

# Source Water Protection Plan

## HARPERS FERRY WATER WORKS

PWSID WV3301912  
JEFFERSON COUNTY



2019 SWPP update amended after a public hearing before the Harpers Ferry Town Council on June 10, 2019

2019 SWPP draft update prepared by Harpers Ferry Water Commission and Water System Manager

Original 2016 SWPP: Harpers Ferry Water Works and Advanced Land and Water, Inc.

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## SOURCE WATER PROGRAM ACRONYMS

AST	Aboveground Storage Tank
BMP	Best Management Practices
ERP	Emergency Response Plan
GWUDI	Ground Water Under the Direct Influence of Surface Water
LEPC	Local Emergency Planning Committee
OEHS/EED	Office of Environmental Health Services/Environmental Engineering Division
PE	Professional Engineer
PSSCs	Potential Source of Significant Contamination
PWSU	Public Water System Utility
RAIN	River Alert Information Network
RPDC	Regional Planning and Development Council
SDWA	Safe Drinking Water Act
SWAP	Source Water Assessment and Protection
SWAR	Source Water Assessment Report
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
WVCA	West Virginia Conservation Agency
WVDEP	West Virginia Department of Environmental Protection
WVDHHR	West Virginia Department of Health and Human Resources
WVDHSEM	Division of Homeland Security and Emergency Management
ZCC	Zone of Critical Concern
ZPC	Zone of Peripheral Concern

## Purpose

The goal of the West Virginia Bureau for Public Health Source Water Assessment and Protection program is to prevent degradation of source waters. The most efficient way to accomplish this goal is to encourage and oversee source water protection at a local level and by engaging local stakeholders and government officials.

The intent of this document is to describe actions the Harpers Ferry Water Works will take to protect its source of drinking water. Implementing measures to prevent contamination of system water sources can be a relatively economical way of protecting drinking water quality.

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

- ❑ Fulfills the West Virginia state requirement for the public water utilities to complete or update their source water protection plan.
- ❑ Provides a means for identification and prioritization of potential threats to sources of drinking water; and the establishment of strategies to minimize the threats.
- ❑ Establishes plans for emergency response to incidents that may come to compromise the water supply sources by contamination or depletion, and includes the manner in which the public, state, and local agencies will be notified of such an occurrence.
- ❑ Evaluates and establishes plans for future expansion and development of water resources, including the need to identify secondary sources of water.
- ❑ Ensures optimal treatment conditions exist to provide the safest and highest quality drinking water to customers at the lowest possible cost.
- ❑ Provides opportunities for funding to improve water system infrastructure, purchase land in the protection area, and for other improvements to either the sources, or their associated Source Water Protection Areas.

## Background: WV Source Water Assessment and Protection Program

**Federal Law** Since 1974, the federal Safe Drinking Water Act has set minimum standards on the construction and operation of public water systems, including Harpers Ferry Water Works, as well as the quality of finished water provided to the public. In 1986, Congress amended the Act. 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. The purpose of the Program is to prevent pollution of source water supplying groundwater sources relied upon by public water systems.

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 Source Water Assessment and Protection programs to protect all public drinking water supplies (both surface water and groundwater sources). As part of this initiative, states must explain how protection areas for each public water system are delineated, how potential contaminant sources are inventoried, and how susceptibility ratings are established.

**West Virginia Action** In 1999, the West Virginia Bureau for Public Health 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, Bureau 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 Harpers Ferry Water Works can be found in **Table 1**.

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 surface water sources or Ground Water Under the Direct Influence of Surface Water sources.

**Local Action** Under the amended and newly added codes, each existing public water utility operating surface water and/or Ground Water sources must update its a Source Water Protection Plan every three years. A new plan is also required when there is a significant change in the Potential Sources of Significant Contamination within the Source Water Protection Area, which includes the Zone of Critical Concern for surface sources.

Public water utilities must include details regarding Potential Sources of Significant Contamination, protection measures, system capacities, contingency plans, and communication plans in their Source Water Protection Plan. The process of approving a Source Water Protection Plan includes a hearing before the town council, where the local health department and public are invited to contribute information and provide comments for consideration. The local health department can ask a public water utility to conduct independent studies of the Source Water Protection Area and specific threats within their Protection Area to gain further insight about the origin of their water for the purpose of developing strategies to better protect these vital resources.

## System Information

Harpers Ferry Water Works 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, or regularly serves 25 or more people throughout the entire year. Information on the population served by this utility is presented in **Table 1** below.

**Table 1. Population Served by Harpers Ferry Water Works**

<b>Administrative office location:</b>	1000 Washington St., Harpers Ferry, WV 25425		
<b>Is the system a public utility, according to the Public Service Commission rule?</b>	Yes		
<b>Date of Most Recent Source Water Assessment Report (SWAR):</b>	2006		
<b>Date of Most Recent Source Water Protection Plan (SWPP):</b>	2019		
<b>Population served directly:</b>	2,122 customers on 814 metered connections		
<b>Bulk Water Purchaser Systems:</b>	<b>System Name</b>	<b>PWSID Number</b>	<b>Population</b>
	None		
<b>Total Population Served by the Utility:</b>	2,122		
<b>Does the utility have multiple source water protection areas?</b>	Yes		
<b>How many Source Water Protection Areas does the utility have?</b>	3; the utility has one Zone of Critical Concern for its primary source, Elks Run, and a second Zone for its backup source, the Potomac River. The utility also has a delineated capture zone for Town Spring, which discharges directly into Elks Run and has some overlap with the existing Elks Run Zone.		

## Water Treatment and Storage

As required, Harpers Ferry Water Works 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 Harpers Ferry Water Works draws water can be found in **Table 3**. Information regarding the utilities' only groundwater source, Town Spring, which discharges directly into Elks Run, is provided in **Table 4**.

**Table 2. Harpers Ferry Water Works Water Treatment Information**

<b>Water Treatment Processes (List All Processes in Order)</b>	Pre-Sedimentation, Coagulation, Flocculation, Sedimentation, Filtration, Disinfection, Fluoridation
<b>Current Treatment Capacity (gal/day)</b>	500,000
<b>Current Average Production (gal/day)</b>	228,000
<b>Maximum Quantity Treated and Produced (gal)</b>	315,000
<b>Minimum Quantity Treated and Produced (gal)</b>	170,000
<b>Average Hours of Operation</b>	11.5 hours/day
<b>Maximum Hours of Operation in One Day</b>	16
<b>Minimum Hours of Operation in One Day</b>	8
<b>Number of Storage Tanks Maintained</b>	3
<b>Total Gallons of Treated Water Storage (gal)</b>	991,000
<b>Total Gallons of Raw Water Storage (gal)</b>	77,000 (in the pre-sedimentation basin)

**Table 3. Harpers Ferry Water Works 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)
Elks Run Intake	TP001	Elks Run	Consists of a small surface impoundment which diverts water into a concrete collection box protected/filtered by two stainless steel screens.	Elks Run	1942	Primary	Active
Potomac River Intake	TP001	Potomac	The intake is located near the base of the Potomac River, approximately 200 feet offshore. An 8-inch transmission line runs out to a 10'x10' collection box.	Potomac River	1985	Backup	Inactive, but tested monthly

**Table 4. Harpers Ferry Water Works Groundwater Sources**

Does the utility blend with groundwater?					Yes, indirectly. The pipeline from the spring to the water treatment plant has not worked for at least four years. Water from the spring now discharges into Elks Run upgradient of the utility's surface water intake, thereby contributing to the water quality of the stream. According to the West Virginia Rural Water Association, flow from the Town Spring is derived from a fracture system north of the spring, which is influenced by an overlying losing stream. The recharge area for the spring approximates 186 acres, and partially overlaps the existing Zone of Critical Concern delineation.				
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)
Harpers Ferry Spring		Town Spring		N/A	N/A	N/A	No	Indirectly primary	Inactive but contributing

## Delineations

For surface water systems, defining a Watershed Delineation Area entails identifying and mapping the drainage basin that potentially supplies water to a point of interest. For surface water sources, this corresponds to a surface water intake. Oftentimes, watershed delineations are based on topographic maps, and are created by tracing and mapping the topographic high points that act as surface water and, presumably, groundwater divides relative to other drainage basins. Surface water sources are susceptible to contamination because they are exposed to the atmosphere and other sources of pollution located at the land surface. Unlike most groundwater sources, they also lack a natural, subsurface protective barrier from contamination, such as soil media that might filter or retain some pollutants. Accidental spills, releases, sudden precipitation events that result in overland runoff, or storm sewer discharges can allow pollutants at the land surface to readily enter surface water bodies and potentially contaminate the source of drinking water at the intake. For regulatory purposes, the Source Water Protection Area for surface water sources is distinguished as the Zone of Critical Concern.

The Watershed Delineation Area includes the entire watershed area upgradient of the intake, to either the political boundary that is the West Virginia state line, or a topographic divide. The Zone of Critical Concern for a public surface water supply is a corridor along streams within the watershed that warrants more detailed scrutiny due to its proximity to the surface water intake and the intake's susceptibility to potential contaminants within that corridor. This Zone is determined using a mathematical model that accounts for stream flows, gradient and topography. The length of this Zone is based on a five-hour time-of-travel of water in the streams (and associated tributaries) to the surface water intake, plus an additional one-quarter mile below the water intake. The width of this Zone 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 Zone of Peripheral Concern for a public surface water 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. This Zone is determined using a mathematical model that accounts for stream flows, gradient and topography. The length of this Zone 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 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.

For groundwater supplies, Bureau for Public Health makes use of two types of Source Water Protection Area delineations: 1) wellhead delineations and 2) conjunctive delineations. Conjunctive delineations are developed for supplies identified as Ground Water Sources Under the Direct Influence of Surface Water. 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 area (five-year time of travel) and an additionally connected area surrounding a surface water body that contributes water to a groundwater source. Conjunctive delineations, therefore, have been created for Ground Water Sources Under the Direct Influence of Surface Water.

Information and maps of the Zone of Critical Concern (which we will refer to as the Source Water Protection Area in this document), for this public water supply were provided to the utility and are attached to this report see **Appendix A Figures**. Other information about the Watershed Delineation Area is shown in **Table 5**.

**Table 5. Watershed Delineation Information**

Source Name	Elks Run	Potomac River
Size of Watershed Delineation Area (Acres)	11,481	4,035,042.
River Watershed Name (8-digit HUC)	Conococheague-Opequon (HUC 02070004)	
Size of Zone of Critical Concern (Acres)	2,573	10,685

<b>Size of Zone of Peripheral Concern (Acres)</b> (Include Zone of Critical Concern area)	2,515 Acres; The Zone of Peripheral Concern is similar in size to the Zone of Critical Concern because the Zone of Critical Concern extends to the headwaters of Elks Run.	26,674 Acres
<b>Method of Delineation for Groundwater Sources</b>	The WHPA for Town Spring, which contributes flow to Elks Run, is based on the recharge area and hydrogeologic studies performed using rhodamine dye. The recharge area is determined by dividing the annual spring discharge (gpm) by the annual recharge rate (in gallons per square mile).	N/A; Surface water source
<b>Area of Wellhead Protection Area (Acres)</b>	186 acres for Town Spring. Note: This delineation has overlap with the Zone of Critical Concern for the proximal tributary to Elks Run.	N/A; Surface water source

## Protection Team

Communities with successful Source Water Protection Plans form a Protection Team to help develop and implement management and protection strategies. A Protection Team provides a broader level of oversight of the source water protection effort and includes individuals familiar with protective strategies. Active team members for Harpers Ferry Water Works include: water supply staff, the Town mayor, representatives from the Harpers Ferry Water Commission, representatives from the West Virginia Department Of Environmental Protection and West Virginia Conservation Agency, and other local government officials, including the director of the planning department. A complete list Protection Team members can be found in **Table 6**.

**Table 6. Protection Team Member and Contact Information**

Name	Representing	Title	Phone Number	Email
Brandon Chuvalas	Harpers Ferry Water Works	Chief Water Operator	304-535-6555	
Christy Huddle	Harpers Ferry Water Commission	Chairperson	304-997-9779	<a href="mailto:huddlec@yahoo.com">huddlec@yahoo.com</a>
Wayne Bishop	Town of Harpers Ferry	Mayor	304-702-3544	
Barbara Humes	Harpers Ferry Water Commission	Council	304-535-2503	
Alana Hartman	WVDEP Watershed Improvement Branch	Environmental Resources Analyst	304-993-6814	<a href="mailto:alana.c.hartman@wv.gov">alana.c.hartman@wv.gov</a>
Kristen Bisom	West Virginia Conservation Agency	Conservation Specialist	304-263-4376	<a href="mailto:kbisom@wvca.us">kbisom@wvca.us</a>
John D Brown	Harpers Ferry Police Department	Chief of Police	304-671-6388	
Monica Whyte	West Virginia Bureau for Public Health	Environmental Resources Specialist	304-725-9453	
Jennifer M. Brockman	Jefferson County Office of Planning and Zoning	County Planner		<a href="mailto:jhartman@jeffersoncountywv.org">jhartman@jeffersoncountywv.org</a>
Steve Allen	Office of Homeland Security	Director		<a href="mailto:sallen@jeffersoncountywv.org">sallen@jeffersoncountywv.org</a>
Ralph Lorenzetti	Jefferson County Commission	Commissioner, Harpers Ferry District		<a href="mailto:rlorenzetti@jeffersoncountywv.org">rlorenzetti@jeffersoncountywv.org</a>
Tanner Haid	West Virginia Rivers Coalition	Eastern Panhandle Field Coordinator	304-886-2665	<a href="mailto:thaid@wvrivers.org">thaid@wvrivers.org</a>

Some government and business agencies were unable to participate in this iteration of the source water protection effort. Their participation should be sought in future iterations of the Source Water Protection Plan, which is updated at least every three years or as significant changes occur within the Source Water Protection Area (i.e., changes to Potential Sources of Significant Contamination or sources of water).

With Harpers Ferry Water Works oversight and approval, its Consultant, Advanced Land and Water, Inc., assembled the Protection Team. Members were given the opportunity to contribute to the Source Water Protection Plan. The Protection Team reviewed the system's existing Source Water Assessment Reports, included as **Appendix E-3** of this report, as well as newly-collected data on Potential Source of Significant Contamination to make informed decisions on potential threats, protective measures, and implementation actions. The Protection Team will continue to be responsible for updating the Source Water Protection Plan in the future and documenting their efforts to engage local stakeholders. The Team will also establish regular meetings

## Potential Sources of Significant Contamination

This SWPP provides a comprehensive list of the Potential Sources of Significant Contamination (PSSCs) contained within the SWPA (specifically the Elks Run ZCC and Town Spring recharge area), based upon information obtained from the WVBPH, working in cooperation with the Department of Environmental Protection (WVDEP) and the 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. This does not necessarily indicate that any release has occurred, presently or historically.

The database information that utilities received of PSSCs located in their 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 SWARs and SWPPs. Typical means of identifying and/or confirming the existence of previously identified PSSCs involves performing a desktop Geographic Information System (GIS) analysis, in which a group performs a digital, desktop "reconnaissance" of potential hazards that can be identified and/or verified using a combination of recent orthophotography and state-provided PSSC database information. Regulated PSSCs are derived from federal and state regulated databases, and may include data from WVDEP, US Environmental Protection Agency, WVDHSEM, and from other state data sources. There are several criteria for which a facility may be named on the WV BPH Regulated Databases (i.e., storage of hazardous materials, stormwater management, etc.). As a result, some facilities may appear as duplicates in the tables presented in Appendix A.

### Confidentiality of PSSCs

A list of the PSSCs contained within the SWPA should be included in this SWPP. However, the exact location, characteristics and approximate quantities of contaminants only were made known to a select designee of the public water utility. This representative has maintained, and will continue to maintain this information in a confidential manner. In the event of a chemical spill, release or other related emergency, information pertaining to such an event will immediately be disseminated to appropriate emergency responders. The designee for Harpers Ferry Water Works is identified in the communication planning section of the SWPP.

PSSC data from some agencies (ex. WVDHSEM, WVDEP, etc.) may be restricted due to the confidential nature of the data. However, geospatial data has been provided to the public water utility's selected designee. On behalf of the system, ALWI contacted the Berkeley County OHSEM office in regards to identifying facilities within the SWPA which are subject to TIER II reporting. The results of this inquiry remained outstanding as of this reporting; Harpers Ferry Water Works will follow up with communications to the Berkeley County OHSEM and the local emergency planning commission (LEPC) in this regard. To obtain specific details regarding contaminants (such as information included in Tier II reports), the water utility will continue to contact local emergency agencies, directly. Maps and lists of the Non-Confidential SWAP and Regulated PSSCs are provided in **Appendix A Figures**.

### Local and Regional PSSCs

For the purposes of this SWPP, local PSSCs are those that are identified by the Harpers Ferry Protection Team, consultants to Harpers Ferry Water Works, or local stakeholders in addition to the PSSCs lists distributed by the

WVBPH and other agencies. Local PSSCs may be identified 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 conduct periodic investigations of 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 SWPA and further into the WSDA, if necessary, to properly identify threats that could impact their drinking water supply source(s). As the utility considers threats in the watershed they may consider collaborating with nearby communities to identify and manage regional PSSCs.

When conducting local and regional PSSC inventories, some sources may be obvious, such as above ground storage tanks, landfills, livestock confinement areas, highway or railroad right of ways, and sewage treatment facilities. Other potential hazards may be more difficult to locate, such as abandoned cesspools, underground tanks, French drains, dry wells, or old dumps and mines.

ALWI completed a desktop GIS survey of the SWPAs to verify the existence of PSSCs previously identified in agency databases and historic documentation. ALWI also reviewed the SWPAs to locate new PSSCs. Information on new or updated PSSCs can be found in **Table 7**.

**Table 7. Locally Identified Potential Sources of Significant Contamination**

PSSC Number	Map Code	Site Name	Site Description	Comments
1	A-6	CONFIDENTIAL	Multiple orchard fields exist within the ZCC, immediately north of Shenandoah Junction and East of Route 16.	Unknown orchard name, plant type, fertilizer practices, and pesticide/herbicide practices. Nutrients, pesticides and herbicides may all potentially enter Elks Branch from runoff.
2	A-5	CONFIDENTIAL	Aerially expansive agricultural lands used to cultivate corn	Located SW of the Duffields MARC Station
3	C-43	CONFIDENTIAL	Lawn Mower and Other Equipment Repair Shop	Potential for minimal VOC and/or SOC Contamination
4	A-5	CONFIDENTIAL	Agricultural lands used to cultivate corn	Located North of the Duffields MARC Station
5	A-5	CONFIDENTIAL	Agricultural land west of Daniel Road	Appears to be hay or wheat based on available 2014 imagery
6	A-5	CONFIDENTIAL	Agricultural land west of Daniel Road	Small agricultural plots and nurseries/greenhouses
7	A-5	CONFIDENTIAL	Agricultural land east of Daniel Road	Appears to be hay or wheat based on available 2014 imagery
8	A-18	CONFIDENTIAL	Livestock kept on south side of site in proximity to Elks Run	While cattle fencing is present, cattle appear to have direct access to Elks Run based on available 2014 imagery
9		CONFIDENTIAL	Heavy industrial	While the site is 8,000 feet from the headwaters of the Elks Branch, there is the potential for air pollutants to settle on the watershed, and the potential for spills from chemicals trucked in to the plant
10			Entire Zone of Critical Concern and Elks Run intake area	NOAA Climate Change modeling predicts an increase in the frequency and severity of storm events in our region, making it more likely the intake near the treatment plant will be flooded. Also, increased stormwater runoff and erosion in the watershed will put more pollutants in the source water, including nutrient, sediment, and bacteria.

## Prioritization of Potential Threats and Management Strategies

The identified PSSCs have been prioritized by potential threat based on water quality concerns, proximity to system water sources, and other local concerns. 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 SWPP, a critical area is defined as an area, identified by local stakeholders, within or outside of the SWPA, that may contain one or more PSSC(s) and/or within which immediate response would be necessary to address the incident and to protect source waters.

The highest priority PSSCs or critical areas affecting primary drinking water source(s) will be addressed first in the management plan. It may not be feasible to develop management strategies for all of the PSSCs within the SWPA, depending on the total number identified. Lower ranked PSSCs will be addressed in the future as time and resources allow. To assess potential threats to source waters, the Harpers Ferry Protection Team and ALWI have considered information regarding each PSSC. PSSCs within the Potomac SWPA have been de-prioritized at this time, so as to give greater focus to those PSSCs associated with primary sources. Notwithstanding their de-prioritization, PSSCs associated with the Potomac Intake are listed in **Appendix A**.

After identifying local concerns, the Harpers Ferry Water Works Protection Team developed and prioritized management strategies to protect the source water from contamination, in cooperation with the WVBPH, local health departments, local emergency responders, LEPCs, and other agencies and organizations. This task was completed at the Harpers Ferry Protection Team Meeting, hosted at the Harpers Ferry Town Hall on March 18, 2016. A list of local representatives involved in the decision making process is provided in **Table 6**. Source management strategies are any actions taken to protect the source water from specific PSSCs, categories of PSSCs (e.g., agricultural, commercial, etc.), and critical areas. It is advisable to focus source management strategies on high-priority PSSCs, with a particular focus on those that are within the utility's jurisdiction. However, the utility can protect against contaminant sources outside of its jurisdiction by working with the officials of the entities within which the sources and/or PSSCs are located.

**Table 8** presents a list of priority PSSCs and critical areas that were selected and ranked by the Harpers Ferry Water Works Protection Team. This list reflects the concerns of this specific utility and local government representatives and may contain PSSCs not previously identified and not within the SWPA. It contains a description of why each critical area or PSSC is considered a threat.

## Implementation Plan for Management Strategies

Source management strategies are any actions taken to protect source waters from specific PSSCs, categories of PSSCs, and critical areas. For example, prohibitions of certain land uses or facilities, design standards, best management practices, operating standards, and reporting requirements are typical source management strategies. Land purchases, conservation easements, and purchase of development rights are also considered source management strategies. As a management strategy, water utilities may also consider notification to and coordination with government agencies during a water supply impairment event. Finally, one strategy all water utilities should implement is periodic surveys of their SWPAs to maintain an active and updated inventory and awareness of potential threats.

Harpers Ferry Water Works reviewed the recommended strategies listed in their previous SWPP, 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.

For 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, determines 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 SWPP. A system of regular updates should be included in every implementation plan.

Proposed commitments and schedules related to both protection strategies and education/outreach strategies may change. The Harpers Ferry Water Works Protection Team has developed an implementation plan for each PSSC

that is listed in the Prioritization of Threats section (**Table 8**). The responsible team member, timeline, and potential cost of each strategy are presented in **Table 9**.

**Table 8. Priority PSSCs or Critical Areas**

PSSC or Critical Area	Priority Number	Reason for Concern
CSX and Norfolk Southern Railroads	1	Railroads present a potential threat to surface water and shallow karst aquifers due to the possibility of spills and train derailments. A CSX Railroad runs through the ZCC along Elk Branch for approximately 5.4 miles and passes the water treatment plant in close proximity. A railway owned and operated by Norfolk Southern also runs through the headwater areas of both Elk Branch and Elks Run. A direct spill into Elk Branch would take less than 5 hours to reach the Water Treatment Plant.
Agricultural Activities	2	As a result of agricultural and pastoral land uses in the area, nutrient levels can become elevated in surrounding surface water bodies and/or the underlying groundwater system. Such activities may also introduce bacteriologicals and sediment to local waterways.
Septic Systems & Public Sewer	3	The status of some older septic systems is unknown and failures and leaks are possible. Unlike other areas, in karst terrain a septic tends to fail downwards and can therefore be virtually undetectable. Where feasible, public sewer expansion is more favorable, but sinkhole monitoring and leak detection are encouraged. BATs and pre-treatment are encouraged for new septic systems that come to be built in the watershed, particularly in the SWPA.
Commercial & Industrial Activities	4	These facilities pose a threat due to the potential for accidental leaks, spills, improper disposal of petroleum products and other wastes, air pollutants that settle in the watershed, or improperly managed stormwater runoff. However, contributions from these facilities are likely minimal relative to the volume of water moving through the watershed. Harpers Ferry does not have the capability to treat for some contaminants that may originate from these sites. Other industrial facilities are located within the watershed, but outside of the ZCC, and are concentrated at the Burr Industrial Park. The Burr Industrial Park overlies the most upgradient portion of the recharge area contributing to the Elks Run Watershed.

**Table 9. Priority PSSC Management Strategies**

<b>PSSC or Critical Area</b>	<b>Management Activity</b>	<b>Responsible Protection Team Member</b>	<b>Status/Schedule</b>	<b>Comments</b>	<b>Estimated Cost</b>
Railroads	<p>Harpers Ferry Water Works and Harpers Ferry Police Department personnel will contact Jefferson County OHSEM and LEPC coordinators to discuss utilizing the training materials provided by CSX railways (i.e., planning guides and in-person/on-site trainings, featuring a safety rail car) across the County. Discussions will help ensure that OHSEM and emergency responders will have access to the CSX Rail Respond program, which provides easy mobile access to critical information about what's traveling on CSX rails. Information regarding these programs is provided in <b>Appendix E-7</b>. Discussions may also focus on performing routine Emergency Response drills for Highway and Railroad spills. Stockpiling spill response equipment in key locations proximal to water utilities will also be discussed.</p> <p>Harpers Ferry Water Works will work with WV DEP or BPH, along with OHSEM, and the railroad companies to discuss safety measures, emergency plans and inspection routine(s).</p>	Brandon Chuvalas (HFWW) and Chief Brown (Harpers Ferry Police Department)	Within 2 years		<p>Staff time involving members from Harpers Ferry Water Works, DOT, OHSEM, other LEPC agencies and BPH and/or WV DEP.</p> <p>Staff time at the LEPC level, and for members of local emergency response stations (e.g., local fire department, police department, etc.).</p>
General Watershed	<p>The utility will contact the Potomac River Basin Drinking Water Source Protection Partnership, which is composed of multiple state agencies and other water systems that use the Potomac River as a primary source, to discuss membership opportunities. The Protection Partnership works together to target key contaminants concerns of point and non-point source origin, and to raise educational awareness via public outreach measures.</p>	Barbara Humes, Harpers Ferry Water Commission Liaison (HFWC)	Ongoing		<p>Staff time for the initial inquiry and any attended meetings, in addition to membership dues.</p>

<b>PSSC or Critical Area</b>	<b>Management Activity</b>	<b>Responsible Protection Team Member</b>	<b>Status/Schedule</b>	<b>Comments</b>	<b>Estimated Cost</b>
Agricultural Activities	Harpers Ferry Water Works and the West Virginia Conservation Agency will work with the County Extension Service, the Soil and Water Conservation District, and/or Natural Resources Conservation Service (NRCS) to encourage agricultural land owners to participate in nutrient management planning, forest conservation, land retirement and management programs (including riparian zone preservation or restoration) within the SWPA. Efforts here will primarily focus on education and outreach measures, though the WVCA also promotes cost-sharing programs to provide cattle fencing, etc.	Barbara Humes, Harpers Ferry Water Commission Liaison (HFWC) and Kristen Bisom (WVCA)	Ongoing	This includes participating in the WV Safe Water Collaborative, coordinated by WV Rivers Coalition to accelerate land conservation and source water protection areas.	Staff time and time/ grant funding from the WVCA.
New Septic Systems	The Harpers Ferry Protection Team is working with the Jefferson County Planning Department (and Health Department) to explore the possibility of requiring Best Available Technologies (BATs) for new septic systems that will be installed within the ZCC delineated by the West Virginia Bureau for Public Health. Discussions will focus on whether or not local ordinances could require the use of BAT's in the ZCC.	Harpers Ferry Protection Team	Ongoing		Staff time pursuing this possibility; otherwise dependent on future agreements.

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status/Schedule	Comments	Estimated Cost
New Subdivisions	<p>The Harpers Ferry Protection Team will work with the Jefferson County Planning Department to discuss the concept of providing education for open-space preservation and open-space conservation subdivision planning. Outside of educational awareness, the Harpers Ferry Protection Team will also inquire as to whether or not local ordinances can be revised to protect or rehabilitate riparian zones impacted by development. Stormwater management requirements will also be reviewed and discussed to determine if better management strategies can be incorporated into subdivision designs through regulations. Should revised ordinances and regulations prove infeasible, the Harpers Ferry Protection Team also plans to discuss an economic incentive program whereby land developers who utilize BMPs to reduce stormwater runoff receive economic credits, whereas those who do not or exceed a percent impervious surface pay a fee that can be used to fund watershed restoration efforts elsewhere in the watershed. These strategies will be discussed with the Jefferson County Commission.</p>	Harpers Ferry Protection Team	Within 2 years		Staff time pursuing this possibility; otherwise dependent on future agreements.
Commercial Facilities	<p>Harpers Ferry Water Works will distribute site-specific Best Management Practice lists, along with advanced hazardous materials containment options, to commercial facilities within the ZCC on an as-needed basis. Consideration may also be given to providing similar information to commercial and industrial business owners outside the ZCC, but within the watershed.</p>	Harpers Ferry Water Works and Christy Huddle, Chairperson, Harpers Ferry Water Commission	On an as-needed basis		Staff time compiling materials and cost of postage.
Previous Plan Status	<p>There were eight management strategies recommended in the existing plan. Two of these strategies have been undertaken. All eight of these are ongoing or continue to be a concern. These are incorporated in this plan update and are provided in Appendix E-3.</p>	Harpers Ferry Water Commission	Varied between ongoing/as needed and five years	Comments regarding implementation of management activities can be found in the previous SWPP, which is included in Appendix E-3.	Staff time, except for sewer expansion, which included engineering and equipment costs.

## Education and Outreach Strategies

The goals of education and outreach strategies are to raise awareness of the need to protect drinking water supplies and build support for implementation strategies. Education and outreach activities will also help ensure that affected citizens and other local stakeholders remain informed and are provided an opportunity to contribute to the development of the SWPP. Harpers Ferry Water Works 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 sources 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
Become a PRBSWPP member	ALWI recommends that Harpers Ferry Water Works become a member of the PRBSWPP (Potomac River Basin Source Water Protection Partnership), which is an interstate program that provides SWP education and outreach opportunities, among various other services oriented towards protecting and improving the quality of water for the Potomac River. While the Potomac River Intake is only a backup source for Harpers Ferry, Elks Run (the primary source for Harpers Ferry) is still within the Potomac River Watershed and it discharges to the Potomac River.	Barbara Humes, (HFWC)	Within 1 year	The HFWC will contact the Potomac River Basin Drinking Water Source Protection Partnership, to discuss membership opportunities.	Staff time and any membership fees
BMP lists	Distribute lists of industry specific BMPs to the owners of (1) Car Repair Shops and (2) Agricultural Lands/ Facilities within the SWPA (Future Farmers, etc.). Provide SWPP education materials. Additional areas outside the ZCC but within the Elks Run Watershed may also be considered.	Harpers Ferry Protection Team	On an as-needed basis		Staff time and fees associated with mailing information
Clean Up Events	Coordinate with local cleanup efforts and publicize projects. Work closely with Watershed Associations in this regard.	Kristen Bisom (WVCA) & Harpers Ferry Water Works	Ongoing		Volunteer and staff time, otherwise, project dependent for cost of materials.

Education and Outreach Strategy	Description of Activity	Responsible Protection Team Member	Status/Schedule	Comments	Estimated Cost
Early Education	Work with area schools to include source water protection information into the curriculum, or present information at assemblies or in classroom events (e.g., environmental science class).	Kristen Bisom (West Virginia Conservation Agency)	Ongoing	The West Virginia Conservation Agency runs a macroinvertebrate analysis program (in the Elks Run Watershed) with local middle school students. WVCA also hosts workshops and improvement projects throughout the watershed.	
Display Information	Include informational materials (i.e., brochures, maps, etc.) in county government offices and other public places (i.e., local fairs). Host non-confidential SWPP online for public review and comment. Work with DOT for protection area sign expansion/coverage.	Barbara Humes (HFWC) and Monica Whyte (WVBPH) and Harpers Ferry Water Works	Ongoing		Staff time associated with getting permission from County entities, staff time and cost associated with printing materials.

## Contingency Plan

The goal of contingency planning is to identify and document how the utility will prepare for and respond to drinking water shortages or emergencies that may occur due to short and long term water interruption, or incidents of contamination resulting from spills or other events. Harpers Ferry Water Works staff examined their capability to protect their intake, treatment, and distribution system from contamination. They also reviewed their ability to use alternative sources and minimize water loss, as well as their ability to operate during power outages. In addition, the utility has reported on the feasibility of establishing an early warning monitoring system and meeting future water demands.

Isolating or diverting possibly contaminated water from a surface water intake for a public water system is an important strategy in the event of an emergency. One commonly used method of diverting contaminated water 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, such as hydrocarbons. 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 from 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 also should have a plan in place to sample raw water to identify the movement of a 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.

Treated water storage capacity also becomes important in the event of such an emergency or contaminant release. Storage capacity can directly determine how well a water system can respond to a contamination event and how long an intake can remain closed or offline. Information regarding the water shortage response capability of Harpers Ferry Water Works is provided in **Table 11**.

## 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/>). Harpers Ferry Water Works has analyzed its ability to effectively respond to emergencies and this information is provided in **Table 11**.

**Table 11. Harpers Ferry Water Works Water Shortage Response Capability**

<b>Can the utility isolate or divert contamination from the intake?</b>	No, the utility does not have the ability to isolate or divert contamination away from the Elks Run intake.
<b>Describe the utility's capability to isolate or divert potential contaminants:</b>	CONFIDENTIAL
<b>Can the utility switch to an alternative water source or intake that can supply full capacity at any time?</b>	Yes, Potomac Intake
<b>Describe in detail the utility's capability to switch to an alternative source:</b>	CONFIDENTIAL
<b>Can the utility close the water intake to prevent contamination from entering the water supply?</b>	Yes, Harpers Ferry Water Works can manually close a valve between the intakes and the wet wells which would prevent contamination from entering the rest of the system.
<b>How long can the intake stay closed?</b>	Indefinitely; the utility has 3-4 days of finished water storage, as well as a backup intake on the Potomac River, the capacity of which significantly surpasses system demands.
<b>Describe the process to close the intake:</b>	CONFIDENTIAL
<b>Describe the treated water storage capacity of the water system:</b>	The utility can hold 991,000 gallons of treated water in its three storage tanks. Tank #1: 241,000 Gallons Tank #2: 250,000 Gallons Tank #3: 500,000 Gallons
<b>Is the utility a member of WVRWA Emergency Response Team?</b>	Yes
<b>Is the utility a member of WV-WARN?</b>	Yes
<b>List any other mutual aid agreements to provide or receive assistance in the event of an emergency:</b>	Harpers Ferry has a verbal agreement to provide and receive assistance to/from the National Park Service in the event that their lands are directly affected.

## 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 12**.

**Table 12. Generator Capacity**

<b>What is the type and capacity of the generator needed to operate during a loss of power?</b>	CONFIDENTIAL			
<b>Can the utility connect to generator at intake/wellhead? If yes, select a scenario that best describes system.</b>	CONFIDENTIAL			
<b>Can the utility connect to generator at treatment facility? If yes, select a scenario that best describes system.</b>	CONFIDENTIAL			
<b>Can the utility connect to a generator in distribution system? If yes, select a scenario that best describes system.</b>	CONFIDENTIAL			
<b>Does the utility have adequate fuel on hand for the generator?</b>	No			
<b>What is your on-hand fuel storage and how long will it last operating at full capacity?</b>	<b>Gallons</b>		<b>Hours</b>	
	CONFIDENTIAL		CONFIDENTIAL	
<b>Provide a list of suppliers that could provide generators and fuel in the event of an emergency:</b>	<b>Supplier</b>		<b>Contact Name</b>	<b>Phone Number</b>
	<b>Generator</b>	Temp-Power Generator Rentals	Associate	703-330-3663
	<b>Generator</b>	Winchester Electric Service, Inc	Associate	540-667-2040
	<b>Fuel</b>	Esi Total Fuel Management	Associate	800-411-3284
	<b>Fuel</b>	United Petroleum	Associate	301-739-9816
<b>Does the utility test the generator(s) periodically?</b>	No, the utility does not currently have generators in place.			
<b>Does the utility routinely maintain the generator?</b>	No, the utility does not currently have generators in place.			
<b>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:</b>	The utility is currently working on conceptual plans to upgrade the facility and provisions for backup power are part of this conceptual plan.			

**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 (future demand). This could mean expanding current sources (e.g., removing water at greater rates than present) or developing new sources in the near future. This can be an expensive and time consuming process, and the water utility should take this into account when determining emergency preparedness. Harpers Ferry Water Works 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 Harpers Ferry Water Works**

<b>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.</b>	Yes, the utility is able to meet water demands with the current production capacity over the next 5 years. Further residential and/or commercial growth is anticipated within Town limits over the next five-year period including a hotel with an average demand of 36,000 gallons/day. On average, the system currently only utilizes 43% of the system capacity.
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**If not, describe the circumstances and plans to increase production capacity:**

N/A; See above

### 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 due to the presence of leaks in the distribution system. To measure and report on this unaccounted for water, a public utility must use the same method used in the Public Service Commission’s (PSC) 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 water used by the 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 SWPP, 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 SWPP. The data in **Table 14** is taken from the most recently submitted Harpers Ferry Water Works PSC Annual Report.

**Table 14. Water Loss Information**

<b>Total Water Pumped (gal)</b>		75,123,000
<b>Total Water Purchased (gal)</b>		0
<b>Total Water Pumped and Purchased (gal)</b>		75,123,000
<b>Water Loss Accounted for Except Main Leaks (gal)</b>	<b>Mains, Plants, Filters, Flushing, etc.</b>	2,558,000
	<b>Fire Department</b>	Failed to report water use
	<b>Back Washing</b>	3,075,000
	<b>Blowing Settling Basins</b>	System does not blow settling basins
<b>Total Water Loss Accounted For Except Main Leaks</b>		5,633,000
<b>Water Sold- Total Gallons (gal)</b>		38,690,000
<b>Unaccounted For Lost Water (gal)</b>		17,550,000
<b>Water lost from main leaks (gal)</b>		13,250,000
<b>Total gallons of Unaccounted for Lost Water and Water Lost from Main Leaks (gal)</b>		30,800,000
<b>Total Percent Unaccounted For Water and Water Lost from Main Leaks (gal)</b>		41%
<b>If total percentage of Unaccounted for Water is greater than 15%, please describe any measures that could be taken to correct this problem:</b>	<p>The Harpers Ferry Water Works has a leak detection program that makes the use of leak detection equipment to monitor and measure the sound of water flow in the pipes. The Fire Department has failed to report its water use and we know nearby Fire Departments are taking hydrant water without permission. The Water Works is initiating a program to determine if hydrants have been opened without permission and is pursuing reporting by the local Fire Department for its use in training and fire suppression.</p> <p>Our aging system requires constant repairs. Some of infrastructure is almost 100 years old. We have initiated a major upgrade to our distribution system and anticipate receiving a loan from the US Dept of Agriculture this year.</p>	

## 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 specific threats to source waters. 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 which conditions are indicative of baseline water quality results and which are indicative of a contamination event. Continuous monitoring provides results for a predetermined list of water quality parameters. The more parameters being monitored, the more sophisticated the monitoring equipment will be. When establishing continuous monitoring systems, a utility considers the logistics of placing and maintaining the equipment, and receiving output data from the equipment.

Alternately, or additionally, a utility may also pull periodic grab samples on a regular basis, or when contaminant incidents occur. The grab samples often are analyzed for specific contaminants, either to help ensure that water quality parameters are within baseline levels, or to assess abnormalities in water quality results that may be spurred by contaminant events. A utility should examine their PSSCs to determine which I contaminants could pose a threat to the water source. If possible, the utility should plan in advance for how those contaminants will be measured and detected. Consideration should be given for where samples will be collected, the preservations and hold times for samples, laboratories available 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 that poses a threat to water quality should incorporate communication with facility owners and operators, with state and local emergency response agencies, with surrounding water utilities, and with the system's customers. Communication plays an important role in knowing how to interpret data and how to respond.

Harpers Ferry Water Works 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 15** and in **Appendix B**.

**Table 15. Early Warning Monitoring System Capabilities**

<b>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?</b>		Yes; notifications are received from the West Virginia Department of Environmental Protection and Local Fire and Police Stations. The Department of Health and Human Resources Bureau for Public Health also sends out emails regarding spills reported throughout the County.	
<b>Are you aware of any facilities, land uses, or critical areas within your protection areas where chemical contaminants could be released or spilled?</b>		Yes, details may be found in <b>Table 8</b> of this report and <b>Appendix A</b> .	
<b>Are you prepared to detect potential contaminants if notified of a spill?</b>		Yes, water chemistry is tested daily through raw water grab samples taken directly from Elk Run. The utility implements monitoring of turbidity, pH, and temperature parameters. Monitoring for VOCs and SOCs are completed through outside Lab. If any parameter is close or above the specified MCL, an investigation into the cause will occur and the appropriate actions will be authorized.	
<b>List laboratories (and contact information) on whom you would rely to analyze water samples in case of a reported spill.</b>	<b>Laboratories</b>		
	<b>Name</b>		<b>Contact</b>
	CONFIDENTIAL		CONFIDENTIAL
<b>Do you have an understanding of baseline or normal conditions for your source water quality that accounts for seasonal fluctuations?</b>		Yes, for pH, turbidity, temperature, alkalinity and hardness.	
<b>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?</b>		Yes; turbidity is continuously monitored and recorded. pH and temperature measurements are recorded every 4 hours. Finally, alkalinity, hardness and fluoride are measured and recorded on a daily basis. The system is also contemplating acquiring equipment to monitor conductivity, dissolved oxygen and dissolved solids.	
<b>Provide or estimate the capital and O&amp;M costs for your current or proposed early warning system or upgraded system.</b>	<b>Capital</b>	CONFIDENTIAL	
	<b>Yearly O &amp; M</b>	CONFIDENTIAL	
<b>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.</b>		No	

### Single Source Feasibility Study

If a public water utility’s water supply plant is served by a single–source intake for a surface water supply source or a GWUDI source, the submitted SWPP 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 from a chemical release or spill event, or other reasons (including drought). These alternatives may include a secondary source, two days of additional raw or treated water storage, 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.

Harpers Ferry Water Works has an alternative surface water intake on the Potomac River. In a contaminant event were to impact the Elks Run intake, the system could rely on the Potomac River intake to meet its full demand. Additionally, the system has at least three days’ worth of finished water storage, which would meet demands for short-term emergencies related to the Elks Run intake. Because the system has an alternative backup source in place, it is not considered a single source system, and a feasibility study matrix is not required

at this time. However, a brief narrative describing alternative emergency preparedness options is provided in Appendix E.

## Communication Plan

Harpers Ferry Water Works also has 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 a spill or contamination event, and provide updated information related to any contamination or impairment of the system's sources or the system's drinking water supply. The initial notification to the public for any such event will occur no later than 30 minutes after the public water system becomes aware of the spill, release, or potential contamination of the public water system. Harpers Ferry Water Works will update the Communication Plan as needed to ensure contact information is up to date.

The water system has procedures in place for various types of significant spills or other emergencies that can reasonably be predicted at the source location or within the SWPA. The chain-of-command, notification procedures and response actions are known by 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; Harpers Ferry Water Works has opted to utilize this procedure. The Communication Plan for Harpers Ferry Water Works is attached as **Appendix C**.

The WVDEP is capable of providing expertise and assistance related to prevention, containment, and clean-up of chemical spills. The WVDEP Emergency Response 24-hour Phone is 1-800-642-3074. The WVDEP 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.

## Emergency Response Short Form

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 SWPP, such as the contingency plan and communication plan, may contain similar information to the utility's Emergency Response Plan (ERP). However, the ERP is confidential and is not included in this SWPP. An Emergency Short Form is included in **Appendix C** to support the Communication Plan by providing quick access to important information about emergency response.

## Conclusion

This report represents a detailed explanation of the required elements of Harpers Ferry Water Work's SWPP. Any additional supporting documentation or other materials that the utility considers relevant to their plan can be found in **Appendix E**.

This SWPP is intended to help prepare Harpers Ferry Water Works to properly handle emergencies that might compromise the quality of the system's source water supply. It is imperative that this SWPP be 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. The communities taking local responsibility for the quality of their source water is the most effective way to prevent contamination and protect the water system against contaminated source water. Community cooperation, sufficient preparation, and accurate monitoring are all critical components of this SWPP, and a multi-faceted approach is the only way to ensure that a system is best protected against source water contamination.

# Appendix A. Figures

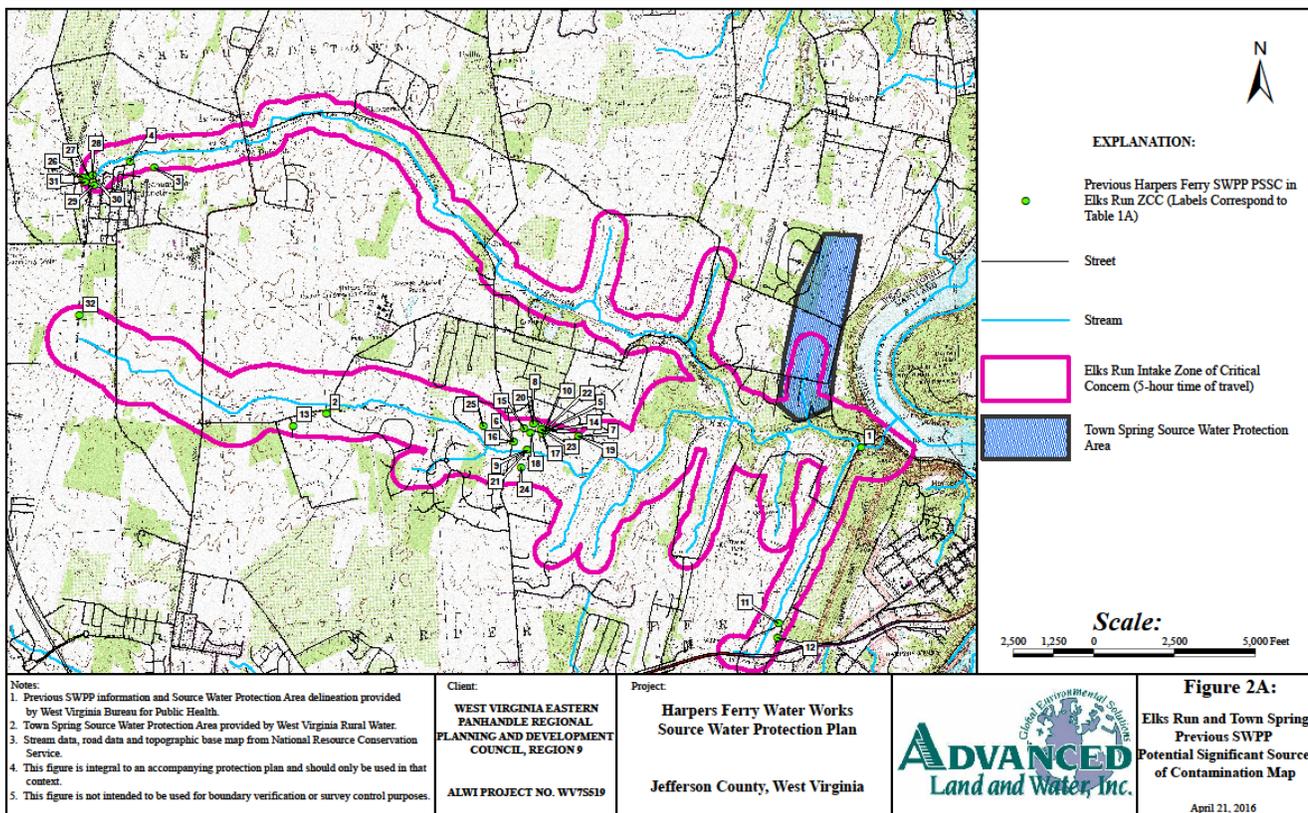
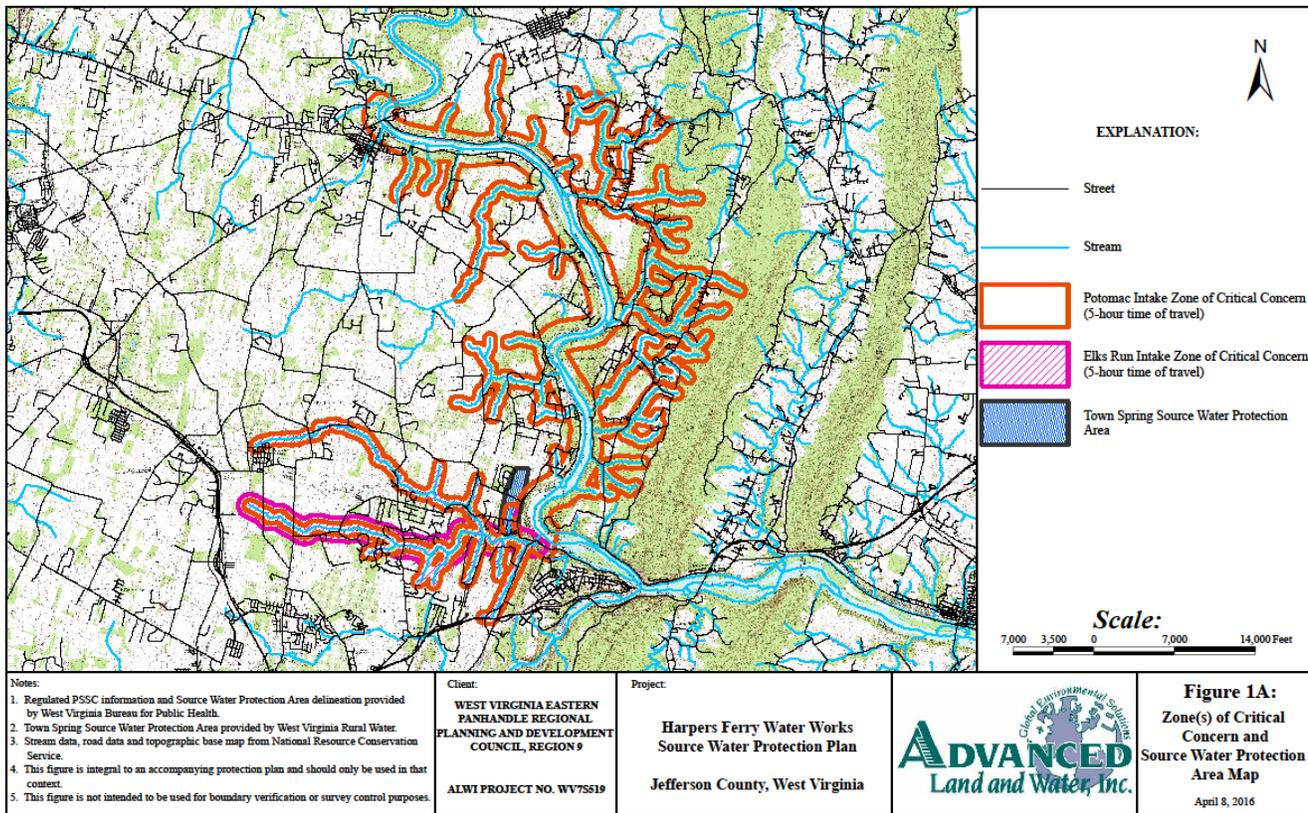


Table 1A: Elks Run List of Previous SWPP PSSCs

Map Label	Source Name	Source Description	Category	Map Code	Associated Chemicals	Threat to SW	Threat to GW
1	CONFIDENTIAL	Drinking Water Treatment Plants	Municipal	M-5	D	L	L
2	CONFIDENTIAL	Permitted Discharge Pipe (outfall)	Industrial	I-27	ALL	L	M
3	CONFIDENTIAL	Other	Agricultural	A-22			
4	CONFIDENTIAL	Wastewater Treatment Plant	Municipal	M-29	MP, D	L	M
5	CONFIDENTIAL	Storm water basins/drains	Municipal	M-25	M, VOC, MP	M	M
6	CONFIDENTIAL	Highway	Municipal	M-7	PH, VOC, M	M	H
7	CONFIDENTIAL	Cemeteries	Commercial	C-9	M, SOC, PH	L	L
8	CONFIDENTIAL	Residential (single family homes)	Residential	R-4	VOC, SOC, NN	H	H
9	CONFIDENTIAL	Pasture*	Agricultural	A-18	MP, SOC	L	L
10	CONFIDENTIAL	Drinking Water Treatment Plants	Municipal	M-5	D	L	L
11	CONFIDENTIAL	Crops, corn, soybean, wheat	Agricultural	A-5	NN, SOC, MP	L	L
12	CONFIDENTIAL	Utility Substation Transformers	Commercial	C-49	PH, VOC, SOC	H	H
13	CONFIDENTIAL	Schools	Municipal	M-21	SOC, D, VOC, PH	L	L
14	CONFIDENTIAL	Storm water basins/drains	Municipal	M-25	M, VOC, MP	M	M
15	CONFIDENTIAL	Residential (single family homes)	Residential	R-4	VOC, SOC, NN	H	H
16	CONFIDENTIAL	Highway	Municipal	M-7	PH, VOC, M	M	H
17	CONFIDENTIAL	Septic Systems (leach field)*	Residential	R-6	MP, VOC, SOC, TO, NN	M	M
18	CONFIDENTIAL	Residential (single family homes)	Residential	R-4	VOC, SOC, NN	H	H
19	CONFIDENTIAL	Cemeteries	Commercial	C-9	M, SOC, PH	L	L
20	CONFIDENTIAL	Residential (single family homes)	Residential	R-4	VOC, SOC, NN	H	H
21	CONFIDENTIAL	Pasture*	Agricultural	A-18	MP, SOC	L	L
22	CONFIDENTIAL	Drinking Water Treatment Plants	Municipal	M-5	D	L	L
23	CONFIDENTIAL	Residential (single family homes)	Residential	R-4	VOC, SOC, NN	H	H

Table 1A: Elks Run List of Previous SWPP PSSCs

Map Label	Source Name	Source Description	Category	Map Code	Associated Chemicals	Threat to SW	Threat to GW
24	CONFIDENTIAL	Crops, corn, soybean, wheat	Agricultural	A-5	NN, SOC, MP	L	L
25	CONFIDENTIAL	Residential (single family homes)	Residential	R-4	VOC, SOC, NN	H	H
26	CONFIDENTIAL	Auto repair shops	Commercial	C-3	PH, M, VOC, HM, SOC	H	M
27	CONFIDENTIAL	Research laboratories	Commercial	C-44	M, VOC, SOC	H	H
28	CONFIDENTIAL	Wastewater Treatment Plant	Municipal	M-29	MP, D	L	M
29	CONFIDENTIAL	Gas Stations	Commercial	C-18	PH, M, VOC, SOC	H	M
30	CONFIDENTIAL	Railroad Tracks (right of way)	Municipal	M-17	M, VOC, SOC, PH	H	M
31	CONFIDENTIAL	Wastewater Treatment Plant	Municipal	M-29	MP, D	L	M
32	CONFIDENTIAL	Railroad Tracks (right of way)	Municipal	M-17	M, VOC, SOC, PH	H	M

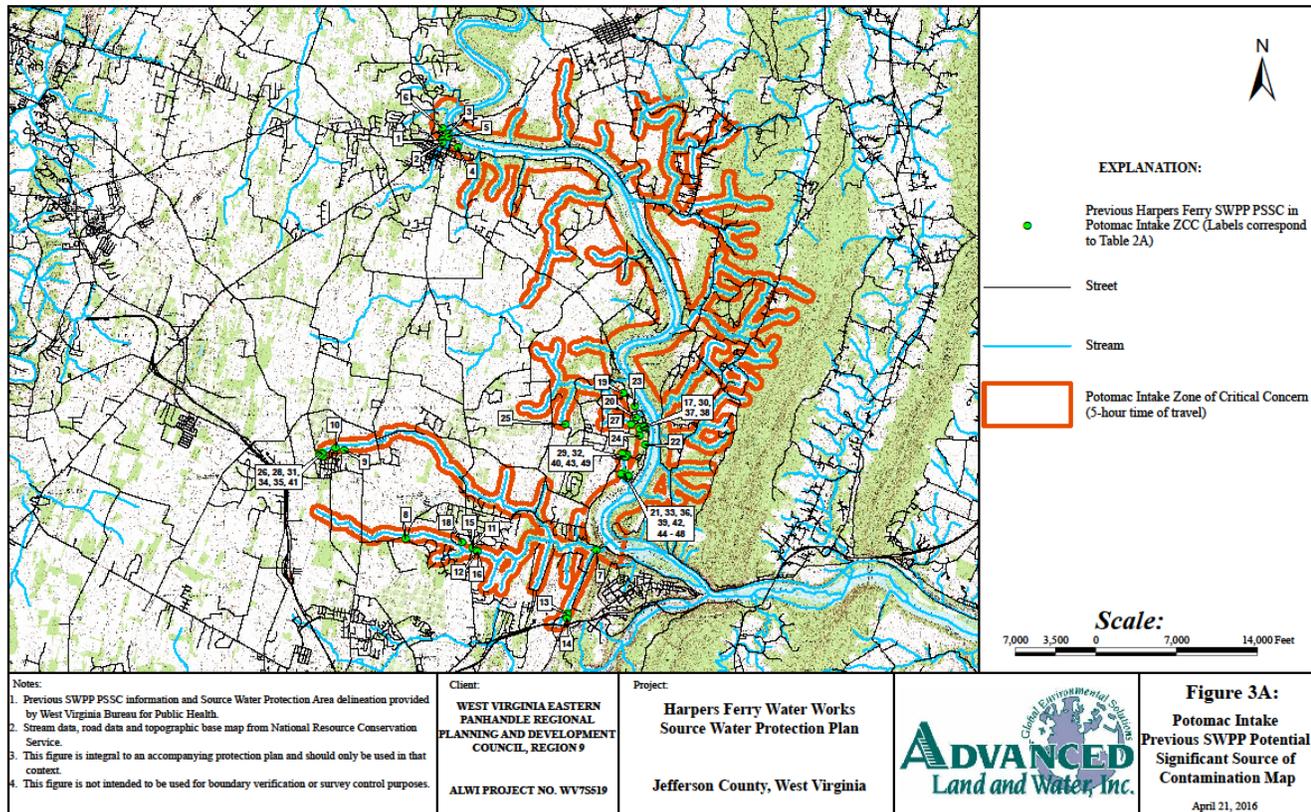
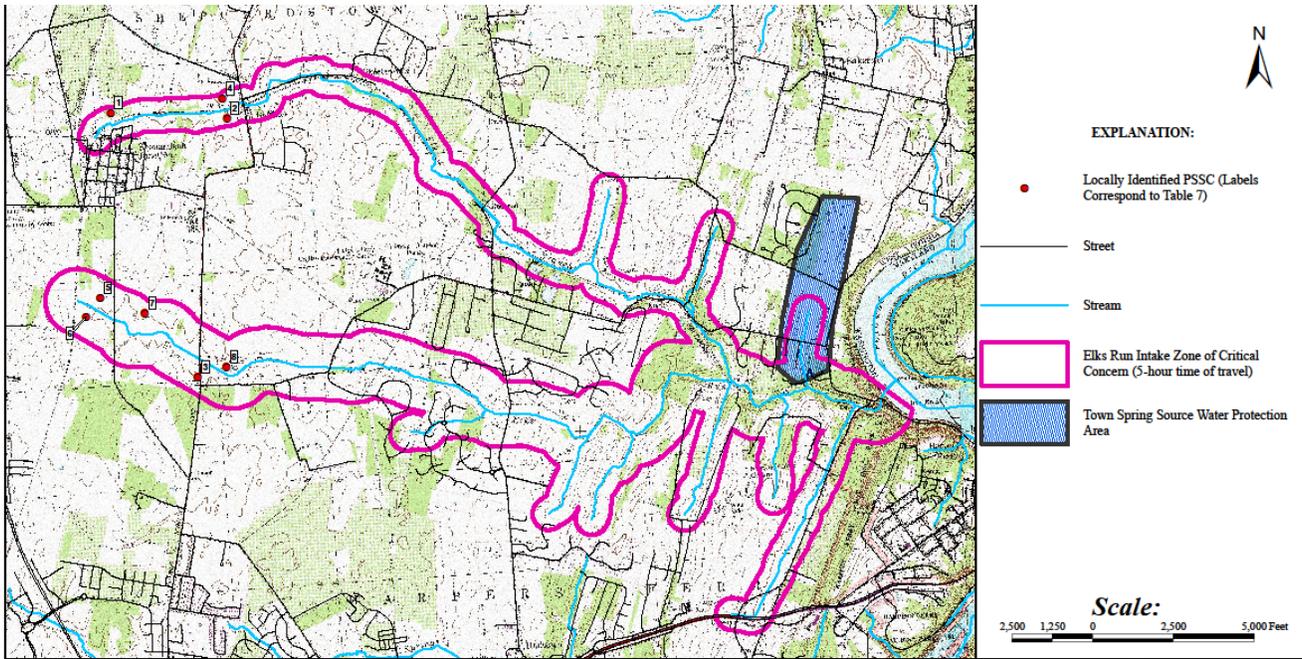


Table 2A: Potomac River List of Previous SWPP PSSCs

Map Label	Source Name	Source Description	Type	Map Code	Associated Chemicals	Threat to GW	Threat to SW
1	CONFIDENTIAL	Schools	Municipal	M-21	SOC, D, VOC, PH	L	L
2	CONFIDENTIAL	Parking lots/malls	Commercial	C-35	VOC, PH	L	M
3	CONFIDENTIAL	Marina/boat docks	Commercial	C-30	PH	L	H
4	CONFIDENTIAL	Wastewater Treatment Plant	Municipal	M-29	MP, D	L	M
5	CONFIDENTIAL	Drinking Water Treatment Plants	Municipal	M-5	D	L	L
6	CONFIDENTIAL	Highway	Municipal	M-7	PH, VOC, M	M	H
7	CONFIDENTIAL	Drinking Water Treatment Plants	Municipal	M-5	D	L	L
8	CONFIDENTIAL	Permitted Discharge Pipe (outfall)	Industrial	I-27	ALL	L	M
9	CONFIDENTIAL	Other	Agriculture	A-22			
10	CONFIDENTIAL	Wastewater Treatment Plant	Municipal	M-29	MP, D	L	M
11	CONFIDENTIAL	Highway	Municipal	M-7	PH, VOC, M	M	H
12	CONFIDENTIAL	Pasture*	Agriculture	A-18	MP, SOC	L	L
13	CONFIDENTIAL	Crops, corn, soybean, wheat	Agriculture	A-5	NN, SOC, MP	L	L
14	CONFIDENTIAL	Utility Substation Transformers	Commercial	C-49	PH, VOC, SOC	H	H
15	CONFIDENTIAL	Highway	Municipal	M-7	PH, VOC, M	M	H
16	CONFIDENTIAL	Pasture*	Agriculture	A-18	MP, SOC	L	L
17	CONFIDENTIAL	Junk yards, scrap and auto	Commercial	C-25	PH, VOC, M, HM	H	H
18	CONFIDENTIAL	Residential (single family homes)	Residential	R-4	VOC, SOC, NN	H	H
19	CONFIDENTIAL	Residential (single family homes)	Residential	R-4	VOC, SOC, NN	H	H
20	CONFIDENTIAL	Residential (single family homes)	Residential	R-4	VOC, SOC, NN	H	H
21	CONFIDENTIAL	Residential (single family homes)	Residential	R-4	VOC, SOC, NN	H	H
22	CONFIDENTIAL	Residential (single family homes)	Residential	R-4	VOC, SOC, NN	H	H
23	CONFIDENTIAL	Crops: other	Agriculture	A-7	NN, MP, SOC	L	M

Table 2A: Potomac River List of Previous SWPP PSSCs

24	CONFIDENTIAL	Quarry	Industrial	I-31	M, T, PH, VOC	M	L
25	CONFIDENTIAL	Animal Feedlots	Agriculture	A-2	NN, MP, TO	H	H
26	CONFIDENTIAL	Auto repair shops	Commercial	C-3	PH, M, VOC, HM, SOC	H	M
27	CONFIDENTIAL	Highway	Municipal	M-7	PH, VOC, M	M	H
28	CONFIDENTIAL	Research laboratories	Commercial	C-44	M, VOC, SOC	H	H
29	CONFIDENTIAL	Septic Systems (leach field)*	Residential	R-6	MP, VOC, SOC, TO, NN	M	M
30	CONFIDENTIAL	Wells: abandoned	Municipal	M-30	VOC, SOC, MP, PH, NN	H	L
31	CONFIDENTIAL	Wastewater Treatment Plant	Municipal	M-29	MP, D	L	M
32	CONFIDENTIAL	Residential (single family homes)	Residential	R-4	VOC, SOC, NN	H	H
33	CONFIDENTIAL	Drinking Water Treatment Plants	Municipal	M-5	D	L	L
34	CONFIDENTIAL	Gas Stations	Commercial	C-18	PH, M, VOC, SOC	H	M
35	CONFIDENTIAL	Railroad Tracks (right of way)	Municipal	M-17	M, VOC, SOC, PH	H	M
36	CONFIDENTIAL	Septic Systems (leach field)*	Residential	R-6	MP, VOC, SOC, TO, NN	M	M
37	CONFIDENTIAL	Drinking Water Treatment Plants	Municipal	M-5	D	L	L
38	CONFIDENTIAL	Residential (single family homes)	Residential	R-4	VOC, SOC, NN	H	H
39	CONFIDENTIAL	Wells: water supply	Municipal	M-31	VOC, SOC	L	L
40	CONFIDENTIAL	Drinking Water Treatment Plants	Municipal	M-5	D	L	L
41	CONFIDENTIAL	Wastewater Treatment Plant	Municipal	M-29	MP, D	L	M
42	CONFIDENTIAL	Septic Systems (leach field)*	Residential	R-6	MP, VOC, SOC, TO, NN	M	M
43	CONFIDENTIAL	Residential (single family homes)	Residential	R-4	VOC, SOC, NN	H	H
44	CONFIDENTIAL	Residential (single family homes)	Residential	R-4	VOC, SOC, NN	H	H
45	CONFIDENTIAL	Septic Systems (leach field)*	Residential	R-6	MP, VOC, SOC, TO, NN	M	M
46	CONFIDENTIAL	Wells: water supply	Municipal	M-31	VOC, SOC	L	L
47	CONFIDENTIAL	Residential (single family homes)	Residential	R-4	VOC, SOC, NN	H	H
48	CONFIDENTIAL	Septic Systems (leach field)*	Residential	R-6	MP, VOC, SOC, TO, NN	M	M
49	CONFIDENTIAL	Highway	Municipal	M-7	PH, VOC, M	M	H



**Notes:**  
 1. Source Water Protection Area delineation provided by West Virginia Bureau for Public Health.  
 2. Town Spring Source Water Protection Area provided by West Virginia Rural Water.  
 3. Stream data, road data and topographic base map from National Resource Conservation Service.  
 4. This figure is integral to an accompanying protection plan and should only be used in that context.  
 5. This figure is not intended to be used for boundary verification or survey control purposes.

**Client:**  
**WEST VIRGINIA EASTERN PANHANDLE REGIONAL PLANNING AND DEVELOPMENT COUNCIL, REGION 9**  
**ALWI PROJECT NO. WV75619**

**Project:**  
**Harpers Ferry Water Works Source Water Protection Plan**  
**Jefferson County, West Virginia**



**Figure 4A:**  
**Elks Run and Town Spring Locally Identified Potential Significant Source of Contamination Map**  
 April 21, 2016

## Appendix B. Early Warning Monitoring System Forms

**The following forms have been prepared by WV BPH for use by public utilities, with the proper form dependent on source type (surface or groundwater) and the presence or absence of an early warning monitoring system. The appropriate forms for this utility to complete are Forms A and B, as the utility has an existing early warning monitoring system. Form B is included to provide information to create a more robust early warning monitoring system for Harpers Ferry Water Works' surface water intake.**

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

**Form B** - If you do not currently have an early warning monitoring system installed for a surface water intake or are planning to upgrade or replace your current system, complete this form.

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

**Form D** - If you do not currently have an early warning monitoring system installed for a groundwater source or are planning to upgrade or replace your current system, complete this form.

**Appendix B- Form A Existing Early Warning Monitoring System Worksheet- Surface Water Source**

<b>Describe the type of early warning detection equipment installed.</b>
CONFIDENTIAL
<b>Describe the mechanism used to store data and an institutional framework to analyze and interpret the data.</b>
CONFIDENTIAL
<b>Describe the process used to determine the credibility of a contamination event if a change is detected in the quality of source water.</b>
<p>Harpers Ferry Water Works utilizes the Potomac River Basin Commission, local and regional news, West Virginia Department of Protection, and the West Virginia State Health and Human Services Department to determine credibility of a spill, contaminant, or change in water quality.</p> <p>If a notable change is detected in water quality for a parameter regularly monitored, an additional water quality sample will be taken immediately for result verification. If the result is confirmed, more comprehensive testing could be performed, depending on the type of water quality change observed (for the purpose of differentiating between hazard types). Harpers Ferry Water Works personnel may also choose to close the Elks Run Intake until an appropriate course of action is determined. This would not affect the quality or quantity of water delivered to customers, as the utility has adequate storage for at least three days, as well as a backup intake on the Potomac River, which has the capacity to meet system demands.</p> <p>If the sample is in violation of an MCL, an additional water quality sample will be taken immediately for result verification. As water quality results are pending, Harpers Ferry Water Works personnel should close the Elks Run Intake until an appropriate course of action is determined. This would not affect the quality or quantity of water delivered to customers, as the utility has adequate storage for at least three days, as well as a backup intake on the Potomac River, which has the capacity to meet system demands.</p>

**Appendix B-Form B; Option 1: NexSens iSIC-Mast Data Logging System**

<b>Describe the type of early warning detection equipment that could be installed, including the design.</b>
CONFIDENTIAL
<b>Where would the equipment be located?</b>
CONFIDENTIAL
<b>What would the maintenance plan for the monitoring equipment entail?</b>
CONFIDENTIAL
<b>Describe the proposed sampling plan at the monitoring site.</b>
CONFIDENTIAL
<b>Describe the proposed procedures for data management and analysis.</b>
CONFIDENTIAL

**Proposed Early Warning Monitoring System Worksheet- Surface**

**Appendix B-Form B; Option 2: Hach sc1000 Source Water Monitoring Panel (SWMP)**

<b>Describe the type of early warning detection equipment that could be installed, including the design.</b>
CONFIDENTIAL
<b>Where would the equipment be located?</b>
CONFIDENTIAL
<b>What would the maintenance plan for the monitoring equipment entail?</b>
CONFIDENTIAL
<b>Describe the proposed sampling plan at the monitoring site.</b>
CONFIDENTIAL
<b>Describe the proposed procedures for data management and analysis.</b>
CONFIDENTIAL

**Proposed Early Warning Monitoring System Worksheet- Surface**

**Appendix B-Form C Existing Early Warning Monitoring System Worksheet- Groundwater Source**

<b>Describe the type of early warning detection equipment installed.</b>
Not Applicable. Harpers Ferry Water Works does not directly utilize a groundwater source and has no present plans to repair the infrastructure connecting the Town Spring to the water treatment plant.
<b>How many monitoring (sentinel) wells are established?</b>
<b>What is the expected rate of travel of a contaminant through the groundwater system?</b>
<b>Provide the distance from the contaminant source to the monitoring wells.</b>
<b>What is the distance of the monitoring equipment to the wellhead?</b>
<b>Describe the mechanism used to store data and an institutional framework to analyze and interpret the data.</b>
<b>Describe the process used to determine the credibility of a contamination event if a change is detected in the quality of source water.</b>

**Appendix B-Form D Proposed Early Warning Monitoring System Worksheet- Groundwater Source**

<b>Describe the type of ground water monitoring network that could be installed, including the design and location.</b>
Not Applicable. Harpers Ferry Water Works does not directly utilize a groundwater source and has no present plans to repair the infrastructure connecting the Town Spring to the water treatment plant.
<b>How many monitoring (sentinel) wells would need to be established?</b>
<b>What is the expected rate of travel of a contaminant through the groundwater system?</b>
<b>Provide the distance from the contaminant source to the proposed monitoring wells.</b>
<b>What is the distance from the proposed monitoring equipment to the wellhead?</b>
<b>What would the maintenance plan for the monitoring equipment entail?</b>
<b>Describe the proposed sampling plan at the monitoring site.</b>
<b>Describe the proposed procedures for data management and analysis.</b>

## Appendix C. Communication Plan

# Communication Plan Template

## For Harpers Ferry Water Works

PWSID: WV3301912 District: Kearneysville

Certified Operator: CONFIDENTIAL

Contact Phone Number: \_\_\_\_\_

Contact Email Address: \_\_\_\_\_

Plan Developed On: 3/18/2016 Plan Update Due On: 3/18/2019

### **ACKNOWLEDGMENTS:**

*This plan was developed by Harpers Ferry Water Works to meet certain requirements of the Source Water and Assessment Protection Program (SWAPP) and the Wellhead Protection Program (WHPP) for the State of West Virginia, as directed by the federal Safe Drinking Water Act (SDWA) and state laws and regulations.*

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## 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 occurring 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 also provides associated risk levels. Example press releases are provided as attachments to this plan.

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

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

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

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

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

Tier	Tier Category	Risk Level	Tier Summary
<b>A</b>	<b>Announcement</b>	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</b>	<b>Boil Water Advisory</b>	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.

<b>C</b>	<b>C</b> 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.
<b>D</b>	<b>D</b> 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.
<b>E</b>	<b>E</b> 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
CONFIDENTIAL				

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 SWPP, 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 SWPP and Communication Plan
- Attend team meetings to ensure up-to-date knowledge of the system and its functions
- Participate in periodic exercises that practice 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
- Agree not to 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 communication 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 example press releases attached)
- 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 collecting information about the:

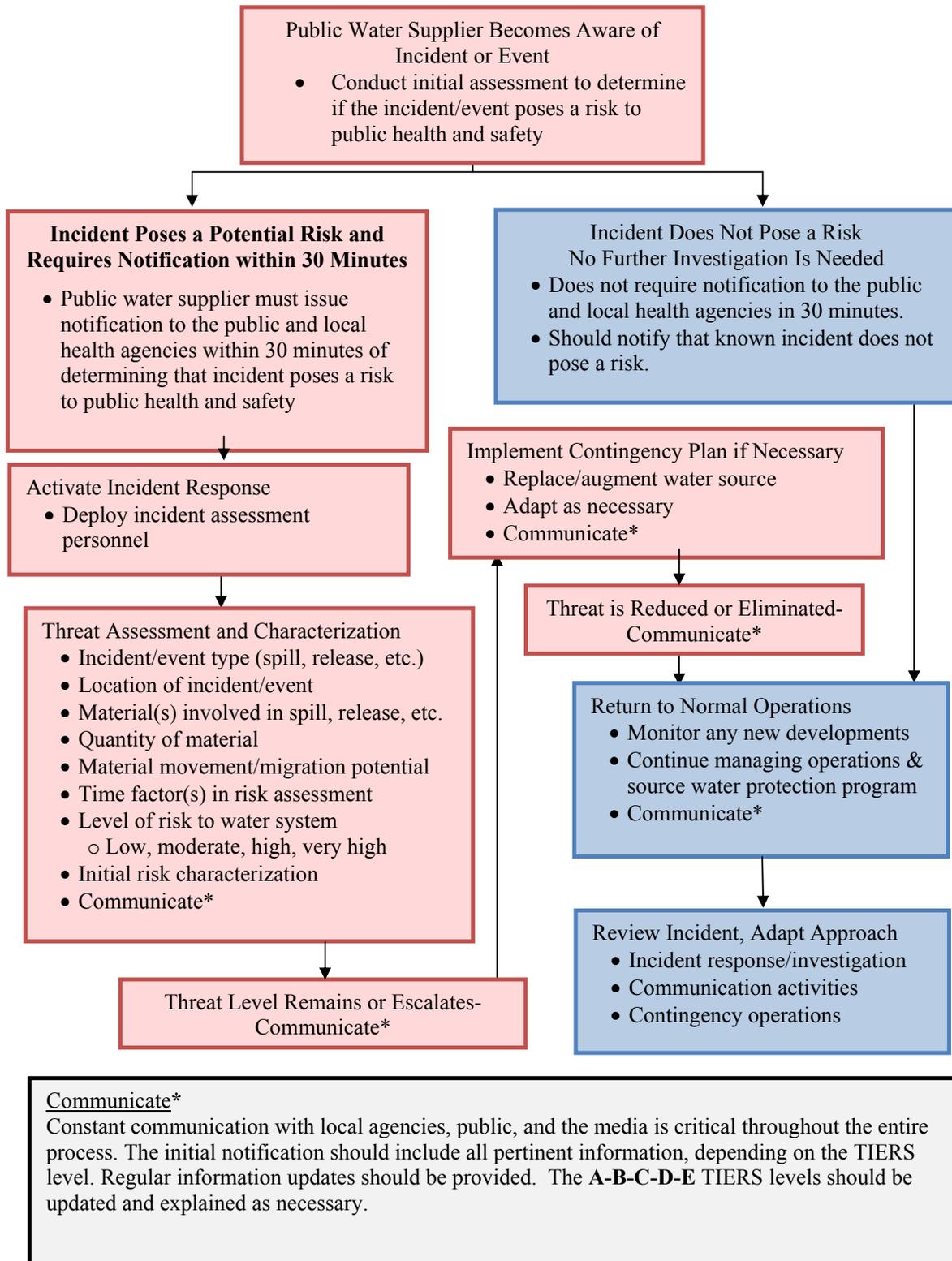
- Incident/event type (spill, release, etc.)
- Location of incident/event
- Type of material(s) involved in spill, release, etc.
- Quantity of material involved
- Potential of the material to move, migrate, or be transported
- Relevant time factor(s) in the risk assessment (e.g., downstream movement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

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

- The initial release (i.e., **Announcement, Boil Water, Cannot Drink, Do Not Use, or Emergency** attached)
  - 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 for 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

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

## TIERS Flow Chart



**Press Release Attachments**

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

**UTILITY ISSUED NOTICE – LEVEL A  
PUBLIC WATER SYSTEM ANNOUNCEMENT**

**A WATER SYSTEM INVESTIGATION IS UNDERWAY**

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

The incident involves the following situation at this location:

---

---

---

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

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

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

State Water System ID# \_\_\_\_\_ Date Distributed: \_\_\_\_\_

## UTILITY ISSUED NOTICE – LEVEL B

### BOIL WATER ADVISORY

#### A BOIL WATER ADVISORY IS IN EFFECT

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

Entire Water System or  Other: \_\_\_\_\_

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

#### What should I do?

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

#### What happened?

- The problem is related to \_\_\_\_\_

#### What is being done?

- The water system is taking the following action: \_\_\_\_\_

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

- \_\_\_\_\_

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

\_\_\_\_\_ at \_\_\_\_\_ or \_\_\_\_\_ at \_\_\_\_\_.

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

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

This notice was distributed by \_\_\_\_\_

State Water System ID# \_\_\_\_\_ Date Distributed: \_\_\_\_\_

**UTILITY ISSUED NOTICE – LEVEL C**  
**“CANNOT DRINK” WATER NOTIFICATION**  
**A LEVEL C WATER ADVISORY IS IN EFFECT**

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

Entire Water System or  Other: \_\_\_\_\_  
\_\_\_\_\_

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

**What should I do?**

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

### Emergency Communication Information

	Name	Phone Number	Email	
<b>Designated spokesperson:</b>	Wayne Bishop	(304) 535-2206	mayor@harpersferrywv.us	
<b>Alternate spokesperson:</b>	Brandon Chuvalas	(304) 535-6555	<a href="mailto:hfwaterworks@gmail.com">hfwaterworks@gmail.com</a>	
<b>Designated location to disseminate information to media:</b>	Corporation of Harpers Ferry Town Hall			
<b>Methods of contacting affected residents:</b>	HF Water Department Robo-calling system; Homeland Security and Emergency Management-Director Steve Allen; WVBPH – Kearneysville District Office; Newspapers – Spirit of Jefferson, Martinsburg Journal; Radio – WRNR, WEPM, Television – WRNR TV, WDVM TV.			
<b>Media contacts:</b>	Name	Title	Phone Number	Email
	Cara Young	Spirit of Jefferson Office Manager	(304) 725-2046, ext. 21	SOJofficemanager@gmail.com
	Tiffany Niebauer	The Journal Office Manager	(304) 263-8931 ext. 125	tniebauer@journal-news.net
	WRNR Radio		(304) 263-6586	
	WEPM Radio		(304) 263-8868	
	Andrew Wyatt	General Manager WDVM TV	(301) 797-4400	

### Emergency Services Contacts

	Name	Emergency Phone	Alternate Phone	Email
<b>Local Police</b>	Harpers Ferry	304-535-6366	304-671-6388	jbrown@harpersferrywv.us
<b>Local Fire Department</b>	Friendship	304-535-2211		
<b>Local Ambulance Service</b>	Friendship	304-535-2211		
<b>Hazardous Material Response Service</b>	DEP Spill Hotline	800-642-3074		

### Key Personnel

	Name	Title	Phone	Email
<b>Key staff responsible for coordinating emergency response procedures?</b>	CONFIDENTIAL			
<b>Staff responsible for keeping confidential PSSC information and releasing to emergency responders:</b>				

<b>Are you planning on implementing the TIER system?</b>	Yes
--	-----

### Emergency Response Information

<b>Has the utility developed a detailed Emergency Response Plan in accordance with the Public Health Security Bioterrorism Preparedness and Response Pan Act of 2002?</b>	Yes
<b>When was the Emergency Response Plan developed or last updated?</b>	2011 (actively being revised)

## **Emergency Contact Information**

### **State Emergency Spill Notification**

1-800-642-3074

### **Office of Emergency Services**

<http://www.wvdhsem.gov/>

Charleston, WV- (304) 558-5380

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

[www.wvdhhr.org/oehs](http://www.wvdhhr.org/oehs)

*Readiness Coordinator- Warren Von Dollen*

Phone; 304-356-4290

Cell; 304-550-5607

e-mail; [warren.r.vondollen@wv.gov](mailto: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/pswcheck/>

## Appendix D. Single Source Feasibility Study

The single source feasibility is required for a public water utility which is served by a single surface water source or a single groundwater source (i.e., one well or one spring). Harpers Ferry Water Works has one fully functional alternative water supply source of practically near-infinite quantity in place at this time. As a result, a single source feasibility study is not required for this utility at this time.

The primary source serving Harpers Ferry is a surface water intake on Elks Run, downgradient of the confluence of Elks Run and Elk Branch. Upgradient of the surface water intake is the Town Spring. The pipeline connecting Town Spring to the Harpers Ferry Water Treatment Plant has been damaged and/or collapsed, and now discharges directly into Elks Run. As a result, the quality of water emanating from the Town Spring influences the quality of water in Elks Run.

In the event that a contaminant occurrence requires that the Elks Run intake be manually closed, water treatment plant operators have the option of manually activating pumps in the wet well for the Potomac River Intake. The Potomac River serves as an emergency backup source for Harpers Ferry during times of drought or during emergency situations. Harpers Ferry Water Works exercises the appurtenances for the Potomac River Intake monthly to help ensure full functionality in times of need. In times of drought, water is captured from both Elks Run and the Potomac River to meet demand. In the event that Elks Run becomes contaminated, the Potomac River Intake and wet well have the capacity to meet system demand on a daily basis.

Additionally, the water system possesses 991,000 gallons of finished water storage, which has the capacity to meet average annual system demand for approximately three days. An additional 77,000 gallons of raw water can be accessed from the pre-sedimentation basin if required. The system possesses abundant capacity to handle short-term emergencies.

At this juncture, creation of an interconnection with another water utility is economically infeasible and is not open for consideration by the utility. Likewise, additional expansion of raw and treated water storage capacity is unnecessary, and spatially and economically challenging. Between the Elks Run and the Potomac River Intakes, which function as distinct, independent sources of water for the system, Harpers Ferry already possesses the capability to provide safe drinking water to its customers in the event that either source becomes contaminated.

Should a failure occur at the water treatment plant for any reason that is of duration long enough that the treated water storage becomes depleted; the utility would have the capability to bring in a portable water treatment trailer using its WVWARN membership. In extreme circumstances, the utility also could consider creating a purchase agreement with nearby water utilities to truck in water. To perform such an assessment entails reviewing the permits and capacities of other water systems to identify suitable entities that could handle such a demand. Such an analysis is not a scope element of this work, nor is it required at this juncture, because of the utility's capability to utilize two different water sources capable of satisfying Harper Ferry's demands.

## **Appendix E. Supporting Documentation**

**Appendix E-1. ALWI PSSC Update and Source Inspection**

**Appendix E-2. Locally Identified PSSC Database Search**

**Appendix E-3. Harpers Ferry Water System SWPP**

**Appendix E-4. Harpers Ferry Water System Protection Team Meeting Minutes**

**Appendix E-5. Emergency Response Plan Signature Page**

**Appendix E-6. Engineering Evaluation**

**Appendix E-7. Railroad Emergency Response Trainings and Services**

## **Appendix E-1. ALWI PSSC Update and Source Inspection**

Advanced Land and Water, Inc. (ALWI) performed regulatory database reviews and a desktop review/reconnaissance in order to identify changes to known PSSCs and to identify and record additional PSSCs not previously documented. The desktop review/reconnaissance also included verifying water source locations and reviewing the delineated SWPA. Both point sources and non-point sources of contamination were considered during our desktop review.

## Appendix E-2. Locally Identified PSSC Database Search

ALWI incorporated information from the following state-maintained environmental databases to supplement the non-confidential point-source hazard inventories, with the date of database publication provided parenthetically as follows:

- WV Department of Agriculture; Pesticide Program Database search for Pesticide Businesses, Regulated Pesticide Application Businesses (RPAB), Pesticide Dealers and Commercial Applicators (2/19/2016);
- WV DEP Office of Environmental Remediation; Public Record of Voluntary Cleanup Program Sites (2/19/2016);
- Underground Storage Tank and Leaking Underground Storage Tank Databases (2/19/2016);
- EPA System Data Search of RCRA Info Database for Resource Conservation and Recovery Act (RCRA) sites (2/19/2016).

The databases helped with interpretations of water susceptibility, in that the listed facilities may be generators of hazardous materials, petroleum products and/or other drinking water contaminants.

## **Appendix E-3. Harpers Ferry Water System Previous SWPP**

## Appendix E-4. Harpers Ferry Protection Team Meeting Minutes

### Harpers Ferry Water Works Protection Team Meeting

March 18, 2016

1000 Washington St. Harpers Ferry, WV

#### In Attendance:

Barbara Humes .....Chairperson of Harpers Ferry Water Commission  
Josh Carter .....Manager, Harpers Ferry Water Works  
Laurel Drake .....Harpers Ferry Water Commission  
Gregory Vaughn.....Mayor of Harpers Ferry  
Zachary Neal .....Advanced Land and Water, Inc.  
Sarah Taggart .....Advanced Land and Water, Inc.  
Stephen M. Gyurisn .....Advanced Planning Associates, LC  
Monica Whyte .....West Virginia Bureau for Public Health  
Alana Hartman .....West Virginia Department of Environmental Protection  
Suzy Campbell.....West Virginia Conservation Agency  
John D. Brown.....Chief of Harpers Ferry Police Department

#### Interested Participants Who Could Not Attend:

Jennifer Brockman .....Jefferson County Department of Planning and Zoning  
Barbara Miller .....Jefferson County OHSEM  
David Lillard .....West Virginia Rivers Coalition  
Eric Bell.....Jefferson County Commissioner, Harpers Ferry District

#### Invitees Who Did Not Respond:

Stephanie Grove .....Jefferson County Commission County Administrator  
Matt Pennington .....Region 9 Chesapeake Bay Coordinator  
Michael Blue .....Jefferson County Farm Bureau  
Michael Harman .....West Virginia University Extension Office  
Dave Scott .....CSX  
Chris Higdon .....Friendship Fire Company  
Pete Dougherty .....Jefferson County Sheriff's Office  
Rebecca Harriet .....Harpers Ferry National Park Service

#### Meeting Objectives:

The purpose of this meeting was to establish a Protection Team, an entity which will work to forward source water protection efforts and strategies for Harpers Ferry Water Works. More specifically, the Team worked to prioritize the major Potential Significant Sources of Contamination, critical areas, and other threats deemed of greatest concern to the systems' water supply source. Management Strategies and Implementation Plans were developed for the highest priority threats. Education and Outreach Strategies were also discussed, and Implementation Plans were created for these and other management

activities. Finally, the Protection Team reviewed additional general recommendations ALWI made for the water System.

### **Timeline of Events:**

Following formal introductions from participating Protection Team members, ALWI staff began a PowerPoint in which we explained both the hydrologic and hydrogeologic setting of Jefferson County and broadly covered general system information pertaining to water source location and delineated areas that influence system sources, which are termed source water protection areas (SWPAs). The System has a Zone of Critical Concern (ZCC), a delineated area which represents the five hour time-of-travel for the Elks Run source, as well as a delineated recharge area for the Town Spring, which overflows into Elks Run. From there, we introduced our list of prioritized PSSCs, management strategies related to those PSSCs and education and outreach strategies to engage and educate the public on source water protection efforts. We then asked the Protection Team to opine on our PSSC list and edit prioritization, if and where appropriate. We discussed implementation measures for protection strategies, as well as education and outreach strategies, and assigned responsibility to Protection Team members who volunteered to handle each strategy.

### **Harpers Ferry Water System Specific Discussions:**

During the presentation, we displayed current and future land use maps. The future growth area maps, which we acquired from the Jefferson County Planning Department website, depict anticipated residential land development in close proximity to both Elk Branch and Elks Run, and may contribute to increased stormwater runoff from overland flow and eutrophication of nearby surface water sources via septic discharge. Preliminary plans suggest that the lands proximal to Elk Branch and east of Shenandoah Junction will experience low density residential development, with sanitary sewer service hookups available. However, the lands more proximal to Elks Run and near Route 230 are planned to experience medium density residential development and will be served by individual domestic well and septic. Additional low density residential development is planned to occur along the headwaters of Elks Run as well, and these homes will similarly be served by individual domestic well and septic. Jennifer Brockman, Director of the Jefferson County Department of Planning and Zoning was invited to the Protection Team meeting, but was unable to attend the meeting at the last minute. ALWI recommended that the Protection Team continue to work with representatives from the Jefferson County Department of Planning and Zoning to limit incompatible land use development within the Zone of Critical Concern for Elks Run. As part of this strategy, Protection Team members will discuss potential revisions to local ordinances, implementation of economic incentives, and education and outreach opportunities to promote low impact development and best available technologies that will reduce stormwater runoff and potential eutrophication of nearby waterways.

ALWI-identified PSSCs and Critical Areas within the Elks Run SWPA were presented and discussed, with ALWI staff explaining the basis for each potential threat. Prior to the meeting, ALWI had prioritized these potential threats, as follows (in order from highest priority to lowest priority):

1. Railroad Networks (CSX and Norfolk Southern)
2. Agricultural Activities
3. Septic & Sewer Systems
4. Commercial Activities

ALWI asked that the Protection Team consider the threats, add additional threats conceived by the team, assess the prioritization of the threats and make any revisions to prioritization, as presented to the team. The Protection Team did not recommend any revisions to the ALWI-identified and prioritized table of PSSCs and Critical Areas.

Management Strategies developed and recommended by ALWI for each of these priority concerns were discussed thereafter. During the discussion, team members volunteered to handle implementation of the recommended management strategies. Relevant management and implementation strategies were discussed as follows:

- ❑ **Railroads** – While Ms. Barbara Miller, Director of Jefferson County OHSEM, was invited to the Protection Team meeting, she was unable to attend. However, Chief John D. Brown of the Harpers Ferry Police Department was in attendance. ALWI recommended that the Protection Team contact additional emergency response personnel (including OHSEM) to discuss working with CSX and their shortline partners to take advantage of free training (online and in classroom) offered by the railroad corporation. These training exercises include online workshops, training at emergency personnel facilities, and train car response workshop activities. ALWI also recommended that emergency personnel pursue gaining access to the CSX Rail Respond Program, which informs emergency personnel as to which materials are being transported on CSX railways. Chief Brown informed the Protection Team that he was granted access to this resource within the last three weeks, and is communicating with other emergency personnel to make sure they are aware of the program. ALWI also recommended that the system work with emergency response personnel to identify suitable locations to store pre-stockpiled emergency spill response equipment that would promote rapid response time to emergency situations that develop within the ZCC. This remains an outstanding task to be discussed with OHSEM, though Chief Brown indicated that Berkeley County would also be able to assist in emergency situations and should be capable of mobilizing to the area within a period of approximately 25-30 minutes. Berkeley County is currently undergoing improvements to their emergency response program and associated capabilities. Finally, we discussed the general communication pathways in place to disseminate spill information. Currently, Harpers Ferry Water Works receives notifications from the Interstate Commission on the Potomac River Basin for spills that affect the Potomac River. However, notifications related to spills within the Elks Run watershed originate from email notifications from the County Health Department or phone calls from the County OHSEM office. Since the travel time for contaminants arising from spills along Elks Branch and their potential associated capture at the surface water intake for Harpers Ferry is on the order of minutes to hours, immediate notification to Harpers Ferry Water Works personnel will be critical to prevent contamination of the water treatment plant. In this regard, ALWI recommended that Harpers Ferry Water Works be one of the first entities to receive notification of spills from 911 operators when spills are reported within the ZCC. Josh Carter of Harpers Ferry Water Works volunteered to discuss the above points with Barbara Miller during the current source water protection effort.
  
- ❑ **Commercial Activities** – A limited number of commercial facilities exist within the Elks Run SWPA. There are a total of two facilities within the ZCC identified by BPH, and they include an

automotive repair shop and a lawn mower repair shop. Additional commercial and industrial facilities exist outside the ZCC, but within the watershed delineation area. However, as this was the inaugural source water protection meeting, an emphasis was placed on those facilities within the ZCC. The Protection Team felt it would be appropriate to provide site-specific Best Management Practice (BMP) documents to these commercial facilities to raise awareness about source water protection efforts and ensure potential contaminants are stored and disposed of using best available methods. While such facilities present the possibility of volatile or synthetic organic carbon contamination of water sources, quantities stored on-site are likely of de minimus quantity (relative to the quantity of water moving through the watershed) and likely pose a minimal threat to the water system from a federal drinking water compliance standpoint. Harpers Ferry Water Works intends to discuss outreach measures to commercial facilities with David Lillard of the West Virginia Rivers Coalition to see if his organization can provide these documents to such facilities.

- ❑ **Septic System(s)** – Biological impairment and potential eutrophication of Elks Run and Elks Branch by failing septic discharges were discussed at some length during the meeting. Previous studies have indicated that more than 1,200 septic systems are located within the watershed, with many of these distributed in high density residential developments proximal to Route 230, west of the confluence of Elk Branch and Elks Run, and adjacent to much of Elks Run. The entirety of the SWPA for Elks Run is located outside of the jurisdiction of the Town of Harpers Ferry. During the meeting, we discussed reaching out to Jennifer Brockman (who could not attend the meeting), the Director of the Department of Planning and Zoning, to discuss the possibility of requiring that new residential lots that will be served by private well and septic utilize Best Available Technologies (BATs), such as pre-treatment, within the ZCC. At this time, it is unknown if such a possibility is feasible and within the authority of the planning department and county health department. Alana Hartman of WV Department of Environmental Protection and Suzy Campbell of the West Virginia Conservation Agency indicated that both agencies publicize cost-sharing initiatives to pump and maintain residential septic systems through the Elks Run Watershed Group. Both representatives promote proper maintenance of septic systems through educational and outreach activities, both within the watershed and across the County. Unless one of the adjacent utilities has the capacity and capability of incorporating future developments into their water and wastewater system, future residencies will likely be served by individual well and septic systems. The focus will be to promote the use of BATs at new residencies, and/or to replace failing systems with BATs, and to continue to provide cost-sharing opportunities to residents with existing systems who wish to partake in the septic pumping maintenance program.
- ❑ **Agricultural Practices** - The Team discussed sediment loading, and the introduction of bacteriologicals and nutrients to County waterways that are associated with agricultural lands. Discussions primarily focused on agricultural lands that lacked adequate riparian buffer zones near stream corridors, pastoral lands that permitted livestock direct access to stream corridors, and those lands that had high runoff and erosion potential that would impact Elks Run. ALWI recommended that the Protection Team open a renewed dialogue with agricultural land owners to focus on implementing additional physical boundaries (such as livestock exclusion fencing along stream corridors) or alternative agricultural practices (including cover crops, crop rotation, implementation of nutrient management plans, etc.). ALWI recommended the use of grant

funding opportunities to promote implementation of many of these programs, and/or educational outreach about programs that have no cost to the landowner (such as the nutrient management plan program) and those that provide economic incentives to landowners who participate in land retirement programs, including CREP. Mrs. Suzy Campbell of WVCA indicated that her organization has provided cost-sharing opportunities to land owners for creation of livestock exclusion fencing on their lands. She also indicated that some of the recommended programs, such as a push for cover crops, are already utilized and are popular in the area. Mrs. Campbell volunteered her agency to continue reaching out to landowners to discuss cattle exclusion fencing, riparian zone restoration, implementation of nutrient management plans, cover crops, and other management practices that would help reduce non-point pollution originating from agricultural and pastoral lands.

- **New Growth** – While Ms. Jennifer Brockman, director of the Jefferson County Department of Planning and Zoning, was unable to attend the Protection Team meeting, proposed residential growth was discussed at some length. Discussions primarily focused on methods to potentially implement low impact development, either through ordinance revision, an economic incentive program, or through educational and outreach measures on the Planning Departments behalf. Discussions primarily focused on encouraging BATs for septic systems (as discussed above) and on promoting subdivision plans that encourage open space, preserve riparian buffer zones, limit impervious surface creation and reduce stormwater runoff by endorsing on-site infiltration and/or biological treatment and uptake. During the discussion, Ms. Monica Whyte of WV BPH volunteered to reach out to Jennifer Brockman to discuss these concepts. The Protection Team decided that it would be best to discuss revisions to the stormwater management, flood plain and subdivision ordinances to promote these strategies. If conversations with Ms. Brockman indicate that this cannot be performed or completed, Ms. Whyte agreed to discuss implementation of economic incentive programs that would promote low impact development. In this manner, a land developer might be charged a County fee or tax if their subdivision plans indicate they will exceed an impervious surface cap imposed by the County. If the developer exceeds the cap, they might be charged a fee that can be used to promote watershed management and restoration strategies elsewhere in the watershed. The goal of the program would not be to penalize developers, but to promote them to incorporate forest and open space preservation and the best stormwater management techniques available into their plans. Those that utilize these strategies or otherwise limit impervious surface development would have the fee waived. Should the economic incentive program prove to be infeasible or non-enforceable, then Ms. Whyte has agreed to discuss education and outreach opportunities with Ms. Brockman whereby the County would promote the use of low impact development designs to land developers.

During the course of the meeting, other topics were discussed, including water quality monitoring programs and alternative stormwater management and drainage way restoration techniques. In regards to water quality monitoring, Mrs. Campbell indicated that her organization will be working with the USGS to conduct DNA testing of E. Coli in Elks Run to determine if these bacteria originate from humans (indicating influence from failed septic systems) or livestock (indicating influence from pastoral and agricultural lands). She indicated that she would share the results of the study with the Harpers Ferry Water Works. She also discussed macroinvertebrate and other water quality sampling her organization performs with local schools to raise educational awareness about the health of Elks Run. These results

will also be shared with the Harpers Ferry Water Works upon request. In regards to stormwater management and design, Mrs. Campbell indicated that her organization is studying the effectiveness of alternative swale drainage systems at Duffields MTA station and Sam Michaels Park. She also indicated that the Elks Run Watershed Group (of whom she is a key member) is performing streambank stabilization projects on Elk Branch downgradient of the Duffields MTA station to reduce streambank erosion and reduce sedimentation of Elks Run and the Potomac River.

The Education and Outreach Strategies recommended by ALWI were discussed, and responsible members were chosen for each category. The Harpers Ferry Water Works agreed to host source water protection information on the Town website to provide general information, provide a draft copy of the source water protection plan for public comment and review, and to raise awareness about the need for volunteers to help expand the Elks Run Watershed Group. Mrs. Campbell stated that she would continue to organize and publicize cleanup events in the watershed, and the Harpers Ferry Water Commission indicated a willingness to help advertise these events to reach a greater volunteer base. Mrs. Campbell also indicated that her co-worker, Ms. Heather Duncan, will continue to work with local middle schools to promote educational and outreach opportunities via their stream macroinvertebrate program, which is used to assess the biological health of the stream. The Team also discussed communicating with Beth Brent to display source water information in public locations. Likewise, similar discussions will be had with other key County personnel. The Team also discussed the concept of establishing source water protection area signs near key roadways, which may be placed on voluntary landowner properties. The meeting, which began at approximately 9:00 AM, was adjourned at 12:00 PM.

## Appendix E-5. Emergency Response Plan Signature Page

Emergency Response Planning for Small Community Water Systems, WV DHSEM, May 2015

I certify that this community water system has completed an Emergency Response Plan (ERP) that does/does not incorporate the results of the Security Vulnerability Assessment (SVA) completed for the system.

I certify that this document was prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information (Safe Drinking Water Act (42U.S.C. 300f etseq.)).

Email/FAX the completed certificate only (do not send your SVA or ERP) to WV DHHR

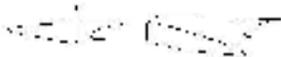
Public Water System ID Number: 3301912

System Name: Harpers Ferry Water Works

Address: 1435 Bakerton Rd, P.O. Box 217, Harper Ferry WV 25425

Print Name of Person Authorized to Sign this Certification on behalf of the System:

Josh Carter Title: Water System Manager

Signature: 

Phone: (304) 535-6555 Cell: (304) 582-5915 Email: jcarter@harpersferryww.us

Fax (304) 535-6520

Received Technical Assistance from the following:

1. Advanced Land & Water
2. WV BPH
3. WV RWA

Completing the following:

- X Security Vulnerability Assessment
- X Emergency Response Plan

## Appendix E-6. Engineering Evaluation

CONFIDENTIAL

## Appendix E-7. Railroad Emergency Response Trainings and Services

The information included in this Appendix may be found at the following web addresses (respectfully):

Online Education:

- ❑ General - <https://www.csx.com/index.cfm/about-us/safety/community/emergency-responder-training-and-education/>
- ❑ Online Trainings – [www.csxsafe.com](http://www.csxsafe.com)
- ❑ Planning Guides – <http://csxhazmat.kor-tx.com/>
- ❑ Additional Training Opportunities - <http://www.beyondourrails.org/index.cfm/safety/>

Rail Respond:

- ❑ Program Information – <http://www.beyondourrails.org/index.cfm/safety/respond/>

Safety Train:

- ❑ Program Information – <http://www.beyondourrails.org/index.cfm/news-stories/articles/csx-safety-train-delivers-enhanced-outreach-to-first-responders-and-communities/>
- ❑ Related Article – [http://www.richmond.com/business/article\\_6b1526cf-e3fe-55d4-bec6-37601609a875.html](http://www.richmond.com/business/article_6b1526cf-e3fe-55d4-bec6-37601609a875.html)
- ❑ CSX Corporate Social Responsibility Report (additional information on the Safety Train program may be found on page 50) - <https://www.csx.com/index.cfm/library/files/responsibility/csr-report-files/corporate-social-responsibility-report/>



About Us / Safety / Community / Emergency Responder Training and Education

Community
Rail Security Partnerships
Emergency Responder Training and Education

## Emergency Responder Training and Education

CSX provides emergency planning assistance and training to local fire, police and emergency response personnel in the communities we serve.



### Online Training at [CSXSAFE.com](http://CSXSAFE.com)

CSX hosts a free online training program to educate emergency personnel on how to safely respond to incidents on and around railroad property and equipment.

CSXSAFE offers participants the opportunity to gain an understanding of how railroads operate, including some of the hazards of working around the rails and necessary protocols to keep responders safe.

The web-based program takes less than an hour to complete and is intended to provide important information to public agency personnel in fire and police departments, rescue and emergency medical organizations about basic rail safety precautions, railroad operations, initial-response procedures, types of rail equipment and who to call in an emergency.

Upon completion of the training modules, participants take a quiz, print a certificate of completion and are able to browse through upcoming in-person training opportunities being offered across the CSX network.

### Training Materials

The CSX Transportation Public Safety and Environment department provides free training and emergency planning materials for emergency response agencies. Visit our [Training Materials for Emergency Responders](#) page to request any of the following items:

- Community Awareness Emergency Planning Guide
- Emergency Response to Railroad Incidents Self Study Guide
- Emergency Response to Railroad Incidents Self Study Video
- Locomotive Emergency Response Operations Video

### Related Links

- Corporate Social Responsibility
- CSX Police Department
- Emergency Responders





## WELCOME TO CSX SAFE,

a course designed by CSX to help local emergency responders manage incidents involving rail property and equipment. CSX is dedicated to managing safe railways, and by working together with professionals like you, we can better protect and serve the communities in which we live and work.

Emergency response procedures require attention to detail. While this site is geared toward all responders, CSX provides discipline-specific training for police, fire & rescue, and other response agencies.

Once you've passed the quiz and are ready to take your emergency response training further, please visit the "More" section of this site.

To save your quiz progress, receive your certificate, or enroll in live training, you must have cookies enabled and be logged in.

CSX Transportation is a proud member of 

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Train Photos Courtesy of Ron Flanary

## TRAINING MATERIALS FOR EMERGENCY RESPONDERS

### Welcome

The CSX Transportation Public Safety and Environment department provides training and emergency planning materials for emergency response agencies free of charge. On this website, you can request the following items:

- Community Awareness Emergency Planning Guide
- Emergency Response to Railroad Incidents Self Study Guide
- Emergency Response to Railroad Incidents Self Study Video
- Locomotive Emergency Response Operations Video

### Please follow the directions below to request these materials.

To login, please select the agency type with which you are affiliated.  
You will need to provide evidence of your need for the materials requested before your order is filled.

**CSX Transportation provides training materials to response agencies located in the states in which we operate. Due to the high demand for these training products, CSXT cannot provide materials for agencies in states other than those served by CSXT. If you are associated with a response agency west of the Mississippi River, Wisconsin, or any other area not served by CSXT, you should contact the railroad company operating in your jurisdiction for training.**



CSX Transportation proudly supports TRANSCAER® (Transportation Community Awareness Emergency Response), a voluntary national outreach effort that focuses on assisting communities prepare for and respond to a possible hazardous material transportation incident.

City/County Government	▲
Consultant/Private Company	
CSX Employee	
EMA - County	
EMA - State	
EMS	
Fire Department - Paid	
Fire Department - Volunteer	
Police	
State/Federal Government	▼

GO ▶

Alternatively, you may login as an authorized CSX employee with your email address and password.

Username:

Password:

LOGIN ▶

[Forgot Your Password?](#)

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Safety

- Play It Safe
- Youth Safety Outreach
- Rail Respond

### Safety

At CSX, safety encompasses every aspect of company operations. Guided by a policy to ensure the safety of our employees, our customers and the communities we serve, CSX works relentlessly to prevent injuries and accidents through education, programming and advocacy at all levels.



### Rail Safety First Responders

Through Rail Respond, CSX and First Responders work hand-in-hand to seamlessly share information to safeguard the communities and customers they serve.

[LEARN MORE](#)



### Emergency Responder Training

- [Rail Respond](#)
- [Online Training](#)
- [Training Materials](#)

[VIEW ALL >](#)



Safety / Rail Respond

Safety
Play It Safe
Youth Safety Outreach
Rail Respond

### Rail Respond



CSX Rail Respond is the first program of its kind among Class I railroads. It provides firefighters, police officers and other emergency responders with easy mobile access to critical information about what's traveling on CSX rails.

Designed specifically to aid first responders in the event of a rail emergency, CSX Rail Respond quickly identifies the contents of rail cars carrying hazardous materials. Through the mobile website, responders can securely access:

- Real-time information on the contents of rail cars.
- Real-time complete train list information.
- A suite of other useful emergency response information designed to assist when responding to a rail-related transportation emergency.

This innovative system builds on CSX's longstanding commitment to communicate with, collaborate with and train first responders in hopes of advancing our top priority: the safety of our communities, our employees and our customers' freight.

CSX Rail Respond, designed to work on smartphones, tablets or desktop PC, can be accessed through iPhone, Android devices and most browsers.

First responders can request access at [www.csxrailrespond.com](http://www.csxrailrespond.com)



Youth Safety Outreach



Play It Safe Outreach Campaign





News/Stories

### CSX Safety Train Delivers Enhanced Outreach to First Responders and Communities



CSX's Safety Train: Energy Preparedness Program, with rolling classrooms and specialized hands-on training, has taken to the rails on an expanded first responder training initiative. The train will travel over much of the company's crude oil service territory over the next several months.

This CSX Safety Train will begin in mid-May, visiting numerous communities in Pennsylvania, New York, New Jersey, Ohio, Indiana and Illinois. The company's enhanced training program offers fire fighters, police officers, emergency medical technicians and other first responders insights on how rail cars work and how to deal with rail

incidents. CSX's first responder training already reaches hundreds of emergency personnel each year.

Upcoming training sessions will include Philadelphia; South Kearny, N.J.; Kingston, Albany, Syracuse, Rochester, Buffalo and New York, N.Y.; Erie, Pa.; Cleveland and Willard, Ohio; Garrett, Ind.; and Chicago. More details will be provided as the schedule is finalized.

"As the market for shipping crude oil has grown, so has our commitment to and responsibility for moving those shipments safely and efficiently," said Skip Elliott, CSX's vice president-public safety, health and environment. "This year, in light of increased crude oil movements on our network, we have expanded our engagement with first responders and emergency personnel along key routes to include training specific to crude oil movements."

The CSX Safety Train is comprised of a locomotive, four tank cars, one flat car equipped with a variety of tank car valves and fittings, two classroom cars and a caboose. CSX hazardous material specialists will lead training sessions with specific instruction on how crude oil is shipped. The train and instruction will help strengthen CSX's partnership with first responders and provide a higher state of emergency readiness.

Increased emergency response training and tuition assistance are part of a voluntary agreement that the nation's railroads reached with the U.S. Department of Transportation earlier this year. As part of this comprehensive agreement, the nation's railroads have lowered maximum authorized speeds for certain trains carrying crude oil in designated cities, increased track inspections on key oil routes, and agreed to implement additional trackside safety technology.

The CSX Safety Train is just one of a number of continuing programs through which CSX offers training and recognition to emergency responders and customers. Just recently, CSX presented its Chemical Safety Excellence Award to more than 70 shippers who had incident-free records in 2013.

Training already reaches hundreds of first responders through the Safety Train, hands-on sessions at training centers operated by CSX and the Association of American Railroads, classroom training at local fire stations, exercises and table-top drills, and thousands more through web-based and self-study courses. In September 2013, nearly 100 crude oil customers were trained by a CSX team.

**Location:** Jacksonville, FL  
**Published:** May 26, 2014

#### Photos