

# Source Water Protection Plan

## Oceana Municipal Water

PWSID WV3305516

Wyoming County

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In cooperation with Oceana Municipal Water

WV Bureau for Public Health, Source Water Assessment and Protection Program

Region I Planning and Development Council

The Thrasher Group



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

Michael Morgan

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

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Chief Oper

Title of Authorizing Signatory:

5-12-16

Date of Submission (mm/dd/yyyy):

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## SOURCE WATER PROGRAM ACRONYMS

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<b>AST</b>	Aboveground Storage Tank
<b>BMP</b>	Best Management Practices
<b>ERP</b>	Emergency Response Plan
<b>GWUDI</b>	Ground Water Under the Direct Influence of Surface Water
<b>LEPC</b>	Local Emergency Planning Committee
<b>OEHS/EED</b>	Office of Environmental Health Services/Environmental Engineering Division
<b>PE</b>	Professional Engineer
<b>PSSCs</b>	Potential Source of Significant Contamination
<b>PWSU</b>	Public Water System Utility
<b>RAIN</b>	River Alert Information Network
<b>RPDC</b>	Regional Planning and Development Council
<b>SDWA</b>	Safe Drinking Water Act
<b>SWAP</b>	Source Water Assessment and Protection
<b>SWAPP</b>	Source Water Assessment and Protection Program
<b>SWP</b>	Source Water Protection
<b>SWPA</b>	Source Water Protection Area
<b>SWPP</b>	Source Water Protection Plan
<b>WARN</b>	Water/Wastewater Agency Response Network
<b>WHPA</b>	Wellhead Protection Area
<b>WHPP</b>	Wellhead Protection Program
<b>WSDA</b>	Watershed Delineation Area
<b>WVBPH</b>	West Virginia Bureau for Public Health
<b>WVDEP</b>	West Virginia Department of Environmental Protection
<b>WVDHHR</b>	West Virginia Department of Health and Human Resources
<b>WVDHSEM</b>	West Virginia Division of Homeland Security and Emergency Management
<b>ZCC</b>	Zone of Critical Concern
<b>ZPC</b>	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 Oceana Municipal Water 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, Oceana Municipal Water 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 Oceana Municipal Water can be found in **Table 1**.

### 3.0 STATE REGULATORY REQUIREMENTS

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

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

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

## 4.0 SYSTEM INFORMATION

Oceana Municipal Water 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 Oceana Municipal Water**

<b>Administrative office location:</b>	1285 Cook Parkway, Oceana, WV 24870		
<b>Is the system a public utility, according to the Public Service Commission rule?</b>	Yes		
<b>Date of Most Recent Source Water Assessment Report:</b>	June 2003		
<b>Date of Most Recent Source Water Protection Plan:</b>	July 2011		
<b>Population served directly:</b>	Residential    1,122 Commercial    107 Public Authorities    8 <b>Total            1,237 Customers</b>		
<b>Bulk Water Purchaser Systems:</b>	<b>System Name</b>	<b>PWSID Number</b>	<b>Population</b>
	Kopperston PSD	WV3305510	434 Customers
<b>Total Population Served by the Utility:</b>	3,018		
<b>Does the utility have multiple source water protection areas (SWPAs)?</b>	No		
<b>How many SWPAs does the utility have?</b>	1		

Information for this table was taken from the Source Water Protection Contingency Plan prepared by The Thrasher Group. The complete report is provided as Appendix D.

## 5.0 WATER TREATMENT AND STORAGE

As required, Oceana Municipal Water 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 Oceana Municipal Water 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. Oceana Municipal Water Treatment Information**

<b>Water Treatment Processes (List All Processes in Order)</b>	Raw Water Intake, Settling Basin, Filters, Post Chlorination, Clear Well, High Service Pumps
<b>Current Treatment Capacity (gal/day)</b>	1,000,000 GPD
<b>Current Average Production (gal/day)</b>	650,000 GPD
<b>Maximum Quantity Treated and Produced (gal)</b>	1,000,000 GPD
<b>Minimum Quantity Treated and Produced (gal)</b>	0 GPD
<b>Average Hours of Operation</b>	16 hours per day
<b>Maximum Hours of Operation in One Day</b>	24 hours per day
<b>Minimum Hours of Operation in One Day</b>	0 hours per day
<b>Number of Storage Tanks Maintained</b>	5
<b>Total Gallons of Treated Water Storage (gal)</b>	1,000,000 GAL
<b>Total Gallons of Raw Water Storage (gal)</b>	0 GAL

Information for this table was taken from the Source Water Protection Contingency Plan prepared by The Thrasher Group. The complete report is provided as Appendix D.

**Table 3. Oceana Municipal Water 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)
Laurel Fork	WV3305516	Laurel Fork	Screened Pipe	Laurel Fork	1990s	Primary	Backup

Information for this table was taken from the Source Water Protection Contingency Plan prepared by The Thrasher Group. The complete report is provided as Appendix D.

**Table 4. Oceana Municipal Water Groundwater Sources**

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

## 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) defined for regulatory purposes.

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

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. 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.

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

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

**Table 5. Watershed Delineation Information**

<b>Size of WSDA (Indicate units)</b>	55.8 square miles
<b>River Watershed Name (8-digit HUC)</b>	Upper Guyandotte - 05070101
<b>Size of Zone of Critical Concern (Acres)</b>	6,866 acres
<b>Size of Zone of Peripheral Concern (Acres) (Include ZCC area)</b>	17,208 acres
<b>Method of Delineation for Groundwater Sources</b>	N/A
<b>Area of Wellhead Protection Area (Acres)</b>	N/A

## 7.0 PROTECTION TEAM

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

The administrative contact for Oceana Municipal Water 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 PSSCs. 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.

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

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

Name	Representing	Title	Phone Number	Email
Michael Morgan	Oceana Municipal Water	Chief Operator	304-682-6248	pigmorgan55@hotmail.com
Romaine Morgan	Oceana Municipal Water	Operator	304-682-6248	
James Drake	Oceana Volunteer Fire Department	Chief	[REDACTED]	
Dean Meadows	Wyoming County Emergency Management	Director	[REDACTED]	
Fred Cox	Wyoming County Health Department	Representative	3 [REDACTED]	
[REDACTED]	Town of Oceana	Mayor	304-682-6231	
Clark Manning	Town of Oceana	Recorder	304-682-6231	clarkmanning72@rocketmail.com
<b>Date of first protection Team Meeting</b>		April 19, 2016		
<b>Efforts made to inform and engage local stakeholders (public, local government, local emergency planners, local health department, and affected residents) and explain absence of recommended stakeholders:</b>		<p>Oceana Municipal Water Protection Team Meeting was held 3 pm April 19, 2016, Oceana City Hall, 1285 Cook Parkway, Oceana. Attendees were: Mike Morgan, Chief Operator; Romaine Morgan, Town of Oceana; Clark Manning, Recorder Town of Oceana; Dean Meadows, Wyoming County 911/OES Director; James Drake, Oceana Fire Department; Charles Childers, Oceana Fire Department; John Beckman, Tetra Tech.</p> <p>Discussed Charleston Water Crisis and subsequent new legislation. Mentioned old source water plan developed by Tetra Tech in 2011, and new contingency plan and feasibility study by Thrasher Group in 2015. Reviewed protection team table and updated contact information.</p>		

	<p>Discussed PSSCs of past and future concern. In 2000 a tanker truck carrying 7,000 gallons of diesel overturned on Route 10 at Matheny. Solution was to run 10,000 feet of water line to a temporary intake on Laurel Fork above the spill. Mentioned that rail traffic in protection watershed is greatly reduced. Rail spur to Kopperston mine is currently inactive. Oceana does not currently have a generator at the water plant. Reviewed local and regulated PSSC maps and Tables 8 and 9. Reviewed Table 10 for Education and Outreach activities.</p> <p>Discussed need to inform public within 30 minutes of discovering potential contamination of source water. Assigned duties of primary and secondary spokespeople. Updated Police, Fire, and Ambulance contact information. Identified local schools served by Oceana Municipal Water. Meeting minutes for protection team meeting are attached in <b>Appendix E.</b></p>
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## 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 Oceana Municipal Water are identified in the communication planning section of the source water protection plan.

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

### 8.2 LOCAL AND REGIONAL PSSCS

For the purposes of this source water protection plan, local PSSCs are those that are identified by 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.

Oceana Municipal Water 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 Oceana Municipal Water and not already appearing in datasets from the WVBPH can be found in **Table 7**.

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

PSSC Number	Map Code	Site Name	Site Description	Relative Risk Score	Comments
N/A					

## 8.3 PRIORITIZATION OF THREATS AND MANAGEMENT STRATEGIES

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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 threats.

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

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

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

## 9.0 IMPLEMENTATION PLAN FOR MANAGEMENT STRATEGIES

Oceana Municipal Water 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. Oceana Municipal Water 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
Railroad/Highway Traffic and Maintenance	1	<p>Given the close proximity of the railway and highways to the SWPA, accidental spills, rights-of-way (ROW) maintenance, and other activities could result in contamination of the water source. This is evidenced from a previous incident where a truck accident spilled approximately 9,000 gallons of diesel into the source.</p>
Active Mines and Abandoned Mine Lands	2	<p>There is active mining ongoing near the ZCC. The active mining results in heavy equipment traveling and working on site. Oils, grease, diesel, and other automotive fluids can migrate to water if spilled on the surface and not properly contained. In addition, increased sediments running off from disturbed mine lands and haul roads may contaminate the water making it more difficult to treat.</p> <p>Abandoned mine sites are also located within the SWPA. Acid mine drainage from both active and surface mines can runoff into the water source after mineral resources are exposed. If not properly treated, acid mine drainage and increased sediments from mine lands may impact the pH, iron, manganese, conductivity, and aluminum levels in the water.</p> <p>In some areas in West Virginia, abandoned underground mines are being used to dispose of coal slurry and/or brine water produced from oil and gas wells. These underground mines may discharge into surface waters.</p>
Equipment Repair Shop, Heavy Equipment Storage Yards, Truck Fleets, School Bus Terminal/Car Wash, and Gas Stations	3	<p>Several industrial facilities are located in the ZCC associated with mining and oil/gas recovery. These include: Adams Manufacturing-Mining Equipment Repair; Cook's Manufacturing-Manufactures Mining Equipment; Star-Lite Construction and Big Justice Construction-Both active in brine hauling and well site construction; Penn Virginia Oil &amp; Gas Corporation-Oil/gas recovery.</p> <p>Oils, antifreeze, and other automobile fluids can cause contamination of water sources if not cleaned up and disposed of properly. Above ground and Underground Storage Tanks (USTs), particularly those at historic sites, may leak and contaminate groundwater sources.</p> <p>In addition, stormwater runoff from industrial and commercial sites, including bus terminal car washes may also contain automotive fluids and other substances that if not managed properly could contaminate water resources.</p> <p>In recent years a fire occurred at the Penn Virginia Oil and Gas Corporation facility. When putting out the fire, they found that oil, diesel, soaps, grease and other materials were stored and used at the facility. Many of these substances were washed into the stream in the runoff.</p>

PSSC or Critical Area	Priority Number	Reason for Concern
Oil and Gas Well Development including Marcellus Shale Reserves	4	<p>Gas wells, when properly drilled in accordance with their permits; do not pose an imminent danger. However, brine removed from the wells must be collected and handled properly to prevent contamination to the surface and ground waters. Also, road cuts to access gas well sites may create erosion issues that can cause increased sediments and turbidity in surface waters.</p> <p>Drilling into Marcellus Shale gas reserves may concern the Community of Oceana. Fracturing fluid, typically water and sand, is forced into the shale to open cracks and fissures so more natural gas can flow out of the formation. Chemicals can also be added to this fluid. There are several methods to dispose of this fluid, such as deep injection and trucking the fluid to a treatment facility. Fracturing water could migrate or be spilled into the source water. In order to obtain water near the site of drilling, water haulers may utilize water from a drinking water source. If they are not aware of low flow limits they could take too much water or accidentally release contaminated water into the stream.</p>
Public Wastewater Facilities	5	There are wastewater treatment package plants located in the SWPA. Accidental releases or line breaks may allow untreated sewage to contaminate the surface source water.
Unsewered Homes and Failing Septic Systems	6	Unsewered homes and failing septic systems can leach into surrounding soils or runoff into streams and potentially contaminate water resources.
Logging/Timber Operations	7	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.

**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. One of these strategies has been accomplished. Seven of these are ongoing or continue to be a concern. These are incorporated in this plan update and listed below.	-	-	-	-

<p>Source Water Protection Area</p>	<p>The utility is required to update the Source Water Protection Plan at least every 3 years and continue to monitor any ongoing or new activities that occur in the watershed.</p>	<p>Oceana Municipal Water Protection Team</p>	<p>Ongoing every 3 years. Next update in 2018</p>	<p>-</p>	<p>-</p>
<p>Railroad/Highway Traffic and Maintenance</p>	<p>Continue to coordinate with emergency officials to be better prepared in the event of a hazardous spill.</p> <p>Contact the railroad companies and trucking companies to determine what types of materials are being transported through the area. Work with the companies to create an emergency response plan should any incident occur.</p> <p>Communicate the boundaries of the SWPA to raise awareness to ensure BMPs during railroad and highway maintenance.</p>	<p>PWS operator or staff</p>	<p>Ongoing coordination.</p>	<p>In the previous spill incident, the water system was able to utilize a temporary emergency intake placed above the spill to obtain water. It took several weeks to clean the contamination from the water to begin using the actual intake again.</p> <p>Rail traffic above intake has been significantly reduced in recent years due to reduced coal production at Kopperston Mine.</p>	<p>Minimal costs associated with staff time.</p>
<p>Abandoned Mine Lands</p>	<p>Provide SWPA boundaries to the companies actively mining, communicate the source water vulnerability and ask that they follow BMPs to reduce the potential from contamination through automotive fluids, sedimentation, and/or acid mine drainage.</p>	<p>PWS operator or staff</p>	<p>Ongoing</p>	<p>Public comment periods are open before WVDEP issues injection or mining permits. Information on permit applications can be obtained through automated emails from the WVDEP Office of Mining and Reclamation. To request to be added as a recipient of these notifications, visit: <a href="http://www.dep.wv.gov/dmr/Pages/default.aspx">http://www.dep.wv.gov/dmr/Pages/default.aspx</a>.</p>	<p>Minimal costs associated with staff time.</p>

<p>Equipment Repair Shop, Heavy Equipment Storage Yards, Truck Fleets, School Bus Terminal/ Car Wash, and Gas Stations</p>	<p>Communicate with facility owners the need for them to properly dispose of oil and other automobile products. Ask them to follow regulations and institute BMPs Provide owners or operators with copies of material on UST maintenance.</p> <p>Determine if stormwater management at commercial/industrial facilities includes oil/grease separators. Remind owners/operators to maintain the separators and dispose of petroleum products responsibly to prevent them from entering water resources. Inquire about facilities GPPs and ask that the facilities consider the source water in planning and implementing BMPs.</p> <p>Coordinate with company emergency preparedness personnel to insure that they are aware of the water intake and what to do in case of an emergency, including notification Ask for copies of the facilities MSDS for the chemicals used/stored on site.</p>	<p>PWS operator or staff</p>	<p>As needed</p>	<p>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. If you have questions regarding GPPs, contact the WVDEP staff geologists at 304-926-0499 ext. 1052.</p>	<p>Minimal costs associated with staff time.</p>
<p>Oil and Gas Well Development including Marcellus Shale Reserves</p>	<p>The system should obtain information about newly permitted wells in their SWPA and keep up to date on potential new regulations. Work with WVDEP and drilling companies to ensure BMPs are adhered to for well sites.</p> <p>Communicate the SWPA to the WVDEP Office of Oil and Gas staff at 304-926-0499 Ext. 1062 and ask for their consideration when approving future permits.</p> <p>If additional Marcellus Shale Wells are permitted, consider sampling raw water for bromide as described in Source Water Monitoring, to establish a baseline and detect elevated levels of bromide that can impact treatment and distribution.</p>	<p>PWS operator or staff</p>	<p>Ongoing</p>	<p>To gain information on permitted oil and gas sites (as well as mining permits), the water system can access online interactive maps provided through WVDEP. Both of the following sites provide similar information in different formats:  <a href="http://gisonline.dep.wv.gov/fogm/index.html">http://gisonline.dep.wv.gov/fogm/index.html</a>,  <a href="http://gis.dep.wv.gov/mapping/oog/oog.html">http://gis.dep.wv.gov/mapping/oog/oog.html</a></p>	<p>Minimal costs associated with staff time.</p>
<p>Public Wastewater Facilities</p>	<p>Communicate with the public wastewater system personnel to raise awareness of the source water vulnerability to contamination from leaking lines. Promote line extensions from the Community of Oceana into the un-served areas upstream.</p>	<p>PWS operator or staff</p>	<p>Ongoing</p>	<p>-</p>	<p>-</p>

<p>Unsewered Homes and Failing Septic Systems</p>	<p>Work with the county health department to identify areas in the SWPA where home owners may need to install septic systems or service existing systems. Consider teaming with others in the community to identify areas that would benefit from a cluster system to eliminate straight pipes and/or malfunctioning septic systems.</p> <p>Provide information regarding contamination and source water protection in mailings to homeowners with septic systems. Consider printing a reminder on water bills for residents to have their septic system inspected regularly and pumped every 5-10 years as needed.</p>	<p>PWS operator or staff</p>	<p>Contact residents with septic systems when necessary</p>	<p>Also, the USEPA provides a complete guide for residents to maintain their septic systems, for the guide, visit:  <a href="http://epa.gov/owm/septic/pubs/homeowner_guide_long.pdf">http://epa.gov/owm/septic/pubs/homeowner_guide_long.pdf</a>.</p>	<p>-</p>
<p>Logging/Timber Operations</p>	<p>Contact the logging company to determine when and where logging activities are taking place and communicate the SWPA boundaries and the water vulnerability to sedimentation. Work with the logging company and property owners to plan/design/implement methods to control impacts to surface water. Contact the WV Division of Forestry, 1900 Kanawha Boulevard East, Charleston, WV 25305-0180, or at (304) 558-2788 to communicate the source location and concerns arising from increased sedimentation.</p>	<p>PWS operator or staff</p>	<p>As needed</p>	<p>When appropriate, 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:  <a href="http://www.wvforestry.com/BMP%20Book%202009.pdf">http://www.wvforestry.com/BMP%20Book%202009.pdf</a>.</p>	<p>-</p>
<p>Yearly Windshield Survey</p>	<p>The utility's 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.</p>	<p>Water utility staff</p>	<p>Yearly, next survey in 2017</p>		<p>Minimal cost associated with staff time</p>
<p>Regular Coordination with Emergency Managers</p>	<p>Local emergency planners have access to confidential chemical contaminant information in Tier II reports from facilities in the SWPA. The utility should coordinate with the local emergency planners to gain an understanding of potential contaminants to better prepare for a spill</p>	<p>Water utility staff emergency personnel</p>	<p>Engage local emergency planners immediately and</p>	<p>-</p>	<p>Minimal cost associated with staff time</p>

	<p>event. Utility staff will continue to communicate with these emergency services groups on a regular basis, especially when there is not an ongoing emergency. They will invite the local emergency planners to meet yearly as part of the Source Water Protection Team.</p>		<p>communicate on a regular basis.</p>		
<p>Yearly Source Water Protection Team Meetings</p>	<p>The utility's staff will invite the protection team to 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.</p>	<p>Source Water Protection Team</p>	<p>Yearly, next meeting in 2017</p>		<p>Minimal cost associated with staff time</p>

## 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. Oceana Municipal Water has created an Education and Outreach plan that describes activities it has either already implemented or could implement in the future to keep the local community involved in protecting their source of drinking water. This information can be found in **Table 10**.

**Table 10. Education and Outreach Implementation Plan**

Education and Outreach Strategy	Description of Activity	Responsible Protection Team Member	Status/Schedule	Comments	Estimated Cost
Public Meeting	<p>Oceana Municipal Water held a source water protection public meeting at Oceana City Hall, 1285 Cook Parkway, Oceana, May 12, 2016, 7 pm. Public meeting was held concurrently with regularly scheduled Oceana Town Council meeting. Meeting was open to the public and advertised in the newspaper and with posted advertisements at the city hall a week before. Meeting minutes are attached in <b>Appendix E</b>.</p> <p>Reviewed source water protection timeline. Discussed Charleston Water Crisis of 2014 and reasons for new source water protection legislation. Discussed update to Oceana’s 2011 plan, and incorporation of Thrasher Group’s contingency/feasibility study. Reviewed plan table of contents and sections.</p> <p>Summarized potential significant sources. Summarized contingency plan alternatives. Discussed 30 minute public notification requirement. Noted Communication Plan in Appendix C with emergency contact information. Reviewed designated spokespeople for Oceana Municipal Water.</p>	Mayor/Town Council/Operator	As necessary	Oceana Municipal Water may have future public meetings to continue to inform the public of important source water issues.	Minimal. Staff time to attend meetings.
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	PSD board member or staff and/or operator	Annually	This would be in addition to required Source Water Assessment information, including source of water and susceptibility to contamination.	CCR required by SDWA, included in annual budget.

	reference to this source water protection plan and how customers can access a copy.				
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 will consider obtaining these materials when needed, to educate the community.	PSD board member or staff and/or operator	Within 1 year	Funding may be available through the grant program. Development of other outreach material may be delegated to a volunteer with appropriate skills.	Cost in brochure printing and mailing.
School Curricula	Work with the school system to incorporate source water activities into the school curricula. One example of school curricula is Project WET. For more information regarding free workshops to educate area teachers on Project WET, visit <a href="http://www.dep.wv.gov/WWE/getinvolved/WET/Pages/default.aspx">http://www.dep.wv.gov/WWE/getinvolved/WET/Pages/default.aspx</a> , or contact the WVDEP at 304-926-0495. Ask the school to include message in school newsletter to raise awareness about source water protection and conservation	PSD board member or staff and/or operator	If invited to participate	Can provide websites with free education materials to promote source water protection and conservation. Also operator may visit school or invite students for a plant tour to tie in with classroom materials.	Minimal costs. Would require time to coordinate, visit classroom and provide tour.
Plant Tours	Provide tours of the water plant to interested organizations such as watershed groups, schools, and civic organizations. Tours will be offered as requested. Organize a tour with local Emergency Responders to make them familiar with the facilities in the event of an emergency.	PWS operator and staff	Ongoing – as requested	Local Emergency Responders visit the plant often and are prepared to respond to an emergency at the plant.	Minimal cost associated with operator’s time.

<p>Emergency Planning and Coordination</p>	<p>Participate with local fire departments and County Emergency Services on a regular basis. This will ensure that all the agencies are in constant communication with one another and prepared in the event of an emergency.</p>	<p>PWS operator and staff</p>	<p>Ongoing and continuing annually</p>	<p>-</p>	<p>Cost associated with participation in training activities.</p>
<p>Partner with Watershed Association</p>	<p>Partner with local watershed associations or other civic groups. These groups may have similar goals and available volunteers that can integrate source water protection into their efforts.</p>	<p>PWS operator and staff</p>	<p>Monthly/ annually</p>	<p>Upper Guyandotte Watershed Association.  <a href="http://www.ugwawv.org/">http://www.ugwawv.org/</a>                      or PO Box 196 Mullens, WV 25882; phone: (304) 250-7053.</p>	<p>Cost associated with participation in activities.</p>

## 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 Oceana Municipal Water 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/>). Oceana Municipal Water has analyzed its ability to effectively respond to emergencies and this information is also provided in **Table 11**.

**Table 11. Oceana Municipal Water Shortage Response Capability**

<b>Can the utility isolate or divert contamination from the intake or groundwater supply?</b>	No
<b>Describe the utility’s capability to isolate or divert potential contaminants:</b>	N/A
<b>Can the utility switch to an alternative water source or intake that can supply full capacity at any time?</b>	No
<b>Describe in detail the utility’s capability to switch to an alternative source:</b>	N/A

<b>Can the utility close the water intake to prevent contamination from entering the water supply?</b>	Yes
<b>How long can the intake stay closed?</b>	N/A
<b>Describe the process to close the intake:</b>	Closing gate valves
<b>Describe the treated water storage capacity of the water system:</b>	The Oceana Municipal Water Department has 6 storage tanks totaling 1,000,000 gallons of treated water storage.
<b>Is the utility a member of WVRWA Emergency Response Team?</b>	Yes
<b>Is the utility a member of WV-WARN?</b>	Yes
<b>List any other mutual aid agreements to provide or receive assistance in the event of an emergency:</b>	None

Information for this table was taken from the Source Water Protection Contingency Plan prepared by The Thrasher Group. The complete report is provided as Appendix D. Information on lack of interconnection with RMS PSD modified by information gathered at the protection team meeting.

## 11.2 OPERATION DURING LOSS OF POWER

Oceana Municipal Water 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**

<b>What is the type and capacity of the generator needed to operate during a loss of power?</b>	The emergency capacity for the treatment plant is 220kW. A 500kW 800A generator is needed to provide standby power.
<b>Can the utility connect to generator at intake/wellhead? If yes, select a scenario that best describes system.</b>	No; the generator would need to be able to connect to an emergency quick connect power connection to provide power service to the intake.
<b>Can the utility connect to generator at treatment facility? If yes, select a scenario that best describes system.</b>	No; a stationary 550kW generator for the treatment plant and high service pumps is required.
<b>Can the utility connect to a generator in distribution system? If yes, select a scenario that best describes system.</b>	No; the generator would need to be able to connect to an emergency quick connect power connection to provide power service.

<b>Does the utility have adequate fuel on hand for the generator?</b>		Yes	
<b>What is your on-hand fuel storage and how long will it last operating at full capacity?</b>		<b>Gallons</b>	<b>Hours</b>
		2,000	N/A
<b>Provide a list of suppliers that could provide generators and fuel in the event of an emergency:</b>	<b>Supplier</b>		<b>Phone Number</b>
	<b>Generator</b>	Because of the very large size of the generator needed to run the water plant, obtaining a generator of the appropriate size during an emergency would be extremely difficult.	-
	<b>Fuel</b>	RT Rogers	(304) 466-1733
<b>Does the utility test the generator(s) periodically?</b>		N/A	
<b>Does the utility routinely maintain the generator?</b>		N/A	
<b>If no scenario describing the ability to connect to generator matches the utility's system or if utility does not have ability to connect to a generator, describe plans to respond to power outages:</b>		During a power outage the utility does not have a backup source of power. The utility has applied to Region 1 for a grant to buy a generator.	

Information for this table was taken from the Source Water Protection Contingency Plan prepared by The Thrasher Group. The complete report is provided as Appendix D. Information on emergency backup generator modified by information gathered at the protection team meeting.

### 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. Oceana Municipal Water 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 Oceana Municipal Water**

<b>Is the utility able to meet water demands with the current production capacity over the next 5 years? If so, explain how you plan to do so.</b>	Yes; there is one proposed extension for the community of Clear Fork. Increase in customer demand is expected to be minimal and the plant is expected to remain under maximum treatment capacity.
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<b>If not, describe the circumstances and plans to increase production capacity:</b>	N/A
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Information for this table was taken from the Source Water Protection Contingency Plan prepared by The Thrasher Group. The complete report is provided as Appendix D.

## 11.4 WATER LOSS CALCULATION

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

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

**Table 14. Water Loss Information\***

<b>Total Water Pumped (gal)</b>		219,507,000
<b>Total Water Purchased (gal)</b>		0
<b>Total Water Pumped and Purchased (gal)</b>		219,507,000
<b>Water Loss Accounted for Except Main Leaks (gal)</b>	<b>Mains, Plants, Filters, Flushing, etc.</b>	1,500,000
	<b>Fire Department</b>	200,000
	<b>Back Washing</b>	6,435,000
	<b>Blowing Settling Basins</b>	600,000
<b>Total Water Loss Accounted For Except Main Leaks</b>		8,735,000
<b>Water Sold- Total Gallons (gal)</b>		85,205,000
<b>Unaccounted For Lost Water (gal)</b>		125,067,000

<b>Water lost from main leaks (gal)**</b>	500,000
<b>Total gallons of Unaccounted for Lost Water and Water Lost from Main Leaks (gal)</b>	125,567,000
<b>Total Percent Unaccounted For Water and Water Lost from Main Leaks (gal)</b>	<b>57 %</b>
<b>If total percentage of Unaccounted for Water is greater than 15%, please describe any measures that could be taken to correct this problem:</b>	Increased inspection, leak detection, and making necessary repairs.

\*Information for this table was taken from the Source Water Protection Contingency Plan prepared by The Thrasher Group. The complete report is provided as Appendix D.

\*\*Water loss through main leaks had been duplicated in the Source Water Protection Contingency Plan based upon the draft calculation instructions from the WVDHHR. Data presented in this table represents corrections to the guidance and calculation made since the Source Water Protection Contingency Plan was finalized.

## 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.

Oceana Municipal Water 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**

<p><b>Does your system currently receive spill notifications from a state agency, neighboring water system, local emergency responders, or other facilities? If yes, from whom do you receive notices?</b></p>	<p>The utility receives spill notifications from the DHHR</p>	
<p><b>Are you aware of any facilities, land uses, or critical areas within your protection areas where chemical contaminants could be released or spilled?</b></p>	<p>No</p>	
<p><b>Are you prepared to detect potential contaminants if notified of a spill?</b></p>	<p>Yes</p>	
<p><b>List laboratories (and contact information) on whom you would rely to analyze water samples in case of a reported spill.</b></p>	<p><b>Laboratories</b></p>	
	<p><b>Name</b></p>	<p><b>Contact</b></p>
	<p>REI Consultants</p>	<p>(304) 255-2500</p>
	<p>WV Office of Lab Services</p>	<p>(304) 558-3530</p>
<p><b>Do you have an understanding of baseline or normal conditions for your source water quality that accounts for seasonal fluctuations?</b></p>	<p>No</p>	
<p><b>Does your utility currently monitor raw water (through continuous monitoring or periodic grab samples) at the surface water intake or from a groundwater source on a regular basis?</b></p>	<p>No</p>	
<p><b>Provide or estimate the capital and O&amp;M costs for your current or proposed early warning system or upgraded system.</b></p>	<p><b>Monitoring System</b></p>	<p>Hach sc1000 (B-2)</p>
	<p><b>Capital</b></p>	<p>\$50,000</p>
	<p><b>Yearly O &amp; M</b></p>	<p>\$750</p>
<p><b>Do you serve more than 100,000 customers? If so, please describe the methods you use to monitor at the same technical levels utilized by ORSANCO.</b></p>	<p>No</p>	

Information for this table was taken from the Source Water Protection Contingency Plan prepared by The Thrasher Group. The complete report is provided as Appendix D.

## 12.0 SINGLE SOURCE FEASIBILITY STUDY

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

To accomplish this requirement, utilities should examine all existing or possible alternatives and rank them by their technical, economic, and environmental feasibility. To have a consistent and complete method for ranking alternatives, WVBPB 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**.

## 13.0 COMMUNICATION PLAN

Oceana Municipal Water 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. Oceana Municipal Water 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 Oceana Municipal Water is attached as **Appendix C** for internal review and planning purposes only.

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

## 14.0 EMERGENCY RESPONSE

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

## 15.0 CONCLUSION

This report represents a detailed explanation of the required elements of Oceana Municipal Water'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

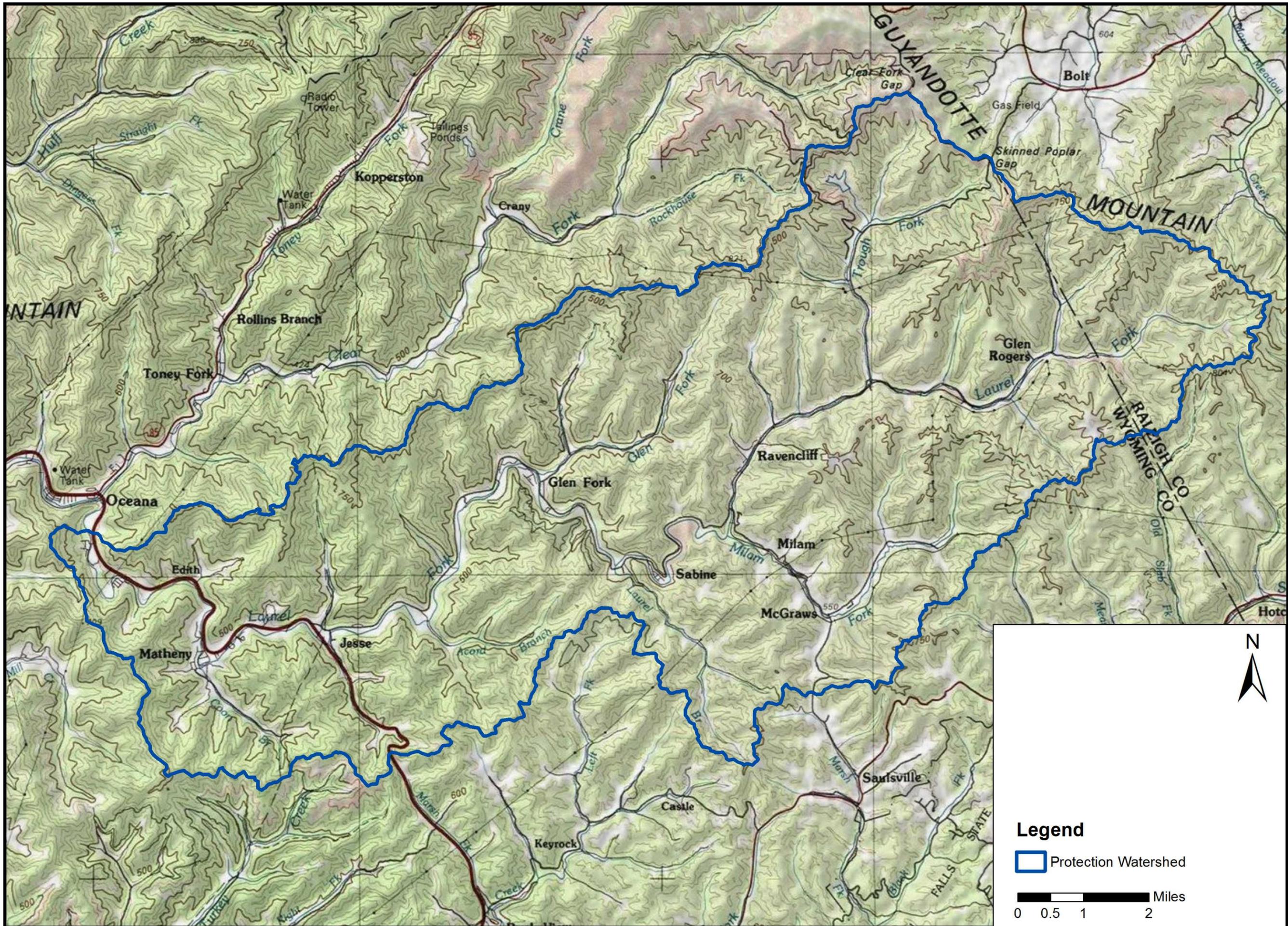


Figure A-1  
Protection Watershed

Oceana Municipal Water  
PWSID: WV3305516  
Source Water Protection Plan

**TETRA TECH**  
803 Quarrier Street, Suite 400  
Charleston, WV 25301



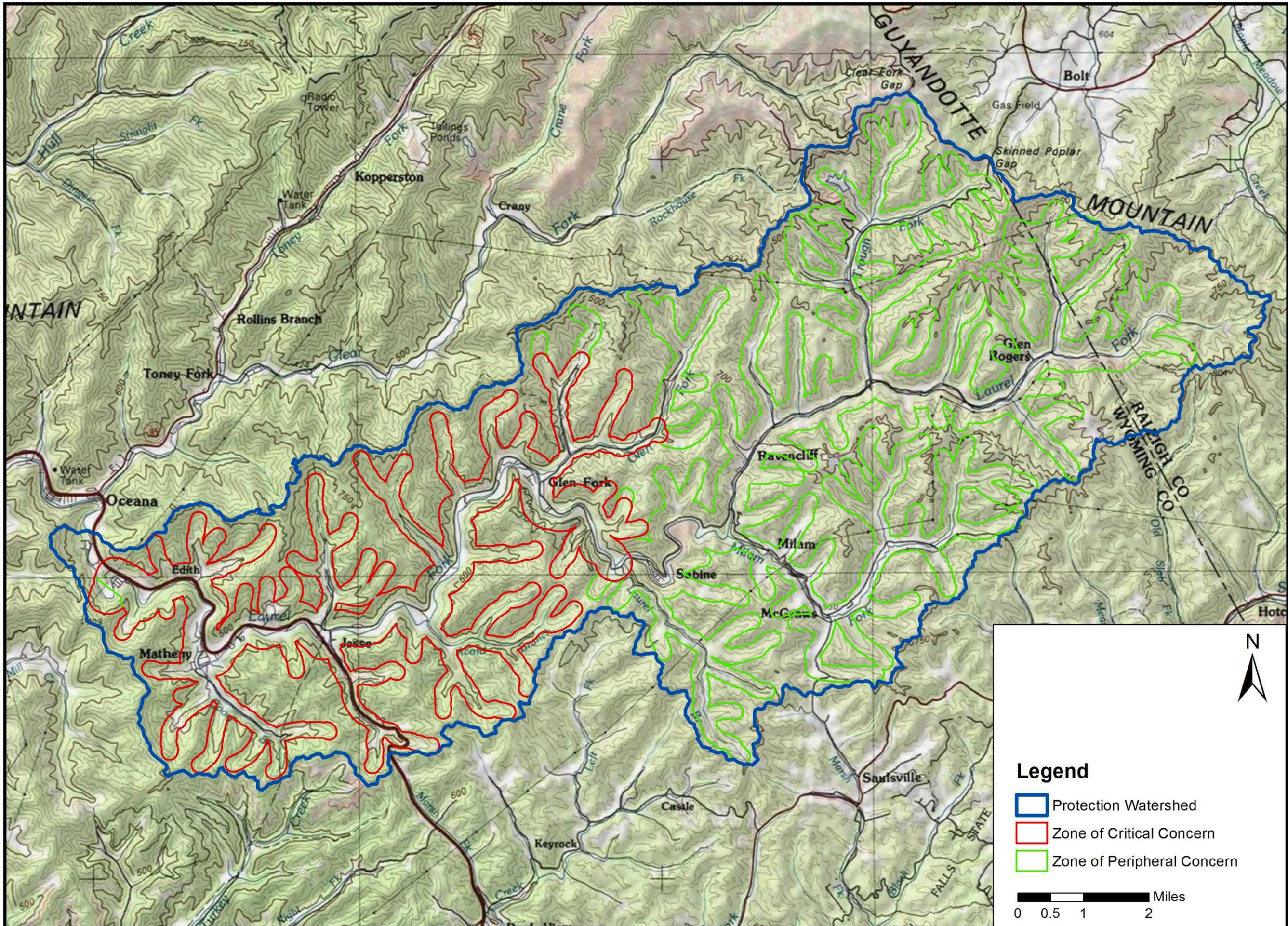


Figure A-2

Zone of Critical Concern and  
Zone of Peripheral Concern

Oceana Municipal Water

PWSID: WV3305516

Source Water Protection Plan

CREATED BY: JFB DATE: 12/8/2015

**Legend**

- Protection Watershed
- Zone of Critical Concern
- Zone of Peripheral Concern

0 0.5 1 2 Miles

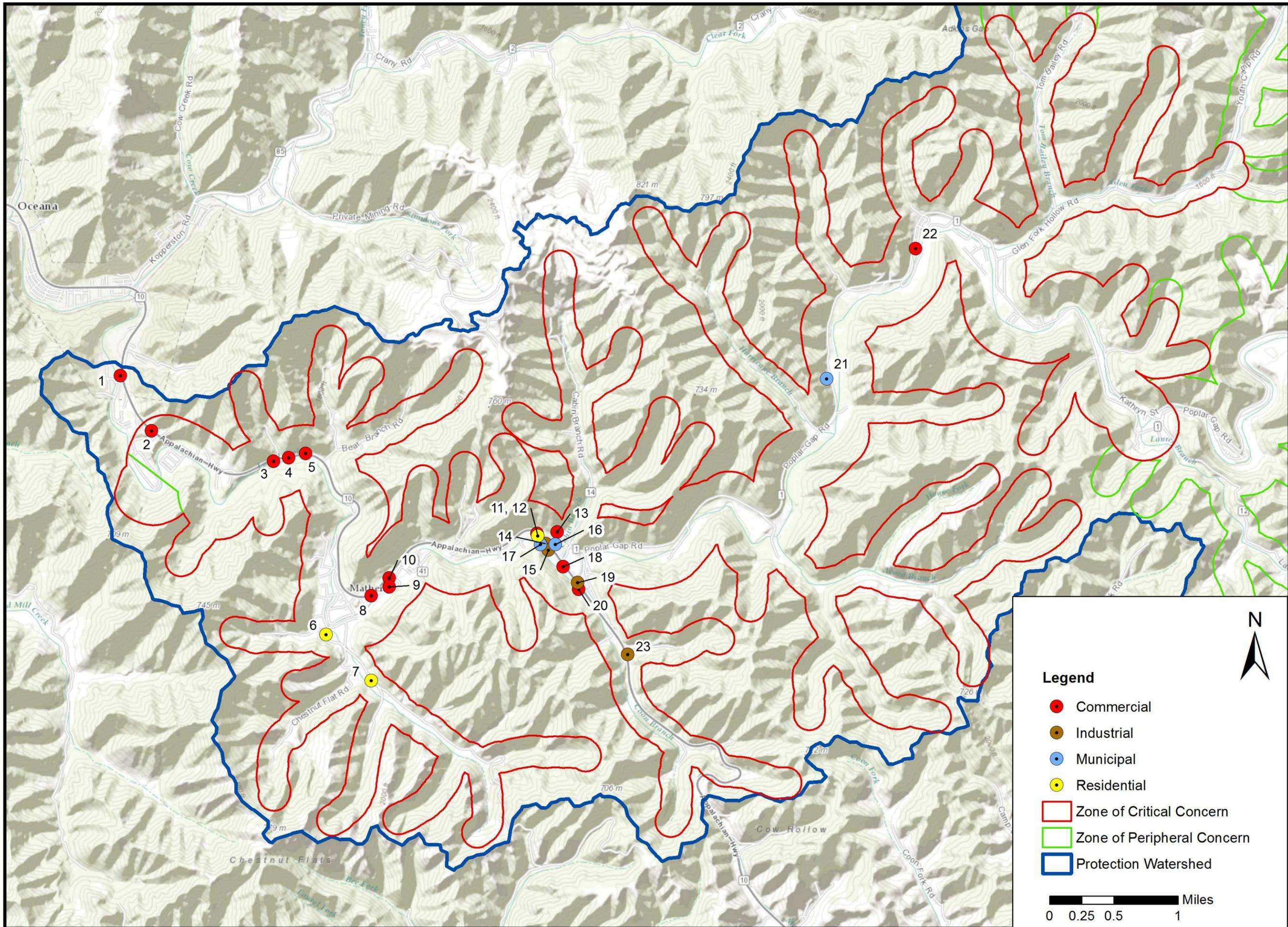


**TETRA TECH**  
803 Quarrier Street, Suite 400  
Charleston, WV 25301

**List of Locally Identified PSSCs**

PCS No.	Site Name	Site Description	Comments
1	Gas Stations	Exxon	Gas Station/Auto Garage
2	Hardware/lumber/parts stores	Oceana Lumber	none
3	Other	Night Spot bar septic tank	none
4	Auto repair shops	Abandoned Garage	Abandoned garage, building damaged, electricity cut off
5	Auto repair shops	Auto repair shop not open at time of visit. Two bays and a small auto salvage yard with newer vehicles.	none
6	Septic Systems (discharging to stream or surface)	Mott, Richard Sewage	Surveyed, Found. Residential HAU.
7	Septic Systems (discharging to stream or surface)	Stewart, Denzil J Sewage	Surveyed, Found. Residential HAU.
8	Repair Shops (engine, appliances, etc.)	Extreme Detailing appears closed for business	none
9	Cemeteries	Palm Memorial Gardens	none
10	Historic gas stations	BP gas station now closed, pumps are still there	none
11	Septic Systems (discharging to stream or surface)	Castle Rock Restaurant package plant	none
12	Car washes	Car Wash - Closed	Surveyed, Not Found
13	Cemeteries	Cemetery on hill behind State Police barracks	none
14	Machine and metalworking shops	Adams Manufacturing machine shop	none
15	Other	Adams Manufacturing Co., Inc.	Used Oil Dumpster
16	Storm water basins/drains	Star-Lite Construction	Surveyed, Found. Stormwater Outlet.
17	Storm water basins/drains	Adams Manufacturing Co Inc. Stormwater Outlet	Surveyed, Found. Stormwater Outlet.
18	Junk yards, scrap and auto	Scrap metal yard along highway west of gas station, probably associated with Cook's Manufacturing	none
19	Machine and metalworking shops	Cook's Manufacturing machine shop	none
20	Gas Stations	Woco Express	Former Citgo gas station
21	Waste transfer/recycling stations	Glen Fork/ Jeese Waste Transfer Station	Surveyed, Found. Active, well-maintained transfer station.

PCS No.	Site Name	Site Description	Comments
22	Utility Substation Transformers	AEP Jarrold Substation	power substation
23	Machine and metalworking shops	Big Justice Construction repair shop and equipment yard	none



**Figure A-3**  
**Locally Identified PSSCs**

**Oceana Municipal Water**  
**PWSID: WV3305516**  
**Source Water Protection Plan**

**TETRA TECH**  
 803 Quarrier Street, Suite 400  
 Charleston, WV 25301

CREATED BY: JFB  
 DATE: 12/8/2015

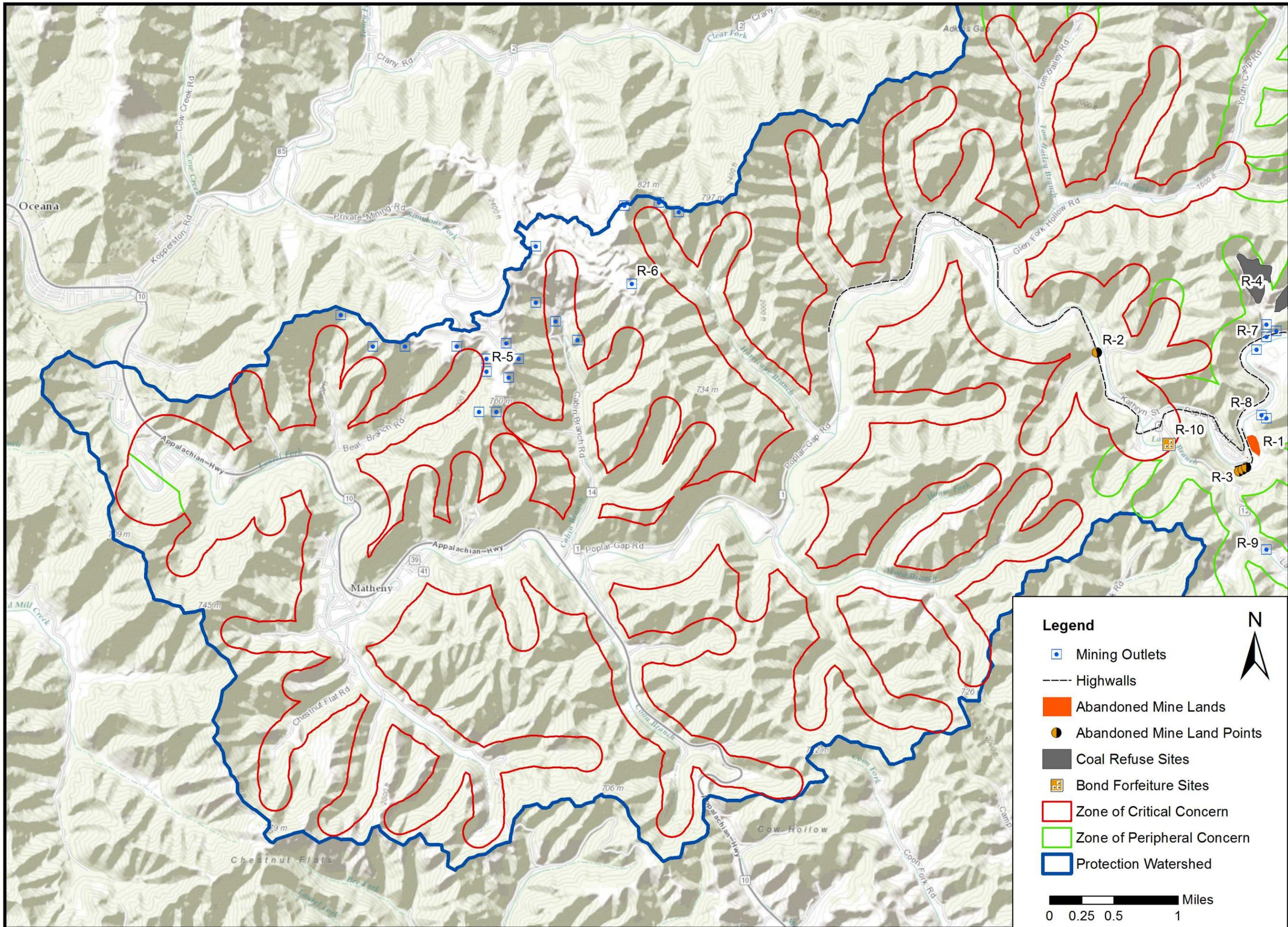
**List of Regulated PSSCs**

Regulated No.	Site Name	Site Description	Regulation ID	Comments
R-1	Abandoned Mine Lands*	Sabine Refuse Pile	WV000931	none
R-2	Abandoned Mine Lands	Glen Fork-Sabine Water Supply	WV005095	none
R-3	Abandoned Mine Lands	Sabine Refuse Pile	WV000931	none
R-4	Coal Refuse Site	Rhino Eastern LLC Beckley #2 Prep Plant & Refuse	P072600	none
R-5	Mining Permit**	Pioneer Fuel Corporation	WV1016431	HPUST
R-6	Mining Permit	Pioneer Fuel Corporation	WV1016431	HPUST
R-7	Mining Permit	Rhino Eastern LLC	WV0039535	HPUGD
R-8	Mining Permit	Rhino Eastern LLC	WV0039535	HPUGD
R-9	Mining Permit	Rhino Eastern LLC	WV0039535	HPUGD
R-10	Bond Forfeiture Site	J & J Motors	UO-394	Completed in 1985. Substantial flow from backfilled portals and also from old portal to W of site with monument for Ranger Fuel. Sabine uses water from portals as unofficial water supply. Mine operated by Pittston. WQ is OK.
R-10	NPDES Outlet	Oceana WTP & Gilliland Park Pool	WVG640075	Water Treatment Plant (GP)
R-11	NPDES Outlet	James Sellards	WVG414414	Home Aeration Unit General
R-12	NPDES Outlet	Matheny Public Service District	WVG640087	Water Treatment Plant (GP)
R-13	NPDES Outlet	Richard Mott	WVG413387	Home Aeration Unit General
R-14	NPDES Outlet	Denzil J Stewart	WVG413888	Home Aeration Unit General
R-15	NPDES Outlet	Jesse-Matheny Water System Upgrade and Extensions	WVR103753	Storm Water Construction (GP)
R-16	NPDES Outlet	Castle Rock Restaurant	WVG550488	Sewage General

Regulated No.	Site Name	Site Description	Regulation ID	Comments
R-17	NPDES Outlet	Adams Manufacturing Co., Inc.	WVG611029	Storm Water Industrial (GP)
R-18	NPDES Outlet	New Life Community Church	WVG551374	Sewage General
R-19	NPDES Outlet	Star-Lite Construction, Inc.	WVG611321	Storm Water Industrial (GP)
R-20	NPDES Outlet	Ravenclyff-Matheny PSD Wyoming County	WVR104400	Storm Water Construction (NOI)
R-21	NPDES Outlet	Cook's Manufacturing	WVG611003	Storm Water Industrial (GP)
R-22	NPDES Outlet	William R. Jewell	WVG410450	Home Aeration Unit General
R-23	NPDES Outlet	Big Justice Construction Co., Inc.	WVG611110	Storm Water Industrial (GP)
R-24	NPDES Outlet	Jesse Transfer Station	WVG611466	Storm Water Industrial (GP)
R-25	NPDES Outlet	Clines Car Wash	WVG990139	Car Wash (GP)
R-26	NPDES Outlet	Glen Fork Elementary School	WVG551084	Sewage General
R-27	NPDES Outlet	Wyoming Co. Youth Camp	0648-03-109	5W32 - Septic Systems(Drain Field Disposal Method)

\*Abandoned mine lands were labeled if identifying information was available. In areas with multiple features all related to one abandoned mine operation, one label may identify multiple features in its vicinity.

\*\*Mining outlets on Figure A-4 below were labeled by the permit to which they belong. Most mining operations have multiple outlets of a similar design located in very close proximity under the same permit, making labeling of individual outlets impractical.



**Legend**

- Mining Outlets
- Highwalls
- Abandoned Mine Lands
- Abandoned Mine Land Points
- Coal Refuse Sites
- Bond Forfeiture Sites
- Zone of Critical Concern
- Zone of Peripheral Concern
- Protection Watershed

N

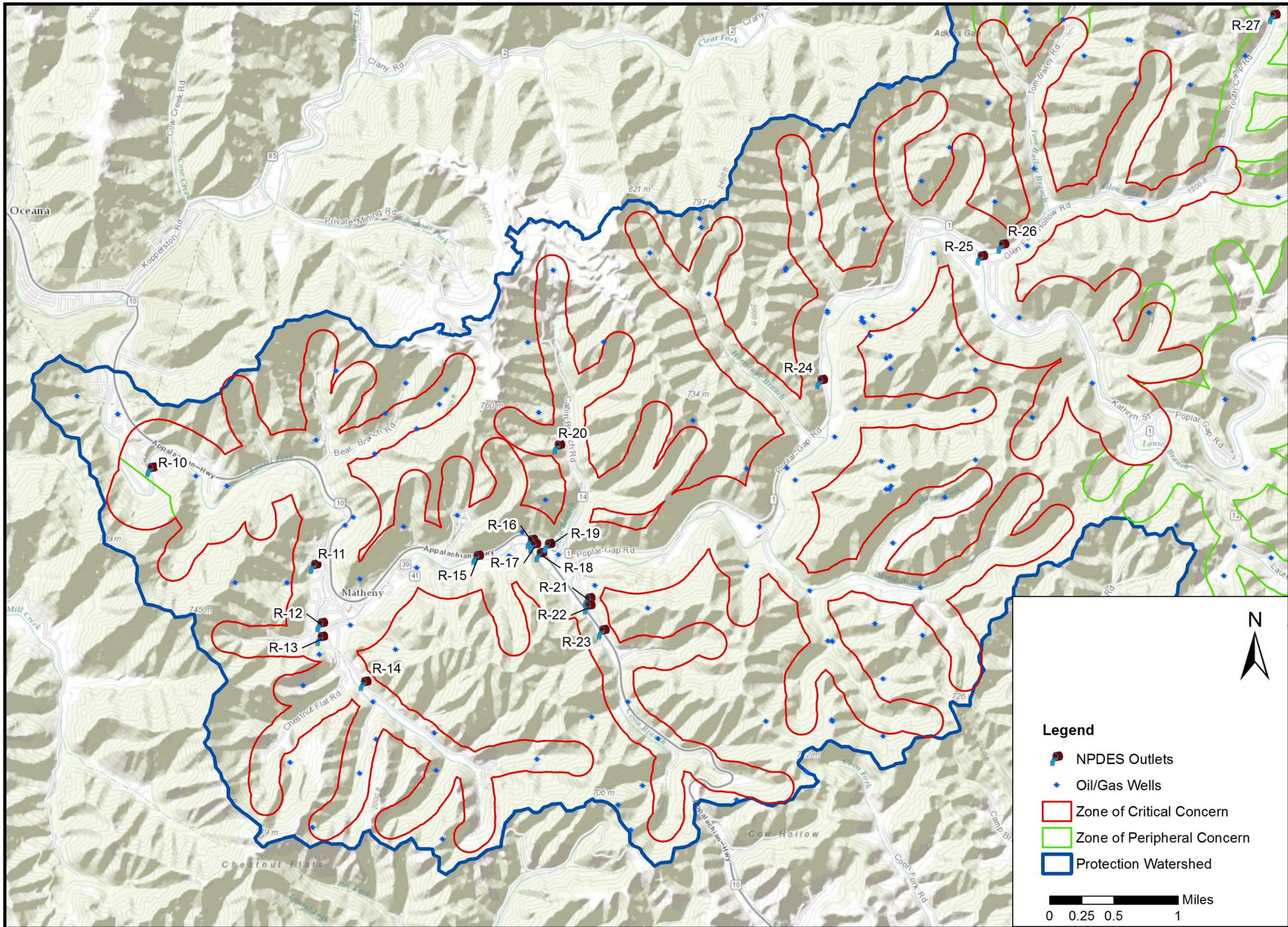


0 0.25 0.5 1 Miles



**Figure A-4**  
Mining Regulated PSSCs

Oceana Municipal Water  
PWSID: WV3305516  
Source Water Protection Plan

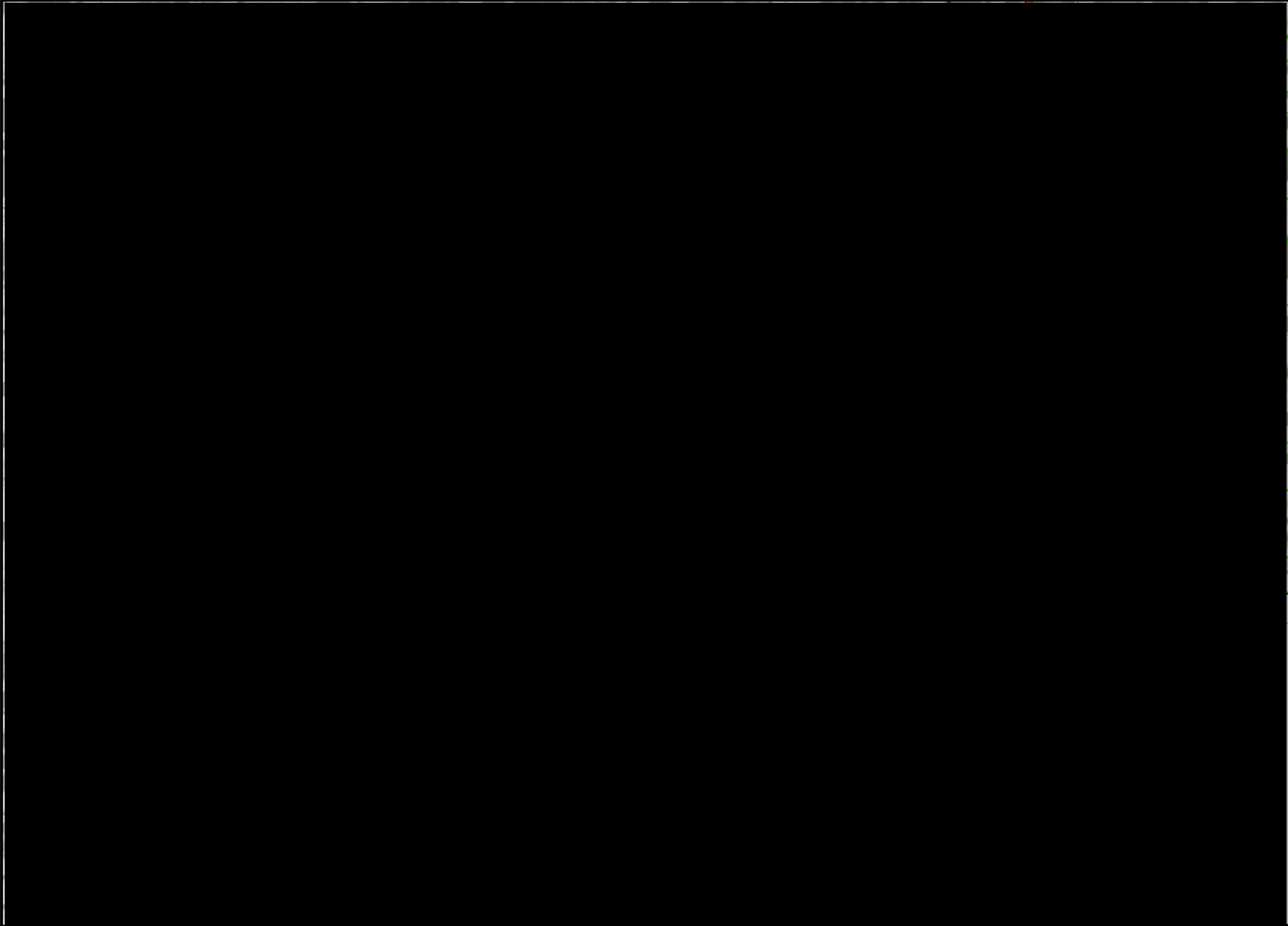


**Figure A-5**  
**Oil/Gas Wells and NPDES Outlet**  
**Regulated PSSCs**

**Oceana Municipal Water**  
**PWSID: WV3305516**  
**Source Water Protection Plan**

**TETRA TECH**  
 803 Quarrier Street, Suite 400  
 Charleston, WV 25301

CREATED BY: JFB  
 DATE: 4/18/2016



**TETRA TECH**  
803 Quarrier Street, Suite 400  
Charleston, WV 25301

**Oceana Municipal Water**  
**PWSID: WV3305516**  
**Source Water Protection Plan**

**Figure A-6**  
**Above Ground Storage Tank**  
**Regulated PSSCs**

CREATED BY: JFB

DATE: 4/18/2016

## APPENDIX B. EARLY WARNING MONITORING SYSTEM FORMS

### **Select and Attach the Appropriate Form for Your System**

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

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

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

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

**Note:** You may need to fill out and attach more than one form to your Protection Plan, depending on your current situation.

**Appendix B-Form B**

Proposed Early Warning Monitoring System Worksheet- Surface Water Source

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

## APPENDIX C. COMMUNICATION PLAN TEMPLATE

### Oceana Municipal Water

PWSID: WV3305516 District: Beckley, District 1

Certified Operator: Michael Morgan

Contact Phone Number: 304-682-6248

Contact Email Address: pigmorgan55@hotmail.com

Plan Developed On: May 2016 Plan Update: \_\_\_\_\_

### ACKNOWLEDGMENTS:

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

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

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

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

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

Tier	Tier Category	Risk Level	Tier Summary
A	Announcement	Low	The water system is issuing an announcement to the public and public agencies about an incident or event that could pose a threat to public health and safety. Additional information will be provided as it becomes available.

<b>B</b>	<b>Boil Water Advisory</b>	Moderate	Water system users are advised to boil any water to be used for drinking or cooking, due to possible microbial contamination. The system operator will notify users when the boil water advisory is lifted.
<b>C</b>	<b>Cannot Drink</b>	High	System users should not drink or cook with the water until further notice. The water can still be used for showering, bathing, cleaning, and other tasks.
<b>D</b>	<b>Do Not Use</b>	Very High	The water should only be used for flushing commodes and fire protection until further notice. More information on this notice will be provided as soon as it is available.
<b>E</b>	<b>Emergency</b>	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
██████████	Oceana	304-682-6231	-	Primary Spokesperson
Clark Manning	Oceana	304-682-6231	clarkmanning72@rocketmail.com	Secondary Spokesperson
Dean Meadows	Wyoming County OEM	██████████	-	Member
Michael Morgan	Oceana	██████████	pigmorgan55@hotmail.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 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. If further investigation is warranted, and the initial facts support it, the water system spokesperson will issue a public communication statement consistent with the threat level. In addition, water system personnel and partners will be dispatched to conduct reconnaissance, a threat assessment, and a threat characterization, if present. This work may include:

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

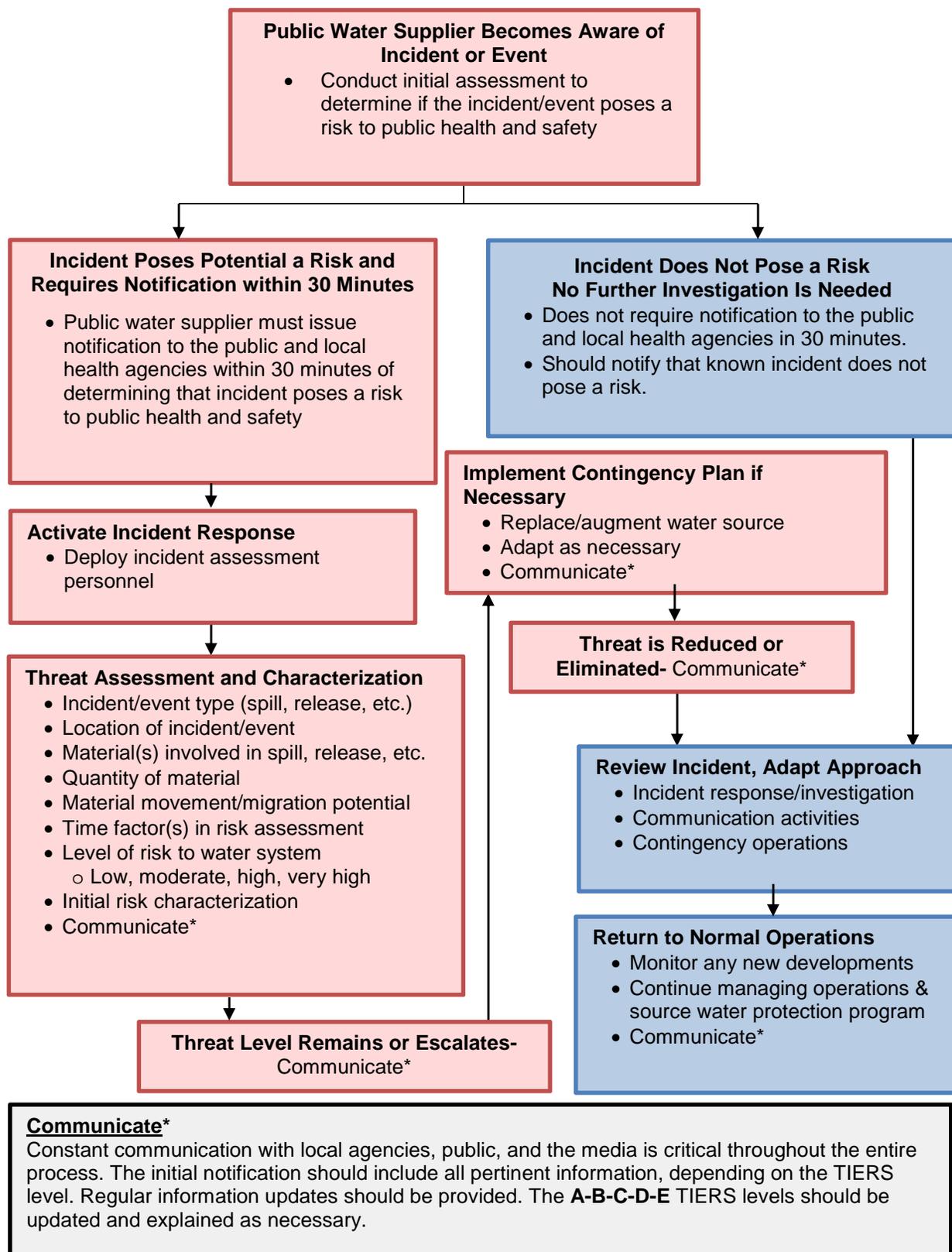
As the flow chart indicates, several iterative cycles will occur after the initial threat assessment, including communication with local agencies and the public, further investigation of the incident, possible implementation of the water system’s contingency plan, and eventual elimination of the threat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

- The initial release (i.e., **A**nnouncement, **B**oil Water, **C**annot Drink, **D**o Not Use, or **E**mergency)
  - 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, the communication and source water protection teams, and their partners will conduct a post-event review and assessment. The purpose of the review is to examine the response to the incident, relevant communication activities, and overall outcomes. Plans and procedures may be updated, altered, or adapted based on lessons learned through this process.

## TIERS FLOW CHART



## EMERGENCY SHORT FORMS

### Emergency Communication Information

	Name	Phone Number	Email	
<b>Designated spokesperson:</b>	██████████	304-682-6231		
<b>Alternate spokesperson:</b>	Clark Manning	304-682-6231	clarkmanning72@rocketmail.com	
<b>Designated location to disseminate information to media:</b>	Radio station WJLS 99.5 FM. All alerts would pass through DHHR EED District 1 office. Town of Oceana has a Facebook page. Town Council is investigating using online application Nixle for phone and text alerts.			
<b>Methods of contacting affected residents:</b>	<b>Word of mouth</b>		<b>Posted notices</b>	
	<b>Door-to-door canvassing</b>	X	<b>Radio</b>	X
	<b>Newspaper</b>		<b>Social Media</b>	X
<b>Media contacts:</b>	Name	Title	Phone Number	Email
	Lon Tegels	WVNS TV 59 News Director	304-929-6471	ltegels@wnstv.com

### Emergency Services Contacts

	Name	Emergency Phone	Alternate Phone	Email
<b>Local Police</b>	Wyoming County Sheriff and the Oceana Police Department	911	304-732-8000 304-682-8311	-
<b>Local Fire Department</b>	Oceana Volunteer Fire Department	911	304-682-5741	-
<b>Local Ambulance Service</b>	JanCare-Oceana Station	911	304-682-5111	-
<b>Hazardous Material Response Service</b>	N/A	-	-	-

### Sensitive Populations

<b>Other communities that are served by the utility:</b>		Wyoming County, Oceana, Lynco, Crouchs Farm, Kopperston		
<b>Major user/sensitive population notification:</b>	<b>Name</b>	<b>Emergency Phone</b>	<b>Alternate Phone</b>	
	Berlin McKinney Elementary	304-682-6481	-	
	Oceana Middle School	304-682-6296	-	
	Westside High School	304-682-8965	-	
	Kopperston Head Start	304-682-4625	-	
	Family Health Care	304-682-8238	-	
<b>EED District Office Contact:</b>	<b>Name</b>	<b>Phone</b>	<b>Email</b>	
	John Stafford	304-256-6666 EED Central Office 304-558-2981	John.PB.Stafford@wv.gov	
<b>OEHS Readiness Coordinator</b>	Warren Von Dollen	304-356-4290 (main) 304-550-5607 (cell)	warren.r.vondollen@wv.gov	
<b>Downstream Water Contacts:</b>	<b>Water System Name</b>	<b>Contact Name</b>	<b>Emergency Phone</b>	<b>Alternate Phone</b>
	Gilbert Water Works	James Deel	██████████	-
<b>Are you planning on implementing the TIER system?</b>		Yes		

### Key Personnel

	Name	Title	Phone	Email
<b>Key staff responsible for coordinating emergency response procedures?</b>	Michael S. Morgan	Chief Operator	304-682-6248	pigmorgan55@hotmail.com
	Romaine Morgan	Operator	304-682-6248	-
<b>Staff responsible for keeping confidential PSSC information and releasing to emergency responders:</b>	Michael S. Morgan	Chief Operator	304-682-6248	pigmorgan55@hotmail.com
	Dean Meadows	Director Wyoming County OEM	██████████	-

### Emergency Response Information

	Name	Phone
<b>List laboratories available to perform sample analysis in case of emergency:</b>	REI Consultants	(304) 255-2500
	WV Office of Lab Services	(304) 558-3530
<b>Has the utility developed a detailed Emergency Response Plan in accordance with the Public Health Security Bioterrorism Preparedness and Response Pan Act of 2002?</b>	Oceana Municipal Water is covered under the county-wide Wyoming County Emergency Plan.	
<b>When was the Emergency Response Plan developed or last updated?</b>	2014	

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## EMERGENCY CONTACT INFORMATION

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**State Emergency Spill Notification**

1-800-642-3074

**Office of Emergency Services**

<http://www.wvdhsem.gov/>  
Charleston, WV- (304) 558-5380

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

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

Readiness Coordinator- Warren Von Dollen

Phone; 304-356-4290

Cell; 304-550-5607

E-mail: [warren.r.vondollen@wv.gov](mailto:warren.r.vondollen@wv.gov)

Environmental Engineering Division Staff

Charleston, Central Office (304) 558-2981

Beckley, District 1 (304) 256-6666

St. Albans, District 2 (304) 722-0611

Kearneysville, District 4 (304) 725-9453

Wheeling, District 5 (304) 238-1145

Fairmont, District 6 (304) 368-2530

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

1-800-424-8802

**WV State Fire Marshal's Office**

1-800-233-3473

**West Virginia State Police**

1-304-746-2100

**WV Watch – Report Suspicious Activity**

1-866-989-2824

**DEP Distance Calculator**

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

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## PRESS RELEASE ATTACHMENTS

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

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

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

The incident involves the following situation at this location:

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

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

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

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

## UTILITY ISSUED NOTICE – LEVEL B

### BOIL WATER ADVISORY

#### A BOIL WATER ADVISORY IS IN EFFECT

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

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

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

#### What should I do?

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

#### What happened?

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

#### What is being done?

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

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

- \_\_\_\_\_

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

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

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

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

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

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

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

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

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

**What should I do?**

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

**What happened?**

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

**What is being done?**

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

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

- \_\_\_\_\_

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

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

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

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

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

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

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

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

**What should I do?**

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

**What happened?**

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

**What is being done?**

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

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

- \_\_\_\_\_

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

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

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

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

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

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

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

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

**What should I do?**

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

**What happened?**

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

**What is being done?**

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

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

- \_\_\_\_\_

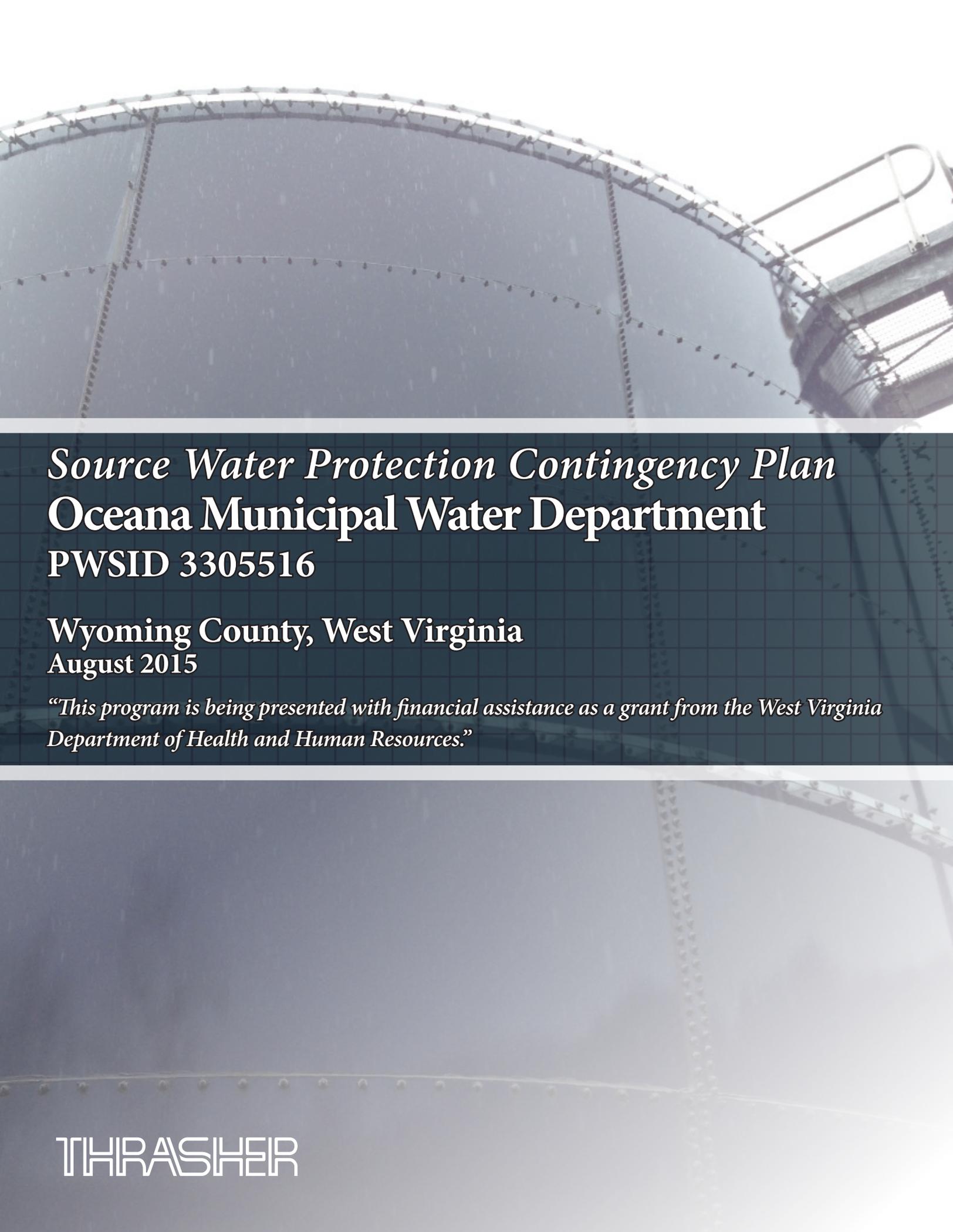
We will inform you when the water is safe to drink. We anticipate resolving the problem within \_\_\_\_\_ hours/days. For more information – or to report unusual water conditions such as abnormal odors, colors, sheen, etc. – please contact \_\_\_\_\_ at \_\_\_\_\_ or \_\_\_\_\_ at \_\_\_\_\_.

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

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

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

## APPENDIX D. SINGLE SOURCE FEASIBILITY STUDY



*Source Water Protection Contingency Plan*  
**Oceana Municipal Water Department**  
**PWSID 3305516**

**Wyoming County, West Virginia**  
**August 2015**

*“This program is being presented with financial assistance as a grant from the West Virginia Department of Health and Human Resources.”*

**THRASHER**

Title of Preparer

Project Engineer

---

Name of Contractor(s)/Consultant(s) (if used):

The Thrasher Group, Inc.

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

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

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Print Name of Authorizing Signatory :

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Title of Authorizing Signatory:

---

Date of Submission:

8/15/15

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## EXECUTIVE SUMMARY

This Source Water Protection Contingency Plan is being developed for the Oceana Municipal Water Department, and is to be included as a portion of the complete Source Water Protection Plan being completed by other parties (per the West Virginia Bureau for Public Health).

The Oceana Municipal Water Department is a state regulated public utility and operates a public water system serving the areas of Oceana, Lynco, Crouchs Farm and Kopperston in Wyoming County, West Virginia. The Oceana Municipal Water Department serves 1,122 residential customers, 107 commercial customers and eight (8) public authorities as reported in the 2014 PSC Annual Report. The Oceana Municipal Water Department also provides water to the Kopperston Public Service District water system.

The water treatment facility for the Oceana Municipal Water Department obtains surface water from one (1) raw water intake – Laurel Fork. The plant has a treatment capacity of 1,000,000 gallons per day and pumps approximately 16 hours per day on average producing an average of 650,000 gallons per day. The Oceana Municipal Water Department maintains five (5) treated water storage tanks totaling 1,000,000 gallons of treated water and does not retain any raw water storage. Currently, the water system is experiencing 57% unaccounted for water; however, the utility is conducting leak detection and making necessary repairs to reduce unaccounted for water. The Oceana Municipal Water Department currently does not have a generator. Consequently, the treatment plant does not operate during power outages.



In the event that the primary water source is contaminated, the Oceana Municipal Water Department currently has one (1) alternative source of water in the form of an interconnection with the Ravenscliff-McGraws-Saulsville Public Service District (RMSPSD) that is under construction. Based on the evaluation of the water system, RMSPSD can provide adequate water supply to the Oceana water system for intermittent periods when Oceana's primary water source becomes contaminated. It is recommended that Oceana install an early warning monitoring system upstream of the intake as well as a backup generator to allow operation during loss of power. Additional detail of the selection of this alternative is discussed in the "Conclusion and Recommendations" section of this report. The feasibility study and supporting documentation is included in the Appendices.

### Backup Intake

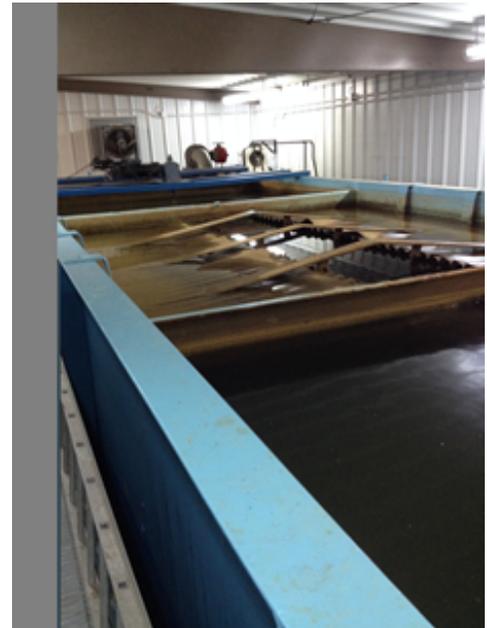
The Clear Fork has adequate supply to provide the average water demand of the Oceana Municipal Water Department. The backup intake would be located on State Route 85 approximately 500 feet downstream of the intersection with State Route 10 and will require approximately 8,000 feet of 8" intake line.

## **Interconnection**

The Oceana Municipal Water Department is currently under construction with a interconnection with the Ravencliff-McGraws-Saulsville Public Service District system. After analysis of the RMSPSD treatment capacities, it was concluded that the RMSPSD treatment facility can intermittently supply the Oceana Municipal Water Department's average water demand. The existing interconnection with RMSPSD was analyzed in the feasibility analysis.

## **Treated Water Storage**

The Oceana Municipal Water Department currently has 1,000,000 gallons of treated water storage distributed between five (5) water storage tanks. Senate Bill 373 requires that each utility maintain two (2) days of storage based on the maximum amount of water produced. The Oceana Municipal Water Department's maximum water production is 1,000,000 gallons, therefore, 2,000,000 gallons of total treated water storage is required to comply with Senate Bill 373. The Town needs a minimum of 1,000,000 gallons of additional treated water storage to consider this option as an alternative water source. This was evaluated in the feasibility analysis.



## **Raw Water Storage**

The Oceana Municipal Water Department does not maintain any raw water storage. To satisfy the two (2) day storage requirement described in Senate Bill 373, the utility needed 2,000,000 gallons of storage. The additional raw water storage was considered in the feasibility analysis.

## **PURPOSE**

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

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

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

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

## **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 was designed to protect the source water contribution areas around groundwater supply wells. This program eventually became known as the Wellhead Protection Program (WHPP). The purpose of the WHPP is to prevent pollution of the source water supplying the wells.

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

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

## **STATE REGULATORY REQUIREMENTS**

On June 6, 2014, §16.1.2 and §16.1.9a of the Code of West Virginia (1931) was reenacted and amended by adding three new sections designated §16.1.9c, §16.1.9d and §16.1.9e. The changes to

the code outline specific requirements for public water utilities that draw water from a surface water source or a groundwater source influenced by surface water (GUIDI).

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

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

## **SYSTEM INFORMATION**

The Oceana Municipal Water Department is classified as a state regulated public utility and operates a public water system serving areas of Wyoming County. A public water system is defined as “any water supply or system which regularly supplies or offers to supply water for human consumption through pipes or other constructed conveyance, if serving at least an average of twenty-five individuals per day for at least sixty days per year, or which has at least fifteen service connections, and shall include i) any collection, treatment, storage and distribution facilities under the control of the owner or operator of the system and used primarily in connection with the system; and ii) any collection or pretreatment storage facilities not under such control which are used primarily in connection with the system.” A public water utility is defined as “a public water system which is regulated by the West Virginia Public Service Commission.” For purposes of this source water protection plan, public water systems are also referred to as public water utilities. Information on the population served by this utility is presented in **Table 1** below.

**Table 1 – Population Served by the Oceana Municipal Water Department**

<b>Administrative office location:</b>		110 Cook Street Oceana, WV 24870	
<b>Is the system a public utility, according to the Public Service Commission rule?</b>		Yes	
<b>Date of Most Recent Source Water Assessment Report:</b>		June 2003	
<b>Date of Most Recent Source Water Protection Plan:</b>		April 2011	
<b>Population served directly:</b>		Residential	1,122
		Commercial	107
		Public Authorities	8
		<b>Total</b>	<b>1,237 Customers</b>
<b>Bulk Water Purchaser Systems:</b>	<b>System Name</b>	<b>PWSID Number</b>	<b>Population</b>
	Kopperston PSD	WV3305510	434 Customers
<b>Total Population Served by the Utility:</b>		3,018	
<b>Does the utility have multiple source water protection areas (SWPAs)?</b>		No	
<b>How many SWPAs does the utility have?</b>		1	

**WATER TREATMENT AND STORAGE**

As required, the Oceana Municipal Water Department has assessed their system (e.g., treatment capacity, storage capacity, unaccounted for water, contingency plans) to evaluate their ability to provide drinking water and protect public health.

**Table 2** contains information on the water treatment methods and capacity of the utility. Information about the surface water sources from which the Oceana Municipal Water Department draws water can be found in **Table 3**. If the utility draws water from any groundwater sources to blend with the surface water, the information about these ground water sources can be found in **Table 4**. These tables can be found on the following pages.

**Table 2 – Oceana Municipal Water Department Water Treatment Information**

<b>Water Treatment Process (List in order)</b>	Raw Water Intake ↓ Settling Basin ↓ Filters ↓ Post Chlorination ↓ Clear Well ↓ High Service Pumps
<b>Current Treatment Capacity (gal/day)</b>	1,000,000 GPD
<b>Current Average Production (gal/day)</b>	650,000 GPD
<b>Maximum Quantity Treated and Produced (gal/day)</b>	1,000,000 GPD
<b>Minimum Quantity Treated and Produced (gal/day)</b>	0 GPD
<b>Average Hours of Operation in One Day</b>	16 hours per day
<b>Maximum Hours of Operation in One Day</b>	24 hours per day
<b>Minimum Hours of Operation in One Day</b>	0 hours per day
<b>Number of Storage Tanks Maintained</b>	5
<b>Total Gallons of Treated Water Storage (gal)</b>	1,000,000 GAL
<b>Total Gallons of Raw Water Storage (gal)</b>	0 GAL

**Table 3 –Oceana Municipal Water Department Water Sources**

<b>Intake Name</b>	<b>SDWIS #</b>	<b>Local Name</b>	<b>Describe Intake</b>	<b>Name of Water Source</b>	<b>Date Constructed/ Modified</b>	<b>Frequency of Use (Primary/ Backup/ Emergency)</b>	<b>Activity Status (Active/ Inactive)</b>
Laurel Fork	–	Laurel Fork	Screened pipe.	Laurel Fork	1990’s	Primary	Active

**Table 4 –Oceana Municipal Water Department Groundwater Sources**

<b>Does the utility blend with groundwater?</b>	No
---	----

## Response Networks and Communication

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

**Table 5 – Oceana Municipal Water Department Water Shortage Response Capability**

<b>Can the utility isolate or divert contamination from the intake or groundwater supply?</b>	No
<b>Describe the utility’s capability to isolate or divert potential contaminants:</b>	N/A
<b>Can the utility switch to an alternative water source or intake that can supply full capacity at any time?</b>	Interconnection under Construction
<b>Describe in detail the utility’s capability to switch to an alternative source:</b>	The Oceana Municipal Water Department can switch to RMS PSD with opening and a gate valve on the emergency transfer station.
<b>Can the utility close the water intake to prevent contamination from entering the water supply?</b>	Yes
<b>How long can the intake stay closed?</b>	The intake can stay closed as long as RMS PSD can supply water. (See Note Below)
<b>Describe the process to close the intake:</b>	Closing gate valves.
<b>Describe the treated water storage capacity of the water system:</b>	The Oceana Municipal Water Department has six (5) storage tanks totaling 1,000,000 gallons of treated water storage.
<b>Is the utility a member of WVRWA Emergency Response Team?</b>	Yes
<b>Is the utility a member of WV-WARN?</b>	Yes
<b>List any other mutual aid agreements to provide or receive assistance in the event of an emergency:</b>	None

Note: In the event the primary source is contaminated, it is recommended that the Utility evaluate the water storage on hand at that time and determine that the alternative source is sufficient to sustain the water system for the duration of shutdown.

## Operation During Loss of Power

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

**Table 6 – Generator Capacity**

<p><b>What is the type and capacity of the generator needed to operate during a loss of power?</b></p>	<p>The emergency capacity for the treatment plant is 220kW. A 500kW 800A generator is needed to provide standby power.</p>	
<p><b>Can the utility connect to generator at intake/wellhead? If yes, select a scenario that best describes system.</b></p>	<p>No; the generator would need to be able to connect to an emergency quick connect power connection to provide power service to the intake.</p>	
<p><b>Can the utility connect to generator at treatment facility? If yes, select a scenario that best describes system.</b></p>	<p>No; a stationary 550kW generator for the treatment plant and high service pumps is required.</p>	
<p><b>Can the utility connect to a generator in distribution system? If yes, select a scenario that best describes system.</b></p>	<p>No; the generator would need to be able to connect to an emergency quick connect power connection to provide power service.</p>	
<p><b>Does the utility have adequate fuel on hand for the generator?</b></p>	<p style="text-align: center;">Yes</p>	
<p><b>What is your on-hand fuel storage and how long will it last operating at full capacity?</b></p>	<p><b>Gallons</b></p>	<p><b>Hours</b></p>
	<p>2,000</p>	<p>–</p>

**Table 6 – Generator Capacity (Continued)**

Provide a list of suppliers that could provide generators and fuel in the event of an emergency:		Supplier	Contact Name	Phone Number
	Generator	Cummins	Crosspoint	(304) 769-1012
	Fuel	RT Rogers	Roger Basler	(304) 466-1733
<b>Does the utility test the generator(s) periodically?</b>		N/A		
<b>Does the utility routinely maintain the generator?</b>		N/A		
<b>If no scenario describing the ability to connect to generator matches the utility’s system or if utility does not have ability to connect to a generator, describe plans to respond to power outages:</b>		During a power outage the utility does not have a backup source of power. The utility has inquired about procuring emergency generators for the pump station and treatment facility.		

If a portable generator is available through the respective county’s 911 or Emergency Center, it is assumed the generator is available only for the utility for which this source water protection plan is prepared. If more than one utility in the county uses the portable generator during power outages, it is suggested that each utility procure a generator specifically to protect their system during a power outage.

**Future Water Supply Needs**

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

**Table 7 – Future Water Supply Needs for the Oceana Municipal Water Department**

<p><b>Is the utility able to meet water demands with the current production capacity over the next 5 years? If so, explain how you plan to do so.</b></p>	<p>Yes; there is one proposed extension for the community of Clear Fork. Increase in customer demand is expected to be minimal and the plant is expected to remain under maximum treatment capacity.</p>
<p><b>If not, describe the circumstances and plans to increase production capacity:</b></p>	<p>N/A</p>

**Water Loss Calculation**

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

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

**Table 8 – Water Loss Information**

<b>Total Water Pumped (gal)</b>		219,507,000
<b>Total Water Purchased (gal)</b>		0
<b>Total Water Pumped and Purchased (gal)</b>		219,507,000
<b>Water Loss Accounted for Except Main Leaks (gal)</b>	<b>Mains, Plants, Filters, Flushing, etc.</b>	1,500,000
	<b>Fire Department</b>	200,000
	<b>Back Washing</b>	6,435,000
	<b>Blowing Settling Basins</b>	600,000
<b>Total Water Loss Accounted For Except Main Leaks</b>		8,735,000
<b>Water Sold- Total Gallons (gal)</b>		85,205,000
<b>Unaccounted For Lost Water (gal)</b>		125,567,000
<b>Water lost from main leaks (gal)</b>		500,000
<b>Total gallons of Unaccounted for Lost Water and Water Lost from Main Leaks (gal)</b>		126,067,000
<b>Total Percent Unaccounted For Water and Water Lost from Main Leaks (%)</b>		<b>57 %</b>
<b>If total percentage of Unaccounted for Water is greater than 15%, please describe any measures that could be taken to correct this problem:</b>		Increased inspection and leak detection, and making necessary repairs.

## EARLY WARNING MONITORING SYSTEM

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

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



indicative of a contamination event and inform the needed response.

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

The Oceana Municipal Water Department has analyzed its ability to monitor for and detect potential contaminants that could impact its source water. Information regarding this utility's early warning monitoring system capabilities can be found in **Table 9** and in **Appendix A**.

**Table 9 – Early Warning Monitoring System Capabilities**

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

## **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 its primary source of supply is detrimentally affected by contamination, release, spill event or other reason. These alternatives may include a secondary intake, two days of raw or treated water storage, interconnections with neighboring systems, or other options identified on a local level. Note: a secondary intake would draw water supply from a substantially different location or water source.

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

## **CONCLUSION & RECOMMENDATIONS**

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

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

Based on the evaluation of the existing water system, Oceana Municipal Water Department maintains an interconnection with RMSPSD that can supply water to sustain Oceana's water system intermittently. RMSPSD does not have the treatment capacity to maintain the day-to-day average water needs for both systems, however, RMSPSD's water production plus available treated water storage can sustain the systems for a short period of time while contaminants are removed or pass by

the primary intake. It is recommended that Oceana install an early warning monitoring system upstream of the surface water intake on the Laurel Fork (as described in Appendix A, “Early Warning Monitoring System Forms”) and purchase a 500 kW stationary emergency generator with an 800A automatic transfer switch to provide power service to the treatment facility and raw water intake. The early warning system shall protect the system from potential contaminants detected in the primary surface water source, which would also provide source water protection for the Oceana Municipal Water Department raw water intake.

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

### **RECOMMENDED ALTERNATIVE COST ESTIMATE**

1	LS	500 kW Stationary Generator	\$92,750	\$92,750
1	LS	Early Warning Detection Equipment	\$50,000	\$50,000
1	LS	Operation & Maintenance for Early Warning System	\$750	\$750
<b>TOTAL</b>				<b>\$143,500</b>

**ASSUMPTIONS:** *The early warning detection equipment, as well as operation and maintenance, will be as described in Appendix A. The stationary 500 kW emergency generator would have the capability to provide power service to the raw water intake and treatment facility.*

## **APPENDIX A – EARLY WARNING MONITORING SYSTEM FORMS**

**Select and Attach the Appropriate Form for Your System.**

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

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

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

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

**Note: You may need to fill out and attach more than one form to your Protection Plan, depending on your current situation.**

**Appendix A - Form B**

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

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

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

## **APPENDIX B – FEASIBILITY STUDY MATRIX**

Alternative Strategy Description	Economic Criteria					Technical Criteria							Environmental Criteria					Final Score	Total Capital Cost	Comments	
	Operation & Maintenance Costs	Capital Costs	Total	Total %	Weighted Total	Permitting	Flexibility	Resilience	Institutional Requirements	Total	Total %	Weighted Total	Environmental Impacts	Aesthetic Impacts	Stakeholder Issues	Total	Total %				Weighted Total
Backup Intake	3.0	2.3	5.3	88.9%	35.6%	2.8	3.0	2.7	2.7	11.1	92.8%	37.1%	3.0	3.0	2.0	8.0	88.9%	17.8%	90.4%	\$2,394,375.00	Backup Intake on Clear Fork
Interconnect	3.0	3.0	6.0	100.0%	40.0%	3.0	3.0	3.0	3.0	12.0	100.0%	40.0%	3.0	3.0	3.0	9.0	100.0%	20.0%	100.0%	\$0.00	Interconnection with Ravenscliff-McGraws-Saulsville PSD is currently in place and can supply water intermittently.
Treated Water Storage	3.0	2.3	5.3	88.9%	35.6%	2.8	3.0	3.0	2.7	11.5	95.6%	38.2%	3.0	2.0	2.0	7.0	77.8%	15.6%	89.3%	\$1,052,625.00	The Oceana Municipal Water Department needs 1,025,000 additional gallons of treated water to meet the minimum treated water storage capacity.
Raw Water Storage	3.0	2.3	5.3	88.9%	35.6%	2.8	3.0	3.0	2.7	11.5	95.6%	38.2%	3.0	2.0	2.0	7.0	77.8%	15.6%	89.3%	\$1,726,700.00	The Oceana Municipal Water Department would require 2,026,000 gallons of raw water storage to have a 2 day supply of raw water.
Other (Specify)	3.0	0.0	3.0	50.0%	20.0%	0.0	0.0	0.0	0.0	0.0	0.0%	0.0%	0.0	0.0	0.0	0.0	0.0%	0.0%	20.0%	\$0.00	No Comment

Scoring:

- 0 - Not feasible. Criterion cannot be met by this alternative and removes the alternative from further consideration.
- 1 - Feasible but difficult. Criterion represents a significant barrier to successful implementation but does not eliminate it from consideration.
- 2 - Feasible. Criterion can be met by the alternative.
- 3 - Very Feasible. Criterion can be easily met by the alternative.

## **APPENDIX C – ANALYSIS OF ALTERNATIVES**

## ANALYSIS OF ALTERNATIVES

The Oceana Municipal Water Department currently has one (1) existing alternative, an interconnection with RMSPSD. The RMSPSD interconnection can provide an intermittent backup water source to the primary source of supply as described below.

### 1. Backup Intake

The Clear Fork stream located approximately 8,000 feet north of the Oceana Municipal Water Treatment plant was selected as a backup intake. The stream flow of Clear Fork was found using the WV DEP database. The data is calculated below.

$$30 \text{ cubic feet per second} * \left( \frac{448.83 \text{ gpm}}{1 \text{ cfs}} \right) = 13,465 \text{ gpm}$$

The minimum required capacity for the treatment facility is 700 gallons per minute, which is satisfied by Clear Fork. The construction of a backup intake located on Clear Fork approximately 8,000 feet downstream of the existing intake on Laurel Fork including 8,000 feet of 8" raw water line from the intake to the water treatment facility was considered during the feasibility analysis. A cost analysis is provided in **Appendix D**.

### 2. Interconnection

The Oceana Municipal Water Department is currently constructiong an interconnected with the RMSPSD. The RMSPSD water treatment facility has a design capacity of 1,000,000 gallons per day and produces an average 400,000 gallons per day. The Oceana Municipal Water Department currently produces an average 650,000 gallons per day. The following calculation shows the required production from RMSPSD based on average production:

$$400,000 \text{ GPD} + 650,000 \text{ GPD} = 1,050,000 \text{ GPD}$$

If Oceana were to utilize the interconnection as an alternative source, the required average production from RMSPSD is 1,050,000 gallons per day which is greater than the design treatment capacity of the RMSPSD water treatment plant. Based on this evaluation, RMSPSD can be utilized as an intermittent source of water in the event that the primary intake is contaminated. This would require coordination between the utilities.

### 3. Treated Water Storage

The Oceana Municipal Water Department treated water storage capacity for the system consists of 5 water storage tanks totaling 1,000,000 gallons. On average, the water treatment facility produces 650,000 gallons per day. The maximum produced by the water treatment facility in a twenty four (24) hour period from April 2014 to April 2015 was 1,000,000 gallons per day, according to monthly operating reports provided by the Oceana Municipal Water Department.

Senate Bill 373 requires utilities to maintain a minimum required treated storage capacity equal to two (2) days of system plant's maximum level of production experienced within the past year. The minimum required treated water storage capacity for the system would be:

$$1,000,000 \text{ gallons per day} * 2 \text{ days} = 2,000,000 \text{ gallons}$$

Therefore, the system currently does not meet the minimum required treated water storage capacity. The remaining minimum required treated water storage capacity for the system would be:

$$2,000,000 \text{ gallons} - 1,000,000 \text{ gallons} = 1,000,000 \text{ gallons}$$

The construction of a 1,025,000 gallon treated water storage tank was analyzed in the feasibility matrix. A cost analysis is provided in **Appendix D**.

### 4. Raw Water Storage

The Oceana Municipal Water Department does not have any raw water storage capacity for the system. As mentioned above, the water treatment facility produces 650,000 gallons per day on average and had maximum production of 1,000,000 gallons per day over the past year.

The minimum required raw water storage capacity is equal to two (2) days of system storage based on the plant's maximum level of production experienced within a twenty four (24) hour period from April 2014 to April 2015. The minimum required raw water storage capacity for the system would be:

$$1,000,000 \text{ gallons per day} * 2 \text{ days} = 2,000,000 \text{ gallons}$$

Thus the construction of a 2,026,000 gallon raw water storage tank was analyzed in the feasibility matrix. A cost analysis is provided in **Appendix D**.

Feasibility Matrix

Oceana Municipal Water Department

PWSID: WV3305516

Date: 7/22/2015

Completed by:

Project Engineer - The Thrasher Group, Inc.

Criteria	Question	Backup Intake	Feasibility	Interconnect	Feasibility	Treated Water Storage	Feasibility	Raw Water Storage	Feasibility	Other (Specify)	Feasibility
<b>Economic Criteria</b>											
What is the total current budget year cost to operate and maintain the PWSU (current budget year)?		\$557,026.00		\$557,026.00		\$557,026.00		\$557,026.00		\$557,026.00	
O and M Costs	Describe the major O&M cost requirements for the alternative?	Labor, power and materials for maintenance	3	Labor, power and materials for maintenance	3	Labor and materials for maintenance	3	Labor and materials for maintenance	3	Labor and materials for maintenance	3
	What is the incremental cost (\$/gal) to operate and maintain the alternative?	\$0.00	3	\$0.00	3	\$0.00	3	\$0.00	3	\$0.00	3
	Cost comparison of the incremental O&M cost to the current budgeted costs (%)	0.00%	3	0.00%	3	0.00%	3	0.00%	3	0.00%	3
<b>O and M-Feasibility Score</b>			<b>3.0</b>		<b>3.0</b>		<b>3.0</b>		<b>3.0</b>		<b>3.0</b>
Describe the capital improvements required to implement the alternative.		Construction of a secondary intake, raw water pump and approximately 8,000 LF of 8" intake line		An interconnection with RMS PSD (under Construction)		Construction of a new 1,025,000 gallon treated water storage tank.		Construction of a new 2,026,000 gallon raw water storage tank.			
Capital Costs	What is the total capital cost for the alternative?	\$2,394,375.00	2	\$0.00	3	\$1,052,625.00	2	\$1,726,700.00	2	\$0.00	0
	What is the annualized capital cost to implement the alternative, including land and easement costs, convenience tap fees, etc. (\$/gal)	0	3	\$0.00	3	\$0.00	3	\$0.00	3	\$0.00	0
	Cost comparison of the alternatives annualized capital cost to the current budgeted costs (%)	0.00%	2	0.00%	3	0.00%	2	0.00%	2	0.00%	0
<b>Capital Cost-Feasibility Score</b>			<b>2.3</b>		<b>3.0</b>		<b>2.3</b>		<b>2.3</b>		<b>0.0</b>
<b>Technical Criteria</b>											
Permitting	Provide a listing of the expected permits required and the permitting agencies involved in their approval.	WV DEP, WV DNR, ACOE, WV SHPO, US FWS, WV DOH and County Floodplain	3	N/A	3	WV DEP, WV DNR, ACOE, WV SHPO, US FWS, WV DOH and County Floodplain	3	WV DEP, WV DNR, ACOE, WV SHPO, US FWS, WV DOH and County Floodplain	3		0
		WV DEP (90 days), WV DNR (60 days), ACOE (90 days), WV SHPO (60 days), US FWS (60 days), WV DOH (90 days) and County Floodplain (90 days)	3	N/A	3	WV DEP (90 days), WV DNR (60 days), ACOE (90 days), WV SHPO (60 days), US FWS (60 days), WV DOH (90 days) and County Floodplain (90 days)	3	WV DEP (90 days), WV DNR (60 days), ACOE (90 days), WV SHPO (60 days), US FWS (60 days), WV DOH (90 days) and County Floodplain (90 days)	3		0
	Describe the major requirements in obtaining the permits (environmental impact studies, public hearings, etc.)	Environmental impact studies.	2	N/A	3	Environmental impact studies.	2	Environmental impact studies.	2		0
	What is the likelihood of successfully obtaining the permits?	Good	3	N/A	3	Good	3	Good	3		0
	Does the implementation of the alternative require regulatory exceptions or variances?	No	3	N/A	3	No	3	No	3		0
<b>Permitting-Feasibility Score</b>			<b>2.8</b>		<b>3.0</b>		<b>2.8</b>		<b>2.8</b>		<b>0.0</b>
Flexibility	Will the alternative be needed on a regular basis or only used intermittently?	Permanently	3	Intermittently	3	Intermittently	3	Intermittently	3		0
	How will implementing the alternative affect the PWSU's current method of treating and delivering potable water including meeting Safe Drinking Water Act regulations? (ex. In the case of storage, will the alternative increase the likelihood of disinfection byproducts?)	No impact	3	N/A	3	The alternative will add 1,025,000 gallons of treated water storage to the system, and will not have any other impact.	3	The alternative will add 2,026,00 gallons of raw water storage to the system, and will not have any other impact.	3		0
<b>Flexibility-Feasibility Score</b>			<b>3.0</b>		<b>3.0</b>		<b>3.0</b>		<b>3.0</b>		<b>0.0</b>

Criteria	Question	Backup Intake	Feasibility	Interconnect	Feasibility	Treated Water Storage	Feasibility	Raw Water Storage	Feasibility	Other (Specify)	Feasibility
Resilience	Will the alternative provide any advantages or disadvantages to meeting seasonal changes in demand?	Yes	3	N/A	3	Yes	3	Yes	3		0
	How resistant will the alternative be to extreme weather conditions such as drought and flooding?	Drought may limit the availability of water.	2	N/A	3	Drought may limit the availability of water.	3	Drought may limit the availability of water.	3		0
	Will the alternative be expandable to meet the growing needs of the service area?	Yes	3	N/A	3	Yes	3	Yes	3		0
<b>Resilience-Feasibility Score</b>			<b>2.7</b>		<b>3.0</b>		<b>3.0</b>		<b>3.0</b>		<b>0.0</b>
Institutional Requirements	Identify any agreements or other legal instruments with governmental entities, private institutions or other PWSU required to implement the alternative.	None	3	N/A	3	None	3	None	3		0
	Are any development/planning restrictions in place that can act as a barrier to the implementation of the alternative.	No	3	N/A	3	No	3	No	3		0
	Identify potential land acquisitions and easements requirements.	Easements (permanent and temporary) may be required for the construction of the intake line.	2	N/A	3	Property acquisition would be required for the tank.	2	Property acquisition would be required for the tank.	2		0
<b>Institutional Requirements-Feasibility Score</b>			<b>2.7</b>		<b>3.0</b>		<b>2.7</b>		<b>2.7</b>		<b>0.0</b>
<b>Environmental Criteria</b>											
Environmental Impacts	Identify any environmentally protected areas or habitats that might be impacted by the alternative.	None are known.	3	N/A	3	None are known.	3	None are known.	3		0
<b>Environmental Impacts-Feasibility Score</b>			<b>3.0</b>		<b>3.0</b>		<b>3.0</b>		<b>3.0</b>		<b>0.0</b>
Aesthetic Impacts	Identify any visual or noise issues caused by the alternative that may affect local land uses?	Fencing and a control panel for the pump station would be constructed, and construction would cause temporary noise issues.	3	N/A	3	Construction would cause temporary noise issues, and some visual impact would be made by the tank.	2	Construction would cause temporary noise issues, and some visual impact would be made by the tank.	2		0
	Identify any mitigation measures that will be required to address aesthetic impacts?	The construction would need to be as quick as possible.	3	N/A	3	The construction would need to be as quick as possible.	2	The construction would need to be as quick as possible.	2		0
<b>Aesthetic Impacts-Feasibility Score</b>			<b>3.0</b>		<b>3.0</b>		<b>2.0</b>		<b>2.0</b>		<b>0.0</b>
Stakeholder Issues	Identify the potential stakeholders affected by the alternative.	Water customers and land owners.	2	N/A	3	Water customers and land owners.	2	Water customers and land owners.	2		0
	Identify the potential issues with stakeholders for and against the alternative.	A rate increase may be required to implement construction, and possible land ownership issues may arise.	2	N/A	3	A rate increase may be required to implement construction, and possible land ownership issues may arise.	2	A rate increase may be required to implement construction, and possible land ownership issues may arise.	2		0
	Will stakeholder concerns represent a significant barrier to implementation (or assistance) of the alternative?	No	2	N/A	3	No	2	No	2		0
<b>Stakeholder Issues-Feasibility Score</b>			<b>2.0</b>		<b>3.0</b>		<b>2.0</b>		<b>2.0</b>		<b>0.0</b>
<b>Comments</b>		Backup Intake on Clear Fork		Interconnection with Ravenciff-McGraws-Saulsville PSD		The Oceana Municipal Water Department needs 1,025,000 additional gallons of treated water to meet the minimum treated water storage capacity.		The Ocean Municipal Water Department would require 2,026,000 gallons of raw water storage to have a 2 day supply of raw water.		No comment	

## Matrix Explanation

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

Economic factors evaluated in the matrix include all information needed to fund the alternative source. The matrix considers the current utility budget available per the latest (2014) annual report, operation and maintenance costs for each alternative, and the capital needed to construct each alternative. Supporting documentation is included in Appendix D of the report which provides a breakdown of costs for each alternative that are used as capital costs in the matrix. The economic feasibility of each alternative is compared on a cost per gallon ratio. This ratio is determined by dividing the capital cost of the improvements by the total number of gallons of water produced per year. An average of the economic feasibility factors is then calculated and entered into the overall feasibility matrix found in Appendix B.

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

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

## **APPENDIX D – SUPPORTING DOCUMENTATION**

## EARLY WARNING MONITORING COST ESTIMATE

Qty.		Description	Unit Price	Total Cost
1	EA	Back Panel / Trough / Level (required)	\$ 4,350.00	\$ 4,350
1	EA	Probe Module SC1000 (6 sensors)	\$ 1,344.00	\$ 1,344
1	EA	Internal Card SC1000 (4 mA inputs)	\$ 879.00	\$ 879
1	EA	Display Module SC1000	\$ 2,770.00	\$ 2,770
1	EA	Conductivity Sensor	\$ 860.00	\$ 860
1	EA	FP360 SC Sensor, 500ppb, SS, 1.5 m Cable	\$ 17,480.00	\$ 17,480
1	EA	ORP Sensor	\$ 880.00	\$ 880
1	EA	pH Sensor, Ryton	\$ 800.00	\$ 800
1	LS	Installation	\$ 20,365.00	\$ 20,365
<b>TOTAL =</b>				<b>\$ 50,000</b>

## OPERATION & MAINTENANCE COST ESTIMATE

Qty.		Description	Unit Price	Total Cost
1	LS	Annual O&M Cost	\$ 750.00	\$ 750
<b>TOTAL =</b>				<b>\$ 750</b>

*In addition to the early warning system, the Oceana Municipal Water Department should establish a baseline water quality for their sources.*

GPM of Existing Pump **900 GPM**

Intake Pricing Parameters	Cost per GPM
If the GPM needed is Greater than or Equal to 1,000 GPM (12" Pipe)	\$ 1,500.00
If the GPM needed is between 700 GPM to 999 GPM (8" Pipe)	\$ 1,750.00
If the GPM needed is less than 700 GPM (6" Pipe)	\$ 2,000.00
<b>Intake pricing includes acreage, pumps, screens, concrete, raw water well, electricity, etc.</b>	<b>\$ 1,575,000.00</b>

Additional Environmental Costs		
Mussel Survey	No	\$ -
Permits	Yes	\$ 7,500.00
		<b>\$ 7,500.00</b>

Piping Size	Cost per Foot	Footage	Totals
6" Pipe	\$ 34.00		\$ -
8" Pipe	\$ 37.00	9,000	\$ 333,000.00
12" Pipe	\$ 60.00		\$ -
			<b>\$ 333,000.00</b>

Totals	
Intake	\$ 1,575,000.00
Permitting	\$ 7,500.00
Piping	\$ 333,000.00
Additional Fees	\$ 478,875.00
<b>Total Cost</b>	<b>\$ 2,394,375.00</b>

Assumptions
Water will be taken from Clear Fork, adjacent to the Town of Oceana. Previous usages of the stream have confirmed the capacity to be adequate.
According to the WV DNR, Clear Fork in Wyoming County is not a mussel stream and does not require a survey to be completed during permitting. Permits required would include WV DEP, WV DNR, ACOE, WV SHPO, US FWS, WV DOH and County Floodplain.
The piping route is included in the following page of supporting documentation.
Additional fees are predicted to be 25% of overall cost. The fees include legal, engineering and accounting needs.

<b>TREATED WATER TANK COST</b>				
<b>Gallons</b>	<b>Tank Dimension</b>	<b>Model Number</b>	<b>Cost</b>	<b>Cost Per Gallon</b>
105,000	25.17' dia. x 28.43' sidewall height	AQUASTORE tank Model 25 28 - SSWT	\$ 155,000	\$ 1.48
209,000	30.77' dia. x 37.59' sidewall height	AQUASTORE tank Model 31 38 - SSWT	\$ 225,000	\$ 1.08
297,000	39.16' dia. x 33.01' sidewall height	AQUASTORE tank Model 39 33 - SSWT	\$ 285,000	\$ 0.96
438,000	47.55' dia. x 33.01' sidewall height	AQUASTORE tank Model 48 33 - SSWT	\$ 345,000	\$ 0.79
491,000	50.35' dia. x 33.01' sidewall height	AQUASTORE tank Model 50 33 - SSWT	\$ 365,000	\$ 0.74
607,000	55.95' dia. x 33.01' sidewall height	AQUASTORE tank Model 56 33 - SSWT	\$ 425,000	\$ 0.70
691,000	64.34' dia. x 28.43' sidewall height	AQUASTORE tank Model 64 28 - SSWT	\$ 470,000	\$ 0.68
816,000	69.93' dia. x 28.43' sidewall height	AQUASTORE tank Model 70 28 - SSWT	\$ 510,000	\$ 0.63
948,000	69.93' dia. x 33.01' sidewall height	AQUASTORE tank Model 70 33 - SSWT	\$ 555,000	\$ 0.59
1,025,000	72.73' dia. x 33.01' sidewall height	AQUASTORE tank Model 73 33 - SSWT	\$ 595,000	\$ 0.58
1,260,000	72.73' dia. x 33.01' sidewall height	AQUASTORE tank Model 73 33 - SSWT	\$ 695,000	\$ 0.55
1,453,000	97.91' dia. x 28.43' sidewall height	AQUASTORE tank Model 98 28- SSWT	\$ 790,000	\$ 0.54
1,601,000	97.91' dia. x 28.43' sidewall height	AQUASTORE tank Model 98 28- SSWT	\$ 870,000	\$ 0.54
1,789,000	103.5' dia. x 28.43' sidewall height	AQUASTORE tank Model 104 28- SSWT	\$ 945,000	\$ 0.53
2,026,000	120.29' dia. x 23.84' sidewall height	AQUASTORE tank Model 120 24- SSWT	\$ 1,052,000	\$ 0.52

<b>COSTS OF ADDITIONAL ITEMS AND ASSUMPTIONS</b>	
<b>Access Road and Site Preparation</b>	\$ 75,000
<b>Yard Piping and Vault</b>	13%
<b>Bonds/Permits</b>	\$ 20,000
<b>Fencings</b>	\$ 35,000
<b>Engineering/Accounting/Legal Fees</b>	25%
<b>Level-Sensing and Measuring Equipment</b>	\$ 10,000
<b>Rock Excavation of Foundation (if encountered)</b>	5%
<b>ASSUMPTIONS:</b> Cost are based on a standpipe glass lined tank. Price include access roads and site preparation (assuming land would need to be purchased for the tank site), telemetry, excavation in rock (% of Tank Cost), valve vault and piping (13% of tank Cost), fencing (Lump Sum). Does not include additional waterline from site to water system. Fees for engineering, legal and accounting services will be 25 percent of the overall project cost.	

<b>TOTAL COST (INCLUDING ADDITIONAL ITEMS) OF TREATED WATER STORAGE</b>				
<b>Gallons</b>	<b>Tank Dimension</b>	<b>Model Number</b>	<b>Cost</b>	<b>Cost Per Gallon</b>
105,000	25.17' dia. x 28.43' sidewall height	AQUASTORE tank Model 25 28 - SSWT	\$ 403,625	\$ 3.84
209,000	30.77' dia. x 37.59' sidewall height	AQUASTORE tank Model 31 38 - SSWT	\$ 506,875	\$ 2.43
297,000	39.16' dia. x 33.01' sidewall height	AQUASTORE tank Model 39 33 - SSWT	\$ 595,375	\$ 2.00
438,000	47.55' dia. x 33.01' sidewall height	AQUASTORE tank Model 48 33 - SSWT	\$ 683,875	\$ 1.56
491,000	50.35' dia. x 33.01' sidewall height	AQUASTORE tank Model 50 33 - SSWT	\$ 713,375	\$ 1.45
607,000	55.95' dia. x 33.01' sidewall height	AQUASTORE tank Model 56 33 - SSWT	\$ 801,875	\$ 1.32
691,000	64.34' dia. x 28.43' sidewall height	AQUASTORE tank Model 64 28 - SSWT	\$ 868,250	\$ 1.26
816,000	69.93' dia. x 28.43' sidewall height	AQUASTORE tank Model 70 28 - SSWT	\$ 927,250	\$ 1.14
948,000	69.93' dia. x 33.01' sidewall height	AQUASTORE tank Model 70 33 - SSWT	\$ 993,625	\$ 1.05
1,025,000	72.73' dia. x 33.01' sidewall height	AQUASTORE tank Model 73 33 - SSWT	\$ 1,052,625	\$ 1.03
1,260,000	72.73' dia. x 33.01' sidewall height	AQUASTORE tank Model 73 33 - SSWT	\$ 1,200,125	\$ 0.95
1,453,000	97.91' dia. x 28.43' sidewall height	AQUASTORE tank Model 98 28- SSWT	\$ 1,340,250	\$ 0.92
1,601,000	97.91' dia. x 28.43' sidewall height	AQUASTORE tank Model 98 28- SSWT	\$ 1,458,250	\$ 0.91
1,789,000	103.5' dia. x 28.43' sidewall height	AQUASTORE tank Model 104 28- SSWT	\$ 1,568,875	\$ 0.88
2,026,000	120.29' dia. x 23.84' sidewall height	AQUASTORE tank Model 120 24- SSWT	\$ 1,726,700	\$ 0.85

<b>RAW WATER TANK COST</b>				
<b>Gallons</b>	<b>Tank Dimension</b>	<b>Model Number</b>	<b>Cost</b>	<b>Cost Per Gallon</b>
105,000	25.17' dia. x 28.43' sidewall height	AQUASTORE tank Model 25 28 - SSWT	\$ 155,000	\$ 1.48
209,000	30.77' dia. x 37.59' sidewall height	AQUASTORE tank Model 31 38 - SSWT	\$ 225,000	\$ 1.08
297,000	39.16' dia. x 33.01' sidewall height	AQUASTORE tank Model 39 33 - SSWT	\$ 285,000	\$ 0.96
438,000	47.55' dia. x 33.01' sidewall height	AQUASTORE tank Model 48 33 - SSWT	\$ 345,000	\$ 0.79
491,000	50.35' dia. x 33.01' sidewall height	AQUASTORE tank Model 50 33 - SSWT	\$ 365,000	\$ 0.74
607,000	55.95' dia. x 33.01' sidewall height	AQUASTORE tank Model 56 33 - SSWT	\$ 425,000	\$ 0.70
691,000	64.34' dia. x 28.43' sidewall height	AQUASTORE tank Model 64 28 - SSWT	\$ 470,000	\$ 0.68
816,000	69.93' dia. x 28.43' sidewall height	AQUASTORE tank Model 70 28 - SSWT	\$ 510,000	\$ 0.63
948,000	69.93' dia. x 33.01' sidewall height	AQUASTORE tank Model 70 33 - SSWT	\$ 555,000	\$ 0.59
1,025,000	72.73' dia. x 33.01' sidewall height	AQUASTORE tank Model 73 33 - SSWT	\$ 595,000	\$ 0.58
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<b>COSTS OF ADDITIONAL ITEMS AND ASSUMPTIONS</b>	
<b>Access Road and Site Preparation</b>	\$ 75,000
<b>Yard Piping and Vault</b>	13%
<b>Bonds/Permits</b>	\$ 20,000
<b>Fencings</b>	\$ 35,000
<b>Engineering/Accounting/Legal Fees</b>	25%
<b>Level-Sensing and Measuring Equipment</b>	\$ 10,000
<b>Rock Excavation of Foundation (if encountered)</b>	5%
<b>ASSUMPTIONS:</b> Cost are based on a standpipe glass lined tank. Price include access roads and site preparation (assuming land would need to be purchased for the tank site), telemetry, excavation in rock (% of Tank Cost), valve vault and piping (13% of tank Cost), fencing (Lump Sum). Does not include additional waterline from site to water system. Fees for engineering, legal and accounting services will be 25 percent of the overall project cost.	

<b>TOTAL COST (INCLUDING ADDITIONAL ITEMS) OF RAW WATER STORAGE</b>				
<b>Gallons</b>	<b>Tank Dimension</b>	<b>Model Number</b>	<b>Cost</b>	<b>Cost Per Gallon</b>
105,000	25.17' dia. x 28.43' sidewall height	AQUASTORE tank Model 25 28 - SSWT	\$ 403,625	\$ 3.84
209,000	30.77' dia. x 37.59' sidewall height	AQUASTORE tank Model 31 38 - SSWT	\$ 506,875	\$ 2.43
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1,601,000	97.91' dia. x 28.43' sidewall height	AQUASTORE tank Model 98 28- SSWT	\$ 1,458,250	\$ 0.91
1,789,000	103.5' dia. x 28.43' sidewall height	AQUASTORE tank Model 104 28- SSWT	\$ 1,568,875	\$ 0.88
2,026,000	120.29' dia. x 23.84' sidewall height	AQUASTORE tank Model 120 24- SSWT	\$ 1,726,700	\$ 0.85

PWS_ID	SYSTEMNAME	County	GEN_EXIST	GEN_NUM	GEN_FACILITY	GEN_LOC	GEN_KVA	GEN_KW	AMP_LOAD	AMP_LOAD_BASIS	VOLTS	PHASES	FUEL_TYPE	FUEL_TANK	F_TANK_SIZE	GEN_CON_PNT	GEN_CABLE_SIZE	GEN_CABLE_NOTE	GEN_CABLE_LENGTH	GEN_C_LEN_NOTE	OTHER_INFO	DISTRICT
WV3305516	OCEANA COMMUNITY OF	WYOMING	NO	1	TREATMENT PLANT	TREATMENT PLANT AT OCEANA	300	240	300	MOTOR LOADING WITH HEAT AND LIGHTING LOAD	277 / 480	3 PHASE WYE	DIESEL	SEPARATE	250 GALLON	CONNECT AT JUNCTION BOX LOCATED OUTSIDE OF THE BUILDING	4 / 0 COPPER	TYPE W PORTABLE POWER CABLE	50 FEET	50 FEET TOTAL LENGTH OF CABLE ( 4 CONDUCTORS WITH GROUND )	(A) WILL NEED ELECTRICIAN (B) 80% POWER FACTOR USED IN CALCULATIONS (C) GENERATOR CAPABLE OF FULL LOAD OF 360 AMPS (D) NO EXISTING TRANSFER SWITCH	DIST1
WV3305516	OCEANA COMMUNITY OF	WYOMING	NO	1	BOOSTER PUMP STATION	BOOSTER STATION LOCATED AT THE HIGH SCHOOL	45	36	54	FULL LOAD FROM DEMAND METER (INDICATED 32 AMPS)	277 / 480	3 PHASE WYE	DIESEL	ATTACHED	50 GALLON	CONNECT AT OUTSIDE DISCONNECT BOX	# 6 COPPER	TYPE W, PORTABLE POWER CABLE	50 FEET	TOTAL LENGTH OF CABLE IS 50 FEET ( 4 CONDUCTOR WITH GROUND )	(A) HAVE ACCESS TO ELECTRICIAN (B) 80% POWER FACTOR USED IN CALCULATIONS ( C ) NO TRANSFER SWITCH (D) POWER CO. TRANSFORMER SIZES: (3) - 25 KVA UNITS @ 90 AMPS FULL LOAD (E) MAXIMUM MOTOR IS 20 HP (F) NO FUEL STORAGE ON SITE	DIST1

## APPENDIX E. SUPPORTING DOCUMENTATION

### Oceana Municipal Water Source Water Protection Team Meeting

Oceana City Hall, 1285 Cook Parkway, Oceana, April 19, 2016, 3 pm

Attendees:

- Mike Morgan, Chief Operator
- Romaine Morgan, Town of Oceana
- Clark Manning, Town of Oceana
- Dean Meadows, Wyoming County 911/OES Director
- James Drake, Oceana Fire Department
- Charles Childers, Oceana Fire Department
- John Beckman, Tetra Tech

Discussed new source water protection regulations in response to Charleston Water Crisis. 2011 source water protection plan must be updated. Updates required every 3 years.

Corrected Town Hall street address for admin office location. Reviewed primary intake location.

Discussed 5 hour time of travel for ZCC and 10 hour time of travel for ZPC.

Reviewed Protection Team Table, corrected member names and contact information. Added Fred Cox from the Wyoming County Health Department who was not able to make the protection team meeting. Also Mayor John Roach.

Discussed PSSCs of past and future concern. In 2000 a tanker truck carrying 7,000 gallons of diesel overturned on Route 10 at Matheny. Solution was to run 10,000 feet of water line to a temporary intake on Laurel Fork above the spill.

Rail traffic in protection watershed is greatly reduced. Rail spur to Kopperston mine is currently inactive. Reduce priority of railroad threat in Section 8 tables. Reviewed Education and Outreach strategies. Plant tours are available on request, but not conducted in recent memory.

Oceana does not currently have a generator at the water plant. They are applying for a grant to purchase a generator large enough to run the water plant. Oceana has had difficulty in the past renting a generator large enough (500 kW) to run their plant. Questioned the Table 12 name and phone number for generator emergency supplier, probably not accurate.

There is no existing interconnection between Ravencliff-McGraws-Saulsville and Oceana. An interconnection is feasible, and may be considered in the future.

Reviewed Appendix C Communication Plan. Mayor Roach will serve as Primary Spokesperson, and Clark Manning will serve as Secondary Spokesperson. Dean Meadows listed as a second backup spokesperson.

Standard procedure is to call DHHR EED Central Office in Beckley and let them handle the emergency notifications. Oceana City Hall has a Facebook page. Jim Cook of the City Council is promoting the Nixle alert cell phone application. Evergreen is a contractor that could be used for hazardous materials cleanup.

Discussed radio station used for alerts. Listed area schools and sensitive populations served by Oceana Wyoming County has a county-wide emergency plan, but not a plan specifically for the water utility.

Resolved to hold a public meeting to present a summary of the source water protection plan at the next Town Council meeting on May 12.

**Oceana Municipal Water Source Water Protection Public Meeting**

Oceana City Hall, 1285 Cook Parkway, Oceana, May 12, 2016, 7 pm

## Attendees:

- Mike Morgan, Chief Operator
- Clark Manning, Town of Oceana
- Charles Childers, Oceana Fire Department
- Jesse Womack, Town Council
- Don Morgan, Town Council
- Bryant Whisenant, Town Council
- John Roach, Mayor
- J.E. Barlow, Oceana Police Department
- Lela Walker, City Attorney
- Homer Evetter, Citizen
- John Beckman, Tetra Tech

Public meeting was held concurrently with regularly scheduled Oceana Town Council meeting. Meeting was open to the public and advertised in the newspaper and at the city hall a week before.

Reviewed source water protection timeline. Discussed Charleston Water Crisis of 2014 and reasons for new source water protection legislation. Discussed update to Oceana's 2011 plan, and incorporation of Thrasher Group's contingency/feasibility study. Reviewed plan table of contents and sections. Noted that past source water protection activities once voluntary have now become mandatory.

Summarized potential significant sources: highway runs close to Laurel Fork – potential for vehicle accidents or toxic spills; machine shops and industrial facilities have stormwater discharge permits to Laurel Fork – potential for oil and chemicals to reach river if not contained; and some residences and facilities upstream of intake are on septic or home aeration units – potential for sewage leaks to reach Laurel Fork.

Summarized contingency plan alternatives: backup intake on Clear Fork, interconnection with Ravenclyff-McGraws-Saulsville PSD; increase treated water storage; and build raw water storage tank.

Discussed 30 minute public notification requirement. Noted Communication Plan in Appendix C with emergency contact information. Reviewed designated primary and secondary spokespeople for Oceana Municipal Water. Primary spokesperson is mayor who will be retiring in June. Received a question from the Town Council about exact penalties for not being able to meet 30 minute notification requirement. Received a question from the City Attorney about available state grants to pay for system improvements that would increase source water protection.

Chief operator Mike Morgan signed protection plan signature page. Tetra Tech will assemble plan final document and submit to DHHR electronically.

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



## Contaminants

Cleaning Products

Automotive Products

Fuel Oil

Furniture Strippers

Oil-based Paints

Sewage

Lawn and Garden Products

Sediments

Pharmaceuticals

## Source Water Links

[www.wvdhhr.org/oehs/eed/swap/](http://www.wvdhhr.org/oehs/eed/swap/)  
[www.epa.gov/safewater/index.html](http://www.epa.gov/safewater/index.html)  
[www.epa.gov/watersense/](http://www.epa.gov/watersense/)  
<http://orsanco.org>

## For Kids

[www.epa.gov/safewater/kids/index.html](http://www.epa.gov/safewater/kids/index.html)  
[www.epa.gov/watersense/kids/index.html](http://www.epa.gov/watersense/kids/index.html)  
[www.groundwater.org/kids/](http://www.groundwater.org/kids/)



## Contacts

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

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



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

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

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

### Do Your Part to Protect Source Water

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



### Do Your Part to Conserve Source Water

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



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