Source Water Protection Plan
City of Fairmont

PWSID WV3302502

Marion County

June 2016

Prepared by:

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In cooperation with The City of Fairmont,

Region VI Planning and Development Council, and The Thrasher Group, Inc.

TETRA TECH

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Director, Water Resources Group

Title of Preparer

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**Note: Portions of this plan relative to the contingency and single source alternative study were completed by The Thrasher Group. Their complete report is included as Appendix D.

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

Signature of responsible party or designee authorized to sign for water utility:

David C. SAGO

Print Name of Authorizing Signatory (see instructions):

Utility Manager

Title of Authorizing Signatory:

6/23/2016

Date of Submission (mm/dd/yyyy):

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APPENDICES

SOURCE WATER PROGRAM ACRONYMS

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

1.0 PURPOSE

The goal of the West Virginia Bureau of Public Health (WVBPH) source water assessment and protection (SWAP) program is to prevent degradation of source waters which may preclude present and future uses of drinking water supplies to provide safe water in sufficient quantity to users. The most efficient way to accomplish this goal is to encourage and oversee source water protection on a local level. Many aspects of source water protection may be best addressed by engaging local stakeholders.

The intent of this document is to describe what The City of Fairmont has done, is currently doing, and plans to do to protect its source of drinking water. Although this water system treats the water to meet federal and state drinking water standards, conventional treatment does not fully eradicate all potential contaminants and treatment that goes beyond conventional methods is often very expensive. By completing this plan, The City of Fairmont acknowledges that implementing measures to minimize and mitigate contamination can be a relatively economical way to help ensure the safety of the drinking water.

1.1 WHAT ARE THE BENEFITS OF PREPARING A SOURCE WATER PROTECTION PLAN?

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

2.0 BACKGROUND: WV SOURCE WATER ASSESSMENT AND PROTECTION PROGRAM

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

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

In 1999, the WVBPH published the West Virginia Source Water Assessment and Protection Program, which was endorsed by the United States Environmental Protection Agency. Over the next few years, WVBPH staff completed an assessment (i.e., delineation, inventory and susceptibility analysis) for all of West Virginia's public water systems. Each public water system was sent a copy of its assessment report. Information regarding assessment reports for The City of Fairmont can be found in **Table 1**.

3.0 STATE REGULATORY REQUIREMENTS

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

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

The code also requires that public water utilities include details regarding PSSCs, protection measures, system capacities, contingency plans, and communication plans. Before a plan can be approved, the local health department and public will be invited to contribute information for consideration. In some instances, public water utilities may be asked to conduct independent studies of the source water protection area and specific threats to gain additional information.

4.0 SYSTEM INFORMATION

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

Table 1. Population Served by the City of Fairmont

Administrative office location:			200 Jackson St., Fairmont, WV 26554
Is the system a public utility, according to the Public Service Commission rule?			Yes
Date of Most Recent Source Water Assessment Report:			January 2003
Date of Most Recent Source Water Protection Plan:			July 2011
Population served directly:			28,997 people Customer: Residential 12,228; Commercial 1,091; and Industrial 20
Bulk Water Purchaser Systems:	**System Name**	**PWSID Number**	**Population**
Direct Resale	Paw Paw Route 19 PSD	WV3302518	1,263
	Ices Run PSD	WV3302508	1,126
	Tri-County Water Association-Fairmont	WV3302522	2,353
	Town of Grant Town	WV3302507	1,214
	Little Creek PSD	WV3302510	1,941
	Montana Water Association	WV3302516	659
	Monumental PSD	WV3302517	1,898
	Town of Rivesville	WV3302519	1,386

	County Club Estates Inc.	WV3302528	N/A
	Valley Falls PSD	WV3302523	3,887
	City of Mannington	WV3302513	2,076
	Monumental PSD-Chesapeake	WV3302533	152
Indirect Resale	Ministers Run PSD	WV3302514	341
	Downs PSD	WV3302501	1,018
	Mannington PSD	WV3302512	756
	Mannington PSD Logansport	WV3302532	346
	Mannington PSD Metz	WV3302536	263
	Sugar Lane	WV3302520	194
	Fairoaks	WV3302534	178
	Rayford Acres	WV3302529	71
Total Population Served by the Utility:		50,119	
Does the utility have multiple source water protection areas (SWPAs)?		No	
How many SWPAs does the utility have?		1	

5.0 WATER TREATMENT AND STORAGE

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

Table 2. The City of Fairmont Water Treatment Information

Water Treatment Processes	Raw water is pumped from the Tygart Valley River through a 10 mm stainless steel screen to a reservoir via any combination of (2) 500 horsepower and (2) 300 horsepower vertical turbine pumps. The water then gravity flows from the reservoir through a 24" pumped line or a 30" gravity flow line into the pretreatment building where a combination of chlorine, XL8, caustic soda, and sodium permanganate can be added as dictated by the raw water. It then travels to the up-flow clarifier for mixing and settling of suspended solids and oxidation. The pretreated water then flows by gravity to the membrane tanks through the distribution channel. The permeate pumps create a negative pressure inside the membrane fibers drawing clean water or permeate through the membrane fibers, leaving the contaminants in the membrane tanks. An aeration system then scours the membranes to reduce fouling. The remaining reject water flows by gravity to the reject transfer pump station. The reject transfer pumps pump the water to the recycle tank. This water is pumped back to the pre-treatment building. Sludge is drawn from the up-flow clarifier through 2 diaphragm valves and sent to the waste water treatment plant.
Current Treatment Capacity (gal/day)	15,000,000
Current Average Production (gal/day)	6,070,799
Maximum Quantity Treated and Produced (gal)	8,526,180
Minimum Quantity Treated and Produced (gal)	4,371,610
Average Hours of Operation	24 hrs./day
Maximum Hours of Operation in One Day	24 hrs./day
Minimum Hours of Operation in One Day	19 hrs./day
Number of Storage Tanks Maintained	Five (5) Storage Tanks & Two (2) 1.5 MG Clearwells
Total Gallons of Treated Water Storage (gal)	8,190,000
Total Gallons of Raw Water Storage (gal)	8,500,000

*This information is from the Source Water Protection Contingency Plan completed by Thrasher in 2016. The study is included as Appendix D.

Table 3. The City of Fairmont Surface Water Sources

Intake Name	SDWIS #	Local Name	Describe Intake	Name of Water Source	Date Constructed / Modified	Frequency of Use (Primary/ Backup/ Emergency)	Activity Status (Active/ Inactive)
Raw Water Intake	IN 1	Pump Station	10 mm Stainless Steel Screen	Tygart Valley River	Constructed in 1942* Intake Screen added 1985 Modified in 2004*	Primary	Active

*This information is from the Source Water Protection Contingency Plan completed by Thrasher in 2016. The study is included as Appendix D.

Table 4. The City of Fairmont Groundwater Sources

Does the utility blend with groundwater?					No				
Well/Spring Name	SDWIS #	Local Name	Date Constructed/ Modified	Completion Report Available (Yes/No)	Well Depth (ft)	Casing Depth (ft)	Grout (Yes/No)	Frequency of Use (Primary/ Backup/ Emergency)	Activity Status (Active/ Inactive)
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

6.0 DELINEATIONS

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

The WSDA includes the entire watershed area upstream of the intake to the boundary of the State of West Virginia border, or a topographic boundary. The ZCC for a public surface water supply is a corridor along streams within the watershed that warrant more detailed scrutiny due to its proximity to the surface water intake and the intake's susceptibility to potential contaminants within that corridor. The ZCC is determined using a mathematical model that accounts for stream flows, gradient and area topography. The length of the ZCC is based on a five-hour time-of-travel of water in the streams to the water intake, plus an additional one-quarter mile below the water intake. The width of the zone of critical concern is 1,000 feet measured horizontally from each bank of the principal stream and 500 feet measured horizontally from each bank of the tributaries draining into the principal stream.

The ZPC for a public surface water supply source and for a public surface water influenced groundwater supply source is a corridor along streams within a watershed that warrants scrutiny due to its proximity to the surface water intake and the intake's susceptibility to potential contaminants within that corridor. The ZPC is determined using a mathematical model that accounts for stream flows, gradient and area topography. The length of the zone of peripheral concern is based on an additional five-hour time-of-travel of water in the streams beyond the perimeter of the zone of critical concern, which creates a protection zone of ten hours above the water intake. The width of the zone of peripheral concern is one thousand feet measured horizontally from each bank of the principal stream and five hundred feet measured horizontally from each bank of the tributaries draining into the principal stream.

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

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

Table 5. Watershed Delineation Information

Size of WSDA (Indicate units)	1,365 square miles
River Watershed Name (8-digit HUC)	Tygart Valley Watershed-05020001
Size of Zone of Critical Concern (Acres)	5,197 acres
Size of Zone of Peripheral Concern (Acres) (Include ZCC area)	18,530 acres
Method of Delineation for Groundwater Sources	N/A
Area of Wellhead Protection Area (Acres)	N/A

7.0 PROTECTION TEAM

One important step in preparing a source water protection plan is to organize a source water protection team who will help develop and implement the plan. The legislative rule requires that water utilities make every effort to inform and engage the public, local government, local emergency planners, the local health department and affected residents at all levels of the development of the protection plan. WVBPH recommends that the water utility invite representatives from these organizations to join the protection team, which will ensure that they are given an opportunity to contribute in all aspects of source water protection plan development. Public water utilities should document their efforts to engage representatives and provide an explanation if any local stakeholder is unable to participate. In addition, other local stakeholders may be invited to participate on the team or contribute information to be considered. These individuals may be emergency response personnel, local decision makers, business and industry representatives, land owners (of land in the protection area), and additional concerned citizens.

The administrative contact for the City of Fairmont is responsible for assembling the protection team and ensuring that members are provided the opportunity to contribute to the development of the plan. The acting members of the Protection Team are listed in Table 6.

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

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

Table 6. Protection Team Member and Contact Information

Name	Representing	Title	Phone Number	Email
David Sago	City of Fairmont	Utilities Manager	304-366-0540	davidsago@aol.com
Lewis “Chip” West	City of Fairmont	Chief/Designated Operator	304-366-1461	cwest@fairmontwv.gov
Bill Foley	City of Fairmont	Assistant Engineer	304-366-0540 ext. 241	bfoley@fairmontwv.gov
Lloyd White	Marion County Health Department	County Health Department Representative	304-367-1746	Lloyd.R.White@wv.gov
Tom Mainella	United Security Agency/Fairmont City Council	Affected Citizen/User Representative	304-333-1662	tmainella@unitedsecurityagency.com
Chris McIntire	Marion County	County Local Emergency Planning Committee Coordinator	304-367-0915 [redacted] (cell)	cmcintire@marioncountywv.com
Thomas DeVito	First Exchange Bank/Fairmont Water Board	Affected Citizen/User Representative	304-367-1700	thomasd@firstexchangebank.com
Hannah Weaver	City of Fairmont	Local Government	304-366-6212 ext. 340	hweaver@fairmontwv.gov
Brian Parker	City of Fairmont	Backflow Coordinator Operator	304-366-1461	bparker@fairmontwv.gov
Ed Simmons	City of Fairmont Fire Department	Fire Chief	304-363-7620	esimmons@fairmontwv.gov
Date of first protection Team Meeting		August 18, 2014; March 2, 2016		
Efforts to engage local stakeholders (public, local government, local emergency planners, local health department, and affected residents) and explain absence of recommended stakeholders:		The LEPC representative was contacted by phone and email for the August 18, 2014 meeting. All recommended members were able to attend the second protection team meeting held on March 2, 2016, except for the affected users. These gentlemen were invited to attend but were unavailable. They input will be sought in relation to protection plan implementation and future updates. The meeting sign in sheet is provided in Appendix E, along with meeting minutes. A public presentation was made on June 23, 2016 and is described in Table 10.		
Notes	The City of Fairmont may also consider participating in an inter-system protection team with the City of Shinnston, Town of Monongah, and Morgantown Utility Board. Representatives from these utilities attended the first meeting.			

8.0 POTENTIAL SOURCES OF SIGNIFICANT CONTAMINATION

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

The list of PSSCs located in the SWPA is organized into two types: 1) SWAP PSSCs, and 2) Regulated Data. SWAP PSSCs are those that have been collected and verified by the WVBPH SWAP program during previous field investigations to form the source water assessment reports and source water protection plans. Regulated PSSCs are derived from federal and state regulated databases, and may include data from WVDEP, US Environmental Protection Agency, WVDHSEM, and from state data sources.

8.1 CONFIDENTIALITY OF PSSCS

A list of the PSSCs contained within the ZCC should be included in the source water protection plan. However, the exact location, characteristics and approximate quantities of contaminants shall only be made known to one or more designees of the public water utility and maintained in a confidential manner. In the event of a chemical spill, release or other related emergency, information pertaining to the contaminant shall be immediately disseminated to any emergency responders reporting to the site. The designees for the City of Fairmont are identified in the communication planning section of the source water protection plan.

PSSC data from some agencies (ex. WVDHSEM, WVDEP, etc.) may be restricted due to the sensitive nature of the data. Locational data will be provided to the public water utility. However, to obtain specific details regarding contaminants, (such as information included in Tier II reports), water utilities should contact the local emergency planning commission (LEPC) or agencies, directly. While the maps and lists of the PSSCs and regulated sites are to be maintained in a confidential manner, these data are provided in **Appendix A.** Figures for internal review and planning uses only.

8.2 LOCAL AND REGIONAL PSSCS

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

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

The City of Fairmont reviewed intake locations and the delineated SWPAs to verify the existence of PSSCs provided by the WVBPH and identify new PSSCs. If possible, locations of regulated sites within the SWPA were confirmed. Information on any new or updated PSSCs identified by the City of Fairmont that do not already appear in datasets from the WVBPH can be found in **Table 7**. The City of Fairmont opted to investigate a Secondary Protection Area upstream of the protection areas delineated by the WVBPH.

Table 7. Locally Identified Potential Sources of Significant Contamination

PSSC Number	Map Code	Site Name	Site Description	Relative Risk Score	Comments
8	C-25	Junk Yard	Unnamed junkyard below water tank	3.36	-
9	C-3	Auto Repair	Armorthane by Toro Linings truck bed liner shop	2.73	-
12	C-35	Shopping Mall	Built up commercial area in White Hall with large parking lots	1.53	-
18	I-28	Oil and Gas Services	GE oil and gas services warehouse and service area near I-79 exit 133	5.07	-
25	C-13	Equipment Sales	Middletown Tractor Sales John Deere dealer	2.07	-
29	C-30	Marina	Private boat marina under Bentons Ferry Bridge	0.95	-
33	M-23	Sewer Lift Station	Sewer lift station between I-79 and Airport Road	6.00	-
34	M-23	Sewer Lift Station	Sewer lift station between railroad tracks and river in Kingmont Area	6.00	-
48	C-21	Pipe Yard	Morgan and Sons Culvert sales	1.17	-
49	C-1	Above Ground Storage Tanks	Unnamed construction yard and farm operation with above ground fuel tanks	6.75	-
55	C-25	Junkyard	Unnamed junkyard on Lost Run with about 2 acres of vehicles	3.36	-
56	I-28	Oil and Gas Services/Auto Repair	All About Auto Motorsports lot taken over by Triana Energy oil and gas services	5.07	-
57	C-7	Car Dealer	Auto Junction used car dealership	1.20	-
58	I-28	Oil and Gas Services	BJ Services Northeast District pipe yard	5.07	-
59	I-28	Oil and Gas Services	J and A Service yard with mobile tanks	5.07	-
60	C-23	Historic Gas Station	Q'Dells gas station closed and for sale	3.00	-
63	A-18	Pasture	Livestock with access to stream on Glady Creek	2.00	-
64	A-18	Pasture	Tucker Run road ridgetop with cattle pasture	2.00	-
65	M-27	Waste Hauling	Refuse Control Systems waste hauling	1.84	-
66	C-21	Lumber Yard	Builders Service and Supply	1.17	-
67	I-29	Adhesives Plant	Dyna-Tech Adhesives, Inc. and Dyna-Mix plant with above ground storage tanks	4.60	-
68	C-43	Repair Shop	Dan's Marine Service	2.07	-
69	C-7	Car Dealer	Toothman Ford car dealership	1.20	-
70	C-18	Gas Station	76 gas station in downtown Grafton	2.88	-
71	C-18	Gas Station	Exxon and Circle K gas stations in Grafton	2.88	-

PSSC Number	Map Code	Site Name	Site Description	Relative Risk Score	Comments
72	C-18	Gas Station	GoMart gas station on north side of Grafton	2.88	-
73	M-27	Waste Handling	Hart and Youngs Handy House port a potty rental yard	1.84	-
74	I-20	Old Factory	PCA plant appears idle	2.55	-
75	I-20	Workshop	Grafton Homes manufacturing plant idle	2.55	-
76	C-3	Auto Repair	Ragers Auto Repair on Rt 119 south of Grafton	2.73	-
77	C-25	Junkyard	Unnamed junkyard with old equipment and tires	3.36	-
78	A-18	Pasture	Cows and horses have access to creek	2.00	-
79	C-25	Junkyard	Rrhamco Junkyard accepting scrap metal for recycling, many old signs on red building	3.36	-
80	M-18	Rail Yard	CSX switching yard in Grafton	4.63	-
81	M-23	Sewer Lift Station	Sewer lift station near Public Works Department building	6.00	-
82	C-3	Auto Repair	Skinned Knuckles Garage	2.73	-
83	C-25	Junkyard	Former Top Quality Used Cars dealer, now junkyard	3.36	-
84	C-41	Railroad Tracks	CSX Railroad tracks with a giant pile of old railroad ties sitting next to rails	4.63	This relative risk score was adjusted from the general statewide score from the WVDHHR. There is generally only coal and sand transported on the tracks.
85	C-14	Truck Yard	S and S Mobile Home Transport	3.74	-
86	C-43	Lawnmower Dealer	Club Cadet lawnmower dealer and service	2.07	-
103	M-10	Illegal Dump	Save the Tygart Watershed Association Sign at site of former illegal dump	6.38	-

8.3 PRIORITIZATION OF POTENTIAL THREATS AND MANAGEMENT STRATEGIES

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

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

In addition to identifying and prioritizing PSSCs within the SWPA, local source water concerns may also focus on critical areas. For the purposes of this source water protection plan, a critical area is defined as an area that is identified by local stakeholders and can lie within or outside of the ZCC. Critical areas may contain one or more PSSCs which would require immediate response to address a potential incident that could impact the source water.

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

9.0 IMPLEMENTATION PLAN FOR MANAGEMENT STRATEGIES

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

When considering source management strategies and education and outreach strategies, this utility has considered how and when the strategies will be implemented. The initial step in implementation is to establish responsible parties and timelines to implement the strategies. The water utility, working in conjunction with the protection team members, can determine the best process for completing activities within the projected time periods. Additional meetings may be needed during the initial effort to complete activities, after which the protection team should consider meeting annually to review and update the Source Water Protection Plan. A system of regular updates should be included in every implementation plan.

Proposed commitments and schedules may change, but should be well documented and reported to the local stakeholders. If possible, utilities should include cost estimates for strategies to better plan for implementation and possible funding opportunities. City of Fairmont has developed an implementation plan for the priority concerns listed in **Table 8**. The responsible team member, timeline, and potential cost of each strategy are presented in **Table 9**. Note: Because timelines may change, future plan updates should describe the status of each strategy and explain the lack of progress.

Table 8. Priority PSSCs or Critical Areas

PSSC or Critical Area	Priority Number	Reason for Concern
Interstate 79 Bridge, Highways, and Railways	1	The water system has concerns that spills from a vehicle accident could occur on Interstate 79 bridges over the source water. If a materials spill occurred directly on the bridge, it could be difficult to contain and could potentially contaminate the water supply. In addition, there are railways and highways along the source. Accidents involving vehicles or trains could result in contaminants entering the source.
Industrial Facilities and Above Ground Storage Tanks	2	Several regulated permit are held by the industrial facilities within the protection watershed. The sites are permitted through: NPDES Outlets, Toxics Release Inventory and RCRA. Some chemicals associated with industrial processes, such as those carried out at the metal fabrication site (Ruskin Manufacturing Company) and the electrical manufacturing facility (Soles Electric Company Inc.) are classified as volatile organic compounds, synthetic organic compounds, petroleum hydrocarbons, metals, and heavy metals. These chemicals could migrate into water and endanger human health if one were exposed to high enough concentrations. These chemicals, as well as water from the manufacturing process and draining from the surface of industrial sites, may potentially impact the source water if not managed properly. Since the existing protection plan was written, an asphalt company developed a site near the intake within the ZCC. The development resulted in increased sediments in the water, as well as concern about the stability of above ground storage tanks located on fill materials near the edge of the source water.
Public and Private Sewer	3	There are private individual septic systems and combined sewer systems located upstream in the protection watershed. The water system is concerned about several lift stations upstream of the intake location. Accidental releases or line breaks may allow untreated sewage to contaminate the surface water source. Untreated sewage contains total coliform, particularly *E. coli*, along with other bacteria and parasites that could negatively impact human health if treatment processes are not adjusted to address the contamination. Failing private septic systems can leach into surrounding soils or run off into surface water and potentially contaminate the water supply. There is a combined sewer overflow (CSO) permitted discharge located upstream of the intake. The City has installed an approximately 600,000 gallon tank at this location to collect stormwater and ease the CSO discharge.
Woods Boat Shop, Gas Stations, Car Dealerships, and Equipment Storage Areas	4	Woods Boat Shop sells and services boats along the Tygart Valley River. They also have boat docks and provide fuel to boaters on the river during summer months. The fuel is stored in an above ground storage tank. Oils, antifreeze, and other fluids can cause contamination of water sources if spilled and not cleaned up and disposed of properly.

PSSC or Critical Area	Priority Number	Reason for Concern
		Underground storage tanks (USTs), particularly those at historic sites, may leak and contaminate groundwater sources and eventually interface with surface water.
Oil & Gas Well and Marcellus Shale Well Drilling	5	There are over 7,600 oil and gas wells permitted within in the watershed. Nearly 1,100 of these have been plugged and 880 have never been drilled. The majority of the active wells are conventional oil and gas wells. There are 90 Marcellus gas wells permitted in the watershed, with 47 of these permitted for horizontal well development. None of these are within the ZCC. Gas wells, when properly drilled in accordance with their permits, do not pose an imminent danger. However, brine removed from the wells must be collected and handled properly to prevent contamination to the surface and groundwater. Also, road cuts to access gas well sites may create erosion issues that can cause increased sediments and turbidity in surface waters. Fracturing fluid, associated with drilling of Marcellus Shale wells, is typically water and sand that is forced into the shale to open cracks and fissures so more natural gas can flow out of the formation. Chemicals can also be added to this fluid. There are several methods to dispose of this fluid, such as deep injection and trucking the fluid to a treatment facility. It is possible for fracturing water to migrate or be spilled into the source water.
Mining Areas	6	The Martinka Coal Company's Tygart River Mine sites are located within or in the vicinity of the ZCC. This mine has been closed since 1995. Effects of acid mine drainage and the water treatment for acid mine drainage are concerns of the water system. If not properly treated, acid mine drainage from mine lands may impact the pH, iron, and manganese levels in the water. Underground mines in some locations may be used to dispose of mine waste and fracturing water from oil and gas operations. There are large coal refuse sites registered at the site associated with the former Martinka Mine Preparation Plant.
Fairmont Airport	7	As shown on base mapping in **Appendix B**, the Fairmont Airport is located within the protection watershed just outside of the ZCC, relatively close to the intake. Given the close proximity, fueling, and maintenance activities at the airport could contaminate the source. Nothing is used for deicing.
Water Treatment Plants	8	There was a spill incident in 2007 when a settling pond at an upstream water treatment plant released sediments and coagulants into the source water. Sediments, removed contaminants, and chemicals used in the water treatment may contaminate the source water if another incident were to occur. The City of Fairmont micro-filtration plant is sensitive to sediment.

Table 9. Priority PSSC Management Strategies

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status/ Schedule	Comments	Estimated Cost
Previous Plan Status	There were eight management strategies recommended in the existing plan. Seven of these strategies were addressed through awareness activities and installation of continuous monitoring equipment. One previous priority is no longer a concern, while all other priorities represent ongoing concern and are incorporated in this plan update and listed below.	-	-	-	-
Interstate 79 Bridge, Highways and Railways	Communicate with the LEPC to determine if they are aware of hazardous material transportation and determine if they can relay that information in a spill event. Will continue to communicate with the LEPC and 911 Centers. If offered participate in communications and incident drills with emergency responders to respond quickly to any spills and initiate cleanup activities. In the event that contaminants do find their way into the public water supplies, the system will monitor and react according to standard operating procedures. Consider erecting signs as described in Table 10.	Water Utility Manager and/or Operator	Ongoing	-	Cost associated with participation in training activities.
Industrial Facilities and Above Ground Storage Tanks	Communicate with industrial facilities through waste water program. Continue to communicate to become more familiar with the activities at the industrial sites, particularly storage and transport of hazardous materials. Coordinate with company emergency preparedness personnel to insure that they are aware of the water intake and what to do in case of an emergency, including notification so that the intake can be shut down to prevent contamination from being drawn into the treatment plant. Ask for copies of the facilities Materials Safety Data Sheets (MSDS) for the chemicals used/stored on site. The MSDS sheets are information sheets provided by the manufacturer explaining how to deal with first aid, and spills of the chemical product. A facility should have a central location of these sheets and provide them if requested by the public or emergency responders. Groundwater Protection Plans (GPP) are required for industry that may impact groundwater and will contain measures that	Water Utility Manager and/or Operator	In the future if needed	-	Minimal costs. Would take time to speak with owners

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status/ Schedule	Comments	Estimated Cost
	are also protective of the surface water. WVDEP may be able to verify if a facility has a GPP. The development of the asphalt company site and instability of the above ground storage tanks were identified as a concern and quickly communicated to WVDEP inspectors, WVDHHR, and the site owner. The above ground storage tanks were moved to a more stable area and the site has been stabilized.				
Public and Private Sewer	The City of Fairmont estimates that the Whitehall PSD CSO activates only once every five years if the 600,000 equalization basin is overwhelmed. Continue to be informed regarding the status of the CSO location upstream of the intake. Should consider shutting down intake pumps during flash flooding events that may result in the release of raw sewage from the CSO when the system is overwhelmed by stormwater runoff. Communicate with Whitehall and other PSDs upstream and voice concern that they control infiltration and inflow to reduce the capacity of system and prevent leaks. Communicate with the public sewer system personnel to raise awareness of the source water vulnerability to contamination from leaking lines. Communicate concerns with the Marion County Health Department and WVDEP regarding areas in the SWPA where home owners may need to install septic systems or service existing systems, particularly home aeration units. Consider areas that would benefit from a cluster system or waste water line extension to eliminate straight pipes and/or malfunctioning septic systems.	Water Utility Manager and/or Operator	Ongoing	-	Depending upon the size, a project to extend wastewater services or construct a decentralized/ cluster system can range from tens of thousands to millions of dollars. Supporting an extension through participation in public meetings and assistance in securing easements, funding, etc. can be done at minimal costs to the water system.
Woods Boat Shop, Gas Stations, Car Dealerships, and Equipment Storage Areas	The City of Fairmont Chief Operator communicates with local businesses to make them aware of the source water vulnerability. When the Woods Boat Shop was acquired by new owners, the operator visited. The site has one 2,000 gallon above ground storage tank where gasoline is stored	Water Utility Manager and/or Operator	Ongoing	-	Cost associated with staff time.

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status/ Schedule	Comments	Estimated Cost
	year round. The tank is equipped with an automatic emergency shutoff to prevent spills. Continue to communicate with station and dealership owners the need for them to properly dispose of oil and other automobile products. Ask them to follow regulations and institute best management practices to contain and clean up spills, such as installing secondary containment around above ground storage tanks and/or chemical storage areas. If an issue with an UST or LUST is suspected, contact the WVDEP at (304)926-0499 and ask for the Underground Storage Tank Staff for an inspection.				
Oil & Gas Well and Marcellus Shale Well Drilling, and Mining Areas	Currently there are few permitted Marcellus gas wells in the watershed and none in the ZCC. The City of Fairmont will continue participation in the WV RAIN program. The City of Fairmont has installed additional monitoring equipment to detect contaminants, before distributing water. New probes added to the existing equipment include a HACH FP 360-SC Oil-in-Water Sensor, a HACH LDO Probe to measure dissolved oxygen, and a HACH UVAS sc Probe that will detect high organic loads to protect the water treatment plant. The probes are established to measure water at the intake and effectively acts an early warning monitoring system. The City of Fairmont will consider additional monitoring equipment further upstream of the intake in the future.	Water Utility Manager and/or Operator	Ongoing	-	The City of Fairmont has already made investments in capitol and maintenance cost for the monitoring equipment and will continue to do what is necessary to maintain the equipment.
Mining Areas	Determine location and reclamation condition of the Levels Road and Sandbank Refuse Disposal Areas associated with the former Martinka Mine Preparation Plant.	Water Utility Manager and/or Operator	In future if needed	-	Minimal cost associated with staff time.
Fairmont Airport	Continue to communicate with the Fairmont Airport Authority personnel to discuss the use of BMPs to control run off of stormwater into the source water. In addition, determine if underground or above ground storage tanks exist at the airport. Invite the Chairman of the Airport Authority to participate on the protection team or in source water meetings to gain a better understanding of any threats to the source water.	Water Utility Manager and/or Operator	Ongoing	-	Cost associated with staff time contacting airport

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status/ Schedule	Comments	Estimated Cost
Water Treatment Plants	The release of contaminants from an upstream water treatment plant is a low priority, the City of Fairmont maintains close communication with the water treatment plants upstream and has included representatives from those communities in source water meetings. In addition, the City of Fairmont stores water in a reservoir near the plant from the Tygart River. The reservoir provides for settling of sediments, as well as storage in case of an incident.	Water Utility Manager and/or Operator	Ongoing	-	Minimal cost associated with staff time
Source Water Protection Plan	Update this Source Water Protection Plan at least every 3 years as required by the State Code of West Virginia. The Protection Plan should also be updated any time there is a significant change within the protection area or in utility staff. Yearly meetings of the protection team are recommended to ensure all members are up to date and informed about any developments within the protection area.	Water Utility Manager and/or Operator	Every 3 years. Next update in 2019	-	Minimal costs associated with team members' time
Future Development and Other Activities Within the Watershed	Water utility staff will perform a yearly "windshield survey" of the ZCC. They will note changes in land use, water quality, and other developments that may have occurred since the previous year's survey. These changes will be documented and reflected in future source water protection plan updates.	Water Utility Manager and/or Operator	Yearly, next survey in 2017	Document the date of the survey and any changes that may have occurred within the ZCC that could impact water quality.	Minimal cost associated with staff time
Regular Coordination with Emergency Managers	The City of Fairmont have worked in the past with local government and emergency planning to respond to emergencies effectively and maintain water service to customers. Representatives from these groups are invited to serve on the source water protection team. The City of Fairmont has obtained Tier II reports for facilities within Marion County from the LEPC Coordinator. The City of Fairmont will continue to coordinate with the LEPC Coordinator to obtain updated information and ask for support obtaining specific chemical contaminant information from facilities located outside of the county, but within the source water protection areas. The LEPC Coordinator will be invited to serve on the Communication Team, to allow for direct communication in case of a spill incident or other emergency."	Water Utility Manager and/or Operator	Ongoing	-	Minimal cost associated with staff time

10.0 EDUCATION AND OUTREACH STRATEGIES

The goal of education and outreach is to raise awareness of the need to protect drinking water supplies and build support for implementation strategies. Education and outreach activities will also ensure that affected citizens and other local stakeholders are kept informed and provided an opportunity to contribute to the development of the source water protection plan. The City of Fairmont has created an Education and Outreach plan that describes activities it has either already implemented or could implement in the future to keep the local community involved in protecting their source of drinking water. This information can be found in **Table 10**.

Table 10. Education and Outreach Implementation Plan

Education and Outreach Strategy	Description of Activity	Responsible Protection Team Member	Status/Schedule	Comments	Estimated Cost
Public Outreach and Meeting	The City of Fairmont began informing the public that their plan would be updated in 2014, by making the plan a topic on their water board meetings. Media representatives were invited to the August 14, 2015 meeting and a story aired on the news that evening regarding the protection team meeting and the ongoing plan revisions. The City of Fairmont invited a representative from Tetra Tech to present at the water board meeting held June 23, 2016, to inform and engage residents about source water protection efforts. This meeting was part of the source water protection planning process.	Water Utility Manager and/or Operator	June 23, 2016	-	Minimal cost related to staff time.
Consumer Confidence Report	The water system publishes a Consumer Confidence Report (CCR) annually, as required by the Safe Drinking Water Act, which is sent to all water customers. Information concerning the Source Water Assessment is included in the CCR. In the future, the system will include a reference to this source water protection plan and how customers can access a copy.	Water Utility Manager and/or Operator	Ongoing	-	CCR required by SDWA, included in annual budget.
Brochures, pamphlets, and letters	Send a letter and/or brochure providing educational information to residences and businesses. These will alert the recipients of the need for source water protection and conservation. Businesses that use greater-than-household quantities of regulated substances may receive a different letter. See Appendix E for an example letter and brochure that can be customized. Funding for the brochures may be available through the Wellhead and Source Water Protection Grant Program. Several organizations provide information and resources on the internet related to certain source water concerns and PCSs. The utility will consider obtaining these materials when needed, to educate the community. Examples of these resources are described below. Due to recent heightened concerns about the effects of pharmaceuticals in surface water bodies, the Ohio River Valley Water Sanitation Commission (ORSANCO) developed a pamphlet regarding pharmaceutical disposal. This pamphlet can be viewed and possibly ordered from: http://orsanco.org/index.php/brochures The Source Water Collaborative has released an educational brochure building tool to assist with creating custom brochures targeting local decision makers. This tool is available at:	Water Utility Manager and/or Operator	Ongoing	Sends communications about water system. Have a website—can share links/information about source water. Going to talk to Hannah Weaver about adding a notice on the website to invite public to submit concerns.	Cost in brochure printing and mailing.

Education and Outreach Strategy	Description of Activity	Responsible Protection Team Member	Status/Schedule	Comments	Estimated Cost
	http://www.yourwateryourdecision.org and may assist in community planning and development. USEPA Water Sense Simple Steps to Save Water (EPA-832-F-07-011) presents benefits of conserving water. Focusing not only on the environment, but also on the financial savings associated with conservation. The brochure can be viewed at: http://www.epa.gov/watersense/docs/ws_simplesteps508.pdf				
School Curricula	Have hosted Project WET workshop and invited junior and senior high school teachers and watershed groups. In addition, the USEPA offers free educational materials for teachers and students, including classroom lessons, fact sheets, and interactive games and activities, for grades K-12. These materials can be accessed at the following websites. For general source water protection: http://www.epa.gov/safewater/kids/index.html. Visit school or invite students for a plant tour to tie in with school curricula. Considering preparing material to display at school and community events to discuss tap vs. bottled water.	Water Utility Manager and/or Operator	Currently hosts events for schools and can incorporate these materials in the future.	-	Minimal costs. Would require time to coordinate, visit classroom and provide tour. Displays and giveaway materials may require additional investment.
Engaging the Public- Plant Tours and Informational Meetings	Continue providing tours of the water plant to interested organizations such as watershed groups, schools (including Fairmont State University), and civic organizations (Leadership Marion and Fairmont 101). Tours are given annually to school groups and are offered as requested. Planning to host an event at the water treatment plant- possibly associated with National Drinking Water Week in May and inviting visitors to visit the plant and be educated on the drinking water, tap vs. bottle, and source water protection. Host organized tours for local Emergency Responders to make them familiar with the facilities in the event of an emergency.	Water Utility Manager and/or Operator	Ongoing	-	Minimal cost associated with operator's and administrator's time. Displays and giveaway materials may require additional investment.
Media Campaign and use of Social Media	Work with the local television stations to post source water and drinking water fact bulletins on public access television. Engages with local media to report on the source water protection plan and other issues important to the customers (ex. automated meter reading and generator project). Continue to engage the public specifically through internet and social media to educate.	Water Utility Manager or City of Fairmont Staff	Ongoing	-	Minimal cost to broadcast on local access television

11.0 CONTINGENCY PLAN

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

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

Public utilities using surface sources should be able to close the intake by one means or another. However, depending upon the system, methods for doing so could vary greatly and include closing valves, lowering hatches or gates, raising the intake piping out of the water, or shutting down pumps. Systems should have plans in place in advance as to the best method to protect the intake and treatment facility. Utilities may benefit from turning off pumps and, if possible, closing the intake opening to prevent contaminants from entering the piping leading to the pumps. Utilities should also have a plan in place to sample raw water to identify the movement of a contaminant plume and allow for maximum pumping time before shutting down an intake (See Early Warning Monitoring System). The amount of time that an intake can remain closed depends on the water infrastructure and should be determined by the utility before an emergency occurs. The longer an intake can remain closed in such a case, the better.

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

11.1 RESPONSE NETWORKS AND COMMUNICATION

Statewide initiatives for emergency response, including source water related incidents, are being developed. These include the West Virginia Water/Wastewater Agency Response Network (WV WARN, see http://www.wvwarn.org/) and the Rural Water Association Emergency Response Team (see http://www.wvrwa.org/). The City of Fairmont has analyzed its ability to effectively respond to emergencies and this information is also provided in **Table 11**.

Table 11. The City of Fairmont Water Shortage Response Capability

Can the utility isolate or divert contamination from the intake or groundwater supply?	No
Describe the utility's capability to isolate or divert potential contaminants:	Absorbent booms are the only means of diverting contaminants
Can the utility switch to an alternative water source or intake that can supply full capacity at any time?	No
Describe in detail the utility's capability to switch to an alternative source:	The City of Fairmont does not have a readily available alternative source of water. There is a possibility of building an intake in the West Fork River, but this may not be feasible.

Can the utility close the water intake to prevent contamination from entering the water supply?	Yes
How long can the intake stay closed?	Approximately 2.74 days based on average usage* Approximately 1.95 to 2.30 days based on maximum usage depending upon the stored capacity at individual purchase systems.
Describe the process to close the intake:	The process takes less than five minutes to shut off pumps and close the 2 valves in the wet well building
Describe the treated water storage capacity of the water system:	2- Clear-wells 1.5 million gallons (MG) each. 2- Allegheny Tanks 1 MG each 1- Watson Tank 1 MG 1- Stoney Road Tank 2 MG 1- Sterling Heights Tank 190,000 Gallons
Is the utility a member of WVRWA Emergency Response Team?	Yes
Is the utility a member of WV-WARN?	Yes
List any other mutual aid agreements to provide or receive assistance in the event of an emergency:	None

*This information is from the Source Water Protection Contingency Plan completed by Thrasher in 2016. The study is included as Appendix D.

11.2 OPERATION DURING LOSS OF POWER

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

Table 12. Generator Capacity

What is the type and capacity of the generator needed to operate during a loss of power?	The utility currently has a 1.2 MW stationary generator and 2 MW automatic transfer switch to supply power to the treatment plant and raw water intake. A small portable generator is used to operate the booster stations.*
Can the utility connect to generator at intake/wellhead? If yes, select a scenario that best describes system.	Yes, the utility has a generator hard wired and ready to turn on.
Can the utility connect to generator at treatment facility? If yes, select a scenario that best describes system.	Yes, the utility has a generator hard wired and ready to turn on.

Can the utility connect to a generator in distribution system? If yes, select a scenario that best describes system.		No, the utility does not have a generator, and requires electrical work to connect	
Does the utility have adequate fuel on hand for the generator?		Yes	
What is your on-hand fuel storage and how long will it last operating at full capacity?		**Gallons**	**Hours**
		2,000*	Raw Water Intake- 16-24 Hours Water Treatment Plant- 50-60 Hours
Provide a list of suppliers that could provide generators and fuel in the event of an emergency:		**Supplier**	**Phone Number**
	Generator	Cummins	304-769-1012*
	Fuel	Joe De Fazio Oil	304-534-3170
	Fuel	RT Rogers	304-466-1733*
Does the utility test the generator(s) periodically?		Yes-Generators are tested weekly	
Does the utility routinely maintain the generator?		Yes-Generators are maintained	
If no scenario describing the ability to connect to generator matches the utility's system or if utility does not have ability to connect to a generator, describe plans to respond to power outages:		N/A-Utility has generators and can operate during power outages	

*This information is from the Source Water Protection Contingency Plan completed by Thrasher in 2016. The study is included as Appendix D.

11.3 FUTURE WATER SUPPLY NEEDS

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

Table 13. Future Water Supply Needs for the City of Fairmont*

Is the utility able to meet water demands with the current production capacity over the next 5 years? If so, explain how you plan to do so.	Yes, based on population trends there is no need for an increase in capacity to meet water demands. If population trends change, an upgrade to the plant would be needed at that time.*

If not, describe the circumstances and plans to increase production capacity:	N/A

*This information is from the Source Water Protection Contingency Plan completed by Thrasher in 2016. The study is included as Appendix D.

11.4 WATER LOSS CALCULATION

In any public water system there is a certain percentage of the total treated water that does not reach the customer. Some of this water is used in treatment plant processes such as back washing filters or flushing piping, but there is usually at least a small percentage that goes unaccounted for. To measure and report on this unaccounted for water, a public utility must use the method described in the Public Service Commission's rule, *Rules for the Government of Water Utilities*, 150CSR7, section 5.6. The rule defines unaccounted for water as the volume of water introduced into the distribution system less all metered usage and all known non-metered usage which can be estimated with reasonable accuracy.

To further clarify, metered usages are most often those that are distributed to customers. Non-metered usages that are being estimated include usage by fire departments for fires or training, un-metered bulk sells, flushing to maintain the distribution system, and water used for backwashing filters and cleaning settling basins. By totaling the known metered and non-metered uses the utility calculates unaccounted for water. Note: To complete annual reports submitted to the PSC, utilities typically account for known water main breaks by estimating the amount of water lost. However, for the purposes of the source water protection plan, any water lost due to leaks, even if the system is aware of how much water is lost at a main break, is not considered a use. Water lost through leaks and main breaks cannot be controlled during a water shortages or other emergencies and should be included in the calculation of percentage of water loss for purposes of the source water protection plan. The data in **Table 14** is taken from the most recently submitted the City of Fairmont PSC Annual Report.

Table 14. Water Loss Information*

Total Water Pumped (gal)		2,282,799,000
Total Water Purchased (gal)		3,316,000
Total Water Pumped and Purchased (gal)		2,286,115,000
Water Loss Accounted for Except Main Leaks (gal)	**Mains, Plants, Filters, Flushing, etc.**	43,339,000
	Fire Department	1,018,000
	Back Washing	-
	Blowing Settling Basins	-
Total Water Loss Accounted For Except Main Leaks		44,357,000
Water Sold- Total Gallons (gal)		1,384,916,000
Unaccounted For Lost Water (gal)		844,328,000
Water lost from main leaks (gal)		12,514,000

Total gallons of Unaccounted for Lost Water and Water Lost from Main Leaks (gal)	856,842,000
Total Percent Unaccounted For Water and Water Lost from Main Leaks (gal)	37.48%
If total percentage of Unaccounted for Water is greater than 15%, please describe any measures that could be taken to correct this problem:	-The utility purchased leak detectors to find leaks in distribution system. Increased inspection and leak detection, and making necessary repairs.

*This information is from the Source Water Protection Contingency Plan completed by Thrasher in 2016. The study is included as Appendix D.

11.5 EARLY WARNING MONITORING SYSTEM

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

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

Every utility should establish a system or process for receiving or detecting chemical threats with sufficient time to respond to protect the treatment facility and public health. All approaches to receiving and responding to an early warning should incorporate communication with facility owners and operators that pose a threat to the water quality, with state and local emergency response agencies, with surrounding water utilities, and with the public. Communication plays an important role in knowing how to interpret data and how to respond.

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

Table 15. Early Warning Monitoring System Capabilities*

Does your system currently receive spill notifications from a state agency, neighboring water system, local emergency responders, or other facilities? If yes, from whom do you receive notices?	Yes- From WVBPH Philippi District
Are you aware of any facilities, land uses, or critical areas within your protection areas where chemical contaminants could be released or spilled?	Yes

<table>
<tr><td colspan="2">Are you prepared to detect potential contaminants if notified of a spill?</td><td colspan="2">Yes</td></tr>
<tr><td colspan="2" rowspan="5">List laboratories (and contact information) on whom you would rely to analyze water samples in case of a reported spill.</td><td colspan="2">Laboratories</td></tr>
<tr><td>Name</td><td>Contact</td></tr>
<tr><td>REIC Consultants</td><td>(304) 241-5861
Info@reiclabs.com</td></tr>
<tr><td>Reliance Laboratories</td><td>(304) 842-5285
reliancelabs@wvdsl.net</td></tr>
<tr><td>Sturm Environmental Services</td><td>(304) 623-6549
info@sturmenvironmental.com</td></tr>
<tr><td colspan="2">Do you have an understanding of baseline or normal conditions for your source water quality that accounts for seasonal fluctuations?</td><td colspan="2">Yes</td></tr>
<tr><td colspan="2">Does your utility currently monitor raw water (through continuous monitoring or periodic grab samples) at the surface water intake or from a groundwater source on a regular basis?</td><td colspan="2">Yes- Grab samples are collected daily and tested for pH, Alkalinity, Turbidity, HD, Fe, Mn, TDS, and temperature. We also have an SC1000 that continuously monitors pH, temperature and conductivity.</td></tr>
<tr><td rowspan="3">Provide or estimate the capital and O&M costs for your current or proposed early warning system or upgraded system.</td><td>Monitoring System</td><td colspan="2">Hach SC-1000 (B-2)</td></tr>
<tr><td>Capital</td><td colspan="2">$50,000</td></tr>
<tr><td>Yearly O & M</td><td colspan="2">$750</td></tr>
<tr><td colspan="2">Do you serve more than 100,000 customers? If so, please describe the methods you use to monitor at the same technical levels utilized by ORSANCO.</td><td colspan="2">No</td></tr>
</table>

*This information was taken or modified from the Source Water Protection Contingency Plan completed by Thrasher in 2016. The study is included as **Appendix D**.

12.0 SINGLE SOURCE FEASIBILITY STUDY

If a public water utility's water supply plant is served by a single–source intake to a surface water source of supply or a surface water influenced source of supply, the submitted source water protection plan must also include an examination and analysis of the technical and economic feasibility of alternative sources of water to provide continued safe and reliable public water service in the event that its primary source of supply is detrimentally affected by contamination, release, spill event or other reason. These alternatives may include a secondary intake, two days of additional raw or treated water storage, an interconnection with neighboring systems, or other options identified on a local level. Note: a suitable secondary intake would draw water supplies from a substantially different location or water source.

To accomplish this requirement, utilities should examine all existing or possible alternatives and rank them by their technical, economic, and environmental feasibility. To have a consistent and complete method for ranking alternatives, WVBPH developed a feasibility study guide. The guide provided several criteria to consider for each category, organized in a Feasibility Study Matrix. By completing the Feasibility Study Matrix, the City of Fairmont has demonstrated the process used to examine the feasibility of each alternative and document scores that compare the alternatives. The Feasibility Study matrix and summary of the results are presented in an alternatives feasibility study attached as **Appendix D**, prepared by The Thrasher Group, Inc. on behalf of the Region VI Planning and Development Council acting on behalf of the City of Fairmont.

13.0 COMMUNICATION PLAN

The City of Fairmont has also developed a Communication Plan that documents the manner in which the public water utility, working in concert with state and local emergency response agencies, shall notify the local health agencies and the public of the initial spill or contamination event and provide updated information related to any contamination or impairment of the system's drinking water supply. The initial notification to the public will occur in any event no later than thirty minutes after the public water system becomes aware of the spill, release, or potential contamination of the public water system. A copy of the source water protection plan and the Communication Plan has been provided to the local fire department. The City of Fairmont will update the Communication Plan as needed to ensure contact information is up to date.

Procedures should be in place to effectively react to the kinds of catastrophic spills that can reasonably be predicted at the source location or within the SWPA. The chain-of-command, notification procedures and response actions should be known by all water system employees.

The WVBPH has developed a recommended communication plan template that provides a tiered incident communication process to provide a universal system of alert levels to utilities and water system managers. The comprehensive Communication Plan for The City of Fairmont is attached as **Appendix C** for internal review and planning purposes only.

The West Virginia Department of Environmental Protection is capable of providing expertise and assistance related to prevention, containment, and clean-up of chemical spills. The West Virginia Department of Environmental Protection Emergency Response 24-hour Phone is 1-800-642-3074. The West Virginia Department of Environmental Protection also operates an upstream distance estimator that can be used to determine the distance from a spill site to the closest public water supply surface water intake.

14.0 EMERGENCY RESPONSE

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

15.0 CONCLUSION

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

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

APPENDIX A. FIGURES

The following appendix provides lists and figures of potential sources of significant contamination in the City of Fairmont Source Water Protections Areas.

LIST OF FIGURES:

Table A-1: WVBPH Source Water Database and Locally Identified Potential Sources of Significant Contamination

Map Label	PSSC Name	PSSC Description	Comment	Map Type	Map Code	Relative Risk Score
1	Marina/boat docks	Boat Ramp floating fuel pumps	Storage area for marina's floating fuel pumps	Commercial	C-30	0.95
2	Marina/boat docks	Marina	75 Boats, gas tanks	Commercial	C-30	0.95
3	Marina/boat docks	Marina and boat ramp	none	Commercial	C-30	0.95
4	Wastewater Treatment Plant	Package Plant for State Park	Owned by WVDNR.	Municipal	M-29	4.03
5	Wastewater Treatment Plant	Restrooms and sewage treatment	none	Municipal	M-29	4.03
6	Wastewater Treatment Plant	Sewage Treatment Facility	none	Municipal	M-29	4.03
7	Park lands	Tygart Lake Park Lodge and Restaurant	none	Municipal	M-15	1.47
8	Junk Yard	Unnamed junkyard below water tank	not surveyed	Commercial	C-25	3.36
9	Auto Repair	Armorthane by Toro Linings truck bed liner shop	none	Commercial	C-3	2.73
10	Car Dealer	Astro GMC dealership	none	Commercial	C-7	1.20
11	Gas Station	BFS gas station	none	Commercial	C-18	2.88
12	Shopping Mall	Built up commercial area in White Hall with large parking lots	not surveyed	Commercial	C-35	1.53
13	Permitted Discharge	City of Fairmont Combined Sewer Overflow (CSO)	NPDES permit. Not field verifitied.	Industrial	I-27	5.07
14	Dry Cleaner	Drycleaning World	none	Commercial	C-12	2.56
15	School	East Fairmont High School	With recreation fields. Located using aerial imagery. Not field verified.	Municipal	M-21	1.47
16	Gas Station	Exxon gas station	Underground storage tanks.	Commercial	C-18	2.88
17	Airport	Fairmont Airport	none	Commercial	C-2	3.04
18	Oil and Gas Services	GE oil and gas services warehouse and service area near I-79 exit 133	none	Industrial	I-28	5.07
19	Gas Station	Go Mart gas station	none	Commercial	C-18	2.88
20	Mechanical Contractor	Hendershot Heating and Cooling	none	Industrial	I-20	2.55
21	Subdivision	Junglewood residential area		Residential	R-7	2.47
22	Junk yards, scrap and auto	L & W Mining Services Equipment Storage Yard	none	Commercial	C-25	3.36
23	Cemetery	Linns Cemetery	Located using aerial imagery. Not field verified.	Commercial	C-9	1.24
24	Farm Equipment Sales	Middletown Tractor sales and service	none	Commercial	C-7	1.20
25	Equipment Sales	Middletown Tractor Sales John Deere dealer	none	Commercial	C-13	2.07
26	Machine and metalworking shops	Mining Equipment		Industrial	I-20	2.55

Map Label	PSSC Name	PSSC Description	Comment	Map Type	Map Code	Relative Risk Score
27	Drinking Water Treatment Plants	Monongah, Town of Water Supply	Not shown for security reasons.	Municipal	M-5	1.50
28	Restaurant	Muriales restaurant	none	Commercial	C-53	0.00
29	Marina	Private boat marina under Bentons Ferry Bridge	none	Commercial	C-30	0.95
30	Electric Products Plant	Rebuilders Battery Service	none	Commercial	I-9	2.17
31	Subdivision	Riverwood Estates residential area	none	Residential	R-7	2.47
32	Sheet Metalwork	Ruskin Manufacturing		Industrial	I-20	2.55
33	Sewer Lift Station	Sewer lift station between I-79 and Airport Road	none	Municipal	M-23	6.00
34	Sewer Lift Station	Sewer lift station between railroad tracks and river in Kingmont Area	none	Municipal	M-23	6.00
35	Steel Fabrication and Construction	Shuck Steel Fabricators	Buildings and heavy equipment	Industrial	I-11	3.32
36	Electric Products Plant	Soles Electric Company Inc. plant		Industrial	I-9	2.17
37	Gas Station	Sunoco gas station	none	Commercial	C-18	2.88
38	Septic Systems (leach field)*	Trailer Park	Possibly on septic systems. Located using aerial imagery. Not field verified.	Residential	R-6	2.13
39	Drinking Water Treatment Plants	Water Supply Intake	Shinnston and Monongah intakes. Not shown on figure for security reasons.	Municipal	M-5	1.50
40	Car Dealer	Wilson Ford dealership	none	Commercial	C-7	1.20
41	Equipment Rental and Leasing	Wolford Contractor Supply		Commercial	C-13	2.07
42	Boat Dealer	Woods Boat Shop	Sales, service, and fuel in above ground storage tank.	Commercial	C-4	2.30
43	Electric Products Plant	WV Electric company plant	none	Industrial	I-9	2.17
44	Septic Systems (discharging to stream or surface)	Home Aeration Unit	Surveyed, Not Found, no HAU permit by that name nearby	Residential	R-5	5.70
45	Construction areas	Logging or Construction Area	Survyed, Not Found	Commercial	C-10	3.48
46	Sewer Lines *	Sewage or Stormwater Pipes	Survyed, Not Found	Municipal	M-23	6.00
47	Other	Stormwater Construction Permit	Surveyed, Not Found	Industrial	I-44	0.00
48	Pipe Yard	Morgan and Sons Culvert sales	none	Commercial	C-21	1.17
49	Above Ground Storage Tanks	Unnamed construction yard and farm operation with above ground fuel tanks	none	Commercial	C-1	6.75
50	Lagoon/Pond/Pit	Martinka Coal Company's Tygart River Mine Pond	Associated with Martinka Coal Company's Tygart River Mine.	Industrial	I-16	5.06

Map Label	PSSC Name	PSSC Description	Comment	Map Type	Map Code	Relative Risk Score
			Located using aerial imagery. Not field verified.			
51	Other	Sandbank Refuse Disposal Area	Locked gate.	Industrial	I-44	0.00
52	Coal Mine	Tygart River Mine Martinka Coal Company	Same as WVDEP Regulated Mining Sites shown on figure.	Industrial	I-25	4.79
53	Mining: underground	Mine Building	none	Industrial	I-25	4.79
54	Other	Stormwater Construction Permit	Not Surveyed, Not Accessible	Industrial	I-44	0.00
55	Junkyard	Unnamed junkyard on Lost Run with about 2 acres of vehicles	none	Commercial	C-25	3.36
56	Oil and Gas Services/Auto Repair	All About Auto Motorsports lot taken over by Triana Energy oil and gas services	none	Industrial	I-28	5.07
57	Car Dealer	Auto Junction used car dealership	none	Commercial	C-7	1.20
58	Oil and Gas Services	BJ Services Northeast District pipe yard	none	Industrial	I-28	5.07
59	Oil and Gas Services	J and A Service yard with mobile tanks	none	Industrial	I-28	5.07
60	Historic Gas Station	Q'Dells gas station closed and for sale	none	Commercial	C-23	3.00
61	Race Track	Thunder Canyon race track	none	Commercial	C-53	0.00
62	Construction areas	Logging or Construction Area	Surveyed, Not Found	Commercial	C-10	3.48
63	Pasture	Livestock with access to stream on Glady Creek	none	Agriculture	A-18	2.00
64	Pasture	Tucker Run road ridgetop with cattle pasture	none	Agriculture	A-18	2.00
65	Waste Hauling	Refuse Control Systems waste hauling	none	Municipal	M-27	1.84
66	Lumber Yard	Builders Service and Supply		Commercial	C-21	1.17
67	Adhesives Plant	Dyna-Tech Adhesives, Inc. and Dyna-Mix plant with above ground storage tanks	none	Industrial	I-29	4.60
68	Repair Shop	Dan's Marine Service	none	Commercial	C-43	2.07
69	Car Dealer	Toothman Ford car dealership	none	Commercial	C-7	1.20
70	Gas Station	76 gas station in downtown Grafton	none	Commercial	C-18	2.88
71	Gas Station	Exxon and Circle K gas stations in Grafton	none	Commercial	C-18	2.88
72	Gas Station	GoMart gas station on north side of Grafton	none	Commercial	C-18	2.88
73	Waste Handling	Hart and Youngs Handy House port a potty rental yard	none	Municipal	M-27	1.84
74	Old Factory	PCA plant appears idle	none	Industrial	I-20	2.55
75	Workshop	Grafton Homes manufacturing plant idle	none	Industrial	I-20	2.55
76	Auto Repair	Ragers Auto Repair on Rt 119 south of Grafton	none	Commercial	C-3	2.73

Map Label	PSSC Name	PSSC Description	Comment	Map Type	Map Code	Relative Risk Score
77	Junkyard	Unnamed junkyard with old equipment and tires	none	Commercial	C-25	3.36
78	Pasture	Cows and horses have access to creek	none	Agriculture	A-18	2.00
79	Junkyard	Rrhamco Junkyard accepting scrap metal for recycling, many old signs on red building		Commercial	C-25	3.36
80	Rail Yard	CSX switching yard in Grafton	none	Municipal	M-18	4.63
81	Sewer Lift Station	Sewer lift station near Public Works Department building	none	Municipal	M-23	6.00
82	Auto Repair	Skinned Knuckles Garage	none	Commercial	C-3	2.73
83	Junkyard	Former Top Quality Used Cars dealer, now junkyard	none	Commercial	C-25	3.36
84	Railroad Tracks	CSX Railroad tracks with a giant pile of old railroad ties sitting next to rails	none	Commercial	C-41	10.00
85	Truck Yard	S and S Mobile Home Transport	none	Commercial	C-14	3.74
86	Lawnmower Dealer	Club Cadet lawnmower dealer and service	none	Commercial	C-43	2.07
87	Cemeteries	Catholic Cemetery	Cemetery	Commercial	C-9	1.24
88	Underground Storage Tanks	Chucks Gas Station	Convenience Store & Gas Station	Commercial	C-48	2.97
89	Fleet/truck/bus terminals	City Equipment Storage Building	Storage Building	Commercial	C-14	3.74
90	Railroad Tracks and Yards	Csx Railroad	Railroad Tracks	Commercial	C-41	10.00
91	Other	Feathers Engraving	Engraving Shop	Commercial	C-53	0.00
92	Mines: abandoned	Mangus Coal Company	Abandoned Mine	Industrial	I-23	5.04
93	Junk yards, scrap and auto	Mitters Salvage Yard	Junk Yard	Commercial	C-25	3.36
94	Medical/dental offices/clinics	Newburg Clinic	Medical Clinic	Commercial	C-31	1.10
95	Wells: water supply	Newburg Water Plant & Well	Water Plant & Well	Municipal	M-31	0.00
96	Combined Sewer Overflows	Town of Newburg	Storm/Sanitary Outlet	Municipal	M-2	7.92
97	Permitted Discharge Pipe (outfall)	Town of Newburg		Industrial	I-27	5.07
98	Waste transfer/recycling stations	Town of Newburg	Newburg Garbage Packer Storage Building	Municipal	M-27	1.84
99	Cemeteries	Union Cemetery	Cemetery	Commercial	C-9	1.24
100	Above Ground Storage Tanks	Verizon	Verizon Fuel Storage Tank & Backup Generator	Commercial	C-1	6.75
101	Auto repair shops	Weavers Garage	Auto Repair Shop	Commercial	C-3	2.73
102	Lawn/farms stores	Ridenours	Tire Repair Shop And Feed Store	Commercial	C-28	1.65
103	Illegal Dump	Save The Tygart Watershed Association Sign At Site Of Former Illegal Dump	None	Municipal	M-10	6.38

Table A-2: Selected Abandoned Mine Land Points

Map Label*	PADNUMBER	PADNAME	PROBKEY**
R0	WV000989	Three Forks #1	VO
R1	WV005485	Fairmont (Linn) Vertical Opening	VO
R2	WV000134	Kingmont Complex	HEF
R3	WV000134	Kingmont Complex	HEF
R4	WV005343	Pine Lane Mine Drainage	DI
R5	WV004862	Bentons Ferry Loadout	HEF
R6	WV001838	Hammond Portals	HEF
R7	WV001838	Hammond Portals	HEF
R8	WV005186	Wv Industrial School Portal & Amd	PWAI
R9	WV000148	Pruntytown Tipple	HEF
R10	WV000976	Berkeley Run Tipple	HEF
R11	WV000975	Long Run #2	VO
R12	WV005186	Wv Industrial School Portal & Amd	DI
R13	WV006458	Grafton (Anderson) Pit	DI
R14	WV000147	Belgium Tipple	HEF
R15	WV000976	Berkeley Run Tipple	HEF
R16	WV000975	Long Run #2	VO
R17	WV001803	Booths Creek Strip	WA

*There are a total of 585 AML Points in the WSDA.
50 points are within or around the ZCC and ZPC. 32 Portals were not labeled.

**PROBKEY	**Problem Key**
HEF	Hazardous Equipment & Facility
DI	Dangerous impoundment
WA	Water Area
VO	Vertical Opening
PWAI	Polluted Water: Agricultural & Industrial

Table A-3: Selected aboveground storage tanks in and around the ZCC and ZPC. Excludes smaller capacity tanks (<8000 gallons)*

Map Label	Reference ID	Responsible Party	Facility Name	Tank Label	Year Constructed	Capacity
R18	2014-0015346	Thomas Petroleum LLC	Thomas Petroleum LLC Fairmont WV	025-00000397	2013	12000
R19	2014-0015346	Thomas Petroleum LLC	Thomas Petroleum LLC Fairmont WV	025-00000398	2013	10000
R20	2014-0007069	City of Fairmont	Fairmont WTP	025-00000758	2002	12000
R21	2014-0015346	Thomas Petroleum LLC	Thomas Petroleum LLC Fairmont WV	025-00000399	2013	10000
R22	2014-0002903	Bunner & Sons Contracting, Llc	Bunner & Sons Contracting - Shop	025-00000200	1989	8000
R23	2014-0002903	Bunner & Sons Contracting, LLC	Bunner & Sons Contracting - Shop	025-00000199	1985	10000
R24	2014-0000948	Martinka Coal Company LLC	Tygart River Mine	025-00000207	1999	10000
R25	2014-0000948	Martinka Coal Company LLC	Tygart River Mine	025-00000205	1999	10000
R26	2014-0000948	Martinka Coal Company LLC	Tygart River Mine	025-00000206	1999	10000
R27	2014-0000948	Martinka Coal Company LLC	Tygart River Mine	025-00000202	1990	10000
R28	2014-0001154	Triana Energy, LLC	Triana Energy, LLC	046-00000067	2013	16800
R29	2014-0001154	Triana Energy, LLC	Triana Energy, LLC	046-00000068	2013	16800
R30	2014-0009354	Rockwater Energy Solutions	Dunham	046-00000369	2010	756000
R31	2014-0001154	Triana Energy, LLC	Triana Energy, LLC	046-00000066	2013	16800
R32	2014-0008310	Carder, Eddie	H Baker 3M	046-00000336	2009	8820
R33	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000438	1995	10000
R34	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000458	1995	10000
R35	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000450	1995	10000
R36	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000451	1995	10000
R37	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000443	1995	10000
R38	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000457	1995	10000
R39	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000434	1995	10000
R40	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000426	1988	8045
R41	2014-0007778	WVDOH-Equipment Division	WVDOH D4 Taylor Co HQ	046-00000364	2006	10000
R42	2014-0015428	Little General Store INC	Little General 7510	046-00000362	1993	8000
R43	2014-0015428	Little General Store INC	Little General 7510	046-00000360	1993	10000
R44	2014-0008868	Carder, Eddie	Tygart Water Withdrawal Point	999-00001691	2008	21326
R45	2014-0008868	Carder, Eddie	Tygart Water Withdrawal Point	999-00001688	2008	21326
R46	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000452	1988	11403
R47	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000429	2003	11344

Map Label	Reference ID	Responsible Party	Facility Name	Tank Label	Year Constructed	Capacity
R48	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000449	1995	11403
R49	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000432	1994	8362
R50	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000459	1995	8362
R51	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000444	1990	8362
R52	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000427	1988	11403
R53	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000416	2003	11344
R54	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000456	1995	11403
R55	2014-0008868	Carder, Eddie	Tygart Water Withdrawal Point	999-00001692	2008	21326
R56	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000447	1994	8362
R57	2014-0008868	Carder, Eddie	Tygart Water Withdrawal Point	999-00001689	2008	21326
R58	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000424	1995	8900
R59	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000419	1995	11403
R60	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000422	1995	8045
R61	2014-0008868	Carder, Eddie	Tygart Water Withdrawal Point	999-00001687	2008	21326
R62	2014-0008868	Carder, Eddie	Tygart Water Withdrawal Point	999-00001690	2008	21326
R63	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000428	1995	8362
R64	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000420	1994	8362
R65	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000423	1994	8362
R66	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000460	1995	8362
R67	2014-0015744	Rex-Hide Industries INC	Rex-Hide Industries, Inc.	046-00000417	1995	8900
R68	2014-0007093	CSX Transportation INC	Grafton Shops	046-00000291	1983	206000
R69	2014-0008662	Carder, Eddie	Elizabeth Wilson #1	046-00000339	1991	8820
R70	2014-0007444	ICG Tygart Valley, LLC	Leer Deep Mine and Slurry Cell	046-00000394	1995	10000
R71	2014-0007444	ICG Tygart Valley, LLC	Leer Deep Mine and Slurry Cell	046-00000401	2011	50000
R72	2014-0007444	ICG Tygart Valley, LLC	Leer Deep Mine and Slurry Cell	046-00000402	2009	20000
R73	2014-0007444	ICG Tygart Valley, LLC	Leer Deep Mine and Slurry Cell	046-00000414	2013	8000

Table A-4: Responsible parties with 20 or greater above ground storage tanks in the source water protection areas.

Responsible Party	ZCC	Around ZCC	ZPC	Around ZPC	WSDA	Total
CNX GAS COMPANY LLC	1	6		2	368	**377**
CHESAPEAKE APPALACHIA, L.L.C.					377	**377**
ENERGY CORPORATION OF AMERICA			1	4	328	**333**
ALLIANCE PETROLEUM CORPORATION					303	**303**
TEXAS KEYSTONE INC					261	**261**
MOUNTAIN V OIL & GAS, INC.					228	**228**
EXCO RESOURCES (PA), LLC			4	18	132	**154**
EQT PRODUCTION COMPANY					139	**139**
INTERSTATE PRODUCTION CO					112	**112**
ENERVEST OPERATING L. L. C.	1	3			105	**109**
DENEX PETROLEUM CORP.					66	**66**
RUBIN RESOURCES CO.					60	**60**
BERRY ENERGY, INC.				2	53	**55**
REX-HIDE INDUSTRIES INC			46			**46**
DEVONIAN GAS PRODUCTION					45	**45**
UPSHUR PROPERTY, INC.					37	**37**
ABARTA OIL & GAS CO., INC.					35	**35**
WVDEP OFFICE OF SPECIAL RECLAMATION					33	**33**
HMS RESOURCES, INC.					32	**32**
MIKE ROSS, INC					31	**31**
WOLF RUN MINING COMPANY					31	**31**
CARDER, EDDIE			7	8	15	**30**
GREAT OAK ENERGY INC					29	**29**
J. F. ALLEN COMPANY					27	**27**
WOODFORD OIL COMPANY		1			25	**26**
GUTTMAN OIL CO					26	**26**
HAYDEN HARPER ENERGY				3	21	**24**
XTO ENERGY, INC.				1	23	**24**
ICG TYGART VALLEY, LLC				9	14	**23**
LYKINS OIL CO			1		19	**20**

Table A-5: Bond forfeiture sites in and around the ZCC and ZPC

Reg_Label	COMPANY	PERMIT	COUNTY	DATE_REVOK	ERIS
R74	WALTER DALE GAINES	221-74 PROS.	Taylor	9/24/1984	S022174
R75	WEST VIRGINIA FUELS, INC.	160-75	Taylor	1/20/1981	S016075

Table A-6: Coal refused sites associated with the former Martinka Coal Mine Preparation Plant

Map Label	FACILITY NAME	COMPANY	PERMIT_ID	SIZE_ACRE
R76	Levels Road Refuse Facility	Martinka Coal Company LLC	O100187	66.08
R77	Sandbank Rd Refuse Disposal Area	Martinka Coal Company LLC	R074600	74.68

Table A-7: Leaking Underground Storage Tank sites in or around the ZCC and ZPC without record of cleanup being complete

Map Label	WVID	Leak	Facility Name	Address	City	Confirmed	Cleanup_In	Cleanup_Co
R78	2503223	92-158-L25	CONSIGNEE #3922-ASTRO'S EXXON	2035 FAIRMONT AVE,	FAIRMONT	07/15/1992	07/14/1992	-
R79	2509711	02-059	KING MART	1135 AIRPORT RD,	FAIRMONT	09/25/2002	09/25/2002	-
R80	2506773	09-067	BFS FOODS # 39	2201 PLEASANTS VALLEY RD,	FAIRMONT	10/19/2009	10/19/2009	-
R81	2503150	02-055	GO-MART STORE 069	2040 FAIRMONT AVE,	FAIRMONT	09/17/2002	09/17/2002	-

Table A-8: Mining Permits in and around the ZCC and ZPC

Map Label	permit	Respible party	Type	Number of Outlets
R82	WV0062766	Martinka Coal Company LLC	HPUGD	24
R83	WV0098221	92 Coal Corp	HPU	4
R85	WV1017764	ICG Tygart Valley, LLC	HPUGD	9
R84	WV0098701	Coaltrain Corporation	HPU	7
R86	WV1017861	ICG Tygart Valley, LLC	REFUS	3

Table A-9: Select NPDES permits* in and around the ZCC and ZPC

Map Label	Permit	Facility name	Description	Permit type	Responsible Party
R87	WVG640079	Town Of Monongah WTP	Water Treatment Plant (GP)	Industrial	Monongah Town Of
R88	WVG611304	Fairmont Bin	Storm Water Industrial (GP)	Industrial	Rolling Frito-Lay Sales, Lp
R89	WVG550163	Junglewood Owners Assoc	Sewage General	Sewage	Junglewood Owners Assoc
R90	WV0032131	Colfax Psd	Ind POTW	Sewage	Colfax Psd
R91	WVG610784	Ruskin Manufacturing	Storm Water Industrial (GP)	Industrial	Ruskin Manufacturing
R92	WVG610028	Ups-Fairmont	Storm Water Industrial (GP)	Industrial	United Parcel Service
R93	0239-99-049	Martinka Coal Company, Levels Road Facility	5X13 - Mining, Sand, or Other Backfill Wells	Mining Underground Injection Control	Martinka Coal Company Llc
R94	WVG550860	Clover Valley Subdivision	Sewage General	Sewage	Clover Valley Homeowners Assoc
R95	WVR310263	Lantz To Musgrove Water Line	Storm Water Construction (NOI OOG)	Industrial	Triana Energy, Llc
R96	WVG611560	S.O.S. Salvage	Storm Water Industrial (GP)	Industrial	Shaffer, Dale W
R97	WVG610904	Refuse Control Systems, Inc.	Storm Water Industrial (GP)	Industrial	Refuse Control Systems, Inc.
R98	WVG550274	Valley Falls State Park	Sewage General	Sewage	Wv Division Of Natural Resources
R99	WVG550697	Home Away From Home Assisted Living	Sewage General	Sewage	Home Away From Home Assisted Living
R100	WVG610650	Builders Service & Supply Co	Storm Water Industrial (GP)	Industrial	Builders Service & Supply Co
R101	WVG610821	Rex-Hide Industries Inc	Storm Water Industrial (GP)	Industrial	Rex-Hide Industries Inc
R102	WVG610718	Rt 50 Car Sales Salvage Yard	Storm Water Industrial (GP)	Industrial	Kuhness, Charles L
R103	WVG980069	Taylor County Hq	WV DOH+MUN	Industrial	Wv Department Of Transportation
R104	WV0021822	Grafton City Of	Ind POTW	Sewage	Grafton City Of
R105	WVSG20009	Hart Industries	Sludge/Septic POTW Disposal (GP)	Sewage	Hart & Young Of Grafton, Inc.
R106	WVG610911	Grafton Truss And Panel Co. Inc. Dba Grafton Homes	Storm Water Industrial (GP)	Industrial	Grafton Homes
R107	WVG551240	Taylor Cnty Senior Center	Sewage General	Sewage	Taylor County Senior Citizens, Inc.
R108	WVG550295	Jewell Mobile Acres	Sewage General	Sewage	Jewell, Perry E
R109	WVG550900	Blue Crest Estates	Sewage General	Sewage	Blue Crest Estates Homeowners
R110	WVG640066	Taylor County Psd Wtp	Water Treatment Plant (GP)	Industrial	Taylor Cnty Psd

*Note: there were 2276 sites permitted through NPDES. The majority of these were septic seals (1,359) or home aeration units (565) and were not given labels. Stormwater constructions permits were also not prioritized for a label. Only those sites in and around the ZCC and the ZPC were labeled.

Table A-10: Permitted Marcellus Shale Gas wells in and around the ZCC and ZPC

Map Label	API	Responsible Party	Well Status	Farm Name	Well Number
R111	091-01302	Triana Energy, LLC	NAVL	Nielson, Paul W. & Deborah	COULSON 5H
R112	091-01238	Triana Energy, LLC	NAVL	Musgrove Jr. Et Ux, John	MUSGROVE 3H
R113	091-01256	Triana Energy, LLC	NAVL	Nielson, Paul W. & Deborah	COULSON 4H
R114	091-01240	Triana Energy, LLC	NAVL	Musgrove, John N., Jr., e	MUSGROVE 5H
R115	091-01294	Triana Energy, LLC	NAVL	Nielson, Paul W. & Debora	COULSON 6H
R116	091-01239	Triana Energy, LLC	NAVL	Musgrove, John N., Jr., et	MUSGROVE 1H
R117	091-01301	Triana Energy, LLC	NAVL	Nielson, Paul W. & Deborah	COULSON 2H
R118	091-01300	Triana Energy, LLC	NAVL	Nielson, Paul W. & Deborah	COULSON 1H
R119	091-01292	Triana Energy, LLC	NAVL	Dunham, Mitchell et al	DUNHAM 5H
R120	091-01147	Petroleum Development Corporation	AC	Baker, Harry E.	H BAKER 2
R121	091-01285	Triana Energy, LLC	NAVL	Dunham, Mitchell ., et al	DUNHAM 2H
R122	091-01293	Triana Energy, LLC	NAVL	Dunham, Mitchell et al	DUNHAM 6H
R123	091-01290	Triana Energy, LLC	NAVL	Dunham, Mitchell et al	DUNHAM 1H
R124	091-01291	Triana Energy, LLC	NAVL	Dunham, Mitchell et al	DUNHAM 4H
R125	091-01197	EXCO Resources (WV), INC.	NI	Fike, Richard & Linda	FIKE L UNIT 3H
R126	091-01196	EXCO Resources (WV), INC.	NI	Shaffer, Joseph	SHAFFER J UNIT 3H

Table A-11: List of Responsible Parties operating 20 or more oil and gas wells in source water protection areas.

Responsible Party	ZCC	Around ZCC	ZPC	Around ZPC	WSDA	Total
ENERGY CORPORATION OF AMERICA			3	20	750	773
ALAMCO INC					479	479
PETROLEUM DEVELOPMENT CORPORATION			5	40	414	459
DOMINION TRANSMISSION INC	3	2		1	400	406
ROSS AND WHARTON GAS COMPANY, INC			3	4	392	399
TEXAS KEYSTONE INC					384	384
MOUNTAIN V OIL & GAS, INC.					350	350
ENERVEST OPERATING L. L. C.					325	325
SENECA-UPSHUR PETROLEUM					298	298
HOUSTON EXPLORATION COMPANY					280	280
EQT PRODUCTION COMPANY			2	4	267	273
OPERATOR UNKNOWN	2	24	27	16	171	240
EXCO RESOURCES (WV), INC.			12	46	156	214
DOMINION EXPLORATION & PRODUCTION			1		205	206
INTERSTATE PRODUCTION CO					160	160
BLAZER ENERGY CORPORATION					131	131
COLUMBIA NATURAL RESOURCES, LLC					126	126
CNX GAS COMPANY LLC		1			119	120
CNG PRODUCING COMPANY		4	1	2	108	115
XPLOR CORPORATION					104	104
CHESAPEAKE APPALACHIA, L.L.C.					97	97
RANGE RESOURCES - APPALACHIA, LLC			16	29	51	96
R & B PETROLEUM, INC.					87	87
EMAX OIL COMPANY	14	11		2	55	82
MASSEY GROUP, INC.					81	81
KEELEX CORPORATION		1	2	3	56	62
EQUITRANS, L P			3	4	51	58
BERRY ENERGY CONSULTANTS & MGRS I				3	54	57
CONSOL GAS COMPANY					54	54
DEVONIAN GAS PRODUCTION					54	54
MOUNTAINEER KEYSTONE, LLC					52	52
GREAT OAK ENERGY INC					46	46
BRAXTON OIL & GAS CORP.					42	42
FMF OIL & GAS PROPERTIES, INC.					40	40
SWIFT ENERGY CO.			2	11	17	30
ABARTA OIL & GAS COMPANY					29	29
FOX DRILLING CO		1	1	4	22	28
CHESTERFIELD ENERGY CORP				1	25	26
JACK PRODUCTION INC			7	9	8	24
DENEX PETROLEUM CORP.					24	24
LOCIN OIL CORPORATION					24	24

Responsible Party	ZCC	Around ZCC	ZPC	Around ZPC	WSDA	Total
MID-PENN ENERGY CORPORATION	3	1	9	5	5	23
BERRY ENERGY, INC.					23	23
BIG SAND DRILLING CO					23	23
DIVERSIFIED RESOURCES, INC.			5	8	9	22
CABOT OIL & GAS CORPORATION	1	2			19	22
RED GAS COMPANY					22	22
BUCHER EXPLORATION, LLC					21	21

Table A-12: USEPA Facilities in and around the ZCC and ZPC

Map Label	Registry	Primary Name	Location	City	Conveyor	Figure
R127	110012000000	Electronic Warfare Assoc Inc	2500 Fairmont Ave Ste 200	Fairmont	FRS	10b
R128	110055000000	New Building	2050 Winners Drive	Pleasant Valley	ICIS	10b
R129	110018000000	Shuck Steel Fabricators	1549 Tulip Lane	Fairmont	FRS-GEOCODE	10b
R130	110000000000	Ruskin Co	2030 Pleasant Valley Rd.	Fairmont	NPDES	10b
R131	110030000000	Fairmont Bin	119 Carr Lane	Fairmont	NPDES	10b
R132	110055000000	Fairmont Avenue U325-25	Us Route 250	Fairmont	ICIS	10b
R133	110006000000	Nations Rent	2039 Pleasant Valley Rd	Fairmont	FRS	10b
R134	110046000000	Municipal Water Works	Unknown	Fairmont	ICIS	10b
R135	110006000000	Top Brand Inc	2103 Pleasant Valley Rd	Fairmont	FRS	10b
R136	110006000000	Valley Lanes	2017 Pleasant Valley Rd	Fairmont	NPDES	10b
R137	110046000000	Construct Parallel Taxiway	P.O. Box 387 Fairmont, Wv 2655	Pleasant Valley	ICIS	10b
R138	110006000000	United Parcel Service	2040 Pleasant Valley Rd	Fairmont	FRS	10b
R139	110041000000	Bfs	2201 Pleasant Valley Road	Fairmont	FRS-GEOCODE	10b
R140	110055000000	Valley Falls Psd, Water System	Unknown	Fairmont	ICIS	10b
R141	110005000000	Wood Group Pressure Control	2100 Pleasant Valley Rd	Fairmont	FRS	10b
R142	110040000000	Lipinski Property	1616 Russell Court	Pleasant Valley	FRS	10b
R143	110055000000	Shuck's House Site Prepar	Unknown	Fairmont	ICIS	10b
R144	110046000000	Middletown Mall Site Improveme	Us-79 Exit 132 To Rt 250 S.	Fairmont	ICIS	10b
R145	110011000000	Fairmont Center No 2650	2040 Pleasant Valley Road	Fairmont	ICIS	10b
R146	110006000000	Cnc Ind Inc	1413 Beach Ln	Fairmont	FRS	10b
R147	110006000000	Winners Choice	2018 Pleasant Valley Rd	Fairmont	FRS-GEOCODE	10b
R148	110017000000	Anderson Equipment	7 Ruskin Dr	Fairmont	FRS	10b
R149	110006000000	D & D Tool	1529 Tulip Ln	Fairmont	FRS	10b
R150	110044000000	Exxonmobil Oil Corp 25600	2035 Fairmont Ave	Fairmont	FRS	10b
R151	110046000000	Beverly Estates	Unknown	Fairmont	ICIS	10b
R152	110006000000	Bp Oil Co- Boron Division	2040 Fairmont Ave	Fairmont	COMMERCIAL VENDOR	10b
R153	110045000000	Schauenburg Flexadux Corp	2103 Pleasant Valey Rd - Bay 3	Fairmont	FRS	10b
R154	110055000000	Advanced Foreign/Domestic Auto Rep LLC	1408 Pleasant Valley Rd Ste A	Fairmont	FRS-GEOCODE	10b
R155	110006000000	Astro @ Exit 132 Buick-Gmc	2238 White Hall Blvd	White Hall	REGION03	10b
R156	110012000000	Superior Laundry	2114 Pleasant Valley Rd	Fairmont	FRS	10b

Map Label	Registry	Primary Name	Location	City	Conveyor	Figure
R157	110055000000	Top Brand Inc	Unknown	Kingmont	ICIS	10b
R158	110011000000	Kingmill Valley PSD	1707 Pleasant Valley Rd	Fairmont	FRS	10b
R159	110055000000	Sanitary Sewer System Improvem	Unknown	Fairmont	ICIS	10b
R160	110046000000	Fairmont General Hospital Heal	Us Route 250	Fairmont	ICIS	10b
R161	110006000000	Fairmont Airport	1150 Airport Rd	Fairmont	FRS	10b
R162	110055000000	F. K. Everest Vip Site	Unknown	Pleasant Valley	ICIS	10b
R163	110055000000	New Go-Mart Store 069 - Fairmot	Wv Rt 250	Fairmont	ICIS	10b
R164	110046000000	Airport Road Commercial Complex	Unknown	Fairmont	ICIS	10b
R165	110006000000	West Virginia Electric Corp	2011 Pleasant Valley Rd	Fairmont	FRS	10b
R166	110055000000	Safety Kleen Corp	Pleasant Valley Rd	Fairmont	ICIS	10b
R167	110046000000	Visibility Improvement Work	Unknown	Pleasant Valley	ICIS	10b
R168	110022000000	Watson Elementary School	1579 Mary Lou Retton Dr	Fairmont	FRS	10b
R169	110038000000	Fairmont Muni-Frankman	Unknown	Fairmont	EIS	10b
R170	110055000000	Yore Academy	Wv Route No. 64/8	Pleasant Valley	ICIS	10b
R171	110011000000	Colfax PSD	Pinch Gut-Hollow Road	Colfax	ICIS	10b
R172	110055000000	Pleasant Valley Subdivision	1898 Ryan Rd	Fairmont	ICIS	10b
R173	110011000000	Junglewood Owners Assoc.	1 Tiger Trail	Fairmont	ICIS	10b
R174	110046000000	Fairmont Water Treatment Plant	Unknown	Fairmont	ICIS	10b
R175	110055000000	Water Transmission System	Cr 31/1, 33, 35, 60, 62, 62/3,	Fairmont	ICIS	10b
R176	110055000000	New Dealership - Middletown Tr	Co Rd 64 Kingmont Rd	Bentons Ferry	ICIS	10b
R177	110006000000	Francis Engineering	1646 Pleasant Valley Rd	Fairmont	FRS	10b
R178	110006000000	Myers Excavating Inc	2009-R Pleasant Valley Rd	Fairmont	FRS-GEOCODE	10b
R179	110046000000	Yanero Property - Pleasant Val	Unknown	Pleasant Valley	ICIS	10b
R180	110006000000	Middletown Tractor Sales	2345 Whitehall Blvd	Fairmont	COMMERCIAL VENDOR	10b
R181	110046000000	Rt 250 Townhomes	Us Rt 250	White Hall	ICIS	10b
R182	110016000000	Par Mar Store #22	200 Kingmont Road	Fairmont	FRS	10b
R183	110006000000	Avenue Auto Sales Inc	1715 Pleasant Valley Rd	Fairmont	FRS	10b
R184	110006000000	Safety-Kleen Systems Inc	2081 Pleasant Valley Rd	Fairmont	COMMERCIAL VENDOR	10b
R185	110022000000	East Fairmont High School	1993 Airport Rd	Fairmont	FRS	10b

Map Label	Registry	Primary Name	Location	City	Conveyor	Figure
R186	110005000000	Quality Repair & Svc	1151 Airport Rd	Fairmont	FRS	10b
R187	110040000000	Marion County Senior Center-Complaint	105 Maplewood Dr	Fairmont	FRS-GEOCODE	10b
R188	110002000000	Soles Electric	1552 Tulip Lane	Fairmont	COMMERCIAL VENDOR	10b
R189	110046000000	Canterbury Woods Housing Development	Cr 60	Fairmont	ICIS	10b
R190	110055000000	Applebee's- Fairmont, WV	Us Route 250	Fairmont	ICIS	10b
R191	110055000000	Construct West General Aviation Apron & Hangars	1170 Airport Road	Fairmont	FRS-GEOCODE	10b
R192	110055000000	Pleasant Valley Industrial Par	Unknown	Pleasant Valley	ICIS	10b
R193	110006000000	Wellco Equipment LLC	52 Vip Way	Fairmont	FRS-GEOCODE	10b
R194	110046000000	Avenue Real Estate Dev., LLC	Co. Rt. 64	Pleasant Valley	ICIS	10b
R195	110006000000	Metal Services	305 Frances St	Fairmont	FRS	10b
R196	110006000000	H & H Racing Stables	1609 Garner St	Fairmont	FRS	10b
R197	110041000000	Bfs Food's	2202 Pleasant Valley Road	Fairmont	FRS	10b
R198	110012000000	United Rentals	2016 Myers Dr	Fairmont	RCRAINFO	10b
R199	110006000000	WV Division Environmental Protection	2031 Pleasant Valley Rd-Ste 1	Fairmont	FRS-GEOCODE	10b
R200	110039000000	Seaboard Wellhead Inc	2103 Pleasant Valley Dr-Bay 2	Fairmont	FRS	10b
R201	110055000000	Town Of Monongah Water System	Unknown	Monongah	ICIS	10b
R202	110006000000	Wilson Ford Inc	2231 White Hall Blvd	White Hall	COMMERCIAL VENDOR	10b
R203	110006000000	Wolford Contractor Supply	2019 Pleasant Valley Road	Fairmont	RCRIS	10b
R204	110045000000	Friend Construction	Marylou Retton Drive	Fairmont	ICIS	10b
R205	110006000000	Penn Auto Toyota Inc	2200 Fairmont Ave Ext	Fairmont	COMMERCIAL VENDOR	10b
R206	110055000000	Improve Runway Safety Areas	P.O. Box 387 Fairmont, Wv 2655	Pleasant Valley	ICIS	10b
R207	110046000000	South Ridge Church	Unknown	Fairmont	ICIS	10b
R208	110055000000	Dr. Linda Ray Office Facility	Unknown	Pleasant Valley	ICIS	10b
R209	110011000000	Clover Valley Subdivision	Clover Valley	Fairmont	FRS	10a
R210	110008000000	Tygart River Mine	Route 4 Levels Rd	Powell	RCRIS	10a
R211	110002000000	Martinka Coal - Tygart River Plant	750 Levels Road	Fairmont	AIRS/AFS	10a
R212	110008000000	Southern Ohio Coke Co Powell Refuse Site	Rte 4 Levels Rd	Powell	RCRIS	10a
R213	110055000000	4 Water Line Extension A	Route 18/5 & 12	Grafton	ICIS	10a
R214	110055000000	Taylor County Workshop	P.O. Box 333	Grafton	ICIS	10a
R215	110055000000	Taylor County Annual Fair Association	Unknown	Pruntytown	ICIS	10a

Map Label	Registry	Primary Name	Location	City	Conveyor	Figure
R216	110055000000	Pines At Hammond	Unknown	Fairmont	ICIS	10a
R217	110011000000	Refuse Control Systems, Inc.	Rt 3 Box 88 Truner	Grafton	NPDES	10a
R218	110045000000	S.O.S. Salvage	W.V. Route 310	Fairmont	NPDES	10a
R219	110055000000	Glady Creek Homes/Logging Dres	Unknown	Grafton	ICIS	10a
R220	110011000000	Valley Falls State Park	Rt. 6 Box 244	Fairmont	NPDES	10a
R221	110046000000	Plum Run Disposal	Wv Rt 310	Fairmont	ICIS	10a
R222	110055000000	Camp Towles Play Field	Co Rt 18/4	Grafton	ICIS	10a
R223	110006000000	Usarc 363rd Military Police Co	363 Luby St	Grafton	RCRIS	10a
R224	110008000000	Toothman Ford Sales Inc	Us Rte 50 West	Grafton	RCRIS	10a
R225	110011000000	Alliance Personal Care Home	119 N	Grafton	NPDES	10a
R226	110055000000	Twin Oaks Development	Co. Rt. Wv Sec 119/14	Grafton	ICIS	10a
R227	110055000000	Cherry Run Bridge , S346-26-	County Route 26	Grafton	ICIS	10a
R228	110006000000	Camp Towles Garage	Rt 4 Box 246 Camp Towle Rd	Grafton	RCRAINFO	10a
R229	110011000000	Builders Service & Supply Co I	State Route 310 N	Grafton	NPDES	10a
R230	110011000000	Rt 50 Car Sales Salvage Yard	. 3 Mile Off Us 50 On Sls 18/4	Grafton	NPDES	10c
R231	110001000000	Rex-Hide Industries Inc	Country Club Road	Grafton	NPDES	10a
R232	110038000000	Taylor County Hq	Unknown	Pruntytown	NPDES	10a
R233	110031000000	Shop-N-Go #4	Intersection Of Rt 50/250	Pruntytown	RCRAINFO	10a
R234	110011000000	DM Salvage	5 Mile Off Us 50 On County Rd	Grafton	NPDES	10c
R235	110055000000	WV National Cemetery Grave Sit	Unknown	Grafton	ICIS	10a
R236	110008000000	Ideal Motors Inc	Riverside Dr	Grafton	FRS	10c
R237	110055000000	Anna Jarvis Elementary	650 Pike Street	Grafton	FRS-GEOCODE	10c
R238	110011000000	City Of Grafton WWTP	Route 50 West	Grafton	ICIS	10c
R239	110040000000	Grafton Auto Detailing	Rt 50 - 5 Mi West Of Grafton	Grafton	RCRAINFO	10c
R240	110039000000	Tenneco Packaging	1200 W Pike Street	Grafton	FRS	10c
R241	110008000000	T & T Autobody	1000 Pike St	Grafton	FRS-GEOCODE	10c
R242	110006000000	Grafton City Hosp Inc	500 Market St	Grafton	REGION03	10c
R243	110055000000	Packaging Corp Of America	1200 West Pike Street	Grafton	ICIS	10c
R244	110040000000	Taylor County Sheriff Department	214 West Main Street	Grafton	FRS-GEOCODE	10c
R245	110011000000	West Virginia Dept. of Transportation	1250 W Pike St	Grafton	FRS	10c
R246	110055000000	Baby's 'N Things Inc	Po Box 279	Grafton	ICIS	10c

Map Label	Registry	Primary Name	Location	City	Conveyor	Figure
R247	110039000000	Former West Virginia Plastics	214 West Main Street	Grafton	ACRES	10c
R248	110039000000	Laverne Sweeney Inc	215 W Main St	Grafton	FRS-GEOCODE	10c
R249	110040000000	Grafton WWTP	Rt 50 W	Grafton	CWNS	10c
R250	110042000000	Grafton City Hospital	Unknown	Grafton	EIS	10c
R251	110055000000	St. Marys Street Bridge S346-	Unknown	Grafton	ICIS	10c
R252	110006000000	Steves Auto	1006 W Main St	Grafton	FRS-GEOCODE	10c
R253	110006000000	Grafton High School	400 River Side Drive	Grafton	FRS-GEOCODE	10c
R254	110022000000	Taylor County Middle School	1 Prospect St.	Grafton	FRS-GEOCODE	10c
R255	110008000000	Quality Supply Warehouse	1200 Pike St	Grafton	RCRAINFO	10c
R256	110006000000	Ideal Annex	420 Riverside Dr	Grafton	FRS-GEOCODE	10c
R257	110006000000	K&P Machine Service Inc	1229 Railroad St	Grafton	COMMERCIAL VENDOR	10c
R258	110045000000	Go-Mart Inc Store #052	2 Weaver Street	Grafton	FRS-GEOCODE	10c
R259	110040000000	Mountain Statesman	914 W Main St	Grafton	FRS-GEOCODE	10c
R260	110006000000	Weaver Brothers Service	1 Weaver St	Grafton	FRS	10c
R261	110012000000	Fellowship Christian Academy	1100 West Main St.	Grafton	FRS-GEOCODE	10c
R262	110042000000	Miller Property	500 Prospect St	Grafton	FRS-GEOCODE	10c
R263	110006000000	Jack Lockhart	514 Gay St	Graften	FRS-GEOCODE	10c
R264	110040000000	Abandon House - Emergency Response	734 Pearl St	Grafton	FRS-GEOCODE	10c
R265	110055000000	Grafton Hs Arch Bridge S346-4	Unknown	Grafton	ICIS	10c
R266	110005000000	Bryans Hardware	6 Rose St	Grafton	FRS	10c
R267	110006000000	James Fike	446 Pearl Street	Grafton	RCRIS	10c
R268	110006000000	WVDOH Grafton	100 Liberty St	Grafton	FRS-GEOCODE	10c
R269	110011000000	Grafton Truss And Panel Co. In	Us 119 South At Liberty St	Grafton	ICIS	10c
R270	110010000000	Taylor County Senior Center	20 East Main Street	Grafton	NPDES	10a
R271	110055000000	Grafton High School	Unknown	Grafton	ICIS	10c
R272	110043000000	Taylor County Vocational Center	115 Luby St	Grafton	FRS-GEOCODE	10c
R273	110055000000	Water Line Extension Project	Unknown	Grafton	ICIS	10c
R274	110040000000	Grafton-Complaint	68 West Main Street	Grafton	FRS-GEOCODE	10c
R275	110012000000	Grace Brethen Academy	45 West St. Charles Street	Grafton	FRS-GEOCODE	10c
R276	110040000000	Gasoline Release	Main St	Grafton	FRS-GEOCODE	10c

Map Label	Registry	Primary Name	Location	City	Conveyor	Figure
R277	110037000000	City Of Grafton	1 West Main Street	Grafton	FRS-GEOCODE	10c
R278	110040000000	Ami Demolition & Environmental-Spill	Front Street	Grafton	FRS-GEOCODE	10c
R279	110006000000	CSX-Grafton Railyard	599 Csx Way	Grafton	COMMERCIAL VENDOR	10c
R280	110008000000	Hart Industries	Rte 1 Haslip Rd	Grafton	FRS-GEOCODE	10c
R281	110006000000	Freys Auto Supply	10 E Main St	Grafton	FRS-GEOCODE	10c
R282	110042000000	Boyce Property	Corner Barrett St & Gordan Ave	Grafton	RCRAINFO	10c
R283	110055000000	East Grafton Bridges (Grafton	Unknown	Grafton	ICIS	10a
R284	110055000000	Rite Aid #1982	98 North Pike St	Grafton	FRS-GEOCODE	10c
R285	110054000000	Grafton	Unknown	Unknown	EIS	10c
R286	110055000000	Jewell Mobile Acres	Rt 1 Box 91	Grafton	ICIS	10a
R287	110055000000	Garrett Mills Apartments	Co. Rte 50/21	Grafton	ICIS	10c
R288	110055000000	Walgreens - Store #12277	Us Rt 119 & Us Rt 50	Grafton	ICIS	10c
R289	110040000000	88 Lincoln - Emergency Response	88 Lincoln St	Grafton	FRS-GEOCODE	10c
R290	110055000000	Go-Mart Inc Store #037	105 N Pike St	Grafton	FRS-GEOCODE	10c
R291	110006000000	West Virginia Paving Inc	112 Blueville Dr	Grafton	FRS-GEOCODE	10c
R292	110055000000	International Coal 138kv Tap T	Sigmans Hallow	Thornton	ICIS	10a
R293	110055000000	ICG-Three Forks Bridge Access	Us Route 50	Grafton	ICIS	10a
R294	110011000000	Blue Crest Estates	Old Route 50	Grafton	NPDES	10a
R295	110011000000	Jewell Mobile Acres	U.S. Rt50 E	Grafton	NPDES	10a
R296	110055000000	Blue Crest Estates	Rt No. 1 Box 122a	Grafton	ICIS	10a
R297	110046000000	ICG Tygart Valley LLC Proposed	Unknown	Thornton	ICIS	10a
R298	110006000000	L M Auto Repair	266 High St	Grafton	FRS-GEOCODE	10c
R299	110012000000	Anna Jarvis West/Central Office	306 Beech Street	Grafton	FRS	10c
R300	110055000000	Hepzibah Elem. School	306 Beech St	Grafton	NPDES	10c
R301	110055000000	Parkview Sanitary Sewer Improvement	Crs 44, 44/6, 44/10, 44/11, 9/	Grafton	ICIS	10c
R302	110011000000	Taylor County Board Of Ed	306 Beech St	Grafton	FRS	10c
R303	110055000000	Taylor County PSD Plant	Po Box 202	Grafton	ICIS	10a
R304	110040000000	Collins Residence Complaint	63 Wabash Ave	Bridgeport	FRS-GEOCODE	10c
R305	110055000000	Parkview Sanitary Sewer Extension	44 Parkview Road	Grafton	ICIS	10a
R306	110011000000	Taylor County PSD WTP	Grafton Dam	Grafton	ICIS	10a
R307	110006000000	Taylor Co School Bus Garage	3 Maple Ave	Grafton	FRS	10c

APPENDIX B. EARLY WARNING MONITORING SYSTEM FORMS

Appendix B-Form A

Existing Early Warning Monitoring System Worksheet- Surface Water Source

Describe the type of early warning detection equipment installed.
SC-1000 continuously monitors the Raw Water coming from the reservoir for PH-Temperature and conductivity.
Describe the mechanism used to store data and an institutional framework to analyze and interpret the data.
The City of Fairmont uses an Aspire one Data logger using Hach WIMS dispatcher control panel software. The computer uses windows 7 operating system with 250 GB HDD. The data is monitored and collected by RAIN.
Describe the process used to determine the credibility of a contamination event if a change is detected in the quality of source water.
For sampling projects designed to generate data of a known or unknown contaminant, the Operator or site investigators usually collect samples in the field and then ship them to stationary laboratories for analysis. These laboratories are generally capable of analyzing samples for many more contaminants or substances than can be identified by Fairmont WTP Lab. Moreover, by following detailed quality assurance/quality control (QA/QC) protocols, these laboratories can produce data that EPA deems to be "legally defensible" and usable for its site-specific human health risk assessments (EPA 1992a).

Appendix B-Form B

Proposed Early Warning Monitoring System Worksheet- Surface Water Source

Describe the type of early warning detection equipment that could be installed, including the design.
The panel is going to include the following on-line analytical instruments supplied by a single manufacturer: Differential pH sensor, Conductivity sensor, Luminescence DO, probe style turbidity, UV organics, and a mineral oil probe able to detect diesel/Petroleum products. Also included will be temperature and level sensor to confirm sample is present.
Where would the equipment be located?
Shinnston/ Monongah Raw Water Intake
What would the maintenance plan for the monitoring equipment entail?
Routine maintenance as listed by the manufacture
Describe the proposed sampling plan at the monitoring site.
Continuous monitoring with detection notification capabilities
Describe the proposed procedures for data management and analysis.
Data will be reviewed to constantly and continuously monitor base line data. Data would be archived into a data base and reviewed daily by the plant operator. Noting any baseline changes prior to alarming.

APPENDIX C. COMMUNICATION PLAN

Communication Plan
City of Fairmont

PWSID WV3302502

Marion County

Administrative Contact: David Sago

Contact Phone Number: 304-366-0540

Contact Email Address: davidsago@aol.com

Certified Operator: Chip West

Contact Phone Number: 304-366-1461

Contact Email Address: cwest@fairmontwv.gov

Plan Developed On: March 1, 2016

ACKNOWLEDGMENTS:

This plan was developed by the City of Fairmont to meet certain requirements of the Source Water and Assessment Protection Program (SWAPP) for the State of West Virginia, as directed by state laws and regulations.

TABLE OF CONTENTS

INTRODUCTION

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

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

TIERS REPORTING SYSTEM

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

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

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

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

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

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

E=**E**mergency. Water cannot be used for any reason.

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

COMMUNICATION TEAM

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

Water system communication team members, organizations, and roles.

Team Member Name	Organization	Phone	Email	Role
David Sago	City of Fairmont	304-366-0540	davidsago@aol.com	Primary Spokesperson
Hannah Weaver	City of Fairmont	(304) 366-6212 Ext. 340	hweaver@fairmontwv.gov	Secondary Spokesperson
Chip West	City of Fairmont	304-366-1461	cwest@fairmontwv.gov	Chief Operator
Brian Parker	City of Fairmont	[redacted] WTP: (304) 366-1461	bparker@fairmontwv.gov	Operator-Backflow Coordinator
Mitchell Richardson	City of Fairmont	[redacted] WTP: (304) 366-1461	mrichardson@fairmontwv.gov	Operator- Lab Technician
Russell Yann	City of Fairmont	WTP: (304) 366-1461 [redacted]	rustyyann@gmail.com	Member
Chris McIntire	Marion County	304-367-0915 [redacted] (cell)	cmcintire@marioncountywv.com	County Local Emergency Planning

Team Member Name	Organization	Phone	Email	Role
				Committee Coordinator

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

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

COMMUNICATION TEAM DUTIES

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

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

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

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

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

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

INCIDENT / EVENT COMMUNICATION PROCEDURE

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

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

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

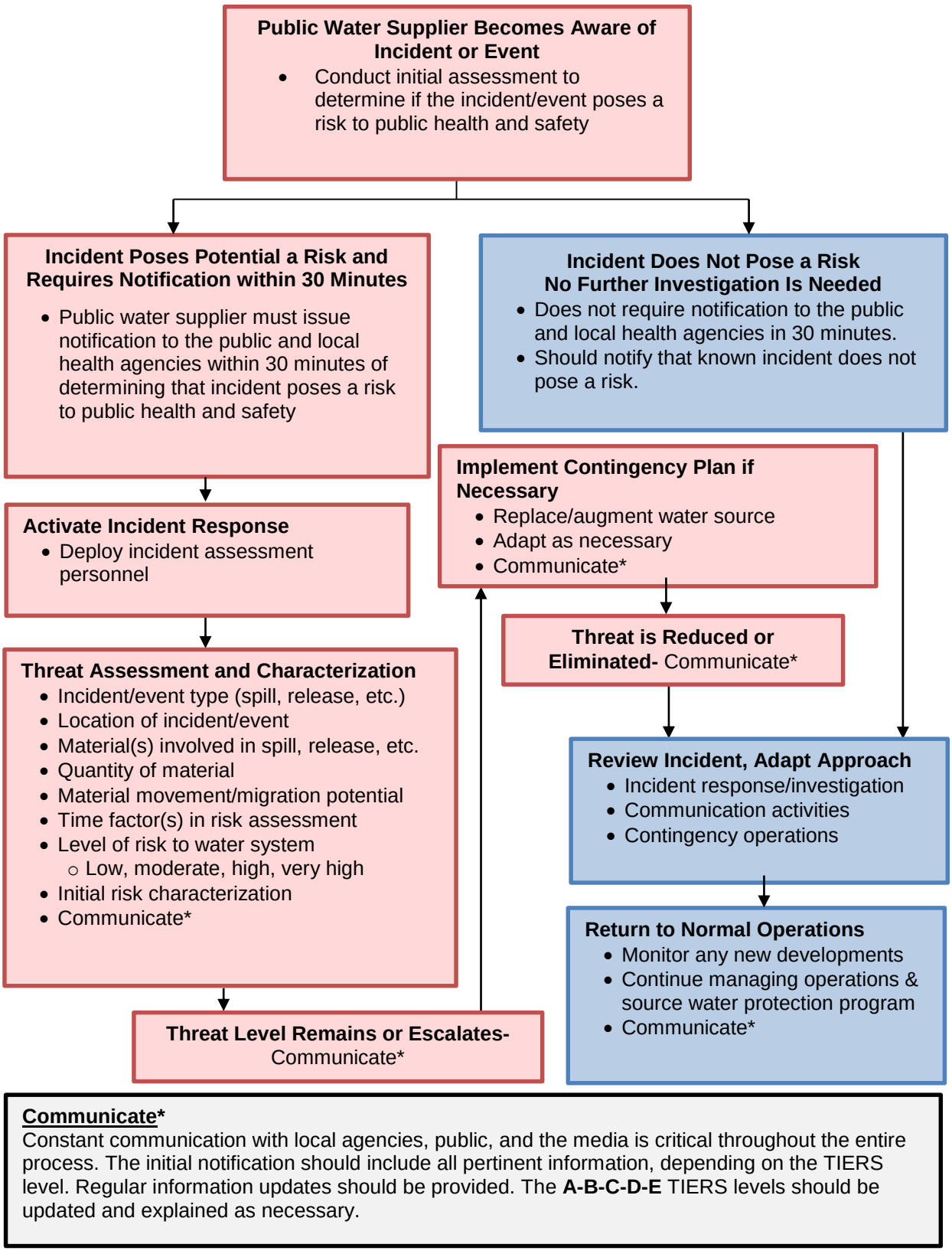
- Verification of the incident/event type (spill, release, etc.)
- Location of incident/event
- Type of material(s) involved in spill, release, etc.
- Quantity of material involved
- Potential of the material to move, migrate, or be transported
- Relevant time factor(s) in the risk assessment (e.g.,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

As the flow chart indicates, several iterative cycles will occur after the initial threat assessment, including communication with local agencies and the public, further investigation of the incident, possible implementation of the water system's contingency plan, and eventual elimination of the threat and a return to normal operations. Communication activities during this period will include:

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

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

TIERS FLOW CHART



PRESS RELEASE ATTACHMENTS

UTILITY ISSUED NOTICE – LEVEL A
PUBLIC WATER SYSTEM ANNOUNCEMENT
A WATER SYSTEM INVESTIGATION IS UNDERWAY

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

The incident involves the following situation at this location:
_____
_____
_____

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

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

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

State Water System ID# _____ Date Distributed: _____

UTILITY ISSUED NOTICE – LEVEL B

BOIL WATER ADVISORY

A BOIL WATER ADVISORY IS IN EFFECT

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

□ Entire Water System or □ Other: _____

_____

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

What should I do?

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

What happened?

- **The problem is related to** _____

What is being done?

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

  _____

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

- _____

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

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

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

This notice was distributed by _____

State Water System ID# _____ Date Distributed: _____

UTILITY ISSUED NOTICE – LEVEL C
"CANNOT DRINK" WATER NOTIFICATION
A LEVEL C WATER ADVISORY IS IN EFFECT

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

□ Entire Water System or □ Other: _____

_____

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

What should I do?

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

What happened?

- **The problem is related to** _____

What is being done?

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

  _____

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

- _____

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

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

This notice was distributed by _____

State Water System ID# _____ Date Distributed: _____

UTILITY ISSUED NOTICE – LEVEL D
"DO NOT USE" WATER NOTIFICATION
A LEVEL D WATER ADVISORY IS IN EFFECT

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

□ Entire Water System or □ Other: _____
_____

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

What should I do?

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

What happened?

- **The problem is related to** _____

What is being done?

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

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

- _____

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

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

This notice was distributed by _____

State Water System ID# _____ Date Distributed: _____

UTILITY ISSUED NOTICE – LEVEL E
EMERGENCY WATER NOTIFICATION
A LEVEL E WATER ADVISORY IS IN EFFECT

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

□ Entire Water System or □ Other: _____
_____

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

What should I do?

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

What happened?

- **The problem is related to** _____

What is being done?

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

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

- _____

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

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

This notice was distributed by _____

State Water System ID# _____ Date Distributed: _____

EMERGENCY SHORT FORM

Emergency Communication Information

	Name	Phone Number	Email
Designated spokesperson:	Dave Sago	(304) 366-0540	davidsago@aol.com
Alternate spokesperson:	Hannah Weaver	(304) 366-6212 ext. 340	hweaver@fairmontwv.gov
Designated location to disseminate information to media:	Water treatment plant or the Public Safety Building conference room if the water treatment plant is restricted.		

Methods of contacting affected residents:	**Word of mouth**	**X**	**Posted notices**	**X**
	Door-to-door canvasing	**X**	**Radio/Television**	**X**
	Newspaper	**X**	**Other- Social Media**	**X**

	Name	Title	Phone Number	Email
Media contacts:	WBOY	Newsroom	(304) 623-9269	-
	WDTV	Newsroom	(304) 842-4604	-
	WFBY	Newsroom	(304) 623-6547	-
	Fairmont Times	Newsroom	(304) 367-2565	-
	WPDX	Newsroom	(304) 363 3852	-

Emergency Services Contacts

	Name	Emergency Phone	Alternate Phone	Email
Local Police	City of Fairmont Police Department	911	304-366-4200	-
Local Fire Department	City of Fairmont Fire Department	911	304-363-7620	-
Local Ambulance Service	Marion County Rescue Squad	911	304-367-0911	-
Hazardous Material Response Service	City of Fairmont Fire Department	911	304-363-7620 or [redacted]	-

Key Personnel

	Name	Title	Phone	Email
Key staff responsible for coordinating emergency response procedures?	David Sago	Utility Manager	(304)-366-0540	davidsago@aol.com
	Chip West	Water Filtration Superintendent	(304) 366-1461	cwest@fairmontwv.gov
	Brian Parker	City of Fairmont	WTP: (304) 366-1461 Cell: [redacted]	bparker@fairmontwv.gov
	Mitchell Richardson	City of Fairmont	WTP: (304) 336-1461 Cell: [redacted]	mrichardson@fairmontwv.gov
Staff responsible for keeping confidential PSSC information and releasing to emergency responders:	David Sago	Utility Manager	(304)-366-0540	davidsago@aol.com
	Hannah Weaver	Marketing/ Communications	(304) 366-6212 ext. 340	hweaver@fairmontwv.gov

Sensitive Populations

	Systems	Contact
Other communities that are served by the utility:	Paw Paw Route 19 PSD	(304) 983-5633
	Ices Run PSD	(304) 363-7025 [redacted]
	Tri-County PSD	(304) 626-5645 [redacted]
	Town of Grant	(304) 278-7381
	Little Creek PSD	(304) 367-0717 [redacted]
	Colfax PSD	(304) 366-5400 [redacted]
	Montana PSD	(304) 366-0198 [redacted]
	Monumental PSD	(304) 363-7025 [redacted]
	Town of Rivesville	(304) 278-5301 [redacted]
	Country Club Estates Inc.	(304) 472-3153
	Valley Falls PSD	(304) 363-0570 [redacted]
	Whitehall PSD	(304) 363-8018 [redacted]
	Kingmill Valley PSD	(304) 366-3928 [redacted]
	City of Mannington	(304) 986-2700
	Downs PSD	(304) 363-1700

	Name	Emergency Phone	Email/Alternate Phone

Major user/sensitive population notification:	Fairmont General Hospital C. Dennis Pride	(304)367-7286	cpride@frmcwv.com [redacted]
	Marion Health Care Hospital Michele Crandall	(304) 363-2500 x 102	Michele.e.crandall@wv.gov
	Marion County Board of Education Gary Price	(304) 367-2107	gprice@k12.wv.us [redacted]
	Fairmont State College Amy Pelligran Tom Tucker Donnie Strand	(304) 367-4000 (304) 367-4139	[redacted]
	Utility staff will go door to door to notify these populations as well as the facilities in High Technology Foundation Park including NOAA and NASA.		
EED District Office Contact:	**Name**	**Phone**	**Email**
	Craig Cobb	304-368-2530	Craig.R.Cobb@wv.gov
	EED Central Office-304-558-2981. Answering service will notify appropriate individuals in case of emergency.		
OEHS Readiness Coordinator	Warren Von Dollen	304-356-4290 (main) 304-550-5607 (cell)	warren.r.vondollen@wv.gov

	Water System Name	**Contact Name**	**Emergency Phone**	**Alternate Phone**
Downstream Water Contacts:	Morgantown Utility Board	Greg Shelito-Treatment Supervisor Mike Anderson- Chief Operator	(304) 599-2111	WTP: (304) 296-4322
Are you planning on implementing the TIER system?	Yes			

Emergency Response Information

	Name	Phone
List laboratories available to perform sample analysis in case of emergency:	REIC Consultants	(304) 241-5861 Info@reiclabs.com
	Reliance Laboratories	(304) 842-5285 reliancelabs@wvdsl.net
	Sturm Environmental Services	(304) 623-6549 info@sturmenvironmental.com
Has the utility developed a detailed Emergency Response Plan in accordance with the Public Health Security Bioterrorism Preparedness and Response Pan Act of 2002?		Yes
When was the Emergency Response Plan developed or last updated?		Preparation Date July 26, 2004 Updated on November 20, 2014

EMERGENCY CONTACT INFORMATION

State Emergency Spill Notification
1-800-642-3074

Office of Emergency Services
http://www.wvdhsem.gov/
Charleston, WV- (304) 558-5380

Marion County Health Department
County Health Department Representative: Lloyd White
304-367-1746
Lloyd.R.White@wv.gov

Marion County Health Officer:
Govind Patel, govind.m.patel@wv.gov

WV Bureau for Public Health Office of Environmental Health Services (OEHS)
www.wvdhhr.org/oehs

Readiness Coordinator- Warren Von Dollen
Phone; 304-356-4290
Cell; 304-550-5607
E-mail; warren.r.vondollen@wv.gov

Environmental Engineering Division Staff
Charleston, Central Office (304) 558-2981
Beckley, District 1 (304) 256-6666
St. Albans, District 2 (304) 722-0611
Kearneysville, District 4 (304) 725-9453
Wheeling, District 5 (304) 238-1145
Fairmont, District 6 (304) 368-2530

National Response Center - Chemical, Oil, & Chemical/Biological Terrorism
1-800-424-8802

WV State Fire Marshal's Office
1-800-233-3473

West Virginia State Police
1-304-746-2100

WV Watch – Report Suspicious Activity
1-866-989-2824

DEP Distance Calculator

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

APPENDIX D. SINGLE SOURCE FEASIBILITY STUDY

Source Water Protection Contingency Plan
City of Fairmont Water Board
PWSID 33002502

Marion County, West Virginia
February 2016

THRASHER

SOURCE WATER PROTECTION CONTINGENCY PLAN
FOR THE
CITY OF FAIRMONT WATER BOARD

Prepared By:

Project Engineer

THE THRASHER GROUP, INC.

600 White Oaks Boulevard
Bridgeport, West Virginia 26330
www.thrashereng.com
Phone: 304-624-4108 Fax: 304-624-7831

I certify the information in this Source Water Protection Contingency Plan is complete and accurate to the best of my knowledge.

Authorizing Signatory:

_____ _____

David Sago
Utility Manager

Date

_____

Date of Submission

Funding By:

Office of Environmental Health Services
West Virginia Department of Health and Human Resources

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EXECUTIVE SUMMARY

This Source Water Protection Contingency Plan (SWPCP) is being developed for the City of Fairmont Water Board (Fairmont) in accordance with Senate Bill 373. Fairmont is a state regulated public utility and operates a public water system serving the City of Fairmont and surrounding areas in Marion County, West Virginia. The utility serves 12,228 residential customers, 1,091 commercial customers, and 20 industrial customers as reported in the 2015 PSC Annual Report. Fairmont also provides water to the City of Mannington, Valley Falls Public Service District (PSD), Tri-County Water Association, Little Creek PSD, Monumental PSD, Grant Town PSD, Town of Rivesville, Paw Paw Rt. 19 PSD, Downs PSD, Ice's Run PSD, and Montana Water Association.

Fairmont's water treatment facility obtains surface water from the Tygart Valley River for treatment at a capacity of 10,400 gallons per minute (gpm). The plant's average a flow rate is 4,216 gpm, pumping approximately 6.07 million gallons per day (MGD) in a twenty-four (24) hour period. Fairmont maintains five (5) treated water storage tanks and two (2) 1.5 million gallon clearwells totaling 8.15 million gallons of treated water storage. Fairmont also maintains an 8.5 million gallon raw water storage reservoir. The total combined water storage for the utility is 16.65 million gallons. At the time of this report, the water system is experiencing 37.48% unaccounted for water and water lost from main leaks; however, the utility is conducting leak detection and making necessary repairs to reduce unaccounted for water. Fairmont currently maintains a 1.2 MW stationary generator to provide power service to the raw water intake and treatment facility and a portable generator to service the distribution system.

In the event the Tygart Valley River is detrimentally affected, Fairmont does not have an alternative water source. This Source Water Protection Contingency Plan describes in detail the aforementioned aspects of Fairmont's public water system and evaluates the technical and economic feasibility of the following four (4) alternatives to provide continued safe and reliable public water service.

Backup Intake

Fairmont's existing surface water intake is on the Tygart Valley River. The West Fork River converges with the Tygart in Fairmont to form the Monongahela River. The West Fork has adequate supply to provide the demand of Fairmont. A backup intake located on the West Fork River and a raw water intake line to tie into the existing intake line was considered during feasibility analysis.

Interconnection

Fairmont is currently interconnected with several systems. None of the interconnected systems, however, produce treated water. After analysis of surrounding systems and their capacities, an interconnection with the Clarksburg Water Board (Clarksburg) was determined to be the only viable option for consideration. Clarksburg could only partially satisfy the demand of Fairmont. In order to transport even the partial supply, the interconnection would require approximately 23 miles of 24'' HDPE water line between the Clarksburg and Fairmont plants. Due to these constraints, an interconnection with the City of Clarksburg was found not to be a viable alternative water source.

Water Storage

Combined Water Storage

Fairmont has a combined water storage capacity of 16.65 million gallons distributed between five (5) treated water storage tanks, two (2) clearwells, and a raw water reservoir. Senate Bill 373 requires that each utility maintain at least two (2) days of system storage based on the maximum level of production experienced within the past year. The maximum amount of water produced by Fairmont within the past year was 8.53 million gallons, therefore 17.06 million gallons of total system water storage is required to comply with Senate Bill 373.

Fairmont provides water to several purchaser systems which maintain respective water storage. After re-evaluating the maximum production to address only customers dependent on Fairmont's water storage, Fairmont satisfies the two (2) day required minimum stated in Senate Bill 373. Therefore, the use of existing water storage was evaluated in the feasibility analysis.

Raw Water Storage

As mentioned above the total water storage capacity of Fairmont is 16.65 million gallons, and to satisfy the two (2) day storage requirement described in Senate Bill 373, the utility needs 17.06 million gallons of total system water storage.

Fairmont requested the evaluation of additional raw water storage adjacent to the existing reservoir at the water treatment plant. The Thrasher Group, Inc. (Thrasher) conducted a preliminary site evaluation and prepared two (2) concept designs for an 11.4 million gallon reservoir and a smaller 4.8 million gallon reservoir. The additional raw water storage will provide protection to the reliability of the water system by increasing the amount of time the plant can be shut down due to contamination or some other type of failure or for maintenance. The construction of an additional raw water reservoir was considered during the feasibility analysis.

Based on the evaluation of the water system, the most feasible option for Fairmont to continue water service is the use of existing treated water storage. Additional detail of the selection of this alternative is provided in **Appendix C**.

PURPOSE

The goal of the West Virginia Bureau for Public Health (WVBPH) Source Water Assessment and Protection (SWAP) program is to prevent degradation of source waters which may preclude present and future uses of drinking water supplies to provide safe water in sufficient quantity to users. The most efficient way to accomplish this goal is to encourage and oversee source water protection on a local level. Every aspect of source water protection is best addressed by engaging local stakeholders.

The intent of this document is to describe what Fairmont has done, is currently doing, and plans to do to protect its source of drinking water. Although this water system treats the water to meet federal and state drinking water standards, conventional treatment does not fully eradicate all potential contaminants, and treatment that goes beyond conventional methods is often very expensive. By completing this plan, Fairmont acknowledges that implementing measures to prevent contamination is vital to ensuring the safety of the drinking water.

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

- Fulfills the requirement for the public water utilities to complete or update their source water protection plan.
- Identifies and prioritizes potential threats to the source of drinking water; and establishes strategies to minimize the threats.
- Plans for emergency responses to incidents that compromise the water supply by contamination or depletion, including how the public, state, and local agencies will be informed.
- Plans for future expansion and development, including establishing secondary sources of water.

- Ensures conditions to provide the safest and highest quality drinking water to customers at the lowest possible cost.
- Provides more opportunities for funding to improve infrastructure, purchase land in the protection area, and other improvements to the intake or source water protection areas.

WV SOURCE WATER ASSESSMENT AND PROTECTION PROGRAM

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

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

In 1999, the WVBPH published the West Virginia Source Water Assessment and Protection Program, which was endorsed by the United States Environmental Protection Agency. Over the next few years, WVBPH staff completed an assessment (i.e., delineation, inventory and susceptibility analysis) for all of West Virginia's public water systems. Each public water system was sent a copy of its assessment report. Information regarding assessment reports for City of Fairmont can be found in **Table 1**.

STATE REGULATORY REQUIREMENTS

On June 6, 2014, §16.1.2 and §16.1.9a of the Code of West Virginia (1931) was reenacted and amended by adding three new sections designated §16.1.9c, §16.1.9d and §16.1.9e. The changes to the code outline specific requirements for public water utilities that draw water from a surface water source or a groundwater source influenced by surface water (GWUDI).

Under the amended and new codes, each existing public water utility using surface water or ground

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

The code also requires that public water utilities include details regarding PSSCs, protection measures, system capacities, contingency plans, and communication plans. Before a plan can be approved, the local health department and public will be invited to contribute information for consideration. In some instances, public water utilities may be asked to conduct independent studies of the source water protection area and specific threats to gain additional information.

SYSTEM INFORMATION

Fairmont is classified as a state regulated public utility and operates a public water system serving areas of Marion County. A public water system is defined as:

> "Any water supply or system which regularly supplies or offers to supply water for human consumption through pipes or other constructed conveyance, if serving at least an average of twenty-five individuals per day for at least sixty days per year, or which has at least fifteen service connections, and shall include:
>
> i. Any collection, treatment, storage and distribution facilities under the control of the owner or operator of the system and used primarily in connection with the system
>
> ii. Any collection or pretreatment storage facilities not under such control which are used primarily in connection with the system."

A public water utility is defined as, "any public water system which is regulated by the West Virginia Public Service Commission."

For purposes of this source water protection plan, public water systems are also referred to as public water utilities. Information on the population served by this utility is presented in **Table 1** on the following page.

Table 1 – Population Served

Administrative office location:	200 Jackson Street Fairmont, West Virginia 26554		
Is the system a public utility, according to the Public Service Commission rule?	Yes		
Date of Most Recent Source Water Assessment Report:	January 2003		
Date of Most Recent Source Water Protection Plan:	July 2011		
Population served directly:	**Customers** Residential 12,228 Commercial 1,091 Industrial 20	**Total Customers** **13,339**	
Bulk Water Purchaser Systems:	**System Name**	**PWSID Number**	**Population**
	City of Mannington	3302513	2400
	Valley Falls PSD	3302523	4050
	Tri-County Water Association	3302522	2550*
	Little Creek PSD	3302510	2195
	Monumental PSD	3302517 & 3302533	2195
	Grant Town PSD	3302507	1200*
	Town of Rivesville	3302519	1535
	Paw Paw Rt. 19 PSD	3302518	1350
	Downs PSD	3302501	1120
	Ice's Run PSD	3302508	1220
	Montana Water Association	3302516	730
Total Population Served by the Utility:	[redacted]		
Does the utility have multiple source water protection areas (SWPAs)?	No		
How many SWPAs does the utility have?	1		

* *Estimated based on West Virginia's 2.43 persons per household as reported by the U.S. Census Bureau*

WATER TREATMENT AND STORAGE

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

Table 2 – Water Treatment Information

Water Treatment Process (List in order)	Raw Water Intake ↓ Resivoir ↓ Coagulation ↓ Flocculation ↓ Sedimentation ↓ Clarification ↓ Prescreening Basin ↓ Filtration ↓ Clearwell ↓ High Service Pumps
Current Treatment Capacity (gal/day)	15,000,000
Current Average Production (gal/day)	6,070,799
Maximum Quantity Treated and Produced (gal/day)	8,526,180
Minimum Quantity Treated and Produced (gal/day)	4,371,610
Average Hours of Operation in One Day	24
Maximum Hours of Operation in One Day	24
Minimum Hours of Operation in One Day	19
Number of Storage Tanks Maintained	Five (5) Storage Tanks & Two (2) 1.5 MG Clearwells
Total Gallons of Treated Water Storage (gal)	8,150,000
Total Gallons of Raw Water Storage (gal)	8,500,000

Table 3 – Surface Water Sources

Intake Name	SDWIS #	Local Name	Describe Intake	Name of Water Source	Date Constructed/ Modified	Frequency of Use (Primary/ Backup/ Emergency)	Activity Status (Active/ Inactive)
Tygart River 1			5' x 6' x 650' conduit	Tygart Valley River	1942 *(C)* 2004 *(M)*	Primary	Active

Table 4 – Groundwater Sources

Does the utility blend with groundwater?	No

(C) – Constructed
(M) - Modified

Response Networks and Communication

Statewide initiatives for emergency response, including source water related incidents, are being developed. These include the West Virginia Water/Wastewater Agency Response Network (WV WARN, see http://www.wvwarn.org/) and the Rural Water Association Emergency Response Team (see http://www.wvrwa.org/). Fairmont has analyzed its ability to effectively respond to emergencies and this information is provided in **Table 5**.

Table 5 – Water Shortage Response Capability

Can the utility isolate or divert contamination from the intake or groundwater supply?	No
Describe the utility's capability to isolate or divert potential contaminants:	N/A
Can the utility switch to an alternative water source or intake that can supply full capacity at any time?	No
Describe in detail the utility's capability to switch to an alternative source:	N/A
Can the utility close the water intake to prevent contamination from entering the water supply?	No
How long can the intake stay closed?	2.74 days based on average usage
Describe the process to close the intake:	Shut down raw water intake pumps
Describe the treated water storage capacity of the water system:	Five (5) treated water storage tanks and two (2) clearwells totaling 8,150,000 gallons At the time of this report, Fairmont was operating at 100% treated water storage capacity.
Is the utility a member of WVRWA Emergency Response Team?	Yes
Is the utility a member of WV-WARN?	Yes
List any other mutual aid agreements to provide or receive assistance in the event of an emergency:	None

Operation During Loss of Power

This utility analyzed and examined its ability to operate effectively during a loss of power. This involved ensuring a means to supply water through treatment, storage, and distribution without creating a public health emergency. Information regarding the utility's capacity for operation during power outages is shown in **Table 6**. The utility's standby capacity would have the capability to provide power to the system as if normal power conditions existed. The utility's emergency capacity would have the capability to provide power to only the essential equipment and treatment processes to provide water to the system. Information regarding the emergency generator capacity for each utility was calculated by the WV BPH and can be found in **Appendix D**.

Table 6 – Generator Capacity

What is the type and capacity of the generator needed to operate during a loss of power?	The utility currently has a 1.2 MW stationary generator and 2 MW automatic transfer switch to supply power to the treatment plant and raw water intake. A small portable generator is used to operate the booster stations.	
Can the utility connect to generator at the intake/wellhead? If yes, select a scenario that best describes system.	Yes, the utility has a generator hard wired and ready to turn on	
Can the utility connect to generator at the treatment facility? If yes, select a scenario that best describes system.	Yes, the utility has a generator hard wired and ready to turn on	
Can the utility connect to a generator in distribution system? If yes, select a scenario that best describes system.	No, the utility does not have a generator, and requires electrical work to connect	
Does the utility have adequate fuel on hand for the generator?	Yes	
What is your on-hand fuel storage and how long will it last operating at full capacity?	**Gallons**	**Duration**
	2,000	24 hours

Table 6 – City of Fairmont Generator Capacity (Continued)

		Supplier	Contact Name	Phone Number
Provide a list of suppliers that could provide generators and fuel in the event of an emergency:	**Generator**	Cummins	Crosspoint	(304) 769-1012
	Fuel	RT Rogers	Roger Basler	(304) 466-1733
Does the utility test the generator(s) periodically?		Yes		
Does the utility routinely maintain the generator?		Yes		
If no scenario describing the ability to connect to generator matches the utility's system or if utility does not have ability to connect to a generator, describe plans to respond to power outages:		N/A		

Future Water Supply Needs

When planning for potential emergencies and developing contingency plans, a utility needs to not only consider their current demands for treated water but also account for likely future needs. This could mean expanding current intake sources or developing new ones in the near future. This can be an expensive and time consuming process, and any water utility should take this into account when determining emergency preparedness. Fairmont has analyzed its ability to meet future water demands at current capacity and this information is included in **Table 7** on the following page.

Table 7 – Future Water Supply Needs

Is the utility able to meet water demands with the current production capacity over the next 5 years? If so, explain how you plan to do so.	Yes, based on population trends there is no need for an increase in capacity to meet water demands. If population trends change, an upgrade to the plant would be needed at that time.
If not, describe the circumstances and plans to increase production capacity:	N/A

Water Loss Calculation

In any public water system, there is a certain percentage of the total treated water that does not reach the customer distribution system. Some of this water is used in treatment plant processes such as backwashing filters or flushing piping, but there is usually at least a small percentage unaccounted. To measure and report on this unaccounted for water, a public utility must use the same method used in the Public Service Commission's rule, *Rules for the Government of Water Utilities*, 150CSR7, Section 5.6. The rule defines unaccounted for water as "the volume of water introduced into the distribution system less all metered usage and all known non-metered usage which can be estimated with reasonable accuracy."

To further clarify, metered usages are most often those that are distributed to customers. Non-metered usages estimated include water used by fire departments for fires or training, un-metered bulk sales, flushing to maintain the distribution system, backwashing filters, and cleaning settling basins. By totaling the metered and non-metered uses, the utility calculates unaccounted for water. Note: To complete annual reports submitted to the PSC, utilities typically account for known water main breaks by estimating the amount of water lost. However, for the purposes of the source water protection contingency plan, any water lost due to leaks – even if the system is aware of how much water is lost at a main break – is not considered a use. Water lost through leaks and main breaks cannot be controlled during water shortages or other emergencies and should be included in the calculation of percentage of water loss for purposes of the source water contingency protection plan. The data in **Table 8** is taken from the most recently submitted City of Fairmont PSC Annual Report.

Table 8 – Water Loss Information

Total Water Pumped (gal)		2,282,799,000
Total Water Purchased (gal)		3,316,000
Total Water Pumped and Purchased (gal)		2,286,115,000
Water Loss Accounted for Except Main Leaks (gal)	**Mains, Plants, Filters, Flushing, etc.**	43,339,000
	Fire Department	1,018,000
	Back Washing	–
	Blowing Settling Basins	–
Total Water Loss Accounted For Except Main Leaks		44,357,000
Water Sold- Total Gallons (gal)		1,384,916,000
Unaccounted For Lost Water (gal)		844,328,000
Water lost from main leaks (gal)		12,514,000
Total gallons of Unaccounted for Lost Water and Water Lost from Main Leaks (gal)		856,842,000
Total Percent Unaccounted For Water and Water Lost from Main Leaks (%)		37.48
If total percentage of Unaccounted for Water is greater than 15%, please describe any measures that could be taken to correct this problem:		Increased inspection and leak detection, and making necessary repairs.

EARLY WARNING MONITORING SYSTEM

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

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

Every utility should establish a system or process for receiving or detecting chemical threats with sufficient time to respond to protect the treatment facility and public health. All approaches to receiving and responding to an early warning should incorporate communication with facility owners and operators that pose a threat to the water quality, state and local emergency response agencies, surrounding water utilities, and the public. Communication plays an important role in knowing how to interpret data and how to respond.

City of Fairmont has analyzed its ability to monitor for and detect potential contaminants that could impact its source water. Information regarding this utility's early warning monitoring system capabilities can be found in **Table 9** on the following page and in **Appendix A**.

Table 9 – Early Warning Monitoring System Capabilities

Does your system currently receive spill notifications from a state agency, neighboring water system, local emergency responders, or other facilities? If yes, from whom do you receive notices?	The utility receives spill notifications from the WV Health Department.		
Are you aware of any facilities, land uses, or critical areas within your protection areas where chemical contaminants could be released or spilled?	No		
Are you prepared to detect potential contaminants if notified of a spill?	Yes		
List laboratories (and contact information) on which you would rely to analyze water samples in case of a reported spill.	**Laboratories**		
	Name	**Contact**	
	REI Consultants	(304) 255-2500	
	WV Office of Lab Services	(304) 558-3530	
Do you have an understanding of baseline or normal conditions for your source water quality that accounts for seasonal fluctuations?	Yes		
Does your utility currently monitor raw water (through continuous monitoring or periodic grab samples) at the surface water intake or from a groundwater source on a regular basis?	Yes		
Provide or estimate the capital and O&M costs for your current or proposed early warning system or upgraded system.	**Capital**	$50,000	
	Yearly O&M	$750	
Do you serve more than 100,000 customers? If so, please describe the methods you use to monitor at the same technical levels utilized by ORSANCO.	No		

SINGLE SOURCE FEASIBILITY STUDY

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

In order to accomplish this requirement, utilities should examine all existing or possible alternatives and rank them by their technical, economic, and environmental feasibility. In order to have a consistent method for ranking alternatives, WV BPH has developed a feasibility study guide. This guide provides several criteria to consider for each category, organized in a scoring matrix. By completing the Feasibility Study, utilities will demonstrate the process used to examine the feasibility of each alternative. The Feasibility Study matrix is attached as **Appendix B**. Those alternatives that are ranked highest and deemed to be most feasible will then be the subject of a second, more in-depth, study to analyze the comparative costs, risks, and benefits of implementing each of the described alternatives. An alternatives analysis report providing these details is attached as **Appendix C**.

CONCLUSION & RECOMMENDATIONS

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

This SWPCP is intended to help prepare community public water systems all over West Virginia to properly handle any emergencies that might compromise the quality of the system's source water supply. It is imperative that this plan is updated as often as necessary to reflect the changing circumstances within the water system. The protection team should continue to meet regularly and continue to engage the public whenever possible. Communities taking local responsibility for the quality of their source water are the most effective way to prevent contamination and protect a water

system against contaminated drinking water. Community cooperation, sufficient preparation, and accurate monitoring are all critical components of this source water protection contingency plan, and a multi-faceted approach is the only way to ensure that a system is as protected as possible against source water degradation.

Based on the evaluation of the existing water system, the most feasible option for Fairmont to continue water service during a contingent event is the use of existing water storage. Fairmont maintains sufficient water storage capacity to provide to the population directly served by Fairmont as well as supplement any purchaser system that does not retain two (2) days of respective water storage. Upon calculation, Fairmont was found to have approximately 2.35 days of water storage based on maximum production, satisfying the requirements stated in Senate Bill 373.

In the event the Tygart Valley River is detrimentally affected by contamination for an extended period, it is recommended that Fairmont construct a backup intake on the West Fork River. Several purchaser systems are dependent on Fairmont for water supply. These utilities could aid in the cost of construction of the intake.

These recommendations are based on an evaluation of the four alternatives. The evaluation consisted of operation and maintenance impacts, capital costs, environmental impacts, along with other criteria. The supporting documentation from the evaluation is included in the Appendices of this report.

RECOMMENDED LONG-TERM ALTERNATIVE COST ESTIMATE

Qty.		Description	Unit Price	Total Cost
1	LS	West Fork River Backup Intake	$14,144,125	$14,144,125
TOTAL				**$14,144,125**

EARLY WARNING MONITORING SYSTEM INFORMATION

Proposed Early Warning Monitoring System Worksheet – Surface Water Source

Describe the type of early warning detection equipment that could be installed, including the design.
The early warning detection equipment that could be installed includes a level controller, display module, back panel, level & trough (see cost estimate by Hach Company in **Appendix D**) along with conductivity, oil-in-water, ORP, and pH sensors.
Where would the equipment be located?
The early warning monitoring systems would be located upstream of the Tygart Valley River raw water intake line prior to where surface water would enter the treatment facility.
What would the maintenance plan for the monitoring equipment entail?
The proposed maintenance plan for the monitoring equipment shall consist of annual cleaning and/or exchanging of the probe(s) for the controller. Periodic calibration of the unit may also be required.
Describe the proposed sampling plan at the monitoring site.
Sampling of water quality data occurs every fifteen minutes. Fairmont would need to retrieve data from the "History" of the controller data collector twice per month.
Describe the proposed procedures for data management and analysis.
Data management for the early warning monitoring system consists of data points (up to 500 points or approximately six months per probe) being recorded in the "History" of the controller data collector. To access the "History", the probe has to be plugged into the controller. Data is able to be removed via USB or through a local SCADA system.

Literature related to the development and design of early warning systems is provided on the following pages courtesy of the American Water Works Association

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APPENDIX B

SINGLE SOURCE FEASIBILITY STUDY

Feasibility Matrix **City of Fairmont Water Board** **PWSID#: WV 3302502** **Date: June 2016** **Completed By: Project Engineer - The Thrasher Group, Inc.**

Alternative Strategy Description	Economic Criteria					Technical Criteria						Environmental Criteria						Final Score	Total Capital Cost	Comments
	Operation & Maintenance Costs	Capital Costs	Total	Total %	Weighted Total	Permitting	Flexibility	Resilience	Institutional Requirements	Total	Total %	Weighted Total	Environmental Impacts	Aesthetic Impacts	Stakeholder Issues	Total	Total %	Weighted Total			
Backup Intake	3.0	2.0	**5.0**	**83.3%**	**33.3%**	2.0	3.0	2.7	2.3	**10.0**	**83.3%**	**33.3%**	2.0	3.0	2.0	**7.0**	**77.8%**	**15.6%**	**82.2%**	**$14,144,125.00**	100% backup to the primary water source, environmental Impacts addressed at intake site.
Interconnect	2.7	1.0	**3.7**	**61.1%**	**24.4%**	2.2	2.5	1.7	2.0	**8.4**	**69.7%**	**27.9%**	3.0	3.0	1.7	**7.7**	**85.2%**	**17.0%**	**69.4%**	**$50,458,125.00**	There are no water systems in close proximity capable of fully supplying Fairmont
Combined Water Storage	3.0	3.0	**6.0**	**100.0%**	**40.0%**	3.0	2.5	2.3	3.0	**10.8**	**90.3%**	**36.1%**	3.0	3.0	3.0	**9.0**	**100.0%**	**20.0%**	**96.1%**	**$0.00**	Utilize existing water storage to intermittently continue service during an emergency.
Concept #1 11.4 MG Reservoir	3.0	2.7	**5.7**	**94.4%**	**37.8%**	3.0	2.5	2.3	3.0	**10.8**	**90.3%**	**36.1%**	3.0	3.0	2.7	**8.7**	**96.3%**	**19.3%**	**93.1%**	**$3,170,375.00**	Supplement existing storage with an additional raw water reservoir constructed at the existing treatment facility.
Concept #1 4.8 MG Reservoir	3.0	2.7	**5.7**	**94.4%**	**37.8%**	3.0	2.5	2.3	3.0	**10.8**	**90.3%**	**36.1%**	3.0	3.0	2.7	**8.7**	**96.3%**	**19.3%**	**93.1%**	**$2,797,100.00**	Supplement existing storage with an additional raw water reservoir constructed at the existing treatment facility.

Scoring:

0 **- Not feasible. Criterion cannot be met by this alternative and removes the alternative from further consideration.**

1 **- Feasible but difficult. Criterion represents a significant barrier to successful implementation but does not eliminate it from consideration.**

2 **- Feasible. Criterion can be met by the alternative.**

3 **- Very Feasible. Criterion can be easily met by the alternative.**

APPENDIX C

ALTERNATIVES ANALYSIS

1. Backup Intake

Fairmont currently obtains raw water from a surface intake on the Tygart Valley River before pumping through two lines, an 18" and a 24", to the treatment facility. The nearest water feature capable of sustaining water supply to Fairmont is the West Fork River. The West Fork River converges with the Tygart Valley River in Fairmont to form the Monongahela River.

According to the United States Geological Survey (USGS), the West Fork River's long-term median flow is 665 cubic feet per second (cfs), or approximately 30,000 gpm. The maximum flow rate experienced by Fairmont's treatment facility in the past year was 5,921 gpm. Therefore the West Fork River satisfies the treatment requirements of Fairmont.

Due to the convergence with the Tygart Valley River, a backup intake would need to be constructed outside of the Tygart Valley River floodplain to ensure the intake was not threatened by antecedent contamination of the Tygart Valley River.

Thus the construction of a backup intake on the southern side of the West Fork River approximately 4,000 feet upstream of the river junction and a raw water intake line was considered during feasibility analysis. The proposed intake line would require approximately 7,650 linear feet of 24" water line from the West Fork River backup intake, under the Tygart Valley River, tieing-into the existing 24" raw water line.

2. Interconnection

Fairmont is currently interconnected with eleven (11) utilities. These utilities, however, do not produce finished water and are classified as purchaser systems. Fairmont is located in central Marion County and is the primary water source for the extent of the county. Fairmont produces an average of approximately 6.07 MGD in order to serve the population of Fairmont and surrounding systems. Due the large demand and service area, the nearest water producer capable of providing even partial supply to Fairmont is the Clarksburg Water Board.

Clarksburg obtains surface water from the West Fork River for treatment. The Clarksburg water plant has a treatment capacity of 11.5 MGD and produces an average of

approximately 7.5 MGD, serving the City of Clarksburg and surrounding systems. The required production by Clarksburg to fully supply Fairmont is shown below:

$$7.5\ MGD + 6.07\ MGD = 13.57\ MGD$$

Therefore Clarksburg is not capable of fully supplying Fairmont's average water demand; however, Clarksburg does have available supply to provide intermittent support in an emergency. Contrarily, in order to transport significant quantities of water between the systems, an interconnection could not be established using the systems' existing water mains. An interconnection would require approximately 23 miles of 24" HDPE water line between Fairmont and Clarksburg's treatment facilities. The demand requirements of Fairmont combined with the necessary size and span of water line to effectively interconnect the two systems, makes an interconnection with Clarksburg impracticable. The construction of a backup intake was not evaluated in the feasibility analysis.

3. Water Storage

a. Combined Water Storage

Fairmont provides finished water to the City of Fairmont and eleven (11) purchaser systems. Fairmont's total system storage is 16.65 million gallons consisting of 8.15 mllion gallons of treated water storage and an 8.5 million gallon raw water reservoir . According to the most recent monthly operating reports provided by the utility, the water treatment facility produces an average of 6.07 MGD, and the maximum quantity produced in a twenty-four (24) hour period was 8.53 MGD.

Senate Bill 373 requires utilities to maintain at least (2) two days of system storage, based on the plant's maximum level of production experienced within the past year. Thus, the minimum required storage capacity for Fairmont's system would be:

$$8.53\ million\ gallons\ per\ day\ \times 2\ days = 17.06\ million\ gallons$$

Therefore, the system currently does not meet the minimum required water storage capacity to supply the City of Fairmont and the surrounding purchaser systems. However, the eleven (11) purchaser systems served by Fairmont maintain water storage for their respective service areas. Accordingly, the average demand of the purchaser systems can be discounted from the calculation of Fairmont's required storage. The adjusted storage requirement is demonstrated on the following page.

City of Fairmont Adjusted Water Storage Calculation

City of Fairmont	Storage Capacity	Max. Produced Per Day	Required Storage	Remaining	Days of Storage
	Gallons				Max. Produced
	16,650,000	8,526,180	17,052,360	402,360	1.95

Water Purchasers		Av. Purchased Per Day			Days of Storage
	Gallons				Av. Purchased
City of Mannington	1,232,000	293,023			4.20
Valley Falls PSD	313,002	273,176			1.15
Tri-County Water Association	673,000	250,638 *			2.69
Little Creek PSD	346,000	196,996			1.76
Monumental PSD	464,000	143,296			3.24
Grant Town PSD	300,000	112,120			2.68
Town of Rivesville	673,000	108,944			6.18
Paw Paw Rt. 19 PSD	351,000	104,945			3.34
Downs PSD	127,000	87,835			1.45
Ice's Run PSD 2015	207,000	75,070			2.76
Montana Water Works	100,000	50,858			1.97

City of Fairmont Adjusted	Storage Capacity	Max. Produced Per Day	Required Storage	Remaining	Days of Storage
	Gallons				Max. Produced
	16,650,000	7,079,917	14,159,834	(2,490,166)	2.35

** The Whitehall area, served by the Tri-County Water Association, relies on the water storage of the City of Fairmont. The amount used specifically by those customers is unknown, so water purchased by Tri-County Water Association was not discounted in this calculation.*

By this evaluation, Fairmont maintains sufficient water storage capacity to satisfy the two (2) day required minimum stated in Senate Bill 373 for the population directly served by Fairmont and insure any purchaser systems that do not already retain two (2) days of respective water storage. The use of existing water storage was evaluated in the feasibility analysis.

b. Raw Water Storage

As previously mentioned the total water storage capacity of Fairmont's system is 16.65 million gallons, and to satisfy the two (2) day storage requirement described in Senate Bill 373, the utility needs 17.06 million gallons of total system water storage.

The remaining required water storage capacity for the system would be:

$$17.06\ million\ gallons - 16.65\ million\ gallons = .41\ million\ gallons$$

Fairmont's existing raw water reservoir houses approximately 8.5 million gallons. Fairmont has expressed interest in constructing a second raw water reservoir adjacent to the existing reservoir. Thrasher performed a preliminary site evaluation and prepared two (2) concept designs of a new reservoir. The concepts included an 11.4 million gallon and a 4.8 million gallon design. The addition of a second raw water reservoir would more than satisfy the storage requirements of Senate Bill 373 as shown here:

Concept #1

$$16.65\ million\ gallons + 11.4\ million\ gallons = 28.05\ million\ gallons$$

Concept #2

$$16.65\ million\ gallons + 4.8\ million\ gallons = 21.45\ million\ gallons$$

Based on the preliminary evaluation an additional reservoir would extend Fairmont's water storage to approximately 2.52 days incorporating Concept #2 and 3.29 days incorporating Concept #1 based on maximum production, satisfying Senate Bill 373.

An additional raw water reservoir at the existing treatment facility was analyzed in the feasibility matrix.

Feasibility Matrix | **City of Fairmont Water Board** | **PWSID#: WV 3302502** | **Date: June 2016** | **Completed By: Project Engineer - The Thrasher Group, Inc.**

Criteria	Question	Backup Intake	Feasibility	Interconnect	Feasibility	Combined Water Storage	Feasibility	Concept #1 11.4 MG Reservoir	Feasibility	Concept #1 4.8 MG Reservoir	Feasibility
Economic Criteria											
What is the total current budget year cost to operate and maintain the PWSU (current budget year)?		$4,212,842.00		$4,212,842.00		$4,212,842.00		$4,212,842.00		$4,212,842.00	
O and M Costs	Describe the major O&M cost requirements for the alternative?	Labor, power, materials for maintenance	3	Labor, power, materials for maintenance	2	No additional cost	3	Labor, materials for maintenance	3	Labor, materials for maintenance	3
	What is the incremental cost ($/gal) to operate and maintain the alternative?	$0.00004	3	$0.00016	3	–	3	$0.00000	3	$0.00	3
	Cost comparison of the incremental O&M cost to the current budgeted costs (%)	0.00%	3	0.00%	3	–	3	0.00%	3	0.00%	3
O and M-Feasibility Score			***3.0***		***2.7***		***3.0***		***3.0***		***3.0***
Describe the capital improvements required to implement the alternative.		Construction of raw water pump station and intake line		Construction of a water line and appurtenances		N/A		Construction of a additional raw water storage		Construction of a additional raw water storage	
Capital Costs	What is the total capital cost for the alternative?	$14,144,125.00	1	$50,458,125.00	0	$0.00	3	$3,170,375.00	2	$2,797,100.00	2
	What is the annualized capital cost to implement the alternative, including land and easement costs, convenience tap fees, etc. ($/gal)	$0.00136	2	$0.00485	0	–	3	$0.00030	3	$0.00027	3
	Cost comparison of the alternatives annualized capital cost to the current budgeted costs (%)	0.00%	3	0.00%	3	–	3	0.00%	3	0.00%	3
Capital Cost-Feasibility Score			***2.0***		***1.0***		***3.0***		***2.7***		***2.7***
Technical Criteria											
Permitting	Provide a listing of the expected permits required and the permitting agencies involved in their approval.	WV DEP, WV DNR, ACOE, WV SHPO, US FWS, WV DOH and County Floodplain	2	WV DEP, WV DNR, ACOE, WV SHPO, US FWS, WV DOH and County Floodplain	2	N/A	3	WV DEP, WV DNR, ACOE, WV SHPO, US FWS, and County Floodplain	3	WV DEP, WV DNR, ACOE, WV SHPO, US FWS, and County Floodplain	3
	What is the timeframe for permit approval for each permit?	WV DEP (90 days), WV DNR (60 days), ACOE (90 days), WV SHPO (60 days), US FWS (60 days), WV DOH (90 days) and County Floodplain (90 days)	2	WV DEP (90 days), WV DNR (60 days), ACOE (90 days), WV SHPO (60 days), US FWS (60 days), WV DOH (90 days) and County Floodplain (90 days)	2	N/A	3	WV DEP (90 days), WV DNR (60 days), ACOE (90 days), WV SHPO (60 days), US FWS (60 days), and County Floodplain (90 days)	3	WV DEP (90 days), WV DNR (60 days), ACOE (90 days), WV SHPO (60 days), US FWS (60 days), and County Floodplain (90 days)	3
	Describe the major requirements in obtaining the permits (environmental impact studies, public hearings, etc.)	Environmental impact studies, water sampling	1	Environmental impact studies	2	N/A	3	Environmental impact studies	3	Environmental impact studies	3
	What is the likelihood of successfully obtaining the permits?	Good	3	Fair	2	N/A	3	Good	3	Good	3
	Does the implementation of the alternative require regulatory exceptions or variances?	No	3	No	3	N/A	3	No	3	No	3
Permitting-Feasibility Score			***2.0***		***2.2***		***3.0***		***3.0***		***3.0***
Flexibility	Will the alternative be needed on a regular basis or only used intermittently?	Intermittently, but can be used permanently	3	Intermittently	2	Intermittently	2	Intermittently	2	Intermittently	2
	How will implementing the alternative affect the PWSU's current method of treating and delivering potable water including meeting Safe Drinking Water Act regulations? (ex. In the case of storage, will the alternative increase the likelihood of disinfection byproducts?)	No impact	3	Current treatment methods will not be required	3	No impact	3	No impact	3	No impact	3
Flexibility-Feasibility Score			***3.0***		***2.5***		***2.5***		***2.5***		***2.5***
Resilience	Will the alternative provide any advantages or disadvantages to meeting seasonal changes in demand?	No	3	No	3	No	3	No	3	No	3
	How resistant will the alternative be to extreme weather conditions such as drought and flooding?	Drought may limit availability of water	2	Drought may limit availability of water	2	Drought may limit availability of water	2	Drought may limit availability of water	2	Drought may limit availability of water	2
	Will the alternative be expandable to meet the growing needs of the service area?	Yes	3	No	0	Yes	2	Yes	2	Yes	2
Resilience-Feasibility Score			***2.7***		***1.7***		***2.3***		***2.3***		***2.3***
Institutional Requirements	Identify any agreements or other legal instruments with governmental entities, private institutions or other PWSU required to implement the alternative.	None	3	Clarksburg Water Board	2	N/A	3	None	3	None	3
	Are any development/planning restrictions in place that can act as a barrier to the implementation of the alternative.	No	3	No	3	N/A	3	No	3	No	3
	Identify potential land acquisitions and easements requirements.	Property acquisition for pump station and easements for waterline	1	Property acquisition for pump station and easements for waterline	1	N/A	3	None	3	None	3
Institutional Requirements-Feasibility Score			***2.3***		***2.0***		***3.0***		***3.0***		***3.0***
Environmental Criteria											
Environmental Impacts	Identify any environmentally protected areas or habitats that might be impacted by the alternative.	West Fork Watershed	2	None	3	N/A	3	None	3	None	3
Environmental Impacts-Feasibility Score			***2.0***		***3.0***		***3.0***		***3.0***		***3.0***
Aesthetic Impacts	Identify any visual or noise issues caused by the alternative that may affect local land uses?	Fencing and control panel for pump station	3	Fencing and control panel for pump station	3	N/A	3	None	3	None	3
	Identify any mitigation measures that will be required to address aesthetic impacts?	Clearance from Culture and History and Local Zoning Commission will be obtained	3	Clearance from Culture and History and Local Zoning Commission will be obtained	3	N/A	3	N/A	3	N/A	3
Aesthetic Impacts-Feasibility Score			***3.0***		***3.0***		***3.0***		***3.0***		***3.0***
Stakeholder Issues	Identify the potential stakeholders affected by the alternative.	Water Customers	3	Water Customers	3	N/A	3	Water Customers	3	Water Customers	3
	Identify the potential issues with stakeholders for and against the alternative.	Rate Increase may be needed to implement construction	1	Rate Increase may be needed to implement construction	1	N/A	3	Rate Increase may be needed to implement construction	2	Rate Increase may be needed to implement construction	2
	Will stakeholder concerns represent a significant barrier to implementation (or assistance) of the alternative?	Yes	2	Yes	1	N/A	3	No	3	No	3
Stakeholder Issues-Feasibility Score			***2.0***		***1.7***		***3.0***		***2.7***		***2.7***
Comments		100% backup to the primary water source, environmental Impacts addressed at intake site.		There are no water systems in close proximity capable of fully supplying Fairmont		Utilize existing water storage to intermittently continue service during an emergency.		Supplement existing storage with an additional raw water reservoir constructed at the existing treatment facility.		Supplement existing storage with an additional raw water reservoir constructed at the existing treatment facility.	

Matrix Explanation

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

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

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

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

SUPPORTING DOCUMENTATION

APPENDIX D

EARLY WARNING MONITORING COST ESTIMATE

Qty.		Description	Unit Price	Total Cost
1	EA	Back Panel / Trough / Level (required)	$4,350.00	$ 4,350
1	EA	Probe Module SC1000 (6 sensors)	$ 1,344.00	$ 1,344
1	EA	Internal Card SC1000 (4 mA inputs)	$ 879.00	$879
1	EA	Display Module SC1000	$ 2,770.00	$ 2,770
1	EA	Conductivity Sensor	$ 860.00	$860
1	EA	FP360 SC Sensor, 500 ppb, SS, 1.5 m Cable	$ 17,480.00	$ 17,480
1	EA	ORP Sensor	$ 880.00	$ 880
1	EA	pH Sensor, Ryton	$ 800.00	$ 800
1	LS	Installation	$ 20,637.00	$ 20,637
			TOTAL=	**$ 50,000**

OPERATION & MAINTENATNCE COST ESTIMATE

Qty.		Description	Unit Price	Total Cost
1	LS	Annual O&M Cost	$750.00	$ 750
			TOTAL=	**$ 750**

In addition to the early warning system, City of Fairmont should establish a baseline water quality for their sources.

BACKUP INTAKE COST ESTIMATE

Utility Information		
Max. Flow Rate	5,921	GPM
Footage Needed	7,634	LF

Intake Pricing Parameters	Cost per GPM
If the GPM needed is Greater than or Equal to 2,000 GPM (24" Pipe)	$ 1,100.00
If the GPM needed is Greater than or Equal to 1,000 GPM (12" Pipe)	$ 1,500.00
If the GPM needed is between 700 GPM to 999 GPM (8" Pipe)	$ 1,750.00
If the GPM needed is less than 700 GPM (6" Pipe)	$ 2,000.00
	$ 6,513,100.00

HDD Bore Costs			
Pipe Size	**Cost per Foot**	**Footage**	**Totals**
24" Pipe	$ 1,650.00	1,510	$ 2,491,500.00
12" Pipe	$ 500.00	-	$ -
8" Pipe	$ 200.00	-	$ -
			$ 2,491,500.00

Piping Costs			
Pipe Size	**Cost per Foot**	**Footage**	**Totals**
24" Pipe	$ 300.00	7,634	$ 2,290,200.00
12" Pipe	$ 60.00	-	$ -
8" Pipe	$ 37.00	-	$ -
			$ 2,290,200.00

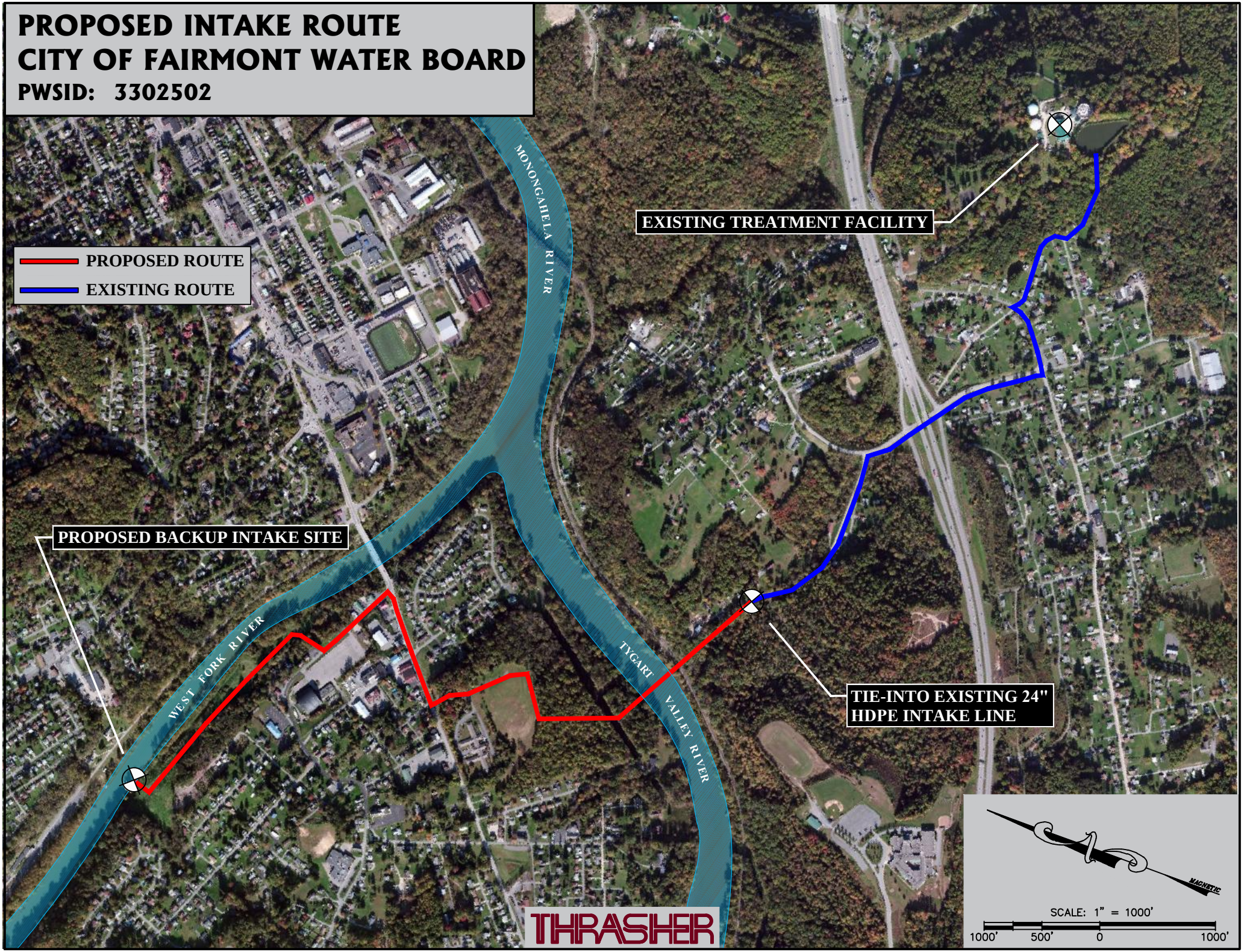
Assumptions
• Water will be taken from the West Fork River.
• Intake pricing includes acreage, pumps, screens, concrete, raw water well, electricity, etc.
• According to the WVDNR, the West Fork River is a mussel stream and will require a survey to be completed during permitting. Permits required would include WV DEP, WV DNR, ACOE, WV SHPO, US FWS, WV
• DOH and County Floodplain.
Additional fees are predicted to be 25% of overall cost.
The fees include legal, engineering and accounting needs.

Additional Environmental Costs		
Mussel Survey	Yes	$ 13,000.00
Permits	Yes	$ 7,500.00
		$ 20,500.00

Totals	
Intake	$ 6,513,100.00
HDD Bore	$ 2,491,500.00
Piping	$ 2,290,200.00
Permitting	$ 20,500.00
Additional Fees	$ 2,828,825.00
Total Cost	**$ 14,144,125.00**

The piping route is included on the following page.

PROPOSED INTAKE ROUTE
CITY OF FAIRMONT WATER BOARD
PWSID: 3302502



INTERCONNECTION COST ESTIMATE

Pricing Parameters
If the GPM needed is Greater than or Equal to 2,000 GPM (24" Pipe)
If the GPM needed is Greater than or Equal to 1,000 GPM (12" Pipe)
If the GPM needed is between 700 GPM to 999 GPM (8" Pipe)

Utility Information		
Existing Capacity	5,921	GPM
Footage Needed	123,000	LF

Price for First 1,000 LF

Item	Unit	$/Unit	Gate Valve (2)	Meter	Cost Per Foot
24" Pipe	LF	$ 300.00	$ 40,000.00	$ 30,000.00	$ 370.00
12" Pipe	LF	$ 60.00	$ 4,400.00	$ 2,450.00	$ 66.85
8" Pipe	LF	$ 37.00	$ 2,530.00	$ 2,450.00	$ 41.98

Additional Costs	
Permitting	$ 7,500.00

Additional Footage after 1,000 LF

Item	Unit	$/Unit	Gate Valve (1)	Cost Per Foot
24" Pipe	LF	$ 300.00	$ 20,000.00	$ 320.00
12" Pipe	LF	$ 60.00	$ 2,200.00	$ 62.20
8" Pipe	LF	$ 37.00	$ 1,265.00	$ 38.27

Booster Station Cost

GPM	$/Gal	Total Cost
1,000+	$ 949.00	$ 949,000.00
400+	$ 950.00	$ 380,000.00
100+	$ 1,798.00	$ 180,000.00

Total Cost of Interconnection	
First 1,000 LF	$ 370,000.00
Additional Footage	$ 39,040,000.00
Permiting	$ 7,500.00
Booster Station	$ 949,000.00
Additional Fees	$ 10,091,625.00
Total	**$ 50,458,125.00**

Assumptions

One gate valve per 1,000 feet of additional water line.
Non-rocky conditions.
Additional Fees predicted to be 25% of overall cost. These include legal, engineering and accounting requirements.
Permits would include WVDEP, WVDNR, ACOE, WVSHPO, USFW, WVDOH and County Floodplain.
Costs for each item include materials and labor.

The piping route is included on the following page.

RAW WATER RESERVOIR CONCEPT #1 COST ESTIMATE

DESCRIPTION	QUANTITY		UNIT PRICE		TOTAL PRICE
Mobilization/Demobilization	1	LS	$25,000.00	/LS	$25,000.00
Video Taping of Project Area	1	LS	$2,500.00	/LS	$2,500.00
Sediment and Erosion Control	1	LS	$25,000.00	/LS	$25,000.00
Demolition and Removal of Existing Storage Tanl	1	LS	$20,000.00	/LS	$20,000.00
Clearing and Grubbing	4	AC	$2,500.00	/AC	$10,000.00
Excavation	200,000	CY	$7.00	/CY	$1,400,000.00
HDPE Liner	135,000	SF	$3.00	/SF	$405,000.00
Filter Fabric	135,000	SF	$1.50	/SF	$202,500.00
24" HDPE Intake Line	750	LF	$300.00	/LF	$225,000.00
Reclamation of Disturbed Area	3.0	AC	$2,500.00	/AC	$7,500.00
Construction Sub-Total					$2,322,500.00
Construction Contingency @ 10 %					$232,250.00
Construction Total					$2,554,750.00
Bonds/Permits					$35,000.00
Additional Fees					$580,625.00
Total Cost					**$3,170,375.00**

These values are based on preliminary evaluation and are not design cost estimates. Actual construction cost will vary. Additional fees predicted to be 25% of overall construction cost. The fees include legal, engineering, and accounting requirements.

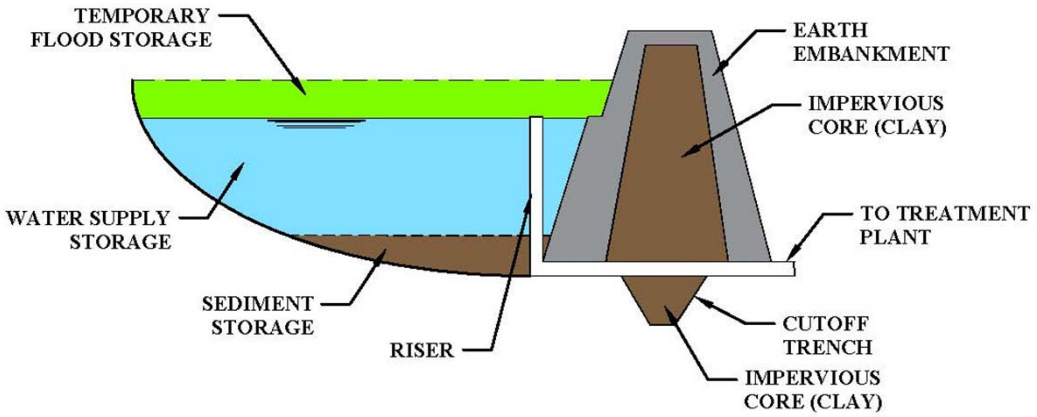


ILLUSTRATION OF WATER SUPPLY EMBANKMENT

OPTION #1

RESERVOIR STORAGE VOLUME

ELEVATION (FT)	DEPTH (FT)	CONTOUR AREA (SF)	INCREMENTAL VOLUME (CF)	CUMULATIVE VOLUME (CF)	CUMULATIVE VOLUME (GALLON)	CUMULATIVE VOLUME (AC-FT)
1,299.00	19.0	117,520.2	116,125.7	1,754,953	13,127,957	40.3
1,298.00	18.0	114,731.1	113,350.2	1,638,827	12,259,276	37.6
1,297.00	17.0	111,969.2	110,601.8	1,525,477	11,411,358	35.0
1,296.00	16.0	109,234.5	107,880.7	1,414,875	10,583,999	32.5
1,295.00	15.0	106,526.9	105,186.7	1,306,994	9,776,995	30.0
1,294.00	14.0	103,846.5	102,519.9	1,201,808	8,990,144	27.6
1,293.00	13.0	101,193.3	99,880.2	1,099,288	8,223,242	25.2
1,292.00	12.0	98,567.2	97,267.7	999,407	7,476,086	22.9
1,291.00	11.0	95,968.3	94,682.4	902,140	6,748,473	20.7
1,290.00	10.0	93,396.6	92,124.3	807,457	6,040,199	18.5
1,289.00	9.0	90,852.0	89,593.3	715,333	5,351,062	16.4
1,288.00	8.0	88,334.7	87,089.5	625,740	4,680,857	14.4
1,287.00	7.0	85,844.4	84,612.9	538,650	4,029,382	12.4
1,286.00	6.0	83,381.4	82,163.5	454,037	3,396,434	10.4
1,285.00	5.0	80,945.5	79,741.2	371,874	2,781,808	8.5
1,284.00	4.0	78,536.8	76,940.0	292,133	2,185,303	6.7
1,283.00	3.0	75,343.1	74,115.7	215,193	1,609,752	4.9
1,282.00	2.0	72,888.3	71,702.9	141,077	1,055,328	3.2
1,281.00	1.0	70,517.4	69,373.9	69,374	518,953	1.6
1,280.00	0.0	68,230.4	0.0	0	0	0.0
TOTAL CAPACITY				1,754,953	13,127,957	40.3
TOTAL CAPACITY WITH 2-FT FREEBOARD				1,525,477	**11,411,358**	35.0

** Volumes are computed using the Average End-Area Method.*

EARTHWORK SUMMARY

OVERALL SITE

Disturbance area	**4.0 Ac.**
Cut Vol.	**200,000 Cu. Yd.**
Fill Vol.	**2,300 Cu. Yd.**
Net Vol.	**197,700 Cu. Yd. (Cut)**

EXISTING WATER TREATMENT FACILITY

EXISTING RESERVOIR TOP EL.= 1316' BTM EL. UNKNOWN

EXISTING WATER TANK

PROPOSED RESERVOIR

ROCK WALL

PAVILLION

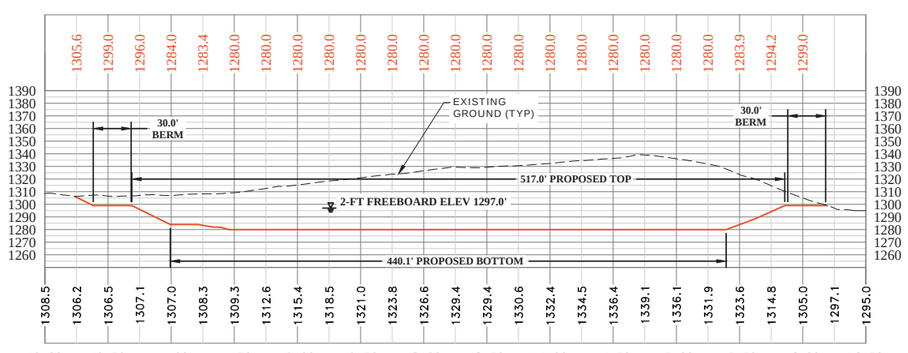
RESTROOM

SHED

EXISTING PAVED ROAD

10+00 11+00 12+00 13+00 14+00 15+00 16+00 16+50

RESERVOIR PROFILE



60' ft.
VERT. 0
0 60' ft.
HOR.

PHONE (304) 624-4108
THRASHER
(FAX) (304) 624-7831
CIVIL ENVIRONMENTAL CONSULTING FIELD SERVICES
600 WHITE OAKS BOULEVARD - BRIDGEPORT, WV 26330

60' 0 60' 120'

RAW WATER RESERVOIR CONCEPT #2 COST ESTIMATE

DESCRIPTION	QUANTITY		UNIT PRICE		TOTAL PRICE
Mobilization/Demobilization	1	LS	$25,000.00	/LS	$25,000.00
Video Taping of Project Area	1	LS	$2,500.00	/LS	$2,500.00
Sediment and Erosion Control	1	LS	$25,000.00	/LS	$25,000.00
Demolition and Removal of Existing Storage Tanl	1	LS	$20,000.00	/LS	$20,000.00
Clearing and Grubbing	2.4	AC	$2,500.00	/AC	$6,000.00
Excavation	200,000	CY	$7.00	/CY	$1,400,000.00
HDPE Liner	75,000	SF	$3.00	/SF	$225,000.00
Filter Fabric	75,000	SF	$1.50	/SF	$112,500.00
24" HDPE Intake Line	750	LF	$300.00	/LF	$225,000.00
Reclamation of Disturbed Area	2.0	AC	$2,500.00	/AC	$5,000.00
Construction Sub-Total					$2,046,000.00
Construction Contingency @ 10 %					$204,600.00
Construction Total					$2,250,600.00
Bonds/Permits					$35,000.00
Additional Fees					$511,500.00
Total Cost					**$2,797,100.00**

These values are based on preliminary evaluation and are not design cost estimates. Actual construction cost will vary. Additional fees predicted to be 25% of overall construction cost. The fees include legal, engineering, and accounting requirements.

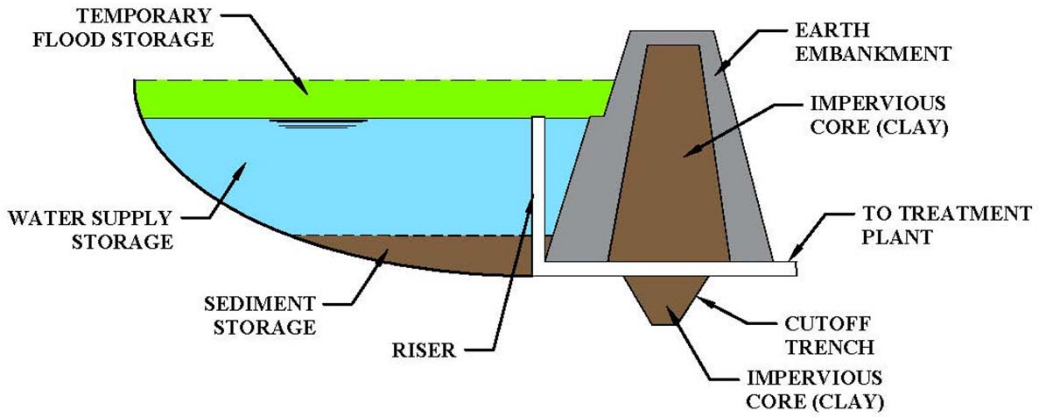


ILLUSTRATION OF WATER SUPPLY EMBANKMENT

OPTION #2

RESERVOIR STORAGE VOLUME

ELEVATION (FT)	DEPTH (FT)	CONTOUR AREA (SF)	INCREMENTAL VOLUME (CF)	CUMULATIVE VOLUME (CF)	CUMULATIVE VOLUME (GALLON)	CUMULATIVE VOLUME (AC-FT)
1,316.00	16.0	62,599.9	61,639.2	771,723	5,772,887	17.7
1,315.00	15.0	60,678.5	59,730.8	710,084	5,311,794	16.3
1,314.00	14.0	58,783.1	57,848.3	650,353	4,864,976	14.9
1,313.00	13.0	56,913.5	55,991.7	592,504	4,432,241	13.6
1,312.00	12.0	55,069.9	54,161.0	536,513	4,013,394	12.3
1,311.00	11.0	53,252.1	52,356.2	482,352	3,608,241	11.1
1,310.00	10.0	51,460.2	50,577.2	429,996	3,216,590	9.9
1,309.00	9.0	49,694.2	48,824.2	379,418	2,838,246	8.7
1,308.00	8.0	47,954.1	47,097.0	330,594	2,473,016	7.6
1,307.00	7.0	46,239.9	45,395.7	283,497	2,120,706	6.5
1,306.00	6.0	44,551.5	43,720.4	238,102	1,781,123	5.5
1,305.00	5.0	42,889.2	42,071.0	194,381	1,454,072	4.5
1,304.00	4.0	41,252.8	40,447.6	152,310	1,139,359	3.5
1,303.00	3.0	39,642.4	38,850.2	111,863	836,790	2.6
1,302.00	2.0	38,058.1	37,278.9	73,012	546,170	1.7
1,301.00	1.0	36,499.7	35,733.5	35,733	267,305	0.8
1,300.00	0.0	34,967.3	0.0	0	0	0.0
TOTAL CAPACITY				771,723	5,772,887	17.7
TOTAL CAPACITY WITH 2-FT FREEBOARD				650,353	**4,864,976**	14.9

** Volumes are computed using the Average End-Area Method.*

EARTHWORK SUMMARY

OVERALL SITE

Disturbance area	**2.4 Ac.**
Cut Vol.	**74,500 Cu. Yd.**
Fill Vol.	**900 Cu. Yd.**
Net Vol.	**73,600 Cu. Yd. (Cut)**

EXISTING WATER TREATMENT FACILITY

EXISTING RESERVOIR TOP EL.= 1316' BTM EL. UNKNOWN

EXISTING WATER TANK

PROPOSED RESERVOIR

10+00 11+00 12+00 13+00 14+00 14+50

SHED

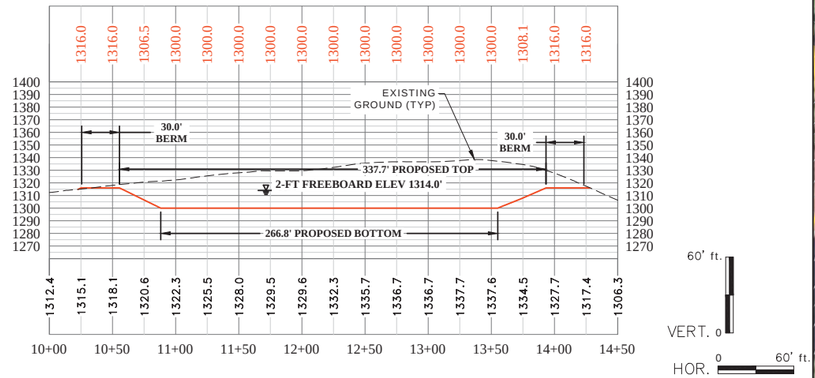
ROCK WALL

PAVILLION

RESTROOM

EXISTING PAVED ROAD

RESERVOIR PROFILE



PHONE (304) 624-4108

THRASHER

(FAX) (304) 624-7831

CIVIL ENVIRONMENTAL CONSULTING FIELD SERVICES

600 WHITE OAKS BOULEVARD - BRIDGEPORT, WV 26330

NORTH

60' 0 60' 120'

APPENDIX E. SUPPORTING DOCUMENTATION

Meeting Notes

City of Fairmont

March 2, 2016

Attendees: See sign in sheet.

Mindy provided an overview of the source water protection plan requirements and explained Tetra Tech's role to compile and revise the source water protection plan components from the original plan prepared by Tetra Tech in 2011 and the contingency plan by Thrasher. She also explained that she will assist with the requirement to engage and inform local stakeholders, including those attending the meeting and later the public during a public presentation. Lastly, she explained the purpose of the meeting was to review the existing draft plan to obtain answer to some questions and verify the existing information.

During a review of the draft document, the following areas were discussed specifically.

a. Delineations (ZCC, ZPC, secondary protection area, and watershed), Protection Team, Priority PSSCs, Management Strategies, Communication Plan

b. Completing/Clarifying Information

   i. System information: There are 10 resale customers. Serve around 50,000 people in 5 counties directly and indirection.

   ii. Protection team participants, titles, telephone numbers, and emails for participants (Table 6) – Need to switch out Jim with Eddie.

   iii. Provide overview of PSSCs (see next page). Had a discussion about risks of the PSSCs. Agreed that understanding more about the risk of specific sites and how to score those is important. Luckily the watershed—at least near the intake does not have as much industry/commercial businesses to worry about in relationship to Marion County as a whole.

   iv. Are all concerns addressed? (Table 8)

   v. Are management strategies appropriate to commit effort? (Table 9)

   vi. Education and outreach strategies appropriate to commit effort? (Table 10)

   vii. Discussed the communication plan and team members (Appendix C), including the 30 minute requirement. Fairmont uses Facebook, twitter, and their website to distribute information to the public, along with traditional means such as radio and television.

   See communication with emergency responders as an important thing to make sure that they are notified in case of a spill in a timely manner. There was a discussion about sharing the mapping and developing a standard procedure to contact the water system when A + B+ C occurs.

   viii. Discussed the contingency plan and feasibility study. Thrasher is going to make revisions to the feasibility analysis to enlarge the proposed raw water reservoir to supply water to better prepare for maxiumum production. Thrasher will get a final copy to Tetra Tech to include in the plan before the plan is finalized and submitted.

Plans were made for Mindy to present to the public on June 23, 2016 at the town council meeting.

PSSC Layer	In ZCC	Around ZCC	In ZPC	Around ZPC	In Watershed	Total
Above Ground Storage Tanks	7	29	65	60	3388	**3549**
Coal Imp Refuse	2				14	**16**
LCAP Sites					1	**1**
LCAP Structures					3	**3**
LCAP Tanks					1	**1**
LCAP Wells					3	**3**
LUST_Sites		7	2	3	41	**53**
Mining Outlets*	41	2	4	24	1245	**1316**
NPDES	38	25	67	47	2099	**2276**
Oil and Gas Wells	25	54	116	257	7239	**7691**
SPREC				2	136	**138**
Superfund RCRA	16	68	60	37	734	**915**
SWAP PSSC/Locally Identified	21	27	24	3	462	**537**
Volunteer Remediation					5	**5**
Totals	**150**	**212**	**338**	**433**	**15371**	**16504**

List of Regulated Databases

In addition to PSSC that have been identified by the WVBPH and local efforts, water systems should consider data available from regulatory agencies, such as the US Environmental Protection Agency (USEPA) and the WV Department of Environmental Protection (WVDEP). The follow presents examples of regulatory program databases that should be considered.

USEPA

CERCLIS:

The Superfund program was created by the Comprehensive Environmental Response, Compensation, and Liability Act, amended by the Superfund Amendments and Reauthorization Act. The acts established authority for the government to respond to the release/threat of release of hazardous wastes, including cleanup and enforcement actions. Long-term cleanups at National Priority List sites last more than a year while short term /emergency cleanups are usually completed in less than a year. CERCLIS is a database used by the USEPA to track activities conducted under its Superfund program. CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA. Sites are investigated because of a potential for releasing hazardous substances into the environment are added to the CERCLIS inventory. USEPA learns of these sites through notification by the owner, citizen complaints, state and local government identification, and investigations by USEPA programs other than Superfund. Specific information is tracked for each individual site.

NPDES:

The National Pollutant Discharge Elimination System (NPDES) database identifies facilities permitted for the operation of point source discharges to surface waters in accordance with the requirements of Section 402 of the Federal Water Pollution Control Act. Point sources are discrete conveyances such as pipes or man-made ditches. Industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters. The NPDES permit program controls water pollution by regulating point sources that discharge pollutants into public waters.

RCRA:

This database has records for all hazardous waste, generators, and transporters as defined by the Resource Conservation Recovery Act (RCRA). Hazardous waste as defined by RCRA is waste material that exhibits ignitability, corrosivity, reactivity, or toxicity. Hazardous waste comes in many shapes and forms. Chemical, metal, and furniture manufacturing are some examples of processes that create hazardous waste. RCRA tightly regulates all hazardous waste from "cradle to grave" (i.e., from manufacture to disposal).

TRI:

The Toxics Release Inventory (TRI) is a publicly available USEPA database that contains information on toxic chemical releases and other waste management activities reported annually by certain covered industry groups as well as federal facilities. This inventory was established under the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) and expanded by the Pollution Prevention Act of 1990.

WVDEP

Abandoned Mine Sites:

Abandoned mine features compiled by the Office of Abandoned Mine Lands and Reclamation (AMLR) of the WVDEP. The AMLR eliminates damage that occurred from mining operations prior to August 3, 1977 and is funded by the AML fund. It corrects hazardous conditions and reclaims abandoned and forfeited mine sites. Typical AML features include high walls, portals, refuse piles, and mining structures such as tipples.

AST:

Above Ground Storage Tanks are regulated by the WVDEP and are subject to specific standards. Any facility using an AST should contact the WVDEP Water and Waste Management office for current requirements and further advice at 304-926-0495 or http://www.dep.wv.gov/WWE/abovegroundstoragetanks/Pages/default.aspx .

Coal Dams:

Point and polygonal mining related impoundments regulated by the WVDEP Division of Mining and Reclamation (DMR).

LUST:

The WVDEP became the lead agency for administering the Leaking Underground Storage Tank (LUST) Program with the USEPA's authorization in September 1997. Since then, the WVDEP has overseen the cleanup of released regulated substances, primarily petroleum products. Such releases can originate from overfilling, spilling, or leaking tanks and piping. To report a release from an underground storage tank system, contact the Office of Environmental Remediation at 304-238-1220, ext. 3506. After hours releases should be reported to the statewide emergency spill line at 800-642-3074.

Solid Waste Facilities:

Municipal and non-municipal waste landfills and waste transfers stations are regulated by the WVDEP Division of Waste Management.

Oil and Gas Wells:

The Office of Oil and Gas maintains records on active and inactive oil and gas wells. It also manages the Abandoned Well Plugging and Reclamation Program.

UIC:

The Underground Injection Control (UIC) program is designed to ensure that fluids injected underground will not endanger drinking water sources. The Division of Water and Waste Management regulates Class 5 wells. These wells include agriculture drainage wells, improved sinkholes, industrial disposal wells, storm water wells and septic systems that have the capacity to serve 20 or more people. The following state codes address UIC regulations; 47CSR9, 47CSR13 and 47CSR55. The Division of Mining and Reclamation oversees all mining UIC permits.

UST:

The purpose of the Underground Storage Tank (UST) Section is to regulate underground storage tanks that contain petroleum or hazardous substances to determine compliance with state rules and federal regulations. West Virginia has had full program approval from USEPA since February 1988.

TETRA TECH

March 2, 2016

Mr. David Sago
Utility Manager City of Fairmont
PO Box 1428
Fairmont, WV 26555-1428

RE: Confidentiality of Potential Sources of Significant Contamination (PSSC) Data

Dear Mr. Sago:

Title 64 Legislative Rules Series 3 (64CSR3) requires that public water systems maintain their PSSC data in a confidential manner. This rule and others that regulate data, such as those related to above ground storage tanks, provide for civil penalties if anyone releases data to the public.

While the general public is required to be involved in all phases of the source water protection plan development, detailed maps displaying locations of PSSCs in the ZCC should not be displayed in any public meeting, nor should a listing of specific contaminants or quantities of contaminants be made publicly available. Exact locations, characteristics and approximate quantities of contaminants within the water system's ZCC shall be made known to one or more designees of the public water utility and maintained in a confidential manner. In the event of a chemical spill, release, or related emergency, information pertaining to the event shall be immediately disseminated to emergency responders.

The City of Fairmont may designate members of their protection team to allow them access to confidential information. In order for Tetra Tech to present these data in a protection team meeting, we ask that the protection team members sign the attached confidentiality statement acknowledging the requirement for data to be kept confidential. Note: The City of Fairmont is not required to designate the protection team members. In this case, Tetra Tech will provide only general information about PSSCs and will not provide mapping during the meetings.

The rules or codes regulating the PSSC data and release of information can be found at the following websites:
http://apps.sos.wv.gov/adlaw/csr/ruleview.aspx?document=9553
http://www.dep.wv.gov/WWE/abovegroundstoragetanks/Documents/SB423.pdf

Please do not hesitate to call or write with concerns. You may reach me direct by writing or calling: mindy.ramsey@tetratech.com or 304-414-0054 x. 100.

Sincerely,

Mindy S. Ramsey
Attachment

Tetra Tech, Inc.
803 Quarrier Street, Suite 400, Charleston, WV 25301
Tel 304-414-0054 Fax 304-720-2334 tetratech.com

Confidentiality Statement

I have reviewed and understand the requirements to maintain PSSC data in a confidential manner (64CSR3). While I may discuss PSSCs in general terms, I understand that I am not permitted to release exact locations, characteristics or quantities of contaminants to the general public.

The City of Fairmont Designees:

Name	Signature	Date
Chris McIntire		3-2-16
Dennis Knolls		3/2/16
Lloyd R White		3/2/16
John Carson		3-2-16
Brian K Parker		3-2-16
Chip West		3-2-16
BILL FOLEY		3-2-16
KENT E ROLLINS		3-2-16
Ed Simmons		3/2/16
Jamie Moore		3/2/16
ERIC SHERRARD		3-2-2016
Dan Ferrell		3/2/2016
DAVID C. SAGO		3/2/2016

TETRA TECH

Source Water Protection Team Meeting - Sign in

Utility Fairmont

Date 3/2/16

NAME	EMAIL	PHONE
BILL FOLEY	bfoley@fairmontwv.gov	[redacted]
Chip West	CWest@fairmontWV.gov	
Brian Packer	BPacker@FairmontWV.gov	
John Carson	jcarson@fairmont wv.gov	
Lloyd R White	lloyd.r.white@WV.gov	
DENNIS KNOTTS	dknotts@marioncountyWV.com	
Chris McIntire	cmcIntire@marioncountywv.com	
DAN FERRELL	DFerrell@Thrashereng.com	
ERIC SHERRARD	esherrard@thrashereng.com	
Jamie Moore	Jamie.W.Moore@WV.GOV	30
Ed Simmons	esimmons@fairmontwv.gov	30
KENT ROLLINS	krollins@regionV1.com	
David C. STGO	dstgo@fairmont WV.gov	

Tetra Tech, Inc.
803 Quarrier Street, Suite 400, Charleston, WV 25301
Tel 304-414-0054 Fax 304-720-2334 tetratech.com

Example Letter to Business for SURFACE WATER

Month/Day/Year

Local Business Owner

Address

City, West Virginia Zip Code

Dear Local Business Owner,

This letter is to make you aware that you own or regulate properties and/or resources within or near the Source Water Protection Area for our community's drinking water. This protection area was developed for the [PUBLIC UTILITY] by the West Virginia Department of Health and Human Resources and provided in a source water assessment report and protection plan.

Our drinking water is supplied from a surface water source. Chemicals used in industrial processes, highway maintenance, agricultural and municipal land uses can contaminate surface water. Water used in these processes and draining from sites can carry contaminants to surface water. These substances can enter the surface water through improper management or accidental incidents. The [PUBLIC UTILITY] water system can be protected from any contamination that enters the surface water if alerted to an incident immediately. Once alerted, the operators can shut down the intake. If not shut down, a contaminant could be drawn into the water system, possibly endangering public health and resulting in a costly cleanup.

[PUBLIC UTILITY] is asking all businesses, landowners, utilities, and agencies located, owning, or regulating properties within the protection area to follow all regulations as required by state and federal laws, report any spills to appropriate officials, and implement best management practices within operations to prevent the improper management of any materials that could contaminate the surface water resources. Ideally facilities will formally include notification to the [PUBLIC UTILITY] in their own Emergency Response Plan.

In addition, [PUBLIC UTILITY] is creating a local program to identify "Partners in Source Water Protection." Participation in the program will mean that your facility would make a good faith effort to cooperate with [PUBLIC UTILITY] in a contamination event from your site to identify protocols to detect contamination and support response to clean up the contaminants.

[PUBLIC UTILITY] thanks you for your cooperation and assistance. If you have any questions or would like to review the drinking water source assessment report or protection plan, or if you would be willing to partner with the water system, please contact [PUBLIC UTILITY].

Sincerely,

Example Letter to Resident for Surface Water

Month/Day/Year

Local Resident

Address:

Dear Local Resident,

This letter is to make you aware that your residence is located within or near the [PUBLIC UTILITY] Drinking Water Source Protection Area. This protection area was developed by the West Virginia Department of Health and Human Resources and provided in a drinking water source assessment report and a protection plan.

Our source of drinking water is supplied by surface water that draining from the watershed in which you reside. Liquid substances such as automotive products, fuel oil, cleaning fluids, pharmaceutical, pesticides, fertilizers, and sediments are common water contaminants. These substances can enter the water through improper disposal methods. Improper disposal methods include pouring chemicals on the ground, down a sink or toilet connected to a septic system, or down storm drains. Any contamination that enters the water resources will force the [PUBLIC UTILITY] to implement additional costly measures in order to assure the water supplied to local customers is safe to drink.

[PUBLIC UTILITY] is asking all residents living within the protection area to report any spills to appropriate officials and prevent the improper disposal of any liquids that could contaminate the water resources. In addition, residents should have septic systems inspected and maintained regularly to protect the source water.

[PUBLIC UTILITY] thanks you for your cooperation and assistance. If you have any questions or would like to review the [PUBLIC UTILITY] source water assessment report or protection plan, please contact [PUBLIC UTILITY].

Sincerely,

City of Fairmont
Source Water Protection Plan

The City of Fairmont has updated its Source Water Protection Plan (SWPP) in cooperation with Tetra Tech and The Thrasher Group. This plan was developed according to guidelines in WV code. The intent of the plan is to identify strategies to minimize potential threats to source water and prepare for spills or other emergencies that could affect water service. The City of Fairmont is a public utility that uses raw water from a surface water source and is required to update their plan every three years. The City of Fairmont is committed to engaging and informing local stakeholders.

Source Water Protection Plan Includes:

- System Information
- Protection Team
- Source Water Protection Area Delineations
- Potential Sources of Significant Contamination
- Plan to Manage Prioritized Concerns
- Education and Outreach Activities
- Contingency Plan Information
- Single Source Feasibility Study
- Communication Plan

City of Fairmont System Information

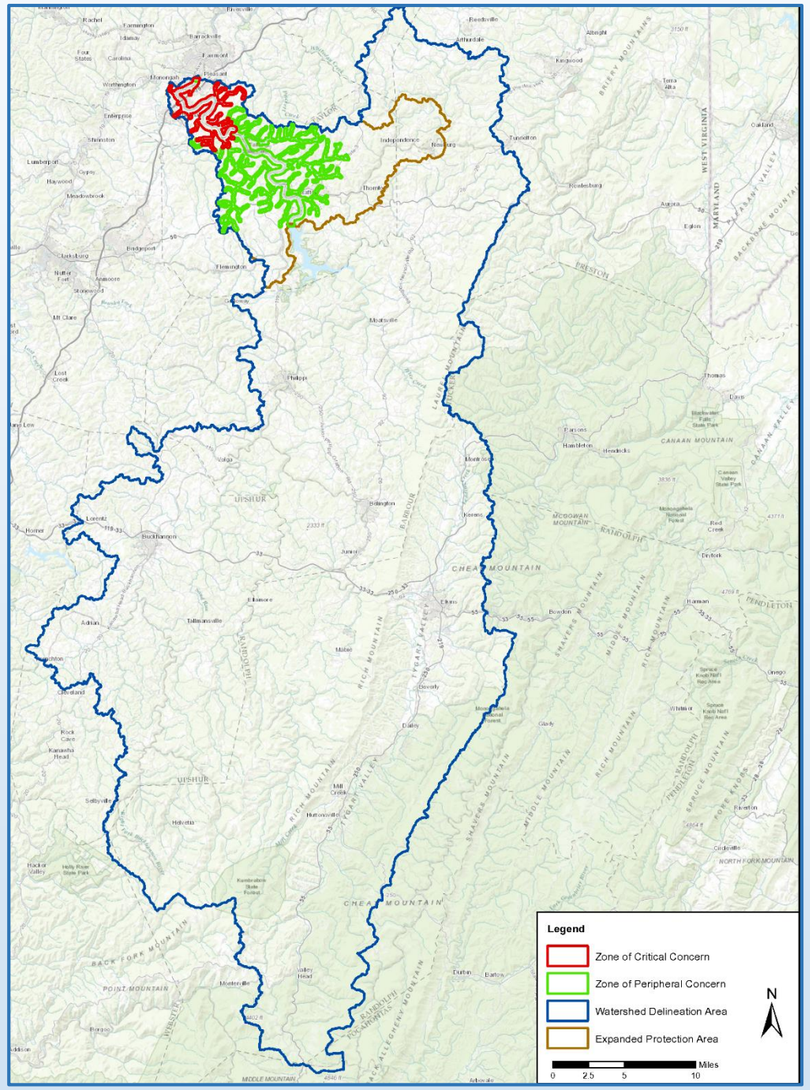
- Directly served approximately 29,000 people in the Fairmont area.
- Sells bulk water to other local water systems, who serve approximately 21,000 additional people.
- Current Treatment Capacity = 15,000,000 gal./day
- Average Production = 6,070,799 gal./day
- Total combined treated water storage capacity is 8,190,000 gal., or roughly 2.74 days of storage at average usage.

Protection Team

Team Member	Title/Role
David Sago	Utilities Manager
Lewis “Chip” West	Chief/Designated Operator
Bill Foley	Assistant Engineer
Lloyd White	County Health Department Representative
Tom Mainella	Affected Citizen/User Representative
Chris McIntire	County LEPC Coordinator
Thomas DeVito	Affected Citizen/User Representative
Hannah Weaver	Local Government
Brian Parker	Backflow Coordinator Operator
Ed Simmons	Fire Chief

Contact Information

Administrative Contact – David Sago
Office Phone: (304) 844-0592
Website: http://www.fairmontwv.gov/



Source Water Protection Areas

Watershed Delineation Area = 1,365 square miles
Zone of Critical Concern (ZCC) = 5,197 acres
Zone of Peripheral Concern (ZPC) = 18,530 acres

Priority Concerns for City of Fairmont

- Spill from vehicle accident on Interstate 79
- Industrial Facilities and ASTs
- Public/Private Sewer
- Woods Boat Shop/Gas Stations/Car Dealers/etc.
- Oil and Gas Wells
- Mining Area – Coal Impoundment
- Fairmont Airport
- Water Treatment Plants

Management Plan, Education/Outreach Strategies

- Coordinate with Emergency Planners and Responders to prepare for incidents
- Communicate with industry, business, and regulators, asking them to partner in protection and raise awareness
- Investigate protection areas regularly to identify threats
- Monitor source water upstream of plant to act as early warning
- Host water fairs and plant tours

Communication Plan

- Notify affected residents within 30 minutes of determining a threat to public health by alerting local TV and radio stations, Fairmont Times newspaper, and posting to social media outlets such as Facebook and Twitter.

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

Do your part to keep contaminants out of our children's source water!

Contaminants

Cleaning Products

Automotive Products

Fuel Oil

Furniture Strippers

Oil-based Paints

Sewage

Lawn and Garden Products

Sediments

Pharmaceuticals

Source Water Links

www.wvdhhr.org/oehs/eed/swap/
www.epa.gov/safewater/index.html
www.epa.gov/watersense/
http://orsanco.org

For Kids

www.epa.gov/safewater/kids/index.html
www.epa.gov/watersense/kids/index.html
www.groundwater.org/kids/

Contacts

WV Department of Health and Human Resources
Source Water Assessment and Protection Program
350 Capitol Street, Room 313
Charleston, WV 25301-3713
phone: (304) 558-2981
fax: (304) 558-4322
e-mail: EEDSourceWaterProtection@wv.gov

City of Fairmont
200 Jackson Street
Fairmont, WV 26554
Phone: 304-366-1461

Do Your Part

Protect Your Source Water

Protect Your Health

TETRA TECH

Prepared by Tetra Tech
In cooperation with the WVDHHR Source Water Assessment and Protection Program

Drinking water is essential for life. Learn what you can do to protect your drinking water sources.

City of Fairmont treats water from The Tygart Valley River using conventional treatment methods. The primary concerns for the water system are highways and bridges, industrial facilities, and wastewater systems. There are many ways you can help minimize impacts from these and other activities on your source of drinking water.

Making choices to protect and conserve the source of your drinking water will help keep you, your family, and neighbors safe and healthy now and in the future.

Do Your Part to Protect Source Water

- ✓ Recycle used oil and other automotive products at a service center. Don't pour them on the ground or down storm drains. Storm drains can lead directly to your source water.

Fix leaks from your automobile and clean up spills.

Apply fertilizers and pesticides as directed. Consider natural alternatives to chemicals.

Don't flush pharmaceuticals. Dispose by mixing with coffee grounds or kitty litter, sealing in a container, and placing in the trash. Organize a collection day with a pharmacy and local police department.

Take unwanted household chemical waste, such as cleaners, oils, and paints to proper waste collection sites. Don't dump down your sink, toilet, or storm drains. Consider organizing a collection day in your community.

Check for leaks at heating fuel tanks and install pads to catch accidental leaks or spills.

Report unused water wells to your utility or WVDHHR.

Inspect your septic system regularly and pump every 5-10 years.

Do Your Part to Conserve Source Water

- ✓ Turn off the water when you brush your teeth and take shorter showers.

Wash full loads of clothes and dishes.

Don't use your toilet to flush trash.

- ✓ Fix leaking faucets, toilets, and lines. Consider installing toilets, faucets, and appliances designed to save water.

Water your lawn and garden in the morning. Consider installing a rain barrel at your downspouts to collect rain to water your lawn and garden, instead of using treated water.

Use native plants in landscape that don't need extra watering. Use mulch to hold moisture.

Don't let your garden hose run when washing your car.

Don't panic if you are asked to conserve during a drought. Your utility will respond to water shortages based on your normal water use. Running extra water in your home during a drought will make it more difficult to respond to the water shortage.

Conserving water saves on your monthly bill now. Protecting your source water will save on treatment costs later.