Beech Bottom Water Dept	Brooke	10	1	GW	610
WV3300506	Follansbee Municipal	Brooke	10	1	GW	2,628
WV3300517	City of Wellsburg	Brooke	10	1	GW	3,468
WV3301516	Newell Company	Hancock	10	1	GW	1,377
WV3302605	Glen Dale Water Works	Marshall	10	1	GW	2,495
WV3302610	McMechen Municipal Water	Marshall	10	1	GW	2,212
WV3302611	Moundsville	Marshall	10	1	GW	11,999
WV3302618	Benwood Water Department	Marshall	10	1	GW	1,510
WV3302712	Mason Co PSD - Lakin Dist	Mason	2	1	GW	3,037
WV3302713	Mason Co PSD - Letart	Mason	2	1	GW	3,376
WV3302714	Mason Co PSD - Crab Creek	Mason	2	1	GW	6,047
WV3303701	City of Belmont	Pleasant	5	1	GW	1,085
WV3304801	Tyler County PSD (Friendly) PSD	Tyler	5	1	GW	2,118
WV3305203	New Martinsville	Wetzel	10	1	GW	5,272
WV3305204	City of Paden City	Wetzel	10	1	GW	2,985
WV3305206	Grandview -Doolin PSD	Wetzel	10	1	GW	1,942
WV3305404	Lubeck PSD	Wood	5	1	GW	10,377
WV3305410	Union Williams PSD	Wood	5	1	GW	7,019
WV3305411	Vienna	Wood	5	1	GW	12,507

APPENDIX C
Public Water Systems' Evaluation of Alternative Sources of Water

PWSID #	COUNTY	SYSTEM NAME	INTAKE	VIABLE ALTERNATIVE	ESTIMATED COST (Based on 2016 Pricing)
3300101	BARBOUR	TOWN OF BELINGTON	TYGART VALLEY RIVER	1) INTAKE MILL CREEK REWORKED	$1,718,000
3300408	BRAXTON	BURNSVILLE PUBLIC UTILITY BOARD	LITTLE KANAWHA RIVER	1) INTAKE SALT LICK CREEK	$1,136,125
3300608	CABELL	WVAW HUNTINGTON WATER SYSTEM	IN001 24TH ST PRIMARY OHIO RIVER	1) INTAKE GUYANDOTTE RIVER: INDUSTRIAL INTAKE	$9,300,000
3300801	CLAY	CLAY WATER DEPARTMENT	ELK RIVER	1) INTAKE BUFFALO CREEK	$1,400,000
3301037	FAYETTE	KANAWHA FALLS PSD	KANAWHA RIVER	1) INTAKE LOOP CREEK IN DEEPWATER, WV--NEED TO VERIFY QUANTITY ADEQUATE	$1,544,000
3301204	GRANT	CITY OF PETERSBURG	SOUTH BRANCH POTOMAC RIVER	1) NEW INTAKE SOUTH BRANCH POTOMAC RIVER	$217,500
3301205	GRANT	MOUNTAIN TOP PSD	MILL RUN RESERVOIR (QUARRY)	1) INTAKE STONY RIVER	$792,425
3301315	GREENBRIER	ALDERSON WATER	GREENBRIER RIVER	1) INTAKE MUDDY CREEK	$1,129,000
3301405	HAMPSHIRE	CITY OF ROMNEY	SOUTH BRANCH POTOMAC RIVER	1) INTAKE MILL CREEK	$1,005,575
3301601	HARDY	CITY OF MOOREFIELD	IN001 OLD PLANT SOUTH FORK OF SOUTH BRANCH POTOMAC RIVER; IN002 NEW PLANT SFSBPR	1) UPGRADE EXISTING INTAKE ON SOUTH BRANCH POTOMAC RIVER-TOWN HAD OLD BID OF $750,000	$1,087,500
3301905	JEFFERSON	CHARLESTOWN UTILITY BOARD	SHENANDOAH RIVER	1) INTAKE MILLVILLE QUARRY	$1,175,000
3301933	JEFFERSON	CORPORATION OF SHEPHERDSTOWN	POTOMAC RIVER	1) INTAKE TOWN RUN	$1,002,000
3302016	KANAWHA	WVAW KANAWHA VALLEY SYSTEM	ELK RIVER	1) INTAKE ON KANAWHA RIVER AT CHARLESTON	$56,000,000
3302852	MERCER	POCAHONTAS WATER SYSTEM	ABBS VALLEY CREEK	1) INTAKE PINNACLE ROCK LAKE	$2,016,300
3302915	MINERAL	CITY OF KEYSER	NEW CREEK	1) INTAKE NORTH BRANCH POTOMAC RIVER	$1,289,775
3302921	MINERAL	CITY OF PIEDMONT	VERSO INTAKE PAPER MILL PRIMARY NORTH BRANCH POTOMAC RIVER	1) INTAKE WESTERNPORT TAP, STILL IN FUTURE, LINE IN PLACE NEEDS TAPPED	$72,800
3303002	MINGO	GILBERT WATER WORKS	GUYANDOTTE RIVER-NEW INTAKE	1) INTAKE GILBERT CREEK	$368,625

PWSID #	COUNTY	SYSTEM NAME	INTAKE	VIABLE ALTERNATIVE	ESTIMATED COST (Based on 2016 Pricing)
3303111	MONONGALIA	MORGANTOWN UTILITY BOARD	MONONGAHELA RIVER	*SECONDARY INTAKE COBUN CREEK RESERVOIR IN WHITE PARK. A NEW RESERVOIR UNDER CONSTRUCTION ON COBUN CREEK UPSTREAM.	*$48,000,000
3303301	MORGAN	CITY OF BERKELEY SPRINGS	SPRING INTAKE	1) INTAKE POTOMAC RIVER	$1,170,625
3303401	NICHOLAS	RICHWOOD WATER DEPT.	NORTH FORK CHERRY RIVER--DAM AT RUDOLF FALLS	1) INTAKE SUMMIT LAKE	$5,517,000
3303404	NICHOLAS	SUMMERSVILLE MUNICIPAL WATER	GAULEY RIVER/ SUMMERSVILLE DAM	1) INTAKE MUDDLETY CREEK (NEEDS CAPACITY STUDIED TO VERIFY QUANTITY)	$6,741,000
3303405	NICHOLAS	WILDERNESS PSD	ANGLINS CREEK & MEADOW RIVER PRIMARY, ACTIVE	1) INTAKE ANGLINS CREEK OUT OF POSSIBLE INFLUENCE OF MEADOW RIVER	$844,379
3303602	PENDLETON	TOWN OF FRANKLIN	DRY RUN SPRING	1) UPGRADE INTAKE ON THORN CREEK	$725,000
3303802	POCAHONTAS	CASS SCENIC RAILROAD	LEATHERBARK RUN	1) INTAKE GREENBRIER	$518,000
3303803	POCAHONTAS	TOWN OF MARLINTON	KNAPP CREEK	1) INTAKE GREENBRIER RIVER	$1,174,000
3303812	POCAHONTAS	POCAHONTAS PSD	SPRINGS SP 001, SP002 AND SP 003	1) INTAKE EAST FORK GREENBRIER RIVER	$1,500,000
3303914	PRESTON	ROWLESBURG WATER WORKS	CHEAT RIVER	1) INTAKE FILL HOLLOW-REHAB DAM & REPLACE LINE, SYSTEM EVALUATING-NO COST PROVIDED	NOT PROVIDED
3303917	PRESTON	TERRA ALTA WATER WORKS	HOPEMONT #1, #2, #3	1) INTAKE TERRA ALTA LAKE-NO OTHER DETAILS OR COSTS	
3304202	RANDOLPH	TOWN OF BEVERLY	TYGART VALLEY RIVER	1) INTAKE BEAVER CREEK	$1,387,000
3304203	RANDOLPH	ELKINS MUNICIPAL WATER	TYGART VALLEY RIVER RESERVOIR	1) INTAKE TYGART VALLEY RIVER	$4,700,000
3304211	RANDOLPH	HUTTONSVILLE PSD	ELWATER FORK RESERVOIR	1) INTAKE TYGART VALLEY RIVER	$2,291,000
3304513	SUMMERS	WVAW BLUESTONE WATER SYSTEM	NEW RIVER (BLUESTONE LAKE)	1) INTAKE LITTLE BLUESTONE OR NEW RIVER	$16,700,000
3304701	TUCKER	DAVIS WATER WORKS	WEIMER RUN IMPOUNDMENT	1) INTAKE DEVIL'S RUN	$395,000
3304709	TUCKER	CITY OF THOMAS	SPRING FED RESERVOIR	1) INTAKE PENDLETON CREEK (NEED TO VERIFY SUPPLY)	$820,100
3304902	UPSHUR	BUCKHANNON WATER BOARD	BUCKHANNON RIVER	1) INTAKE STONE COAL LAKE	$12,490,000
3305103	WEBSTER	COWEN PSD	GAULEY RIVER	1) INTAKE WILLIAMS RIVER	$2,310,000

PWSID #	COUNTY	SYSTEM NAME	INTAKE	VIABLE ALTERNATIVE	ESTIMATED COST (Based on 2016 Pricing)
3305517	WYOMING	MUNICIPAL WATER WORKS PINEVILLE	GUYANDOTTE	1) RELOCATE PINNACLE CREEK INTAKE	$46,375
3305407	WOOD	PARKERSBURG UTILITY BOARD	WOOD	1) CONVERT RANNEY WELL	$2,500,000
				TOTAL INTAKES	**$189,366,104**
					*Based on 2018 Pricing
3300609	CABELL	MILTON WATER	MUD RIVER	1) INTERCONNECTION WVAW	$17,714
3300806	CLAY	CLAY ROANE PSD	ELK RIVER	1) INTERCONNECTION TOWN OF CLAY	$200,000
3301004	FAYETTE	ARMSTRONG PSD	KANAWHA RIVER	1) INTERCONNECTION KANAWHA FALLS	$1,744,000
3301104	GILMER	CITY OF GLENVILLE	LITTLE KANAWHA	1) INTERCONNECTION WVAW WESTON	$631,124
3301412	HAMPSHIRE	CENTRAL HAMPSHIRE PSD	SP001-GREEN SPRING; SP002-SPRINGFIELD WD; SP003 RAVEN ROCK	1) INTERCONNECTION FRANKFORT PSD	$536,258
3301504	HANCOCK	CHESTER MUNICIPAL WATER	INFILTRATION GALLERY OHIO RIVER	1) INTERCONNECTION W/NEWELL COMPANY (GW)	$439,890
3301714	HARRISON	TOWN OF LUMBERPORT	MANMADE RESERVOIR ON JONES RUN	1) INTERCONNECTION CITY OF SHINNSTON	$83,500
3301721	HARRISON	CITY OF SHINNSTON	TYGART VALLEY RIVER	1) INTERCONNECTION CLARKSBURG NEEDS UPGRADES	$2,669,976
3301811	JACKSON	CITY OF RIPLEY	MILL CREEK @ O'BRIEN DAM	1) INTERCONNECTION WITH RAVENSWOOD VIA NORTHERN JACKSON PSD	$69,520
3302009	KANAWHA	COMMUNITY OF CEDAR GROVE	KANAWHA RIVER	1) INTERCONNECTION WVAW KANAWHA VALLEY	$85,000
3302031	KANAWHA	CITY OF SAINT ALBANS	COAL RIVER	1) INTERCONNECTION WVAW KANAWHA VALLEY	$2,300,000
3302104	LEWIS	WVAW WESTON WATER SYSTEM	WEST FORK RIVER	1) INTERCONNECTION WITH WVAW WEBSTER SPRINGS	$21,200,000
3302203	LINCOLN	CITY OF WEST HAMLIN	GUYANDOTTE RIVER	1) INTERCONNECTION WVAWC	$347,800
3302205	LINCOLN	LINCOLN PSD	LOW DRAWOFF POINT COAL RIVER	1) INTERCONNECT WVAWC	$510,144
3302336	LOGAN	MAN WATER WORKS	GUYANDOTTE RIVER	1) INTERCONNECTION WITH BUFFALO CREEK PSD	$263,538
3302347	LOGAN	BUFFALO CREEK PSD	TONEY FORK INTAKE	1) INTERCONNECTION BUFFALO CREEK PSD	$282,288
3302357	LOGAN	LOGAN CO. PSD GREENVILLE	GUYANDOTTE RIVER (UPPER INTAKE)	1) INTERCONNECTION BUFFALO CREEK PSD	$710,303
3302801	MERCER	TOWN OF ATHENS	ATHENS LAKE (AKA LAUREL CREEK)	1) INTERCONNECTION WVAW BLUESTONE	$2,632,589

PWSID #	COUNTY	SYSTEM NAME	INTAKE	VIABLE ALTERNATIVE	ESTIMATED COST (Based on 2016 Pricing)
3302835	MERCER	WVAW BLUEFIELD WATER SYSTEM	3 RESERVOIRS: ADA, HORTON AND KEE	1) INTERCONNECTION WITH WVAW BLUESTONE	$22,600,000
3303003	MINGO	KERMIT WATER WORKS	LOW DRAWOFF POINT TUG FORK RIVER-PRIMARY	1) INTERCONNECTION--A BROKEN RIVER CONNECTION THAT WHEN REPAIRED ESTABLISHES SERVICE TO EAST KERMIT AND PROVIDES AN INTERCONNECTION WITH MINGO COUNTY PSD	$452,790
3303611	PENDLETON	PENDLETON CO. PSD BRANDYWINE	BIG SPRING	1) INTERCONNECTION PETERSBURG	$881,277
3304011	PUTNAM	PUTNAM PSD	POPLAR FORK RESERVOIR & LARCH FORK RESERVOIR	1) INTERCONNECTION CITY OF HURRICANE	$8,400,000
3304209	RANDOLPH	MILL CREEK WATER DEPARTMENT	MILL CREEK	1) INTERCONNECTION HUTTONSVILLE PSD	$253,500
3304307	RITCHIE	HUGHES RIVER WATER BOARD	HUGHES RIVER	1) INTERCONNECTION CLAYWOOD PARK PSD	$4,045,300
3304704	TUCKER	HAMRICK PSD	DRY FORK	1) INTERCONNECTION CITY OF PARSONS	$410,500
3304707	TUCKER	CITY OF PARSONS	SHAVERS FORK	1) INTERCONNECTION HAMRICK PSD--CURRENT PLANS ARE TO INTERCONNECT BOTH SO EACH COULD SUPPLY THE OTHER IF NEEDED	$586,500
3304802	TYLER	MIDDLEBOURNE MUNICIPAL WATER WORKS	#2 INTAKE MIDDLE ISLAND CREEK	1) CURRENTLY INTERCONNECTED TO TYLER CO. PSD - INTERCONNECTION NEEDS 7500' OF 6" LINE UPGRADED AND A PRESSURE REDUCING VALVE TO FULLY SUPPLY MIDDLEBOURNE	$818,860
3305004	WAYNE	FORT GAY WATER WORKS	TUG FORK RIVER	1) INTERCONNECTION LOUISA WATER IN KY	$279,892
3305007	WAYNE	TOWN OF WAYNE	LOW DRAWOFF POINT TWELVEPOLE CREEK	1) INTERCONNECTION (LAVALLETTE PSD--PURCHASES FROM KENOVA-- NEAR WOLF CREEK; INTERCONNECT TO LAVALLETTE NEAR CHERRY BRANCH WOULD USE WATER FROM WVAW HUNTINGTON)	$509,529
3305009	WAYNE	KENOVA MUNICIPAL WATER	BIG SANDY RIVER	1) INTERCONNECTION WVAW HUNTINGTON	$567,938
3305104	WEBSTER	WVAW WEBSTER SPRINGS	ELK RIVER	1) INTERCONNECTION WITH WVAW WESTON	$21,200,000
3305402	WOOD	CLAYWOOD PARK PSD	LITTLE KANAWHA RIVER	1) INTERCONNECTION PARKERSBURG	$440,000
				TOTAL INTERCONNECTIONS	**$96,169,730**

PWSID #	COUNTY	SYSTEM NAME	INTAKE	VIABLE ALTERNATIVE	ESTIMATED COST (Based on 2016 Pricing)
3300402	BRAXTON	FLATWOODS CANOE RUN	ELK RIVER	1) TREATED WATER STORAGE 607K GAL. TANK	$801,875
3300516	BROOKE	WEIRTON AREA WATER BOARD	OHIO RIVER	1) TREATED WATER STORAGE- 1,025K GAL. STANDPIPE TANK	$1,021,375
3301024	FAYETTE	MOUNT HOPE WATER	MINE INTAKE TO RAW WATER PUMP	1) USE EXISTING TANKS AT BOY SCOUT CAMP AND PUMP STATION	$1,538,000
3301705	HARRISON	CLARKSBURG WATER BOARD	WEST FORK RIVER	1) 31 TREATED WATER STORAGE-MULTIPLE TANKS APPROXIMATELY 4,000K GAL.	$4,206,075
3302331	LOGAN	CITY OF LOGAN WATER DEPARTMENT	GUYANDOTTE RIVER	1) TREATED WATER STORAGE - THREE 816K GAL. TANKS	$2,781,750
3302364	LOGAN	LOGAN COUNTY PSD NORTHERN REGIONAL	GUYANDOTTE RIVER	1) TREATED WATER STORAGE 1,260K GAL. TANK	$1,200,125
3302435	MCDOWELL	MCDOWELL CO. PSD BERWIND	BERWIND WELL	1) TREATED WATER STORAGE 195K GAL. TANK	$403,625
3302804	MERCER	BLUEWELL PSD	SHUPE RESERVOIR	1) TREATED WATER STORAGE 105K GAL. TANK	$406,625
3302849	MERCER	GREEN VALLEY GLENWOOD PSD GLENWOOD	GLENWOOD RESERVOIR	1) TREATED WATER STORAGE 1,260K GAL. TANK	$1,200,125
3302928	MINERAL	FRANKFORT PSD	IN001 PATTERSON CREEK	1) TREATED WATER STORAGE: 4 EXISTING TANKS NEED DEMOLISHED AND REPLACED WHILE INCREASING VOLUME	$1,812,000
3303005	MINGO	MATEWAN WATER WORKS	TUG FORK RIVER	1) TREATED WATER STORAGE 607K GAL. TANK	$801,875
3303009	MINGO	WILLIAMSON UTILITY BOARD	TUG FORK RIVER	1) TREATED WATER STORAGE 1,260K GAL. TANK	$1,200,215
3303029	MINGO	MINGO COUNTY PSD NAUGATUCK	TUG FORK RIVER	1) TREATED WATER STORAGE 2,000K GAL. ELEVATED TANK	$3,722,900
3303908	PRESTON	KINGWOOD WATER WORKS	CHEAT RIVER	1) TREATED WATER STORAGE 2,490K GAL. TANK	$2,400,250
3304104	RALEIGH	BECKLEY WATER COMPANY	GLADE RESERVOIR; SWEENEYSBURG MINE	1) TREATED WATER STORAGE W/SWEENEYSBURG PRODUCTION	$8,909,160
3304407	ROANE	WALTON PSD	SILCOTT FORK RESERVOIR	1) TREATED WATER STORAGE 50K GAL. TANK	$240,850
3304605	TAYLOR	TAYLOR COUNTY PSD	TYGART DAM TYGART LAKE (TYGART VALLEY RIVER)	1) TREATED WATER STORAGE	$695,000
3304803	TYLER	SISTERSVILLE MUNICIPAL WATER	OHIO RIVER	1) TREATED WATER STORAGE REHABILITATE TANK TAKEN OUT OF SERVICE	$300,000
				TOTAL TREATED WATER STORAGE	**$33,641,825**
3300404	BRAXTON	SUGAR CREEK PSD	ELK RIVER	1) RAW WATER STORAGE 297K GAL. TANK	$713,375

PWSID #	COUNTY	SYSTEM NAME	INTAKE	VIABLE ALTERNATIVE	ESTIMATED COST (Based on 2016 Pricing)
3300512	BROOKE	FOLLANSBEE HOOVERSON HTS.	OHIO RIVER	1) RAW WATER STORAGE 2,026K GAL. TANK	$1,726,700
3300901	DODDRIDGE	TOWN OF WEST UNION	MIDDLE ISLAND CREEK (MIC)	1) RAW WATER STORAGE 1,000K GAL. TANK	$993,625
3301307	GREENBRIER	CITY OF LEWISBURG	GREENBRIER RIVER	1) RAW WATER STORAGE 2,000K GAL. TANK	$4,552,000
3301613	HARDY	HARDY COUNTY PSD BAKER	IN001 PARKER HOLLOW RESERVOIR	1) RAW WATER STORAGE 300K GAL. TANK	$650,000
3302434	MCDOWELL	MCDOWELL CO. PSD BARTLEY	BARTLEY SOURCE	1) RAW WATER STORAGE 491K GAL. TANK	$713,375
3302515	MARION	TOWN OF MONONGAH	TYGART VALLEY RIVER	1) RAW WATER STORAGE 666K GAL. TANK	$909,375
3303206	MONROE	RED SULPHUR PSD	HANCOCK SPRING; COBURN SPRING; RICH CREEK INTAKE	1) RAW WATER STORAGE 816K GAL. TANK	$927,250
3303308	MORGAN	PAW PAW WATER WORKS	POTOMAC RIVER	1) RAW WATER STORAGE 297K GAL. TANK	$564,125
3303402	NICHOLAS	CRAIGSVILLE PSD	GAULEY RIVER	1) RAW WATER STORAGE 3,000K GAL. TANK	$3,936,000
3303403	NICHOLAS	NETTIE LEIVASY PSD	PANTHER CREEK	1) RAW WATER STORAGE 1,000K GAL TANK	$2,935,000
3304005	PUTNAM	CITY OF HURRICANE	HURRICANE RESERVOIR	1) RAW WATER STORAGE 1.000K GAL. TANK	$1,500,000
3304204	RANDOLPH	TOWN OF HARMAN	HARMAN WELL	1) RAW WATER STORAGE 105K GAL. TANK	$403,625
3304507	SUMMERS	BIG BEND PSD	GREENBRIER	1) RAW WATER STORAGE 209K GAL. TANK	$506,875
3304711	TUCKER	TIMBERLINE FOUR SEASONS RESORT	WELL #5	1) RAW WATER STORAGE 210K GAL. TANK	$506,875
3305205	WETZEL	PINE GROVE WATER	NORTH FORK FISHING CREEK	1) RAW WATER STORAGE- CURRENTLY 177K ONLY 70% VIABLE DUE TO PUMP ISSUES, ADD 139K GAL. TANK AND UPGRADE PUMPS TO FULLY UTILIZE STORAGE.	$478,750
3305516	WYOMING	COMMUNITY OF OCEANA	LAUREL FORK	1) RAW WATER STORAGE 2,026K GAL. TANK	$1,726,700
				TOTAL RAW WATER STORAGE	**$23,743,650**
3300315	BOONE	BOONE RALEIGH PSD	BIG COAL RIVER	1) WELLS DRILLED INTO WATER FILLED ABANDONED MINES	$500,000
3300406	BRAXTON	WVAW GASSAWAY	ELK RIVER	1) DEVELOP WELLS (PREFERRED); NOTE $14,800 ANNUAL O & M	$1,000,000
3300508	BROOKE	HAMMOND PSD	BUFFALO CREEK	1) GROUNDWATER SUPPLY WELLS OR SPRINGS	$134,000
3302503	MARION	FAIRVIEW WATER SYSTEM	WELLS #1, #2, #3 AND #4	2) MINE POOLS	$700,000

PWSID #	COUNTY	SYSTEM NAME	INTAKE	VIABLE ALTERNATIVE	ESTIMATED COST (Based on 2016 Pricing)
3302603	MARSHALL	CITY OF CAMERON	EARTHEN DAM	1) WELLS TO REPLACE SURFACE SUPPLY-- MURRAY ENERGY IS LONG WALL MINING THE AREA AND THIS IS THEIR PROPOSED BACKUP.	$888,250
3303516	OHIO	CITY OF WHEELING	OHIO RIVER	1) TWO ADDITIONAL WATER WELLS PLANNED	NO COST PROVIDED
				TOTAL GROUNDWATER (WELLS)	**$3,222,250**
3301912	JEFFERSON	CORPORATION OF HARPERS FERRY	POTOMAC RIVER; ELK RUN	1) PORTABLE WATER TREATMENT TRAILER	
3301979	JEFFERSON	JEFFERSON UTILITIES DEERFIELD VILLAGE	WELL #1 -SOUTH PAW LANE; WELL #2-DEERFIELD VILLAGE DRIVE; WELL #3 PATHFINDER COURT	1) WATER TRUCK TO HAUL WATER IN AN EMERGENCY	
3302813	MERCER	GREEN VALLEY GLENWOOD PSD BULLTAIL	JAMES BAILEY RESERVOIR	ALTERNATIVE SOURCE ANALYSIS NOT COMPLETED	
3303616	PENDLETON	PENDLETON CO. PSD UPPER TRACT	SOUTH FORK OF SOUTH BRANCH POTOMAC RIVER	1) OLD SUGAR GROVE NAVAL FACILITY HAS A WATER PLANT ON THEIR PROPERTY THAT COULD BE USED IN AN EMERGENCY.	$108,750
				TOTAL MISCELLANEOUS	**$108,750**
3300104	BARBOUR	PHILIPPI PUBLIC WATER SYSTEM	TYGART VALLEY RIVER	1) PLAN TO CONSTRUCT RESERVOIR ON LITTLE LAUREL CREEK	$5,864,000
3300701	CALHOUN	GRANTSVILLE WATER DEPARTMENT	LITTLE KANAWHA RIVER	1) IMPOUNDMENT BULL RIVER	$300,000
3301046	FAYETTE	WVAW NEW RIVER	NEW RIVER	1) RAW WATER STORAGE-20,000K GAL. (5 DAY SUPPLY) RESERVOIR	$22,600,000
3302502	MARION	CITY OF FAIRMONT	TYGART VALLEY RIVER	1) 11,400K GAL. RESERVOIR	$3,170,375
3303808	POCAHONTAS	CHEAT MOUNTAIN WATER SYSTEM	SHAVERS FORK LAKE	1) RAW WATER STORAGE USING SILVER CREEK RESERVOIR-CURRENTLY USED FOR SNOWMAKING	$1,194,000
3303912	PRESTON	PRESTON COUNTY PSD #1		1) FAIRFAX POND IS COUNTED AS RAW WATER STORAGE ALSO	
3304405	ROANE	CITY OF SPENCER	CHARLES FORK LAKE	1) ALTERNATE SOURCE-CONSTRUCT RESERVOIR MILETREE LAKE-A FORMER INTAKE THERE BUT STRUCTURE TOO DILAPIDATED TO USE	$431,409
				TOTAL RESERVOIRS (IMPOUNDMENTS)	**$33,559,784**

PWSID #	COUNTY	SYSTEM NAME	INTAKE	VIABLE ALTERNATIVE	ESTIMATED COST (Based on 2016 Pricing)
				GRAND TOTAL	**$379,812,093**

APPENDIX D
Public Water System Supply Study Commission
Work Group Membership

Work Group 1

(A review and assessment of the effectiveness and quality of information contained in updated Source Water Protection Plans required for certain public water systems by the provisions of sections nine-c, article one, chapter sixteen of this code)

Cathy Slemp, MD, MPH - **Chair**
Commissioner & State Health Officer, Interim
Bureau for Public Health

Walt Ivey *(serving as proxy for Dr. Slemp)*
Office of Environmental Health Services
Bureau for Public Health

Tim Ball
Morgantown Utility Board

Evan Hansen
West Virginia Rivers Coalition

Michael McCawley, PhD
Assistant Professor
WVU School of Public Health

Laura Martin
West Virginia American Water Company

Vacant
Hydrologist

Amy Swann, Executive Director
Rural Water Association

Work Group 2

(A review and assessment of the effectiveness of the legislation enacted during the 2014 Regular Session of the West Virginia Legislature, as it pertains to assisting public water systems in identifying and reacting or responding to the identified potential sources of significant contamination and increasing public awareness and public participation in the emergency planning and response process)

Dr. Terry Polen - **Chair**
WV Department of Environmental Protection

Cathy Slemp, MD, MPH
Commissioner & State Health Officer, Interim
Bureau for Public Health

Walt Ivey *(serving as proxy for Dr. Slemp)*
Office of Environmental Health Services
Bureau for Public Health

Tim Ball
Morgantown Utility Board

Evan Hansen
West Virginia Rivers Coalition

Pam Nixon
Citizen Member

Amy Swann, Executive Director
WV Rural Water Association

Work Group 3

(The extent of available financing and funding alternatives which are available to existing public water systems to pursue projects which are designed to create alternate sources of supply or increased stability of supply in the event of a spill, release or contamination event which impairs the water system's primary source of supply)

Amy Swann, Executive Director - **Chair**
WV Rural Water Association

David L. Acord, II (Designee for Mike Albert)
WV Public Service Commission

Laura Martin
West Virginia American Water Company

Rick Roberts
E. L. Robinson Engineering Company

Vacant
Hydrologist

Work Group 4

(A review and consideration of the recommendations of the U.S. Chemical Safety and Hazard and Investigation Board after its investigation of the Bayer Crop Science incident of 2008)

Michael McCawley, PhD - **Chair**
Assistant Professor
WVU School of Public Health

Rebecca McPhail, President
West Virginia Manufacturers Association

Pam Nixon
Citizen Member

Vacant
Hydrologist

Dr. Terry Polen (designee)
WV Department of Environmental Protection

Work Group 5

(Any recommendations or suggestions the study commission may offer to improve the infrastructure of existing public water systems, to provide safe and reliable sources of supplies and to pursue other measures designed to protect the integrity of public water services)

David L. Acord, II - **Chair**
WV Public Service Commission

Amy Swann, Executive Director
WV Rural Water Association

Tim Ball
Morgantown Utility Board

Cathy Slemp, MD, MPH
Commissioner & State Health Officer, Interim
Bureau for Public Health

Laura Martin
West Virginia American Water Company

Walt Ivey *(serving as proxy for Dr. Slemp)*
Office of Environmental Health Services
Bureau for Public Health

Rick Roberts
E. L. Robinson Engineering Company

Evan Hansen
West Virginia Rivers Coalition

APPENDIX E
Department of Environmental Protection
Aboveground Storage Tank Program Status Report

As of December 6, 2018

Total Registered Tanks:	39,277
Total Regulated Tanks:	5,045
Total Level 1 Tanks:	4,109
Total Level 2 Tanks:	936

January 1 – December 6, 2018

Aboveground Storage Tank Inspections (All types):	1,571
Aboveground Storage Tank Compliance Monitoring Inspections:	1,083
CMI Follow-up Inspections & IOVs:	424
Compliance Assistance Inspections:	12
Complaint Responses:	9
Record Reviews:	52
Spill Responses:	40

Fiscal Information – Fiscal Year 2018

Aboveground Storage Tank Fund (3004)

- Beginning Cash Balance $ 1,266,723.00
- Total Revenues $ 1,042,136.99
- Total Expenses $ 559,357.28
- Ending Balance $ 1,749,502.71

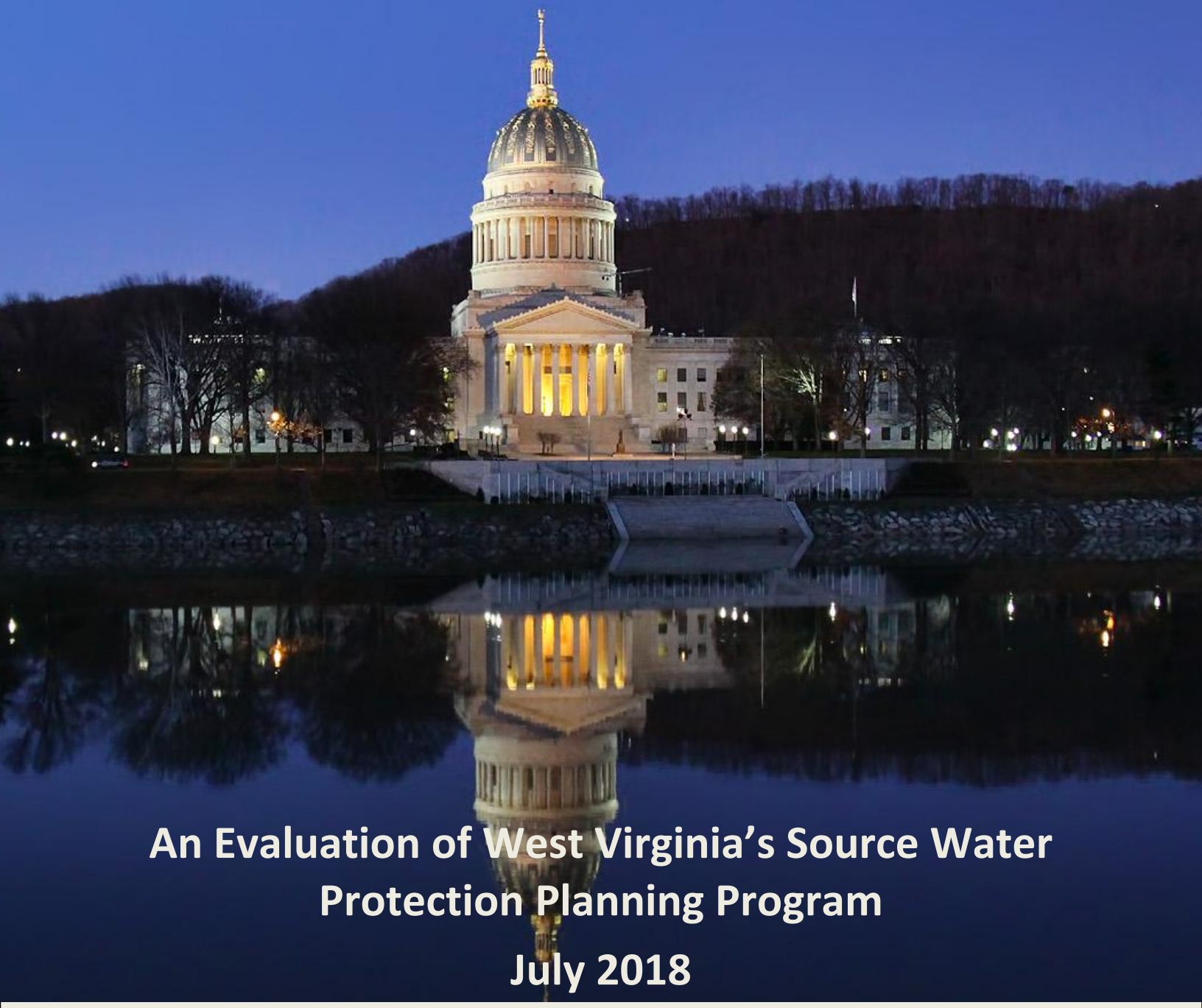
Leaking Aboveground Storage Tank Fund (3016)

- Beginning Cash Balance $ 633,356.00
- Total Revenues $ 129,250.69
- Total Expenses $ 94,648.16
- Ending Balance $ 667,958.53

APPENDIX F
Public Water System Supply Study Commission Recommendations Matrix

PWSSSC Recommendations		
Number	Description	Status/Comment
1.1	Require an annual evaluated exercise of the SWPP.	Survey to PWSs in May 2017.
1.2	DEP and/or DHHR notify downstream water utilities if change in AST.	Quarterly reports to database. Recommending other notifications as well.
1.3	Contract with outside organization to review and evaluate SWPPs.	Completed – Attached in Appendix G.
1.4	Legislature review of the proposed alternative water sources. Funding needs.	Provided to the Legislature in previous reports. Unknown if considered.
2.1	Additional funding to BPH and DEP for electronic databases.	Working on process as able. Still recommend improvements to reporting process.
2.2	Use current and past Commission reports for future legislation.	Reports have been submitted to Legislature.
2.3	Spill reporting hotline collect information if spills were from AST and when systems were notified.	Working on process as capable. Still recommend improvements to reporting process.
2.4	Any future reduction in tanks regulated by the Aboveground Storage Tank Act be based on sound science demonstrating no threat to drinking water.	No updates at this time.
3.1	Legislature appropriate $2.0 million for BPH source water protection efforts.	Legislature has provided additional funding through SFY 2018.
3.2	Amend West Virginia Code 16-1-9c to stagger SWPP submissions.	Working on a voluntary method with PWSs. Proposed changes being provided to the Legislature for the 2019 Session. (See Appendix H)
3.3	IJDC and BPH amend project ranking to add emphasis for source water protection projects.	BPH has amended project rankings.
3.4	Legislature resume appropriation of $40 million to IJDC.	$40 million appropriated at last state budget.
4	Emergency Planning Community Right to Know Act (EPCRA) Tier II information, as appropriate, should be required to be made available to water utilities within 30 days of receipt of the request of the information from a water utility.	No updates at this time.
5.1.A	Not up to utility to complete gaps in SDS. Entities submitting SDSs to have burden of submitting missing information.	No updates at this time.

PWSSSC Recommendations		
Number	Description	Status/Comment
5.1.B	Amend West Virginia Code 22-30-10(a) to inform PWS of type and quantity of fluids stored upstream.	No updates at this time.
5.1.C	Notify downstream PWSs of NPDES NOVs issued.	No updates at this time.
5.2	Regarding reporting spills to the hotline. Report spills as soon as possible, provide accurate coordinates, timing of the spill, contains of the spill. Notice to PWS as soon as possible.	BPH is forwarding to PWSs by email. Still recommend improvements to reporting process.
5.3	DHSEM and LEPC provide information to PWS as allowed.	No updates at this time.
5.4	Legislation to provide tax credits for source water protection.	No updates at this time.
5.5	BPH evaluate and potentially implement RAIN or another similar network.	Providing funding to implement RAIN in areas of the state.



An Evaluation of West Virginia's Source Water Protection Planning Program

July 2018

Prepared for: West Virginia Department of Health and Human Resources

Prepared by: Horsley Witten Group, Inc.

Table of Contents

1.0 Executive Summary

As required by §22-31-2, West Virginia's Department of Health and Human Resources (DHHR) is required to conduct an evaluation of the state's Source Water Protection (SWP) Program. The Horsley Witten Group, Inc. (HW) funded through the U.S. Environmental Protection Agency was selected to prepare a report evaluating the effectiveness of the SWP program in WV, and to offer recommendations to address gaps, improve water system source water protection efforts, and enhance protection efforts for the future. As part of this effort, DHHR distributed an online survey to 126 water systems. HW processed and analyzed the survey data, reviewed and analyzed 12 Source Water Protection Plans (SWPPs), and conducted an in-person stakeholder meeting in March 2018 in Sutton, WV. This report highlights programmatic areas of the SWP Program that work well and components of the SWP program that could benefit from improvements.

HW identified the following key themes, which are discussed in further detail in this report:

1. The SWPP process would be enhanced by updating the SWPP template and instructions, and the use of an online tool to streamline development of the SWPPs;
2. WV Department of Environmental Protection's (DEP) Spill Hotline would benefit from improvements to ensure that accurate information regarding spills is communicated as soon as possible to potentially affected water systems; and
3. Public and stakeholder participation is an integral part to the SWP process and efforts should be taken to improve engagement in the SWP process.

HW summarized the results of the evaluation into a series of recommendations and implementation actions (Table 1). DHHR staff can reference this table as the Department plans to implement the recommendations. This table can be further enhanced by adding information such as timeframe for implementation, estimated costs, and interim actions and considerations. These recommendations presented in this report are the outcome of the first evaluation of WV's SWP program. Moving forward, DHHR should consider these recommendations and implementation actions along with other suggestions from SWP stakeholders, related to improving the SWP process.

Table 1. Recommendations and Implementation Actions

Recommendations	Implementation Actions	Report Section	Responsible Entity
Update the SWPP Template/Instructions.	Encourage water systems to present information in a legible manner. More specifically, indicate that supplemental information in the SWPP be provided electronically and not scanned.	Section 4	DHHR
	Add a field in Table 2 of the SWPP template for calculating the two day minimum raw/treated water storage capacity requirement.	Section 4	DHHR
	Develop a list of best practices to locate and contact responsible parties at Potential Source of Significant Contamination (PSSCs) (especially for PSSCs identified locally by the water system) in order for water systems to more easily obtain the necessary information for the SWPP and to build relationships if and when an incident occurs.	Section 4	DHHR
	Include formulas for calculating the values that are not taken directly from the Public Service Commission (PSC) report in the water loss calculation table (Table 14, SWPP template). In addition, instructions should indicate that all table fields are presented in the same order as the template and remain in the table, even if those fields do not apply to their system (e.g., Water Sold).	Section 4	DHHR
	Clarify if and how the "Water Sold" field is being accounted for in calculating the ratio for the water loss calculations.	Section 4	DHHR
Use an online form for SWPP development to make updating SWPPs more efficient and to ensure consistent information across systems.	Finalize the online form/tool and deploy it for use as soon as possible. This tool should be included as part of the online portal that DHHR plans to implement.	Section 4	DHHR
Evaluate and improve the WV DEP Spill Hotline to ensure that accurate information is communicated to potentially affected water systems.	Send notifications from the Spill Hotline call center directly to downstream water systems.	Section 5	DEP
	Update/develop the Spill Hotline database to include: • Geographically-referenced information. • Combine geo-referenced water system, water intake, and PSSC information from multiple websites into one database. This information should be included as part of the online portal that DHHR plans to implement. (http://tagis.dep.wv.gov/pswicheck/; http://tagis.dep.wv.gov/WVwaterplan/; https://geopub.epa.gov/DWWidgetApp/) • Information on if downstream public water systems were notified of a spill. • Information on when downstream public water systems were notified of a spill. • Updated contact list information – to be updated annually, at minimum, and whenever a spill occurs.	Section 5	DEP
	Provide training to Spill Hotline call center staff.	Section 5	DHSEM/DHHR

Recommendations	Implementation Actions	Report Section	Responsible Entity
	Provide oversight of database entries by experienced technical staff.	Section 5	DHSEM/DEP
	Provide water systems and other government departments access to the Spill Hotline database.	Section 5	DEP
	Evaluate/audit the Spill Hotline for process improvements.	Section 5	DEP
Update water system contact information in the Spill Hotline database to ensure that notifications are sent to the correct staff.	Develop a plan to update water system contact information, annually, at minimum, and whenever an incident occurs.	Section 5	DHHR
	Coordinate between DEP, WV Department of Homeland Security and Emergency Management (DHSEM), and DHHR to ensure all parties are prepared should an incident occur.	Section 5	DHHR/DEP/ DHSEM
Share the responsibility of improving communication between DEP, DHHR, water systems, and facilities/PSSCs to improve SWP efforts.	Water systems should attempt to build close relationships with upstream facilities and leverage ongoing work to expand the River Alert Information Network (RAIN).	Section 5	Water systems/ DHHR
	Communicate through face-to-face meetings and group interactions between water systems, upstream facilities, and DHHR.	Section 5	Water systems/ DHHR
	DEP, DHHR, and water systems should improve communication with each other regarding PSSCs. DEP and DHHR should work together to educate PSSCs about communication with water systems for SWP efforts.	Sections 4,5	DHHR/DEP/ Water systems
	DEP should provide PSSC information to all water systems and DHHR via the Department's online, secure GIS website to accommodate for situations where facilities are not forthcoming with information to water systems directly. Currently access to this information is provided to water systems by request only.	Section 5	DEP/DHHR
Continue funding and technical assistance so that water systems can continue and enhance SWP efforts.	Continue communication efforts to water systems on upcoming grant opportunities.	Section 5	DHHR
	Provide funding for table-top exercises and regional exercises.	Section 5	DHHR
	Use the SWPP to address watershed-based improvements as well as source water protection projects.	Section 5	DHHR
	Improve mapping resources by creating a comprehensive web-based database that includes PSSC data, downstream water system locations, other water resources, and Spill Hotline information. This information could be included as part of the online portal that DHHR plans to implement.	Section 5	DHHR
	Consider providing funding to water systems to support efforts to collect the required information and update the SWPPs.	Section 4	DHHR
Exercise the SWPPs.	Exercise the SWPPs through emergency response hypothetical scenarios (e.g., tabletops, full-scale exercises).	Section 6	DHHR/Water systems
	Encourage water systems to use exercises to identify gaps and improve emergency response and contingency procedures in their SWPPs.	Section 6	DHHR/Water systems

Recommendations	Implementation Actions	Report Section	Responsible Entity
Leverage the work of WV Rivers Coalition and implement lessons learned to improve public engagement in the SWP process.	Engage the public by meeting people "where they are." This includes planned annual events such as outdoor festivals, county fairs, etc.	Section 6	DHHR/Water systems
	When possible, provide food and drink at events and host events at times when the public can attend – e.g., outside of work hours and possibly on weekends.	Section 6	DHHR/Water systems
	In public outreach materials, when deemed appropriate, use the term "drinking water protection" instead of source water protection. This resonates with the general public, as people make the connection between drinking water and reducing pollution to surface waters.	Section 6	DHHR/Water systems
Improve public participation at SWPP meetings and hearings.	Increase communication with local partner organizations and Local Emergency Planning Committees (LEPCs) about in-person events on source water protection efforts and SWPPs.	Section 6	DHHR/Water systems
	Provide templates for public announcements for distribution in newspapers and online communication channels such as websites, social media sites (Facebook, Twitter, etc.).	Section 6	DHHR
Modernize public engagement mechanisms to reduce costs (i.e., staff time) and provide easier ways for the public to participate in the SWP process.	Research online meeting platforms to host public meetings or hearings, as required by state or federal regulations.	Section 6	DHHR
	Ensure that full transcripts can be provided with these platforms and consider platforms that will record audio and the presentation together as a .mp4 file.	Section 6	DHHR

2.0 Background

Following a chemical spill on January 9, 2014 on the Elk River in Charleston, West Virginia (WV), legislators passed WV Senate Bill (SB) 373 §16-1-9c, to protect drinking water supplies or "source water" statewide. This bill required all existing water systems that draw and treat water from a surface water supply source or a surface water influenced groundwater supply source to develop and submit source water protection plans (SWPPs) to the Bureau for Public Health. Further, the bill mandated that water systems address specific components in the SWPPs. SB 373 revised portions of Article 1 of Chapter 16 (Public Health) of the WV Code to address regulation of public water systems, source water protection, and grants for wellhead and source water protection. The law became effective on June 6, 2014 and was adopted into WV Code at §16-1-9c,d,f. To provide clarification on how the code should be implemented, the state passed a legislative rule (64-03) with guidance and instructions for the SWPP process. As a final quality control step in this process, WV passed §22-31-12, which established a Public Water System Supply Study Commission (a)(1) and (2) required an evaluation of program effectiveness.

2.1 Purpose of Evaluation Report

To fulfill requirements in WV §22-31-12 requiring that the State conduct an evaluation of WV's Source Water Protection (SWP) Program, Horsley Witten Group (HW) was selected to prepare a report evaluating the effectiveness of the SWP program in West Virginia, and to offer recommendations to address gaps, improve water system source water protection efforts, and enhance protection efforts for the future. Further, this report provides an analysis of gaps in the SWPP process and suggested improvements in the SWP planning process across the State.

2.2 Structure of Evaluation Report

The SWP Program operates within the WV Department of Health and Human Resources (DHHR), Bureau for Public Health. This report provides lessons learned from working with WV DHHR staff, water systems, and other SWP stakeholders for the past four years, following the passing of SB 373. As part of this effort, DHHR distributed an online survey to 126 water systems. HW analyzed the survey data, reviewed and analyzed 12 SWPPs, and conducted an in-person stakeholder meeting in March 2018. These efforts are described more in the next section (Section 3). This report highlights programmatic areas of the SWP Program that are working well and components of the SWP program that could benefit from improvements, presenting a summary of recommendations and implementation actions in Section 1 and recommendations for SWP Program improvements by section. This report describes our Methodology (Section 3), Information Quality in SWPPs (Section 4), the SWP Program's effectiveness of assisting public water systems in identifying and reacting or responding to identified potential sources of significant contamination (PSSCs) (Section 5), public awareness and public participation in the emergency planning and response efforts as part of the SWP program (Section 6).

3.0 Methodology

This section outlines the methodology HW followed to evaluate the WV SWP program.

3.1 Kickoff meeting with DHHR

HW held a kick-off meeting with DHHR to discuss the goals of the evaluation, as well as the anticipated evaluation process and timeframe. During this meeting, HW gathered initial feedback about the WV

SWP program from DHHR staff. DHHR provided HW with background information to review to understand the history and development of the program. In addition, HW and DHHR discussed the relevant survey questions for distribution to WV water systems.

3.2 Review of background information

In order to conduct an effective evaluation, HW first reviewed background information to understand the history and development of the WV SWP Program. The following materials were included as part of the review:

- SB 373 §16-1-9c.[1];
- Legislative Rule, 64CSR3[2];
- WV DHHR's SWPP template and supplemental guidance[3];
- Various WV Rivers Coalition publications, reports, and materials[4];
- WV Source Water Assessment and Protection program documents; and,
- Source water protection program efforts in other states, such as New Hampshire, North Carolina, Ohio, and Colorado.

3.3 Survey of water systems

DHHR distributed an online survey to solicit feedback from water systems on the SWP program. In late 2017, the survey weblink was emailed to 126 SWP staff at water systems across WV.. All questions were optional. While some questions asked for a simple "Yes" or "No" response, others asked respondents to elaborate and comment on specific areas of the program, allowing DHHR to collect valuable input.

A total of 61 responses were received, reflecting a 48% response rate. HW staff analyzed the survey data, collated the results anonymously, and distributed to DHHR for review. General feedback and recommendations from the survey results are provided as recommendations throughout this report. Survey questions and results are included in Appendix A.

3.4 Review of SWPPs

WV SB 373 required that "on or before July 1, 2016, each public water system 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." SB 373 contains required components for all (SWPPs).

With the help of DHHR, HW selected SWPPs from 12 water systems to provide a representative cross section of small, medium, and large systems – reflecting diverse capabilities and concerns. HW reviewed the SWPPs in concurrence with DHHR's template, instructions, and supplemental guidance available on DHHR program's website[5]. The SWPPs were reviewed for compliance with the components required by SB 373. HW also reviewed the SWPPs for any unique or outstanding components. The intent of this review was not to evaluate to provide specific feedback on any particular water system, but rather to identify trends, general feedback, and recommendations to improve the SWPP process.

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1 http://www.wvlegislature.gov/bill_status/bills_text.cfm?billdoc=SB373%20SUB2%20ENR.htm&yr=2014&sesstype=RS&i=373

2 http://apps.sos.wv.gov/adlaw/csr/readfile.aspx?DocId=26138&Format=PDF

3 https://www.wvdhhr.org/oehs/eed/swap/Draft_Template.asp

4 http://wvrivers.org/resources/publications/

5 https://www.wvdhhr.org/oehs/eed/swap/Draft_Template.asp

HW tracked the review of the SWPPs using an Excel spreadsheet in order to highlight commonalities, inconsistencies, unique components, and pull out recommendations. This tracking spreadsheet was provided to DHHR, but it is not included as a part of this report. Instead, general feedback and recommendations based on the SWPP review are provided in Section 4 of this report. Feedback and recommendations are not specific to any water system.

3.5 Stakeholder Meeting Feedback

WV DHHR hosted a stakeholder meeting on March 15, 2018 in Sutton, WV to discuss the evaluation process and collect additional feedback on the SWP program. The meeting was advertised to SWP staff at water systems across WV. The summary from the meeting, including the agenda, list of attendees, and relevant presentations is included in Appendix B.

During the meeting, participants provided valuable feedback on the SWPP development process and ways to improve source water protection at the local and state level. Discussions from the March stakeholder meeting helped to inform the recommendations in this report. Information contained in this report is attributed to comments made during the meeting, as appropriate.

3.6 Report

Based on a review of relevant background information and legislative requirements, analysis of the online survey results, review of 12 SWPPs, and feedback from the March stakeholder meeting, HW compiled recommendations into this evaluation report. This report evaluates the effectiveness of the SWP program by offering recommendations to address gaps in the SWP program, improve the process of SWPP development for water systems, improve water systems SWP efforts, and enhance protection efforts for the future. This report provides recommendations for SWP program improvements by Section. All recommendations are summarized in the Executive Summary section of this report.

The intent of the SWPP is to outline what a water system has done, is doing, and plans to do to protect its source of drinking water (*DHHR Template Instructions*):

- Identify and prioritize potential threats to the source water supply and establish strategies to minimize the threats.
- Plan for emergency response to incidents that threaten or compromise the source water supply.
- Plan for future expansion and development, like storage or establishing alternative sources.
- Document the need and benefits to increase opportunities for funding.

4.0 Quality of information in updated SWPPs

HW staff reviewed SWPPs from 12 water systems submitted to DHHR in 2016. HW evaluated the SWPPs in concurrence with DHHR's template, instructions, and supplemental guidance available on the DHHR program website[6]. The SWPPs were reviewed for compliance with the components required by SB 373. HW noted any unique or outstanding components. The intent of this review was not to provide specific feedback on any particular water system, but rather to identify trends, general comments, and recommendations to improve the SWPP process.

An Excel spreadsheet used by HW to track the review of the SWPPs was provided to DHHR as a separate document.

[6] https://www.wvdhhr.org/oehs/eed/swap/Draft_Template.asp

4.1 SWPP Development

Almost all SWPPs reviewed used the template provided by DHHR. This template provides water systems with a standardized format to present information. In addition to the template, DHHR developed instructions and supplemental guidance documents. Since it is required that public water systems submit an updated SWPP at least every three years, or when there is a substantial change in PSSCs, the template and guidance materials are intended to make SWPP development and updates more streamlined and reduce the burden on the water systems.

During the March stakeholder meeting, attendees indicated that collecting the information for the SWPPs and developing the SWPPs requires a significant amount of time and effort. However, a small water system servicing a population less than 10,000 people was able to collect all the required information and develop a SWPP without the support of a contractor. Because this water system staff collected the information themselves, they claimed to know the SWPP process and their system's source water protection needs better than other systems who hired a contractor.

As part of the online survey, WV DHHR asked water systems to rate how difficult or easy, in terms of time spent and response from partners, it was to develop the information necessary for each of the SWPP's components required by SB 373. The components that were answered to be the most difficult include: the technical and economic feasibility of alternative source options and ability to switch to an alternative source. The components that were answered to be the easiest include: available storage, operational information, ability to close water intake. The other components fell in the moderate category.

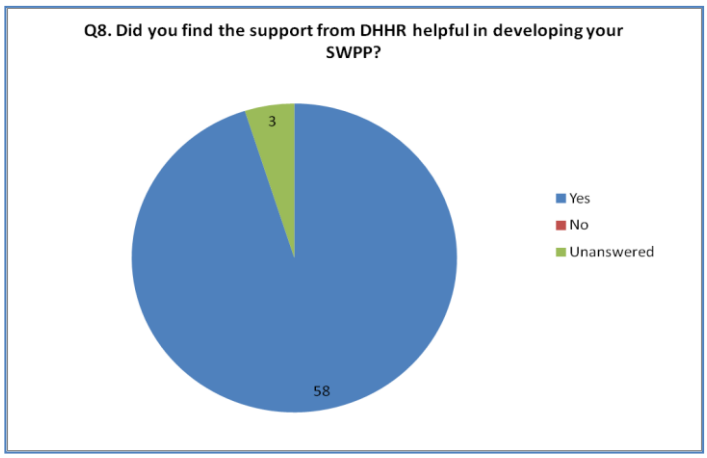


Figure 1. DHHR Support in developing the SWPP

Water systems were also asked if they found support from DHHR helpful when developing the SWPP (Figure 1). The majority of respondents (58 out of 61) responded that DHHR was helpful. The template and instructions most likely contribute significantly to this support.

In the SWPP instructions, DHHR references an online form/tool. At the time of this evaluation, the online form had not been released for use by the water systems. DHHR did release a feasibility study matrix spreadsheet on the Department's website, which automatically populates certain feasibility criteria, final score, and costs based on information and feasibility ranking provided by the water system. This populated feasibility matrix can then be copied and pasted into the SWPP. These types of forms/tools will make it easier for water systems to develop and update their SWPPs.

Finally, water systems responded that they learned from their experience developing and implementing the SWPP, including obtaining information on various sources of potential contamination upstream of a water intake and how important it is to protect source water. Table 2 below provides a selection of raw responses from this survey question. A complete summary of responses to all survey questions is provided in Appendix A.

Table 2. Electronic survey question and select responses.

What did you learn from the public or agency partners during the development or implementation of the SWPP?
They put it into perspective of how vulnerable our source water intake could be.
Learned the issues and concerns of the citizens.
Learned information regarding PSSC's that we were previously unaware of.
A lot of info but difficult to obtain and coordinate all the info and parties involved. Small systems do not have time or manpower to get desired results.
That there seems to be limited information travel among the group.
Who to contact in case of emergency.

4.2 Source Water Protection Team

SB 373 requires that "every effort shall be made to inform and engage the public, local governments, local emergency planners, local health departments and affected residents of the development of the protection plan," however there is no formal recommendation on how to do this. Therefore, DHHR recommends that the water system invite representatives from these stakeholder organizations to form a Source Water Protection Team. The purpose of the Source Water Protection Team is to contribute information to the development of the SWPP and assist with the implementation and updates of the SWPP.

The majority of SWPPs reviewed used the template to provide information on the Source Water Protection Team, including the table listing Source Water Protection Team members, contact information, date of the first protection team meeting, and a list of efforts made to inform and engage local stakeholders. Some SWPPs included the sign-in sheets and meeting minutes from one of the first few Source Water Protection Team meetings in an appendix to the SWPP.

Before a SWPP can be approved, the instructions state that the public must be invited to contribute information for consideration. DHHR must conduct at least one public hearing to engage the public. DHHR's Supplemental Guide on the Source Water Protection Team[7] provides a number of recommended education and outreach activities besides a public hearing, as well as best practices for publicizing and holding the public hearing.

The template includes a section for education and outreach. Most SWPPs reviewed completed this standard information, including an Education and Outreach Implementation Plan, which describes current and future activities that could be implemented to engage the public on source water protection. Some of the more unique efforts to engage the public provided in the SWPPS that were reviewed included:

- Sending brochures to customers regarding measures that can help protect source water and conserve potable water.
- Teaming with a local watershed association as they have similar goals to protect water resources.
- Helping to coordinate local environmental clean-up efforts.

[7] https://www.wvdhhr.org/oehs/eed/swap/documents/SB_373/Updated_2016/2_Supplemental%20Guide%20I-Protection_team_1_26_16.pdf

- Distributing industry-specific Best Management Practices for nutrient management, pesticide use, pest management, waste oil disposal, safe chemical handling and/or safe chemical storage to owners of gas stations, auto repair shops, agricultural facilities, and other aboveground storage tank (AST) owners.
- Producing and distributing a video to provide information to customers. For example: one video can be accessed here: https://www.youtube.com/watch?v=aOJKKXJGE7k.
- Monitoring proposed land use changes to determine if there are potential short- or long-term adverse effects on source water.
- Supporting "Drug Take Back" events and providing information to customers on proper pharmaceutical disposal.

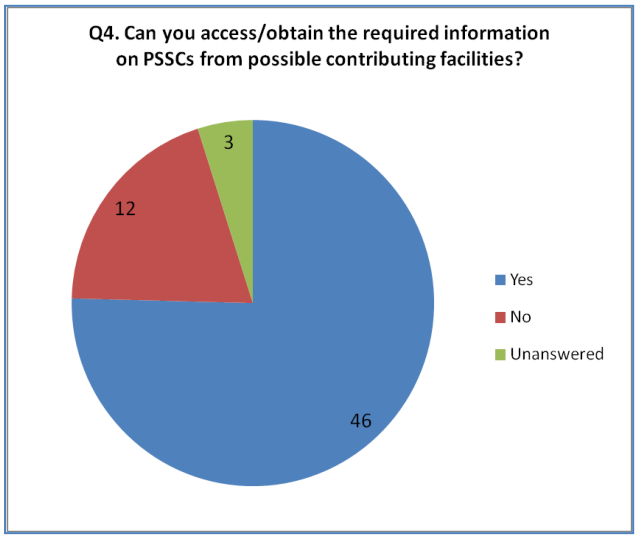


Figure 2. Accessing PSSC information

4.3 PSSCs

In general, it appears that the information contained in the SWPPs on the PSSCs is in compliance with the SB 373 requirements. However, results from the survey and feedback during the March stakeholder meeting, demonstrated that PSSC information should be more readily available through the DHHR and DEP databases. The survey results indicate that while most people encountered no issues in obtaining the required information, there were some water systems (12 out of 46) that could not obtain the necessary information on PSSCs (Figure 2). In particular, information on ASTs was particularly difficult to obtain. Currently, the burden of obtaining PSSC information is on the water system. HW recommends that DHHR coordinate with other responsible agencies (e.g., DEP) about the need to educate PSSCs about the importance of communication with nearby water systems. In addition, DEP should make PSSC information readily available to water systems.

Water systems were able to collect information on PSSCs using other methods (Table 3). Based on the survey results, it appears that personal communication with PSSCs can be an effective method. During the March stakeholder meeting, several water systems emphasized the importance of establishing relationships with upstream facilities, not only to obtain the required information, but also to help with timely and effective communication when an incident occurs. Table 3 below provides a selection of raw responses from this survey question. A summary of responses to all survey questions is provided in Appendix A.

Table 3. Electronic survey question and select responses.

Can you describe successful approaches that you used to collect information on PSSCs?
Talking to farmers and businesses upstream and the locals around the city.
Public Meetings, Questionnaires.
General outreach (website, bill inserts), direct contact (phone, email, mail), site visits, collaboration with LEPC and other organizations.
Person to person conversations.

Hire environmental specialist to collect information.
The information we have was available on the WV DEP network.
Physical observation, reports from DEP.

It was made apparent in the survey and at the March 2018 stakeholder meeting that if a consultant collected information and developed the SWPP, the consultants were responsible for obtaining information about PSSCs. As such, the water systems were not always aware of the information source or how easy the information was to obtain. Water systems should keep up-to-date records as to how PSSC information was obtained and how it can be sourced again in the future (e.g., contact information, database).

DHHR's template instructions state that PSSC information is "from a statewide perspective and may not properly characterize a specific site in a source water protection area." For this reason, it is important that water systems do not rely solely on information provided by databases from DHHR, DEP, and EPA. It is critical that water systems try to find information on local PSSCs to obtain more information than contained in the DHHR, DEP, and EPA databases. HW recommends that DHHR develop a list of best practices to locate and contact local PSSCs in order to obtain the necessary information for the SWPP.

Best practices for locating and tracking PSSCs might include:

- Developing training materials or a video to demonstrate how water systems could conduct a windshield survey of facilities including documenting geo-referenced information.
- Tips for contacting facilities including how to introduce yourself and the topic of source water protection.
- Recommendations for tracking and updating information over time.

Finally, DHHR's SWPP instructions mention that incorrect information on PSSCs (e.g., location, chemical, amount stored) should be reported to the responsible agency. It is unclear how this information is updated in the respective agency and whether this information is updated in a timely manner. A process should be developed so the burden to update this information should not be left solely to the water system. More specific information regarding PSSC information and spill report notification is provided in Section 5.

4.4 Management Strategies

One required component of the SWPP is a management plan that identifies how the water system will protect its source water and manage priority PSSCs. All SWPPs reviewed contained a management plan. Some of the unique management strategies that were highlighted in the SWPPs include:

- Responsibly manage company-owned chemical storage.
- Develop a flow chart describing source water monitoring efforts.
- Coordinate with other utilities in the area regarding the use of pesticides and herbicides in public rights of way.
- Develop of a threat matrix for communication of risk.
- Develop a plan for reduced sedimentation in reservoir.
- Conduct a study of ammonium sources and minimize loading from mining activities.
- Manage sinkholes to prevent them from causing groundwater pollution.
- Prepare for an incident by having appropriate bottleware on site and keep active with Ohio River Valley Water Sanitation Commission (ORSANCO) data sharing network.
- Provide GIS information and maps to emergency management partners so they can consider SWP during incidents.

In order to be effective, management strategies should address how they will be implemented, including the responsible entity, timeframe, and any considerations. Most SWPPs include this type of implementation information – as directed in the SWPP instructions. DHHR should recommend that water systems be as specific as possible to maximize timeliness of implementation. See Figure 3 below for recommended updated to Table 9 in the SWPP template.

Current table format – Template Table # 9, Priority PSSC Management Strategies

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status/ Schedule	Comments	Estimated Cost

Recommended table format – Template Table # 9, Priority PSSC Management Strategies

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Expected date of implementation	Status at SWPP submission	Comments	Estimated Cost

Figure 3. Management Strategies - Updated Table

4.5 Water Loss Calculations

One of the required components of the SWPP, as required by SB 373, is to provide water loss calculations. SB 373 states:

> *The calculated level of unaccounted for water experienced by the public water system for each surface water intake, determined by comparing the measured quantities of water which are actually received and used by customers served by that water plant to the total quantities of water treated at the water plant over the past year. If the calculated ratio of those two figures is less than eighty-five percent, the public water system is to describe all of the measures it is actively taking to reduce the level of water loss experienced on its system.*

The majority of the 12 SWPPs reviewed used the template's table to provide the water loss calculations. However, during this evaluation, HW found inconsistencies in the information presented. The water loss values entered into the template (Table 14) should be taken directly from the water system's annual Public Service Commission (PSC) Report, or be calculated according to the directions in the SWPP instructions.

In some cases, the "Total Percent Unaccounted for Water and Water Lost from Main Leaks" ratio, which is the ratio of the total quantity of water received and used by customers versus the total quantity of water treated at the water plant is not calculated correctly. DHHR is aware of these inconsistencies and is working towards streamlining how this information is calculated and presented.

In general, the SWPP instructions provide helpful step-by-step information on how to complete the water loss calculations. DHHR plans to publish an online form that would automatically fill in the template table based on what the public water system inputs to the form. HW recommends that DHHR finalize the Department's online form/tool as soon as possible, as it will help alleviate the inconsistencies in the SWPP water loss calculation sections.

4.6 Other

Additional considerations, related to specific SWPP components, are described below.

- **Alternative source:** The majority of SWPPs reviewed indicated that the water system could not switch to an alternative water source. Survey results confirm this as, the majority of respondents indicated that switching to an alternative water source would be very difficult. In the survey, respondents noted that connecting into nearby towns would be far too expensive; the nearby system does not have enough supply; or the elevation difference is too great to be able to deliver the water. Water systems should explore temporary alternate sources for critical users, such as hospitals, and ensure that contingency plans exist to provide those critical users with water in the event of a contamination incident. For example, this might involve signing on-call contracts with bottled water distributors or water hauling truck companies.
- **Early warning monitoring system:** The majority of SWPPs reviewed indicated that the water system did not have an existing early warning monitoring system. The survey results indicated that this type of system would be expensive to implement for some water systems.
- **Technical and economic feasibility of secondary or alternative options:** The majority of SWPPs reviewed indicated water systems currently do not meet the two-day minimum water storage capacity requirement. SB 373 requires that water systems, served by a single-source intake to a surface water source of supply or surface water influenced source of supply, submit an examination and analysis of the technical and economic feasibility in the SWPP, including constructing additional storage capacity to provide at least two days of raw or treated water storage. The instruction manual states that SWPPs examining the alternative of additional raw and/or treated water must comply with existing design standards regulating treated water storage, including minimum storage capacity and adequate turn-over requirements (§64-77-9.1.a, §64-77-9.4). HW recommends adding a field in Table 2 of the SWPP template for calculating the two day minimum requirement based on the water system's maximum level of production for a single day within the past year.
- **Public participation** in the SWPP process was low, despite the water systems making efforts to hold public meetings and conduct outreach. More specific information on source water protection public outreach and engagement is provided in Section 6.
- **Funding needs** were mentioned throughout the survey and March stakeholder meeting. Water system representatives stated that funding would help water systems be able to better collect the required information and update the SWPPs. Funding would also assist water systems with source water protection needs, such as expanding available storage, implementing early warning monitoring systems, and developing alternative sources.

4.7 Recommendations

Update the Template/Instructions

<u>General</u>

- Encourage water systems to present information in a legible manner. More specifically, indicate that supplemental information in the SWPP be provided electronically and not scanned.

<u>Technical and economic feasibility of secondary or alternative options</u>

- Add a field in Table 2 of the SWPP template for calculating the two day minimum raw/treated water storage capacity requirement.

<u>PSSC information</u>

- Coordinate with DEP to educate PSSCs and facility owners about communication with nearby

water systems for SWP efforts.

- Develop a list of best practices to locate and contact PSSCs (especially for PSSCs identified locally by the water system) in order for water systems to be able to obtain the necessary information for the SWPP and to build relationships that will be helpful if and when an incident occurs.

Water loss calculations

- Include formulas for calculating the values that are not taken directly from the PSC report in the water loss calculation table (Table 14) in the SWPP template. For example, the input cell for "Total Water Pumped and Purchased" should show that it is the summation of the fields "Total Water Pumped" and "Total Water Purchased." In addition, instructions should indicate that all table fields are presented in the same order as the template and remain in the table, even if those fields do not apply to their system (e.g., Water Sold).
- Clarify if and how the "Water Sold" field is being accounted for in calculating the ratio.

Use of Online Form

It is recommended that DHHR finalize the online form/tool and deploy it for use as soon as possible. This tool should be included as part of the online portal that DHHR plans to implement. The online form/tool that DHHR plans to release would assist in the following ways:

- As indicated by the instructions for the template, the online form will automatically calculate values for the water loss calculations. This will minimize mistakes made by calculating these values by hand and help ensure the information presented is accurate.
- Information will be stored making updates more efficient, which will reduce the burden on the water systems when updating the SWPPs.
- Information will be presented consistently across all water systems.

Funding

- Consider providing funding to water systems to support efforts to collect the required information and update the SWPPs.

5.0 Effectiveness of assisting public water systems in identifying and reacting or responding to identified PSSCs

5.1 DEP Spill Hotline

HW examined the WV DEP Spill Hotline process to better understand the spill notification process. The Spill Hotline Center is managed by the WV Department of Homeland Security and Emergency Management (DHSEM). The flow of information through this process is as follows:

- Information is entered into the DEP Spill Hotline database which organizes entries based on incident types and types of facilities.
- Spill information is then sent via email to DEP and DHHR-Charleston staff, and DHHR-Charleston staff send the information to DHHR district offices, based on the incident type.
- The district offices forward the spill reports to water systems (Figure 4).

When there is an immediate threat to public drinking water, the DEP Spill Hotline attendee immediately contacts the threat assistant at DEP/DHHR via call or in person, in addition to sending the email. When information is entered into the Spill Hotline database, the program automatically sends an email to relevant DEP and DHHR staff based on the incident type. Subsequently, when DHHR receives a spill alert notification email, that email is automatically forwarded onto the district office contacts based on the

county. Separate spill notification emails are sent each time an update has been made to the incident report in the DEP Spill Hotline database. DEP, DHHR, and district offices review the spill information; if the spill is located near a water system, DHHR will contact the water system directly. The DEP/DHHR staff contact lists and the district office contact list are updated as necessary, including when a staff member leaves or when a phone number changes. However, water system contact information is not updated regularly at the district offices.

Stakeholders indicated that spill notification is not timely and does not always contain accurate information (e.g., exact location or spill amount). Water systems find it difficult to understand the details and severity of each spill as several reports on the same incident can be issued on the same day. In addition, accurate geographical information is not always included. The water systems should not be responsible for obtaining the spill information from the PSSC that is late or not complete. Rather, the burden should be on the responsible party to communicate accurate and complete information in a timely manner.

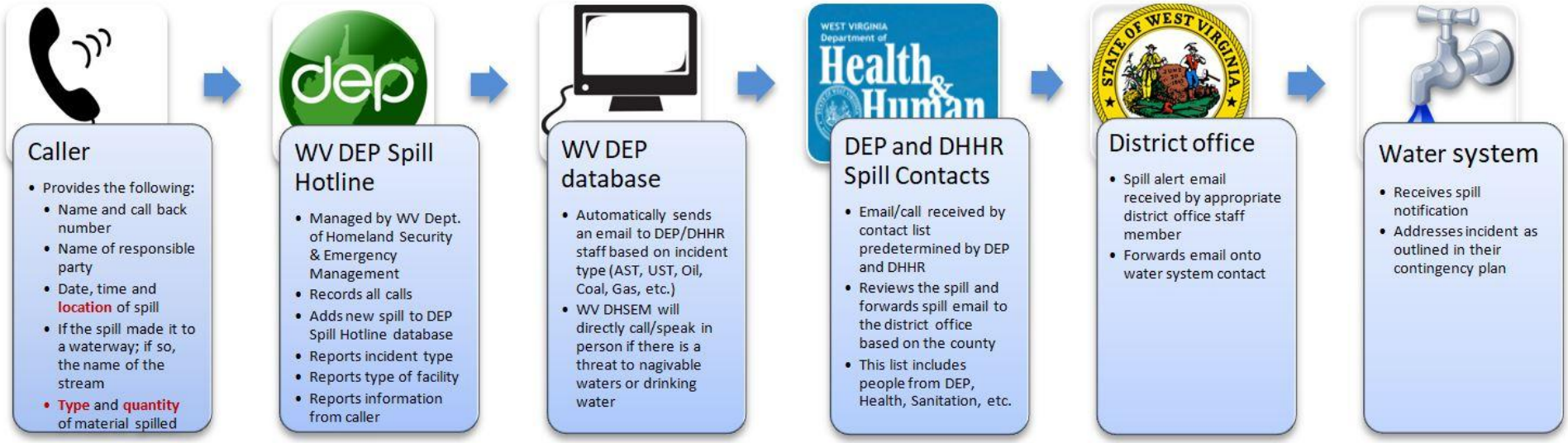


Figure 4. DEP Spill Hotline process. Critical information needed from the caller is highlighted in red.

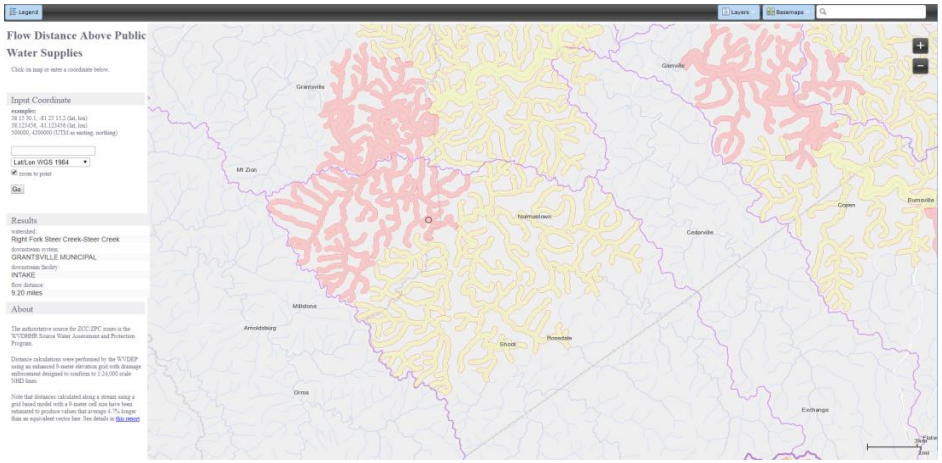


Figure 5: DEP's Flow Distance mapping tool allows the user to enter coordinates or select a point where a spill has occurred. The program then displays the watershed name, the nearest downstream utility, presence of zones of concern, zones of potential concern, and wellhead protection areas.

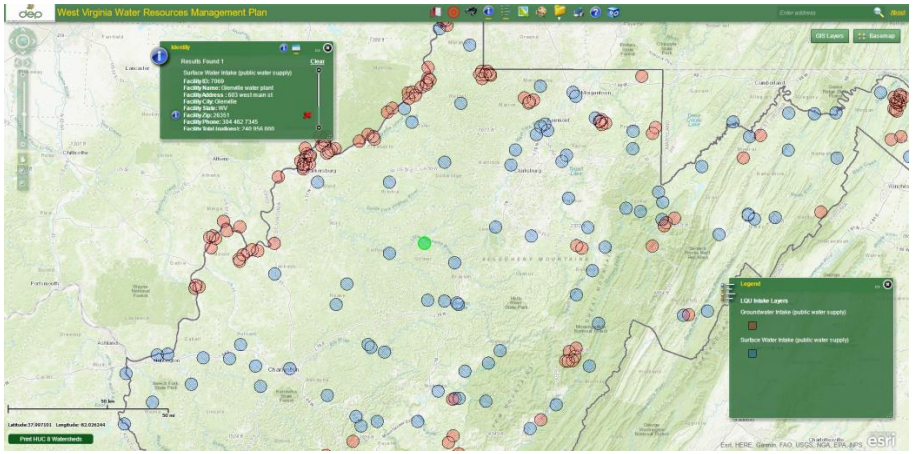


Figure 6: WV DEP's Water Resources Management Plan[10] allows users to locate groundwater and surface water intakes to public and non-public water supplies. The program can also provide facility information, such as facility ID, phone number, and total amount of water used by the water system.

Streamlining the DEP Spill Hotline process would provide water systems with accurate and timely information. In the Report to the Joint Committee on Government and Finance of the West Virginia Legislature by the Public Water System Supply Study Commission (PWSSSC)[8], dated December 15, 2017, the committee recommended that the DEP Spill Hotline collect information on when downstream public water systems are notified of the spill to evaluate timeliness of notifications. HW is not aware if this information is currently tracked.

Many stakeholders also suggested requiring the DEP Spill Hotline call center staff to identify and notify downstream water systems and SWP stakeholders immediately. Throughout this evaluation, there has been a consistent recommendation to include geo-referenced information with the spill notifications. More specifically, stakeholders including water systems, DHHR staff, and others recommended that Spill Hotline call center staff be trained in using some of the GIS-based mapping tools to provide more accurate information and identifying nearby, downstream intakes. Several websites currently provide relevant information downstream water systems[9], water intakes[10], PSSCs[11], etc.

Online Geographic Information Systems (GIS)-Based Data Layers

- Flow Distance[9]: DHHR currently uses the Flow Distance above Public Water Supplies[9] to evaluate spill information as it displays the watershed name, downstream water system, facility information and the flow distance from a specific location (Figure 5).
- WV DEP Water Resources Management Plan[10]: This interactive mapping program provides access to GIS data layers relevant to water resource management, including surface water and groundwater intake locations, facility contact information, and total amount of water used by the water systems (Figure 6).
- US EPA Drinking Water Mapping Application to Protect Source Waters (DWMAPS)[11]: This resource displays geo-referenced information regarding drinking water providers, PSSCs, polluted waterways and projects and source water collaborative (Figure 7). WV DHHR could use this resource in conjunction with WV mapping programs to provide complete overview of the spill and the potentially affected water sources.

Incorporating the use of these websites into the call center data entry and spill notification process would help to ensure the geographic accuracy of the information.

HW recommends combining data layers from each of these tools to develop an online database used to: 1) track spill records and notifications and 2) enable call center staff to see the geographic location of the reported spill and evaluate the water systems and downstream communities that could be affected.

[8] http://wvrivers.org/wp-content/uploads/2018/01/2017-PWSSSC-Report-December-15-2017.pdf
[9] Flow Distance above Public Water Supplies Map http://tagis.dep.wv.gov/pswicheck/
[10] West Virginia Water Resources Management Plan http://tagis.dep.wv.gov/WVwaterplan/
[11] EPA – Drinking Water Mapping Application to Protect Source Waters (DWMAPS) https://geopub.epa.gov/DWWidgetApp/

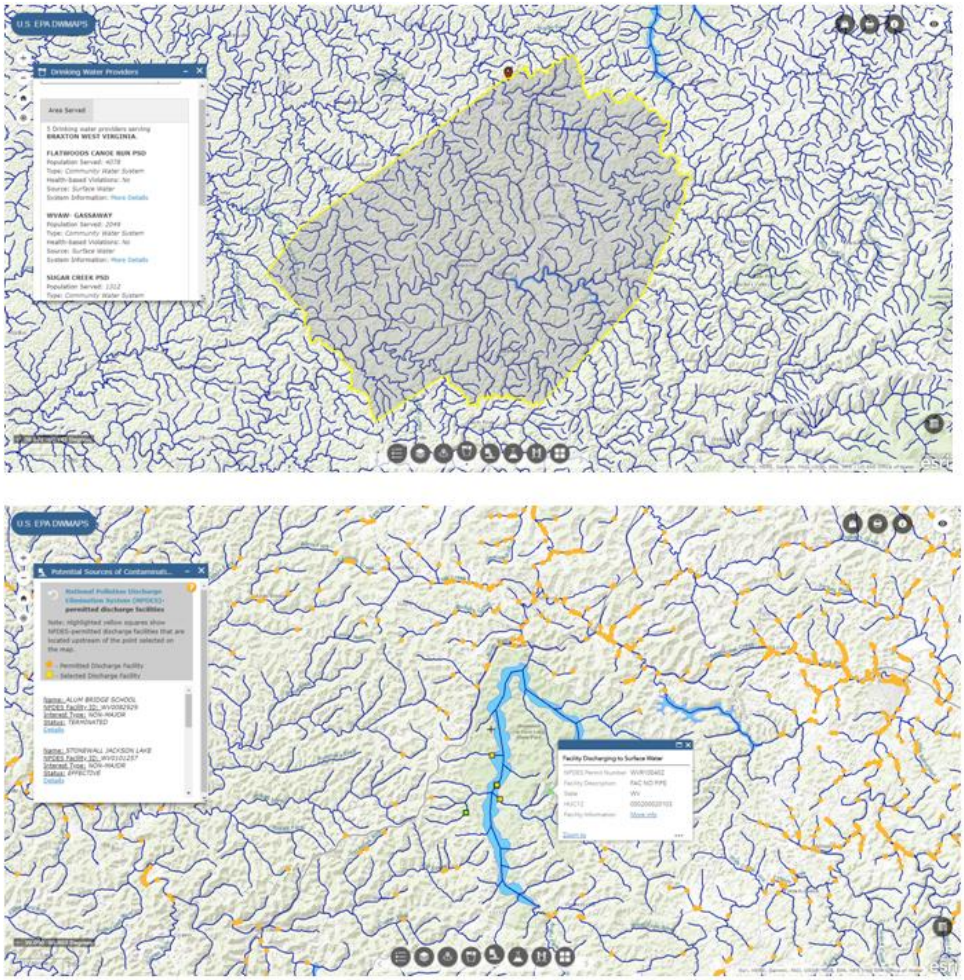


Figure 7: US EPA Drinking Water Mapping Application to Protect Source Waters (DWMAPS)[11] can provide geo-referenced information regarding drinking water providers, PSSCs, polluted waterways and projects and source water collaboratives. Regarding PSSCs, the program can provide detailed facility information.

Further, HW recommends providing better training for Spill Hotline call center staff. This training should include:

1. Information on how to use DEP's mapping tools
2. Instructions on how to ask the right questions – focusing on the location of the spill, type of material spilled, and quantity of material spilled.
3. Instructions on obtaining information that is detailed and as accurate as possible,
4. Implementing a quality control program whereby experienced technical staff monitor data entry to reduce redundancy and increase accuracy of information provided in spill reports.

In addition, access to the DEP Spill Hotline database should be provided to water systems to ensure that they have the most accurate and recent information. HW recommends that this newly combined database be made available via the online SWPP Portal currently in development by DHHR. The Portal could include mapping capabilities as described above with the data layers illustrated in Figures 4, 5, and 6.

The WV Rivers Coalition advanced the PWSSC's recommendation[8] that a formal audit of the Spill Hotline may provide the political push to improve the overall process.

5.2 DHHR water system contact information

As mentioned earlier, the district offices are tasked with contacting water systems directly in the event of a potential spill. However, there have been reports that contact information for water systems is not regularly updated and sometimes incorrect. In addition, water systems often provide personal emails and personal phone numbers for contact information instead of a facility phone or email, which can complicate spill notification when there are changes in staff or staff are unavailable. Incomplete or outdated DHHR water system contact information limits DHHR's capability to effectively assist water systems regarding any incidents involving PSSCs. DHHR is currently in the process of developing a database to replace the former, manual, method of updating contact information. This database will act as a living document that can be updated immediately and shared with relevant parties.

HW recommends that DHHR ensure that contact information in the database is updated at least once a year via a request to water systems, when there are staff changes, or whenever an incident occurs. In addition, DHHR should consider the following:

1. Assigning responsible parties at DHHR and district offices to update water system contact information. Also, documenting the date when this information is recorded.
2. Sharing contact information with DEP and DHSEM to ensure all parties are prepared if an incident should occur.

5.3 Lack of communication with upstream facilities

Obtaining proprietary information on PSSCs from facilities in watershed Zones of Concern[12] has been difficult. There is currently no requirement for facilities to communicate directly with water systems. Developing close relationships with upstream facilities is vital to effective communication during potential contamination/spill incidents. However, as part of the SWPP development, water systems have expended a significant amount of time and effort understanding contamination potential, with little to no response from facilities.

Although facilities are not required to provide information directly to water systems, facilities with regulated PSSCs are required by state and federal regulations to provide information regarding potential spills to DEP and EPA. WV Code, Chapter 22, Article 30 requires facilities with regulated ASTs to provide DEP with a Spill Prevention and Response Plan (SPRP), and 40 C.F.R. §112 requires that oil and gas facilities submit a Spill Prevention, Control, and Countermeasure (SPCC) plan to EPA. WV Reg. §35-1-9 requires oil and gas facilities to provide the SPCC to DEP for review. DEP has access to information that may be beneficial for water systems to have in advance of a spill incident.

Obtaining accurate information from upstream PSSCs is challenging but stakeholder feedback has demonstrated that communication and establishing relationships with these facilities has been effective at improving source water protection. Building close relationships with upstream facilities is the primary recommended method for improving communication. Face-to-face meetings, like the March 2018 stakeholder meeting, provide a platform for all parties to engage in group interactions that build relationships. Holding these types of meetings regularly allows for water systems, upstream facilities,

[12] A Zone of Critical Concern (ZCC) is the area for a public surface water supply that is comprised of a corridor along streams within a watershed that warrants more detailed scrutiny due to its proximity to the surface water intake and the intake's susceptibility to potential contaminants within that corridor. A Zone of Peripheral Concern (ZPC) is the area for a public surface water supply source that is a corridor along streams within a watershed that warrants scrutiny due to its proximity to the surface water intake and the intake's susceptibility to potential contaminants. The length of the ZPC is based on an additional five-hour time-of-travel of water in the streams beyond the perimeter of the ZCC, which creates a protection zone of ten (10) hours above the water intake.

and DHHR to communicate more effectively. Active participation in organizations, such as the River Alert Information Network (RAIN), could also help facilitate the exchange of source water quality information between all parties. Water systems could leverage ongoing work to expand the RAIN network.

In addition, it would be beneficial for DEP to provide PSSC information to all water systems in a user friendly format. Currently, DEP provides PSSC information to water systems via a secure GIS-portal, but only on a per-request basis. DEP should work with DHHR and the water systems to accommodate situations when facilities are not willing to provide information to all water systems directly. Interstate and inter-agency cooperation could help water systems obtain required information on PSSCs and other components in the SWPPs. While some information may be proprietary, it is critical that water systems have information about PSSCs in advance of a contamination event to effectively address an incident.

5.4 Funding and technical assistance

Some Clean Water Act programs provide funding for Watershed Improvement/Assessment Plans. For example, communities can apply for funds to develop a plan after a stream is designated "impaired." In addition, DHHR currently manages the Wellhead Protection and Source Water Protection Grant Programs[13] which provide funding for the development and implementation of local wellhead and source water protection programs. Water systems can propose two types of projects, Wellhead/Source Water Protection Program Projects or Security Projects. Security projects must propose activities directly related to raw water sources or pumping facilities for raw water.

Water system representatives indicated that grant funding enables water systems to make enhancements and conduct projects that would otherwise be impossible due to financial constraints; highlighting the importance of communicating grant opportunities to water systems. In addition, water systems have expressed that funding for table-top exercises and regional exercises help systems to test out the operational components of the SWPPs and illuminate needed process improvements.

DHHR district offices and District Engineers should coordinate face-to-face meetings with water utility staff about all SWP-related resources including grant opportunities. DHHR and water systems can also collaborate with local and state agencies, non profits, academia, and professional associations to provide an expansive network for technical assistance and funding opportunities. HW also recommends that the DHHR continue to update the Department's website with grant application information, eligible applicants, deadlines, etc, to ensure that water systems can access the most up-to-date grant information.

Water systems indicated that greater technical assistance from the State would be beneficial. At the March 2018 stakeholder meeting, a suggestion was made to create a combined plan to address watershed improvements and source water protection in order to leverage resources. This might involve identifying watershed improvement projects, as part of watershed-based plans, in SWPPs if projects enhance source water protection. For example, a project that involves improvements to upstream water quality may benefit a downstream river segment that provides public drinking water. Funding can be leveraged between multiple partners for a particular project that will provide both water quality and watershed improvements and enhance source water protection.

5.5 Recommendations

Spill Hotline

- Streamline the Spill Hotline process

[13] https://www.wvdhhr.org/oehs/eed/swap/grant_program_summary.asp

    - The DEP Spill Hotline call center should send notifications directly to downstream water systems.
    - Update/develop Spill Hotline database to include:
        - Geographically referenced information.
        - Combined geo-referenced water system, water intakes, and PSSC information from multiple websites into one database. This information should be included as part of the online portal that DHHR plans to implement. (http://tagis.dep.wv.gov/pswicheck/; http://tagis.dep.wv.gov/WVwaterplan/; https://geopub.epa.gov/DWWidgetApp/)
        - Information on if downstream public water systems were notified of a spill.
        - Information on when downstream public water systems were notified of a spill.
        - Updated contact list information – to be updated annually, at minimum, and whenever an incident occurs.
- Provide training to Spill Hotline call center staff, perhaps in the form of an exercise
- Provide oversight of database entries by experienced technical staff.
- Provide water systems and other government departments access to the DEP Spill Hotline database.
- Evaluate/audit the Spill Hotline for process improvements.

DHHR Water System Contact Information

- Ensure the new DHHR database is updated annually, at minimum, when there are staff changes, and whenever an incident occurs.
- Coordinate between DEP, DHSEM, and DHHR to ensure all parties are prepared should an incident occur.

Communication with upstream facilities

- Water systems should attempt to build close relationships with upstream facilities that are considered PSSCs. Face-to-face meetings can be an effective way to build relationships with all stakeholders.
- DEP, DHHR, and water systems should improve communication with each other regarding PSSCs. DEP and DHHR should work together to educate PSSCs about communication with water systems for SWP efforts.
- DEP should provide PSSC information to all water systems and DHHR via the Departments online, secure GIS website to accommodate for situations where facilities are not forthcoming with information to water systems directly. Currently access to this information is provided to water systems by request only.

Funding and technical assistance

- Continue communication efforts to water systems on upcoming grant opportunities.
- Provide funding for table-top exercises and regional exercises.
- Use the SWPP to address watershed-based improvements as well as SWP projects.

- Improve mapping resources by creating a comprehensive program that includes PSSC data, downstream water system locations, other water resources, and Spill Hotline information. This information should be included as part of the online portal that DHHR plans to implement.

6.0 Increasing public awareness about source water protection and public participation in the SWPP process

Ensuring that the general public understands where their drinking water comes from, the intricacies of the drinking water treatment process, and how water is transported to their house and faucet has challenged water systems for decades. Even more difficult is communicating the importance of protecting the source of public drinking water supplies. WV's SWP Planning Process was designed to engage the public in source water protection planning efforts. WV stakeholders have been successful at improving outreach and public education on the topic of source water protection across the state, but more work can be done.

As part of this evaluation, HW staff compiled lessons learned from the results of an electronic survey of WV water systems, a review of select SWPPs, and feedback from the March stakeholder meeting in Sutton, WV. Key strategies to improve public outreach and education on source water protection and emergency response planning in the context of drinking water are woven throughout the sections below:

- Lessons learned from the SWPPs;
- Leveraging the ongoing work of stakeholders like WV Rivers Coalition;
- Exercising the SWPPs;
- Improving public meetings and the public hearing process; and
- Exploring alternative public engagement options.

6.1 Lessons learned from the SWPPs

All 12 SWPPs reviewed by HW contained information on how a water system conducts public education and outreach. This information was found primarily in a separate section entitled "Public Education and Outreach Strategies", as well as in the management plan section. Most water systems listed common strategies for outreach. These included actions such as including information on source water protection in their consumer confidence report, letters, brochures, and news releases, conducting water treatment plant tours with emergency response partners, posting roadside signs, holding a public meeting, and incorporating source water protection in local school curricula. SWPPs often listed costs associated with these efforts and the person or group responsible. Unique strategies that one or more water systems mentioned in their discussion of public education and outreach included:

- Cooperating with local watershed associations to share the goal of source water protection.
- Educating PSSCs about techniques to reduce risk.
- Including information with water bills on what to do if a resident notices a sign of a spill, how to properly dispose of hazardous materials, and how to dispose of pharmaceuticals.
- Educating septic system owners on how to properly care for their systems to prevent source water contamination.
- Convening an annual water festival that teaches children and the community about their drinking water supply.
- Drafting a letter for water system customers about source water protection.

- Educating the relevant agencies and staff on proper techniques of spill cleanup.
- Informing landowners that their land lies in the ZCC and educating them on the sensitive nature of their water supply.
- Conducting a media campaign in local news outlets that would discuss seasonal topics, such as fertilizer use in the spring and summer.
- Hosting a booth at the county fair to discuss source water protection.
- Providing information on source water protection to agricultural partners and Future Farmers of America (FFA).

6.2 Leveraging the work of WV Rivers Coalition

6.2.1 Engaging the Public

WV Rivers Coalition (WV Rivers) and the agency's partners have been heavily involved in improving source water protection through public awareness of local drinking water supply sources, i.e., nearby rivers and streams. Through their work they have conducted outreach on source water protection at locations across the state, employing innovative public engagement approaches and developing technical and educational materials and resources for water systems. For example, WV Rivers recognized that in some areas of the state, source water protection areas (i.e., ZCCs, ZPCs) overlay with waterbodies that have developed Watershed Based Plans (WBP). WV Rivers developed a guide[14] to offer assistance to water systems which illustrates the commonalities between SWPPs and WBPs. This document also explains how water systems can work with watershed groups and state agencies to help with the SWPP implementation process.

WV Rivers organized and facilitated an engagement meeting in April of 2017 in Marlinton. During this meeting, 30 local participants and 8 regional experts from partner organizations discussed priority water projects. Expert panelists described their ongoing work related to water resources protection. The group discussed options for protecting the watershed and drinking water and developed a list of priority projects that were further discussed at follow-up meetings. By recognizing the connection between watershed-based planning and source water protection, this group was able to tackle a variety of challenges and solutions to protect WV waters from point and nonpoint sources. Some of the priority projects that the group recommended include: organizing a Water Resources Task Force (dialogue with County Commission), addressing bacteria, stream bank erosion, local jobs, tourism and advocacy, public education, and community parks. The group decided to pursue a project converting a vacant city lot with poor drainage into a community park around wetland education (from West Virginia Safe Water Success Story Community Engagement in Source Water Protection, 2017).

WV Rivers has also been successful in conducting outreach to meeting people "where they are." For example, just holding an open house, public meeting at a town or city hall may not draw a large crowd to learn about source water protection. Instead, WV Rivers has found that attending local festivals and designing interactive public events to educate communities on what it means to protect drinking water supplies reaches far more people than traditional public meetings.

[14] Source Water Protection Plan Implementation Guide, WV Rivers Coalition; http://wvrivers.org/resources/publications/

In August of 2017, WV Rivers and partners held an event in Buckhannon with approximately 75 people and 10 partner organizations. Speakers at the event included representatives from WV Rivers Coalition, Mountain Lake Preservation Alliance, Buckhannon River Watershed Association, WVDEP Watershed Improvement Branch, Buckhannon Fire Department, Mayor of Buckhannon, and State Senator Karnes. The event also featured live music by Seth Maynard and a Native American historical presentation titled "Environmental Lessons from the Past" by Doug Wood, a local naturalist and historian. Tygart River Outfitters provided raft and kayak rides on the Buckhannon River. Locally grown and prepared food was provided by Fish Hawk Acres and Green Acres Farm. Four local faith leaders from different denominations held an interfaith water blessing. Hands-on kid's activities were available for children to make flower wreaths that they tossed into the river as part of the event closing. The event was so successful that the partners want to make it an annual event (from West Virginia Safe Water Success Story Community Engagement in Source Water Protection, 2017).

6.2.2 Source Water Protection Outreach

As illustrated above, WV Rivers has been successful at engaging the general public and local decision makers in water resources protection – both in the context of watershed planning and source water protection. They credit their success, in part, to using “drinking water protection” instead of the term “source water protection.” This alternate terminology links potential pollutant and contamination events to the waterbodies that provide a drinking water source, in the minds of the general public. Source water protection, as a term, does not necessarily resonate with the public as relating to the water that is treated and eventually comes out of their household faucets. WV Rivers has found that the term drinking water protection elicits a much stronger sense of understanding from the public and even water resources stakeholders, ultimately carving out an easier path to protecting those sources. In public outreach materials, when deemed appropriate, using the term “drinking water protection” instead of “source water protection” could improve public engagement.

6.3 Exercising the SWPPs

Something heard from water systems, specifically at the March stakeholder meeting, was that exercising the SWPPs has allowed water systems to identify gaps and improve response and contingency procedures. Exercises can be tabletops, full-scale, and/or functional and allow participants to engage in scenarios or role play as if they were experiencing a potential contaminant event. Water systems representatives indicated that these types of exercises allow participants to suggest process improvements and also identify and refine the SWPP management strategies. New information arises organically during an exercise through observations made by water system staff and other stakeholders such as emergency responders, DEP staff, health department officials, etc. Collaboration in this type of environment only further strengthens the SWPP process.

6.4 Public Meetings and DHHR Public Hearings

In an attempt to engage as many people as possible from the general public, DHHR staff held regional meetings and invited the general public to review the draft SWPPs. These meetings were held over a few months in late summer and early fall 2016. According to DHHR staff, people who attended wanted to discuss building out new sources, rate increases, and/or new connections, not source water protection. Water system representatives also reported that participation at the required public engagement during their SWPP development was also low.

In regards to public engagement in the SWPP process, water systems provided answers to these questions in the survey:

- *Did you hold public awareness meetings when developing the SWPP? (Q9)*
- *As a result of developing and implementing your SWPP, do you feel that the SWPP has increased public awareness of source water protection? (Q11)*
- *What did you learn from the public or agency partners during the development or implementation of the SWPP? (Q10)*

As illustrated in Figure 8, 55 of the 61 water systems respondents answered yes when asked if public awareness meetings were held. As part of the survey, water system staff were also asked if the SWPP increased public awareness about source water protection. As illustrated in Figure 8, the majority of respondents indicated the SWPP process has increased public awareness of source water protection.

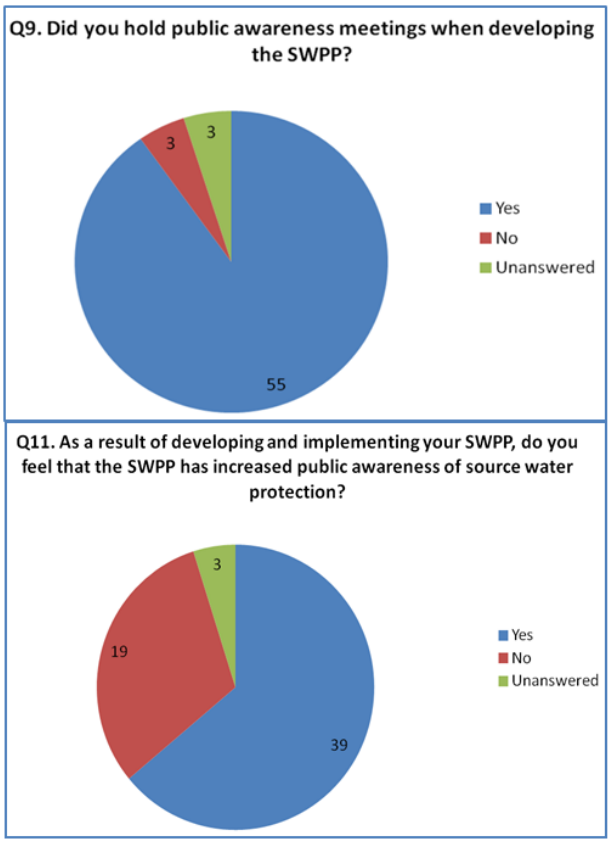


Figure 8. Electronic Survey Questions - Sent to WV Water Systems December 2017

However, when further pressed on the issue of what was learned from the public, many water system respondents indicated that public participation at meetings was very low. This was further confirmed by discussions at the March 2018 Stakeholder engagement meeting and in discussions with DHHR staff. Table 4 below provides a selection of raw responses from this survey question. A complete summary of responses to all survey questions is provided in Appendix A.

Table 4. Electronic survey question and select responses.

What did you learn from the public or agency partners during the development or implementation of the SWPP? (Select responses related to public participation)
That there seems to be limited information travel among the group.
There was not a lot of participation from the public.
No one from the public attended the meetings.
No interest shown.
Most showed a lack of interest in supporting a meeting and an ongoing program.
All of the public and agency partners were very receptive in providing information and helping with the completion of the SWPP.
We had no public output. Nobody from the public showed up.
That most of the individuals do not care enough to show up and be educated until they are in a crisis and it directly affects them.
Public is very outspoken.

Learned the issues and concerns of the citizens.
That they as community leaders and first responders are very supportive of the program and willing to share information that can be responsive and helpful in the time of need.
Not much input.
Public is very helpful and concerned when it affects their drinking water.
Need to be more involved in LEPC.
The biggest thing that was learned is that the public didn't care to be involved. We set up a booth at two local events and not one person came up and discussed anything with us. It's hard getting the public involved.

During the March 2018 stakeholder meeting, stakeholders indicated that improved communication is needed between DHHR, public water systems, and the regional SWP utility staff to increase participation in public awareness meetings about water system efforts to protect drinking water sources and surrounding watershed areas. This may include assistance from DHHR (Charleston) and Regional DHHR SWP staff in reaching out to local partner organizations and LEPCs, and providing templates for public announcements either for distribution in newspapers and online internet communication channels such as websites, social media sites (Facebook, Twitter, etc.).

6.5 Explore alternative public engagement options

The lack of public engagement at meetings to review the draft SWPPs and DHHR public hearings to discuss the SWPPs was apparent. Various governmental and nongovernmental agencies are exploring various ways to involve the public and organizational partners while managing continually low budgets for engagement activities. This is a challenge, but one that can seemingly be overcome. During the March stakeholder meeting, participants noted that the DHHR hearings should have been staggered to encourage stakeholder attendance, rather than conducting them all during a few weeks in the fall of 2016. At that same meeting, stakeholders were also asked for suggestion to improve the SWPP process. As demonstrated in the table below (Table 5), most responses related heavily to “meeting people where they are” rather than scheduling the conventional public hearing and delivering a PowerPoint Presentation at a local community center or town hall.

Table 5. Electronic survey question and select responses

What are effective strategies to improve the public engagement component of the SWPP process in the future?
Host outreach events that involve food and fun, e.g., talk to local craft brewers.
Change branding to “Drinking Water” protection instead of “Source Water” protection.
Host a Preparedness Fair with booths set up to host one-on-one conversations between source water protection stakeholders (e.g., utility staff, public health, etc.) and the general public.
Conduct outreach at schools.
Make a personal connection with staff at local newspapers and media outlets.
Leverage relationships with members of faith communities, as some congregations allow time at the end of their services for guest speakers.
Publicize results of Consumer Confidence Report to demonstrate water quality improvements.

In addition, meeting participants suggested that DHHR can play a more active role in public engagement by assisting with messaging about SWP across the state through radio announcements, billboards, etc.

In addition, DHHR can encourage the SWP Teams to be more active rather than simply requiring them to attend one meeting with the public.

Moreover, it is worthwhile for DHHR to consider investing staff time and resources into alternative public hearing options to meet regulatory requirements. By pursuing online mechanisms for conducting public hearings, DHHR staff time can be freed up to conduct in-person outreach at local festivals, organizational meetings (e.g., Annual Rural Water Association meetings), schools, local media outlets, etc. A few considerations that DHHR staff can keep in mind when researching options for online hearings include:

- Some services offer transcription services for a small/nominal fee. By providing a call-in number and full transcription of the online hearing, the state (DHHR) will meet the regulatory requirements of providing the public with a Forum to comment officially.
- Webinar platforms include but are not limited to:
    - Adobe Connect
    - WebEx
    - GoToMeeting
    - Media Platform[15]
- Consider platforms that will record audio and the presentation together as a .mp4 file so that you can post the entire file on your website and submit it as part of the electronic record (if applicable).

DHHR Plans to Continue to Support Water System SWP Efforts (*Todd Cooper, March 2018 Stakeholder Meeting)*

- Committing state grant funding to local SWP activities to support continued implementation and sustainability of SWPPs and activities.
- Developing and supporting outreach and educational programs and materials, including conferences and publications.
- Providing Continuing Education Units (CEUs) to operators who attend training sessions on source water protection.
- Providing technical assistance and working with technical assistance providers such as state and national Rural Water Associations, the US Geological Survey and State Geological Survey, and Rural Community Assistance Partnership (RCAP) affiliates.
- Developing a state SWP program website with detailed back-ground materials, templates for protection plans, resources, and links to related information.

6.6 Recommendations

Follow through with current plans to support water system SWP protection efforts.

Leveraging the work of WV Rivers Coalition

- Engage the public by meeting people "where they are." This includes planned annual events such as outdoor festivals, county fairs, etc.
- If possible, provide food and drink at events and host events at times when the public can attend – e.g., outside of work hours and possibly on weekends.
- In public outreach materials, when deemed appropriate, use the term "drinking water protection" Instead of source water protection. This resonates with the general public more, as people can make the connection between water that they drink and reducing pollution to

[15] HW has experience using Media Platform's services with operated-assisted call in lines for online public hearings. General cost information can be provided to DHHR upon request.

surface water bodies.

Exercise the SWPPs

- Exercise the SWPPs through emergency response hypothetical scenarios (e.g., tabletops, full-scale exercises).
- Encourage water systems to use exercises to identify gaps and improve emergency response and contingency procedures in their SWPPs.

Improve public meetings and DHHR hearings

- Improve outreach. Get the word out.
- Increase communication with local partner organizations and LEPCs about in-person events on source water protection efforts and SWPPs.
- Provide templates for public announcements for distribution in newspapers and online communication channels such as websites, social media sites (Facebook, Twitter, etc.).

Explore alternative options for public engagement

- Research online meeting platforms to host public meetings or hearings that are required by state or federal regulations.
- Ensure that full transcripts can be provided with these platforms and consider platforms that will record audio and the presentation together as a .mp4 file.

7.0 Conclusions

HW developed the following list of recommendations after a thorough review of stakeholder feedback and SWPP reviews. For a list of corresponding implementation actions, applicable sections of this report, and responsible entities, see Section 1.

- Update the SWPP Template/Instructions.
- Use an online form for SWPP development to make updating SWPPs more efficient and to ensure consistent information across systems.
- Evaluate and improve the WV DEP Spill Hotline communication process to ensure that accurate information is provided to potentially affected water systems.
- Update water system contact information in the Spill Hotline database to ensure that notifications are sent to the correct staff.
- Share the responsibility of improving communication between DEP, DHHR, water systems, and facilities/PSSCs to improve SWP efforts watershed-wide.
- Continue funding and technical assistance so that water systems can continue and enhance SWP efforts.
- Exercise the SWPPs.
- Leverage the work of WV Rivers Coalition and implement their lessons learned to improve public engagement in the SWP process.
- Improve public participation at SWPP meetings and hearings.
- Modernize public engagement mechanisms to reduce costs (i.e., staff time) and provide easier ways for the public to participate in the SWP process.

The recommendations presented in this report are the outcome of the first evaluation of WV's SWP program, completed in summer 2018. DHHR should consider these recommendations along with lessons learned from DHHR agency staff and other SWP stakeholders when making programmatic changes to the required elements to the SWP program and SWP guidance documents.

Appendix A: Survey Results

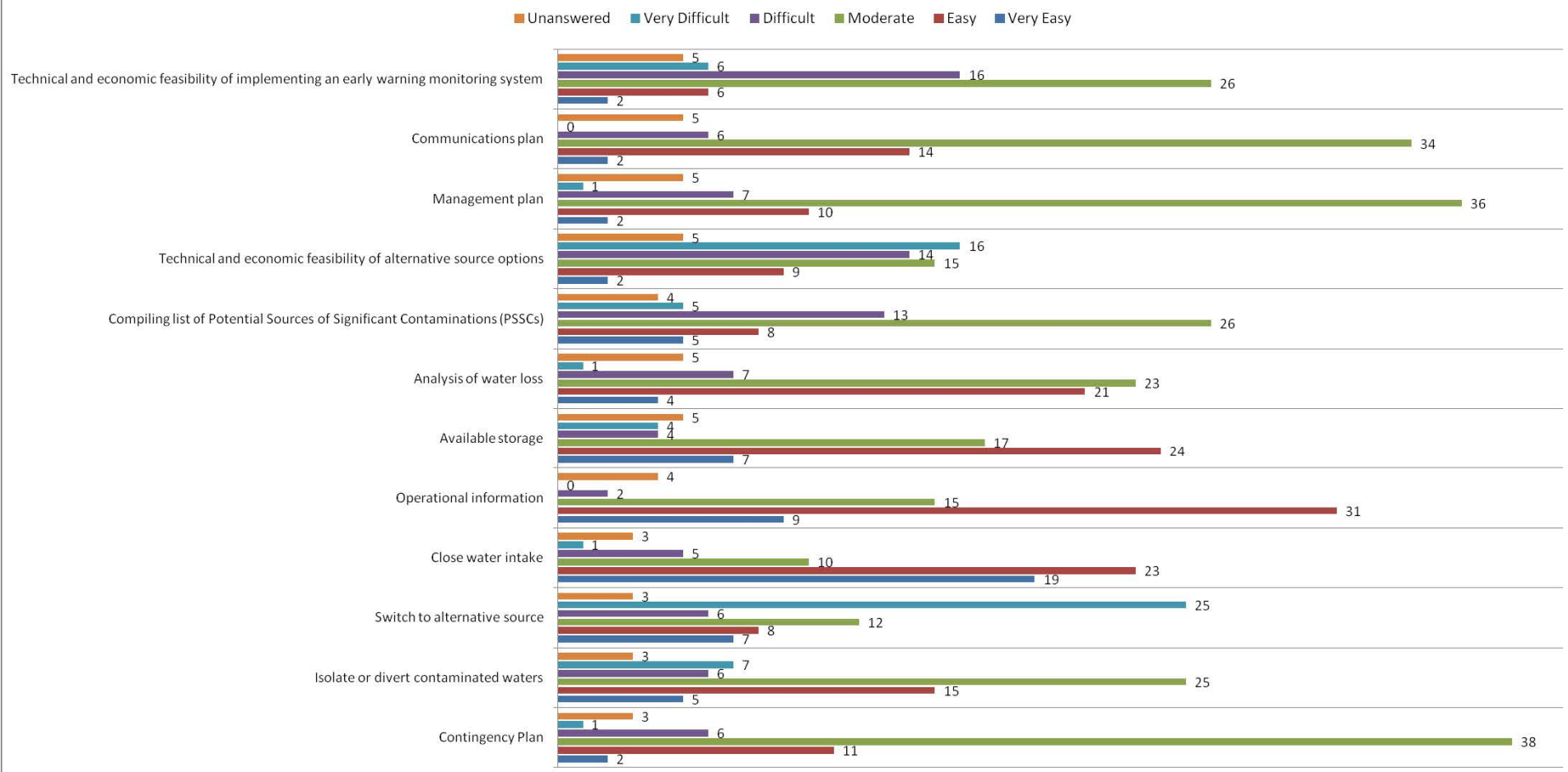
SWPP Program Survey Results

January 11, 2018

Survey Purpose and Goals

- Purpose: To solicit feedback on the WV Source Water Protection Program
  - What is working well?
  - What are the gaps source water protection information?
  - What are the challenges with the SWPP process?
  - How can the process of SWPP information collection be improved or streamlined for water systems?
  - How can WV source water protection efforts be enhanced in the future?
- Survey Distribution
  - Electronic survey distribution (Survey Monkey)
  - Survey open: 1 month, Nov-Dec 2017
  - Distributed to 126 source water protection contacts at WV water systems
  - 61 surveys completed – 48% percent response rate!

Q2. Rate how difficult or easy, in terms of time spent and response from partners, it was to develop the information necessary for each of the SWPP's components required by Senate Bill 373



Q3. Please elaborate on areas that were particularly difficult or any barriers encountered. (Slide 1 of 3)

- Secondary Water Source if Primary is Contaminated
- Switch to alternative source the City does not have a second source The City does not have the funds to do this
- Isolate or divert contaminated waters
- None
- Analysis of water loss, since Fairmont is currently working on this area called out in SB373. This requirement will take a lengthy amount of time to complete
- Getting a second source is expensive and a good distance away from the plant.
- Current land owner changes & all agencies were contacted still difficult to protect all areas of SWPP
- The zone of critical concern for Weirton involves a very large number of potential sources.
- Review of possible sites that could possibly contaminate was very difficult due to using two separate raw water sources. All upstream locations had to be evaluated.
- Raw water source-No other raw water source next to plant. No alternative raw water source
- Lack of funding
- We only have one water source

20 of 30 respondents indicated that ***switching to an alternative water supply source*** would be very difficult.

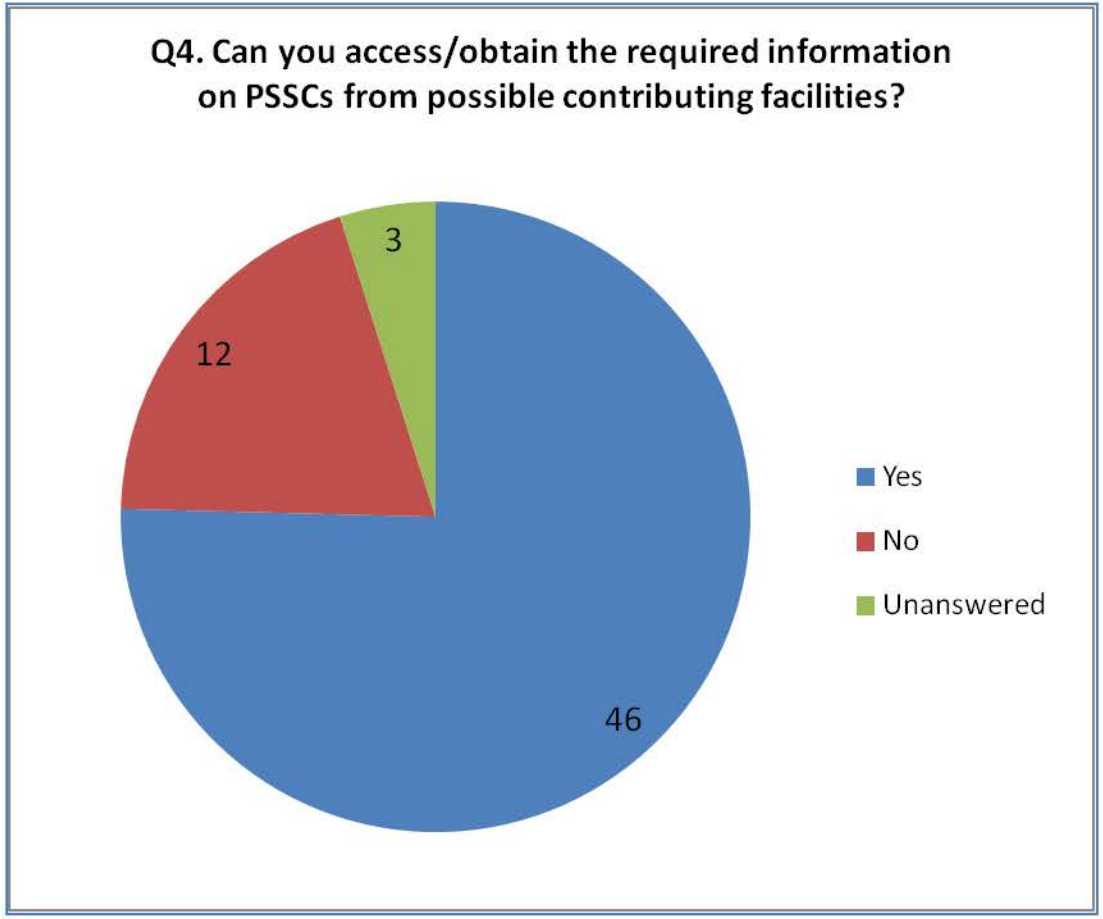
Funding was also identified as a challenge.

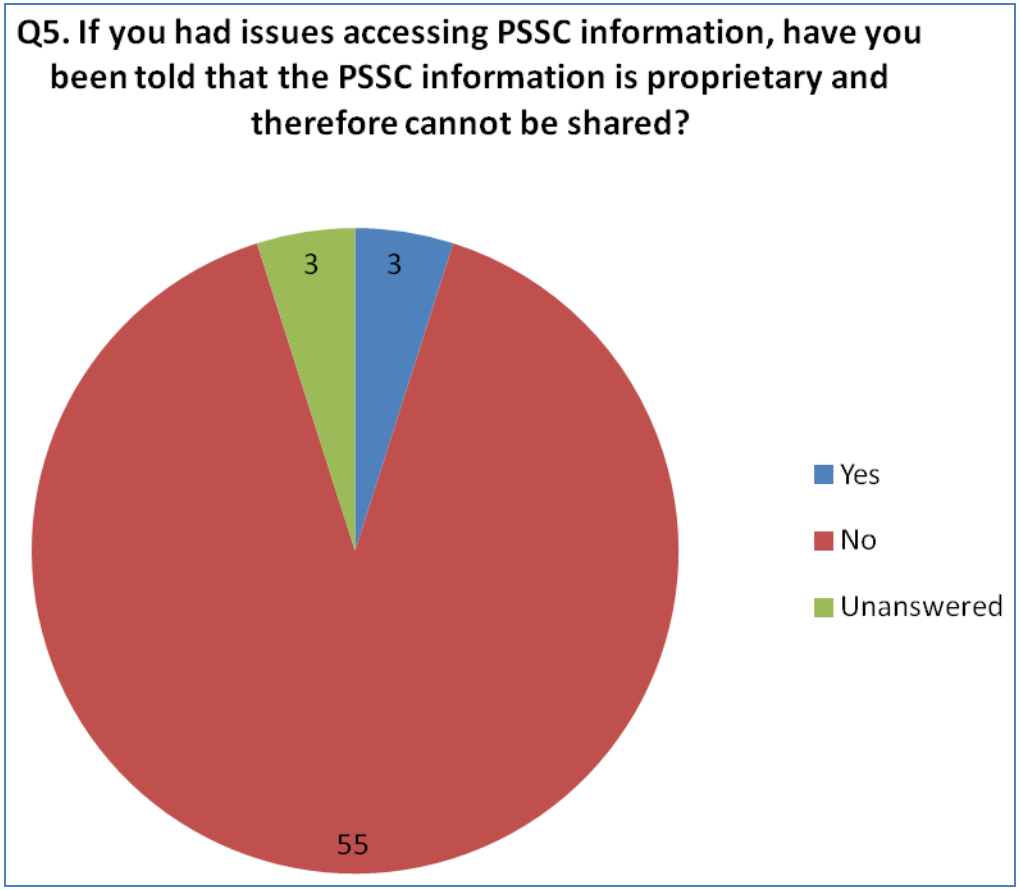
Q3. Please elaborate on areas that were particularly difficult or any barriers encountered. (Slide 2 of 3)

- We don't have an alternate source of water, no where to divert river, early warning systems are very expensive for small systems to implement.
- Finding an alternate source
- There was not a common sense approach to this issue. During the diesel spill, we found out first hand that to actually boom off the inlet at the river for us was next to impossible. Our plan from the engineers called for source water protection needs for raw water storage. This is not a viable option due to the issues of bacteria, cost, and practicality of the plan. We were able to spend $5,000 dollars, not millions and look at an alternative water source utilizing resources we have in place (fire hose, fire trucks, and a creek that is not contaminated by the Greenbrier River. If the creek is an issue, we can utilize our fire trucks and supply the amount of water needed to supply the plant for treatment to our customers.
- Alternate source of water
- There are no other alternative feasible sources for our system.
- There is no other water source in the area that can be used.
- Available of storage
- There are not any adequate systems very near that can supply excess water. In addition, our elevation is much higher than those closest to us making it very difficult to supply adequate pumping to bring water to us.

Q3. Please elaborate on areas that were particularly difficult or any barriers encountered. (Slide 3 of 3)

- How do you divert a river? No alternate source available.
- We have no alternate water source. We had sufficient storage but now we don't. They took us from 750,000 gallons down to about 320,0000. there is really no alternative source that is economically feasible. Hard to implement early warning, we are on the Potomac River owned by Maryland.
- We only have one source of raw water there is no easy option to a alternative raw water source
- Obtaining timely information about potential sources of contamination
- Plan was developed by a consulting engineering firm, Cerrone Associates.
- Projects need funding
- Alternative source is a challenge having to lay 2 miles of pipe and rent equipment
- Location of this water system makes having an alternative source extremely difficult. An early warning monitoring system would be very expensive and nearly impossible to afford for a very small water system such as this one without a major rate increase.
- Funding and the time requirements
- The only issue we had was getting people interested in participating with the Source Water Protection Team. We currently still have issues with it.


Q4. Can you access/obtain the required information on PSSCs from possible contributing facilities?
3
12
46
Yes
No
Unanswered



If yes, please describe:

- We have no other Municipality that we can access
- I have not tried to access it
- The Railway/Rail Yard transports various materials on a daily basis by the Tug Fork which is our only water source
- Not receiving all required information about ASTs
- Unsure because consulting firm did all the required data collection

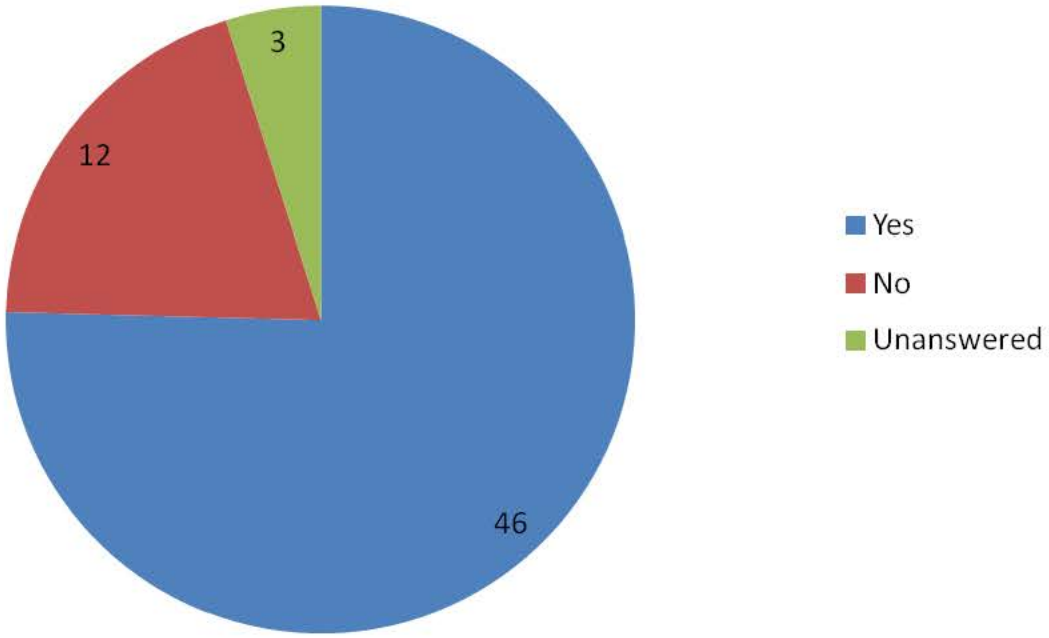
Q6. Can you describe successful approaches that you used to collect information on PSSCs? (Slide 1 of 2)

- We need to connect to either Clarksburg or Shortline as a back-up
- Talking to farmers in business up stream and the locals around the city
- Ongoing at this time. The county Emergency service director is gathering information
- Fairmont had a couple of face to face meetings near the Filtration Plant intake that went well. Fairmont's consultant, Tetra Tech did a majority of the data collection
- Data bases from DHHR and DEP
- Health Dept Website Water Source Website
- Public Meetings, Questionnaires
- Keeping check on raw water source coming into intakes
- Physical observation, reports from DEP
- Used Thrasher Eng. company to complete our Source Water plan
- Survey information was prepared by Potesta & Associates.
- Utilized the DEP website with no issues.
- We had help from Tetra Tech doing our SWPP
- Being in contact with businesses and facilities that are upstream from our source intake, such as the Core of Engineers at the Sutton Dam.

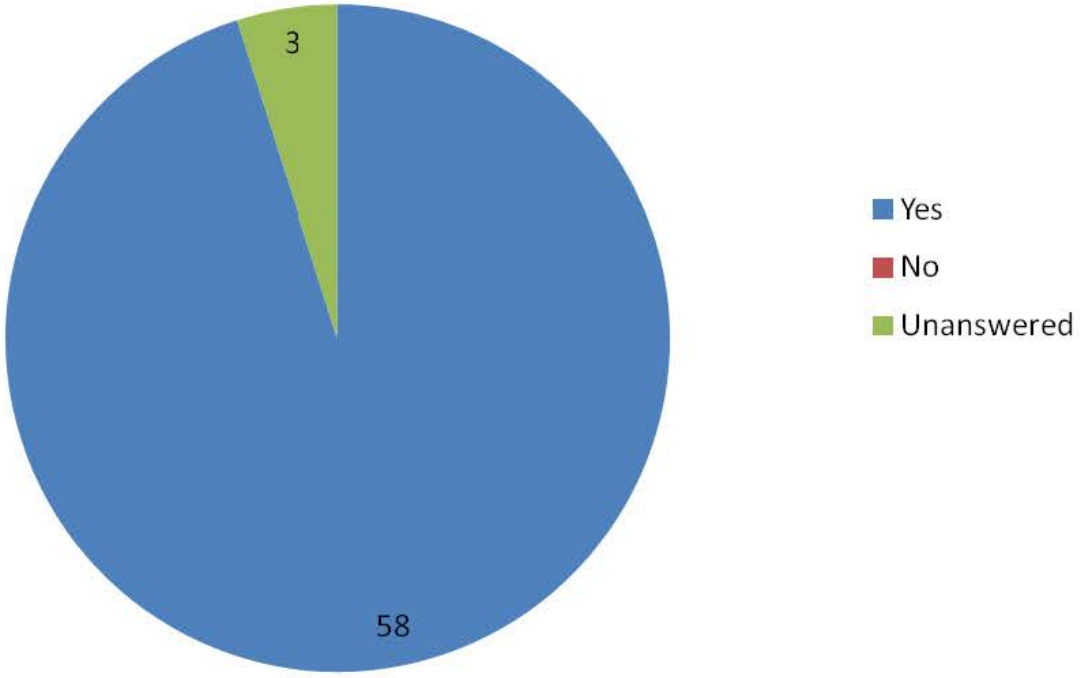
Q6. Can you describe successful approaches that you used to collect information on PSSCs? (Slide 2 of 2)

- DEP spill hotline and Mingo county emergency services.
- The information we have was available on the WV DEP network.
- Never done it.
- Meeting and personal contact
- General outreach (website, bill inserts), direct contact (phone, email, mail), site visits, collaboration with LEPC and other organizations
- Looked at mapping
- Contacted Agriculture Dept.
- Person to person conversations
- Contacted appropriate employees of a PSSC and obtained information regarding potential contaminates.
- Luckily for us, we don't have any facilities where we need to get PSSC information from.
- Hire environmental specialist to collect information
- Interviews with managers at facilities.

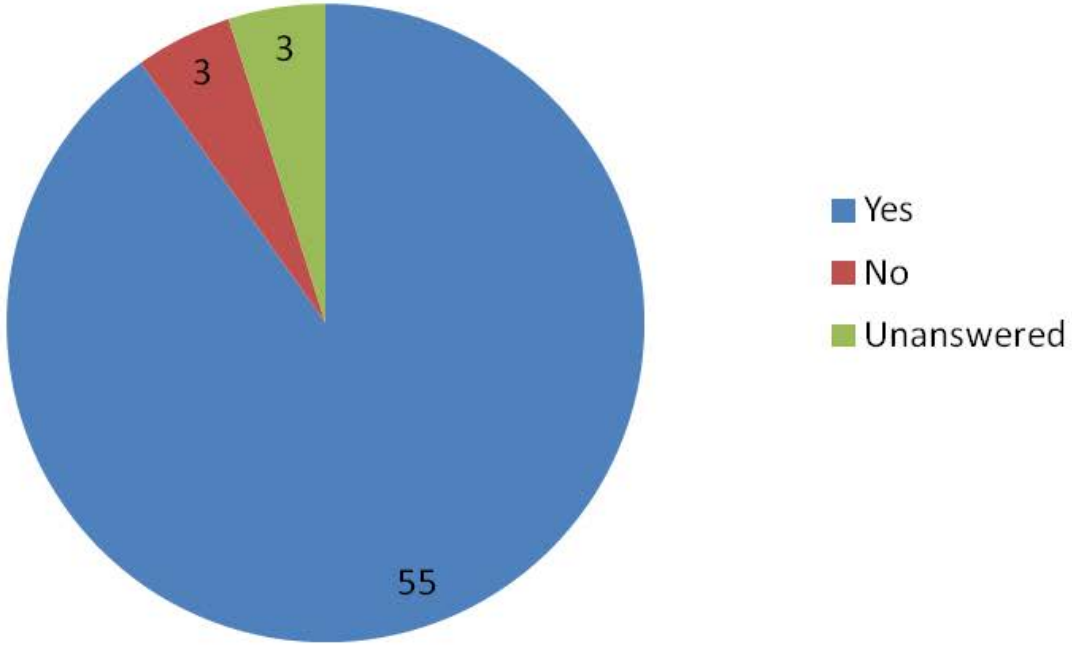
Q7. Do you plan to hold annual meetings to assess implementation progress, maintaining lines of communication and keeping contacts current?



Q8. Did you find the support from DHHR helpful in developing your SWPP?



Q9. Did you hold public awareness meetings when developing the SWPP?



Q10. What did you learn from the public or agency partners during the development or implementation of the SWPP? Please describe. (Slide 1 of 3)

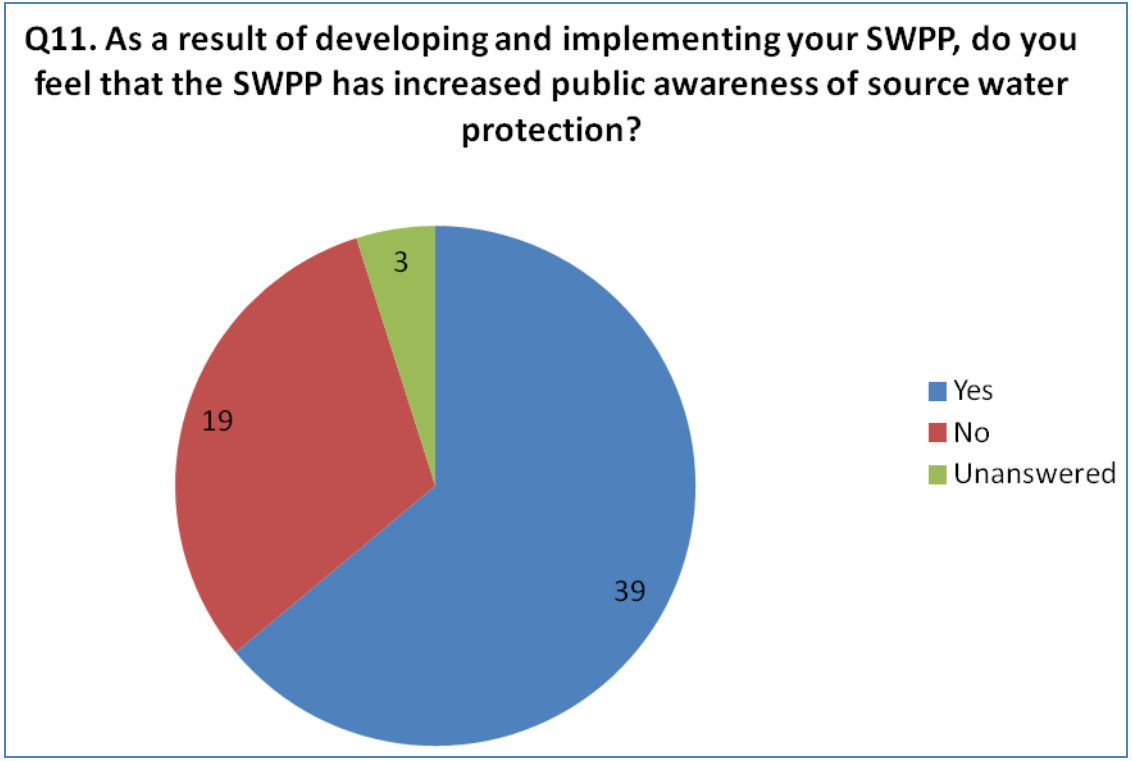
- That there seems to be limited information travel among the group
- How and where to access a back-up source if we would have a contamination
- That there was more possible contamination up stream then I knew about
- There was not a lot of participation from the public.
- The requirements to put together a SWPP seemed to be very difficult for smaller water systems.
- No one from the public attended the meetings.
- No interest shown
- The data is there some in different formats making putting it all together a bit challenging
- Who to contact incase of Emergency
- Most showed a lack of interest in supporting a meeting and an ongoing program.
- All of the public and agency partners were very receptive in providing information and helping with the completion of the SWPP.

Q10. What did you learn from the public or agency partners during the development or implementation of the SWPP? Please describe. (Slide 2 of 3)

- We call each other in case water contamination occurs
- County needs better communication.
- Mainly the concern of groups over oil/gas development in our watershed
- We gained a lot of information from it.
- We had no public output nobody from the public showed up
- That most of the individuals do not care enough to show up and be educated until they are in a crisis and it directly affects them.
- They put it into perspective of how vulnerable our source water intake could be.
- Public is very outspoken
- Learned the issues and concerns of the citizens.
- That they as community leaders and first responders are very supportive of the program and willing to share information that can be responsive and helpful in the time of need.
- We have to deal with Maryland Department of the Environment (MDE) so its hard to tell.

Q10. What did you learn from the public or agency partners during the development or implementation of the SWPP? Please describe. (Slide 3 of 3)

- The meeting I attended was very informative
- See public comments in SWPP
- Not much input.
- Importance of paying attention to this situation and acting on it as needed.
- The numerous sources of contamination
- Public is very helpful and concerned when it affects their drinking water
- Learned information regarding PSSC's that we were previously unaware of.
- Need to be more involved in LECP
- A lot of info but difficult to obtain and coordinate all the info and parties involved. Small systems do not have time or manpower to get desired results.
- The biggest thing that was learned is that the public didn't care to be involved. We set up a booth at two local events and not one person came up and discussed anything with us. It's hard getting the public involved.
- Todd Cooper was helpful in assisting us in setting up our plan.

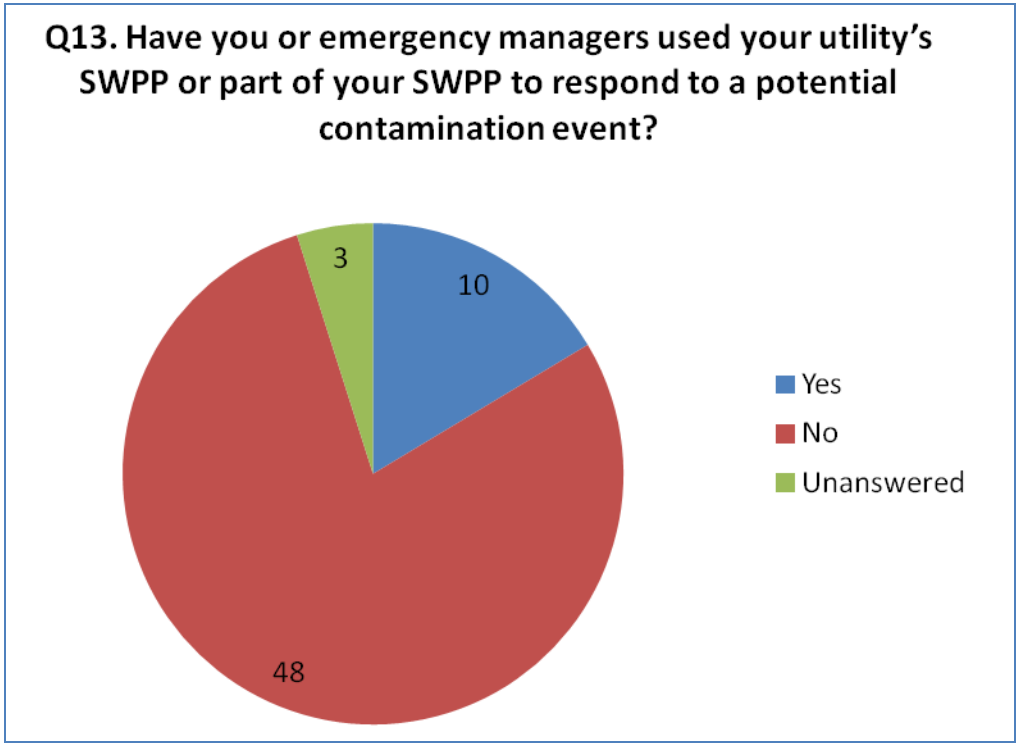


If you have a specific example, please share:

- By opening meetings with the public
- There has been work done to inform the owners of Wood's Boathouse and boat owners in general about the need to prevent oil and fuel spills in the river due to the harm it can create for the WTP membranes and the water treatment process.
- Two members of the community came to the public SWPP meeting.
- Websites to visit and other
- The meetings were very poorly attended
- Particularly with those we will be working with in case of an event.
- Public will call water plant when they feel or see something out of the ordinary
- Public participation proved to be very difficult. Our experience has been that people don't pay attention to this sort of thing until an issue affecting them arises.
- Because of the chem spill in Chas. awareness is high

Q12. Have you encountered any barriers or challenges in implementing specific components of the SWPP?

- No just hard to find original information that was gathered in the past.
- No, we know where we can tap into Shortline's main if the need arises
- No
- We are limited to only one water source. The water utility is trying to locate funding to pursue a water project to include additional tank storage.
- None that seemed significant.
- Landowner in SWPP area is a member of our team and still did clear cut timber.
- The notification to the water companies by the PSCS is slow or lacking
- Money and interest
- Only financial
- Looking for an alternate source of water.
- Yes. One example is DOT not allowing signage for protection areas. Another barrier is limited access to up-to-date information about potential sources of contamination.
- Alternative sources
- Alternative sources and early warning system have proved very difficult to implement.
- Time and resources
- Just getting people to participate on the Source Water Protection Team



If yes, please describe the experience:

- It starts with the Mayor and works down
- A call by 911 to the Filtration plant was made to warn the WTP that a plane had crashed near the Fairmont Airport and that there could be a possible fuel leak into the Tygart River.
- Intake shut down for a minor oil spill.
- Railroad had a spill up the river so the plant was shut down until confirmation was made that there was no contamination.
- Contingency Plan used in response to plane crash at Yeager airport
- Gasoline spill in October DEP was notified
- Sewage spill in our water shed shut down raw water pumps.

Q14. What could the state do in the future to help you implement components of your SWPP? (Slide 1 of 3)

- I feel the State did a great job by involving engineering firms to assist us in developing these plans, and I am very impressed with Mr. Everett Mulkeen of Potesta Assoc.
- Help in the costs associated with tapping into another system
- Help with funding. Develop a specific site for alerts through emails and texts that alerts water utility automatically along with the team.
- See if there would be a way to increase funding for more expensive components of SB373 and to try to possibly get some federal funding to also assist.
- Do not know
- Grants for purchasing rights to protect SWPP areas
- Making funds available for the entire plan. Make more funds available for alternate sources/power/monitoring. Make getting grants for these easier and allow more time to apply.
- The water companies have no authority to have PSCS comply and supply the required information

Q14. What could the state do in the future to help you implement components of your SWPP? (Slide 2 of 3)

- They are doing a great job
- Help out with money to have material here to work with
- Continue to provide grant money to help provide third party companies to provide assistance in the creation and updating of the SWPP.
- The state is doing a good job in helping.
- Create one communication system.
- Provide additional funding
- Make the process for getting copies of Tier II reports easier, 911 center will no longer provide them and require going through homeland security
- Provide Funding.
- Help other utilities in funding projects
- Make portable lab testing available that WV Division of Homeland Security may possibly have that eliminates the waiting to see if the actual source is contaminated.
- Working with tetra tech was helpful to me, funding for that in the future would be great

Q14. What could the state do in the future to help you implement components of your SWPP? (Slide 3 of 3)

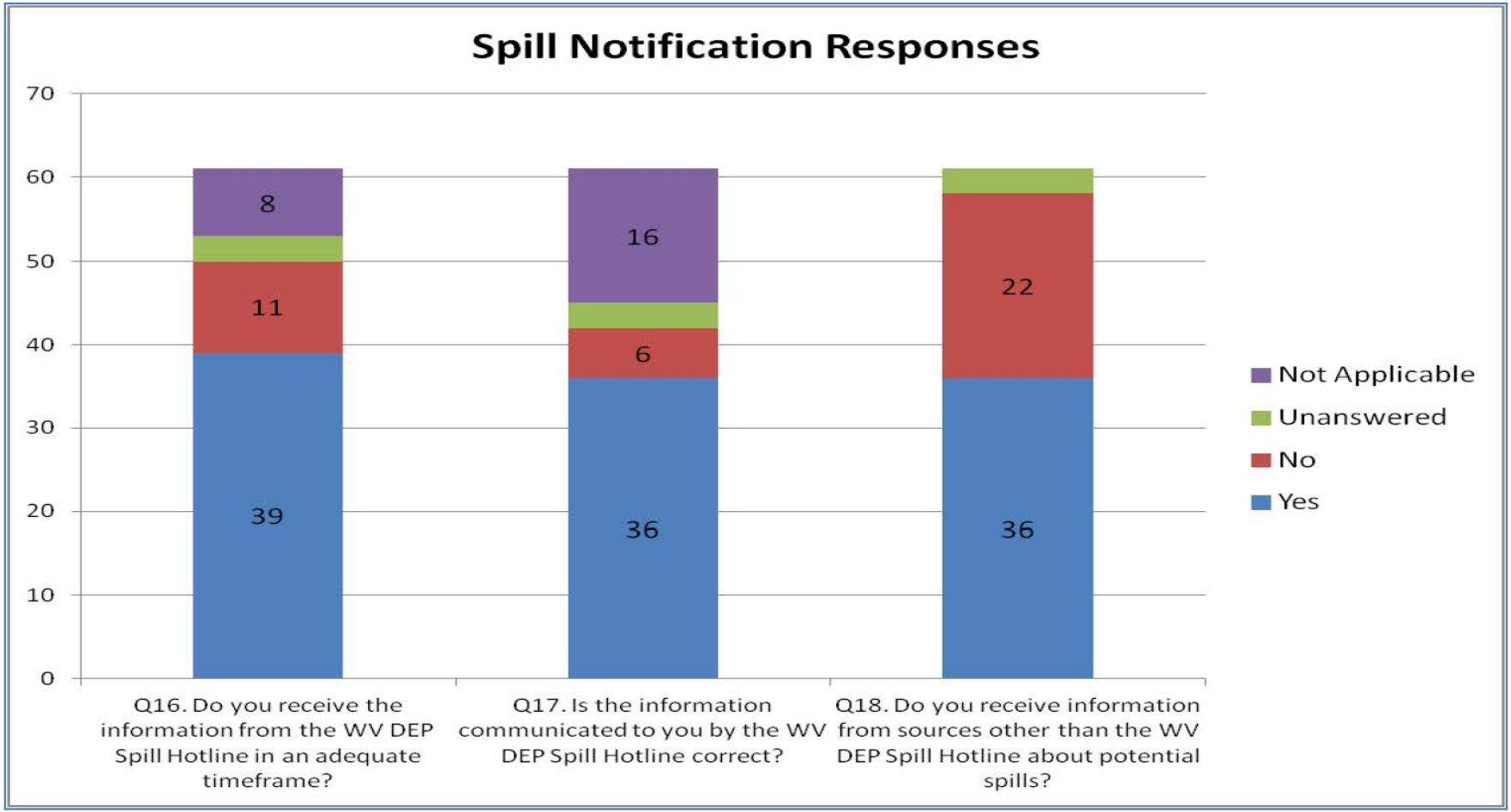
- Many of the requirements are very costly and will take time to implement entirely. Therefore, funding is a necessary component which would help if it were made available.
- More grant money
- Support public engagement by hosting joint meetings and community events. Provide updates to online database for potential sources of contamination that show when it was last updated. Improve DEP enforcement of materials management and public water system notification requirements.
- Better organization.
- Immediate information from other agencies that may affect us.
- Funding
- Help with funding new plant closer to alternative sources
- If an alternate water source or early warning monitoring system are required, significant grant funding from the State is a must.
- Assistance and funding

Q15. How would you change the requirements in Senate Bill 373 to improve the SWPP program and enhance source water protection? (Slide 1 of 2)

- I feel our biggest threat to our streams is John Q Public during flooding or high water flows. This can come from farming and construction materials. I feel there needs to be a better way of tracking some of these chemicals once they are sold as to where they are at and how much is stored by the individual public. Most people do not understand how dangerous some of these chemicals are.
- Make sure all Chemical Tanks have a containment dike that will hold at least 1 1/2 the contents of the tank
- Make sure the Legislative body consults with and listens to recommendations by water industry professionals.
- Do not know
- Again some authority to have PSCS comply and supply information, also not to continue having the state weaken the PSCS requirements i.e. continued tank exemptions.
- I wouldn't make any changes to it
- Help small water district out with money
- I feel like Senate Bill 373 is adequate enough at the present time to allow the SWPP program to operate as designed.
- Seems like they are doing a good job.

Q15. How would you change the requirements in Senate Bill 373 to improve the SWPP program and enhance source water protection? (Slide 2 of 2)

- Unsure about this question
- Provide funds to implement protection and plans
- I can’t think of anything
- No need to change
- Make PSSC information more available. Also, make hazardous chemicals information that is hauled through our watershed and ZCC available to the utility in order to prepare for certain events.
- No changes
- Don’t change
- Shared responsibility between water utilities, agencies, and owners/operators of upstream potential sources of contamination
- Don’t know
- Find funding sources to help us with it
- Make the companies more responsible
- More funding for detection equipment


Spill Notification Responses
70
60
50
40
30
20
10
0
8
11
39
16
6
36
22
36
Not Applicable
Unanswered
No
Yes
Q16. Do you receive the information from the WV DEP Spill Hotline in an adequate timeframe?
Q17. Is the information communicated to you by the WV DEP Spill Hotline correct?
Q18. Do you receive information from sources other than the WV DEP Spill Hotline about potential spills?

Comments on the WV DEP Spill Hotline

Do you receive the information in an adequate timeframe?

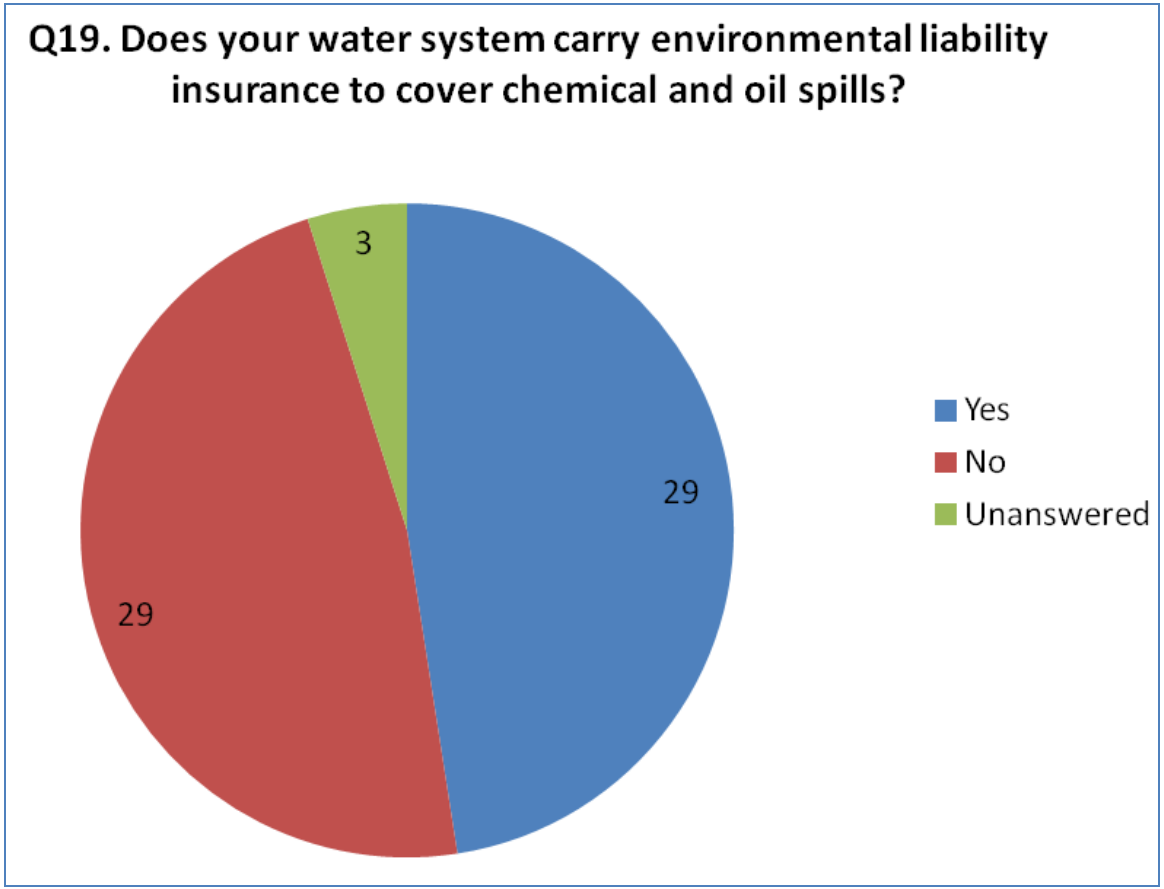
- The district office must forward this info to me the DEP does not
- E-mail
- This program seems to work well
- Sometimes... A lot of the time the information is old, and specifics are lacking especially exact locations
- Usually, there have been cases of not getting information on time
- Have not received anything to my knowledge
- We did for a while but haven't seen any reports for several months
- Do not receive this information
- A lot of times its days later before we receive the spill when its to late if something was to happen
- Sometimes it is quickly, other times it can be 24+ hours since the event occurred before it comes across on spill hotline
- Do not currently receive alerts from WV DEP Spill Hotline
- To many from outside of my area
- Have never heard from WV DEP spill hotline. I assume that's because we've not have a spill in the watershed

Is the information correct?

- E-mail
- Sometimes the information is site specific or complete
- Again a lot of the times it isn't
- Also ORSANCO
- As far as we know it is
- I am not sure since I am not receiving any information
- Sometimes, often details evolve as a scenario unfolds

Where do you get spill information?

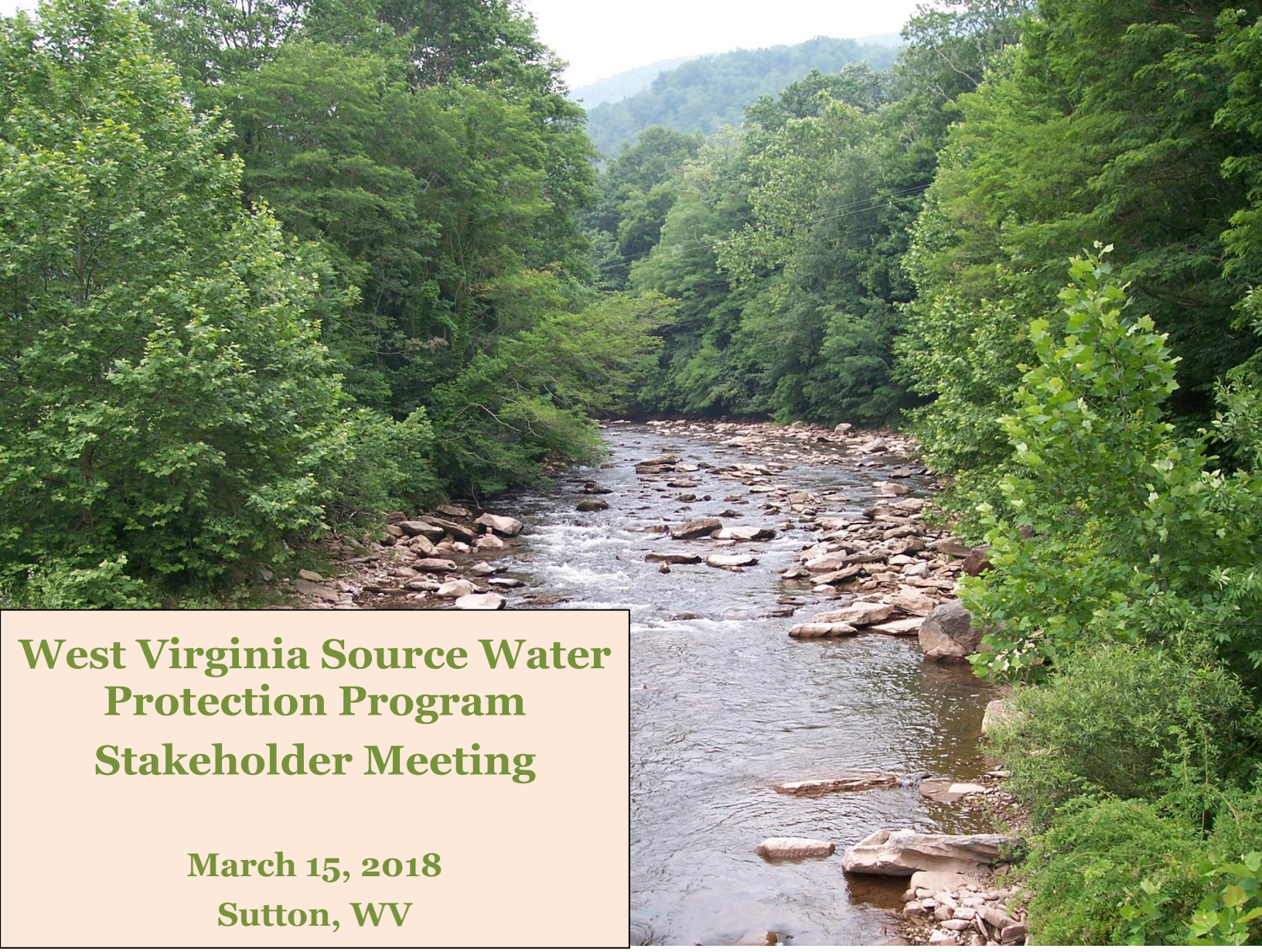
- WVDHHR Fairmont district office
- Mingo county emergency services
- St Albans District Office
- Through or local EOC
- OEHS
- Local fire department
- 911
- Direct communication from agencies (DHHR, ORSANCO), customer notifications, emergency response organizations
- DHHR
- Calls directly from people about possible spills
- Upper Potomac watershed
- Only information we've ever received regarding a spill was from District Health Office in Kearneysville, WV.
- Health Dept, ICPRB,LECP
- District Engineer Office
- Other water plants will call
- Private sources
- Employees and local fire dept
- District office of the Health Dept. (Fairmont)
- Rural Water
- Emergency director at times
- Fairmont and MUB exchange information regularly.
- State
- I don’t receive any information for any spills
- ORSANCO, Wheeling District Office
- Local gas and oil companies will and have notified
- West Virginia Department of Health and Human Resources Bureau for Public Health, St Albans District Office-808B Street, Suite G, St. Albans, WV 25177
- ORSANCO
- Local 911
- County emergency services
- County emergency OES
- Local Health dept. notifies us on spills
- Have received calls from DHHR District Engineer
- WVDHHR



If yes, please describe:

- We have ISO standard pollution liability for sudden and accidental discharge. We do not have any environmental impairment liability or pollution other than that endorsement.
- Only if we cause it not if somebody else does it
- Don’t know
- Not sure if that is covered by our insurance
- Not sure
- This is an unknown question, since the Lady who takes care of this out of town. We cover what is required by law so unsure.

Appendix B: March 2018 Stakeholder Meeting Summary



West Virginia Source Water Protection Program Stakeholder Meeting

March 15, 2018
Sutton, WV

Introduction

West Virginia (WV) Department of Health and Human Resources (DHHR) is working with their consulting firm, Horsley Witten Group (HW) to conduct an evaluation of the Source Water Protection (SWP) Program. DHHR solicited feedback on the program through a survey that was sent out to water utility staff in late 2017. As a next step, HW is evaluating several existing utility Source Water Protection Plans (SWPPs) and evaluating the overall program for successes, information gaps and potential improvements. The purpose of the stakeholder meeting was to gather feedback and obtain perspectives on the SWP Program process and the development of SWP Plans. This meeting was sponsored by DHHR and facilitated by HW. The meeting agenda is included as Attachment A.

SWP utility staff were invited from various public water systems around the State. There were a total of 18 participants, including participants from public water systems, DHHR, WV Rivers Coalition, and WV Rural Water Association. A meeting attendee list is provided as Attachment B and a summary of participant evaluations is provided as Attachment C.

Action Items

- HW will examine the West Virginia Department of Environmental Protection (DEP) Spill Hotline process to understand the notification process and inform HW's Evaluation Report.
- HW will incorporate feedback and considerations from the stakeholder meeting into the final SWP Program Evaluation Report.

Key Comments/Feedback

- Spill notification is not timely and does not always contain accurate information. Water utilities find it difficult to understand the details and severity of each spill as several reports on the same incident can be issued on the same day. In addition, accurate geographical information is not always included.
- Obtaining accurate information from upstream Potential Sources of Significant Contamination (PSSCs) is a challenge. Developing close relationships with upstream facilities is vital to effective communication during potential contamination/spill incidents. However, utilities are expending a lot of effort to understand contamination potential, with little to no response from facilities.
- Developing effective strategies to engage the public in source water protection efforts is challenging. West Virginia Rivers Coalition (WV Rivers) and water utilities have developed creative public engagement strategies by making the connection between source water protection and public health. For example, WV Rivers has found that using "Drinking Water" protection instead of "Source Water" protection resonates more with the general public.
- It is beneficial to have SWP stakeholders such as water utilities, state agencies, and nongovernmental entities discuss the program face-to-face.
- Improved communication is needed between DHHR and public water systems and the regional SWP utility staff to increase participation in these types of meetings.
- The SWP Plan (SWPP) process and template can work even for small utilities that do not use outside resources to develop the plan.

Update on Source Water Protection Program Evaluation

Kathleen McAllister (HW) provided an overview of the program evaluation objectives and the evaluation process. This presentation is provided in Attachment D. To date, DHHR circulated a survey to all SWP staff at public water systems in WV to solicit feedback on the program. In addition, HW has been evaluating SWPPs from multiple water systems. A group discussion followed the presentation. The main points are captured below:

- How difficult was it to collect detailed information from the PSSCs?
    - One participant mentioned it was difficult to get information from a nearby military base. Even though the utility does not have detailed information on potential contaminants on the base, utility staff have a good relationship and are notified of all potential, even minor, contamination incidents.
    - With other upstream dischargers, there is often little to no communication.
    - Spill Notifications do not come from DEP but are instead forwarded by the DHHR District Office.
- Do others experience issues with Spill Notification?

    - Morgantown Utility Board (MUB) receives spill notifications but there are accuracy issues, such as a lack of information or wrong location. It is difficult to understand what is involved and the potential threat level.
    - One participant mentioned that you will receive the same spill report six times a day because a notification is sent every time it is updated. For example, the same report may be updated with more exact location information or spill amount. Spill reports are often ignored because too many are received.
    - One participant mentioned that the Spill Hotline Center is run by the Department of Homeland Security (DHS). Information is then sent to DEP, onto DHHR, and then to DHHR district offices. The district offices finally forward the spill reports to water systems.
    - There has been a consistent recommendation to include geo-referenced information with the spill notifications.
    - One participant stated that DEP created a mapping application for spill notification 10 years ago. The County Emergency Departments used this application and when receiving calls about spills.
        - The participant suggested using this application at the Spill Hotline call center so that staff taking calls could identify water intakes downstream of reported spills. These staff could then call the downstream water systems to warn them of a potential contamination incident.
    - One participant recommended that DEP require facilities which have permits to document spill plans and specifically identify downstream intakes and the emergency phone numbers for those facilities. The spill plan would also provide time-of-travel estimates for an array of contaminants to help alter potential threats to downstream facilities of potential threats. Fines could be used to encourage facilities to complete the permit process.
    - The water system should not be responsible for obtaining PSSC information that is late or not complete. The burden should be on the spiller to communicate accurate and complete information in a timely manner.
    - One participant mentioned that PSSC information exists somewhere because DEP requires it.
    - There should be protocol requiring call centers to identify and notify the downstream sources immediately.
    - Intake locations are not always publicly available because of the security risks.
    - Angie Rosser (WV Rivers) mentioned that there is a recommendation to conduct an audit on the Spill Hotline in a December 2017 report to the Public Water Supply Commission. Political will is needed to change the current process.
        - It would be helpful if decision makers could hear from water systems or the public directly.
        - Water utility customers should know about challenges facing the utility in regards to source water protection and that there are solutions. The public can be educated and lobby the Legislature to improve this process. Water utilities can educate customers about how spills are reported to the water systems.
- Is DEP aware of issues with the Spill Hotline? Have these issues been communicated to DEP?
    - There have been discussions with DEP and Homeland Security but not everything has been resolved.
- How do you make sense of the monitoring data? How do we interpret data?

- Pennsylvania has mobile testing kits that utilities can use if they need to conduct monitoring.

Panel Discussion

A panel discussion was held to discuss which aspects of the SWP program work well and address ways to improve SWP efforts, in addition to the discussing the process to develop and implement the SWPPs. The panel included Kendra Hatcher representing Morgantown Utility Board (MUB), Erica Pauken representing West Virginia American Water (WVAW), and Erica Johnson representing Claywood Park.

Kendra Hatcher (Downstream Strategies, representing MUB)

MUB has enough funds to manage a SWP program. Downstream Strategies conducted a windshield survey to collect PSSC information upstream of the facility, as well as evaluated permits downstream to see how they are updated. The utility's largest concern for the intake is a chemical plant 1000 feet upstream of the intake. MUB has been one of the most cooperative facilities in the watershed. While the utility sends letters and phone calls to communicate with other facilities upstream, little communication is returned. MUB has initiated communication and tried to collect information on PSSCs, but upstream facilities are not providing much information.

- Q: Does the chemical plant have continuous monitoring on their outfall?
- A: No, they do not. The utility has continuous monitoring at the intake and we are setting up another sensor further upstream.

Erica Pauken (West Virginia American Water)

WVAW has eight systems, ranging in size from small to large. The SWP program is consistently implemented across all water utilities regardless of number of customers.

WVAW's challenges encountered include:

- Aboveground storage tanks (AST) notifications: WVAW experienced a 55% notification rate in regards to AST owners notifying downstream utilities. The majority of notifications do not include a Material Safety Data Sheet. DEP provided supplemental information from the agency's inspections of ASTs. WVAW encounters the most difficulty with oil and gas industry ASTs.
- Notification on PSSCs: WVAW has no regulatory authority and two-way communication with upstream facilities is difficult. There is no requirement for facilities to provide information on PSSCs, especially if the facility does not have any permitted ASTs. Communication is largely dependent on developing relationships with facility staff.
- Finding updated information: WVAW monitors baseline water quality data and analyzes changes over time with information from available databases.
- Resources: Personnel and financial resources are a big challenge for small systems, which operate with fewer personnel on tight budgets.
- Integration and communication between the Clean Water Act agencies and the Safe Drinking Water Act agencies: There are a lot of gaps. The spill reports are coming from DEP, but DEP does not regulate the water systems.

WVAW successes include:

- Spill reports have been helpful although they are not perfect. There is some concern about Combined Sewer Overflow (CSO) reports and whether or not other industrial discharges are included in the CSO report.

- WVAW employs personnel trained in the National Incident Management System (NIMS) process. WVAW has developed relationships through exercises and working with the health departments. Being able to exercise the SWPP to prepare for potential events has been beneficial.
- Relationships with Ohio River Valley Water Sanitation Commission (ORSANCO) and River Alert Information Network (RAIN) and active participation in those organizations have been beneficial.
- WVAW conducts outreach describing source water protection efforts to customers and the general public through mechanisms such as the WVAW website, bill inserts, community events, environmental grant program, and school programs.
- WVAW participated in an EPA forum about branding the source water protection message to better communicate with the public and different audiences – Do people know what source water is?
- Technology for plan implementation: WVAW implements online water quality monitoring for all eight systems, and the utility's alert notification process is robust. WVAW uses GIS with WaterSuite to manage data and information.

Erica mentioned that when communicating with PSSCs, it is not good to use the words "potential source of contamination." As WVAW is trying to build a relationship with these entities, they have found it best to request basic information and move into the harder questions once the relationship is solidified.

Erica Johnson (Claywood Park)

- Since the SWPP was written, there hasn't been much progress. Claywood Park does not have the same resources as larger utilities.
- Claywood Park had a small grant to write the whole plan, and staff worked hard to collect the information required to develop the plan. Because the utility staff collected the information and prepared the SWPP, they know the process and system better.
- Tier II Permitted Facilities: The Local Emergency Planning Committee (LEPC) was helpful and directed utility staff to Homeland Security for more Tier II information. There should be a more consistent process to obtain Tier II information.
- Customer interest in the SWPP: There was not much interest. Only one customer attended the public meeting.
- Claywood Park would benefit from template materials for outreach. It would be helpful if EPA or DHHR provided template materials such as bill stuffers, social media blurbs, websites, that can be edited to include the utility name and change a few pieces of information specific to the utility.
- Claywood Park would benefit from assistance and funding for table-top exercises and would like to participate in a regional exercise.
- Grant program: Claywood Park installed continuous monitoring sensors after receiving a grant from the State. Claywood Park pushed for the grant because it allows the water utility to make improvements and conduct projects that would otherwise be impossible due to financial constraints.

Todd Cooper mentioned that in general, participation was low at public hearings across the State. People who attended wanted to discuss building out new sources, rate increases, and/or new connections, not source water protection.

HW facilitated a discussion with the panel and posed the questions:

What have you seen that has happened because of your plan that has been helpful or useful? What were positive or negative outcomes?

- Beckley reached out to the local county emergency planner. The local emergency services have a lot of resources and have been allies. Utilities can leverage their expertise and wisdom and ability to reach partners and the public. Beckley conducted a table-top exercise and the local emergency management services participated and provided feedback on the utility's preparedness and response procedures.
- Angie Rosser mentioned that she serves on the Source Water Protection team as a customer of her town's utility. They established a Facebook page and worked with county 911 service to send out an automated message when there are incidents (e.g., boil water notification).
- Todd Cooper added that some utilities send alerts through Facebook, and the message reaches people faster than the more traditional communication channels. Many utilities created Facebook pages for outreach to meet the legislative requirement to conduct outreach on source water protection.
- Another participant mentioned that community outreach was helpful so that customers recognize that people are working hard to protect the water source.

Does any of your planning involve land use and/or zoning changes?

- Morgantown has been working on a plan for land preservation in the Monongahela River headwaters. It has been difficult to communicate to property owners how to manage their property. MUB does not want to approach owners with an attitude of "we are taking your land" but rather with a focus on educating people to employ best management practices. If owners are not using the land, MUB has been exploring easements to preserve the land.
- The idea of land stewardship and passing land onto the next generation is important to West Virginians. If protection messages resonate with leaders of the community, then best practices will be accepted by the entire community. It is beneficial if messages come from a trusted community member.
- One participant notes that data can be used to tell a story and educate the public about potential impacts to source water.
- WVU Extension Service can communicate messages to the agricultural community.

What are your experiences with AST information?

- Morgantown received feedback from some ASTs, and the utility is waiting for information from the State. Even when information is received, it is often difficult to interpret and follow up with AST owners to understand the information has been challenging.

Regarding backup storage and alternate water source, do you have strategies to work with the challenges surrounding these two issues? Are there any interim steps?

- Claywood Park added finished water storage to meet the two-day storage requirement.
- Kingwood mentioned that unless they can buy out smaller systems for a lot of money, they cannot interconnect to these systems.

WV Rivers – Results from Public Engagement Studies

- What motivates people? What message gets people to a public event or hearing?
    - Making the connection between source water protection and public health, and connecting people to water.

- WV Rivers held public forums around the State and invited the local water utilities to make presentations. The key to success is to engage local organizations, such as faith groups, clubs and advocacy organizations.
- WV Rivers conducted a survey on public perception and recommendations. Key feedback from the survey includes:
    - Use multiple channels to communicate a message.
    - Stagger public hearings instead of trying to conduct many in a few weeks.
    - Utilities often encounter confidentiality issues and challenges with understanding what information can be shared with the community.
- In regards to leveraging resources, some Clean Water Act programs provide funding for Watershed Improvement/Assessment Plans. For example, communities can apply for funds to develop a Plan after a stream is designated "impaired." A suggestion was made to create a combined plan to address watershed improvements and source water protection.
- Other suggestions to improve public engagement and outreach include:
    - Using different forms of social media and traditional media, and
    - Leverage already-planned events, such as river festivals or community festivals, instead of creating a new event.

What are effective strategies to improve the public engagement component of the SWPP process in the future?

- Host outreach events that involve food and fun, e.g., talk to local craft brewers.
- Change branding to "Drinking Water" protection instead of "Source Water" protection.
- Host a Preparedness Fair with booths set up to host one-on-one conversations between source water protection stakeholders (e.g., utility staff, public health, etc.) and the general public.
- Conduct outreach at schools.
- Make a personal connection with staff at local newspapers and media outlets.
- Leverage relationships with members of faith communities, as some congregations allow time at the end of their services for guest speakers.
- Publicize results of Consumer Confidence Report to demonstrate water quality improvements.

Can the State play a role in public engagement?

- Assist with messaging across the state (e.g., radio announcements, billboards).
- Encourage the SWP Teams to be more active.

WV DHHR Presentation – SWPP Process, Summary Analysis

Todd Cooper of WV DHHR presented a summary of the agency's SWP process to date, including background information on Senate Bill 373, source water assessment at the state level, creation of WV's Public Water Supply Commission, and WV DEP's Above Ground Storage Tank Act. He provided observations on the SWP program and highlighted planned improvements to the SWP process based on challenges encountered by water systems and other SWP stakeholders. These planned improvements are described below in more detail.

Improved data sharing and management

- Update and share various types of data through Geographic Information System (GIS) portal applications.

- Resolve locational data inaccuracies through interagency collaboration and shared data and security protocols.
- Develop an electronic entry format.

Motivating local activity in SWP

- Commit state grant funding to local SWP activities to support continued implementation and sustainability of SWPPs and activities.
- Develop and support outreach and educational programs and materials, including conferences and publications.
- Provide Continuing Education Units (CEUs) to operators who attend training sessions on source water protection.
- Provide technical assistance and work with technical assistance providers such as state and national Rural Water Associations, the US Geological Survey and State Geological Survey, and Rural Community Assistance Partnership (RCAP) affiliates.
- Develop a state SWP program website with detailed back-ground materials, templates for protection plans, resources, and links to related information.

Partnerships, Integration, and Leveraging

- Continue to develop strategic partnerships.
- Leverage funds and work from different programs including: Clean Water Act, Safe Drinking Water Act, stormwater management, and land conservation.

Measurement and Characterization

- Conduct a periodic evaluation on SWP program effectiveness.
- Target new activities and how to refine ongoing implementation strategies and activities.

Mr. Cooper also described information gaps, specifically noting that sensitive data is often not accessible to water systems. Tier 2 Data is considered highly sensitive, and although AST owners are legally mandated to make Tier 2 data accessible, that data is often difficult to obtain. Even more, Tier 2 data are often subject to interpretation by local emergency planning committees (LEPCs), which adds another layer of complexity to obtaining the information. In addition, some information is subject to the Confidential Business Information (CBI) /Toxic Substances Control Act which specifies that facilities with chemicals or mixtures that are deemed trade secrets or CBI are exempt from public disclosure. Again, this presents challenges for water systems in accessing information on potential sources of contamination. Last, DHHR recognizes that databases containing regulated data are often not standardized and don't abide by baseline standards of data quality.

Mr. Cooper's presentation is available in Attachment D.

Report out

Following the presentation by DHHR staff, meeting participants gathered into small groups and discussed challenges, successes, and opportunities to improve the SWPP process. Key comments are listed below.

Challenges

- Some attendees voiced concerns about farmers who do not implement best management practices and discharge directly to source waters or tributaries that drain to source waters.

- Obtaining proprietary information on PSSCs from facilities in watershed Zones of Concern is difficult.
- A better understanding of water quality baselines is needed – What is normal and abnormal?

Successes

- The SWPP process works for utilities of all sizes. Claywood Park, a small utility, developed the SWPP without any assistance. Because utility staff developed the plan, they understand the process and intimately know their plan and system.
- The SWPP template is helpful, as it allows utilities to understand the legislative requirements, which is especially helpful for smaller utilities which develop the plans themselves.

Opportunities for improvement

- Face-to-face meetings are beneficial, but more SWP utility staff should be present at these meetings. How can we improve outreach?
    - Suggestion: Involve the District DHHR offices and District Engineers in outreach for these types of meetings and other information dissemination (e.g., grant opportunities).
- Obtaining accurate information from upstream sources is challenging but communication and maintaining a relationship with these facilities has been beneficial.
- Interstate and inter-agency cooperation could help water utilities obtain required information on PSSCs and other components in the SWPPs.
- DHHR could create a frequently asked questions (FAQs) document for the SWPP process to provide FAQs and responses before the next round of SWPP development.

Next Steps

The feedback solicited during this meeting will be used to inform the SWP Program Evaluation Report. The Evaluation Report will include information from the results to the survey sent to utility staff in late 2017, as well as evaluation results of the SWPP review. The draft Evaluation Report will be available in June 2018, and HW will share this meeting summary with DHHR staff.

West Virginia Source Water Protection Program
Stakeholder Meeting
March 15, 2018
WV Rural Emergency Trauma Institute (RETI) Training Center, Sutton, WV (Flatwoods Exit)

Attachment A: Meeting Agenda

Time	Activity	Participants
9:45 AM – 10:00 AM	Sign in	All
10:00 AM – 10:30 AM	Welcome and introductions	WV DHHR and Horsley Witten Group (HW)
10:30 AM – 11:00 AM	**Update on Source Water Protection Program Evaluation** • Methodology • Results of Water Utilities' Survey • Precedent source water protection planning examples • Next steps	HW
11:00 AM – 12:00 PM	**Panel Discussion: Large, Medium and Small Water Utility Representatives** • What worked? What could be improved? • What part of the SWPP process should remain the same? • Are there other ways to improve source water protection efforts?	Panelists provide brief remarks (30 minutes) • Morgantown Utility Board (Kendra Hatcher) • Claywood Park (Erica Johnson) • West Virginia American Water (Erica Pauken) HW-led facilitated discussion (30 minutes)
12:00 PM – 12:15 PM	**Break**	All
12:15 PM – 1:15 PM (Light lunch provided)	**WV Rivers Coalition – Results from Public Engagement Studies** • Discussion about improving public engagement and awareness in source water protection	Angie Rosser, WV Rivers Coalition (20 minutes) HW-led facilitated discussion (40 minutes)
1:15 PM – 1:30 PM	**Break**	All
1:30 PM – 2:00 PM	**Presentation by DHHR** • What worked? • Gaps in information or Issues with information collection? • How can the state improve SWPP technical assistance capacity for water utilities? • Examples of SWPP Implementation	DHHR brief remarks (10 minutes) HW-led facilitated discussion (20 minutes)
2:00 PM – 2:30 PM	**Small Breakout Discussions – What did we hear today?** • What are the strengths of the SWPP process? • What could be improved? • Where are the gaps in source water protection information?	All – Break into small groups
2:30 PM – 2:45 PM	**Small Groups Report Out**	Small Group Designated Representative
2:45 PM – 3:00 PM	**Evaluations and Next Steps**	HW

Note: Utilities cannot represent or speak on behalf of other systems but are providing perspective concerning their water system.

West Virginia Source Water Protection Program
Stakeholder Meeting

Attachment B: Attendee List

Name	Affiliation
Lewis Baker	WV Rural Water Association
Todd Cooper	WV DHHR Source Water Assessment Program
Kendra Hatcher	Downstream Strategies, representing MUB
Erica Johnson	Claywood Park PSD
Gemma Kite	Horsley Witten Group
Daniel Layton Jr.	Kingwood Water Works
Catherine Magliocchetti	USEPA
James Marks	Kingwood Water Works
Kathleen McAllister	Horsley Witten Group
Christina Mickey	WV DHHR/OEHS
Keith Morris	WV DHHR/OEHS - SWAP
Mark Nelson	Horsley Witten Group
Erica Pauken	WV American Water
Roger Pence	Lewisburg
Angie Rosser	WV Rivers Coalition
Jonathan Stanley	Beckley Water Company
Amy Swann	West Virginia Rural Water Association
William Toomey	WVDHHR/OEHA/EED
Judy Vallandingham	WV DHHR/OEHS
Cory Weese	Town of Beverly
Louis Wooten	Beckley Water Company

West Virginia Source Water Protection Program – Stakeholder Meeting

March 15, 2018

Attachment C:

Evaluation Summary

	Average*
1. The meeting was well structured and organized.	**4.8**
2. Overall, the meeting was a valuable use of my time.	**4.6**

*Scores are an average of the 5 evaluations we received after the meeting and are based on a scale of 1-5 with 1 being strongly disagree and 5 being the strongly agree.

3. What are the strengths of the SWPP process?

- Expectations and templates are clear. Good feedback from DHHR.
- Legislative mandate for sourcewater protection. Full participation by systems to complete plans - all but I filed on time.
- Establishing relationships between each other (water co. & PSD's) and external partners engaging water companies & PSD.
- Understanding inter-agency awareness and actions.
- BPH template, mandatory SWP.

4. What could be improved?

- Online process has been discussed for four years. Implementation soon would be helpful for working towards updates.
- More information made publicly available.
- Relationships between water co. & PSD. Water systems and DEP - relationships.
- Warmer weather.
- Add addendum to template for sharing water quality information, what's being monitored and what is being learned from monitoring.

5. What part of the SWPP process should remain the same?

- Timing of plans is sufficient. DHHR grant program for implementation should be continued.
- Availability of BPH staff at a high level/helps a lot. Keep Horsley Witten.
- Templates. Make all systems use the templates, especially WVAW company.
- You've got the basics right.

6. Are there other ways to improve source water protection efforts?

- Push for more regulations to increase feedback/information from PSSC. Streamline data collection process.
- Make staggered submissions - change the law to allow this.
- School curricula; class credits for student (offer) utilize social media more.
- Stagger schedule so they don't all come in at same time.

Attachment D: Presentations

Update on Source Water Protection Program Evaluation

March 15, 2018

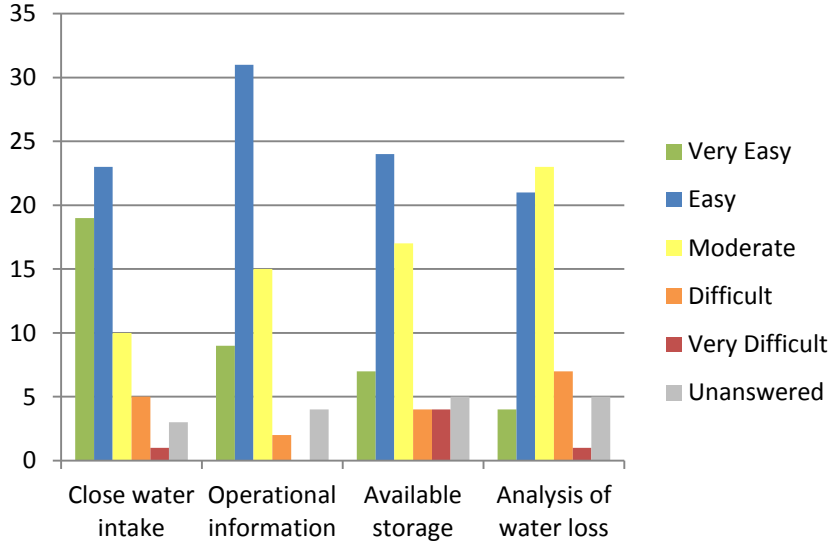
Methodology

- Survey of water utilities
  - Distributed to 126 source water protection contacts at WV water systems.
  - 61 surveys completed – 48% percent response rate.
- Review of 12 SWPPs from utilities across the state
  - Cross section of water systems (surface water and groundwater; publicly and privately owned, large, mid-sized, and small).
  - Reviewed plans to assess compliance with WV legislation and guidance documents.

Common Themes Identified by Survey and SWPP Review

- Strengths
  - Utility Operations
  - Management Strategies
- Challenges
  - Alternate Water Source
  - Public Outreach/Communication
  - Cost and Funding

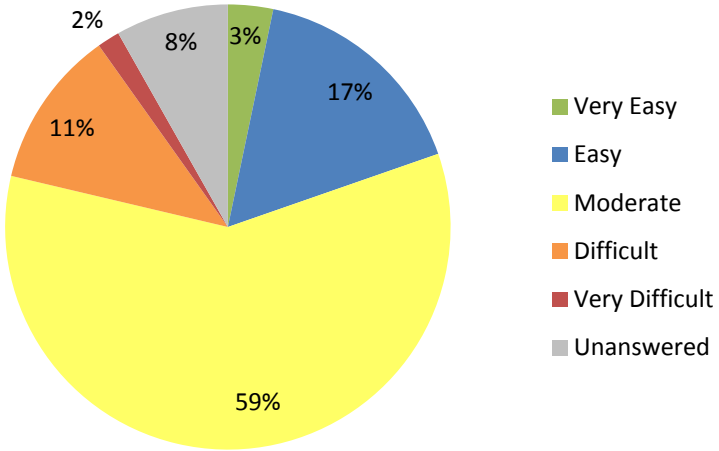
Utility Operations



Rate how difficult or easy, in terms of time spent and response from partners, it was to develop the following components of the SWPP?

- 12 out of 12 reviewed plans contained required operational information
- 12 out of 12 utilities can close water intake and provided adequate information on available storage

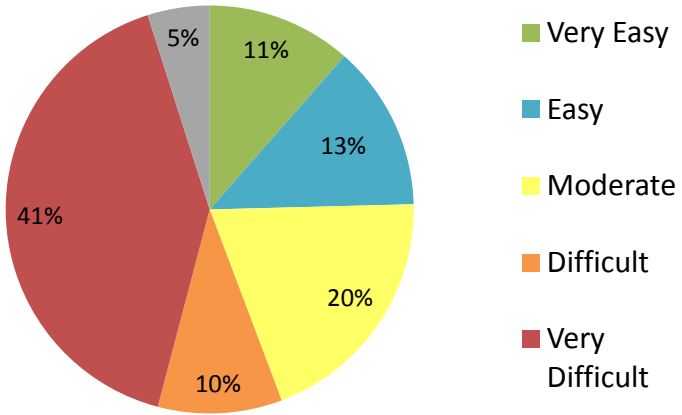
Management Strategies



Rate how difficult or easy, in terms of time spent and response from partners, it was to develop the management plan?

- Utilities listed coming up with a management plan as being moderately difficult
- But 12 out of 12 plans had comprehensive management plans.
- Sample management strategies:
  - Working with DOT, railroad companies, and barge companies to conduct a hazardous materials inventory for their watersheds.
  - Coordination with other utilities in the area regarding the use of pesticides and herbicides in public rights of way.
  - Management of sinkholes to prevent groundwater contamination.
  - Purchasing parcels from the farm bureau and farmland protection board that lie in zones of critical concern.

Alternate Water Source: Online Survey



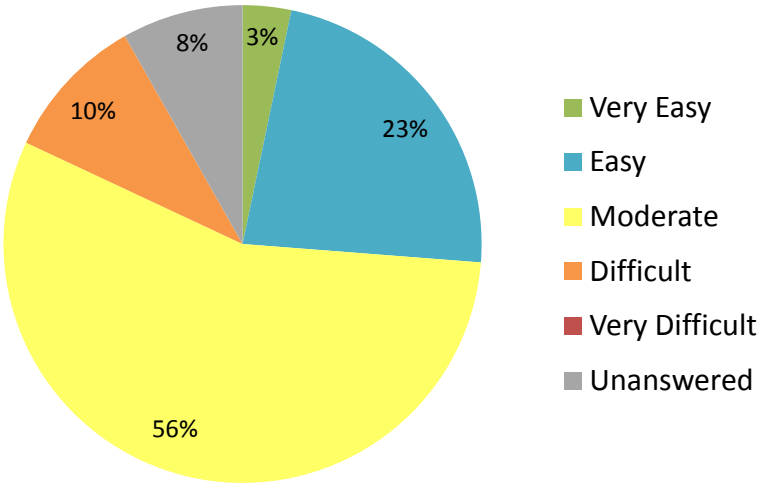
Rate how difficult or easy, in terms of time spent and response from partners, it was to develop a plan to switch to an alternative source?

- Q: Please elaborate on areas that were particularly difficult or any barriers encountered.
  - A: “Switch to alternative source the City does not have a second source The City does not have the funds to do this”
  - A: “Getting a second source is expensive and a good distance away from the plant.”
- Q: Have you encountered any barriers or challenges in implementing specific components of the SWPP?
  - A: “We are limited to only one water source. The water utility is trying to locate funding to pursue a water project to include additional tank storage.”

Alternate Water Source: SWPP Review

- 8 out of 12 utilities cannot switch to an alternate water source
  - Of the utilities that can, most alternate water sources can only supply water needed for a given period of time.
  - Utilities suggested adding an additional intake, creating an interconnect, and other strategies for establishing an alternate water source.
  - High cost of establishing an alternate water supply was discussed.
  - 8 out of 12 utilities currently do not meet the two day minimum water storage capacity requirement.

Public Outreach/Communication: Online Survey



Rate how difficult or easy, in terms of time spent and response from partners, it was to develop a communications plan?

- Q: What did you learn from the public or agency partners during the development or implementation of the SWPP?
  - A: “That there seems to be limited information travel among the group”
  - A: “County needs better communication.”
  - A: “A lot of info but difficult to obtain and coordinate all the info and parties involved. Small systems do not have time or manpower to get desired results.”

Public Outreach/Communication: SWPP Review

- All plans contained a communications plan
  - Based on outlines from the state.
  - Plans provide contact information for state, local, and media partners.
  - Most plans do not discuss differences in response based on the specific incident or contingency plans related to handling incident complications.
  - Communications plans and Emergency Response plans are often combined into one document or section.

Cost and Funding: Survey

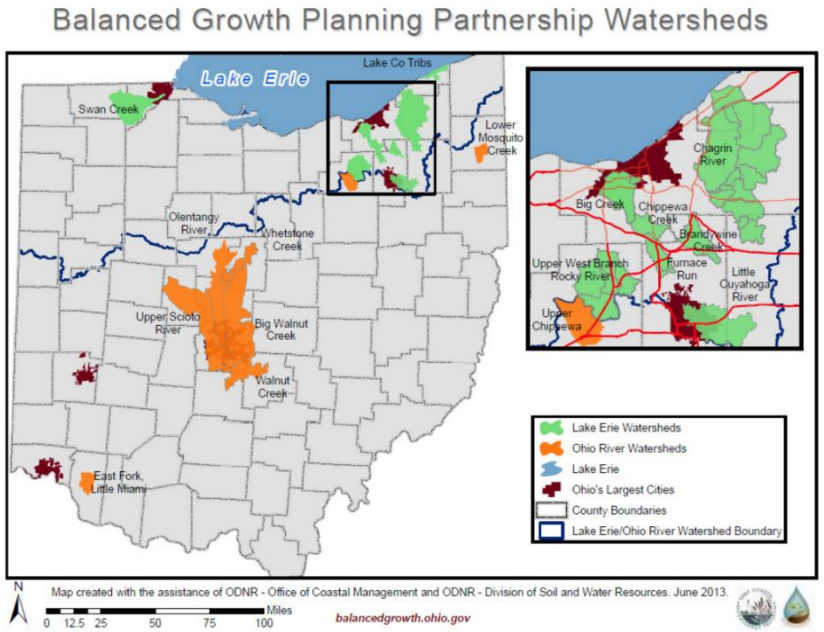
- Respondents identified cost as a barrier for analysis and establishing protective measures.
  - Q: Please elaborate on areas that were particularly difficult or any barriers encountered
    - A: “funding and time requirements”
    - A: “Alternative source is a challenge; having to lay 2 miles of pipe and rent equipment”
  - Q: Have you encountered any barriers or challenges in implementing specific components of the SWPP?
    - A: “money and interest”
    - A: “only financial”

Precedent Source Water Protection Examples

- Ohio
- North Carolina
- Colorado

Ohio

- Uses watershed level land use planning to proactively control risks to source waters.
  - Focuses on a few critical watersheds that contribute to Lake Erie or the Ohio River and are located around or near major population centers.
  - Offers technical assistance and incentives for enacting different source water protection measures, such as acquiring property or infrastructure developments.
- Interstate framework for source water monitoring in the southern portion of the state.



North Carolina

- State provides guidance establishing water supply classifications that limit new PSSCs around surface water intakes.
- Local governments are required to establish minimum standards for source water protection in local ordinances.
- NC Source water collaborative involves local and state agencies, non profits, academia, and professional associations. The collaborative can connect towns and utilities with state funding sources.

The town of Gardner, NC used funds from the state to create a video informing residents about the connection between water quality and trash clean up.

Colorado

- The state develops source water risk assessments. The state offers some support to utilities for protection and planning measures but is ultimately up to the utility.
- The state provides guidance documents to assist utilities, including:
  - Highlights previously developed protection plans for utilities to use as a resource.
  - Recommends best practices for minimizing risks from oil and gas drilling.

Common Themes: Online Survey (1 of 2)

- Increased funding and technical assistance
- Increased enforcement of potential polluters by the state and utility
  - “Again some authority to have PSCS comply and supply information, also not to continue having the state weaken the PSCS requirements i.e. continued tank exemptions.”
- Streamline communication
  - “Immediate information from other agencies that may affect us.”
  - “Create one communication system.”
- Assist in information gathering
  - “Make PSSC information more available. Also, make hazardous chemicals information that is hauled through our watershed and ZCC available to the utility in order to prepare for certain events.”

Common Themes: Online Survey (2 of 2)

- Stakeholder outreach
  - “Support public engagement by hosting joint meetings and community events. Provide updates to online database for potential sources of contamination that show when it was last updated. Improve DEP enforcement of materials management and public water system notification requirements.”
- Additional resources
  - “Make portable lab testing available that WV Division of Homeland Security may possibly have that eliminates the waiting to see if the actual source is contaminated”
- Joint responsibility
  - “Shared responsibility between water utilities, agencies, and owners/operators of upstream potential sources of contamination”

Common Themes: SWPP review

- Increased emphasis on alternate source analysis and implementation
  - Funding was listed as a challenge to implementing an alternate source.
  - Coordination between utilities to establish inter-connections could be helpful.
- Increased coordination and contingency planning for different types of incidents.
  - Additional information could be included in communications plans and emergency response plans.

Next Steps

- Today’s meeting
- Draft Evaluation Criteria/Outline
- Feedback
- Final SWP Program Evaluation Report

Panelists

- Morgantown Utility Board (Kendra Hatcher, consultant)
- Claywood Park (Erica Johnson)
- West Virginia American Water (Erica Pauken)

Panel Discussion

Large, Medium and Small Water Utility Representatives

- What worked? What could be improved?
- What part of the SWPP process should remain the same?
- Are there other ways to improve source water protection efforts?

Presentation by WV DHHR

- What worked?
- Gaps in information or Issues with information collection?
- How can the state improve SWPP technical assistance capacity for water utilities?
- Examples of SWPP Implementation

Small Group – Breakout Discussions

- What did we hear today?
- What are the strengths of the SWPP process?
- What could be improved?
- Where are the gaps in source water protection information?

Thank you!

Email additional information to
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Kathleen McAllister, kmcallister@horlseywitten.com
Gemma Kite, gkite@horsleywitten.com

West Virginia Source Water Protection: "Plan Evaluation Workshop"

Todd Cooper & William Toomey
Source Water Protection Manager
Department of Health and Human Resources
Bureau for Public Health
Office of Environmental Health Services

Flatwoods, WV
March 15, 2018

WEST VIRGINIA Department of Health & Human Resources
BUREAU FOR PUBLIC HEALTH

Summary Analysis

- **Regulatory:**
  - Senate Bill (SB) 373 was passed (**April 1, 2014)** by the WV Legislature **requiring Source Water Protection** plans to be developed under the WV Code Chapter 16, "Public Health".
    - SB added **additional resources** and **implementation strategies** providing for:
      - ❖Hired additional staff providing technical and/or administrative support in protection efforts.
  - Development of the "Public Water System Supply Study Commission".
  - Above Ground Storage Tack Act (purview of the WVDEP).

Source Water Protection Timeline

Wellhead protection	*SDWA Surface water System protections*	*Source Water Protection Program*	*Voluntary SWPP Developed by PWS*	*Elk River Chemical Spill*	*SB 373*	*125 SWPP Received/Approved*	*Work Continues*
1986	**1996**	**1999**	**Early 2000s**	**2014**		**2016**	**2017**

Summary Analysis (Continued)

- **Managing and Sharing Data:**
  - Sharing and updating various types of data/information through a secure and non-secure Geographic Information System (GIS) portal applications.
  - Establishing inter-agency sharing of security data protocols.
  - Resolving/fixing locational data inaccuracies with other agencies?
  - Development of electronic entry format.

Summary Analysis (Continued)

- **Motivating Local Activity:**
  - Committing state grant funding to local Source Water Protection (SWP) activities to support continued implementation and sustainability of source water protection plans and activities.
  - Developing or supporting outreach/educational programs and materials including conferences and publications.
  - Providing Continuing Education Units (CEU's) to operators who attend training sessions on source water protection.
  - Providing technical assistance and working with technical assistance providers such as state NRWA, US Geological Survey and State Survey, and RCAP affiliates.
  - Developed a state source water protection program-specific website with detailed back-ground materials, templates for protection plans, resources, and links to related information.

Summary Analysis (Continued)

- **Partnerships, Integration, and Leveraging:**
  - Continue to:
    - Develop strategic partnerships.
    - Improve integration and leveraging of Clean Water Act regulation and Safe Drinking Water Act (source water Protection) and /or other programs such as storm water management and land conservation.
- **Measurement and Characterization:**
  - A periodic evaluation program on effectiveness is essential for any type of long-term program.
    - Target new activities and how to refine ongoing implementation strategies and activities.

Summary Analysis (Continued)

- **Informational collection gaps?**
  - Accessibility of Sensitive Data –
    - Tier 2 Data - considered highly sensitive data and although they are legally mandated to be made publicly accessible, they are often the most difficult data for utilities obtain.
    - Accessibility of tier II data are subject to the interpretation of individual local emergency planning committees, which made returns on requests for tier II information unpredictable.
  - Confidential Business Information (CBI) / Toxic Substances Control Act - This information must be made publicly available; facilities with chemicals or mixtures that are deemed trade secrets or CBI are exempt from public disclosure.
  - Baseline standards for regulated data bases - Data quality and lack of detail.

Contact Information

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Environmental Engineering Division

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WEST VIRGINIA LEGISLATURE

2019 REGULAR SESSION

Draft

House Bill Number

BY ENTER SPONSORS HERE

[Enter References]

A BILL to amend and reenact §16-1-9c of the West Virginia Code, 1931, as amended, to authorize the Secretary of the Department of Health and Human Resources to propose rules related to completion or updating source water protection plans.

Be it enacted by the Legislature of West Virginia:

ARTICLE 1. STATE PUBLIC HEALTH SYSTEM.

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

(a) ~~On or before July 1, 2016, each~~ An existing public water utility ~~which~~ that 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 the development of the protection plan.

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

(1) A contingency plan that documents each public water utility's planned response to contamination of its public surface water supply source or its public surface water influenced groundwater supply source;

(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;

(7) The calculated level of unaccounted for water experienced by the public water system for each surface water intake, determined by comparing the measured quantities of water which are actually received and used by customers served by that water plant to the total quantities of water treated at the water plant over the past year. If the calculated ratio of those two figures is less than 85 percent, the public water system is to describe all of the measures it is actively taking to reduce the level of water loss experienced on its system;

(8) A list of the potential sources of significant contamination contained within the zone of critical concern as provided by the Department of Environmental Protection, the Bureau for Public Health, and the Division of Homeland Security and Emergency Management. The exact location of the contaminants within the zone of critical concern is not subject to public disclosure in response to a Freedom of Information Act request under §29B-1-1 *et seq.* of this code. However, the location, characteristics and approximate quantities of potential sources of significant contamination within the zone of critical concern shall be made known to one or more designees of the public water utility, and shall be maintained in a confidential manner by the public water

utility. Disclosure is permitted on any location, characteristics and approximate quantities of potential sources of significant contamination within the zone of critical concern to the extent they are in the public domain through a state or federal agency. In the event of a chemical spill, release, or related emergency, information pertaining to any spill or release of contaminant shall be immediately disseminated to any emergency responders responding to the site of a spill or release, and the general public shall be promptly notified in the event of a chemical spill, release, or related emergency;

(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~~ or treated water storage capacity or both, 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~~ §16-1-9c(9)(A) through (D), inclusive, 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;

(10) A management plan that identifies specific activities that will be pursued by the public water utility, in cooperation and in concert with the Bureau for Public Health, local health departments, local emergency responders, local emergency planning committee, and other state, county, or local agencies and organizations to protect its source water supply from contamination, including, but not limited to, notification to and coordination with state and local government agencies whenever the use of its water supply is inadvisable or impaired, to conduct periodic surveys of the system, the adoption of best management practices, the purchase of property or development rights, conducting public education, or the adoption of other management techniques recommended by the commissioner or included in the source water protection plan;

(11) 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 the public to occur, in any event, no later than 30 minutes after the public water system becomes aware of the spill, release or potential contamination of the public water system;

(12) A complete and comprehensive list of the potential sources of significant contamination contained within the zone of critical concern, based upon information which is directly provided or can otherwise be requested and obtained from the Department of Environmental Protection, the Bureau for Public Health, the Division of Homeland Security, and Emergency Management and other resources; and

(13) An examination of the technical and economic feasibility of implementing an early

warning monitoring system.

(c) ~~Any~~ A public water utility's public water system with a primary surface water source of supply or a surface water influenced groundwater source of supply ~~that comes into existence on or after the effective date of this article~~ shall submit, prior to the commencement of its operations, a source water protection plan satisfying the requirements of subsection (b) of this section.

(d) The commissioner shall review a plan submitted pursuant to this section and provide a copy to the Secretary of the Department of Environmental Protection. Thereafter, within 180 days of receiving a plan for approval, the commissioner may approve, reject, or modify the plan as may be necessary and reasonable to satisfy the purposes of this article. The commissioner shall consult with the local public health officer and conduct at least one public hearing when reviewing the plan. Failure by a public water system to comply with a plan approved pursuant to this section is a violation of this article.

(e) The commissioner may request a public water utility to conduct one or more studies to determine the actual risk and consequences related to any potential source of significant contamination identified by the plan, or as otherwise made known to the commissioner.

(f) Any public water utility required to file a complete or updated plan in accordance with the provisions of this section shall submit an updated source water protection plan at least every three years or when there is a substantial change in the potential sources of significant contamination within the identified zone of critical concern.

(g) ~~Any public water utility required to file a complete or updated plan in accordance with the provisions of this section shall review any source water protection plan it may currently have on file with the bureau and update it to ensure it conforms with the requirements of subsection (b) of this section on or before July 1, 2016.~~

~~(h)~~ The commissioner's authority in reviewing and monitoring compliance with a source water protection plan may be transferred by the bureau to a nationally accredited local board of public health.

(h) The Secretary is authorized to propose legislative rules for promulgation pursuant to §29A-3-1 *et seq.* of this code to implement the provisions of this section. Rules may include a staggered schedule for the submission of Source Water Protection Plans by public water utilities pursuant to §16-1-9c(f) of this code, including a schedule of submission that results in an initial period of greater than three years.

NOTE: The purpose of this bill is to authorize the Secretary to propose rules related to the completion or updating of source water protection plans.

Strike-throughs indicate language that would be stricken from a heading or the present law and underscoring indicates new language that would be added.