

Source Water Protection Plan

BERKELEY COUNTY PUBLIC SERVICE WATER DISTRICT (BCPSWD)

BUNKER HILL WATER TREATMENT PLANT (WTP)

PWSID WV3300202

BERKELEY COUNTY



12/30/15

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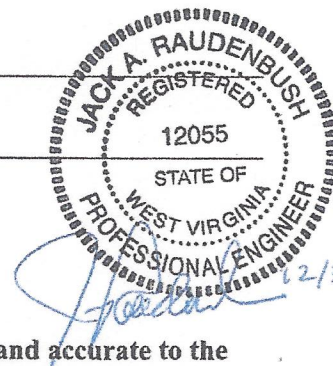
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Acronyms

GWUDI – Groundwater Under Direct Influence of Surface Water

PSSC – Potential Source of Significant Contamination

SWAP Program – Source Water Assessment and Protection Program

SWAR – Source Water Assessment Report

SWPA – Source Water Protection Area

SWPP – Source Water Protection Plan

WHPA – Wellhead Protection Area

WTP – Water Treatment Plant

WVBPH – West Virginia Bureau for Public Health

WVDEP – West Virginia Department of Environmental Protection

Purpose

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

The intent of this document is to describe what the Berkeley County Public Service Water District (BCPSWD) has done, is currently doing and plans to do to protect its sources of drinking water, BCPSWD owns and operates the Bunker Hill WTP. Although this water system treats water to meet federal and state drinking water standards, conventional treatment does not fully eradicate all potential contaminants. Treatment that goes beyond conventional methods is often very expensive to implement, maintain and operate. By completing this plan, the BCPSWD acknowledges that implementing measures to prevent contamination of system water sources can be a relatively economical way to help protect drinking water in ways that it can continue to be provided to customers, reliably and safely.

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

- ❑ 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 source(s) 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 (SWAP) Program

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

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

State Regulatory Requirements

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

Under the amended and newly added codes, each existing public water utility operating surface water and/or GWUDI sources must have completed or updated a Source Water Protection Plan (SWPP) by July 1, 2016, and must continue to update their plan every three years. Existing SWPPs have been developed for many public water utilities in the past. If available, these SWPPs were reviewed and considered in the development of this updated plan. Any new water system established after July 1, 2016 must submit a SWPP before operations commence. A new plan is also required when there is a significant change in the Potential Sources of Significant Contamination (PSSC) within the Source Water Protection Area (SWPA).

The code also requires that public water utilities include details regarding PSSCs, protection measures, system capacities, contingency plans, and communication plans in their SWPP. Before a SWPP can be approved, the local health department and public will be invited to contribute information and provide comments for consideration. In some instances, public water utilities may be asked to conduct independent studies of the SWPA and specific threats within their SWPA to gain further insight about the origin of their water for the purpose of developing strategies to better protect these vital resources.

System Information

The BCPSWD Bunker Hill WTP 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 the Bunker Hill WTP

Administrative office location:	251 Caperton Boulevard Martinsburg, WV 25403		
Is the system a public utility, according to the Public Service Commission rule?	Yes		
Date of Most Recent Source Water Assessment Report (SWAR):	January, 2001		
Date of Most Recent Source Water Protection Plan (SWPP):	November 2011		
Population served directly:	27,563		
Bulk Water Purchaser Systems:	System Name	PWSID Number	Population
	No other utilities currently purchase water from the System		
Total Population Served by the Utility:	27,563		
Does the utility have multiple source water protection areas (SWPAs)?	Yes		
How many SWPAs does the utility have?	Two, which share one common boundary line. As explained on page 11, one is a WHPA and the other is a conjunctive protection area.		

Water Treatment and Storage

As required, the BCPSWD Bunker Hill WTP 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 backup surface water source (Baker Lakes Quarry) from which the BCPSWD Bunker Hill WTP can draw water in emergency and/or drought scenarios can be found in **Table 3**. The utility draws groundwater from a spring source (LeFevre Spring), information for which can be found in **Table 4A**.

Table 2. The BCPSWD Bunker Hill WTP Water Treatment Information

Water Treatment Processes (List All Processes in Order)	Disinfection (chlorination) Diatomaceous Earth Filtration Fluoridation
Current Treatment Capacity (gal/day)	3,400,000
Current Average Production (gal/day)	1,900,000
Maximum Quantity Treated and Produced (gal)	2,000,000
Minimum Quantity Treated and Produced (gal)	1,000,000
Average Hours of Operation	18
Maximum Hours of Operation in One Day	24
Minimum Hours of Operation in One Day	8
Number of Storage Tanks Maintained	6 Distribution Storage Tanks (combined capacity of 3,471,000 gal.) 2 Contact Storage Tanks (250,000 gal. each)
Total Gallons of Treated Water Storage (gal)	3,971,000
Total Gallons of Raw Water Storage (gal)	None

Table 3. The Bunker Hill WTP Surface Water Sources

Source Name	SDWIS #	Local Name	Describe Source	Name of Water Source	Date Constructed / Modified	Frequency of Use (Primary / Backup / Emergency)	Activity Status (Active / Inactive)
Baker Lakes Quarry	TP001 – LeFevre Spring	Baker Lakes Quarry	18” Screened Pipe	Baker Lakes	-	Emergency / Backup	Inactive

Table 4A. The Bunker Hill WTP Groundwater Sources

Does the utility blend with groundwater?					The utility primarily uses groundwater and blends with or utilizes surface water when needed (occasional drought scenarios).				
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)
LeFevre Spring	TP001-LeFevre Spring	LeFevre Spring	1958 / 2003	No	-	-	-	Primary (TP1)	Active
Quarry Well	TP001 – LeFevre Spring	Quarry Well	Unknown	No	N/A	N/A	N/A	Emergency	Inactive

Table 4B. Other Sources Proximal to Bunker Hill with Separate Water Treatment Plants

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)
Springdale Well #4	TP003	Springdale Well #4	2005	Yes	140	75	Yes	Emergency	Inactive
Springdale Well #5	TP003	Springdale Well #5	2005	Yes	400	140	Yes	Primary (TP3)	Active
Springdale Well #6	TP003	Springdale Well #6	2009	Yes	252	144	Yes	Emergency	Inactive
Morning Dove Well #7	TP004	Morning Dove Well #7	2005	Yes	290	60	Yes	Emergency	Inactive
Morning Dove Well #8	TP004	Morning Dove Well #8	2005	Yes	270	60	Yes	Emergency	Inactive

Delineations

For groundwater supplies, BPH makes use of two types of SWPA delineations: 1) wellhead delineations and 2) conjunctive delineations, which are developed for supplies identified as GWUDI sources. A Wellhead Protection Area (WHPA) 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 WHPA 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 GWUDI sources.

Information and maps of the WHPA, which will be referred to as the Source Water Protection Area (SWPA) in this document, for this public water supply were provided to the utility and are attached to this report. See figures provided in **Appendix A**. Other information pertaining to the SWPA is shown in **Table 5**.

Table 5. Source Water Protection Area Delineation Information

Size of WSDA (Acres)	N/A; this system does not have an active surface water intake
River Watershed Name (8-digit HUC)	Conococheague-Opequon (HUC 02070004)
Size of the Conjunctive Delineation (Acres)	2,279
Size of Zone of Peripheral Concern (Acres) (Include ZCC area)	N/A; this system does not have an active surface water intake
Method of Delineation for Groundwater Sources	The WHPA was delineated by the SWAP Program as part of the SWAR in 2001 based on prior delineations in one study conducted by Draper Aden Associates and another by the West Virginia Rural Water Association (WVRWA). The WVRWA delineation was more conservative than that of Draper Aden Associates; as a result, the SWAP Program combined both into the 2001 SWAR WHPA (See Appendix F-3). WV BPH expanded the WHPA, proximal to Sylvan Run, prior to this SWPP update (See Appendix A).
Area of Wellhead Protection Area (Acres)	1,862
Total Area of SWPA (Acres)	4,141

Protection Team

Communities with successful protection plans form a Protection Team to help develop and implement management and protection strategies presented within the SWPP. 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 the Bunker Hill WTP include: water supply staff (including the executive director and chief operator), the Office of Homeland Security and Emergency Management (OHSEM) representatives and other local government officials, including the director of the planning department. A complete list of Protection Team members can be found in **Table 6**. Some government and business agencies were unable to participate in this iteration of the source water protection effort. Their participation will be sought in future iterations of the SWPP, which is updated at least every three years or as significant changes occur to PSSCs within the SWPA.

On behalf of BCPSWD, Advanced Land and Water, Inc. (ALWI) took responsibility for assembling the Protection Team. Members were provided the opportunity to contribute to the development of the plan. The Protection Team reviewed the system's existing SWPP and Source Water Assessment Report (SWAR), included as **Appendix F-3** of this report, as well as newly collected PSSC data to make informed decisions on potential threats, protective measures, and implementation actions. The Protection Team will continue to be responsible for updating the SWPP continually and documenting their efforts to engage local stakeholders.

Table 6. Protection Team Member and Contact Information

Name	Representing	Title	Phone Number	Email
Chris Thiel	Berkeley County PSWD	Executive Director		
Steve DeRidder	Berkeley County PSWD	Chief Operator		
Mike Thompson	Berkeley County Council	Planning Department Director		
Eddie Gochenour	Berkeley County Council	OHSEM Director		
Alana Hartman	WVDEP Division of Water and Waste Management (Nonpoint Section)	Environmental Resources Analyst		
Jennifer O'Brien	Eastern Panhandle Regional Planning & Development Council	Assistant Director		
Bill Clark	Eastern Panhandle Regional Planning & Development Council	Director		
*Regina (Suzy) Lucas	West Virginia Conservation Agency	Conservation Specialist		
*Joseph A. Castaldo	Department of Transportation	Berkeley County Supervisor		
Date of Protection Team Meeting		November 19, 2015		
Efforts to engage local stakeholders and explain absence of required stakeholders:		A list of local stakeholders invited to join the Protection Team is provided in Appendix F-4 . Reasons for their absence are explained therein.		

*These representatives could not attend the first Protection Team meeting, but have expressed interest in assisting with the source water protection effort.

Potential Significant Sources of Contamination

This SWPP provides a comprehensive list of the Potential Sources of Significant Contamination (PSSC) contained within the SWPA, based upon information obtained from the Department of Environmental Protection (WVDEP), the WVBPH and the Division of Homeland Security and Emergency Management. 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 “windshield survey,” in which a group performs a reconnaissance of potential hazards that can be identified from public rights of way, throughout the SWPA. This same method was used by ALWI to verify the presence of previously identified PSSCs, identify and record new PSSCs and/or change the details of facilities over time (e.g., when a gas station switches owners). Regulated PSSCs are derived from federal and state regulated databases, and may include data from WVDEP, US Environmental Protection Agency, Division of Homeland Security and Emergency Management, and out of state data sources. The presence of these PSSCs also was confirmed by ALWI field personnel to the degree feasible.

Confidentiality of PSSCs

A list of the PSSCs contained within the SWPA is included in this SWPP. However, the exact location, characteristics and approximate quantities of contaminants only were made known to a select designee of the 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 related emergency, information pertaining to such an event will immediately be disseminated to involved emergency responders.

PSSC data from some agencies (e.g., Division of Homeland Security and Emergency Management, WVDEP, etc.) may be restricted due to the sensitive nature of the data. However geospatial data has been provided to the public water utility. To obtain specific details regarding contaminants (such as information included on Tier II reports), the water utility will continue to contact local emergency agencies, directly. Maps and lists of the Non-Confidential 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 Bunker Hill WTP Protection Team, consultants to BCPSWD, 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. The second reason local PSSCs are identified is because public water utilities may consider expanding the PSSC inventory effort outside of the SWPA, 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 are or 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 are more difficult to locate, such as abandoned cesspools, underground tanks, French drains, dry wells or old dumps and mines.

ALWI investigated the Bunker Hill SWPA by means of a “windshield survey”. The purpose of this survey was to verify the existence of previously identified PSSCs and to identify any new PSSCs. Completion of such a survey increases local knowledge of the presence of PSSCs not listed on the original inventory or in regulated databases. Information on any new or updated PSSCs can be found in **Table 7**.

Table 7. New Locally Identified Potential Significant Sources of Contamination

PSSC Number	Map Code	Site Description	Comments
15	C-3	Automotive Repair	Automotive repair shop; exact services not known with certainty. Potential for vehicular fluid replacement, storage and/or disposal.
16	I-9	Electrical Repair / Services	Garage observed on site; whether used for vehicle maintenance or storage is unknown.
18	A-15	Greenhouse / Nursery	Storage or use of pesticides and/or fertilizers is unknown.
19	C-3	Automotive Repair	Automotive repair shop; exact services not known with certainty. Potential for vehicular fluid replacement, storage and/or disposal.
21	C-3	Automotive Repair	Automotive repair shop; exact services not known with certainty. Potential for vehicular fluid replacement, storage and/or disposal.
23	C-3	Automotive Repair	Automotive repair shop; exact services not known with certainty. Potential for vehicular fluid replacement, storage and/or disposal.

Note: The windshield survey for this system was completed prior to receipt of the BPH provided databases. Geospatial information collected during the windshield survey was compared against that provided by BPH for regulated and previously identified PSSCs. ALWI attempted to remove geospatial duplicates and add PSSC numbers for newly identified PSSCs, which are listed above. Numbers not displayed in the table above correspond with PSSCs previously identified in past SWAP reports or in regulated databases, the information for which can be found in **Appendix A**.

Prioritization of 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 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 will be addressed first in the management plan. Lower ranked PSSCs will be addressed in the future as time and resources allow. To assess potential threats to source waters, the BCPSWD Bunker Hill WTP Protection Team and ALWI have considered information regarding each PSSC.

After identifying local concerns, BCPSWD Bunker Hill WTP staff developed and prioritized management strategies to protect the source water from contamination, in cooperation with the WVBPH, local health departments, local emergency responders OHSEM and other agencies and organizations. This task was completed at the BCPSWD Protection Team meeting, hosted at BCPSWDs main office on November 19, 2015. A list of local representatives involved in the decision making process were 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 county in which the sources are located. The BCPSWD Bunker Hill SWPA is partially within Berkeley County, West Virginia and partially in Frederick County, Virginia, with PSSCs in both counties. In order to effectively manage PSSCs outside of Berkeley County, the WTP will have to work with Frederick County, VA officials. Also, if watershed groups are active in the area of concern, the utility may be able to partner with them.

A list of these priority PSSCs and critical areas were selected and ranked by the Bunker Hill WTP Protection Team. This list reflects the concerns of BCPSWD 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. This information is presented in **Table 8**.

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.

For source management and education/outreach strategies, this utility has considered how the strategies will be implemented. The initial step in implementation is to discuss responsible parties and timelines for implementation of strategies. The Protection Team members will determine the best process for completing activities within the projected time periods. Additional meetings may be needed during the initial effort to complete activities, after which the Protection Team should consider meeting annually to review and update the 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 BCPSWD Bunker Hill WTP Protection Team has developed an implementation plan (**Table 9**) for each PSSC that is listed in the Prioritization of Threats section. The responsible team member, timeline and any additional comments for each management strategy are presented in **Table 9**.

Table 8. Priority PSSCs or Critical Areas

PSSC or Critical Area	Priority Number	Reason for Concern
Highway (I-81)	1	Threat to source water due to the potential for accidental leaks and spills of vehicle fluids or hazardous freight; the area is underlain by karst terrain and contains losing streams which put groundwater sources at a higher risk from surface water contaminant pathways.
Railroad	2	Threat to surface water and shallow groundwater aquifers due to the possibility of spills and derailments.
Sinkholes	3	When sinkholes occur, a direct conduit from the surface to groundwater is created, and natural soil filtration processes are often bypassed. Water quality threats are dependent on surrounding land uses.
Commercial Activity	4	Facilities such as gas stations and auto repair shops lie within and just outside of the SWPA and pose a threat due to the potential for accidental leaks/spills, improper disposal of hazardous wastes or improperly managed stormwater runoff.
Septic & Sewer Systems	5	The status of some older septic systems is unknown and failures and leaks are possible. Unlike other areas, in karst terrain a septic system tends to fail downwards and can therefore be difficult to detect. Centralized sewer is preferable but needs periodic assessment for leaks and collapse, which may be associated with sinkholes.
Agricultural Activities	6	Due to agricultural land use in the area, nutrient levels can become elevated in surrounding surface water bodies and/or the underlying groundwater system.
New Growth	7	Expanded impervious surfaces can reduce natural recharge and introduce stormwater contaminants (including road salt, hydrocarbons and nutrients) into the groundwater system.

Table 9. Priority PSSC Management Strategies

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status / Schedule	Comments	Estimated Cost
<p>Highway (I-81)</p>	<p>BCPSWD, in conjunction with Berkeley County OHSEM, will work with the Department of Transportation (DOT) to explore opportunities to create and manage pre-stocked emergency spill response kits at state operated facilities along highway and railroad corridors (including the facility at Tabler Station Road). Alternative plans will be arranged should an agreement not be reached by these entities. The county currently possesses 25 bags of absorbent on hand with the possibility of acquiring up to 50 additional bags from neighboring emergency response entities. These entities may contact Frederick County, VA for additional emergency response & coordination of emergency equipment. OHSEM will work with LEPC coordinators and other emergency personnel to ensure that BCPSWD receives timely notification in the event of highway or other roadway spills within SWPAs.</p> <p>BCPSWD and OHSEM will work with the DOT to explore traffic regulation options for key highway corridors, and revisit postings of source water protection signs along these roadways.</p>	<p>Mr. Eddie Gochenour</p>	<p>Mid-term (2+ years)</p>		<p>Staff time involving members from BCPSWD, DOT, and OHSEM.</p> <p>Material costs for additional spill response kits/absorbent bags.</p>

<p>Railroad</p>	<p>Berkeley County OHSEM will work with LEPC and other local emergency responders to utilize the training materials provided by CSX railways (i.e., planning guides and in-person/on-site trainings, featuring a safety rail car) and their short line partners, which include Winchester and Western. OHSEM and emergency responders will also work with CSX to inquire about the 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 Appendix F-7. Emergency personnel have also expressed interest in performing routine Emergency Response drills for Highway and Railroad spills.</p> <p>BCPSWD will work with WV DEP or BPH to perform a Hazmat Re-route request to prevent specific potential contaminants from being transported through system source water protection areas. These entities, along with OHSEM, will work with railroad companies to discuss safety measures, emergency plans and inspection routine(s).</p>	<p>Mr. Eddie Gochenour</p>	<p>Mid- term (2+ years)</p>	<p>The Berkeley County OHSEM Director has already started a dialogue with CSX to request training materials and the use of the CSX training car within the next two years.</p>	<p>Staff time involving members from BCPSWD, 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>
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Sinkholes	<p>Region 9 will be researching available funding opportunities to create a SWPA-specific sinkhole management program.</p> <p>Currently, sinkholes that develop in the County are the responsibility of private land owners and other similar entities (including homeowner’s associations). The goal of the sinkhole management program will be to assign responsibility for mitigation and repair to relevant parties, encourage routine investigations along key travel corridors and provide advice and funding opportunities for sinkholes that develop on lands within the SWPA. Implementation of this task will take many years and cooperation from multiple public and private entities. The recommended sinkhole management plan is broadly based upon the Carroll County, MD sinkhole management plan.</p>	Region 9	10+ years	<p>Currently, there is not a specific government entity that oversees sinkhole mitigation and repair once lands have been developed. The Planning Department only has regulations in place to address existing sinkholes on lands that have not been developed.</p>	<p>Region 9 staff time researching available grant funding opportunities.</p> <p>BCPSWD staff time for utilizing funding information provided by Region 9.</p> <p>County Council, BCPSWD and DEP staff time for determining how best to allocate potentially available funds.</p>
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<p>Commercial Activity</p>	<p>BCPSWD will request Groundwater Protection Plans (GPPs) and/or stormwater management plans from WV DEP for commercial facilities located within the SWPAs. From these the utility will investigate what (if any) preventative pollution measures are already in place for these facilities. This will permit the utility to better understand protection strategies already in place at these facilities and more accurately determine the threat posed by specific facilities.</p> <p>BCPSWD will educate facility owners on the potential threat of sinkhole development caused by improper stormwater management.</p> <p>BCPSWD will distribute site-specific Best Management Practice lists, along with advanced hazardous materials containment options to facilities (which will include vaulted Above ground Storage Tanks) on an as-needed basis.</p>	<p>BCPSWD</p>	<p>Mid- term (2+ years)</p>	<p>Education outreach and voluntary strategies such as these are the most effective means of source water protection for this hazard at this time, as more restrictive localized regulations cannot be implemented.</p>	<p>BCPSWD staff time putting together information packets/materials for commercial business owners, as well as research time to pull GPPs from WV DEP records.</p>
<p>Septic systems</p>	<p>BCPSWD will work with Public Sewer to develop a leak detection protocol and recommend areas which would benefit from incorporation into the public sewer system, as development occurs.</p> <p>BCPSWD will work with the Health Department, to the degree feasible, to encourage homeowners to maintain and routinely inspect their septic systems or replace old or failing septic systems with Best Available Technologies (BATs).</p>	<p>BCPSWD</p>	<p>Pending</p>	<p>BCPSWD will pursue this recommendation at the time of the next Sewer Expansion Plan update. Extending the gravity sanitary sewer system to every resident in the county is not feasible.</p>	<p>BCPSWD staff time and public sewer staff time to determine priority sewer expansion areas.</p> <p>Material costs associated with expansion of sewers.</p> <p>Staff time providing informational materials.</p>

<p>Agricultural Activities</p>	<p>BCPSWD 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 focus on education and outreach measures.</p>	<p>BCPSWD</p>	<p>Long Term (5+ years)</p>	<p>Nutrient management plans are not required for agricultural facilities within Berkeley County but are provided at no cost by the USDA NRCS.</p>	<p>BCPSWD staff time associated with raising local awareness of the existence of these programs.</p>
<p>New Growth</p>	<p>BCPSWD will initiate a dialogue with the Farm Bureau and Farmland Protection Board to discuss funding opportunities (for acquisition) and/or land protection programs for parcels in proximity to springs, along stream corridors and in proximity to major mapped faults and fractures that supply system sources.</p>	<p>BCPSWD</p>	<p>Long Term (5+ years)</p>	<p>At this time, and until more restrictive land use regulations come to exist, land development rights provides the best means to preserve select sensitive areas.</p>	<p>BCPSWD staff time. Cost of land acquisition if expansion of land owned and controlled by utility is pursued.</p>

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. The BCPSWD Bunker Hill WTP has created an Education and Outreach plan to keep the local community involved in protecting their sources of drinking water in the future. 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
General Information Dissemination	BCPSWD will include educational information on the following topics on their website for public use: source water protection, water conservation, household hazardous materials disposal, pharmaceuticals disposal, observing and reporting spills/leaks.	BCPSWD	Short Term (1-2 years)		Staff time pulling together information and making it available to public.
BMP lists	Distribute lists of industry specific BMPs to the owners of (1) Gas Stations, (2) Car Repair Shops, (3) Agricultural Lands/Facilities within the SWPA (Future Farmers, etc.). Provide SWPP education materials.	BCPSWD	Short Term (1-2 years)		Staff time creating BMP lists using published/provided materials
Public Workshops	Present Source Water Protection information at already scheduled public meetings (i.e., town board meetings) and/or plan a Source Water specific Public Presentation.	BCPSWD	Pending	Status / Schedule will be evaluated based on participation and perceived need.	Staff time preparing for and hosting workshops
Clean Up Events	Coordinate with local Clean Up efforts and publicize projects. Work closely with Watershed Associations in this regard.	BCPSWD	Long Term (5+ years)		Staff time associated with watershed group coordination
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).	BCPSWD	Long Term (5+ years)		Staff time providing information to school system or attending events/classes
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.	BCPSWD, Region 9 & WV BPH	Ongoing / As local events occur		Staff time creating and displaying relevant information

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. BCPSWD Bunker Hill WTP examined their capability to protect their sources, treatment, and distribution system from contamination events and water shortages by assessing their water sources to determine if adequate capacity exists to meet demands during such events. They also reviewed their ability to use alternative water 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.

For groundwater sources, diverting or removing contaminated groundwater can be extremely difficult and costly. It may involve removing contaminated groundwater via pump and treat methods, or by implementing other remediation technologies. Systems have contingency plans in place to protect each source and treatment facility during contaminant events. BCPSWD Bunker Hill WTP can protect their source by turning off pumps and closing valves to prevent contamination of the treatment plant and/or distribution system. The amount of time that a source can remain offline depends, in part, on the water infrastructure, and should be determined by the utility before an emergency occurs. For groundwater sources, other factors, such as geologic strata orientation and configuration, contaminant type, contaminant viscosity, and retention also affect the period of time over which a groundwater source may not be usable. The longer a source can remain offline in such a case via interconnections and backup sources, the better equipped and flexible a water system will be for responding to emergency events. Incorporation of advanced treatment options into the water system, while expensive, may also offer additional options during contamination events, with the specific treatment methods dependent on the type of contaminant introduced into the groundwater supply.

Treated water storage capacity also becomes important in the event of an emergency or contaminant release. Storage capacity can directly determine how well a water system can respond to a contamination event and how long a source can remain offline. Information regarding the water shortage response capability of the BCPSWD Bunker Hill WTP 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/>). The BCPSWD Bunker Hill WTP has analyzed its ability to effectively respond to emergencies and this information is provided in **Table 11**.

Table 11. The BCPSWD Bunker Hill WTP Water Shortage Response Capability

Can the utility isolate or divert contamination from the groundwater supply?	Yes	
Describe the utility's capability to isolate or divert potential contaminants:	CONFIDENTIAL	
Can the utility switch to an alternative water source that can supply full capacity at any time?	Yes	
Describe in detail the utility's capability to switch to an alternative source:	CONFIDENTIAL	
Can the utility close the water source to prevent contamination from entering the water supply?	Yes	
How long can the source stay closed?	60-90 days; depending on storage in the Quarry	
Describe the process to close the source:	CONFIDENTIAL	
Describe the treated water storage capacity of the water system:	Inwood (2)	1,000,000 Gal. each
	Ridgeway	200,000 Gal.
	Gerrardstown	171,000 Gal.
	Airport	500,000 Gal.
	Liberty Park	600,000 Gal.
	Contact Tank (2)	250,000 Gal. each
Is the utility a member of WVRWA	Yes	

Emergency Response Team?	
Is the utility a member of WV-WARN?	Yes
List any other mutual aid agreements to provide or receive assistance in the event of an emergency:	BCPSWD has a purchase agreement with the City of Martinsburg for a small service area in close proximity to the City. BCPSWD also has interconnections with their Potomac River Plant, as well as with Frederick County, Virginia.

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

What is the type and capacity of the generator needed to operate during a loss of power?	CONFIDENTIAL	
Can the utility connect to generator at wellhead? If yes, select a scenario that best describes system.	Yes, CONFIDENTIAL.	

Can the utility connect to generator at treatment facility? If yes, select a scenario that best describes system.	Yes, CONFIDENTIAL.			
Can the utility connect to a generator in distribution system? If yes, select a scenario that best describes system.	Yes, CONFIDENTIAL.			
Does the utility have adequate fuel on hand for the generator?	CONFIDENTIAL			
What is your on-hand fuel storage and how long will it last operating at full capacity?	Gallons		Hours	
	CONFIDENTIAL		CONFIDENTIAL	
Provide a list of suppliers that could provide generators and fuel in the event of an emergency:	Supplier		Contact Name	Phone Number
	Generator	Allegheny Power	Customer Service Rep	888-254-6359
	Generator	WV National Guard	Garrison Commander	304-267-2772
	Fuel	Roach Oil	Associate	304-263-3329
	Fuel	Griffith Energy services	Associate	888-721-5707
Does the utility test the generator(s) periodically?	Yes, every Wednesday			
Does the utility routinely maintain the generator?	Annual service contract with ANRE			
If no scenario describing the ability to connect to generator matches the utility's system or if utility does not have ability to connect to a generator, describe plans to respond to power outages:	N/A			

Future Water Supply Needs

When planning for potential emergencies and developing contingency plans, a utility needs to not only consider their current demands for treated water but also account for likely future needs (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. The BCPSWD Bunker Hill WTP has analyzed its ability to meet future water demands at current capacity, and this information is included in **Table 13**.

Table 13. Future Water Supply Needs for the Bunker Hill WTP

<p>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.</p>	<p>Yes, there is enough capacity to support additional residential development. Over the last seven years, BCPSWD has experienced flat volumetric sales, whereby minimal growth has been offset by more efficient water practices. To address future commercial and industrial growth, BCPSWD plans to provide water from their Potomac River Plant (PWSID WV3300218). BCPSWD also has access to an additional 750,000 gpd based on their purchase agreement with the City of Martinsburg.</p>
<p>If not, describe the circumstances and plans to increase production capacity:</p>	<p>Re-evaluate withdrawal permit</p>

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 and other perforations 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 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 typically estimated include water used by fire departments for fires or training, un-metered bulk sales,

flushing to maintain the distribution system, backwashing filters, and cleaning settling basins. By totaling the metered and non-metered uses the utility calculates unaccounted for water. Note: To complete annual reports submitted to the Public Service Commission, 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. Therefore, these circumstances are included in the calculation of percentage of water loss for purposes of the SWPP. The data in **Table 14** were taken from the most recently submitted BCPSWD combined system Annual Report; the data were not available in a manner that isolates water loss by WTP.

Table 14. Water Loss Information

Total Water Pumped (gal)		1,695,168,000
Total Water Purchased (gal)		82,390,000
Total Water Pumped and Purchased (gal)		1,777,558,000
Water Loss Accounted for Except Main Leaks (gal)	Mains, Plants, Filters, Flushing, etc.	58,434,000
	Fire Department	1,890,000
	Back Washing	16,740,000
	Blowing Settling Basins	N/A
Total Water Loss Accounted For Except Main Leaks		77,064,000
Water Sold- Total Gallons (gal)		1,348,394,000
Unaccounted For Lost Water (gal)		352,100,000
Water lost from main leaks (gal)		1,137,000
Total gallons of Unaccounted for Lost Water and Water Lost from Main Leaks (gal)		353,237,000

<p align="center">Total Percent Unaccounted For Water and Water Lost from Main Leaks (gal)</p>	<p align="center">19.9%</p>
<p align="center">If total percentage of Unaccounted for Water is greater than 15%, please describe any measures that could be taken to correct this problem:</p>	<p align="center">BCPSWD is actively replacing leaky copper fittings throughout the system to reduce the amount of water lost. Additionally, the Bunker Hill WTP utilizes a leak noise correlation system that listens to the distribution system and produces a report indicating potential leak noise. If the system were also to install meter pits throughout the system, the flow could be monitored by systematically closing valves in designated areas and inspecting the system's master meter to note when flow decreases.</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 are often analyzed for specific contaminants, either for ensuring water quality parameters are within baseline levels, or for assessing abnormalities in water quality results that may be spurred by contaminant events. A utility should examine their PSSCs to determine which contaminants could pose a threat to the water source. If possible, the utility should create advanced plans for how those contaminants will be detected and measured. 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. BCPSWD Bunker Hill WTP collects samples for their source throughout the year to better understand the baseline water quality conditions and natural seasonal fluctuations. Having a

baseline helps determine if changes in the water quality are indicative of a contamination event. In addition to required water quality sampling analyses, the BCPSWD Bunker Hill WTP monitors pH, turbidity, hardness, total dissolved solids (TDS) and alkalinity on a daily basis.

The BCPSWD Bunker Hill WTP has established an early warning monitoring system for detecting chemical threats with sufficient time to respond to protect the treatment facility and public health. The utility has also outlined a communication plan which establishes communication with facility owners and operators that pose a threat to the water quality, with state and local emergency response agencies, with surrounding water utilities, and with the public. Communication plays an important role in knowing how to interpret data and how to respond.

The BCPSWD Bunker Hill WTP 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

<p>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?</p>	<p>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. OHSEM will coordinate with system representatives to notify them of large spills (>1,000 gallons) within or in proximity to SWPAs.</p>
<p>Are you aware of any facilities, land uses, or critical areas within your protection areas where chemical contaminants could be released or spilled?</p>	<p>Yes; I-81 Corridor and CSX Short Line Partner Railway. Two gas stations also exist in the southern portion of the SWPA.</p>
<p>Are you prepared to detect potential contaminants if notified of a spill?</p>	<p>The Bunker Hill WTP has the ability to detect potential contaminants that may affect turbidity, hardness, alkalinity, TDS and pH on a daily basis. Other contaminants including VOCs and SOCs require analysis from an outside laboratory.</p>

List laboratories (and contact information) on which you would rely to analyze water samples in case of a reported spill.	Laboratories	
	Name	Contact
	CONFIDENTIAL	
Do you have an understanding of baseline or normal conditions for your source water quality that accounts for seasonal fluctuations?	Yes; turbidity, hardness, alkalinity, TDS, pH are monitored and recorded on a daily basis.	
Does your utility currently monitor raw water (through continuous monitoring or periodic grab samples) from a groundwater source on a regular basis?	<p>Yes; turbidity, hardness, alkalinity, TDS, pH are all monitored on a daily basis prior to treatment.</p> <p>The utility plans to record conductivity daily using their existing digital conductivity meter. They also plan to acquire a dissolved oxygen meter.</p>	
Provide or estimate the capital and O&M costs for your current or proposed early warning system or upgraded system.	Capital	CONFIDENTIAL
	Yearly O & M	CONFIDENTIAL
Do you serve more than 100,000 customers? If so, please describe the methods you use to monitor at the same technical levels utilized by ORSANCO.	No	

Single Source Feasibility Study

If a public water utility’s water supply plant is served by a single–source intake 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 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, raw or treated water storage, interconnection with neighboring systems, or other options identified on a local

level. A secondary water supply should draw water from a substantially different location or water source to prevent contamination of both sources.

The BCPSWD Bunker Hill WTP has, in addition to its primary source, an emergency backup source (Baker Lakes Quarry) and an available interconnection with the City of Martinsburg Water System (PWSID # WV3300212). In the event of an emergency in which the LeFevre Spring cannot be utilized, the system would be able to supply water to its customers via these alternative sources. As a result, completion of the Feasibility Study Matrix spreadsheet was not required for this system; however, a brief narrative is attached (**Appendix E**) which describes the alternatives already in place.

Communication Plan

The Protection Team for this water system has also developed a Communication Plan that documents the manner in which the public water utility, working in concert with state and local emergency response agencies, shall notify the local health agencies and the public of a spill or contamination event, and provide updated information related to any contamination or impairment of the source water supply or the system's drinking water supply. The initial notification to the public for any such event will occur no later than thirty minutes after the public water system becomes aware of the spill, release, or potential contamination of the public water system. The Protection Team will update the Communication Plan continually to ensure contact information is up to date.

The water system has procedures in place for various types of catastrophic 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, though BCPSWD will be working with OHSEM and emergency response personnel to improve the communication and first response systems over the next two years.

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; BCPSWD Bunker Hill WTP has opted to utilize this procedure. The Communication Plan for the BCPSWD Bunker Hill WTP is included in **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 source.

Emergency Response

A public water utility must be prepared for any number of emergency scenarios and events that would require immediate response. It is imperative that information about key contacts, emergency services, and other potentially impacted systems be posted and readily available in the event of an emergency. Key information regarding this utility's Emergency Response Plan can be found in **Appendix C**. Several short forms are included and provide quick access to important information about emergency response. The following information is included in the utility's Emergency Response Plan:

- Emergency Response Team
- Emergency Communication Equipment
- List of sensitive populations
- List of major users
- Personnel and property protection measures
- Planned training courses
- Resource inventory
- Repair and supply providers
- Procedures for specific emergency incidents

If this information is not included in the Emergency Response Plan, the plan should be reevaluated and updated to provide all important information.

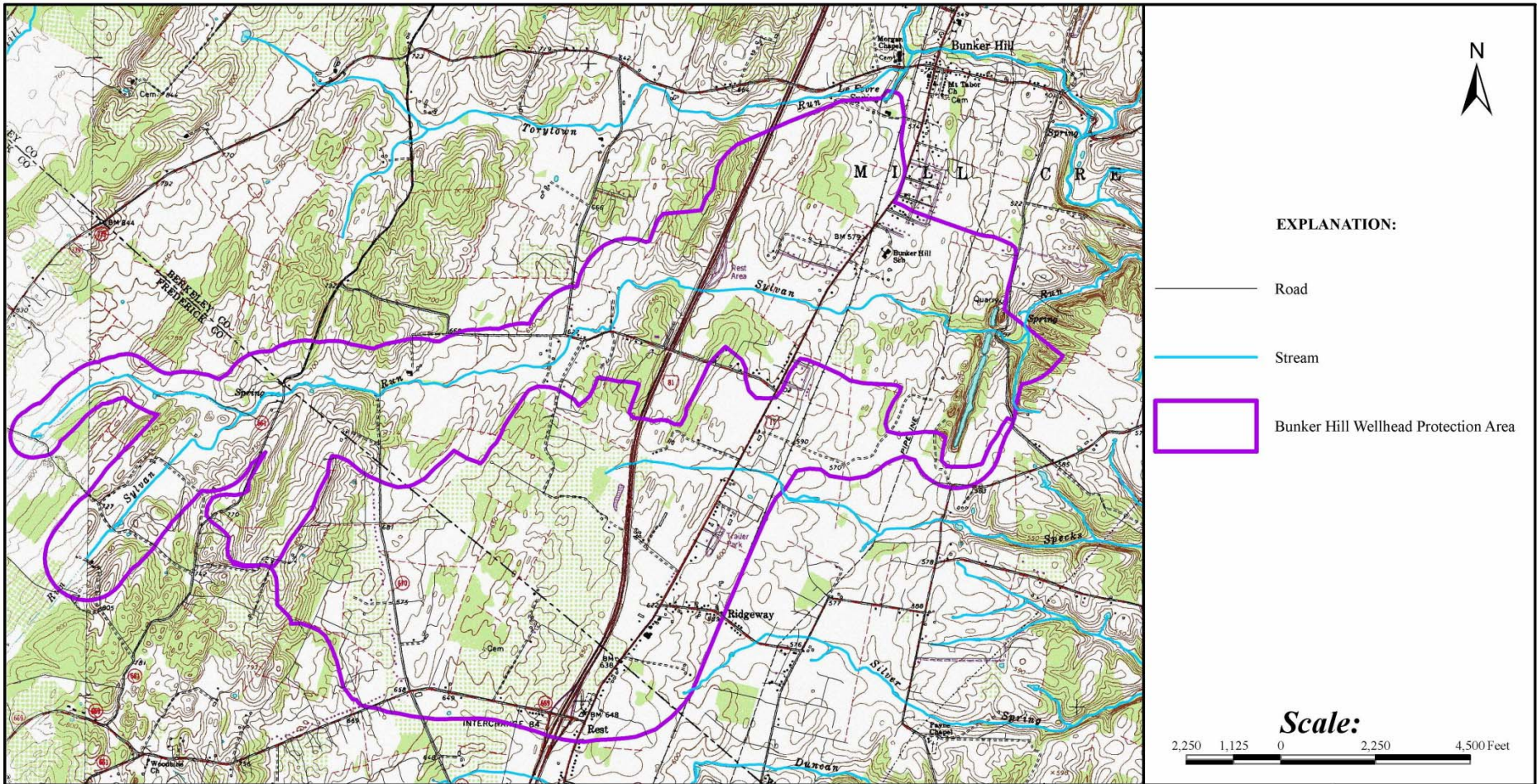
Conclusion

This report represents a detailed explanation of the required elements of the BCPSWD Bunker Hill WTP's SWPP. Any supporting documentation or other materials that the utility considers relevant to their plan can be found in the **Appendices** of this report.

This SWPP is intended to help prepare BCPSWD 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 community 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 and reliable 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



Notes:

1. Source Water Protection Area delineation provided by West Virginia Bureau for Public Health.
2. Stream data, road data and topographic base map from National Resource Conservation Service.
3. This figure is integral to an accompanying protection plan and should only be used in that context.
4. 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. WV7S319

Project:
**Bunker Hill Source Water
 Protection Plan**
 Berkeley County, West Virginia

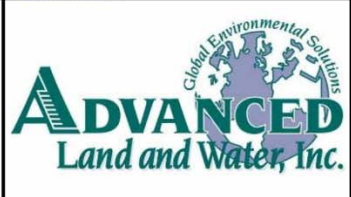
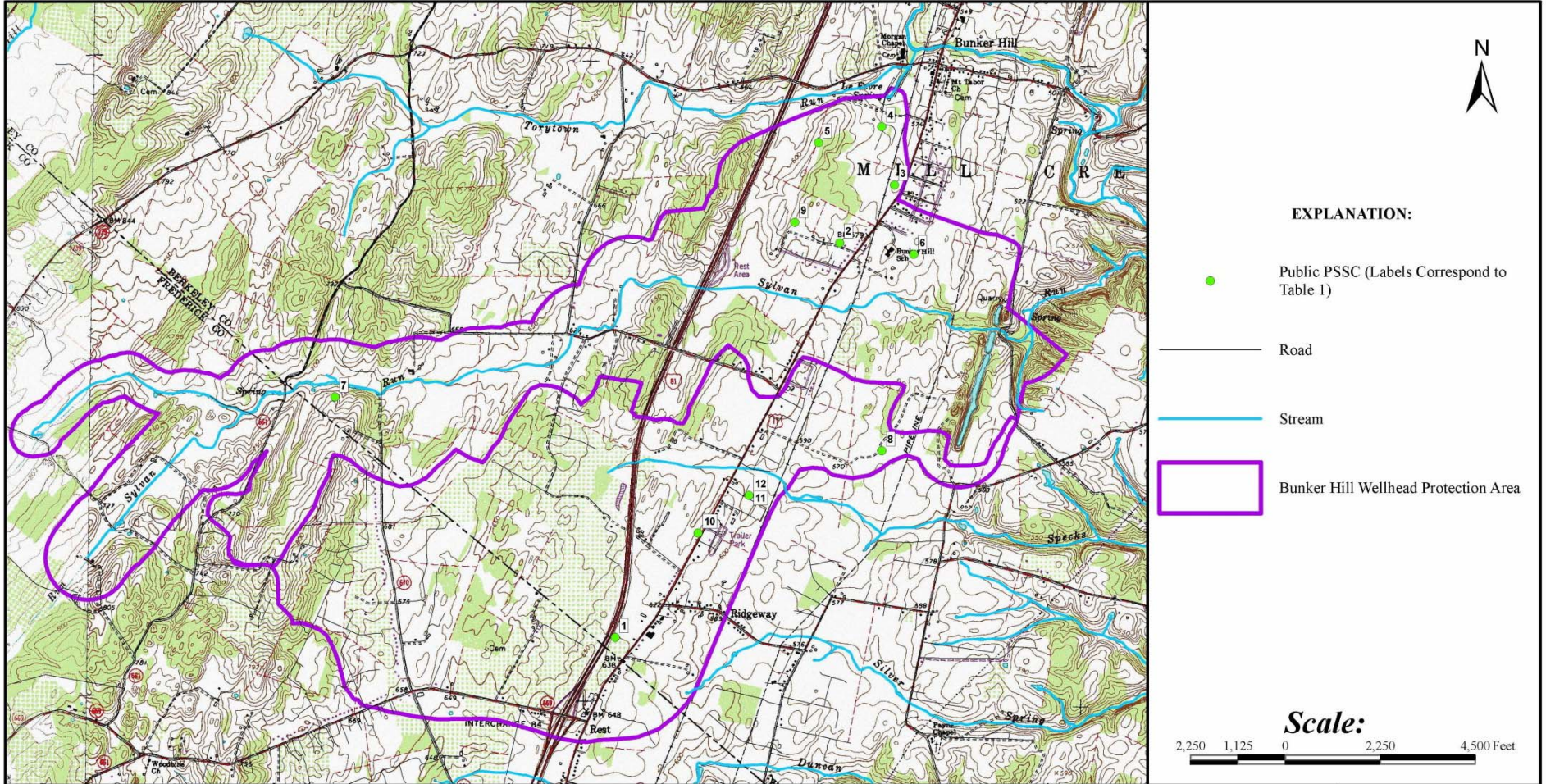


Figure 1:
**Wellhead
 Protection Area**
 December 21, 2015

Table 1: Public List of Regulated PSSCs

PSSC Label	Site Description	PSSC Type
1	Confidential	LUST Site
2	Confidential	LUST Site
3	Confidential	Resource Conservation and Recovery Act Facility of Interest
4	Confidential	Resource Conservation and Recovery Act Facility of Interest
5	Confidential	Resource Conservation and Recovery Act Facility of Interest
6	Confidential	Resource Conservation and Recovery Act Facility of Interest
7	Confidential	Resource Conservation and Recovery Act Facility of Interest
8	Confidential	Resource Conservation and Recovery Act Facility of Interest
9	Confidential	Resource Conservation and Recovery Act Facility of Interest
10	Confidential	Resource Conservation and Recovery Act Facility of Interest
11	Confidential	Resource Conservation and Recovery Act Facility of Interest
12	Confidential	Resource Conservation and Recovery Act Facility of Interest



Notes:

1. Source Water Protection Area delineation provided by West Virginia Bureau for Public Health.
2. Stream data, road data and topographic base map from National Resource Conservation Service.
3. See report for public PSSC data source.
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:
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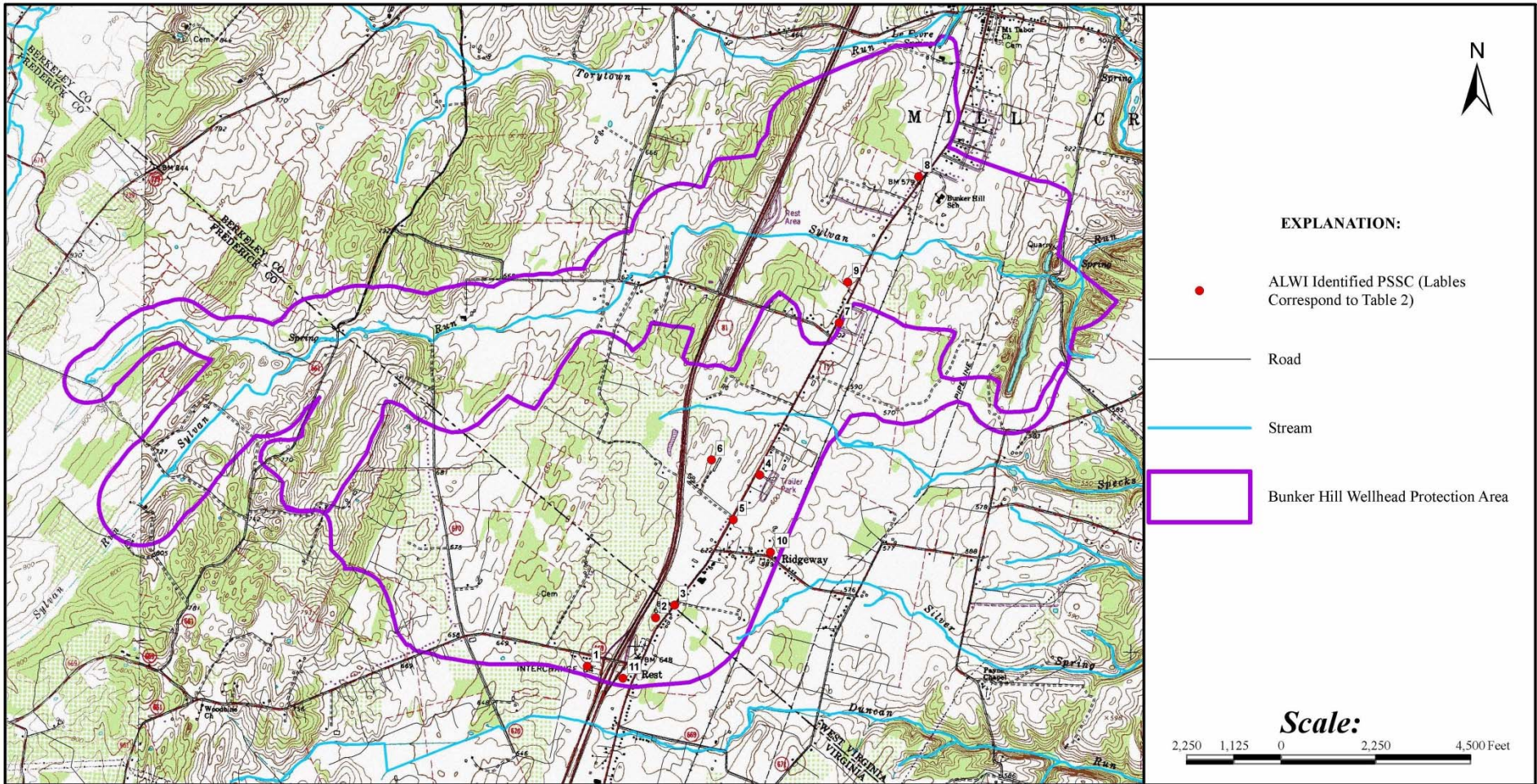


Figure 2:
**Public Potential
 Significant Source of
 Contamination in
 Wellhead Protection Area**
 December 21, 2015

Table 2: Public List of Locally Identified PSSCs

PSSC Number	Map Code	Site Description
15	C-3	Automotive Repair
16	I-9	Electrical Repair / Services
18	A-15	Greenhouse / Nursery
19	C-3	Automotive Repair
21	C-3	Automotive Repair
23	C-3	Automotive Repair

Note: The windshield survey for this system was completed prior to receipt of the BPH provided databases. Geospatial information collected during the windshield survey was compared against that provided by BPH for regulated and previously identified PSSCs. ALWI attempted to remove geospatial duplicates. Numbers not displayed in the above table correspond with PSSCs previously identified in past SWAP reports or in regulated databases.



Notes:

1. Source Water Protection Area delineation provided by West Virginia Bureau for Public Health.
2. Stream data, road data and topographic base map from National Resource Conservation Service.
3. ALWI Identified PSSC verified by ALWI field reconnaissance.
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
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 COUNCIL, REGION 9**
 ALWI PROJECT NO. WV7S319

Project:
**Bunker Hill Source Water
 Protection Plan**
 Berkeley County, West Virginia

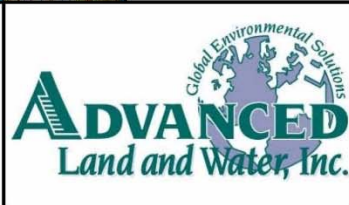


Figure 3:
 ALWI Identified Potential
 Significant Source of
 Contamination in
 Wellhead Protection Area
 December 21, 2015

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 form for this utility to complete is Form C, as the utility has an existing early warning monitoring system.

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 (Not applicable to BCPSWD Bunker Hill WTP)

Existing Early Warning Monitoring System Worksheet- Surface Water Source

Describe the type of early warning detection equipment installed.
Describe the mechanism used to store data and an institutional framework to analyze and interpret the data.
Describe the process used to determine the credibility of a contamination event if a change is detected in the quality of source water.

Appendix B-Form B (Not applicable to BCPSWD Bunker Hill WTP)

Proposed Early Warning Monitoring System Worksheet- Surface

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

Appendix B-Form C

Existing Early Warning Monitoring System Worksheet - Groundwater Source

Describe the type of early warning detection equipment installed.
CONFIDENTIAL
How many monitoring (sentinel) wells are established?
None. Due to the complex hydrogeologic setting and widespread geospatial position of PSSCs, there is no guarantee that installation of monitoring wells would provide adequate advanced notification of contamination in the groundwater system. Monitoring wells may be considered in the future if outside funding sources are available.
What is the expected rate of travel of a contaminant through the groundwater system?
Travel times are highly dependent on the 1.) Location of the contaminant source with respect to System sources, 2.) Hydraulic conductivity (0.6 – 120.0 m/d, according to the USGS) of geologic formations, which reflects the degree to which fractures are naturally enlarged and 3.) Hydraulic gradient along groundwater flow pathways. As such, travel times vary significantly throughout the SWPA and change as hydrologic conditions change.
Provide the distance from the contaminant source to the monitoring wells.
CONFIDENTIAL
What is the distance of the monitoring equipment to the wellhead?
CONFIDENTIAL
Describe the mechanism used to store data and an institutional framework to analyze and interpret the data.
CONFIDENTIAL
Describe the process used to determine the credibility of a contamination event if a change is detected in the quality of source water.
<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). BCPSWD Bunker Hill WTP personnel may also choose to shut down the LeFevre Spring pump 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 several days, as well as interconnections and a backup source.</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, BCPSWD Bunker Hill WTP personnel should shut down the LeFevre Spring pump 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 several days, as well as interconnections and a backup source. Should the LeFevre Spring become inoperable, the backup source can meet system demands for 60 to 90 days.</p>

Appendix B-Form D (Not applicable to BCPSWD Bunker Hill WTP)

Proposed Early Warning Monitoring System Worksheet- Groundwater Source

Describe the type of ground water monitoring network that could be installed, including the design and location.
How many monitoring (sentinel) wells would need to be established?
What is the expected rate of travel of a contaminant through the groundwater system?
Provide the distance from the contaminant source to the proposed monitoring wells.
What is the distance from the proposed monitoring equipment to the wellhead?
What would the maintenance plan for the monitoring equipment entail?
Describe the proposed sampling plan at the monitoring site.
Describe the proposed procedures for data management and analysis.

Appendix C. Communication Plan

Communication Plan Template

For The Bunker Hill Public Water System

PWSID: WV3300202 District: Kearneysville

Certified Operator: CONFIDENTIAL

Contact Phone Number: _____

Contact Email Address: _____

Plan Developed On: _____ Plan Update Due On: _____

ACKNOWLEDGMENTS:

This plan was developed by Berkeley County Public Service Water District 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 which poses a potential threat to public health and safety.

The public water system has the 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.

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
A	Announcement	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	Boil Water Advisory	Moderate	Water system users are advised to boil any water to be used for drinking or cooking, due to possible microbial contamination. The system operator will notify users when the boil water advisory is lifted.
C	Cannot Drink	High	System users should not drink or cook with the water until further notice. The water can still be used for showering, bathing, cleaning, and other tasks.
D	Do Not Use	Very High	The water should only be used for flushing commodes and fire protection until further notice. More information on this notice will be provided as soon as it is available.
E	Emergency	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 “game out” incident response and communication tasks
- Help to educate local officials, the media, and others on source water protection
- Cooperate with water supplier efforts to coordinate incident response communication
- Be prepared to respond to requests for field investigations of reported incidents
- Not speak on behalf of the water supplier unless designated as the system’s spokesperson

The primary spokesperson will be responsible for speaking on behalf of the water system to local agencies, the public, and the news media; as well as working with the management staff and the communication team to ensure that 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
- 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. 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:

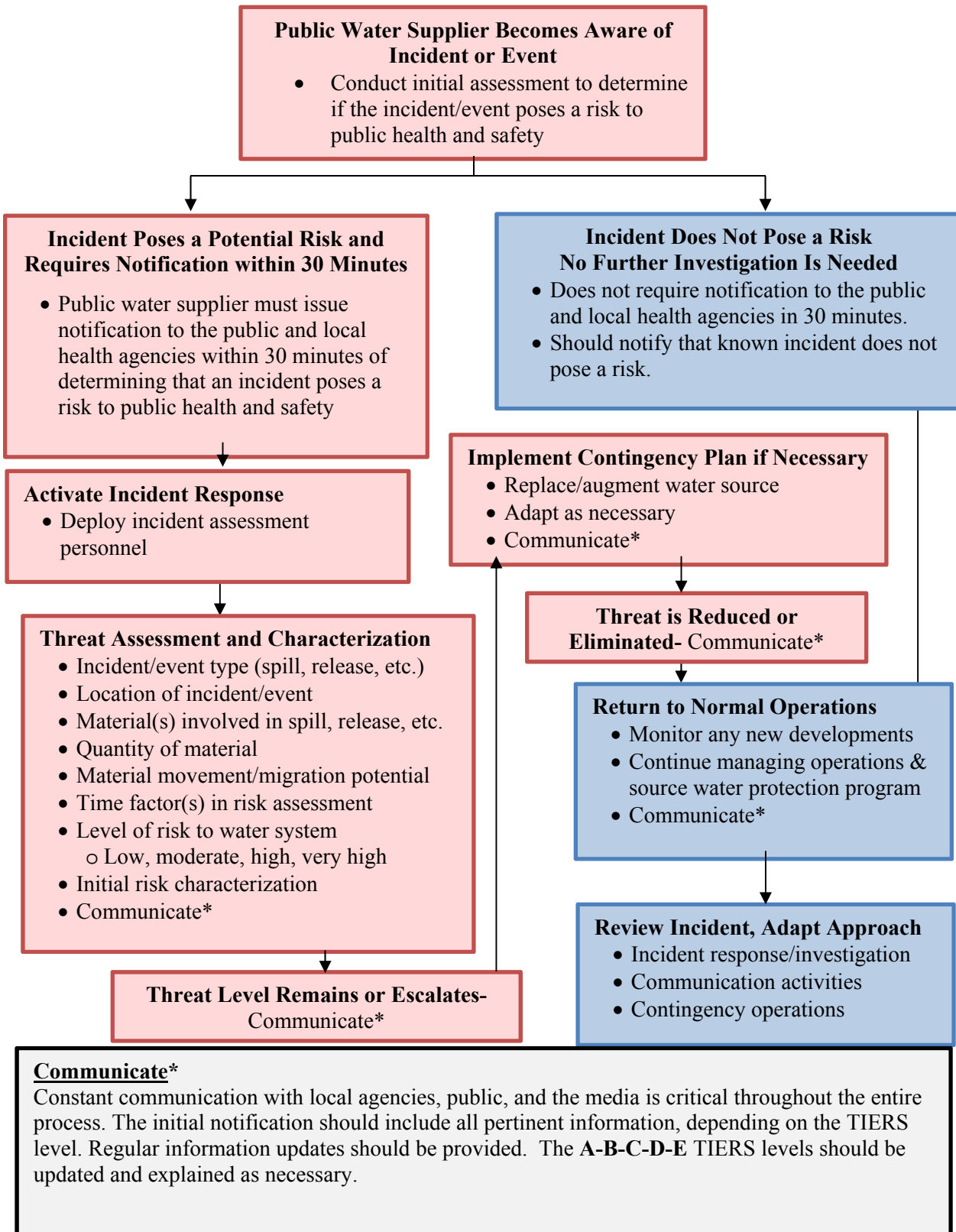
- Incident/event type (spill, release, etc.)
- Location of incident/event
- Type of material(s) involved in spill, release, etc.
- Quantity of material involved
- Potential of the material to move, migrate, or be transported
- Relevant time factor(s) in the risk assessment (e.g., downstream movement 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**)
 - Sent to local health agencies, the public, and the news media within 30 minutes
- Notification to the local water system's source water protection and communication teams
 - If warranted by initial findings regarding the spill, release, or incident
- Notification to the WV Bureau of Public Health
 - As required
- Periodic information updates, as incident response information is received
- Updates to the applicable A-B-C-D-E advisory tier, as necessary

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 will 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



Emergency Short Form 1

Emergency Communication Information

	Name	Phone Number	Email	
Designated spokesperson:	Christine Thiel	304-267-4600	cthiel@berkeleywater.org	
Alternate spokesperson:	Steve DeRidder	304-274-5803 or 304-229-5255	sderidder@berkeleywater.org	
Designated location to disseminate information to media:	251 Caperton Boulevard Martinsburg, WV 25403			
Methods of contacting affected residents:	Word of mouth		Posted notices	
	Door-to-door canvassing		Radio	X
	Newspaper	X	Other	Television
Media contacts:	Name	Title	Phone Number	Email
	Bill Kohler; The Herald Mail Co.	Editor	301-733-5131	billk@herald-mail.com
	The Journal	-	304-263-8931 ext. 125	-
	WRNR – Main Line	-	304-263-6586 304-263-6540	info@talkradiowrnr.com
	WKMZ – Main Line	-	304-263-2770	-
	WYII	-	304-263-0637	-
	WEPM 1340	-	304-263-8868 304-263-4321	-
	WHAG Channel 25	-	301-797-4400	-

Emergency Services Contacts

	Name	Emergency Phone	Alternate Phone	Email
Local Police	Berkeley County Sheriff's Office	911	304-267-7000	-
Local Fire Department	South Berkeley Volunteer Fire Department	911	304-229-5377	Brent Orsini; President: borsini@southberkeleyfire.com PJ Burroughs; Chief: firechief@southberkeleyfire.com
Local Ambulance Service	South Berkeley Volunteer Fire Department	911	304-229-5377	Brent Orsini; President: borsini@southberkeleyfire.com PJ Burroughs; Chief: firechief@southberkeleyfire.com
Hazardous Material Response Service	Berkeley County Public Safety Office	911	304-263-1345	berkeleycountycomm.org

Emergency Short Form 2

Key Personnel

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

Are you planning on implementing the TIER system?	Yes
--	-----

Emergency Short Form 3

Emergency Response Information

	Name	Phone
List laboratories available to perform sample analysis in case of emergency:	Reliance Laboratories, Inc.	304-754-7360
	Environmental Engineering & Technology, Inc.	(757) 873-1534
Has the utility developed a detailed Emergency Response Plan in accordance with the Public Health Security Bioterrorism Preparedness and Response Pan Act of 2002 that covers the following areas?	<p style="text-align: center;">Yes</p>	
When was the Emergency Response Plan developed or last updated?		<p style="text-align: center;">October, 2015</p>

Emergency Short Form 4

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

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

Philippi, District 6 (304) 457-2296

National Response Center - Chemical, Oil, & Chemical/Biological Terrorism

1-800-424-8802

WV State Fire Marshal's Office

1-800-233-3473

West Virginia State Police

1-304-746-2100

WV Watch – Report Suspicious Activity

1-866-989-2824

DEP Distance Calculator

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

Appendix D. Single Source Feasibility Study

The single source feasibility study 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). The BCPSWD Bunker Hill WTP has one or more alternative supply sources in place at this time; see **Appendix E** for details. As a result, a single source feasibility study is not required for this utility at this time.

Appendix E. Single Source Feasibility Study Narrative

A feasibility study matrix was deemed unnecessary for the BCPSWD Bunker Hill Water System (BHWS) (PWSID #WV3300202). This plant can utilize the Baker Lakes Quarry as a secondary source that would sufficiently provide raw water to the BHWS plant for a period of 60-90 days, depending on climatic and hydrologic conditions. The operator on duty would have to isolate the contaminated LeFevre Spring water and then activate the Baker Lakes Quarry pumps and open the transmission line valve to provide the BHWS plant with raw water from the Quarry. Once the plant receives water from the Baker Lakes Quarry, the treatment process would continue as if treating water from LeFevre Spring.

In the event that both the LeFevre Spring and Baker Lakes Quarry become impaired by contamination, or should prolonged drought decrease the productivity of both sources, BCPSWD can also utilize water from outside of their treatment plant area, which include interconnections with their Potomac River Plant and the City of Martinsburg.

Appendix F. Supporting Documentation

Appendix F-1. ALWI PSSC Update and Source Inspection

Appendix F-2. Locally Identified PSSC Database Search

Appendix F-3. BCPSWD – Bunker Hill WTP SWAR

Appendix F-4. BCPSWD Bunker Hill WTP Protection Team Meeting Minutes

Appendix F-5. Emergency Response Plan Signature Page

Appendix F-6. Engineering Evaluation

Appendix F-7. Railroad Emergency Response Trainings and Services

Appendix F-1. ALWI PSSC Update and Source Inspection

Advanced Land and Water, Inc. (ALWI) performed regulatory database reviews and a field reconnaissance in order to identify changes to known PSSCs and to identify and record additional PSSCs not previously documented. The field 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 field reconnaissance.

PSSC VERIFICATION AND SWPA INSPECTION

On April 29, 2015 ALWI performed a visual reconnaissance in the way of a windshield survey from public rights-of-way for the purpose of verifying and updating the PSSC inventory provided in past SWAPs, database reviews and associated lists provided by BPH. In so doing, we observed the existence (or continuing existence) of previously identified PSSCs, and recorded the locations of previously unidentified PSSCs. Results of this updated inventory are listed in Appendix A.

During this reconnaissance, local land use conditions were observed, with an emphasis on the potential use, storage and disposal practices of hazardous materials and petroleum products near BCPSWD Bunker Hill WTP sources and elsewhere throughout the delineated SWPA. Properties were visually scanned to the degree practicable from public rights-of-way. Global Positioning System (GPS) devices were used to verify geospatial positions of PSSCs.

Though ALWI observed and recorded additional hazards previously unknown to BPH and the System and updated the existing hazard data, (1) contaminant hazards may exist and could remain undetected due to limitations in the methods employed (concealed visual evidence, limited property access, etc.) and/or (2) new contamination hazards may develop in the future. For these reasons, the measures employed herein for identifying contaminant hazards should be repeated periodically for the assessment to remain current.

On April 29, 2015 ALWI also observed the location and condition of each of the Bunker Hill sources and the measures which the System has taken to protect them. The LeFevre Spring source was considered to be adequately housed and protected.

The Baker Lake Quarry (backup / emergency) source entrance is blocked by a low padlocked vehicle barrier.

Appendix F-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:

- ❑ Pesticide Businesses (11/6/2015);

- ❑ Land Restoration Program Sites (Voluntary Cleanup Program and Comprehensive Environmental Response, Comprehensive, and Liability Act) (11/9/2015);

- ❑ Underground Storage Tank and Leaking Underground Storage Tank Databases (5/4/2015 and 11/9/2015 respectfully);

- ❑ Resource Conservation and Recovery Act (RCRA) sites (11/9/2015).

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

Appendix F-3. BCPSWD – Bunker Hill WTP SWAR

SOURCE WATER PROTECTION PLAN

November 2011

Berkeley County PSWD- Bunker Hill

PWSID: WV3300202

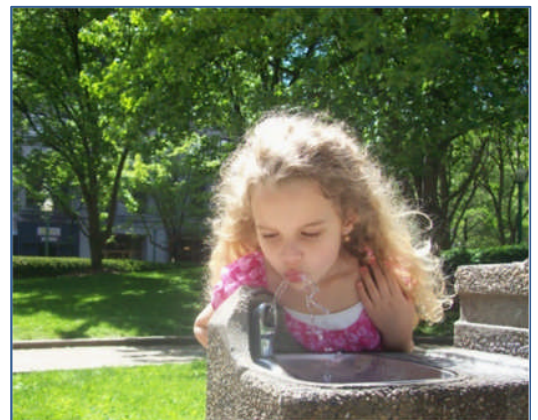
Berkeley County

Prepared by:



803 Quarrier Street
Suite 400
Charleston, WV 25301

Funded by WV Department of Health and Human Resources
Contract number EHS90111



SOURCE WATER PROTECTION PLAN

BERKELEY COUNTY PSWD-BUNKER HILL

97 Runnymede Road
Bunker Hill, WV 25413

PWSID: WV3300202
BERKELEY COUNTY

Funded by the West Virginia Department of Health and Human Resources
Contract Number: EHS90111

November 2011

**Prepared by:
Tetra Tech, Inc.
803 Quarrier Street
Suite 400
Charleston, WV 25301**

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Source Water Protection Plan

Berkeley County PSWD-Bunker Hill

Purpose

The intent of this document is to describe what the Berkeley County Public Service Water District (PSWD)-Bunker Hill has done, is currently doing, and plans to do to protect its source of drinking water. Although Berkeley County PSWD-Bunker Hill treats the water to meet federal and state drinking water standards, conventional treatment does not fully eradicate all potential contaminants and treatment that goes beyond conventional methods is often very expensive. By completing this plan, Berkeley County PSWD-Bunker Hill acknowledges that implementing measures to prevent contamination can be a relatively economical way to help ensure the safety of the drinking water.

It should be noted that proposed source water protection strategies in this report are voluntary, and not necessarily mandated by the Safe Drinking Water Act (SDWA). Proposed commitments and schedules are subject to change.

What are the Benefits of a Source Water Protection Plan?

- ✓ It can ensure conditions to provide the safest and highest quality drinking water to customers at the lowest possible cost.
- ✓ It establishes strategies to minimize the potential threats to the source of drinking water.
- ✓ It can plan for expansion, development, zoning and emergency response issues.
- ✓ It can provide more opportunities for funding in order to improve infrastructure, purchase land in the protection area, and other improvements to the wellhead or source water protection areas.

Background

Source Water Protection

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

The Safe Drinking Water Act Amendments of 1996 expanded the concept of wellhead protection to include surface water sources under the umbrella term of Source Water Protection. The amendments encourage states to establish source water assessment and protection (SWAP) programs to protect all public drinking water supplies. As part of this

initiative states must explain how protection areas for each public water system will be delineated and inventoried for potential contaminant sources, and given a susceptibility rating.

In 1999, the West Virginia Department of Health and Human Resources (WVDHHR) published the West Virginia Source Water Assessment and Protection (SWAP) Program, which was endorsed by the United States Environmental Protection Agency (USEPA). Over the next few years, WVDHHR 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. Berkeley County PSWD-Bunker Hill was provided its Source Water Assessment Report for Lefevre Spring, their primary water source. The report was prepared in January 2001 and is attached as **Appendix A**. This assessment report included information about the Baker Lake Quarry and Baker Lake Well, the backup sources. The report provides a list of recommended activities to review for possible implementation. A Source Water Assessment Report has not been completed for the Springdale and Morning Dove sources.

For more information regarding the SWAP program or your Source Water Assessment Report, contact staff at the WVDHHR (304)558-2981 or visit: <http://www.wvdhhr.org/oehs/eed/swap>.

System Information

Berkeley County PSWD-Bunker Hill operates a community public water system that serves an estimated population of 23,701 people. A community public water system is a system that regularly supplies drinking water from its own sources to at least 15 service connections used by year-round residents of the area or regularly serves 25 or more people throughout the entire year. Berkeley County PSWD-Bunker Hill purchases bulk water from the City of Martinsburg. Berkeley County PSWD-Bunker Hill sells bulk water on an emergency basis to the VA Medical Center system (serving 1,801 people) and Berkeley County PSWD-Potomac River system (serving 22,396 people). Berkeley County PSWD-Bunker Hill has not sold bulk water to the VA Medical Center or Berkeley County PSWD-Potomac River in over 10 years.

The Bunker Hill water treatment facility is located off of Runnymede Road in Bunker Hill, WV. Source water for this facility is obtained from Lefevre Spring. The Baker Lake Quarry and Baker Lake Well serve as backup sources for the spring during drought conditions. However, they have not needed to draw from these sources in over two years.

The Bunker Hill water treatment plant is staffed and operated 16 hours a day. Its original plant and intake were constructed in 1954. A new plant was constructed in 1968; and a new intake and pumping house were constructed in 2003. The approximate treatment capacity for this facility is 3.4 million gallons per day. The current average production is 2 million gallons per day. Water treatment processes include disinfection, diatomaceous earth filtration and fluoridation.

The Springdale and Morning Dove water treatment facilities are located in Bunker Hill, WV. The Springdale plant is operated 4 hours a day and the Morning Dove plant is operated 5 hours a day. Daily operations for these facilities are controlled manually to meet system demand.

There are three drilled wells that serve the Springdale plant. Springdale Well #4 was constructed in 2005 and has been declared Groundwater Under the Direct Influence of surface water (GWUDI). Springdale Well #5 was constructed in 2005 and is still being monitored to determine GWUDI status. Springdale Well #6 was constructed in 2009 and is currently inactive. GWUDI testing has not been initiated for this well. The approximate treatment capacity for the Springdale facility is 430,000 gallons per day. The current average production is 55,000 gallons per day. Water treatment processes include disinfection and fluoridation.

There are two drilled wells that serve the Morning Dove plant. Morning Dove Well #7 and Morning Dove Well #8 were constructed in 2005. GWUDI testing for Morning Dove Well #7 was completed in 2011 and determined that the well is not GWUDI. GWUDI testing has been initiated but not finalized for Morning Dove Well #8. The approximate treatment capacity for the Morning Dove facility is 430,000 gallons per day. The current average production is 70,000 gallons per day. Water treatment processes include sequestering, disinfection and fluoridation.

There are seven storage tanks and three booster stations maintained on Berkeley County PSWD-Bunker Hill's distribution system, which allows for more than 3.84 million gallons of storage.

Delineation

Delineation is the process used to identify and map the recharge area that supplies water to a well or spring; or the drainage basin that supplies water to a surface water intake. This area is referred to as the source water protection area (SWPA).

Lefevre Spring (including Baker Lake Quarry and Baker Lake Well Backups)

The following excerpt from the Source Water Assessment Report (See **Appendix A**) describes the SWPA. The estimated land area (approximately 3,935 acres) that contributes water to the spring is depicted in **Figure 1** (See **Appendix B**) as the Wellhead Protection Area (WHPA). This area includes coverage in both West Virginia and Virginia. The delineated area was determined by the SWAP Program based on prior delineations from two separate studies conducted by Draper Aden Associates and the WV Rural Water Association (WV RWA).

Springdale Wells

The Springdale SWPA was created using an interim 2,000 feet fixed radius delineation. This is generally based on water use for a five year period with consideration given to influencing hydrogeologic factors. The estimated land area (approximately 472 acres) that contributes water to the two active wells, Springdale Well #4 and Springdale Well #5, is

depicted in **Figure 1** (See **Appendix B**) as the WHPA. WVDHHR will update this delineation upon request.

Morning Dove Wells

The Morning Dove SWPA was created using an interim 2,000 feet fixed radius delineation. This is generally based on water use for a five year period with consideration given to influencing hydrogeologic factors. The estimated land area (approximately 317 acres) that contributes water to the two active wells, Morning Dove Well #7 and Morning Dove Well #8, is depicted in **Figure 1** (See **Appendix B**) as the WHPA. WVDHHR will update this delineation upon request.

Protection Team

Communities with successful protection plans form a protection team to help develop and implement the plan. A protection team provides a broader level of oversight and should include individuals familiar with protective strategies. Team members may include: water supply staff, emergency response personnel, local decision makers, business and industry representatives, land owners (of land in the protection area), and concerned citizens. The protection team may consist of one individual to a number of individuals.

Suggested members who may contribute to source water protection by joining the Berkeley County PSWD-Bunker Hill Protection Team are listed in **Table 1**.

Table 1: Protection Team Members and Contact Information

Name	Organization	Title	Phone Number
Daryl Mason	Berkeley County PSWD	Water Production Supervisor	304-283-6116
Mike Collis	Berkeley County PSWD – Bunker Hill	Chief Operator	304-229-5255
Paul Fisher	Berkeley County PSWD	Administrative Contact	304-267-4600
Steve Allen	Berkeley County Office of Emergency Services	Director	304-263-1345
James Barnhart	Berkeley County Health Department	Director	304-267-7130
Chief	South Berkeley Volunteer Fire Department	Chief	304-229-5377
Erica Johnson or Lewis Baker	WV Rural Water Association	Source Water Protection Specialist	304-201-1694

Identification of Local Source Water Concerns

Potential Contaminant Source Inventory

This inventory identifies potential contaminant sources (PCSs) in and around the protection area that could pose a threat to drinking water. A facility or activity is listed as a PCS if it has the potential to release a contaminant based on the kinds and amounts of chemicals typically associated with that type of facility or activity. It does not necessarily indicate that any release has occurred. The initial PCS list or inventory was developed as part of the Source Water Assessment conducted by WVDHHR in the early 2000's. PCSs were identified for the delineated area from electronic databases and from windshield surveys.

The USEPA and the West Virginia Department of Environmental Protection (WVDEP) regulate sites for a number of reasons pertaining to protecting public health and the environment. Databases and corresponding mapping of these regulated sites within or near the SWPA were reviewed to gain further information of the threats to the source(s).

On October 13, 2010, in preparation for developing this protection plan, contractor staff met with Berkeley County PSWD-Bunker Hill staff, including Mike Collis (Chief Operator) and Daryl Mason (Water Production Supervisor), along with WVDHHR Kearneysville District staff David Smith, to gain local knowledge of the presence of PCSs not listed on the original inventory or in regulated databases and not easily detected (ex. underground storage tanks, abandoned water wells, spill sites, etc). See **Appendix C** for notes from this meeting.

In addition, the contractor staff inventoried the delineated area to verify the existence of PCSs previously identified and to identify any new PCSs. If possible, locations of regulated sites within the SWPA were verified by global positioning system (GPS). Contractors located and/or reported on 42 PCSs, including wellheads (**Table 2**). Proper maintenance and construction of wells in adherence with WVDHHR rule, *Public Water System Design Standards*, 64CSR77 is vital to protecting the groundwater source.

In addition to the wells, the water treatment plant is also often considered a PCS. This is due to the chemicals used to treat the water, as well as the concentration of contaminants removed during the treatment process. To protect the source water, treatment plant, and personnel, the system should regularly inspect chemical containment structures, evaluate and update materials handling procedures and implement a "just-in-time" ordering process for chemicals when possible.

Figure 2 presents a map of the PCS locations (See **Appendix B**). Please note that the locations of wells and intakes are not displayed on figures due to security reasons.

Table 2: Potential Contaminant Sources Occurring in or Near the Source Water Protection Area for Berkeley County PSWD-Bunker Hill

PCS No.	Site Name	Site Description	Comments
1	Grocery Store	Food Lion grocery store	none
2	Gas Station	Shell gas station	none
3	Funeral Home	Brown funeral home	none
4	Car Wash	SUD's car wash	none
5	Gas Station	7-11 gas station and convenience store	none
6	Auto Repair Shop	Bob's Auto Repair shop	With older vehicles in lot.
7	Gas Station	Valley Service Center	No gas pumps visible but tanks could still be there.
8	Above Ground Storage Tank	Above ground tank on extensive apple orchard	none
9	Cornfield	Cornfield	none
10	Orchard	Apple orchard	none
11	Orchard	Apple orchard	none
12	Orchard	Apple orchard	Formerly a cattle farm.
13	Septic Tank	Septic tank on farm with apple orchard	none
14	Pasture	Cattle farm with pasture	none
15	Houses	House	No city water or sewer.
16	Crop field	Cornfield	none
17	Crop field	Cornfield	none
18	Crop field	Hayfield	none
19	Above Ground Storage Tank	Above ground storage tank on apple orchard	none
20	Orchard	Apple orchard	none
21	Gas Station	Flying J truck stop and gas station	none
22	Gas Station	Exxon gas station	none
23	Cemetery	United Methodist Church cemetery	none
24	Car Wash	Kar-Klean car wash	none
25	Water Supply Wells	Morning Dove Water Treatment Facility and Wells	Not shown for security reasons.
26	Water Supply Wells	Springdale Water Treatment Facility and Wells	Not shown for security reasons.
27	Cemetery	Cemetery	Containing old and new plots.
28	Gas Station	Liberty gas station	none
29	Car Wash	Whale of a Wash car wash	none
30	Gas Station	Exxon gas station	none
31	Quarry	Inwood Quarry, Inc.	Limestone quarry. A DL Morgan Jr. Inc. company. Same as R-1 thru R-11.
32	Auto Repair Shop	Shane's Auto and Truck Repair	Appears to be mostly farm now

PCS No.	Site Name	Site Description	Comments
			with few vehicles. Same as R-13.
33	Hotel	Hampton Inn Hotel	Farm field previously. Same as R-14.
34	House	Individual Residence	Private residence with large yard. Same as R-15.
35	School	Bunker Hill Elementary School	With retention pond. Same as R-16.
36	Gas Station	Sheetz Gas Station	Same as R-17.
37	Food Manufacturing	Musselman's Apple Products	Plant no longer in use. Same as R-18.
38	Water Treatment	Berkeley County Water Treatment Facility	Same as R-20. Not shown for security reasons.
39	Houses	Por Vida Homes Residential Development	Underground utility pipes in field and drainage area for residential homes. Same as R-21.
40	Excavating Company	DL Morgan, Jr., Inc. Excavating	Same as R-22.
41	Houses	Georgetown Square Residential Development	Exposed pipes at construction site. Same as R-23.
42	Cement/Concrete Plant	DanLee Co Concrete	A DL Morgan Jr. Inc. company. Not field verified. Same as R-9.

In addition to PCSs identified through interviews and field inventories, a list of regulated sites is provided in **Table 3**. If verified the regulated sites are recorded as PCSs. Those sites not confirmed in the field appear only on the regulated site list and are depicted on **Figure 3** (See **Appendix B**). The protection team may choose to verify this list and initiate protective strategies to address confirmed threats to the source water. Sites listed may represent expired permit data. For existing facilities of concern, determine if there is an active permit. In addition determine whether the owners/operators are complying with the permit, including developing and adhering to Groundwater Protection Plans when applicable.

Table 3: USEPA/WVDEP Regulated Sites Occurring in or Near the Source Water Protection Area for Berkeley County PSWD-Bunker Hill

PCS No.	Site Name	Site Description	Regulation Type*	Comments
R-1 thru R-11	HPUG2	Inwood Quarry, Inc.	DEP Regulated Mining	Surveyed, found. A DL Morgan Jr. Inc. company along with DanLee Co Concrete. Associated with PCS 31 and PCS 42.
R-12	Sewage	Berkeley County PSSD	NPDES	Not Surveyed, Not Accessible.
R-13	Industrial	Shane's Auto and Truck Repair	NPDES	Surveyed, Found. Location has farm with cornfields. Same as PCS 32.
R-14	UIC Stormwater	Aikens Corp.	NPDES	Surveyed, Found. Location is now

PCS No.	Site Name	Site Description	Regulation Type*	Comments
	Industrial			a Hampton Inn hotel. Same as PCS 33.
R-15	Industrial	Russell, Glen	NPDES	Surveyed, Found. Location is a residence with large yard. Same as PCS 34.
R-16	UIC Sewage	Berkeley County Board of Education	NPDES	Surveyed, Found. Location is a school with a stormwater pond. Same as PCS 35.
R-17	UIC Stormwater Industrial	Sheetz, Inc.	NPDES	Surveyed, Found. Same as PCS 36.
R-18	Industrial	Knouse Foods Cooperation	NPDES	Surveyed, Found. Sign says Musselman's, plant no longer in use. Same as PCS 37.
R-19	UIC Stormwater Industrial	JEM X LLC.	NPDES	Not Surveyed, Not Accessible.
R-20	Industrial	Berkeley County PSD	NPDES	Surveyed, Found. Same as PCS 38. Not shown for security reasons.
R-21	Industrial	Por Vida Homes, LP	NPDES	Surveyed, Found underground utility pipes in field and drainage area for residential homes. Same as PCS 39.
R-22	Industrial	Cogar Excavating	NPDES	Surveyed, Found excavation company. Same as PCS 40.
R-23	Industrial	Georgetown Square, Inc.	NPDES	Surveyed, Found exposed pipes at construction site. Same as PCS 41.
R-24	Sewage	Berkeley County PSSD	NPDES	Not Surveyed.
R-25	Industrial	Knouse Foods Cooperative, Inc.	NPDES	Not Surveyed. Ground water monitoring.
R-26	Air-Conditioning And Warm Air Heating	National Fruit Product Co. Inc.	RCRA	Not Surveyed.
R-27	Facility	National Fruit Product Co. Inc.	Toxics Release Inventory	Not Surveyed.

*Note: See **Appendix D** for guide to regulated types.

Prioritization of Potential Contaminant Sources & Critical Areas

It may not be feasible to develop management strategies for all of the PCSs within the Berkeley County PSWD-Bunker Hill SWPA, depending on the total number identified. The identified PCSs can be prioritized by potential threat to water quality, proximity to the intake and wells, and local concern. The highest priority PCSs can be addressed first in the initial management plan. Lower ranked PCSs can be addressed in the future as time and resources allow. In addition to identifying and prioritizing PCSs within the SWPA, local source water concerns may also focus on critical areas. For purposes of this source water protection plan, a critical area is defined as an area, identified by local stakeholders, within

or outside of the SWPA, that may contain one or more PCS(s), and/or within which immediate response would be necessary to address the incident and to protect the source water.

During a follow-up meeting, to be scheduled, staff from Berkeley County PSWD-Bunker Hill will review the PCS and critical area lists derived from the original Source Water Assessment Report, new field verified PCSs, regulated points, and local concerns. Meeting participants will identify the PCSs and/or critical areas as the highest priority at this time (**Table 4**). The Berkeley County PSWD-Bunker Hill protective strategies will focus on these PCSs.

The locations of these highest priority PCSs are identified in **Figure 2** (See **Appendix B**).

Table 4: PCSs and/or Critical Areas Prioritized as Highest Priority and Reason for Local Concern

Description of Highest Priority PCSs/Critical Areas	Why Are They Considered Highest Priority?
Sinkholes	Due to the karst geology (limestone) within the SWPA, there could be sinkholes in this area. Surface waters (and contamination) can enter the groundwater system very quickly through these sinkholes or other fracture/solution openings.
Public and Private Sewer	There are private individual septic systems and combined sewer systems located in the SWPA. Accidental releases or line breaks may allow untreated sewage to contaminate the surface water source. Untreated sewage contains total coliform, particularly <i>E. coli</i> , along with other bacteria and parasites that could negatively impact human health if treatment processes are not adjusted to address the contamination. Failing private septic systems can leach into surrounding soils or run off into surface water and potentially contaminate the water supply.
Gas Stations and Auto Repair Shops	Oils, antifreeze, and other automobile fluids can cause contamination of groundwater sources if not cleaned up and disposed of properly.
Inwood Quarry and Concrete Plant	DL Morgan Jr. Inc. operates a quarry and concrete plant through their companies, Inwood Quarry, Inc. and Danlee Co. Concrete. Concrete plants typically have chemicals, hazardous waste and oil or fuel storage tanks on site. In the event of fire, flood or other emergency, these could contaminate the source water.
Food Processing Plant and holding ponds	Knouse Foods Cooperative, Inc. owns the food processing plant located in Inwood, WV. This C.H. Musselman plant produced canned apple sauce until 2008. Previous contamination from the holding ponds located north of the plant has shown up in Mill Creek, which may influence to the Morning Dove wells. Knouse Foods Cooperative, Inc. holds an NPDES permit for ground water monitoring wells

Description of Highest Priority PCSs/Critical Areas	Why Are They Considered Highest Priority?
	at this location.
Agricultural Land Uses	Pesticides and other chemicals used for farm operations can migrate into the water supply. Areas used for disposal of animal waste or burying dead livestock can also cause contamination of the source water.
Interstate 81 and Major Roadways	I-81 and several other major roads traverse the SWPA. If a hazardous materials spill were to occur, it may be difficult to contain and could potentially contaminate the groundwater. Rights-of-way (ROWs) are typically maintained with herbicides that can migrate into the water supply. Highway road salt use can also migrate into the water supply.
Railroad Tracks	ConRail tracks run through the SWPA for the Lefevre Spring. A spill (fuel or transported materials) could contaminate the sources.
New construction and development	Construction runoff from new development can increase turbidity, total dissolved solids, and total suspended solids in the surface waters. Petroleum products from construction equipment could migrate into source waters should spills or leaks occur.
Unused Water Wells	Unused water wells, if not properly abandoned, act as open corridors to allow contaminants directly to the groundwater sources.

Protective Strategies

Source Management Strategies

Source management strategies are any actions taken to protect the source water from specific PCSs, type of contaminant, or critical area. For example, prohibitions, design standards, operating standards, and reporting requirements are typical source management strategies. Land purchases, conservation easements, and purchase of development rights are also included in the category of source management strategies.

It is advisable to focus source management strategies on high-priority PCSs, especially those that are within Berkeley County PSWD-Bunker Hill's jurisdiction. However, Berkeley County PSWD-Bunker Hill can protect against contaminant sources outside its jurisdiction by working with the officials of the county or neighboring communities in which the sources are located. Also, if watershed groups are active in the area of concern, the system may be able to partner with them.

Table 5 lists the PCS/critical area and active or possible protective strategies that Berkeley County PSWD-Bunker Hill has implemented, is implementing, or intends to implement to reduce the threat to the source water.

Table 5: Source Management Strategies

Potential Contaminant Source/Critical Area	Active or Possible Protective Strategies
Sinkholes	<p>Monitor for the formation of any new sinkholes in the SWPA. Establish or encourage buffering around sinkholes. Buffering techniques in use in other regions range from encouraging landowners to provide vegetative buffers to purchasing rights from the landowner. If buffering is not a feasible option, consider filling in the sinkhole following WVDEP's Sinkhole Mitigation Guidance document, which can be found at http://www.dep.wv.gov/WWE/Programs/gw/Documents/9026_Sinkhole_Mitigation_Guidance_Document_A2005.pdf.</p> <p>If applicable, seek state and/or local permits prior to filling sinkholes.</p>
Public and Private Sewer	<p>Work with the county health department to identify areas in the SWPA where home owners may need to install septic systems or service existing systems. Consider teaming with community to identify areas that would benefit from a cluster system or waste water line extension to eliminate straight pipes and/or malfunctioning septic systems.</p> <p>Provide information regarding contamination and source water protection in mailings to homeowners and include non-emergency contact information. Outreach materials will encourage them to have their septic system inspected regularly and pumped every 5-10 years as needed. Also, the USEPA provides a complete guide for residents to maintain their septic systems, for the guide, visit: http://epa.gov/owm/septic/pubs/homeowner_guide_long.pdf.</p> <p>The utility will also consider reducing the amount of septic systems in use by extension of the public sewer system.</p>
Gas Stations and Auto Repair Shops	<p>Communicate with station and shop owners the need for them to properly dispose of oil and other automobile products. Ask them to institute best management practices (BMPs) to contain and clean up spills, such as secondary containment around above ground storage tanks. Monitor compliance with state environmental regulations. Provide owners or operators with copies of material on underground storage tank maintenance. Install secondary containment around above ground storage tanks and/or chemical storage areas. These facilities may already be implementing BMPs for monitoring and/or containing a potential leak or spill and may be reviewed.</p>
Inwood Quarry and Concrete Plant	<p>Contact DL Morgan Jr. Inc. to determine the types and amounts of chemicals, hazardous waste, and fuel or oil stored on site, if any. Determine if the quarry and concrete plant have emergency response procedures in the event of fire, flood, or any other emergency. Work with their personnel to create an emergency response plan should contamination occur. Consider inviting owners/operators to join the protection team.</p>
Food Processing Plant and	<p>Contact Knouse Foods Cooperative, Inc. to determine if the groundwater monitoring is ongoing at this location. Ask to review</p>

Potential Contaminant Source/Critical Area	Active or Possible Protective Strategies
holding ponds	previous groundwater monitoring results and to be notified if additional contamination is discovered.
Agricultural Land Uses	Work with the County Extension Service, the Soil and Water Conservation District, and/or the Natural Resource Conservation Service to provide copies of fact sheets covering BMPs for nutrient management, pesticide use, pest management, waste oil disposal, safe chemical handling and/or safe chemical storage. Consider working with the local Future Farmers of America members to distribute educational materials and BMPs information. Work with the local livestock owners to determine the placement of animal waste disposal areas and/or areas for burying dead livestock.
Interstate 81 and Major Roadways	Coordinate with emergency officials to be better prepared in the event of a hazardous spill. Contact the local road maintenance department to determine the herbicides used within the ROW and any other chemicals used. Herbicide labeling is developed with guidance from the USEPA providing information on application. This guidance has been developed with public health in mind and may list restrictions for application to prevent herbicide migration into water supplies. Communicate the boundaries of the SWPA to raise awareness and ensure BMPs.
Railroad Tracks	Contact the railroad companies to determine the average number of daily (or weekly) trains passing in the SWPA and what types of materials these trains are typically transporting. Work with the railroad company to create an emergency response plan should any contamination of the source water occur.
New construction and development	Ensure sediment and erosion control measures are being instituted at construction sites. Monitor compliance with existing regulations through inspections and/or contact with regulatory agencies.
Unused Water Wells	Work with property owners to identify and properly abandon or seal unused wells. Contact the local health department about unused wells in the surrounding area. WVDHHR may provide funding for a community public water system to properly abandon wells that threaten the source water. See implementation for more information on the Wellhead and Source Water Protection Grant Program. For property owners that do not wish to abandon their wells, work with the local health department to provide information to them on proper well maintenance and construction that will protect the source water.

Education and Outreach Strategies

Table 6 gives an overview of strategies that Berkeley County PSWD-Bunker Hill proposes to implement for education and outreach activities. The goal of the overall education and

outreach plan is to raise awareness of the need to protect drinking water supplies and build support for implementation strategies.

Table 6: Education and Outreach Strategies

Education and Outreach Strategies	Target Audience
Consumer Confidence Report	<p>The water system publishes a Consumer Confidence Report (CCR) annually, as required by the Safe Drinking Water Act, which is sent to all water customers. Information concerning the Source Water Assessment is included in the CCR. In the future, the system will include a reference to this source water protection plan and how customers can access a copy.</p>
Brochures, pamphlets, and letters	<p>Send a letter and/or brochure providing educational information to residences and businesses. These will alert the recipients of the need for source water protection and conservation. Businesses that use greater-than-household quantities of regulated substances may receive a different letter. See Appendix E for example letters and brochure that can be customized. Funding for the brochures may be available through the Wellhead and Source Water Protection Grant Program.</p> <p>Several organizations provide information and resources on the internet, related to certain source water concerns and PCSs. The utility will consider obtaining these materials when needed, to educate the community. Examples of these resources are described below.</p> <p>Due to recent heightened concerns about the effects of pharmaceuticals in surface water bodies, the Ohio River Valley Water Sanitation Commission (ORSANCO) developed a pamphlet regarding pharmaceutical disposal. This pamphlet can be viewed and possibly ordered from: http://orsanco.org/index.php/brochures</p> <p>The Source Water Collaborative has released an educational brochure building tool to assist with creating custom brochures targeting local decision makers. This tool is available at: http://www.yourwateryourdecision.org and may assist in community planning and development.</p> <p>USEPA Water Sense Simple Steps to Save Water (EPA-832-F-07-011) presents benefits of conserving water. Focusing not only on the environment, but also on the financial savings associated with conservation. The brochure can be viewed at: http://www.epa.gov/watersense/docs/ws_simplesteps508.pdf</p>
School Curricula	<p>Work with the school system to incorporate source water activities into the school curricula. One example of school curricula is Project WET. For more information regarding free workshops to educate area teachers on Project WET, visit http://www.dep.wv.gov/WWE/getinvolved/WET/Pages/default.aspx, or contact the WVDEP at 304-926-0495.</p> <p>In addition, the USEPA offers free educational materials for teachers and students, including classroom lessons, fact sheets, and interactive games and activities, for grades K-12. These materials can be accessed at the following websites.</p>

Education and Outreach Strategies	Target Audience
	<p>For general source water protection: http://www.epa.gov/safewater/kids/index.html.</p> <p>For water conservation: http://www.epa.gov/watersense/resources/educational_materials.html</p> <p>Similar protection and conservation related resources can be found at the Groundwater Foundation website; http://www.groundwater.org/kc/kc.html</p> <p>Visit school or invite students for a plant tour to tie in with school curricula.</p> <p>Ask the school to include message in school newsletter to raise awareness about source water protection and conservation.</p>
Plant Tours	<p>Provide tours of the water plant to interested organizations such as watershed groups, schools, and civic organizations. Tours will be offered as requested.</p> <p>Organize a tour with local Emergency Responders to make them familiar with the facilities in the event of an emergency.</p>
Drinking Water Protection Signs	<p>Erecting Drinking Water Protection Signs along highways is a common awareness strategy in some states and recommended by the USEPA. Signs are placed to alert the public to the SWPA and about what to do in case of accidental spills. The WV Division of Highways (WVDOH) has not approved the placement of signs along or adjacent to state highway right of ways for the purposes of source water protection, except for specific sensitive areas. If you believe erecting signs along a state highway is imperative to your source water protection, please contact Cindy Cramer P. E., Director, Traffic Engineering Division at 304-558-3063. She may be reached via e-mail: Cindy.L.Cramer@wv.gov. If approved the WVDOH may place and maintain signs along state highways at mutually acceptable locations.</p> <p>In addition, the WVDHHR recommends erecting awareness signs in public areas and along city streets not associated with state highways. If interested in erecting Drinking Water Protection Signs, contact the WVDHHR SWAP program at 304-558-2981. The WVDHHR may distribute standard signs or provide financial support through a Source Water Protection Grant. The water system will be responsible for erecting and maintaining the signs in public areas and along city streets.</p>
Emergency Planning and Coordination	<p>Participate with local fire departments and County Emergency Services on a regular basis. This will ensure that all the agencies are in constant communication with one another and prepared in the event of an emergency.</p>
Partner with Watershed Association	<p>Partner with local watershed associations or other civic groups. These groups may have similar goals and available volunteers that can integrate source water protection into their efforts.</p>
Public Meeting	<p>Hold an informational meeting with local residents about source water protection efforts. The meeting will increase awareness of the</p>

Education and Outreach Strategies	Target Audience
	connection between land use and drinking water quality. This meeting could be structured as a water fair/public event with drinking water displays and activities. This can be combined with activities of the local watershed associations.
Media Campaign	Work with the local television stations to post source water and drinking water fact bulletins on public access television.
County Fair	Consider providing information on source water protection for the County Health Department's booth at the County Fair, should they have one.

Source Water Monitoring

Current water quality is monitored through the testing of raw and treated water, as required under the Safe Drinking Water Act and regulated by WVDHHR. This includes sampling for bacteriologicals, inorganics, volatile organic compounds (VOCs) and synthetic organic compounds (SOCs) as well as nitrates and radiological materials. In addition, Berkeley County PSWD-Bunker Hill collects raw water samples on a daily basis. These samples are analyzed for turbidity, pH, alkalinity, etc. Sample results are used to adjust treatment of the raw water on a daily/weekly basis.

Berkeley County PSWD-Bunker Hill does not currently have a source water monitoring program to detect contamination from a particular threat. Based on this review no additional monitoring is needed at this time. However, this source water protection plan describes management strategies to reduce the risk of contamination including best management practices and promoting rapid response if a spill should happen. Berkeley County PSWD-Bunker Hill will reexamine the need to develop a source water monitoring program if identified management strategies are not implemented, pumping rates change, and/or significant changes in land use occur in the SWPA.

Contingency Planning

The goal of contingency planning (See **Appendix F**) is to identify how Berkeley County PSWD-Bunker Hill will prepare for and respond to any drinking water shortages or emergencies that may occur, due to short and long term water interruption, incidents of spill or contamination.

The pages in **Appendix F** may be photocopied and posted in the water plant making them accessible in case of an emergency.

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 WV Rural Water Association Emergency Response Team (see <http://www.wvrwa.org/>). Berkeley County PSWD is a member of the WV RWA Emergency Response Team and will consider participation in WV WARN.

Implementation

Table 7 summarizes the Berkeley County PSWD-Bunker Hill Source Water Protection Plan. (Bolded items are new commitments; others are already complete or ongoing.) Many implementation activities may be eligible for funding offered through the WVDHHR. For more details on the Wellhead and Source Water Protection Grant Programs, visit: <http://www.wvdhhr.org/oehs/eed/swap/grants.asp>.

The initial step in implementation should be to confirm suggested Protection Team members and ask to meet as soon as possible to discuss strategies. Protection Team members can determine the best process for completing activities within the projected time periods. Additional meetings may be needed during the initial effort to complete activities, after which the Protection Team should consider meeting annually to review and discuss the Source Water Protection Plan.

Throughout the implementation process, the Protection Team may contact the WV SWAP Program staff at 304-558-2981 for guidance and support.

Updating the Plan

Berkeley County PSWD-Bunker Hill commits to updating this Protection Plan every five (5) years or whenever there are changes in the following: major staff, PCSs near the SWPA, land use in the watershed, water quality, etc.

Berkeley County PSWD-Bunker Hill will review the contingency plan to update emergency contact numbers and procedures continually to best prepare for emergency incidents and water shortages.

Substantial Implementation

A community public water system can reach substantial implementation by addressing at least three of the recommendations listed in the Source Water Assessment Report (See **Appendix A**); protection measures identified in this Source Water Protection Plan; and/or locally defined protective measures approved by the WVDHHR SWAP Program. The Berkeley County PSWD-Bunker Hill has completed the following implementation activities:

- Participation in drafting this source water protection plan;
- Emergency Response Plan on file at facility and updated annually;
- Installed physical security measures at raw water facilities;

Berkeley County PSWD-Bunker Hill can achieve substantial implementation by carrying out additional activities described in **Table 7**.

Table 7: Implementation of Activities

ACTIVITY	RESPONSIBLE PARTY	WHEN IMPLEMENTED	COMMENTS	COST ESTIMATE
SOURCE MANAGEMENT ACTIVITIES				
<p>Monitor for the formation of any new sinkholes in the SWPA. Establish or encourage buffering around sinkholes. Otherwise consider filling in the sinkhole.</p>	<p>Operator and/or staff</p>	<p>Ongoing</p>	<p>Buffering techniques in use in other regions range from encouraging landowners to provide vegetative buffers to purchasing rights from the landowner. If filling in sinkholes, follow WVDEP's Sinkhole Mitigation Guidance document (http://www.dep.wv.gov/WWE/Programs/gw/Documents/9026_Sinkhole_Mitigation_Guidance_Document_A2005.pdf) and seek state and/or local permits, if applicable.</p>	<p>Cost associated with staff time discussing options with landowners and the repair of sinkholes if on utility's property.</p>
<p>Work with the county health department to identify areas in the SWPA where home owners may need to install septic systems or service existing systems.</p> <p>Consider teaming with community to identify areas that would benefit from a decentralized system, cluster system, or public waste water line extension to eliminate straight pipes and/or malfunctioning septic systems.</p>	<p>Operator and/or staff</p>	<p>Within 5 years.</p>		<p>Depending upon the size, a project to extend wastewater services or construct a decentralized/ cluster system can range from tens of thousands to millions of dollars. Supporting an extension, through participation in public meetings and assistance in securing easements, funding, etc. can be done at minimal costs to the water system.</p>
<p>Communicate with gas station and auto repair shop owners the need to properly dispose of oil and other petroleum products. Ask to institute BMPs to contain and clean up spills. Provide owners or</p>	<p>Board member or staff, and/or operator</p>	<p>Initial contact to communicate SWPA made as soon as possible.</p>	<p>These facilities may already be implementing BMPs for monitoring and/or containing a potential leak or spill.</p>	<p>Cost associated with staff time.</p>

ACTIVITY	RESPONSIBLE PARTY	WHEN IMPLEMENTED	COMMENTS	COST ESTIMATE
operators with copies of materials on underground storage tank maintenance.				
Contact DL Morgan Jr. Inc. about hazardous materials at the quarry and concrete plant. Work with their personnel to create an emergency response plan.	Operator and staff	Initial contact to communicate SWPA made as soon as possible	Consider inviting owners/operators to join the protection team.	Cost associated with staff time.
Contact Knouse Foods Cooperative, Inc. to determine if the groundwater monitoring is ongoing at this location. Ask to review previous groundwater monitoring results and to be notified if additional contamination is discovered.	Operator and/or staff	Within 1 year		Cost associated with staff time.
Work with the County Extension Service, the Soil and Water Conservation District, and/or the Natural Resource Conservation Service to provide copies of fact sheets.	Staff and/or operator	Within 5 years	Potential topics for fact sheets include BMPs for nutrient management, pesticide use, pest management, waste oil disposal, safe chemical handling and/or safe chemical storage. Consider working with local Future Farmers of America members to distribute materials. Work with local livestock owners to determine placement of animal waste disposal areas or areas for burying dead livestock.	Costs for preparing, printing, and delivering fact sheets.
Participate in communications and incident drills with emergency responders to react quickly to any spills and initiate cleanup activities. In the event that contaminants do find their	Board member or staff, and/or operator	Within 1 year		Cost associated with staff time.

ACTIVITY	RESPONSIBLE PARTY	WHEN IMPLEMENTED	COMMENTS	COST ESTIMATE
<p>way into the public water supplies, the system will monitor and react according to standard operation procedures.</p>				
<p>Contact the local road maintenance department to determine the herbicides used within the ROW and any other chemicals used. Communicate the boundaries of the SWPA to raise awareness and ensure BMPs.</p>	<p>Board member or staff, and/or operator</p>	<p>Within 1 year</p>	<p>Herbicide labeling is developed with guidance from the USEPA providing information on application. This guidance has been developed with public health in mind and may list restrictions for application to prevent herbicide migration into water supplies.</p>	<p>Cost associated with staff time.</p>
<p>Contact the railroad companies to determine the average number of daily (or weekly) trains passing in the SWPA and what types of materials these trains are typically transporting.</p>	<p>Operator and/or staff</p>	<p>Within 1 year</p>	<p>Work with the railroad company to create an emergency response plan should any contamination of the source water occur.</p>	<p>Cost associated with staff time contacting the railroad.</p>
<p>Ensure sediment and erosion control measures are being instituted at construction sites.</p>	<p>PSWD staff and/or operator</p>	<p>Within 1 year</p>	<p>Monitor compliance with existing regulations through inspections and/or contact with regulatory agencies.</p>	<p>Minimal costs associated with staff time.</p>
<p>Interview property owners and local health department to determine presence of unused water wells. Seek support to properly abandon.</p>	<p>Staff and/or operator</p>	<p>Within 1 year</p>	<p>Funding for properly abandoning unused water wells may be available through the WV Wellhead and Source Water Protection Grant Program.</p>	<p>Minimal costs. Would take time to interview property owners and apply for grant.</p>

ACTIVITY	RESPONSIBLE PARTY	WHEN IMPLEMENTED	COMMENTS	COST ESTIMATE
EDUCATION AND OUTREACH				
Include info on source water protection plan in CCR.	PSD board member or staff and/or operator	Annually	This would be in addition to required Source Water Assessment information, including source of water and susceptibility to contamination.	CCR required by SDWA, included in annual budget.
Send public letters and/or brochures to educate on what they can do to protect and conserve source water.	PSD board member or staff and/or operator	Within 1 year	Brochure is included in Appendix E . Funding may be available through the grant program. Development of other outreach material may be delegated to a volunteer with appropriate skills.	Cost in brochure printing and mailing.
Coordinate with educators to include source water protection information in school curricula.	PSD board member or staff and/or operator	Within 1 year	Can provide websites with free education materials to promote source water protection and conservation. Also operator may visit school or invite students for a plant tour to tie in with classroom materials.	Minimal costs. Would require time to coordinate, visit classroom and provide tour.
Conduct plant tours for emergency responders, students, and interest groups.	PWS operator and staff	Ongoing – as requested		Minimal cost associated with operator's time.
Identify preferred locations for drinking water protection signs.	PWS Staff	Within 1 year	If interested in erecting Drinking Water Protection Signs on state highways, determine desired sign locations and contact Cindy Cramer P. E., Director, Traffic Engineering Division at 304-558-3063 or via e-mail at Cindy.L.Cramer@wv.gov . Signs on city streets or in public areas will be erected and maintained by the system.	If approved, signs will be erected along state highways at no cost to water system. WVDHHR may provide signs or financial support for signs erected on city streets or in public areas.
Participate in Emergency Planning and Coordination.	PWS operator and staff	Ongoing and continuing annually		Cost associated with participation in training activities.
Partner with Watershed Association.	PWS operator and staff	Monthly/annually	Watershed Associations have monthly meeting and conduct public outreach on a yearly basis.	Cost associated with participation in activities.

ACTIVITY	RESPONSIBLE PARTY	WHEN IMPLEMENTED	COMMENTS	COST ESTIMATE
Conduct Public Meeting.	PWS operator and staff	In future if needed.	May be structured as a water fair.	Minimal cost related to operator time.
Post source water and drinking water facts on public access television.	PWS staff	Within 5 years	Information can be run at different times of the year (ex. focus on fertilizer contamination in spring/summer).	The ad for public access television should be free, so the cost would just be the time to prepare the information.
Distribute info at County Fair.	PWS operator and staff	Annually	Distribute outreach material. May be delegated to PSD staff or a volunteer with appropriate skills.	
CONTINGENCY PLANNING				
Updating the Plan.	PWS operator	Ongoing		Cost associated with staff updating materials.
SOURCE WATER MONITORING				
Continue monitoring raw water as needed to influence treatment process. No raw water monitoring program for a specific contaminant is occurring at this time. Will reconsider in future if needed.				

Appendix A:
Source Water Assessment Report



STATE OF WEST VIRGINIA
DEPARTMENT OF HEALTH AND HUMAN RESOURCES

Cecil H. Underwood
Governor

January 2, 2001

Joan E. Ohl
Secretary

Berkeley County PSD
Post Office Box 389
Bunker Hill, WV 25413

RE: **Source Water Assessment**
Berkeley County PSD 3300202

Dear Berkeley County PSD,

Thank you for your participation in the West Virginia Bureau for Public Health (WVBPH) Source Water Assessment and Protection (SWAP) Program. Your cooperation in the program is greatly appreciated. This mandated United States Environmental Protection Agency (US EPA) program involves delineating wellhead protection areas, identifying potential contamination sources, and recommending management strategies to protect these sources used for public drinking water supplies. Assessments must be completed for every public water system by 2003 in West Virginia. The WVBPH encourages the development of a local SWAP committee made up of community members, civic groups, youth groups, etc. that will help your community develop and carry out a plan to prevent water quality problems. Please review the enclosed EPA "*Community Involvement in Drinking Water Source Assessments*" (EPA 816-F-00-025 May 2000) for additional information on the SWAP Program.

Enclosed, please find the main products of your initial Source Water Assessment including a detailed SWAP Plan and a Public Summary containing a Susceptibility Analysis. Each groundwater source and the potential sources of contamination surrounding these wells were evaluated by the WVBPH SWAP Program to determine these findings.

- SWAP Plan is composed of six steps including introductory materials, reservoir characterization, wellhead delineation, and an inventory of potential contaminant sources. The initial four steps are completed. This plan also contains steps five and six entitled management and contingency planning, respectively. These last two steps need completed by the Berkeley County PSD to conclude this initial assessment. Please reference these last two steps in the bound report (pages 10-13) for guidance to complete this task. SWAP staff are available to meet with you concerning these last two steps if necessary. Please contact the WVBPH within 15 days if you have any concerns about these additional steps to complete or if there are any other significant potential sources of contamination located in this delineated area which the SWAP Program has not listed in this assessment. The target

BUREAU FOR PUBLIC HEALTH
Office of Environmental Health Services
815 Quarrier Street, Suite 418
Charleston, West Virginia 25301-2616
Telephone: (304) 558-2981

Source Water Assessment

Public Summary

Berkeley County PSD

PWSID WV3300202

Berkeley County

Prepared by

Department of Health and Human Resources

Bureau for Public Health

West Virginia Office of Environmental Health Services

Environmental Engineering Division

Source Water Assessment and Protection Unit

Introduction

The Source Water Assessment and Protection (SWAP) Program of the West Virginia Bureau for Public Health (BPH) is completing assessments of the contamination threats to all public water sources (private wells are not involved in this effort). This concept of source water protection is a preventative approach and complements the effort of proper treatment and disinfection by the individual water supply systems. This assessment is one step in a multilevel approach to ensure a safe future supply of water by understanding what potential threats exist.

This Source Water Assessment Public Summary is to provide information to support local and state efforts to protect the Berkeley County PSD public drinking water source and to maintain a safe and dependable water supply for the protection of human health by preventing contamination. The costs of these preventative measures will never outweigh the cost of possibly remediating a public water supply.

The emphasis of this assessment is on "source" (well/spring) water rather than the "tap" water. Information on tap water quality is available in the Berkeley County PSD *Consumer Confidence Report* which can be obtained from the Berkeley County PSD by calling (304) 229-5255.

What is the Source of Your Drinking Water?

The Berkeley County PSD water system serves a population in excess of 20,000 people. The main supply is from the LeFevre Spring located at Bunker Hill. There is also a well used in this system located at the Baker Quarry along with a backup supply available from a quarry pond adjacent to the Baker Quarry well. The spring and well combined are pumped to provide an average daily production of about two million gallons per day.

The spring flows at approximately 14,000 GPM. The depth to water in the Quarry well is 93 feet with the total depth of the well being 492 feet. There are some shallow sinkholes in this area and the surface streams will generally lose their water to the subsurface. Surface waters can enter the ground water regime very quickly via direct injection through sinkholes or other fracture or solution openings. The type of flow in karst areas is described as being conduit flow and is delivered via strike oriented cave passages or along fault planes and fault passages. The estimated land area (approximately 3935 acres) that contributes water to the wells is depicted in the attached map as the new Wellhead Protection Area (WHPA). The major land uses in the wellhead area are 49% open brush/grass, 42% forested, 5% row crops and 2% urban. This area includes coverage in both West Virginia and Virginia. The delineated area was determined by the SWAP Program based on prior delineations by two studies conducted by Draper Aden Associates and the West Virginia Rural Water Association. The Rural Water Association delineation was more conservative so the SWAP Program added a portion of it to the delineation conducted by Draper Aden Associates. This can be noted on the second map with the "Added WHPA" blue outline surrounding this additional delineation.

Well/Spring Construction

Wells may vary in their construction characteristics and in the geologic rock types in which they occur. The lack of an effective grout and sanitary seals are avenues by which contaminants from nearby surface water bodies or overland runoff can percolate to wells. Based on onsite reviews and the ground water under the direct influence data the wells integrity were rated generally satisfactory or good, with no visible problems existing during the visit. The State has determined that these wells are under the influence of surface water. It is unknown at this time if the Baker quarry well or the backup well would currently meet the State Water Well Design Standards due to the lack of documentation concerning well construction. The spring does not currently meet the Public Water System Design Standards as it is not housed in a permanent structure.

Water Quality and Water Treatment Information

The water withdrawn from the spring and wells is currently filtered and disinfected prior to distribution. Water quality testing performed by the system on the treated water indicates results are all within the limits set by the state and federal requirements. No raw water analysis is available for this system. All drinking water including bottled water, may reasonably be expected to contain small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. For further information regarding the quality of the system's finished water, please refer to the *Consumer Confidence Report* or call the Environmental Protection Agency's Safe Drinking Water Hotline at *1-800-426-4791* or contact your local health provider for more information about contaminants and potential health effects. This system is required to test for Volatile Organic Compounds (VOC), Synthetic Organic Compounds (SOC), Inorganic, Nitrates/Nitrites, and Bacteria on its post treated water.

Evaluation of Significant Potential Sources of Contamination

This assessment evaluates contaminants that may enter the water drawn directly from the well. The contaminants addressed in this assessment include those regulated under the Safe Drinking Water Act as well as those the BPH has determined may present a concern to public health. A description of the significant potential sources of contamination associated with the wellhead area was provided in the original Source Water Assessment and Protection Plan report. Each significant potential source of contamination has been analyzed and prioritized (low, medium, and high) in accordance with their potential to impact the water supply. Potential sources of contamination of high priority are summarized in a table format and map. No contaminants have been found in this source of water.

Sequential Number	Map Code	PCS Category	PCS Name	Associated Chemicals	Threat to GW
1	C-13	Commercial	Equipment rental/repair shop	PH, M, VOC	H
2	C-18	Commercial	Gas Stations	PH, M, VOC, SOC	H
3	C-3	Commercial	Auto repair shops	PH, M, VOC, HM, SOC	H
4	C-19	Commercial	Gas Stations	PH, M, VOC, SOC	H
5	C-18	Commercial	Gas Stations	PH, M, VOC, SOC	H
6	C-7	Commercial	Car dealerships	PH, VOC	H

Source Water Assessment and Protection Activities

Based on this summarized narrative and the attached susceptibility review for each spring and well, the overall susceptibility ranking for the Berkeley County PSD has a higher susceptibility to the identified potential sources of contamination. There does not appear to be much natural protection of this water source which makes it very vulnerable to potential contamination if some type of leak were to occur. For this susceptibility analysis, the State combined the inventory results with other relevant information to decide how likely a water supply may become contaminated by the identified potential sources of contamination. This step makes the assessments useful for communities, since it provides information that local decision-makers use to prioritize approaches for protecting the drinking water supply. It does not mean that these wells are currently contaminated or that these wells are going to be contaminated in the near future, but the potential does exist.

An aquifer protection management program should be developed for the Berkeley County PSD spring and wells. Preferably, the protection plan should be developed for the entire WHPA with the cooperation of neighboring towns, county, and state agencies.

It is recommended that protection and management efforts should focus on obtaining additional information on the sources present to evaluate their risk. The Berkeley County PSD may want to consider the following:

1. Obtain further detailed information concerning the type of leak detection and corrosion protection currently being used at the three gas station underground storage tank facilities. These facilities and any former facilities also need checked to see if there was any history of leaks associated with present or past underground storage tank systems located within the wellhead protection area.
2. Another activity should focus on what type of preventive measures are being conducted at the auto repair shop, the car dealership, the equipment rental business, and along the railroad.
3. Another area of significance is the I-81 Interstate Highway. Although highways are not listed as high risk on the groundwater threat list, they certainly are a high risk for the surface water threat list and since this area has many losing streams, the proximity of a major Interstate certainly makes this shallow karst aquifer high risk in this particular area.
4. Another area of significance is that there is a positive connection already documented by a dye trace between the sink adjacent to the I-81 Welcome Center and the LeFevre Spring.
5. The integrity of the older septic systems located in the WHPA may also need to be evaluated.

The aquifer protection management program may include the distribution of educational materials, site monitoring, land acquisition, etc. The BPH and the West Virginia Rural Water Association (304-562-8585) personnel are available to provide technical assistance to local public water supplies.

How to Obtain Additional Information

This Source Water Assessment Public Summary was completed in December 2000. Individuals interested in learning more about this water system and aquifer/watershed can contact the Berkeley County PSD at (304) 229-5255 or the State Bureau for Public Health at (304) 558-2981. A full length (more detailed version) of the source water assessment is available for review at the Berkeley County PSD and the County Health Department.

Glossary of Terms

- Alluvium:* Sediments deposited by moving rivers.
- Aquifer:* A formation, group of formations, or part of a formation that contains sufficient saturated permeable materials to yield sufficient, economical quantities of water to wells and springs.
- Contamination:* The addition to water of any substance or property preventing the use or reducing the usability of the water for ordinary purposes such as drinking, preparing food, bathing, washing, recreation, and cooling.
- Flood Plain:* Any land area susceptible to inundation by flood water from any source.
- 100-year Flood Plain:* The area adjoining a river, stream, or water course covered by water in the event of a 100 year flood.
- 100 -year Flood:* The flood having a one percent chance of being equaled or exceeded in magnitude in any given years. Contrary to popular belief it is not a flood occurring once every 100 years.
- Infiltration:* The process of, or fluids, entering the soil and recharging aquifers rather than becoming runoff.
- Maximum Contaminant Level (MCL):* Defined as the maximum permissible level of a contaminant in water which is delivered to any user of a public water system.
- Potential Significant Contaminant Source (PSCS):*
A facility or container or route of travel that could release a sufficient amount of a harmful contaminant that upon entering an aquifer or surface stream could contaminate it past the level of human health concerns.
- Recharge:* Water entering the upper end of a groundwater flow system.
- Remediation:* The removal of contaminants from soil and/or ground water.
- Sensitivity of the Source Water Protection Area (SWPA):*
refers to the hydrologic or hydrogeologic characteristics that effect the transport of contaminant from a source of contamination to a well or intake.
- Source Water Assessment and Protection (SWAP) Program:*
The program established by the 1996 Amendments to the Safe Drinking Water Act (SDWA) which expanded the initial Wellhead Protection Program

to all public drinking water supply systems including surface water systems. This program is to assess, preserve, and protect the source waters which are used to supply water for public drinking water supply systems and to provide a long term availability of an abundant supply of safe water in sufficient quantity for present and future citizens of the State. This program also enables the water supply owners, consumers, and others to initiate and promote actions to protect their drinking water supplies with the developed information.

Source Water Protection Area (SWPA):

refers to the area delineated by the State for a public water system, or including numerous public water systems, whether the source is ground water, surface water or both, as part of the West Virginia SWAP approved by the EPA under section 1453 of the Safe Drinking Water Act.

Susceptibility: The likelihood that a release from a PSCS would contaminate and render unusable a drinking water supply such as aquifers or surface streams.

Unconfined Aquifer: An aquifer over which there is no confining layer.

Well (s): refers to ground water intakes including the well structure (i.e., casing, etc) and wellhead.

Wellhead Protection Area (WHPA):

The surface and subsurface area surrounding a water well or wellfield, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or wellfield. This area is delineated by the State for ground water source public water systems. The former Wellhead Protection Program (WHPP) is now part of the Source Water Assessment and Protection (SWAP) Program.

SUSCEPTIBILITY ANALYSIS

PWSID SYSTEM NAME WELL NUMBER

3300202 Berkeley Co PSD Spring

STEP TWO - RESERVOIR SENSITIVITY

HIGH SENSITIVITY

- COAL MINE AREAS - HIGH SENSITIVITY
- SPRINGS - HIGH SENSITIVITY
- KARST AREAS - HIGH SENSITIVITY
- ALLUVIAL VALLEYS (unconfined) - HIGH SENSITIVITY
- ALLUVIAL VALLEYS (confined) - MODERATE SENSITIVITY
- VALLEY AND RIDGE PROVINCE (fracture) - MODERATE SENSITIVITY
- APPALACHIAN PLATEAU PROVINCE (fracture) - MODERATE SENSITIVITY
- FOLDED PLATEAU AREA (fracture) - MODERATE SENSITIVITY

STEP ONE - WELL CONSTRUCTION

LOW SOURCE INTEGRITY

- NOT CONSTRUCTED TO PWS STANDARDS
- CONSTRUCTION UNKNOWN
- SANITARY SURVEY/VULNERABILITY
- CONSTRUCTED TO STANDARD

STEP 3 - PHYSICAL BARRIER

HIGH POTENTIAL SUSCEPTIBILITY

- LOW SOURCE INTEGRITY VS HIGH AQUIFER SENSITIVITY = HIGH POTENTIAL SUSCEPTIBILITY
- HIGH SOURCE INTEGRITY VS HIGH AQUIFER SENSITIVITY = MODERATE POTENTIAL SUSCEPTIBILITY
- LOW SOURCE INTEGRITY VS MODERATE AQUIFER SENSITIVITY = MODERATE SUSCEPTIBILITY
- HIGH SOURCE INTEGRITY VS MODERATE SENSITIVITY = LOW POTENTIAL SUSCEPTIBILITY

STEP FOUR - LAND USE THREAT

HIGH THREAT TO GROUND WATER

STEP FIVE - WATER QUALITY IMPACT

NO IMPACT FROM MAN MADE CHEMICALS

SUSCEPTIBILITY DETERMINATION

HIGH SUSCEPTIBILITY

- HIGH POTENTIAL SUSCEPTIBILITY VS HIGH CONCERN LAND USE = HIGH
- HIGH POTENTIAL SUSCEPTIBILITY VS MEDIUM CONCERN LAND USE = HIGH
- HIGH POTENTIAL SUSCEPTIBILITY VS LOW CONCERN LAND USE = HIGH
- MODERATE POTENTIAL SUSCEPTIBILITY VS HIGH CONCERN LAND USE = HIGH
- MODERATE POTENTIAL SUSCEPTIBILITY VS MEDIUM CONCERN LAND USE = MODERATE
- MODERATE POTENTIAL SUSCEPTIBILITY VS LOW CONCERN LAND USE = MODERATE
- LOW POTENTIAL SUSCEPTIBILITY VS HIGH CONCERN LAND USE = MODERATE
- LOW POTENTIAL SUSCEPTIBILITY VS MEDIUM CONCERN LAND USE = MODERATE
- LOW POTENTIAL SUSCEPTIBILITY VS LOW CONCERN LAND USE = LOW

SUSCEPTIBILITY ANALYSIS

PWSID SYSTEM NAME WELL NUMBER
3300202 Berkeley Co PSD Baker Well

STEP TWO - RESERVOIR SENSITIVITY HIGH SENSITIVITY

STEP ONE - WELL CONSTRUCTION LOW SOURCE INTEGRITY

- NOT CONSTRUCTED TO PWS STANDARDS
- CONSTRUCTION UNKNOWN
- SANITARY SURVEY/VULNERABILITY
- CONSTRUCTED TO STANDARD

- COAL MINE AREAS - HIGH SENSITIVITY
- SPRINGS - HIGH SENSITIVITY
- KARST AREAS - HIGH SENSITIVITY
- ALLUVIAL VALLEYS (unconfined) - HIGH SENSITIVITY
- ALLUVIAL VALLEYS (confined) - MODERATE SENSITIVITY
- VALLEY AND RIDGE PROVINCE (fracture) - MODERATE SENSITIVITY
- APPALACHIAN PLATEAU PROVINCE (fracture) - MODERATE SENSITIVITY
- FOLDED PLATEAU AREA (fracture) - MODERATE SENSITIVITY

STEP 3 - PHYSICAL BARRIER

HIGH POTENTIAL SUSCEPTIBILITY

- LOW SOURCE INTEGRITY VS HIGH AQUIFER SENSITIVITY = HIGH POTENTIAL SUSCEPTIBILITY
- HIGH SOURCE INTEGRITY VS HIGH AQUIFER SENSITIVITY = MODERATE POTENTIAL SUSCEPTIBILITY
- LOW SOURCE INTEGRITY VS MODERATE AQUIFER SENSITIVITY = MODERATE SUSCEPTIBILITY
- HIGH SOURCE INTEGRITY VS MODERATE SENSITIVITY = LOW POTENTIAL SUSCEPTIBILITY

STEP FOUR - LAND USE THREAT

HIGH THREAT TO GROUND WATER

STEP FIVE - WATER QUALITY IMPACT

NO IMPACT FROM MAN MADE CHEMICALS

SUSCEPTIBILITY DETERMINATION

HIGH SUSCEPTIBILITY

- HIGH POTENTIAL SUSCEPTIBILITY VS HIGH CONCERN LAND USE = HIGH
- HIGH POTENTIAL SUSCEPTIBILITY VS MEDIUM CONCERN LAND USE = HIGH
- HIGH POTENTIAL SUSCEPTIBILITY VS LOW CONCERN LAND USE = HIGH
- MODERATE POTENTIAL SUSCEPTIBILITY VS HIGH CONCERN LAND USE = HIGH
- MODERATE POTENTIAL SUSCEPTIBILITY VS MEDIUM CONCERN LAND USE = MODERATE
- MODERATE POTENTIAL SUSCEPTIBILITY VS LOW CONCERN LAND USE = MODERATE
- LOW POTENTIAL SUSCEPTIBILITY VS HIGH CONCERN LAND USE = MODERATE
- LOW POTENTIAL SUSCEPTIBILITY VS MEDIUM CONCERN LAND USE = MODERATE
- LOW POTENTIAL SUSCEPTIBILITY VS LOW CONCERN LAND USE = LOW

SUSCEPTIBILITY ANALYSIS

PWSID 3300202 SYSTEM NAME Berkeley Co PSD WELL NUMBER BackupWell

STEP ONE - WELL CONSTRUCTION

LOW SOURCE INTEGRITY

- NOT CONSTRUCTED TO PWS STANDARDS
- CONSTRUCTION UNKNOWN
- SANITARY SURVEY/VULNERABILITY
- CONSTRUCTED TO STANDARD

STEP 3 - PHYSICAL BARRIER

HIGH POTENTIAL SUSCEPTIBILITY

- LOW SOURCE INTEGRITY VS HIGH AQUIFER SENSITIVITY = HIGH POTENTIAL SUSCEPTIBILITY
- HIGH SOURCE INTEGRITY VS HIGH AQUIFER SENSITIVITY = MODERATE POTENTIAL SUSCEPTIBILITY
- LOW SOURCE INTEGRITY VS MODERATE AQUIFER SENSITIVITY = MODERATE SUSCEPTIBILITY
- HIGH SOURCE INTEGRITY VS MODERATE SENSITIVITY = LOW POTENTIAL SUSCEPTIBILITY

STEP FOUR - LAND USE THREAT

HIGH THREAT TO GROUND WATER

SUSCEPTIBILITY DETERMINATION

HIGH SUSCEPTIBILITY

- HIGH POTENTIAL SUSCEPTIBILITY VS HIGH CONCERN LAND USE = HIGH
- HIGH POTENTIAL SUSCEPTIBILITY VS MEDIUM CONCERN LAND USE = HIGH
- HIGH POTENTIAL SUSCEPTIBILITY VS LOW CONCERN LAND USE = HIGH
- MODERATE POTENTIAL SUSCEPTIBILITY VS HIGH CONCERN LAND USE = HIGH
- MODERATE POTENTIAL SUSCEPTIBILITY VS MEDIUM CONCERN LAND USE = MODERATE
- MODERATE POTENTIAL SUSCEPTIBILITY VS LOW CONCERN LAND USE = MODERATE
- LOW POTENTIAL SUSCEPTIBILITY VS HIGH CONCERN LAND USE = MODERATE
- LOW POTENTIAL SUSCEPTIBILITY VS MEDIUM CONCERN LAND USE = MODERATE
- LOW POTENTIAL SUSCEPTIBILITY VS LOW CONCERN LAND USE = LOW

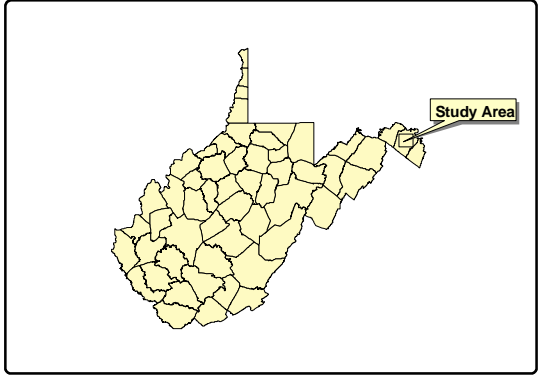
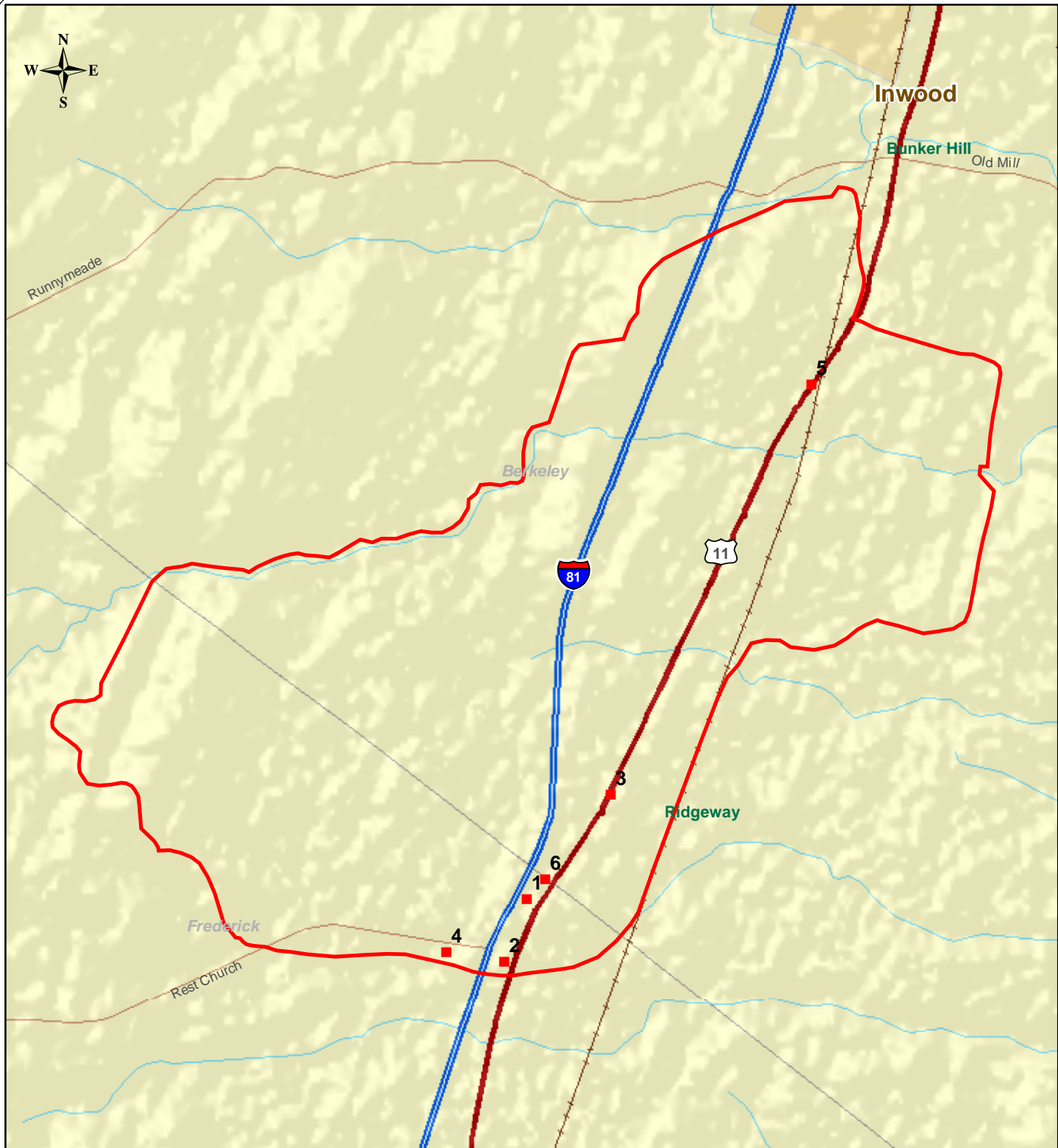
STEP TWO - RESERVOIR SENSITIVITY

HIGH SENSITIVITY

- COAL MINE AREAS - HIGH SENSITIVITY
- SPRINGS - HIGH SENSITIVITY
- KARST AREAS - HIGH SENSITIVITY
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- APPALACHIAN PLATEAU PROVINCE (fracture) - MODERATE SENSITIVITY
- FOLDED PLATEAU AREA (fracture) - MODERATE SENSITIVITY







STEP FIVE - WATER QUALITY IMPACT

NO IMPACT FROM MAN MADE CHEMICALS



Map Key

Potential Contaminant Sources

-  Agriculture
-  Commercial
-  Industrial
-  Municipal
-  Residential
-  Source Water Protection Area

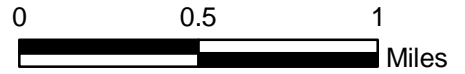


This map is provided as a public service by the West Virginia Bureau for Public Health. The Bureau makes NO representation regarding completeness or accuracy of the data hereon. Efforts are made to verify and update the data used to generate this map. However, with data sets of this size and nature, eliminating all errors is difficult. Thus, the user assumes total responsibility for verification.

Source locations not included for reasons of security

**Berkeley County PSD - Bunker Hill
WV3300202
Berkeley County**


Scale: 1:34,000
Drawn by: JEM
08/21/08




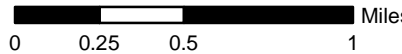
Appendix B:

Figures

Legend

 Wellhead Protection Area

 N

 Miles
0 0.25 0.5 1

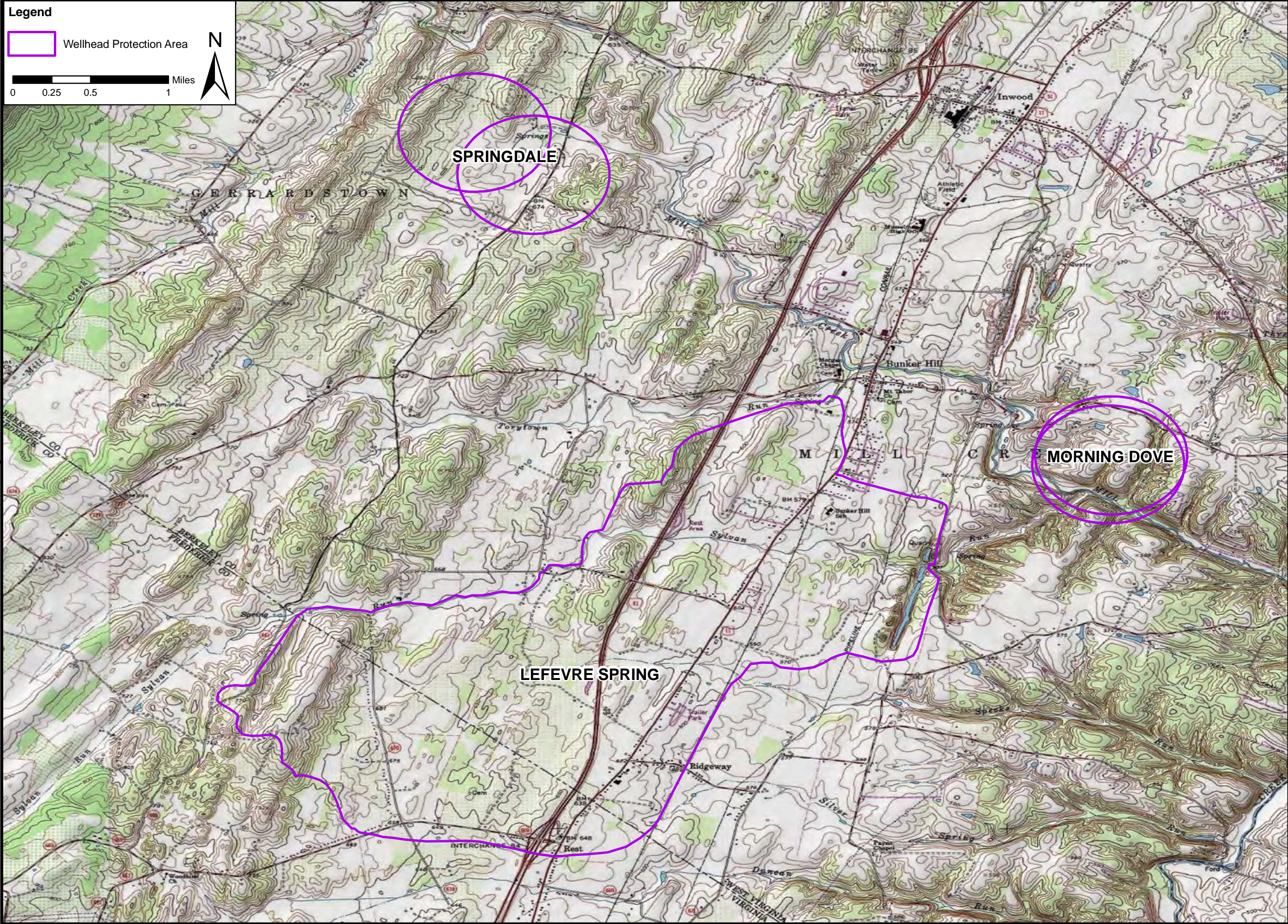


Figure 1
Source Water Protection Area Delineation

Berkeley County PSWD-Bunker Hill
PWSID: WV3300202
Source Water Protection Plan

CREATED BY: GKH
 DATE: 4/1/11

Legend

- Agricultural
- Commercial
- Industrial
- Municipal
- Residential
- Wellhead Protection Area

N

Miles
 0 0.25 0.5 1

NOTE: PCSs 25, 26, and 38 are not shown for security reasons.

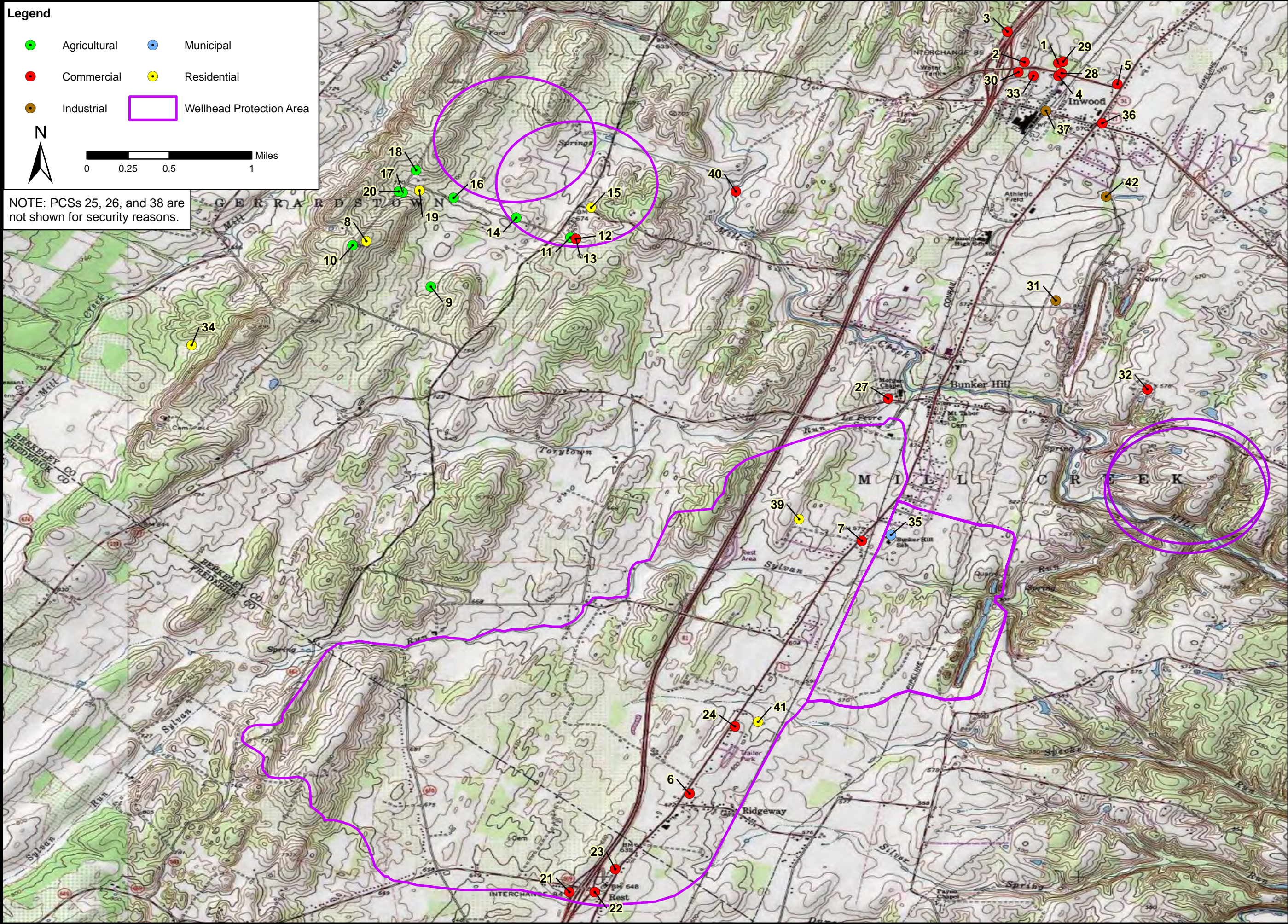


Figure 2

Potential Contaminant Sources

Berkeley County PSWD-Bunker Hill

PWSID: WV3300202






Source Water Protection Plan

DATE: 4/1/11

CREATED BY: GKH



Legend

-  WVDEP Regulated Mining
-  USEPA RCRA
-  NPDES
-  Toxics Release Inventory
-  Wellhead Protection Area



NOTE: R-20 is not shown for security reasons.

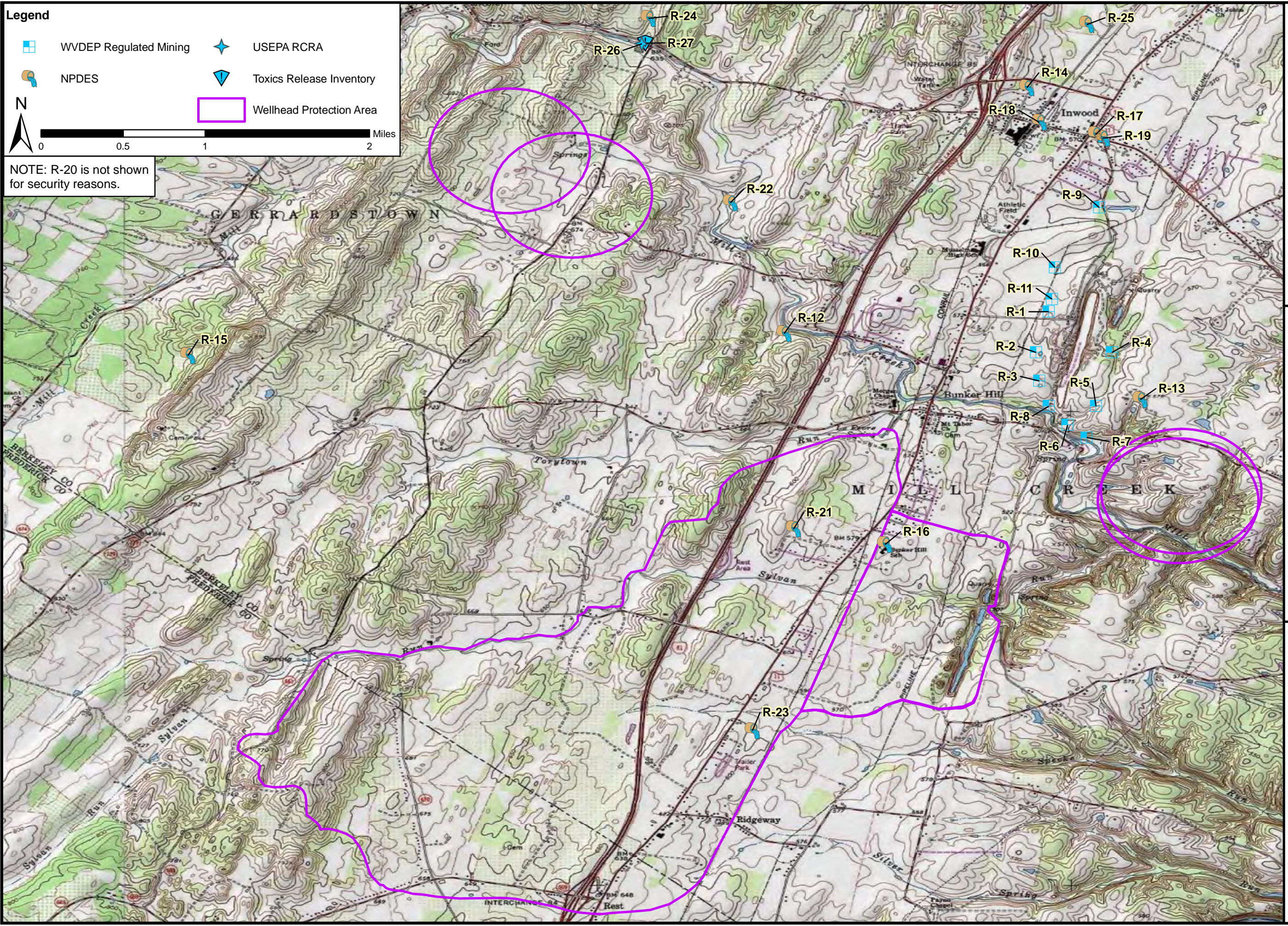


Figure 3
Regulated Sites

Berkeley County PSWD-Bunker Hill
PWSID: WV3300202
Source Water Protection Plan

Appendix C:
Meeting Notes

Source Water Protection Plan

Initial Meeting Notes

Berkeley County PSWD-Bunker Hill

October 13, 2010

Attendees: Greta Hawkins (Tetra Tech, Inc.), Mike Collis (BCPSWD-Bunker Hill), Steve Deridder (BCPSWD-Potomac River), Daryl Mason (BCPSWD), and Dave Smith (WVDHHR-Kearneysville)

- I. Introductions
- II. Project Overview
 - a. Potential Contaminant Source Survey
 - i. Reviewed existing PCSs presented on figure
 - 1. National Fruit Farm – PCS 5319
 - a. Apple orchard that sprays a lot
 - b. Have some cornfields too
 - 2. Inwood Quarry – quarries limestone
 - ii. Discussed additional PCSs
 - 1. Mike Collis has a list of current PCSs. Have the field team call him before doing field work and he will share the list with them to make sure they don't miss anything.
 - 2. Flying J Truck Stop and Exxon Station off I-81 at the southern end of the map near the Rest area
 - 3. In the past a sinkhole opened up during construction at the rest area and caused mud to show up in the Bunker Hill spring
 - 4. Car Wash on the same road but north of PCS 167
 - 5. Historic gas station located near the B of Bunker Hill – tanks still in the ground
 - 6. Diesel repair shop and auto repair shop to the west of PCS 161
 - 7. Sheetz gas station at the intersection south of PCS 164
 - 8. Asphalt plant south of the Sheetz (see map for approximate location)
 - 9. Munsen Plant – apple processing
 - a. Holding ponds located north of the plant
 - b. Contamination from holding ponds showed up in Mill Creek
 - b. Contingency Plan
 - i. Reviewed existing contingency plans and emergency response plans
 - 1. ERPs kept on file for each system and updated yearly
 - ii. Members of WV RWA, but not WV WARN
 - c. Management Plan
 - i. Reviewed suggested strategies from the Assessment Report
 - ii. All intakes are fenced/restricted

- iii. Not all wells are capped and locked
- iv. Source Water Protection Plan completed in 2006 by RWA
- v. Discussed possible priorities
 - 1. Septic systems
 - 2. Gas stations and auto repair shops
 - 3. Concrete?? plant
 - 4. Munsen Plant and holding ponds
 - 5. New construction/development
- d. Source Water Protection Plan
 - i. Reviewed components of the plan
- III. Project Timeline
 - a. Reviewed key steps of process and basic timeline
 - b. Discussed presentation of the final plan at the Water Board Meeting
- IV. Received copy of completed Facility Information Form

Source Water Protection Plan Follow-Up Meeting Agenda Berkeley County PSWD-Bunker Hill

October 13, 2011

Attendees: Mike Collis (BCPSWD-Bunker Hill), Daryl Mason (BCPSWD), and John Beckman (Tetra Tech, Inc.)

- I. Introductions
- II. Draft Source Water Protection Plan Review
 - a. Potential Contaminant Source
 - i. Survey Results
 - ii. Review Figures and confirm locations
 - iii. Prioritizing PCSs and Critical Areas
 - iv. Reviewed sinkhole management information
 - b. Management Plan
 - i. Strategies to Address Priority PCSs/Critical Areas
 - ii. Education and Outreach Measures
 - iii. Plant tours are offered to education groups
 - iv. Delete reference to Baker Lake Well
 - v. Storage capacity, tanks, and booster station numbers in report are correct as is
 - c. Implementation
 - i. Review responsible parties and timing
 - ii. Explained tables 5 -7
 - d. Contingency Plan
 - i. Reviewed draft contingency plans
 - ii. GWUDI testing was finalized for Morning Dove #7 and found not GWUDI.
 - iii. GWUDI testing has not been finalized for Morning Dove #8
 - iv. Bulk water sold on emergency basis to VA Med Center and Berkeley County-Potomac River, but no emergency sales in 10 years
 - v. Housing boom and population growth has leveled off.
 - vi. Primary use is residential, with IRS center, other government offices, and EcoLab also big customers.
- III. Project Timeline
 - a. Reviewed key steps of process and basic timeline
 - b. Discussed presentation of the final plan and schedule for report drop-off

Appendix D:

USEPA Regulated Sites

CERCLIS:

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

NPDES:

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

RCRA:

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

TRI:

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

WVDEP Regulated Sites

Abandoned Mine Sites:

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

HPU-Hydrological Protection Unit

This is a general term to describe a type of permit issued and regulated by the WVDEP for the active and inactive mines in the state. These are similar to USEPA's NPDES permits, in that they are issued for point sources or "outlets" into surface waters. HPU may be seen alone as a general permit description or have suffixes added, such as in HPUG1-general surface mining, HPUG2-general quarry, HPUGD-deep mine, to further describe specific sites.

Coal Dams:

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

Solid Waste Facilities:

Seventy-eight (78) municipal and non-municipal waste landfills and waste transfers stations. This data layer was published by WVDEP Division of Waste Management in 2/2002.

Oil and Gas Wells:

The Office of Oil and Gas maintains records on over 40,000 active and 25,000 inactive oil & gas wells. It also manages the Abandoned Well Plugging and Reclamation Program.

Appendix E:
Example Letters and Brochure

Example Letter to Business for GROUNDWATER

Month/Day/Year

Local Business Owner
Address

Dear Local Business Owner,

This letter is to make you aware that your business, **Business Name**, is located within or near the Source Water Protection Area for our community's drinking water. This protection area was developed for Berkeley County PSWD-Bunker Hill by the West Virginia Department of Health and Human Resources and provided in a source water assessment report.

Our source of drinking water is supplied by groundwater that is pumped out of the ground. Liquid substances such as automotive products, fuel oil, cleaning fluids, and oil-based paints are common groundwater contaminants. These substances can enter the groundwater through improper disposal methods. Improper disposal methods include pouring chemicals on the ground, down a sink or toilet connected to a septic system, or down a storm drain. Any contamination that enters the groundwater resources will force Berkeley County PSWD-Bunker Hill to implement additional costly measures in order to assure the water supplied to local customers is safe to drink.

Berkeley County PSWD-Bunker Hill is asking all businesses located within the protection area to follow all regulations as required by state and federal laws for their business, implement best management practices within business operations, report any spills to appropriate officials, and prevent the improper disposal of any liquids that could contaminate the water resources.

Berkeley County PSWD-Bunker Hill thanks you for your cooperation and assistance. If you have any questions or would like to review the drinking water source assessment report or protection plan please contact Michael Collis at 304-229-5255.

Sincerely,

Example Letter to Resident for GROUNDWATER

Month/Day/Year

Local Resident
Address:

Dear Local Resident,

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

Our source of drinking water is supplied by groundwater that is pumped out of wells. Liquid substances such as automotive products, fuel oil, cleaning fluids, and oil-based paints are common groundwater contaminants. These substances can enter the groundwater through improper disposal methods. Improper disposal methods include pouring chemicals on the ground, down a sink or toilet connected to a septic system, or down storm drains. Any contamination that enters the groundwater resources will force the Berkeley County PSWD-Bunker Hill to implement additional costly measures in order to assure the water supplied to local customers is safe to drink.

Berkeley County PSWD-Bunker Hill is asking all residents living within the protection area to report any spills to appropriate officials and prevent the improper disposal of any liquids that could contaminate the groundwater resources.

In addition to improper disposal, contaminants can also enter into the groundwater through private water wells. If you own a private well, please perform maintenance to prevent contaminants, including bacteria, from entering the groundwater source. Please contact Berkeley County PSWD-Bunker Hill if you are willing to have your well properly abandoned to protect the system groundwater source. Contact the state or local health department to learn more on how to maintain well and protect you water source.

Berkeley County PSWD-Bunker Hill thanks you for your cooperation and assistance. If you have any questions or would like to review the Berkeley County PSWD-Bunker Hill source water assessment report or protection plan, please contact Michael Collis at 304-229-5255.

Sincerely,

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



Contaminants

Cleaning Products

Automotive Products

Fuel Oil

Furniture Strippers

Oil-based Paints

Sewage

Lawn and Garden Products

Sediments

Pharmaceuticals

Source Water Links

www.wvdhhr.org/oehs/eed/swap/
www.epa.gov/safewater/index.html
www.epa.gov/watersense/
<http://cfpub.epa.gov/owm/septic/index.cfm>
<http://orsanco.org/index.php/brochures>

For Kids

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



Contacts

WV Department of Health and Human Resources
Source Water Assessment and Protection Program
350 Capitol Street, Room 313
Charleston, WV 25301-3713
phone: (304) 558-2981
fax: (304) 558-0324
e-mail: William.J.Toomey@wv.gov

*Do Your Part
Protect Your
Source Water
Protect Your
Health*



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

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

Do Your Part to Protect Source Water

- ✓ Recycle used oil and other automotive products at a service center. Don't pour them on the ground or down storm drains. Storm drains can lead directly to your source water.
- ✓ Fix leaks from your automobile and clean up spills.
- ✓ Apply fertilizers and pesticides as directed. Consider natural alternatives to chemicals.
- ✓ Don't flush pharmaceuticals. Dispose by mixing with coffee grounds or kitty litter, sealing in a container, and placing in the trash. Organize a collection day with a pharmacy and local police department.
- ✓ Take unwanted household chemical waste, such as cleaners, oils, and paints to proper waste collection sites. Don't dump down your sink, toilet, or storm drains. Consider organizing a collection day in your community.
- ✓ Check for leaks at heating fuel tanks and install pads to catch accidental leaks or spills.
- ✓ Report unused water wells to your utility or WVDHHR.
- ✓ Inspect your septic system regularly and pump every 5-10 years.

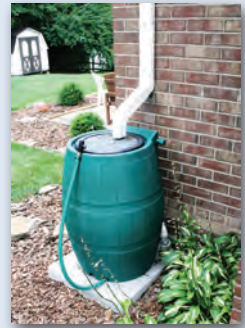


Making choices to protect and conserve the source of your drinking water will help keep you, your family, and neighbors safe and healthy now and in the future.



Do Your Part to Conserve Source Water

- ✓ Turn off the water when you brush your teeth and take shorter showers.
- ✓ Wash full loads of clothes and dishes.
- ✓ Don't use your toilet to flush trash.
- ✓ Fix leaking faucets, toilets, and lines. Consider installing toilets, faucets, and appliances designed to save water.
- ✓ Water your lawn and garden in the morning. Consider installing a rain barrel at your downspouts to collect rain to water your lawn and garden, instead of using treated water.
- ✓ Use native plants in landscape that don't need extra watering. Use mulch to hold moisture.
- ✓ Don't let your garden hose run when washing your car.
- ✓ Don't panic if you are asked to conserve during a drought. Your utility will respond to water shortages based on your normal water use. Running extra water in your home during a drought will make it more difficult to respond to the water shortage.



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

Appendix F:
Contingency Plans

Drinking Water Shortage - Short Term Loss of Source

BERKELEY COUNTY PSWD-BUNKER HILL

PWSID#: WV3300202

The water users will be notified of a water emergency by:

Word of Mouth		Posted Notices	
Door-to-door canvas		Radio	X
Newspaper	X	Television	X

Phone number for emergency services:

Service	Name	Emergency Phone #	Alternate Phone #
Police	Berkeley County Sheriff's Office	911	304-267-7000
Fire	South Berkeley Volunteer Fire Department	911	304-229-5377
Ambulance	South Berkeley Volunteer Fire Department	911	304-229-5377

County Director of Emergency Services (Name and Number)

Berkeley County Emergency Management Agency contact: Stephen Allen			
Work Phone #	Cell Phone #	Pager #	Email
304-263-1345	304-676-9911	N/A	BCOES@EARTHLINK.NET or BCOES901@ADELPHIA.COM

Name, location, and phone number of person(s) that the consumer should notify regarding a potential problem so that the operator can assess the potential problem and notify the appropriate parties:

Name	Location	Phone	Alt. Phone #
Mike Collis	Bunker Hill, WV	304-229-5255	304-283-5656
Daryl Mason	Bunker Hill, WV	304-229-5255	304-283-6116

Short-term alternative sources of water:

Backup sources are Baker Lake Quarry. Berkeley County PSWD-Bunker Hill also has connections with the Berkeley County PSWD-Potomac River plant, City of Martinsburg, and Frederick County, Virginia. Generators are available in case of emergency.

Drinking Water Shortage - Long Term Water Supply Planning

BERKELEY COUNTY PSWD-BUNKER HILL PWSID #: WV3300202

Future water supply needs may involve expanding a current water source or developing a new one. A community needs to plan for such major expenditures, and may need to acquire options on or secure relatively undeveloped land many years in advance. Completing the following will help determine how soon this may occur.

Berkeley County PSWD-Bunker Hill currently provides water at 59% of pumping capacity and 59% of plant capacity.

The following information is needed to calculate the above percentages:

- A. Average production = 2,000,000 gallons per day.
- B. Pumping capacity = 3,400,000 gallons per day (% of pumping capacity is A/B)
- C. Plant capacity = 3,400,000 gallons per day. (% of plant capacity is A/C)

Given current conditions and projections of growth, Berkeley County PSWD-Bunker Hill anticipates the need to add filtration for the Springdale wells. Housing boom of mid-2000s is over and population growth is leveling off. Main customers are residential users, the IRS center, other government offices, and the EcoLab plant.

Drinking Water Shortage – Spill Response Sheet

BERKELEY COUNTY PSWD-BUNKER HILL
PWSID #: WV3300202

Procedures should be in place for the kinds of catastrophic spills that can reasonably be expected in the SWPA. The chain-of-command, notification procedures and response actions should be known by all water system employees.

What fire department or hazardous materials response team would respond to a spill in the SWPA?

Berkeley County Office of Emergency Services

The fire department or hazardous materials response team can be reached at:

Emergency Phone #	Alternate Day-Time Phone #	Alternate After Hours Phone #
911	304-263-1345	304-676-9911

The WVDEP is capable of providing expertise and assistance related to prevention, containment, and clean-up of chemical spills.

Contact Spill Hotline: **800-642-3074**

Responsibility for coordinating the response procedures will rest upon a key water system staff. This person will oversee and coordinate activities with other water system staff and external organizations.

	Name	Day-Time Phone #	After Hours Phone #
Primary Contact	Michael Collis	304-229-5255	304-283-5656
Backup Contacts	Daryl Mason	304-229-5255	304-283-6116

Notify WVDHHR/EED District Office contact: Bradley Reed or Alan Marchun		
Day-Time Phone #	Alternate Day-Time Phone #	After Hours Phone #
304-725-9453	304-558-2981, EED Central Office	304-558-2981, Answering service will notify appropriate individuals in case of emergency.

General Emergency Response Procedure

BERKELEY COUNTY PSWD-BUNKER HILL PWSID #: WV3300202

When an incident occurs the water system will follow the procedures in their Emergency Response Plan. However, if an Emergency Response Plan is not accessible, the following response procedure is recommended:

- ❖ Received and document incident information, including:
 - What is the incident? (ex. material spill, contaminant detection in water, power outage, security breach, line break.)
 - Where has incident occurred? Is the incident ongoing?
 - What components of the water system are affected?

- ❖ Identify how the water system came to know about incident:
 - Outside source: individual or public notice by an official
 - Emergency reported to 911 or other emergency response notification
 - An employee detected contamination by testing or observation

- ❖ Begin to notify the proper chain of command:
 - Chief Plant Operator
 - President of Company, Mayor, or Board Chairman
 - Other System/City Staff
 - Emergency Responders
 - WVDHHR Environmental Engineering District Office

- ❖ Identify if the water system is in imminent danger; if so begin to shut down the treatment process accordingly. Answer these questions:
 - Does the intake pump need to be shut off? For how long?
 - How long can water be supplied from storage?
 - How wide spread is the incident?
 - Does the treatment plant need to be completely evacuated?
 - What is the impact to the treatment plant and potentially to the customers?
 - Does any specific area of the distribution system need to be isolated?
 - Obtain additional personnel to assist in treatment plant operation, maintenance, monitoring, or shut down as appropriate
 - Call for materials and equipment as necessary

- ❖ Provide information to emergency agencies, the public, and issue press releases

- Who is the point of contact to distribute information to the public and coordinate with these agencies?
 - County Emergency Operations Center
 - Local Police, Fire, and Emergency Medical Services
 - West Virginia Department of Environmental Protection
 - West Virginia State Police
 - County Sheriff
 - WVWARN
 - WV Rural Water Association
 - West Virginia Department of Natural Resources
 - National Park Service
 - West Virginia Dam Safety
- How often will updates be provided?
- Has the incident been addressed with no further action needed?

❖ Depending on the circumstances, other measures may include:

- Backup Plan:
 - Utilize backup generator.
 - Switch to a backup source of water.
 - Contact certified well driller and/or pump installer to address issues with well.
 - Contact water system engineer.
 - Contact alternate source water suppliers, such as neighboring water system, water haulers, bottled water distributors.
- Release affected waters from, plant, storage, or reservoir.
- Resume pumping according to level of contamination or toxins:
 - Utilize environmental testing labs to analyze water.
 - Utilize the chemical suppliers for potential solutions and remedies.
- Address Clean up:
 - Coordinate with State/County/Local/Private partners via ongoing meetings and other communications, support or assistance.
 - Organize support accordingly.
 - Utilize the County Emergency Services, WVDEP, and other local emergency response resources as necessary.
 - Partner with WVWARN and WV Rural Water Emergency Team, networks of utilities that can be called on to assist in an emergency situation.

❖ Financing of clean-up would be according to magnitude of incident.

- Initial management and in house work would be handled as part of regular maintenance cost.
- Temporary financing would be available until the liable party could be ascertained.

❖ Document the incident and actions taken. Retain records.

Appendix F-4. BCPSWD Bunker Hill WTP Protection Team Meeting Minutes

Bunker Hill WTP *and* Potomac River Plant

Protection Team Meeting

November 19, 2015

251 Caperton Blvd. Martinsburg, WV

In Attendance:

Christine ThielBCPSWD

Steven DeRidder.....BCPSWD

Zachary NealAdvanced Land and Water, Inc.

Sarah TaggartAdvanced Land and Water, Inc.

Stephen M. Gyurisin.....Advanced Planning Associates, LC

Bill ClarkEastern Panhandle Regional Planning & Development Council

Jennifer O'BrienEastern Panhandle Regional Planning & Development Council

Eddie GochenourBerkeley County Office of Homeland Security & Emergency
Management

Alana HartmanWest Virginia Department of Environmental Protection

Monica WhyteWest Virginia Bureau of Public Health

Mike ThompsonBerkeley County Planning Commission

Interested Participants Who Could Not Attend:

Regina (Suzy) LucasWest Virginia Conservation Agency

Joseph A. CastaldoWest Virginia Department of Transportation

Invitees Who Did Not Respond:

- Penny ShewellBerkeley County Council Office Administrator
- Stephen L ChristianBerkeley County Development Authority
- Manny P. ArvonBerkeley County Schools
- Tina CombsMartinsburg-Berkeley County Chamber of Commerce
- Ashley PetrolinoBerkeley County Health Department
- Matt Ware.....Berkeley County Farm Bureau
- Tim Canfield.....USDA Natural Resources Conservation Service
- Dolly VessellaWinchester and Western Railroad
- Dave ScottCSX Corporation
- Eric Lawrence.....Frederick County, VA Department of Planning

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 the BCPSWD Bunker Hill and Potomac River Systems. 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 sources. 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 both of the water Systems.

Timeline of Events:

Following formal introductions from participating Protection Team members, ALWI staff began a PowerPoint in which we explained the hydrogeologic setting of Berkeley 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). 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. We ended the meeting by presenting additional general system recommendations, which broadly covered better physical protection measures (e.g., fences) and investigative studies.

Discussion of Public Involvement and Future Public Workshop Meetings:

During the course of the meeting, the Protection Team discussed the degree of public involvement required and concerns about the confidentiality of specific information (PSSC Inventory) when engaging the public. This was brought about by discussion of the future public workshop meeting and conceptualization of hosting a draft SWPP (that does not contain confidential information) on BCPSWD's website, for the purpose of garnishing additional public comment and feedback. BPH opined that this could be an effective method of keeping the public informed of Source Water Protection activities, as long as confidential information (i.e., that information that isn't accessible to the public online) is omitted from the document.

Monica Whyte informed the Protection Team that the BPH will hold public hearings (possibly grouping Systems together based on geographic location) after they have received and reviewed the completed Source Water Protection Plans from required systems throughout Region 9. This hearing does not satisfy the requirements, nor take the place of the public workshop that each utility is required to hold for their relevant systems. Feasible methods of advertising such workshops were also discussed; BCPSWD has contacts with local newspapers and radio stations, and has the ability to advertise on their website, Facebook page, and posted notices at the BCPSWD office.

Bunker Hill System Specific Discussions:

During discussion of a 1976 dye tracing study completed in Berkeley County by W.A. Hobba Jr., Alana Hartman stated that the non-point section of the Division of Water & Wastewater Management is beginning to focus funding and interest towards Sylvan Run, Torytown Run, and Mills Creek. Funding would potentially be available through the West Virginia DEP Agricultural Enhancement Program (among other programs), and would focus on reducing negative effects associated with agricultural practices within the watershed, and may potentially cover non-point contamination originating from septic systems. Programs being forwarded in these areas include agricultural enhancement programs, others aimed at establishing riparian buffer zones, and others designed for encouraging residents to frequently check and pump their septic tanks. These programs are important for the Bunker Hill system, as Sylvan run has been documented as a losing stream (Hobba, 1976) and may serve as a source of recharge to LeFevre Spring. As such, the Bunker Hill Water Treatment Plant may benefit from activation and renewed interest in these programs in the SWPA, with an emphasis placed on decreasing the effects of non-point source pollution on Sylvan Run.

During the presentation, we displayed current and future land use maps, with the BPH delineated SWPA overlain. The future growth area maps, which we acquired from the Berkeley County Council website, depict anticipated land development in close proximity to the LeFevre Spring, and in areas associated with major faults and conduits associated with the spring. Much of the

development area is anticipated to occur between and west of the Route 11 and I-81 corridors. The maps also showed that approximately one-third of the SWPA is located in Frederick County, VA in locations where zoning maps indicate future industrial and commercial growth will occur. Eric Laurence, Director of the Frederick County, VA Department of Planning was invited to the Protection Team meeting, but did not respond. ALWI recommended that the System continue to work with representatives from the Frederick County Department of Planning to limit incompatible land use development within the Bunker Hill SWPA.

ALWI-identified PSSCs and Critical Areas within the Bunker Hill 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; see Table 8):

1. Highway (I-81) Corridors
2. Railroad Networks
3. Sinkholes
4. Commercial Activities
5. Septic & Sewer Systems
6. Agricultural Activities
7. New Growth Areas

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 (see Table 9). During the discussion, team members volunteered to handle implementation of the recommended management strategies. Relevant management and implementation strategies were discussed as follows:

- ❑ **Highways** - In response to an ALWI recommendation to establish emergency spill response stations, Mr. Eddie Gochenour explained that OHSEM currently has 20-25 absorbent bags available for the cleanup of spills and leaks. Mr. Gochenour deemed that this would be enough for small spills, but not large spills associated with train derailments and tanker truck accidents. Mr. Gochenour indicated that Berkeley County can receive mutual aid from Washington County, MD, who maintains an inventory of two pallets of absorbent, with each pallet containing 20-25 bags of absorbent. Mr. Gochenour agrees that pre-stocked response stations at key locations could decrease response time in the event of a spill. In this regard, Mr. Gochenour recommended reaching out to Joseph A. Castaldo with the Department of Transportation to discuss storage options for spill response equipment at the State Highway facility located on Tabler Station Road, which is located between the City of Martinsburg and Town of Inwood. Alana Hartman added that as a “one-time-expense” project, there is a possibility that funding for instituting emergency stations could be sought through local watershed

groups. The responsibility of re-stocking the emergency resources would be put on the carrier or entity responsible for the spill.

- ❑ **Railroad** - ALWI recommended that Berkeley County emergency personnel work with CSX and their shortline partners and 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. Mr. Gochenour informed the Team that he is working with Joe Taylor (CSX) to schedule tabletop and onsite trainings for railroad accidents and spills. He anticipates that onsite drills will begin to take place as early as 2016, and that the recommendations provided in Table 9 (relating to highways and railroads) will be implemented within a two-year time period.

- ❑ **Sinkholes** - Due to the presence of karst terrain, which underlies the region and encompasses the majority of both SWPAs, ALWI recommended that the System work with the County to establish a Sinkhole Management Program, possibly modeled after the Carroll County, MD Sinkhole Management Program. ALWI explained the general outline of the Carroll County Sinkhole Management Plan, whereby the locations of known sinkholes and karst geology boundaries are mapped, responsible parties for sinkhole formation and mitigation are established and/or determined, protocol for regular sinkhole inspections on County lands are instituted and cost-sharing initiatives for sinkhole mitigation are presented. When asked what policies Berkeley County presently has in place for sinkhole management, Mike Thompson stated that from a planning perspective, the Council becomes aware of the presence of sinkholes on private lands through the subdivision ordinance and associated planning requirements. Developers are required to establish buffers around known sinkholes, and residents are encouraged to establish buffers around or mitigate sinkholes that come to form on their land. Sinkholes located on land to be developed must be mapped and reported to the planning commission. A 50 foot buffer is required around existing sinkholes. Mr. Thompson added that roadways in the County are all privately owned, excluding State roads maintained by the Department of Transportation, which is no longer accepting incorporation of privately built roads. This presents a problem when a sinkhole forms on a private roadway because the responsibility of onerous repair efforts falls on one or more residents or homeowners associations. Berkeley County is dealing with such a situation currently. The lack of zoning in the County impedes land use restriction efforts and makes it difficult to establish sinkhole regulations through ordinances or other related measures. The Team discussed alternative options for implementing sinkhole regulations. Currently there are minimal sinkhole requirements embedded into County Stormwater Regulations, which are presently being updated. Matt Pennington is responsible for the draft stormwater regulations. This could present a possible avenue to incorporate more stringent sinkhole management regulations. WV State Code also provides for protective efforts to be established in wellhead protection areas. A sinkhole management strategy would be far more feasible if it is focused on SWPAs or other critical areas within the County, rather than as a County-wide regulation. Mr. Bill Clark and Ms. Jennifer O'Brien with the Eastern Panhandle Regional Planning & Development Council expressed a willingness to

identify funding opportunities for implementation of a preliminary sinkhole management program.

- ❑ **Commercial Activities** – While a limited number of commercial facilities exist within the Bunker Hill SWPA, two of the existing facilities identified by BPH included gas stations. ALWI also came to identify a number of auto repair and maintenance shops scattered throughout the SWPA. These facilities were discussed briefly. The Protection Team decided it would be appropriate to request site information from the Department of Environmental Protection and confirm that auto repair facilities were legal and properly disposing waste products. The Protection Team also 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 disposed of using best available methods.
- ❑ **Septic System(s)** - The Protection Team decided to hold off on implementation of related management activities until the next time the Sanitary Sewer Service plans to assess the feasibility of sewer extension/expansion, which will occur concordantly with development. The team discussed how the DEP Non-Point Section of the Division of Water and Wastewater Management works to assist and encourage residents to properly maintain their septic systems and maintains information regarding which systems are in need of attention. As a result, ALWI recommendations will be coordinated with other agencies at a later date.
- ❑ **Agricultural Practices** - The Team discussed recommended management activities for farmlands within the SWPA; accepting our recommendations without a set time limit for implementation. Ms. Alana Hartman indicated that West Virginia does not require Nutrient Management Plans for agricultural facilities, but that they are developed and provided at no cost.
- ❑ **New Growth** - When discussing relevant management activities, the Berkeley County Planning Commission reiterated that they do not possess the ability to enforce low impact development practices directly due to the absence of zoning in Berkeley County, presently. The Protection Team is turning towards alternate avenues of land use restrictions and purchasing opportunities, which include coordination with the Farmland Protection Board and other Land Protection programs/agencies. In this regard the System could consider working with Farmland Protection to request a higher point value (system of ranking the program uses; corresponding to the amount of funding given) to properties within the SWPA which are near the System's sources or overlying mapped fractures and faults associated with System sources.

During the course of the meeting, the Communication Plan component of the SWPP was discussed. The plan requires that a Communication Team be formed and comprised of personnel who would play an integral part in disseminating information between the system, the public and other entities involved, should an emergency contamination event occur. ALWI recommended to the System that invitations be extended to local emergency and law enforcement personnel in this regard. However, ALWI also pointed out to Protection Team members that diagrams

depicting the chain of communication/command in the event of a contaminant occurrence are provided in BCPSWDs confidential Emergency Response Plan (ERP), which BPH possesses and will receive an update to at a later date. This ERP outlines the means by which information will be disseminated to the public in a timely manner. Recent public notifications by BCPSWD regarding the latex spill on the Potomac River indicate that the ERP is sufficiently well designed and organized to effectively notify water users in a timely fashion.

When discussing the generalized and non-confidential web of communication followed by different entities in the event of a spill or other emergency, it became apparent that there is a delay in the time it takes information gathered by first responders and emergency personnel to be shared with water suppliers. Eddie Gochenour stated that when a spill or other contamination emergency is reported to their dispatch station, the EPA has asked that they be notified directly. From there, notifications would then be sent out at the State and then the Local levels. It is important to note that this system is not currently in place or finalized, and is just a concept proposed by the EPA.

Chris Thiel indicated that she receives notifications of spills on the Potomac (such as the recent latex spill) from the Interstate Commission on the Potomac River Basin, while she receives only email notifications from the County Health Department for all other spills. Ms. Thiel indicated that she receives excessive notifications of small scale spills on a daily basis. In an effort to streamline local communication efforts with the System, Mr. Gochenour will work with local dispatchers to highlight circumstances where the BCPSWD should be directly informed of a spill (i.e., spills occurring in close proximity to Sylvan Run, or LeFevre Spring itself). Mr. Gochenour inquired as to the amount of spilled material which Ms. Thiel would want to be notified of directly. She indicated that she would deem a spill of 1,000 gallons or more within the SWPA as a critical threat, but that notifications of smaller quantities may be issued if spills occur in close proximity to System sources.

The Education and Outreach Strategies recommended by ALWI were discussed, and responsible members were chosen for each category (See Table 10).

Appendix F-5. Emergency Response Plan Signature Page

EMERGENCY RESPONSE PLAN
WATER SECTOR

Public Water System Name: Berkeley County - Bunker Hill PWS

PWSID No: WV3300202

Physical Address: 251 Caperton Blvd.

City: Martinsburg

State: West Virginia

Zip Code: 25403

General Phone Number: 304-267-4600

Population Served: 27,563

Municipalities Served: 1

Prepared by (signature & title):  Chief Operator

Reviewed by (signature & title):  Executive Director

Date Completed: June 2004 (June 2004)

Date Revised: November 2015 (November 2015)

Appendix F-6. Engineering Evaluation

CONFIDENTIAL

Appendix F-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
- ❑ 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
- ❑ 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

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](#)



Beyond Our Rails



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.

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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.



Youth Safety Outreach



Play It Safe Outreach Campaign





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.

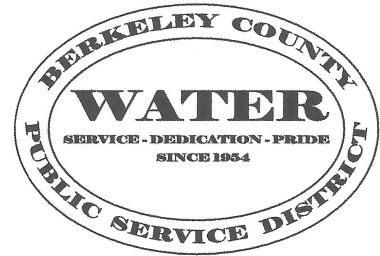
The CSX Safety Train is just one of a number of continuing programs through which CSX offers training and recognition to emergency responders and customers. Just recently, CSX presented its Chemical Safety Excellence Award to more than 70 shippers who had incident-free records in 2013.

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



Summary of Public Outreach Efforts

Source Water Protection Plan Update,

Bunker Hill Source and Potomac River Plant Source

Activity	Date	Objective
Public Workshop	Dec 16, 2015	Provide forum for public information exchange.
Source Water Protection Team Meeting	Nov 18, 2015	Development of source water protection strategies.
Invitation Letters for Protection Team	Nov 2015	Identify prospective members for the Source Water Protection Team
Water District Board of Directors Meetings	Various	Open discussion of source water protection efforts with opportunity for public comment.
Press Release for publication in The Journal (by Region IX)	Nov 2015	Notify public of SB373 compliance efforts and opportunity for public comment on SWPPs.
Web site and facebook postings (Region IX and BCPSWD sites)		Public information
Emergency Response Planning Workshop, Shepherdstown	Sept 3, 2015	Network with agencies involved in emergency response activities; training
Potomac River Basin Source Water Protection Team Annual Meeting	Nov 18, 2015	Network with Potomac River water purveyors; discuss source water protection concerns
Source Water Protection Plan Training, Region IX	Sept 3, 2015	Network and training
Article in The Journal	May 25, 2015	Public information