Source Water Protection Plan Nettie-Leivasy PSD

PWSID WV3303403 Nicholas County

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In cooperation with Nettie-Leivasy PSD



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

knowledge.

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

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Date of Submission:



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SOURCE WATER PROGRAM ACRONYMS

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



1.0 PURPOSE

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

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

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

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

2.0 BACKGROUND: WV SOURCE WATER ASSESSMENT AND PROTECTION PROGRAM

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

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

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

3.0 STATE REGULATORY REQUIREMENTS

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

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

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

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4.0 SYSTEM INFORMATION

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

Table 1.	Population	Served by	Nettie-Leivasy	PSD

Administrative office location:			125 Cedar Road Netti	e, WV 26681	
Is the system a public utility, according to the Public Service Commission rule?			Yes		
Date of Most Recent Source Water Assessment Report:			December 2002		
Date of Most Recent Source Water Protection Plan:			March 201	1	
Population served directly:			Nettie-Leivasy PSD directly serves 1,394 customers* or approximately 3,485 people.		
	System Name	PWSID Number Popu		Population	
Bulk Water Purchaser Systems:	None		N/A	N/A	
Total Population Served by the Utility:			he utility serves a total of a people*.	pproximately 3,485	
Does the utility have multiple source water protection areas (SWPAs)?			In addition to the Panther utility also has a combined ea for the Panther Mine and backup intak	Creek protection area, I wellhead protection d Jim's Branch Mine es.	
How many SWP	As does the utility have?		2		

*Information from the 2015 Public Service Commission Annual Report. Estimated population served is the number of customers multiplied by 2.5.

5.0 WATER TREATMENT AND STORAGE

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

Table 2. Nettie-Leivasy PSD Water Treatment Information

Water Treatment Processes (List All Processes in Order)	Water treatment processes include coagulation, pH control, filtration, and chlorination.
Current Treatment Capacity (gal/day)	The current treatment capacity of the treatment plant is approximately 504,000 gallons/day.
Current Average Production (gal/day)	Current average production is around 365,000 gallons/day.
Maximum Quantity Treated and Produced (gal)	The maximum quantity produced in a single day in the last year was 580,000 gallons on 2/21/2015 ⁽¹⁾ .
Minimum Quantity Treated and Produced (gal)	The minimum quantity produced in a single day in the last year was 248,000 on 8/9/2014 ⁽¹⁾ .
Average Hours of Operation	The plant is staffed and operated 18-22 hours/day.
Maximum Hours of Operation in One Day	The maximum number of hours of operation in a single day in the last year was 24 hours (580,000 gal. at 350 gallons per minute (GPM).
Minimum Hours of Operation in One Day	The minimum hours of operation in a single day in the last year was 12 hours (248,000 gal. at 350 GPM).
Number of Storage Tanks Maintained	The water system maintains 7 ⁽²⁾ treated water storage tanks.
Total Gallons of Treated Water Storage (gal)	The system has a total of 815,000 ⁽²⁾ gallons of treated water storage.
Total Gallons of Raw Water Storage (gal)	The utility does not have any raw water storage.

⁽¹⁾Information from the 2015 Public Service Commission Annual Report.

⁽²⁾This information was updated after the completion of the Contingency and Feasibility study. This is the most updated information from Nettie-Leivasy PSD.

Table 3. Nettie-Leivasy PSD Surface Water Sources

Intake Name	SDWIS #	Local Name	Describe Intake	Name of Water Source	Date Constructed / Modified	Frequency of Use (Primary/ Backup/ Emergency)	Activity Status (Active/ Inactive)
Panther Creek Intake	IN002	Panther Creek Intake	The intake is a 12"-14" screened straight pipe with a blow-off valve. It is located in a small impoundment just east of Nettie.	Panther Creek	1960	Primary	Active

Table 4. Nettie-Leivasy PSD Groundwater Sources

Does the utility blend with groundwater?								Yes	
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)
Panther Mine	IN004	Panther/Gauley Mine Source	2013	No	N/A	90' of 10" Casing	No	Backup	Active
Jim's Branch Mine	-	Jim's Branch Mine Source	1980	No	N/A	N/A	No	Backup	Active

6.0 DELINEATIONS

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

The WSDA includes the entire watershed area upstream of the intake to the boundary of the State of West Virginia border or a topographic boundary. The ZCC for a public surface water supply is a corridor along streams within the watershed that warrants more detailed scrutiny due to its proximity to the surface water intake and the intake's susceptibility to potential contaminants within that corridor. The ZCC is determined using a mathematical model that accounts for stream flows, gradient and area topography. The length of the ZCC is based on a five-hour time-of-travel of water in the streams to the water intake, plus an additional one-quarter mile below the water intake. Ohio River ZCC delineations are based on ORSANCO guidance and extend 25 miles above the intake. The width of the zone of critical concern is 1,000 feet measured horizontally from each bank of the principal stream and five hundred feet measured horizontally from each bank of the tributaries draining into the principal stream. Ohio River ZCC delineations are based on ORSANCO guidance and extend 25 miles above the intake and one-quarter mile below the intake. The Ohio River ZCC delineations include 1,320 feet (one-quarter mile) measured from the bank of the main stem of the Ohio River and 500 feet on tributary.

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

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

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

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Table 5. Watershed Delineation Information

Size of WSDA (Indicate units)	The watershed delineation area covers approximately 12 square miles.		
River Watershed Name (8-digit HUC)	Gauley River Watershed- 05050005		
Size of Zone of Critical Concern (Acres)	The ZCC for the Panther Creek intake covers approximately 3,765 acres.		
Size of Zone of Peripheral Concern (Acres) (Include ZCC area)	The ZPC for the Panther Creek intake covers approximately 3,711 acres.		
Method of Delineation for Groundwater Sources	The combined wellhead protection area for the Jim's Branch Mine and Panther Mine was delineated along the existing boundaries for the mines themselves.		
Area of Wellhead Protection Area (Acres)	The area of the combined wellhead protection areas for the Jim's Branch Mine intake and Panther Mine intake is approximately 14,298 acres.		



7.0 PROTECTION TEAM

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

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

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

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

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Table 6. Protection Team Member and Contact Information

Name	Representing	Title	Phone Number	Email
Norma Cogar	Nettie-Leivasy PSD	Office Manager	304-846-9589	nettiewater@frontier.com
Russell Hatfield	Nettie-Leivasy PSD	Designated Operator	304-846-9664	-
				-
Chris Farrish	WV DHHR Environmental Engineering Division	District Engineer	304-575-8524	chris.b.farrish@wv.gov
John Tuggle	Region 4 Planning and Development Council	Executive Director	304-872-4970	-
B.J. Robinson	Nettie Fire Department	Fire Chief	304-619-1978	nettiefiredepartment@gmail.com
	Nicholas County Emergency Management			
Rob Meadows	Nettie-Leivasy PSD	Water Board Member		-
Fred Amick	Nettie-Leivasy PSD	Water Board Member		-
Elizabeth Ratliff	Nicholas County Health Department	-	304-872-5329	elizabeth.d.ratliff@wv.gov
Date of first p	protection Team Meeting		9/9/2015	
Efforts made to inforr (public, local govern local health departm explain absence of	n and engage local stakeholders ment, local emergency planners, ent, and affected residents) and f recommended stakeholders:	Office Manager Norma Cogar of Protection Team via telephone the required members were pro- Judy, Rob Meadows, Fred Am be involved in	contacted and organi and email and arran esent at the meeting nick, and Elizabeth R n future source water	ized the suggested members of the aged the first team meeting. Most of at Nettie-Leivasy PSD office. Mike atliff were unable to attend but will r planning efforts.



8.0 POTENTIAL SOURCES OF SIGNIFICANT CONTAMINATION

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

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

8.1 CONFIDENTIALITY OF PSSCS

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

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

8.2 LOCAL AND REGIONAL PSSCS

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

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

Nettie-Leivasy PSD reviewed intake locations and the delineated SWPAs to verify the existence of PSSCs provided by the WVBPH and identify new PSSCs. If possible, locations of regulated sites within the SWPA were confirmed. Information on any new or updated PSSCs identified by Nettie-Leivasy PSD and not already appearing in datasets from the WVBPH can be found in Table 7.

Table 7. Locally Identified Potential Sources of Significant Contamination

PSSC Number	Map Code	Site Name	Site Description	Relative Risk Score	Comments
19	C-2	Airport	Richwood Airport	3.0	Small paved airstrip, only a few single engine planes and no storage tanks.



8.3 PRIORITIZATION OF THREATS AND MANAGEMENT STRATEGIES

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

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

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

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

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9.0 IMPLEMENTATION PLAN FOR MANAGEMENT STRATEGIES

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

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

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

Table 8. Priority PSSCs or Critical Areas

PSSC or Critical Area	Priority Number	Reason for Concern
Logging/Timber Operations	1	Logging activities within the ZCC have occurred in the past. These activities can cause erosion and sediment can be washed into surface waters. Fuel and other fluids from vehicles and machinery can contaminate groundwater.
Highway Traffic	2	Highways run within the watershed and cross the ZCC. If an accident were to occur, it may be difficult to contain spill materials and these could potentially contaminate the surface water. Rt. 20 crosses Panther Creek very near the raw water intake, and an accident in this area could impact the primary source of raw water for Nettie.
Gas stations, auto repair shops and underground storage tanks (USTs)	3	Oils, antifreeze, and other automobile fluids can cause contamination of groundwater sources if not cleaned up and disposed of properly. USTs, particularly those at historic sites, may leak and contaminate groundwater sources.

Table 9. Priority PSSC Management Strategies

PSSC or Critical Area	Management Activity	Responsible Protection Team Member	Status/ Schedule	Comments	Estimated Cost
Previous Plan Status	There were 7 management strategies recommended in the existing plan. 6 of these strategies have been implemented or are no longer relevant. 2 of the original strategies address ongoing concerns. These are incorporated in this plan update and listed below, along with other source water protection strategies the water utility staff will pursue.	-	-	-	-

Source Water Protection Plan	Update this Source Water Protection Plan at least every 3 years as required by the State Code of West Virginia.	Source Water Protection Team	Every 3 years. Next update in 2019.	The Protection Plan should also be updated any time there is a significant change within the protection area or in utility staff. Yearly meetings of the protection team are recommended to ensure all members are up to date and informed about any developments within the protection area.	Minimal costs associated with team members' time
Logging/ Timber Operations	Utility staff will continue to contact the logging company to determine when and where logging activities are taking place. Work with the logging company and property owners to plan/design/implement methods to control impacts to surface and groundwater.	Utility Staff/ Operator	By 2019 plan update	Continue to coordinate with the WV Division of Forestry, 1900 Kanawha Boulevard East, Charleston, WV 25305-0180, or at (304) 558- 2788. Ask that they investigate active logging sites and educate the loggers of proper BMPs to prevent runoff into the streams. The WV Division of Forestry offers a BMP manual at the following link: http://www.wvforestry.com/BMP%20Book%20 <u>2009.pdf</u> .	Utility Staff/ Operator
Highway Traffic	Utility staff will continue to coordinate with emergency officials to be better prepared in the event of a hazardous spill. Explore the possibility of erecting signs within the ZCC to alert motor carriers of the emergency number(s) to call should a spill occur. This information will be used to inform and properly prepare emergency response personnel.	Utility Staff/ Fire Chief	Ongoing	-	Minimal costs associated with staff time.
Gas stations, auto repair shops and underground storage tanks (USTs)	Communicate with station and shop owners the need for them to properly dispose of oil and other automobile products. Ask them to institute 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.	Utility Staff	Ongoing	Consider whether operating or historic stations and shops are compliant with rules regarding USTs and leaking underground storage tanks (LUSTs). If you suspect an issue with an UST or LUST, contact the WVDEP at (304)926-0499 and ask for the Underground Storage Tank Staff for an inspection. These facilities may already be implementing BMPs for monitoring and/or containing a potential leak or spill and may be reviewed.	Minimal costs. Would take time to speak with owners and understand BMPs and regulations.

Future Development and Other Activities Within the Watershed	Water utility staff will perform a yearly "windshield survey" of the zone of critical concern. They will note changes in land use, water quality, and other developments that may have occurred since the previous year's survey. These changes will be documented and reflected in future source water protection plan updates.	Water utility staff	Yearly, next survey in 2017	Document the date of the survey and any changes that may have occurred within the ZCC that could impact water quality.	Minimal cost associated with staff time
Regular Coordination with Emergency Managers	Nettie-Leivasy PSD staff have worked in the past with Nicholas County Emergency Management to respond to emergencies effectively and maintain water service to customers. A representative from this group is an active member of the Source Water Protection Team. Utility staff will continue to communicate with emergency services groups on a regular basis, especially when there is not an ongoing emergency. They will meet yearly as part of the Source Water Protection Team.	Water utility staff and emergency personnel	Yearly during regular Protection Team Meetings	Nicholas County Emergency Management has developed a county-wide inventory of hazardous sites and materials, including the PSSCs discussed in this plan. Nettie-Leivasy PSD staff will work with representatives from this group to properly respond to spills and accidents in the watershed.	Minimal cost associated with staff time
Yearly Source Water Protection Team Meetings	The Protection Team for Nettie-Leivasy PSD will meet on a yearly basis to discuss any changes that might have occurred within the watershed or to find replacements for members who can no longer participate.	Source Water Protection Team	Yearly, next meeting in 2017	-	Minimal cost associated with staff time

10.0 EDUCATION AND OUTREACH STRATEGIES

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



Table 10. Education and Outreach Implementation Plan

Education and Outreach Strategy	Description of Activity	Responsibl e Protection Team Member	Status/ Schedul e	Comments	Estimated Cost
Public Meeting	The water system held an informational meeting for local residents about the source water protection efforts. The meeting was intended to increase awareness of the connection between land use and drinking water quality. This meeting fulfilled a required part of the source water protection planning process.	Utility Staff	On March 21, 2016	The PSD held a public meeting at the utility office on March 21, 2016 during the regularly scheduled PSD board meeting. The meeting was advertised in the PSD office and in the Nicholas Chronicle newspaper for several weeks. The office manager gave the presentation, which was provided by Tetra Tech staff. The board members were present for the event but no public representatives were in attendance.	Minimal cost associated with staff time.
Consumer Confidence Report	The water system publishes a Consumer Confidence Report (CCR) annually, as required by the Safe Drinking Water Act, which is sent to all water customers. Information concerning the Source Water Assessment is included in the CCR. In the future, the system will include a reference to this source water protection plan and how customers can access a copy.	Utility Staff	Yearly	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.
Brochures, Pamphlets, and Letters	Send a letter and/or brochure providing educational information to residences and businesses. These will alert the recipients of the need for source water protection and conservation. Businesses that use greater- than-household quantities of regulated substances may receive a different letter. Funding for the brochures may be available through the Wellhead and Source Water Protection Grant Program. Several organizations provide information and resources on the internet, related to certain source water concerns and PCSs. The utility	Utility Staff	Yearly	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: <u>http://www.yourwateryourdecision.org</u> and may assist in community planning and development. USEPA Water Sense Simple Steps to Save Water (EPA-832-F-07-011) presents benefits of conserving water. Focusing not only on the environment, but also on the financial savings associated with conservation. The brochure can be viewed at: <u>http://www.epa.gov/watersense/docs/ws_simplesteps5</u> <u>08.pdf</u>	Cost in brochure printing and mailing.

	will consider obtaining these materials when needed, to educate the community			There is also a brochure template attached in Appendix E. Supporting Documentation.	
School Curricula	 Work with the school system to incorporate source water activities into the school curricula. Visit school or invite students for a plant tour to tie in with school curricula. Ask the school to include message in school newsletter to raise awareness about source water protection and conservation. 	Utility Staff	Yearly	The USEPA offers free educational materials for teachers and students, including classroom lessons, fact sheets, and interactive games and activities, for grades K-12. These materials can be accessed at the following websites. For general source water protection: <u>http://www.epa.gov/safewater/kids/index.html</u> . One example of school curricula is Project WET. For more information regarding free workshops to educate area teachers on Project WET, visit <u>http://www.dep.wv.gov/WWE/getinvolved/WET/Pages/</u> <u>default.aspx</u> , or contact the WVDEP at 304-926-0495.	Minimal costs. Would require time to coordinate, visit classroom and provide tour.
Plant Tours	Continue to provide tours of the water plant to interested organizations such as watershed groups, schools, and civic organizations. Tours will be offered as requested. Consider providing information from School Curricula above to students/teachers during visits.	Operator	As requested	Local Emergency Responders have visited the plant and are familiar with the facilities and prepared in the event of an emergency. The fire department is next to the water department, so ready to respond quickly and in close communication.	Minimal cost associated with operator's time.

11.0 CONTINGENCY PLAN

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

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

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

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

11.1 RESPONSE NETWORKS AND COMMUNICATION

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

Table 11. Nettie-Leivasy PSD Water Shortage Response Capability

Can the utility isolate or divert contamination from the intake or groundwater supply?	No	
Describe the utility's capability to isolate or divert potential contaminants:	The utility has no means of isolating or diverting potential contaminants.	
Can the utility switch to an alternative water source or intake that can supply full capacity at any time?	Yes.	

	The utility currently has two alternative sources it can use in the event that the primary intake on Panther Creek is unavailable.
Deservites in detail the utility's	Their primary backup source is the Panther Mine source. This is a reliable source that can fully supply the water system and would be unaffected by any contamination on Panther Creek. Water from this source is pumped to the wet well near the Panther Creek impoundment.
capability to switch to an alternative source:	The secondary backup source that is available to Nettie is the Jim's Branch Mine source. This source is located north of the Panther Creek impoundment and would also be unaffected by any contamination of the primary source. Water from the mine typically has high iron levels, however, and requires additional treatment. This water is also pumped to the wet well.
	The utility can switch to either of these sources with little advance notice, and uses these other sources regularly.
Can the utility close the water intake to prevent contamination from entering the water supply?	Yes
How long can the intake stay closed?	If the operators were unable to pull water from any of their sources, the storage for the system would last approximately 1.71 days if water was conserved throughout the system.
Describe the process to close the intake:	The operators can manually close a valve to shut the intake off from the water treatment plant.
	Nettie-Leivasy PSD has 7 treated water storage tanks and 1 booster pump station (BPS). The utility does not have raw water storage, but does maintain the following treated water tanks ⁽¹⁾ :
	New Clearwell- 230,000 gallons.
	Leivasy Tank- Steel tank with capacity of 75,000 gallons.
Describe the treated water storage capacity of the water	Pencil Distribution Tank- Newer steel tank with storage capacity of 110,000 gallons.
system:	Nettie Tank #1- Elevated steel tank with a capacity of 125,000 gal.
	Nettie Tank #2- steel elevated tank with storage capacity of 125,000 gal.
	Canvas Tank- steel tank with capacity of 100,000 gal.
	Carl Tank- New steel tank with capacity of 50,000 gal.
	Total treated water storage capacity - 815,000 gal.
Is the utility a member of WVRWA Emergency Response Team?	Yes. The utility is a member of West Virginia Rural Water Association (WVRWA) Emergency Response Team.



Is the utility a member of WV- WARN?	No
List any other mutual aid agreements to provide or receive assistance in the event of an emergency:	Nettie-Leivasy PSD has informal mutual aid agreements with nearby local water systems, including Craigsville PSD, Richwood Water, and Summersville Water.

⁽¹⁾This information was updated after the completion of the Contingency and Feasibility study. This is the most updated information from Nettie-Leivasy PSD

11.2 OPERATION DURING LOSS OF POWER

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

Table 12. Generator Capacity

What is the type and capacity of the generator needed to operate during a loss of power?	The utility has sufficient generator capacity to power the intake, treatment plant, and distribution system in the event of a power outage. They own 2 diesel generators and 2 propane generators		
Can the utility connect to generator at intake/wellhead? If yes, select a scenario that best describes system.	Yes. The intake pumps at the primary source are hardwired to a 125kW Cummins Diesel generator that automatically engages when the power goes out. Also, the 125 kW propane generator and pump at the Panther Creek secondary source are hardwired but must be manually switched. This pump can provide water to the local fire department		
Can the utility connect to generator at treatment facility? If yes, select a scenario that best describes system.	Yes. The treatment facility is hardwired to a 230 kW Diesel generator that automatically engages when the power goes out.		
Can the utility connect to a generator in distribution system? If yes, select a scenario that best describes system.	Yes. The Carl BPS is hardwired to a 60 kW propane generator that must be manually switched on during a power outage. 60 kW propane		
Does the utility have adequate fuel on hand for the generator?	Yes		
	Gallons	Hours	
What is your on-hand fuel storage and how long will it last operating at full capacity?	2 x 500 gal. diesel tanks	120	
	2 x 1000 gal. propane tanks	120	

		Supplier	Phone Number
Provide a list of suppliers that could provide generators	Generator	Walker Caterpillar- Summersville, W	V 304-872-4303
	Generator	Cummins- Charleston, WV	1-877-769-7669
of an emergency:	Fuel	U-Save Propane- Mt. Nebo, WV	304-872-9334
	Fuel	Adkins Oil- Craigsville, WV	304-742-8971
Does the utility test the generator(s) periodically?		Yes-The generators perform a weekly self-test.	
Does the utility routinely maintain the generator?		Yes- The utility maintains a yearly service contract with a loca mechanic.	
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

11.3 FUTURE WATER SUPPLY NEEDS

When planning for potential emergencies and developing contingency plans, a utility needs to not only consider their current demands for treated water but also account for likely future needs. This could mean expanding current intake sources or developing new ones in the near future. This can be an expensive and time consuming process, and any water utility should take this into account when determining emergency preparedness. Nettie-Leivasy PSD 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 Nettie-Leivasy PSD

Yes- The utility managers expect demands service area in the next 5 years. On average, operating at around 70% capacity, and alth days when the filters were maxed out, these anomalous. The water system's opinions con for the next five years are generally supported projected based on US Census Bureau 20 According to the 2005 Interim State Populatio as a whole will see a population decline betwee addition, researchers at the WVU College Economics specifically project that populatio County will decrease from a population of 2 projected population of 25,878 in 2020 (2) projections cannot account for increases in water line extensions. If, in the future, water line are proposed the daily demands will be reases the source and treatment facilities can support
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If not, describe the circumstances and plans to increase production capacity:	N/A
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(1)US Department of Commerce, United State Census Bureau. 2005 Interim State Population Projections. Table 1. <u>http://www.census.gov/population/projections/data/state/projectionsagesex.html</u>. Accessed June 10, 2015.

(2) Christiadi, Ph.D., Deskins, John, Ph.D., Lego, Brian. WVU College of Business and Economics, Bureau of Business and Economic Research. March 2014. WVU Research Corporation. <u>http://be.wvu.edu/bber/pdfs/BBER-2014-04.pdf</u> Accessed June 10, 2015.

11.4 WATER LOSS CALCULATION

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

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

Total W	147,279,000		
Total Wa	0		
Total Water Pu	147,279,000		
	Mains, Plants, Filters, Flushing, etc.	5,740,000	
Water Loss Accounted for Except Main Leaks (gal)	Fire Department	233,000	
	Back Washing	6,702,000	
	Blowing Settling Basins	449,000	
Total Water Loss Ac	13,124,000		
Water Sol	57,827,000		

Table 14. Water Loss Information

Unaccounted For Lost Water (gal)	0			
Water lost from main leaks (gal)	76,328,000			
Total gallons of Unaccounted for Lost Water and Wa from Main Leaks (gal)	76,328,000			
Total Percent Unaccounted For Water and Water Lost from Main Leaks (gal)		51.83%		
If total percentage of Unaccounted for Water is greater than 15%, please describe any measures that could be taken to correct this problem:	The utility performs regular leak surveys on meters, hydrants, and valves. Most of the unaccounted for water is lost through old leaking service lines, however, and they regularly repair leaks as they are detected.			

*This information was taken from the 2015 Public Service Commission Annual Report for Nettie-Leivasy PSD

11.5 EARLY WARNING MONITORING SYSTEM

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

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

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

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



Table 15. Early Warning Monitoring System Capabilities

Does your system currently receive spill notifications from a state agency, neighboring water system, local emergency responders, or other facilities? If yes, from whom do you receive notices?		Yes. Panther Creek is a small stream, so there are no upstream users to notify the utility of contamination. However, local EMS, the Nettie Fire Department, and the State Health Department will notify the water system staff of any contamination event that is reported in the area.					
Are you aware of any facilities, land uses, or critical areas within your protection areas where chemical contaminants could be released or spilled?		The major source of water contamination that impacts the Panther Creek impoundment is logging in the surrounding watershed. Occasionally a storm event will cause increased turbidity and sediment in Panther Creek due to this logging, and Nettie-Leivasy will switch over to one of their alternative sources.					
Are you prepar contaminants	ed to detect pote if notified of a sp	ential bill?	Yes. The utility does not currently have an early warning monitoring system in place but could collect grab samples o the raw water to send to a laboratory for testing.			ave an early warning collect grab samples of atory for testing.	
			Laboratories				
List laboratories (and contact information) on whom you would rely to analyze water	Name		Contact				
	REIC Laboratory- Beaver, WV		800-999-0105, 304-255-2500, info@reiclabs.com				
samples in case of a reported spill. Che		WV State Laboratory, Environmental Chemistry Section- Charleston, WV		304-965-2694			
		Aı	Analabs- Crab Orchard, WV		1-800-880-6406, analabs@analabsinc.com		
Do you have an understanding of baseline o normal conditions for your source water quality that accounts for seasonal fluctuations?		e or er	Yes. The operators have established and understanding of baseline water quality conditions through daily testing of iron, hardness, turbidity, chlorine, pH, alkalinity, and temperature.				
Does your utility currently monitor raw water (through continuous monitoring or periodic grab samples) at the surface water intake or from a groundwater source on a regular basis		ater odic e or asis?	No. See Form B in Appendix B .				
Provide or estimate the capital and O&M costs for your current or proposed early warning system or upgraded system.	Monitoring System	Y	SI EXC (B-1)	SI EXO 2 Hach sc10 (B-1) (B-2)		00	Real Tech Full Scanning Monitoring System (B-3)
	Capital	Total	Total Capital Cost- \$19,000		Basic Equipn Cost- \$18,9 Oil in Water Se \$18,414.0	nent 07 ensor- 0	Total Capital Cost- \$19,000

				Total Capital Cost- \$37,321	
	Yearly O & M	Parts and calibration- Approximately \$1000.00 Data management and telemetry- \$1000.00		Full service contract with Hach Service Representative- \$2,258 Online Viewer-\$600	Replacement Lamps- \$1,480 Smart-Sense Monitoring Service- \$499
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		



12.0 SINGLE SOURCE FEASIBILITY STUDY

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

To accomplish this requirement, utilities should examine all existing or possible alternatives and rank them by their technical, economic, and environmental feasibility. To have a consistent and complete method for ranking alternatives, WVBPH has developed a feasibility study guide. This guide provides several criteria to consider for each category, organized in a Feasibility Study Matrix. By completing the Feasibility Study Matrix, utilities will demonstrate the process used to examine the feasibility of each alternative and document scores that compare the alternatives. The Feasibility Study matrix and summary of the results are presented in an alternatives feasibility study attached as **Appendix D**.

TE TETRA TECH
13.0 COMMUNICATION PLAN

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

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

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

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

14.0 EMERGENCY RESPONSE SHORT FORM

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

15.0 CONCLUSION

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

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



APPENDIX A. FIGURES















Source Water Protection Plan

CREATED BY: RWM

DATE: 2/1/2016



Lists of Potential Sources of Significant Contamination

PSSC Layer	In ZCC	Around ZCC	In ZPC	Around ZPC	In Watershed	Total
Mining Outlets	4	0	0	0	21	25
NPDES Permits	0	2	0	0	1	3
Bond Forfeiture Sites	1	1	0	0	0	2
USEPA Regulated Sites	0	3	0	0	5	8
Field Verified PSSCs	5	7	0	0	8	20
SWAP Aerial Assessment	0	0	0	0	1	1
Oil/Gas Wells	1	1	0	0	15	17
Above Ground Storage Tanks	0	4	0	0	1	5
Abandoned Mine Lands	1	0	0	0	0	1
Leaking Underground Storage Tanks	0	0	0	0	2	2
Coal Refuse Sites	0	0	0	0	1	1
Total	14	18	0	0	55	87

Nettie-Leivasy PSD PSSC Summary

Field Verified PSSCs (SWAP_PCS) – Figure A-4

PSSC Number	Map Code	Site Name	Site Description	Comments
1	A-20	Silviculture (logging)	Silviculture (logging)	
2	A-20	Silviculture (logging)	Logging Area	none
3	C-13	Equipment rental/repair shop	Ruckman Truck Repair Company	outside ZCC
4	C-28	Lawn/farms stores	J&J Mountaineer Farm & Feed	
5	C-18	Gas Stations	Go Mart	
6	C-46	Sawmills and planers	Sawmill	
7	C-49	Utility Substation Transformers	Utility Substation	
8	C-49	Utility Substation Transformers	Allegheny Power Grassy Falls substation	outside ZCC

Nettie-Leivasy PSD

PSSC Number	Map Code	Site Name	Site Description	Comments
9	C-52	Welding Shops	Welding Shop	
10	C-18	Gas Stations	Gas Station	
11	C-53	Other	Highland Auto Parts	
12	C-53	Other	Battery Shop	
13	C-8	Car washes	Car Washes	
14	C-9	Cemeteries	Fairview Cemetery	
15	I-23	Mines: abandoned	Reclaimed Mine Lands Classic Marble Company	PCS not found
16	I-23	Mines: abandoned	Reclaimed Mine Lands Lady H Coal Company land	Inaccessible, but visible from vantage point
17	I-23	Mines: abandoned	Reclaimed Mine Lands Sewell Coal Mine	Inaccessible, but visible from vantage point
18	M-6	Fire Stations	Fire Station	
19	C-28	Airport	Richwood Airport	Small paved airstrip, only a few single engine planes and no storage tanks.

*Only 19 of 20 Field Verified PSSCs were prioritized and labeled. PSSC 19, Richwood Airport, was added by the Protection Team during the first meeting and is listed as a Point of Interest.

Aboveground Storage Tanks (AST_Chemicals) – Figure A-5

PSSC Number	Regulation Type	Tank Label	Responsible Party	In ZCC	Year Constructed	Capacity (gal)	Contents
R1	AST_Chemicals	034-00000097	GREEN VALLEY COAL COMPANY	No	2000		
R2	AST_Chemicals	034-00000114	L ADKINS OIL INC	No	2011		

*Only 2 of 5 points were prioritized and labeled. The remaining points lie within the WSDA and should be examined but were not prioritized in this assessment.



Abandoned Mine Lands (AML_Points) - Figure A-5

PSSC Number	Regulation Type	Pad Name	Pad Number	ProbKey
R3	AML_Points	PANTHER CREEK (SPADE) AIRSHAFT	WV005299	VO

Oil/Gas Wells (ERIS_Wells) – Figure A-5

PSSC Number	Regulation Type	Permit Number	Responsible Party	Farm Name	Well Status	Well Number	Marcellus	In ZCC
R4	ERIS_Wells	6700908	TRIANA ENERGY, LLC	PLUM CREEK TIMBERLANDS, L	AB	NEW GAULEY 4R	Yes	No
R5	ERIS_Wells	6700918	TRIANA ENERGY, LLC	PLUM CREEK TMBRLNDS	AB	TNG 6S	Yes	No
R6	ERIS_Wells	6700913	TRIANA ENERGY, LLC	PLUM CREEK TIMBERLANDS	AB	NEW GAULEY 7	Yes	No
R7	ERIS_Wells	6700917	TRIANA ENERGY, LLC	PLUM CREEK TIMBERLANDS	AB	NEW GAULEY 9	Yes	No

*Only 4 of 17 points were prioritized and labeled. The remaining points lie within the WSDA and should be examined but were not prioritized in this assessment. Triana Energy,LLC owns 16 of the 17 wells, and Jay-Bee Oil and Gas owns the other.

Mining Outlets (HPU) – Figure A-5

PSSC Number	Regulation Type	Permit Number	Responsible Party	Туре	In ZCC
R8	HPU	WV0001104	GREEN VALLEY COAL COMPANY	OUTLT	Yes
R9	HPU	WV0002984	GREEN VALLEY COAL COMPANY	OUTLT	No
R10	HPU	WV0025712	GREEN VALLEY COAL COMPANY	OUTLT	No
R11	HPU	WV0065749	GREEN VALLEY COAL COMPANY	OUTLT	No
R12	HPU	WV1000454	GREEN VALLEY COAL COMPANY	STRM	No

*Only 5 of 25 points were prioritized and labeled. The remaining points lie within the WSDA and should be examined but were not prioritized in this assessment. Green Valley Coal Company owns all 25 mining outlets in the WSDA.

NPDES Permits (OWRNDPES) – Figure A-5

PSSC Number	Regulation Type	Permit Number	Facility Name	Responsible Party	Permit Type	In ZCC	Status Flag
R13	NPDES	WVG415041	Go Mart #42	GO MART INC	Sewage	No	0

*Only 1 of 3 points were prioritized and labeled. The remaining points lie within the WSDA and should be examined but were not prioritized in this assessment.



PSSC Number	Regulation Type	WV ID	Facility Name	Cleanup Completed
R14	LUST	3404263	J J MOUNTAINEER FARM & FEED	10/02/2003

*Only 1 of 2 points waprioritized and labeled. The remaining point lies within the WSDA and should be examined but was not prioritized in this assessment.

Bond Forfeiture Sites (SPREC) – Figure A-5

PSSC Number	Regulation Type	Permit Number	Company	Mining Type	In ZCC
R15	SPREC	S-3038-86	VICKIE ENERGY, INC.	S	Yes
R16	SPREC	S-3012-92	POCAHONTAS RESOURCES, INC.	S	Yes

USEPA Regulated Sites (Superfund_RCRA) – Figure A-5

PSSC Number	Regulation Type	Registry	Primary Site Name	Registry ID	In ZCC
R17	Superfund_RCRA	110054964428	HIGHLAND LUMBER CO INC	110055000000	No
R18	Superfund_RCRA	110055083573	METAL CRAFT ENGINEERING	110055000000	No
R19	Superfund_RCRA	110010851355	NETTIE CAR WASH	110011000000	No

*Only 3 of 8 points were prioritized and labeled. The remaining points lie within the WSDA and should be examined but were not prioritized in this assessment.



APPENDIX B. EARLY WARNING MONITORING SYSTEM FORMS

Form B-Proposed Early Warning Monitoring Systems

Nettie-Leivasy PSD

Primary Surface Water Source:

There are many possible solutions for designing and installing an early warning monitoring system. Over time, this technology changes and improves and it is difficult to determine the type of equipment that will be useful and effective in the long term. This plan is a proposed system that would work for Nettie-Leivasy PSD using current technology and the current plant and intake configuration.

Nettie-Leivasy PSD regularly uses their alternative sources of water to replace or supplement their primary source. Both of these alternative sources are from mine pools and less vulnerable to contamination from spill incidents. The following proposed early warning monitoring plans are for the primary intake in the Panther Creek impoundment because it is sourced from surface water and supplies the majority of the raw water for the treatment plant. The plant is located approximately 2 miles from the Panther Creek impoundment, so data telemetry and reliable power supply will be a concern when designing an early warning monitoring system for Nettie.

B-1. YSI EXO 2 Monitoring System Proposal

Describe the type of early warning detection equipment that could be installed, including the design.

The YSI EXO 2 Multiport Sonde can accommodate 6 different sensors and has an automatic wiper mechanism to remove biofouling from the sensor tips, which reduces maintenance time. The sonde is built to be resilient and low maintenance, and is capable of providing online water quality monitoring that can be transmitted real time to a designated PC or website that can be accessed by any designated user.

The sonde can hold up to 6 sensors, but this plan recommends 4 of the more basic sensors that would be sufficient to detect any sudden shifts in water quality in any West Virginia stream or river. These sensors would include: conductivity/temperature, optical dissolved oxygen, pH, and fluorescent dissolved organic matter (fDOM). The fDOM sensor could potentially detect petroleum products in the water but is not entirely reliable for this purpose. At this time, YSI does not make a sensor for petroleum products for the EXO 2 but likely will in the future, at which time it is recommended that the utility purchase it. Other sensors could be purchased in the future as well if deemed necessary by the utility.

Where would the equipment be located?

The sonde would be attached to the intake pipe itself, which extends into the small impoundment on Panther Creek. This would provide a stable foundation for the equipment and also ensure that the device is able to sample the water that is actually entering the intake pipe and not missing potential contaminants because it is located on the wrong side of the stream or too far from the intake. The suggested method of mounting the sonde involves drilling holes in a PVC pipe, capping the end, inserting the sonde and attaching to the intake pipe structure using brackets or chains. This will protect the sensor from debris and hide it from view somewhat.

The sonde would be hardwired to the YSI Storm 3 data analysis/telemetry system. Since the Nettie-Leivasy water treatment plant is located so far away, the Storm 3 would need to be located closer to the intake. Ideally the equipment would be located in the existing pump house, which would also provide an electric supply. If this was not possible, a new structure would need to be built to house the equipment. The unit is contained in a waterproof case and comes with a solar photovoltaic panel capable of powering both the data analysis unit

and the sonde, so long as the sonde is hardwired to the Storm 3. The device can be battery powered as well if this is not an option.

What would the maintenance plan for the monitoring equipment entail?

The maintenance plan for the system would involve replacing the dissolved oxygen sensor cap, replacing the pH electrode cap, and purchasing pH, turbidity, and conductivity calibration solution on a yearly basis. The sonde itself is designed to last from 5-10 years and should be inspected and calibrated once a month.

In addition, there is a recurring yearly fee associated with the real-time data/telemetry package for managing the website and data analysis.

Describe the proposed sampling plan at the monitoring site.

The sonde can be programmed to take regular measurements at any intervals defined by the operator or user. These measurements can also be taken in bursts, averaged over a period of time, or modified automatically as water quality levels change. Data is stored in the Storm 3 and transmitted to the plant computer as it is recorded. This information can be transmitted wirelessly via a cellular modem. The cellular transmitter is powerful enough to work even in areas with poor cell reception.

Describe the proposed procedures for data management and analysis.

The Storm 3 package includes data management software that can generate data reports and presentations and allow the user to modify and adjust sampling schedules remotely from the plant.

The sonde can be programmed to alert the user when any of the water quality parameters exceeds a userdefined level. This will allow the operator to program the system to notify them when their previously observed baseline conditions are exceeded in time for them to shut down the pumps and close off the intake. The operator can receive alerts via text message and email at the treatment plant computer or any designated cell phone.

B-2. Hach sc1000 Monitoring System Proposal

Describe the type of early warning detection equipment that could be installed, including the design.

The Hach sc1000 online monitoring system includes a controller, back panel, display module, and samping trough. Raw water is pumped into the trough from the source where it can be sampled in real time. The probe module can accommodate up to 6 sensors, which means it can monitor up to 6 parameters at once. This plan suggests the following sensors: conductivity, pH, turbidity, and dissolved oxygen. Hach can also supply a sensor to detect oil in water, which would cost an additional \$18,414.00 and would be a good investment for any water system if sufficient funds were available. This sensor is included in the quoted capital cost. There are several other probes for other parameters that are available from Hach, and these could be purchased as deemed necessary by the utility.

Where would the equipment be located?

The sc1000 Controller, back panel, and trough need to be protected from the elements. This would mean that it would need to be located in the existing pump house or a new structure would need to be built near the intake to house the equipment. A small diameter line would run out from this structure the length of the intake pipe to pull raw water back to the controller where it would flow into the trough for sampling. The closer this sampling line can be to the actual intake, the more accurately it will reflect the raw water that is actually entering the plant. This option would require the utility to purchase a line or hose long enough to reach the



intake pipe and a small pump. The line and pump could be fairly low- tech and inexpensive, as the sc1000 only requires a minimum of 900 mL/min. of flow.

The controller will be equipped with the MODBUS advanced communications/networking unit, which can transmit readings in real time directly to the SCADA system in the treatment plant to alert the operators in any change in baseline water quality. The sc1000 can either be hardwired to the computer at the treatment plant or it can use a cellular modem to transmit the data if there is sufficient cellular signal. In this case, it would likely need to be hardwired, which would be an additional cost.

What would the maintenance plan for the monitoring equipment entail?

The maintenance plan for the system would entail a yearly maintenance contract with the manufacturer. A Hach Service Representative would regularly service the monitoring equipment. This service would take care of all parts, labor, and preventative maintenance and would include 2-3 scheduled maintenance visits per year.

Describe the proposed sampling plan at the monitoring site.

The sc1000 monitors the quality of water flowing through the trough in real time, and can transmit this data back to the plant as it is collected. The actual timing of the sampling plan could be determined by the utility.

Describe the proposed procedures for data management and analysis.

It is recommended that the utility purchase the Hach Universal Data Gateway software, which would help to process and analyze the incoming information into easily interpreted reports. The price of this software is included in the rough capital cost.

Table B-3. Real Tech Full Scanning UV-VIS Monitoring System

Describe the type of early warning detection equipment that could be installed, including the design.

The Real Tech Full Scanning UV-VIS monitoring system provides full ultraviolet/visible scanning for organics and other specific parameters that may indicate a contamination event. The included PC Controller is preloaded with the software needed to store and process this information to establish a "normal" or "baseline" set of conditions for the raw water source. In addition to the UV-VIS sensors, the system can accommodate up to 8 additional sensors that are available from a third party and priced separately.

This plan includes pricing and details for a system equipped to measure conductivity, pH, temperature, and dissolved oxygen. Other additional sensors could be purchased and added if deemed necessary by the utility.

Where would the equipment be located?

In the case of Nettie-Leivasy PSD, the UV-VIS Full Monitoring System would need to be located in the existing pump house near the intake. A small-diameter line or hose would run from the treatment plant to the intake pipe to pull raw water back to the controller where it would flow into the unit for sampling. The closer the end of the sampling line can be to the actual intake, the more accurately it will reflect the raw water that is



TETRA TECH

actually entering the plant. This option would require the utility to purchase enough line to reach the intake as well as a small pump. The line and pump could be fairly small and inexpensive, as the system only requires a minimum of 300-800 mL/min. of flow. The system also includes the Real Pump Clean System, which provides flow and automatic chemical cleaning of the sensors and reduces maintenance time.

This system would require a reliable electrical source and it could likely be wired into the supply for the intake pumps, which are also connected to a generator.

What would the maintenance plan for the monitoring equipment entail?

The maintenance plan for the system would require about 2 hrs/month for scheduled maintenance tasks. It is also recommended that a monthly laboratory reference sample is taken to effectively calibrate the sensors.

The Smart-Sense Web Monitoring Service package costs an additional \$499/yr., but provides additional support and remote accessibility by Real Tech, and it is recommended. The Deuterium and Tungsten lamps would also need to be replaced every six months at a cost of \$740.

Describe the proposed sampling plan at the monitoring site.

The Full Scanning UV-VIS system continuously monitors raw water as it is pumped through the unit, and is capable of establishing baseline conditions that account for seasonal variability, which can help to reduce false alarms.

Describe the proposed procedures for data management and analysis.

The Real Tech monitoring system is capable of communicating with the treatment plant via Modbus, Ethernet, USB, or cell modem. It can be integrated with the treatment plant's SCADA system to provide real-time information about conditions at the intake and provides full remote monitoring.

It is also recommended that the utility take advantage of the Smart-Sense Web Monitoring service offered by Real-Tech to analyze and interpret data taken by the monitoring system. This consultation service requires an additional service fee, which is included in this quote.



APPENDIX C. COMMUNICATION PLAN TEMPLATE

Nettie-Leivasy PSD

PWSID: WV3303403 District: Beckley

Certified Operator: Russell Hatfield

Contact Phone Number: Water Treatment Plant - 304-846-9664

Contact Email Address: nettiewater@frontier.com

Plan Developed On: July 1, 2016

ACKNOWLEDGMENTS:

This plan was developed by Nettie-Leivasy PSD 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 to occur no later than thirty minutes after the supplier becomes aware that the spill, release or potential contamination of the public water system poses a potential threat to public health and safety.

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

TIERS REPORTING SYSTEM

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

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

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

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

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

D = 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.

Tier	Tier Category	Risk Level	Tier Summary	
A	Announcement Low The water system is pose a threat to information will b		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.	
В	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.	

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

с	C annot Drink	High	System users should not drink or cook with the water until further notice. The water can still be used for showering, bathing, cleaning, and other tasks.
D	D o Not Use	Very High	The water should only be used for flushing commodes and fire protection until further notice. More information on this notice will be provided as soon as it is available.
E	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
Norma Cogar	Nettie-Leivasy PSD	304-846-9589	nettiewater@frontier.com	Primary Spokesperson
Russell Hatfield	Nettie-Leivasy PSD	304-846-9664	-	Secondary Spokesperson
Rob Meadows	Nettie-Leivasy PSD		-	Member
	Nicholas County EMS			Member
B.J. Robinson	Nettie Fire Chief	304-619-1978	nettiefiredepartment@gmail.com	Member

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

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

COMMUNICATION TEAM DUTIES

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

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

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



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

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

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

INCIDENT / EVENT COMMUNICATION PROCEDURE

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

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

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

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

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

- The initial release (i.e., Announcement, Boil Water Advisory, Cannot Drink, Do Not Use, or Emergency)
 - Sent to local health agencies, the public, and the news media within 30 minutes
- Notification of the local water system's source water protection and communication teams
 If warranted by initial findings regarding the spill, release, or incident
- Notification of the WV Bureau of Public Health
 - As required



- Periodic information updates, as incident response information is received
- Updates to the applicable A-B-C-D-E advisory tier, as necessary

After the threat level is reduced and operations return to normal, the water system staff, as well as 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



Constant communication with local agencies, public, and the media is critical throughout the entire process. The initial notification should include all pertinent information, depending on the TIERS level. Regular information updates should be provided. The **A-B-C-D-E** TIERS levels should be updated and explained as necessary.

EMERGENCY SHORT FORMS

Emergency Communication Information

		Nan	ne	e Phone Number		Email	
Designated Norma Cogar spokesperson:		Utility Office n 304-846-9589		nettiev	iewater@frontier.net		
Alternate spokesperson: Russell Ha		Hatfield	Water Treatment Plant 304-846-9664		-		
Designated I disseminate i to mee	ocation to nformation dia:	Nettie-Leivasy PSD Office					
Methods of c affected re	Nicholas (and c commun Media to cc about 50% The water s	Nicholas County Emergency Management typically handles communication and coordination during any emergencies. They have an effective communication network that uses the Code Red Alert System and Social Media to contact affected residents. The Code Red Alert System currently has about 50% coverage in Nicholas County, but they are trying to increase that number. The water system also broadcasts emergency notices over the local radio and television stations.					
	Nai	me		Title	Pho Num	one iber	Email
Media	WSAZ News Affiliate		News C Affiliate-	hannel 3 NBC Charleston, WV	304-34	4-3521	news@wsaz.com
contacts:	WC	HS	ABC Affili	ate- Charleston, WV	304-34	6-5358	news@wchstv.com
	ABC Aff		iiliate, Oak Hill, WV	304-46	9-3361	news@woay.com	

Emergency Services Contacts

	Name	Emergency Phone	Alternate Phone	Email
Local Police	Nicholas County Sheriff Department	911	304-872-7814	-



Local Fire Department	Nettie Fire Department Incorporated	911	304-846-9538	nettiefiredepartment@gmail.com
Local Ambulance Service	Quinwood Emergency Ambulance Incorporated	911	304-846-2601	-
Hazardous Material Response Service	Nettie Fire Department/ WV State Fire Marshall Regional Response Team	911	Nettie Fire Dept. 304-846-9538 WV State Fire Marshall 1-800-233-3473	-

Sensitive Populations

Other commu are served by	nities that the utility:	Nettie, Leivasy, Carl, Green Valley, Canvas areas of Nicholas County					
		Nan	ne	Emergency Phone			Alternate Phone
Major user/sensitive population notification:	Panther Creek Elementary School		304-846-6808		-		
		Open Doors		-			-
		Nan	ne	I	Phone		Email
		John Otaffand		304-256-6666 (Beckley District Office)			
EED District Office Contact:	ct:	John Stanord		EED Central Office 304-558-2981		John polstanoru @ wv.gov	
		Chris Farrish		Cell 304-575-8524		chris.b.farrish@wv.gov	
OEHS Readiness Coordinator		Warren Von Dollen		304-356-4290 (main) 304-550-5607 (cell)		warren.r.vondollen@wv.gov	
	Water Syst		Contac	t Name	Emergency Pl	hone	Alternate Phone
Downstream Water Contacts:	City of Sur	nmersville	Steve	Acree 304-872-334		47	-
	Kanawha	Falls PSD	Carl	King Treatment PI 304-779-260		ant 00	Cell 304-877-8761

	Armstrong PSD	Joe Burdett	Treatment Plant 304-442-5044	Don Navarro 304-442-5647
	WVAW-Montgomery District	-	Treatment Plant 304-442-9728	304-340-2038
Are you planning on implementing the TIER system?			Yes	

Key Personnel

	Name	Title	Phone	Email
Key staff responsible for coordinating	Norma Cogar	Office Manager	304-846-9589	nettiewater@frontier.net
emergency response procedures?	Russell Hatfield	Chief Operator	304-846-9589	-
Staff responsible for keeping confidential PSSC	Norma Cogar	Office Manager	304-846-9589	nettiewater@frontier.net
information and releasing to emergency responders:	Russell Hatfield	Chief Operator	304-846-9589	-

Emergency Response Information

	Name	Phone	
List laboratories available to perform sample analysis in case of emergency:	REIC Laboratory- Beaver, WV	800-999-0105, 304-255-2500, info@reiclabs.com	
	WV State Laboratory, Environmental Chemistry Section- Charleston, WV	304-965-2694	
	Analabs- Crab Orchard, WV	1-800-880-6406, analabs@analabsinc.com	



Has the utility developed a detailed Emergency Response Plan in accordance with the Public Health Security Bioterrorism Preparedness and Response Pan Act of 2002?	Yes		
When was the Emergency Response Plan deve	The ERP was updated in 2015.		

EMERGENCY CONTACT INFORMATION

State Emergency Spill Notification 1-800-642-3074

Office of Emergency Services http://www.wvdhsem.gov/

Charleston, WV- (304) 558-5380

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

www.wvdhhr.org/oehs

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

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

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

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

West Virginia State Police 1-304-746-2100

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

DEP Distance Calculator

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



PRESS RELEASE ATTACHMENTS

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

UTILITY ISSUED NOTICE – LEVEL A

PUBLIC WATER SYSTEM ANNOUNCEMENT

A WATER SYSTEM INVESTIGATION IS UNDERWAY

On	at	<u>:</u>	AM/PM, the	Water System began

investigating an incident that may affect local water quality.

The incident involves the following situation at this location:

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

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

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

State Water System ID# _____ Date Distributed: _____

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UTILITY ISSUED NOTICE – LEVEL B

BOIL WATER ADVISORY

A BOIL WATER ADVISORY IS IN EFFECT

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

Entire Water System or Other: ______

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

What should I do?

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

What happened?

The problem is related to ______

What is being done?

The water system is taking the following action: _______

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

•

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

_____ or _____ at _____.

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

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

This notice was distributed by _____

State Water System ID# _____ Date Distributed: _____



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

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

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

What should I do?

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

What happened?

The problem is related to ______

What is being done?

The water system is taking the following action: ______

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

•

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

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

This notice was distributed by _____

State Water System ID# _____ Date Distributed: _____

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UTILITY ISSUED NOTICE – LEVEL D

"DO NOT USE" WATER NOTIFICATION

A LEVEL D WATER ADVISORY IS IN EFFECT

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

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

What should I do?

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

What happened?

The problem is related to ______

What is being done?

The water system is taking the following action: ______

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

•

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

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

This notice was distributed by _____

State Water System ID# _____ Date Distributed: _____



UTILITY ISSUED NOTICE – LEVEL E

EMERGENCY WATER NOTIFICATION

A LEVEL E WATER ADVISORY IS IN EFFECT

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

Entire Water System or
 Other: ______

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

What should I do?

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

What happened?

The problem is related to ______

What is being done?

The water system is taking the following action: ______

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

•

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

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

This notice was distributed by _____

State Water System ID# _____ Date Distributed: _____

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APPENDIX D. SINGLE SOURCE FEASIBILITY STUDY


APPENDIX E. SUPPORTING DOCUMENTATION

E-1. Source Water Protection Team Meeting Notes:

Date: 9/9/2015

Location: Nettie-Leivasy PSD Office, Nettie, WV

- On Wednesday September 9, 2015, the Source Water Protection Team for Nettie-Leivasy PSD met at the PSD office to discuss the draft of the updated Source Water Protection Plan. Most of the suggested members were in attendance, including chief operator Russell Hatfield, Utility Manager Norma Cogar, PSD Board member David McMillian, Chris Farrish, John Tuggle, Fire Chief B.J. Robinson, and Tetra Tech Representative Russell Myers. Mike Judy, Rob Meadows, and Fred Amick were unable to attend but would like to be included in future meetings and have a chance to review the SWPP before it is submitted.
- Russell presented the draft plan and mapping information to the team and they discussed the potential contaminants as well as some of their priority sites.
 - The team reported that the Richwood Airport, which lies within thin WSDA, is very small and holds only 1-2 engine planes. The runway is paved but there are no tanks on the site as far as the protection team knows. The point will be added to the Points of Interest file and shown on the map.
 - There is an old gas station with underground tanks across from Family Dollar, used to be Nettie IGA.
 - J and J Farm and Feed is now Nettie Hardware.
 - PSSC R-3, Highland Lumber Company, is no longer operating.
 - PSSC R-6, Car wash is now closed.
 - The team suggested that placing drinking water protection signs at the Panther Creek intake could possibly put the intake at risk since it is so close to the road and there is relatively easy access to the source.
 - The tanks that were listed in the 2013 Sanitary Survey were incorrect, and Chris Farrish said he would make the corrections and report the correct figures to Tetra Tech staff to be included in the protection plan.
 - B.J. Robinson requested that the Nettie fire department have access to the regulated PSSCs for emergency response purposes. He would like to have copies of the maps that he can show to firefighters and EMS personnel to inform them of potentially hazardous materials that might be located on site.
 - The team requested that a definitions page be included in the final report to define acronyms and other commonly used terminology.

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E-2. List of Regulated Databases

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

<u>USEPA</u>

CERCLIS:

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

NPDES:

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

RCRA:

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

TRI:

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

WVDEP

Abandoned Mine Sites:

Abandoned mine features compiled by the Office of Abandoned Mine Lands and Reclamation (AMLR) of the WVDEP. The AMLR eliminates damage that occurred from mining operations prior to August 3, 1977 and is funded by the AML fund. It corrects hazardous conditions and



reclaims abandoned and forfeited mine sites. Typical AML features include high walls, portals, refuse piles, and mining structures such as tipples.

AST:

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

Coal Dams:

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

LUST:

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

Solid Waste Facilities:

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

Oil and Gas Wells:

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

UIC:

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

UST:

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

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Confidentiality Statement

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

Nettie-Leivasy PSD Designees:

Signature Name Date John Tuggle 9-9-1N Norma Logar -9-15 CHRIS FARRISH Chow tar 9-9-15 William "BJ Kobinsa ~-/S Thussel b. susal Ho DAVID MCM: 11:0N

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NICHOLAS COUNTY DIVISION OF HOMELAND SECURITY AND EMERGENCY MANAGEMENT

Nicholas County, West Virginia 511 Church Street, Summersville, WV 26651 304-872-7893 Phone, 304-872-7874 Fax



Date: October 22, 2014

To: All PSD Customers

From: Nicholas County Emergency Management

Dear Customer,

The Nicholas County Division of Emergency Management has contracted with CodeRED to provide a high-speed public notification solution for our residents. This system provides us the ability to rapidly deliver emergency messages to targeted areas including boil water advisories, evacuation notifications, shelter-in-place notifications, and severe weather notifications. Such systems are only as good as the telephone number database supporting them. "If your phone number is not in the database, you will not be called." No one should assume his or her phone number is included.

Businesses should also register, as well as individuals who have unlisted phone numbers; who have changed their number or address within the past year, **and those who use cell phones** or VoIP phones as their primary numbers.

Nicholas County Emergency Management is urging all individuals and businesses to log onto <u>www.MyNicholasCounty.com</u> and follow the link to the "CodeRED Community Notification Enrollment" page.

Those without internet access may call 304-872-7892/7893, Monday through Friday (9AM-4PM), to register over the phone. The data collected will <u>ONLY</u> be used for public emergency notifications, and is not available to any 3^{rd} party company for any reason.

For more information, please contact the Nicholas County Division of Emergency Management at 304-872-7892/7893.

Mike Judy, Director Nicholas County Homeland Security & Emergency Management 511 Church St, Summersville, WV 26651 Email: <u>Michael.Judy@NCDHSEM.com</u> Phone: 304-872-7892