2015

# Berkeley County Public Service Sewer District Stormwater Financing Feasibility Study

*Prepared for*

Berkeley County Public Service Sewer District

*Prepared by*

University of Maryland Environmental Finance Center for the National Fish & Wildlife Foundation

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Lastly, we would like to remember Todd Doub, Berkeley County Engineering Department Director, who passed away unexpectedly during the course of this project. Todd was so very helpful to the EFC Project Team and will be missed by all that knew him.

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# Executive Summary

### *Project Overview and Approach*

The Environmental Finance Center (EFC) at the University of Maryland began communicating with the Berkeley County Public Service Sewer District (PSSD) in May of 2014, brainstorming ways to develop a program to comply with the PSSD's Municipal Separate Storm Sewer System (MS4) Phase II permit under unique and challenging circumstances. A project developed from this initial dialogue beginning in the fall of 2014, and focused on the EFC providing technical assistance to the PSSD on developing a County-scale stormwater management program with an associated financing strategy. This effort was funded by the National Fish and Wildlife Foundation's (NFWF) Chesapeake Bay Stewardship Fund Technical Assistance Program. Through this program, NFWF connects communities in the Chesapeake Bay watershed with organizations that provide technical assistance to support local communities' restoration efforts.

Under the County's MS4 permit, the PSSD is required to develop a stormwater management program to reduce stormwater from discharging in receiving waters. There are just over 55 communities in West Virginia with MS4 permits, and new MS4s being added each permit cycle[1]. Berkeley County is the first MS4-designated County in the state. The permit was originally issued to Berkeley County in 2004, and the PSSD assumed responsibility of the County's MS4 permit in 2011. In May of 2014, the PSSD received a compliance inspection from the U.S. Environmental Protection Agency (EPA) on its existing MS4 program. An inspection report was prepared in August 2014, in which the PSSD received violations under multiple MS4 Minimum Control Measures.

The EFC Project Team sought to use this project as an opportunity to: (1) help the PSSD to identify the program activities and corresponding costs and resources needed to develop a robust stormwater management program which would better facilitate MS4 permit compliance; (2) develop an initial finance strategy that would support program activities; and, (3) identify and facilitate partnerships that will help accelerate the PSSD's ability to meet MS4 permit requirements and local and regional water quality goals.

Under this framework, the EFC Project Team provided the following elements of technical assistance to the PSSD:

- First, the EFC Project Team performed an assessment of PSSD's current stormwater management program through a process of data gathering and informational interviews conducted with key PSSD and County staff, consultants, and state and regional agencies.
- Second, the EFC Project Team conducted a gap analysis to develop a projected level of service that detailed the stormwater management program components needed to achieve a comprehensive program.
- Third, the EFC Project Team identified costs associated with the activities, developed a stormwater management program budget, and conducted a stormwater fee rate structure analysis to estimate the revenues needed to support the stormwater program.
- Finally, and throughout the process, the EFC Project Team worked to facilitate partnerships with local and regional groups to develop resources to support PSSD's stormwater management program goals.

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[1] West Virginia MS4 Communities, Updated July 2013, West Virginia Department of Environmental Protection, http://www.dep.wv.gov/WWE/Programs/stormwater/MS4/permits/Documents/MS4%20Listing%20Includes%20waived%20municipalities%20w%20permit%20number07-29-2013.pdf

### *Findings and Recommendations*

The key outcomes of this project include: (1) a clearer understanding of the PSSD MS4 permit requirements and strategies for achieving a desired level of service; (2) an interim three year budget and plan to develop and finance a more comprehensive stormwater program; and, (3) opportunities to continue to build partnerships and leverage technical resources to reduce overall implementation costs. The EFC Project Team developed a roadmap that outlines the responsibilities, actions, and resources needed for the PSSD and the County to effectively manage stormwater and deliver an adequate level of service to the community under the MS4 permit. Detailed recommendations are as follows:

***Establish a Memorandum of Understanding (MOU) between Berkeley County and the PSSD in order to more formally and fully support the PSSD's MS4 Program.*** While the PSSD holds the MS4 permit, and is ultimately responsible for compliance, there are current responsibilities that remain with Berkeley County, most notably addressing MCMs 4 and 5, and a much greater effort is needed between the PSSD and County to ensure all MS4 activities are completed, tracked, documented, and reported back to the PSSD.

***Develop a robust stormwater program in two stages, with the first being a three-year plan to expand stormwater staff capacity, develop organized engineering data, and identify and prioritize capital projects.*** There is a pressing need to hire staff initially to help develop and manage the program, with the likelihood of phasing additional staff in as the program develops and engineering studies are completed and inform stormwater management system operations and maintenance needs. The PSSD should work with the County to identify the necessary activities required by engineering, planning, and other County staff as the PSSD's program is developed. While the transfer of all MS4 permit compliance activities to PSSD may ultimately occur, currently the County is needed to help fill resource and capacity gaps.

Organized and analyzed engineering data to inform how and when to prioritize stormwater conveyance and treatment system projects is limited. The PSSD's first step will need to focus on building the initial capacity and engineering data that will serve as the foundation of a long-term program. It is essential that the existing stormwater conveyance and treatment system is inventoried, mapped, and assessed so that the PSSD knows the baseline condition of the systems and the location of its components. In addition, a stormwater management plan that considers existing conditions and prioritizes capital improvements must be developed to guide the PSSD's decision making and ensure cost effective solutions are being implemented.

***Institute a stormwater fee system to support the development, stability, adequacy, and flexibility of a comprehensive stormwater program.*** The PSSD is unable to utilize existing sewer and water utility funds to support stormwater management activities, and lacks a dedicated revenue stream with which to payback outside financing for stormwater. This effort has provided a unique perspective on the importance of communicating and ensuring dedicated funding is in place when a stormwater program is established. However, West Virginia Senate Bill 234 now enables decisions on the development of a stormwater financing system to be made locally, creating an opportunity for the PSSD to address revenue needs.

***Continue to build partnerships, collaborate with outreach groups, access technical assistance, explore grant opportunities, and leverage resources to reduce the costs and resource requirements associated with program development and implementation.*** To springboard from the initial advances made in engaging potential partners throughout this study will require ongoing communications and continued efforts to build bridges with these organizations. As the program develops, a commitment of resources and/or effort to advance these collaborations will realize

efficiencies and cost savings in the MS4 program. This report contains information on multiple possible partners, groups, and sources of technical assistance and grants.

### *Conclusion*

The EFC Project Team recommends the creation of a dedicated stormwater fee designed to fund an estimated annual stormwater program budget, developed as an interim three-year budget, of approximately $1.12 million annually. While developing a stormwater fee should be done expeditiously, there is also a pressing need to bring resources to the PSSD through partnerships, technical assistance, and grants in order to fill the current resource gap, although these opportunities alone will not be sufficient to support the MS4 Program.

As the only MS4-designated county in West Virginia, Berkeley County has the opportunity to become a stormwater program model for the rest of the state. While examples of countywide stormwater programs, dedicated fee systems, and sewer districts serving as stormwater districts exist throughout the region and nation, there are aspects of West Virginia that make Berkeley County unique. While the program components must be tailored to provide a level of service specific to the context of Berkeley County, the need for a stable, sufficient, flexible and recurring revenue stream; for analyzed engineering data; for prioritized projects; for staff capacity; and, for partnerships that reduce implementation costs are common to any community seeking to host a comprehensive stormwater program, avoid penalties, and prevent increased costs over time due to system neglect.

Together, Berkeley County and the PSSD can develop a Stormwater Management Program and supporting financing strategy which meets the existing MS4 permit and provides an adequate, stable, and sustainable level of service to the community.

# Chapter 1: Introduction

## *Background*

### The Chesapeake Bay Stormwater Landscape

Effectively managing stormwater is one of the greatest resource management challenges faced by communities throughout the region. Like all infrastructure, stormwater management systems can have significant upfront capital costs and require long-term management and maintenance to function effectively. As communities struggle to best allocate limited resources, stormwater management systems are frequently overlooked until an emergency occurs, costing millions in damages and repairs, or until a mandate forces a community to take action.

While most communities rely on general funds for stormwater management activities, this means stormwater programs compete for dollars with other critical community priorities like emergency services, planning, and other engineering needs. Having a dedicated revenue stream that is specifically set aside for maintenance and upgrades is often critical to the effective management of stormwater systems at the local level.

The significance of this looms even larger as Chesapeake Bay communities continue to face more stringent regulations, from Municipal Separate Storm Sewer System (MS4) Permits to Total Maximum Daily Load (TMDL) allocations to Watershed Implementation Plans (WIPs). Although often an effective driver, federal and state mandates are not always accompanied by the type of technical assistance, information, and resources needed to successfully guide the development and implementation of sustainable stormwater management plans and programs.

Berkeley County, West Virginia, is under similarly stringent regulations to manage stormwater and is the **only** MS4-designated county in West Virginia. The Berkeley County Public Service Sewer District (PSSD) is mandated under its MS4 permit, administered by the West Virginia Department of Environmental Protection (WV DEP), to develop a stormwater management program to reduce stormwater from discharging into receiving waters. The permit was originally issued to Berkeley County in 2004, and the PSSD assumed responsibility of Berkeley County's MS4 permit in 2011. In May of 2014, the PSSD received a compliance inspection from the U.S. Environmental Protection Agency (EPA) on its existing MS4 program. An inspection report was prepared in August 2014, in which the PSSD received multiple violations in several areas relating to the Minimum Control Measures (MCMs) contained within the MS4 permit.

***Why regulate stormwater?***

As precipitation flows over impervious surfaces, it picks up chemicals, debris, sediment, and other pollutants that left untreated, could harm local waterways. Municipalities often convey their stormwater through municipal separate storm sewer systems (MS4s), which discharge untreated runoff into local waterways. As part of the Clean Water Act, the National Pollutant Discharge Elimination Program regulates stormwater discharge from municipal sources. Municipalities must then obtain MS4 permits from the state regulatory agency to discharge stormwater and prevent other harmful pollutants from entering a MS4. The MS4 permit addresses and attempts to curtail urban non-point pollution.

MS4 permits are further divided by community type, namely Phase I or Phase II. Phase I communities are medium and large cities or counties with a population density of 100,000 or more and receive individual permits. Phase II communities are smaller communities in or outside urbanized areas and are regulated by general permits.

*Source:* Stormwater, U.S. Environmental Protection Agency, http://water.epa.gov/polwaste/npdes/stormwater/index.cfm

***Map of Berkeley County, West Virginia***

*Source:* U.S. Genealogy Express, Welcome to State of West Virginia, Berkeley County, http://www.usgenealogyexpress.com/~wv/berkeley/


*Source:* Weichert Realtors, Berkeley County, West Virginia Real Estate, http://www.weichert.com/WV/Berkeley/

Berkeley County is located in the Eastern Panhandle of the state and has a total population of 110,497, with 40,447 households (2009-2013) and a median household income of $53,515 (2009-2013).[2] It is the second most populous county in West Virginia. The County covers approximately 321[3] square miles of land, and within the County lies the City of Martinsburg, which spans 6.65 square miles.[4] Berkeley County is part of the small portion of West Virginia that falls within the Chesapeake Bay watershed. The County is bordered by Morgan County on the northwest, Jefferson County on the southeast, and Frederick County, Virginia on the southwest, and the Potomac River on the northeast, which separates West Virginia from Washington County, Maryland.[5] For the purposes of this study, the area described is the entire County of Berkeley, excluding the City of Martinsburg, since the City is under its own MS4 permit to manage stormwater within City limits.

Typical of many mountainous headwater streams in the Ridge and Valley Appalachians where the impenetrable nature of shale geology creates a rock floor combined with steep slopes, there is no opportunity for stormwater runoff to percolate after a precipitation event, and the increased water volume following from a rain storm quickly results in rising streams, hence the "flashy" nature. See Appendix A for more information on the geography, geology, and flooding issues in Berkeley County.

Approximately 40% of the land area in Berkeley County is woodland[6]. Most of the woodland is located in the western third of the County, including large continuous tracts on North Mountain. A U.S. Forest Service study of the County found 51,460 acres of the area were covered by tree canopy[7]. The more

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[2] U.S. Census Bureau, Berkeley County, West Virginia, http://quickfacts.census.gov/qfd/states/54/54003.html

[3] Soil Survey of Berkeley County, West Virginia, U.S. Department of Agriculture, Natural Resources Conservation Service, http://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/west_virginia/WV003/0/wv_berkeley.pdf

[4] U.S. Census Bureau Quick Facts, Martinsburg (city), West Virginia, http://quickfacts.census.gov/qfd/states/54/5452060.html

[5] Berkeley County Public Service Sewer District Municipal Separate Storm Sewer System (MS4) Program Inspection Report, August 2014, U.S. Environmental Protection Agency, Region III, Water Protection Division, Office of NPDES Enforcement (3WP42)

[6] Soil Survey of Berkeley County, West Virginia, Ibid

[7] A Report on Berkeley County's Existing and Possible Tree Canopy, Draft, U.S. Forest Service, April 16, 2013, http://gis.w3.uvm.edu/utc/Reports/TreeCanopy_Report_BerkeleyCountyWV.pdf

developed area of the County runs along an urban corridor with Martinsburg as the central core. See Appendix B for a map showing the concentration of impervious area across the entire County.

## *Goals of the Berkeley County Stormwater Financing Feasibility Study*

The primary goal of the Berkeley County stormwater financing study was to review and assess the current stormwater program under the direction of the Berkeley County PSSD and provide recommendations that will enhance the current stormwater program and raise the level of service to meet state and federal requirements and improve water quality. An equally important goal was to assess the costs associated with a comprehensive stormwater program and provide specific recommendations for a dedicated funding mechanism to pay for recommended improvements.

Since this stormwater program is newly under the management of PSSD, many of the County's previous stormwater activities and existing costs were relatively unknown prior to the EFC's study. Therefore, the EFC Project Team found it necessary to manage this project as if it were a newly permitted program. This meant creating a comprehensive new stormwater program for the PSSD that had a start-up program inventory requiring a three-year budget to support the program, along with options for a dedicated revenue stream to pay for program improvements. This is similar to the approach of other sewer and water districts in West Virginia, although in Berkeley's case building potential collaborations and utilizing technical assistance to leverage existing resources is a central component to building a sustainable program. The EFC Project Team also facilitated new partnerships that are expected to help accelerate the PSSD's ability to meet MS4 permit requirements and local and regional water quality goals.

## *Project Approach*

The EFC Project Team's approach to this study combined in-depth technical analysis with outreach facilitation and strategy development in order to build the partnerships needed to help the PSSD meet its MS4 permit goals more effectively.

Our technical analysis began with an assessment of the PSSD's current stormwater management program through a systematic process of gathering pertinent data and conducting informational interviews with essential PSSD staff, County staff, engineers, private consultants, and state and regional agencies (see Appendix C for list of meetings). Once the Project Team assessed the current program, a gap analysis was conducted to estimate the necessary level of service needed to meet MS4 compliance and administer a comprehensive program that meets the County's stormwater needs.

### Project Objectives

What limited funding is currently used to pay for stormwater activities in Berkeley County comes from general fund appropriations and is insufficient to cover the costs anticipated with a more comprehensive program. As part of the study, the EFC Project Team developed the following set of objectives and criteria for stormwater management financing in Berkeley County.

Objective 1. Allocate the costs associated with managing stormwater in a way that is practical, fair, and equitable to all residents and businesses located within the municipality.

Objective 2. Generate an adequate estimate of revenue on an average yearly basis needed to maintain an appropriate level of service for managing stormwater.

Objective 3. Recommend a funding level that is accountable, appropriately sufficient, and realistic.

Objective 4. Engage potential partners and allow an opportunity to educate and inform the community while at the same time prioritizing stormwater for the County.

With the above objectives guiding the EFC Project Team's approach throughout the study, the EFC has developed recommendations designed to assist the PSSD and Berkeley County with improving the way they pay for and manage stormwater.

## Project Process

After establishing the objectives for the study, the Project Team established a process to guide the one-year study. The following steps describe the process used to develop the recommendations found in this report.

***Step 1: Conduct a Program Assessment to Identify Program Costs.*** Since the stormwater program is currently considered to be in its initial phases of development under the new management of the PSSD, the EFC Project Team approached this project by initially identifying all costs associated with the activities required to meet the necessary level of service to develop a program in its first three years. The costs were broken down into staffing capacity, operations and maintenance, and capital costs.

***Step 2: Collect Pertinent Data.*** Once costs were identified and a three-year budget prepared, the Project Team retrieved parcel data from the County and sewer and water customer data from PSSD to conduct a rate structure analysis to estimate the revenues needed to support a stormwater program. The final recommendations reflect the needed revenue based on the cost estimates for the PSSD to develop a stormwater program.

***Step 3: Conduct Outreach and Identify Potential Partnerships.*** While the EFC Project Team did not anticipate conducting extensive outreach during this project, it was important to do as much as was possible under the terms of the grant to seek some level of community engagement and build potential partnerships that would strengthen the program recommendations and reduce costs for the PSSD. Interviews were conducted and meetings held with potential partners throughout the study. The EFC Project Team recognizes there is a great need for stormwater education and outreach required both as part of the PSSD's MS4 permit requirements, as well as to engage and inform the public about the need to better manage stormwater. This project presented an opportunity for the EFC Project Team to facilitate partnerships with local and regional groups whose mission is aligned with the PSSD's stormwater management program goals. As a result of the EFC's outreach, important opportunities to enlist new partners and coordinate better outreach for the PSSD have emerged.

The EFC Project Team participated in a number of monthly meetings with the Tuscarora Creek Project Team, and met with several watershed groups, state and regional agencies, and neighboring MS4 jurisdictions to identify and begin facilitating partnership opportunities on behalf of the PSSD. The outreach approach developed as part of this project culminated in an event held on May 27$^{th}$, 2015 at Oatesdale Park in Martinsburg, WV (see Appendix D for photos from the event). The event reached over 100 youths and their families. Many families participated in interactive watershed-based educational stations and games and were provided with educational materials from various organizations during the evening's little league games (see Appendix E for EFC's outreach flyer).

***Step 4: Develop Stormwater Financing Recommendations.*** Concurrent to the steps one through three, the EFC Project Team evaluated different financing mechanisms to support stormwater program budget needs. Different financing options were examined internally at EFC, with routine feedback from the PSSD and County. Ultimately, the recommended financing strategy included options for a dedicated revenue stream based on consideration of unique factors within the PSSD and the County, as well as the input of the local community.

## *Project Funding*

This effort was funded by the National Fish and Wildlife Foundation's (NFWF) Chesapeake Bay Stewardship Fund Technical Assistance Program. Through this program, NFWF connects communities in the Chesapeake Bay with organizations that provide technical assistance to support local communities' restoration efforts. The EFC intends to use the experiences of working with the Berkeley County PSSD as a model for countywide efforts to manage stormwater through a dedicated fund, and administered by a sewer district. As communities in the region are more proactive than ever in developing robust stormwater management programs, the unique case of Berkeley County can be shared and modeled in order to advance Bay restoration.

# Chapter 2: Stormwater Program Assessment and Recommendations

## *The MS4 General Permit*

In August 2014, the PSSD received a compliance inspection from the U.S. EPA that resulted in a list of violations for four of the six Minimum Control Measures (MCMs), specifically MCMs 3 through 6, within the MS4 Permit. It was observed by the U.S. EPA auditors that the County and the PSSD share responsibilities, and that the PSSD was not currently in compliance with activities under MCMs 3-6.[8] Although the U.S. EPA as part of the inspection process did not assess MCMs 1 and 2, the EFC Project Team still considers them to be critical to the success of any stormwater program. These measures that focus on outreach and engagement help to educate and inform the community about the importance of managing stormwater, tailoring the needs and level of service, informing the development of the program, and overall creating a robust stormwater program that addresses water quality and quantity impacts important in a community. While the PSSD holds the MS4 permit, and is ultimately responsible for compliance, there are other responsibilities that remain with Berkeley County, most notably to address MCMs 4 and 5. Overall, greater effort is needed between the PSSD and County to ensure all MS4 activities are completed on a schedule, tracked, documented, and reported back to the PSSD. While this is an existing challenge, the EFC Project Team facilitated the initial steps to better integrate the two entities.

***MS4 Permit Compliance: 6 MCMs –***

1. Public Education & Outreach
2. Public Participation & Involvement
3. Illicit Discharge Detection & Elimination
4. Construction Site Runoff Control
5. Post Construction Runoff Control
6. Pollution Prevention/Good Housekeeping

*Tuscarora Creek at Oatesdale Park, City of Martinsburg, Berkeley County, West Virginia; Photo Credit – E. Reed*

For each MCM, there are specific stormwater best management practices (BMPs) that the PSSD can implement to comply with its permit. Although there is flexibility to implement BMPs that fit the needs and resources within the community, there are also significant costs associated with addressing the MS4 permit in order to sustain a level of service. As a result of the EFC Project Team's independent analysis, it was found that while the PSSD is working towards meeting each MCM, capacity and resource constraints hinder the development of a more comprehensive stormwater management program. The primary limitation is the restriction on what

[8] Berkeley County Public Service Sewer District Municipal Separate Storm Sewer System (MS4) Program Inspection Report, August 2014

existing PSSD funds can be spent on, which excludes stormwater activities. The following is a brief discussion of the EFC Project Team's findings related to current funding, data, and staff capacity under the stormwater program, followed by recommendations to develop a robust County-wide stormwater management program.

## *Current Funding for Stormwater in Berkeley County*

In interviews and comments with the PSSD and their consultants, it was communicated that the PSSD is restricted by financing terms and rate fillings from allocating sewer revenue to stormwater projects. The June 30, 2014 Berkeley County Public Service Sewer District Financial Report provides the following detail on bond covenants:

> *As of June 30, 2014 the District was not in compliance with the bond coverage test which requires that all estimated future net earnings of the system must be at least 1.15 times the highest combined debt service requirement. The District currently has a coverage ratio of 1.08.*[9] *Upon recognition that the District may not meet is coverage requirement, application for an interim emergency rate increase was filed with the PSC. The District was granted an emergency interim rate increase of 5.8% on June 12, 2014.*[10]

Prior to 2014, $1.148 Million of funds were expended by PSSD from the stormwater fund.[11] Based on interviews with PSSD and after careful review of their 2014 financial statements, there remains a balance payable from the stormwater fund of $524,903 for past expenditures.[12] The EFC Project Team included this balance in the capital costs developed as part of the three-year budget, to be paid off from the stormwater fund to the sewer fund over 20 years. Based on interviews, financial statements, and internal 2015 PSSD budgets, the PSSD is not expending any additional funds for stormwater, and it appears the manager undertakes stormwater activities as they arise in the course of performing utility management duties.

Without a dedicated source of funding to pay for stormwater, the necessary increase in the level of service for stormwater will not occur and changes to the existing program are highly unlikely.

## The Potential Impact of Senate Bill 234

An unexpected change occurred in the legislative landscape during the course of the study that could prove valuable to the PSSD. The passing of Senate Bill (SB) 234 in April 2015 repealed the Public Service Commission (PSC) jurisdiction over water, sewer, and stormwater utilities owned and operated in West Virginia.[13] SB 234 is a landmark opportunity for the PSSD to set a fee through the Berkeley County Council, enabling more local control and decision making. Due to SB 234, the PSSD is now better positioned to address the County MS4 and pass a fee in a much shorter time frame.

While SB 234 represents a shift toward local autonomy to set stormwater fees, political challenges to implementing a dedicated stormwater fee within the County remain. Yet, given that Berkeley County is the only MS4-designated County in West Virginia, and the PSSD has additional constraints to raising funds for stormwater, the County could become the model for other communities in the state.

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[9] June 30, 2014 Berkeley County Public Service Sewer District, Martinsburg, WV, Financial Report, prepared by Yount Hyder & Barbour, page 23

[10] Ibid, page 7

[11] Ibid, page 11

[12] Ibid, page 11

[13] Senate Bill No. 234, Introduced Version, West Virginia Legislature, http://www.legis.state.wv.us/Bill_Status/bills_text.cfm?billdoc=sb234%20intr.htm&yr=2015&sesstype=RS&i=234

## *Collecting Pertinent Data and Assessing Stormwater Program Staff Capacity*

Currently there is no dedicated staff within the PSSD focused solely on the MS4 Program. Since the PSSD has taken over the MS4 permit from the County, the PSSD General Manager has been assigned the additional responsibility for developing and managing the MS4 Program. While the General Manager serves as the MS4 Program lead, his time is limited due to the full-time responsibilities he already has managing the County's sewer system. Since stormwater duties are shared between the PSSD and the County, the County engineering department currently performs inspections, which often results in reporting and written communication of data to be lacking or negligent.

There is a pressing need to hire dedicated stormwater personnel to manage all aspects of the stormwater program. Ideally in a community the scale of Berkeley County, stormwater staff would not share any other sewer responsibility and would be dedicated only to managing the stormwater program. As the program develops and engineering studies are completed in the future, it is anticipated additional staff will be needed to manage the operations and maintenance of the stormwater management system. The PSSD should work closely with the County to identify the necessary activities required by engineering, planning, and other County staff to support the PSSD's permit activities, including a formal process for the County to report back to the PSSD, since reporting remains a critical aspect of MS4 permit compliance. It is recommended that regular meetings between the PSSD and the County be organized to coordinate information and activities. See Chapter 6 for a more detailed discussion of partnerships and opportunities to work with County staff, as well as other resources to help fill capacity gaps in the short term.

Based on the information shared with the Project Team by the PSSD, the County, and private consultants, there is very limited engineering data available to properly assess and analyze the program needs. It was therefore very difficult for the EFC Project Team to inform the PSSD on how and when to prioritize stormwater conveyance system and treatment system projects.

## *Recommendations Based on the Stormwater Program Assessment*

Based on the Project Team's assessment of the MS4 Program and the current capacity of the PSSD to meet the level of service required to properly manage stormwater, the following recommendations were developed:

***Recommendation 1: Establish a Memorandum of Understanding (MOU) between Berkeley County and the PSSD.*** The EFC Project Team recommends the County develop a formal MOU with the PSSD in order to more formally and fully support the PSSD's MS4 Program.

***Recommendation 2: Immediately hire a person dedicated to managing only stormwater.*** Without the necessary data and with no dedicated staff capacity to properly manage stormwater, the PSSD should take immediate actions to address their internal capacity and consider adding a new position focused solely on managing the stormwater program.

***Recommendation 3: Prioritize new engineering activities and projects.*** The PSSD must acquire additional engineering data to inform the development of a long-term program. For example, it is essential that the existing stormwater conveyance and treatment system is inventoried, mapped, and assessed so that the PSSD knows its baseline condition and the location of system components. In addition, a stormwater management plan that considers existing conditions and prioritizes capital improvements must be developed to guide the PSSD's decision making and ensure cost effective solutions are being implemented.

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# Chapter 3: Stormwater Program Budget Recommendations

## *A Phased-In Approach to Managing Stormwater*

Based on the Project Team's research and analysis, extensive conversations with the community, and the lack of capacity and existing engineered data, the PSSD should consider an approach that phases in a more progressive program over time to enhance the chances of long-term success over attempting to transform a program overnight. By phasing in recommended improvements, the PSSD stormwater program will expand effectively and efficiently as it continually becomes more comprehensive over the next several years. This process is highly recommended for the PSSD for a multitude of reasons including the following:

- ***Allow time to develop necessary engineering information and gain Geographic Information System (GIS) data.*** There is a lack of significant engineering and GIS data with which to adequately support the selection of capital projects, justify capital budget appropriations, as well as justify programmatic decision-making. By phasing in enhanced engineering capabilities and GIS data over the next three years, budgets and capital projects would be better supported, prioritized, and sufficiently budgeted for by the PSSD.
- ***Adopt an approach utilized by other West Virginia communities.*** A phased-in approach is consistent with programs already undertaken by other West Virginia communities as a first step in developing a more robust program. The precedence has been set for showing a phased-in approach works well in West Virginia.
- ***Build a robust outreach program.*** Focusing on developing staffing, communications, outreach, education, and collecting robust data over the next three years in the initial phase will provide for the internal development of intellectual capital and organizational knowledge about stormwater, thus removing some of the cost barriers and potential uncertainties of more long range stormwater capital project planning.
- ***Develop a more organized program and acquire necessary data.*** Since the data does not currently exist to assess a comprehensive level of service, and what does exist is not well-organized, there is a need to start building a foundation of baseline information for the program. An effective system can be set up over the next three years that will allow for prioritizing the condition of the stormwater system and County BMPS.

Developing staff, undertaking studies, and analyzing this data must be a priority for the PSSD, and a phased-in approach over the next three years enables this to happen at a pace suitable for all parties involved. The EFC Project Team developed an interim, three-year budget, which focuses on addressing the staffing and engineering needs with which to develop a more robust and analyzed long-term budget, and a discussion of this budget follows.

## *Budget Recommendations*

The EFC Project Team developed a budget that reflects staffing, operations and maintenance, and capital costs associated with developing a 3-year startup program. The total costs annually, and the average annual costs are shown in Table 1.

**Table 1: Total MS4 Program Costs, Years 1-3**

| Cost Category | Year 1 | Year 2 | Year 3 | Average Annual Budget |
|---|---|---|---|---|
| Staffing | $201,218 | $271,774 | $278,568 | $250,520 |
| Operations & Maintenance | $452,164 | $391,711 | $84,404 | $309,427 |
| Capital Improvements | $0 | $770,789 | $931,389 | $567,392 |
| **Total** | **$653,382** | **$1,434,273** | **$1,294,361** | **$1,127,339** |

## Staffing

The Project Team recommends a significant increase in dedicated stormwater staff, per findings on the PSSD's current staff capacity for handling the MS4 Program. It is recommended that additional staff be phased in over the first three years, and likely additional staff will be identified and needed in future years; however, there is a need to hire 3 full time staff in year 1 and utilize staff and consultant time from existing PSSD staff positions to develop the program. MS4 Program staff recommendations include:

- A full time MS4 Program General Manager hired in year one, who would be the primary point of day to day management responsibility for the program and would take the lead in program development and delegation of tasks;
- A full time MS Program Assistant hired in year one, who would work closely alongside the MS4 Program General Manager and support the MS4 Program staff in program development;
- A full time MS4 Inspector hired in year one, who would inspect both current construction and installed BMPs;
- A full time MS4 O&M Foreman hired in year two, who would have field responsibility such as project management, or upkeep of existing stormwater assets, and serve as liaison to County staff;
- Utilize 10% of existing PSSD staff time for the current positions of Fiscal Officer and IT Administrator to support billing and IT coordination.

While the EFC Project Team included the full list of staffing needs to develop the program, it should be noted that the staff list should be reviewed with the County to identify any existing capacity that could be leveraged in the first few years to offset staffing costs. However, dedicated full-time staff will ultimately be needed at the PSSD to ensure the program's success[14].

The average annual staffing budget for the program's first three years is **$250,520.** This includes an additional 10% for contingency and reserve. See Appendix F for the itemized list of staffing costs

[14] Salaries include annual wages and benefits (overhead used as a proxy). 2.5% inflation was added in each year for all salaries.

included in the MS4 Program budget, with notes on the assumed duties and responsibilities for each staff person.

## Operations and Maintenance Costs

*Engineering Studies.* Based on the team's analysis, it appears that minimal work has been performed to develop a comprehensive stormwater inventory mapping and infrastructure condition assessment. Engineering studies were included in the initial years' operating and maintenance budget in order to develop baseline assessments of the stormwater system.

A mapping and infrastructure condition assessment is beneficial and an important first step to undertake. It will enable the permit holder to better identify, examine, estimate costs, and prioritize areas within the system which are most in need of service. It will also enable the PSSD to prioritize areas within the system in which the most benefits can be gained by improvements. The EFC Project Team included a conservative estimate of $100,000 distributed over the first two years to inventory and map the stormwater system.

Additionally, it is estimated that comprehensive watershed drainage studies will be needed to examine and map hydrology. This is important as it identifies volume, flow rate, and storage within the system, both from a water quality and a water quantity standpoint. With this information, the PSSD will be in a position to better understand the flow of stormwater within the County and will be able to identify areas of maximum concern, as well as areas in which the non-stormwater benefits are greatest from stormwater investments and capital improvements. The budget estimates that four watershed studies will be needed at an estimate of $115,000 per watershed. The estimate is based on verbal indications from a local engineering firm. The EFC Project Team included two studies a year in the first two years, for a total of $460,000 distributed over the first two years.

The final engineering study component that is budgeted is for a study to update the cost of the Inwood Project, a capital project included in the capital costs portion of the budget. The estimated one-time cost in year one to update Inwood is budgeted for $60,000.

*Traditional O&M.* Resources will be needed to conduct education and outreach, to support staff activities, and to analyze data and projects. The budget estimates $3,000 in year one to send two educational mailings out to the community and one additional mailing in subsequent years at $1,500 annually. Also in the budget are estimates for legal services to support the development of a stormwater fee, collections, capital project easements, etc. at $25,000 annually, a truck for use by the stormwater staff that costs $5,000 annually,[15] truck maintenance expenses at $4,400 annually, GIS software and services at $15,000 annually, and operating expenses to support staff each year that represents 10.2% of the staffing budget (without reserves).[16]

The budget makes the assumption that the entire cost of these activities will be borne by the PSSD. It does not account for potential resource sharing with partners which is possible and highly encouraged. The average annual O&M budget for the program's first three years is **$309,427.** This includes an additional 10% for contingency and reserve. See Appendix G for a complete list of all engineering and traditional operations & maintenance costs included in the MS4 Program budget.

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[15] The Project Team assumed $25,000 for the purchase of the vehicle paid back over 5 years in equal increments.

[16] The Project Team assumed 10.2% of total staffing costs each year based on sewer operating expenses from 2015 that include taking the total percentage of salary and wage costs for training & education, office & janitorial supplies, tools & computer expenses, materials & supplies, shipping, miscellaneous, director compensation, dues & subscriptions, advertising, postage, travel, office utilities, which equals 10.2%.

## Capital Costs

Based on discussions, research, and data provided, the only stormwater capital project of any significance that has been designed to a stage where costs could be estimated is the Inwood Drainage and Flood Project.[17] The costs used in the budget were derived from the Inwood study completed in 2010; however, the costs will need to be updated to reflect current conditions. Engineering work to bring this assessment up to date has been included in the engineering portion of the O&M budget, estimating the study be completed in year one at a total cost of $60,000.

Based on discussions with the PSSD regarding financing facilities and current cost of capital, the Inwood project was assumed to be financed over a 20 year term at a 3% cost-of-capital with fixed flat principal and interest payments. The capital budget includes costs of Phase 1 of the project beginning in year two, the green infrastructure component beginning in year two, as well as a budget for the operations and maintenance of the project after completion beginning in year two, as shown in Table 2 below. Lastly, the EFC Project Team included the balance owed to the sewer fund of $524,903 for past expenditures with the same term and interest rates, where beginning in year two the payback will be $35,282 annually.

**Table 2: Inwood Project Costs included in the PSSD's Stormwater Program Capital Costs**

| Description | Year 1 | Year 2 | Year 3 |
|---|---|---|---|
| Inwood Project 1A – Green Infrastructure Project (GIP) | -- | $396,573 | $396,573 |
| Inwood Project 1 B – Green Infrastructure Upgrade | -- | $268,863 | $268,863 |
| Inwood Project – Green Infrastructure Basin Operations and Maintenance | -- | -- | $126,000 |
| Inwood Project – Green Infrastructure Pump Station O&M | -- | -- | $20,000 |
| Payback to the PSSD Sewer Fund of the balance due in the PSSD Stormwater Fund for project costs previously expended ($524,903)[18] | -- | $35,282 | $35,282 |
| **Total Inwood Project Costs** | **$0** | **$700,718** | **$846,718** |

The average annual capital budget for the program's first three years is **$567,392.** This includes an additional 10% for contingency and reserve beginning in year two. See Appendix H for a complete list of all capital costs included in the MS4 Program budget.

[17] Inwood Land Drainage and Water Quality Project Final Report, Prepared for the Berkeley County Public Service Sewer District (PSSD) by Woolpert, Inc., June 30, 2010

[18] June 30, 2014 Berkeley County Public Service Sewer District, Martinsburg, WV, Financial Report, page 11

# Chapter 4: Stormwater Financing Recommendations

## *Consideration of Various Funding Options*

Since the MS4 permit is held by the PSSD, there are no general funds that exist to support a stormwater program. The permit was transferred to the PSSD due to the strengths in operating a utility and knowledge of water issues. However, based on discussions, the PSSD is unable to access internal funds due to both sewer rate filing regulatory restrictions and to bond financing restrictions on the use of sewer funds. The PSSD has been unable to raise outside capital from the County or other sources without a funding mechanism in place, such as a stormwater fee or an enterprise fund, which can provide a stable source of revenue to pay back the initial investment needed to fund the startup of a robust program.

Recognizing current funding as inadequate, the EFC Project Team explored many financing options, yet only a few cover the costs of capital and operations and maintenance, as highlighted in Table 3, which lists various funding programs and tools under consideration.

**Table 3: Funding Sources, Coverage of Costs, and Features**

| Funding Source | Coverage of Cost Type | | Features |
|---|---|---|---|
| | Capital Improvements | O&M | |
| Grants | Yes | No | Not guaranteed, highly competitive, not sustainable in the long-term |
| Loan Programs | Yes | No | Not guaranteed, highly competitive, must repay often with interest |
| Bond Financing | Yes | No | Dependent on fiscal capacity, can utilize for large, long-term expenditures, must repay with interest |
| General Fund | Yes | Yes | Not equitable, competes with other community priorities, changes from year-to-year |
| Permit & Inspection Fees | No | No | Not significant revenue, may deter development |
| Public Private Partnership | Yes | Yes | Efficiency, transfer of risk, capital access |
| Stormwater Utility Rates | Yes | Yes | Generates ample revenue, sustainable, dependable, equitable, requires significant public dialogue |

Given the magnitude and the immediacy of the funding need, the two main options are general funds and a stormwater utility fee, however in the case of PSSD's MS4 Program, tapping into general funds is not an option. Even if the assumption is made that the County could provide resources from its general funds, the PSSD does not have a source of revenue with which to pay back those funds. In the current structure, where the permit lies, there is no ability to generate funds from operations.

## *Rationale for Recommending a Stormwater Fee*

Based on the above analysis, it was ultimately decided by the EFC Project Team that a stormwater fee should be recommended as the most appropriate financing mechanism. A stormwater fee will enable funds to be raised to provide an increased level of service to the community and develop a sustainable and comprehensive MS4 Program. Additionally this source of revenue will begin to provide the PSSD and County access to other stormwater financing options. With a dedicated revenue system in place, the PSSD will be in a better position when applying for grants and loans as it will be able to contribute matching funds, which are usually a requirement. As a result, a stormwater fee will enable leverage and savings, which the PSSD is not able to take advantage of now as they are sufficiently lacking in funds.

### Benefits of a Stormwater Fee

In additional to the financing argument, a stormwater fee offers additional benefits over other options. Stormwater fees are designed to be stable, adequate, flexible and equitable. Fees provide a mechanism with which to match revenue with level of service costs and property stormwater impacts. It is a mechanism which is dedicated and allocated to stormwater funding. A well-structured fee can lay the ground work for incentives in the future for property owners to minimize stormwater runoff. Additionally, the PSSD has a billing and administrative operations framework in place which can be leveraged for smaller additional marginal costs. And finally, a stormwater fee is consistent with choices made by other West Virginia jurisdictions.

### Diversifying Funding for Stormwater

The Project Team strongly recommends a stormwater fee should not be construed to imply that other funding sources and methods should not be pursued. Most of the successful stormwater fee programs around the country use a range of other funding to support their program such as grants, general funds, and loans as needed. Cost-saving strategies such as partnerships and resource sharing will serve to further reduce and mitigate costs and are highly encouraged. Grants will serve to access additional needed resources and is discussed in more detail in Chapter 6. Given the magnitude and urgency of the resource needs, the Project Team believes the establishment of a stormwater fee is an initial step that can be taken to begin generating stable and sufficient funding for the program to support the crucial initial activities.

# Chapter 5: Stormwater User Fee Rate Development

***Average Annual Stormwater Program Budget, Years 1-3 –***

Staffing: $250,520
Operations & Maintenance: $309,427
Capital Improvements: $567,392

**Total Budget: $1,127,339**

The recommended stormwater user fees developed for the PSSD are expected to total an annual budget, on average, of $1.12 million over a three-year period. Once the initial program is underway, the budget will need to be reevaluated, and in turn, so too will the initial stormwater rates set at the program's startup.

## *Challenges in Assessing Parcel Data*

The Project Team made several attempts to gather parcel data from both the County and PSSD. The fact that there is no zoning or land use planning classification in Berkeley County makes identifying types of properties challenging for future planning and budgeting purposes. While the County shared parcel data on all its properties identifying the number, size, and types of parcels in the County, there was no impervious data or information to link parcels in the County with existing PSSD customers. Based on data from the County, there are a total of **45,865** parcels in the County (excluding Martinsburg)[19].

The PSSD provided the EFC Project Team with all available data on the number of residential and commercial customers. Based on the data from the PSSD, there are a total of **25,011** existing drinking water and/or sewer PSSD customers (excluding those in Martinsburg). The breakdown between residential and commercial PSSD customers is 24,534 residential and 477 commercial. Using PSSD data and County data, there are 20,854 parcels in the County that are not part of the PSSD's existing customer base.

Despite our research, there does not appear to be any available impervious data on a per-property basis in the County, and thus estimates on the amount of imperviousness were not possible as a part of this analysis. The PSSD recognizes the importance of having accurate parcel data to charge customers based on their stormwater impact, and is continuing to work on a way to compile this data, potentially collaboratively with others in the region. Should this become available at some point in the near future, the PSSD is encouraged to reevaluate the distribution of a fee based on impervious surface.

As a result of limited data available at the time of the study, the stormwater user fee estimates had to be based on a flat fee scenario. This approach is not unusual when data is lacking, and other jurisdictions have employed the method during their startup phase. For example, the City of Huntington, West Virginia issued a stormwater fee in 2013 to fund the initial staffing and engineering work to set up a stormwater program. Huntington combined three utilities into one to focus on water and water quality and a portion of the rate was used to fund an impervious area survey, staff positions and engineering related to stormwater plan development.[20]

In the long-term, the Project Team recommends developing a more complete data set so that a more equitable rate system can be developed. Basing the rate on imperviousness will enable the PSSD to incorporate credits and discounts for positive stormwater management projects implemented and maintained on private property. See Appendix I for a brief discussion of how to

[19] This is the total parcels provided to the EFC Project Team by the Berkeley County Tax Assessor's Office from 2014 tax data.
[20] Casto, J., City of Huntington Enacts Stormwater Fee, WOWKTV.COM, July 30, 2014, http://www.wowktv.com/story/25904556/city-of-huntington-enacts-stormwater-fee

set up a stormwater fee once impervious data is available and Appendix J for a brief discussion of credit systems and exemptions.

The EFC Project Team had several discussions with PSSD staff, County staff, and consultants on whom to charge in the initial program phase. Although it is more equitable and preferable to charge all properties within Berkeley County, excluding those in the City of Martinsburg, there are too many data gaps to quantify the increase in costs from assessing a countywide fee. The challenges to collect a fee from properties that are not currently on public sewer or drinking water seemed insurmountable under the current conditions of the PSSD. Additional costs will be incurred if the PSSD must charge all properties, since there will be an additional 20,000+ customers that will need to be billed, and costs associated with collection and enforcement.

To become a fair and equitable financing system, however, the EFC Project Team would choose to have those costs made and then recalculate the fee for the entire County at some point in the immediate future. Based on feedback from stakeholders, there are tradeoffs associated with each approach, and it will ultimately be up to the community to decide what its guiding philosophy and values to adjust for the 20,000 customers not currently in the PSSD's system.

## *Establishing a Phased-in Funding Program*

Given the immediacy to establish funding, the EFC Project Team recommends first charging existing PSSD customers, and then moving towards charging all Berkeley County parcels after year three, once the program is fully developed. The issue of equity has been raised several times, and the Project Team understands the need, in the long run, to charge all County properties, which is the most fair and equitable approach given that the MS4 Program services will reach Countywide. Our recommendation is an attempt to balance the immediate need to establish a program with a dedicated source of funding in the short-term with the goal of a functioning and equitable program in the long-term. The EFC Project Team conducted a stormwater rate analysis with various scenarios that show the impacts of charging existing PSSD customers only versus charging all County parcels. The Project Team did not, however, take into account additional costs that will be incurred for charging all County parcels.

## *Calculating the Stormwater Fee*

The EFC Project Team analyzed the flat rate that would need to be set in order to support an annual budget of $1.12 million in the program startup. By taking the 25,011 existing PSSD customers, and assuming a 5% adjustment for bad debt, the EFC Project Team estimated a total of 23,760 net payers. With 23,760 payers all receiving the same stormwater bill, the stormwater fee would need to be set at **$3.95** per month, or **$47.45** annually across all residential and non-residential customers (see Appendix K). Under this scenario, each parcel regardless of size or property type would be charged the same fee of $3.95 per month. Should the County choose to implement a Countywide stormwater fee from the very beginning, the flat rate across all residential and non-residential customers would come to **$2.75** per month (see Appendix L), assuming that only 50% of non-PSSD customers pay the fee given the difficulty in collecting and enforcing a stormwater fee for any parcel not currently on public sewer or drinking water.

Given the variance in size between a large commercial property and that of a typical residential property, along with the feedback from the PSSD and the County, the EFC Project Team conducted an analysis to show the stormwater fee rates that would need to be set under different commercial: residential fee ratios (see Appendix M).

Ultimately, the EFC Project Team recommends that the initial stormwater fee rates be set at a ratio of 2:1, where each residential PSSD customer is charged a flat fee of **$46.56** annually, or **$3.88** per

month and each non-residential PSSD customer is charged a flat fee which is twice the size of the residential fee, or **$93.12** annually, or **$7.76** per month. A comparison of the different interim program stormwater fee rate scenarios developed by the EFC Project Team for the PSSD and County to review are as follows:

**Scenario: Flat fee across all existing PSSD sewer and/or water customers where non-residential parcels pay twice that of residential parcels**

**Total customers = 25,011**

**Residential stormwater fee = $3.88/month or $46.56/year**

**Non-residential stormwater fee = $7.76/month or $93.12/year**

**Scenario: Flat fee across all existing PSSD sewer and/or water customers regardless of property type**

**Total customers = 25,011**

**Stormwater fee = $3.95/month $47.45/year**

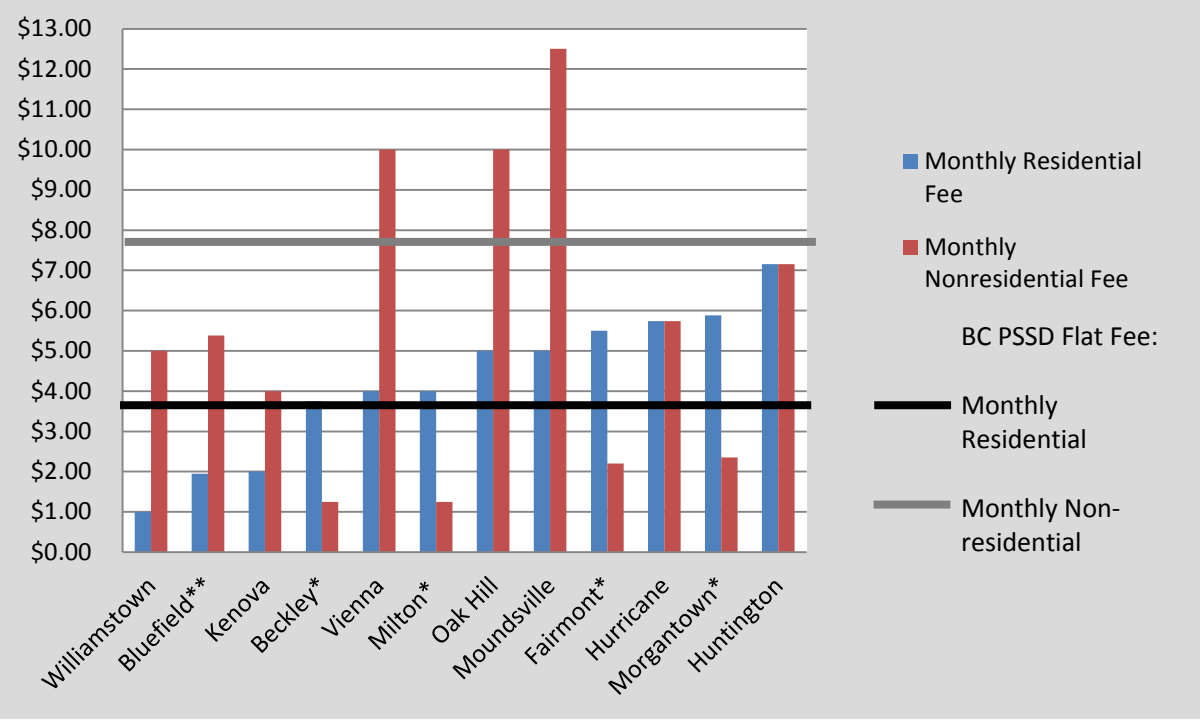
**Scenario: Countywide flat fee across all residential and non-residential properties**

**Total customers = 45,865**

**Stormwater fee = $2.75/month $32.98/year**

Figure 1 indicates how the estimates for the PSSD stormwater fee rates recommended by the EFC Project Team compare with other West Virginia jurisdictions which have implemented a stormwater fee.

**Figure 1: Stormwater Fee Rates, a Comparison of Berkeley County to West Virginia Communities**



# Chapter 6: Leveraging Resources to Reduce Costs

The EFC Project Team explored additional ways for the PSSD to offset the costs associated with a stormwater management program. This included developing new partnerships to fill capacity gaps, gaining additional technical assistance, and seeking and collaborating on grant funding opportunities. The EFC Project Team has found in past projects that there is great value in partnering by collaborating with others to share resources that can often yield high returns on investment. The EFC Project Team identified and worked with multiple entities within the community during this project that were already conducting watershed improvement activities that had overlap with similar missions as the PSSD's MS4 Program.

With the goal of looking at opportunities to help the PSSD decrease stormwater discharges and clean waterways, the EFC Project Team reached out to several relevant entities and discovered synergetic options that mutually benefited both parties. This section focuses on potential partnerships explored throughout the study, and it is worth noting that the PSSD has made significant inroads since the inception of this study to begin partnering with other organizations that may have a lasting positive impact on the County's stormwater program.

To springboard from the initial advances made in engaging potential partners throughout this study will require ongoing communications and continued efforts to build bridges with these organizations. As the program develops, a commitment of resources and/or effort to advance these collaborations will realize efficiencies and cost savings in the MS4 program. This report contains information on multiple possible partners, groups, and sources of technical assistance and grants.

## *Berkeley County Partnership and Collaboration*

During the project, the EFC Project Team met with County staff and representatives multiple times to better understand the activities the County is currently conducting that can support MS4 permit compliance. It was determined that activities conducted in engineering should be housed at PSSD and the data collected by the County needs to be better shared with the PSSD. For example, the engineering department maintains a list of all BMPs in the County constructed beginning in 2010 or later. Since PSSD is the permit holder, a formal process such as an MOU, for identifying activities being done at the County level and that directly address MS4 requirements, inventorying stormwater BMPs, and reporting back to the PSSD should be put in place.

Other resources to share are the flood control and hazard mitigation efforts through the fire and rescue and planning departments. Since the County is a member of the Federal Emergency Management Agency's (FEMA) Community Rating System (CRS) Program, they are required to conduct outreach to the community on flooding. Through sharing distribution of stormwater reduction flyers through both programs, there are opportunities to simultaneously benefit both the County in satisfying FEMA's CRS flood program and PSSD's MS4 permit requirements. Other opportunities to partner include the County offering to help mail outreach or stormwater fee bills if a countywide fee is developed and implemented.

## *City of Martinsburg Partnership and Collaboration*

The EFC Project Team and PSSD have met with the City's Public Works Director during multiple watershed team meetings. The City of Martinsburg, as noted previously, is an MS4-permitted municipality and is under similar obligations. The City is currently in the process of presenting their elected officials with a proposed utility fee to help support a stormwater management program. Having the City's MS4 Program in the news media concurrently with the County news about PSSD's MS4 Program sends a consistent message to the community. With consistent messaging, community members will have increased awareness about the importance of decreasing

stormwater runoff and also be more likely to support a stormwater program and possibly fee to help the PSSD implement such a program.

The City participated in the outreach event on May 27th, and was a willing and active partner listed on the outreach flyer created by the EFC Project Team. This type of collaboration and resource sharing will save both the City and PSSD time and money on staffing stormwater outreach events. The City and PSSD expressed a willingness to continue to partner on possibly sharing resources down the road.

## *Berkeley County Public Service Water District (PSWD) Partnership and Collaboration*

Another regulatory item influencing the community is SB 423,[21] requiring all public water utilities develop and submit Source Water Assessments and Protection Plans (SWPPs) to the West Virginia Department of Health and Human Resources, under the Bureau for Public Health. Part of the mandated SWPP includes assessing all contaminants to water quality within a specific perimeter of each intake (1,000 feet, 5 hour travel time, etc.) and recommendations for remediation. The regulation goes further and requires public outreach and involvement in the remediation plans. In order to comply with the new Senate Bill, the PSWD will perform efforts similar to the PSSD efforts to comply with the MCM requirements of the stormwater MS4 permit. Similar efforts overlapping in similar geographic areas can offer opportunities to defray costs to both parties, while meeting their separate mandates. For example, outreach efforts by the PSWD mirror PSSD's efforts to meet MCMs 1 and 2 in the MS4 permit. Mapping of land uses and identifying outfalls will be performed by PSWDs and also by the PSSD for illicit discharge detection. By coordinating between the PSSD and PSWD, both entities may be able to share consultant costs and make a bigger impact on the community through consistent messaging across districts.

## *Non Profit Partnership and Collaboration*

There exist numerous watershed groups in the Eastern Panhandle of West Virginia with growing concern to abate pollution and clean the local TMDL streams. The EFC Project Team participated in multiple meetings with one of these groups, the **Tuscarora Creek Project Team**. The PSSD likewise accompanied the EFC Project Team to the Tuscarora Creek Project Team meetings to explain the PSSD stormwater program, permit and willingness to partner. The Tuscarora Creek Project Team meets every other month and has a wide range of public and private stakeholders including representatives from the Berkeley County Conservation District, City of Martinsburg, WV Department of Highways, WV DEP, WV Division of Forestry, Canaan Valley Institute, Cacapon Institute, Opeqon Creek Project Team, and others.

Through meeting with the Tuscarora Creek Project Team, a series of outreach activities were achieved including a news article (see Appendix N) and the outreach event on May 27th, 2015. The EFC Project Team worked closely with the **Canaan Valley Institute** to help plan the outreach event. The Project Team recommends the PSSD continue to attend Tuscarora Creek Project Team meetings and seek opportunities for stormwater outreach and partnership building. There is a caution that some of the Tuscarora funding is supported by EPA's 319 program, which cannot be used to address MS4 permit compliance. However, the members are well aware of the stipulations with those funds and exercise care not to cross activities that might jeopardize future funding. The EFC Project Team suggests future partnering with these members include accounting metrics of meetings attended

[21] WV Press Release: Governor Tomblin Signs SB 423, Amending the Aboveground Storage Tank Act, March 27, 2015, http://www.governor.wv.gov/media/pressreleases/2015/Pages/GOVERNOR-TOMBLIN-SIGNS-SB-423,-AMENDING-THE-ABOVEGROUND-STORAGE-TANK-ACT.aspx

and activities implemented for MS4 permit reporting as well as to ensure no 319 funding is used on the stormwater projects on behalf of PSSD.

## *Accessing Technical Assistance*

### Region 9 Eastern Panhandle Regional Planning & Development Council (Region 9)

The Regional Planning and Development Council is a hybrid state and local governmental organization that supports communities in West Virginia. The area served by Region 9 includes Berkeley County, Jefferson County, Morgan County, the City of Martinsburg, and other cities in the eastern panhandle. Region 9 offers land use planning, stormwater and other environmental technical assistance, guidance, and grant support to member jurisdictions.[22] The EFC Project Team and PSSD initiated a partnership in early 2015 and since that time, the Region 9 staff has begun supporting PSSD in multiple arenas including stormwater permit reporting. Region 9 was a partner on the stormwater outreach event held in May with the PSSD.

Region 9 has written grant support for a stormwater management project in the City of Martinsburg and if awarded, could develop an extensive GIS mapping capacity. If the City is awarded the grant, there may be opportunities for the PSSD to use some of the mapping services that Region 9 would acquire under that award. While not a firm commitment on the part of Region 9, there exists a strong alliance between PSSD and Region 9, and the Project Team recommends that partnership be continued. Many Region 9 activities are free services to their member jurisdictions, and if the PSSD requires support beyond the capacity of Region 9, the Region 9 staff indicated they would be willing to help write grants to seek additional funding to build capacity at PSSD for stormwater management.

### State Agencies

Technical assistance can come in the form of state agencies, such as the West Virginia (WV) Bureau of Public Health and the WV DEP, who have staff in the region and are willing to help the PSSD meet its MS4 permit. If the PSSD has questions or needs guidance or advice, the EFC Project Team recommends reaching out to these agencies, which both benefit when MS4 permits are in compliance, and have strong incentives to help the PSSD. Assistance to the PSSD could occur at times throughout the year and if they cannot provide immediate help, they know of other organizations who can offer requested support.

## *Grant Opportunities*

While partnering can help save costs, and a stormwater fee can offer a critical dedicated source of revenue, it takes multiple funding streams and actions to maximize leveraging resources. To this end, the EFC Project Team explored multiple grant opportunities to help the PSSD build capacity and develop its MS4 Program.

NFWF, who is sponsoring this project, offers a cycle of technical assistance grants for stormwater each year. In August 2015, NFWF will open their program for requests for stormwater support using the list of technical service providers. This was raised to the PSSD Board of Directors for further consideration as part of the final recommendations to help PSSD build staff support and help fill gaps in engineering data.

Additionally, several entities are willing to write grants, on behalf of the PSSD, to help fund aspects of the MS4 Program. One organization in particular, the Canaan Valley Institute, reached out to the EFC Project Team, expressing a willingness to provide support for the PSSD. While the EFC does not

[22] Region 9, The Eastern Panhandle Regional Planning and Development Council, http://www.region9wv.com/

advocate one consulting firm over another, there are several groups in the region who the team consulted with, and who will provide opportunities to enhance the PSSD's program.

Additionally, the WV DEP offers multiple cycles of funding for watershed improvement projects. While the current funding cycle is closed, the EFC Project Team recommends the PSSD continue to review WV DEP funding options and let the WV DEP staff know PSSD is interested in funding to help satisfy their MS4 permit.

Region 9 is a primary grant writer for West Virginia to seek allocations under annual EPA funding offered through two programs: Chesapeake Bay Implementation Grants (CBIG) and Chesapeake Bay Regulatory and Accountability Program (CBRAP). Table 4 highlights the amount of funding allocated to West Virginia for water quality improvement projects.

**Table 4: CBIG and CBRAP Funding Allocation for West Virginia, 2014[23]**

| Funding Source | Allocated to WV | % Allocated to WV | Total Allocated Across all Bay States |
|---|---|---|---|
| **CBIG Funding** | $1,250,000 | 10% | $12,719,021 |
| **CBRAP Funding** | $672,311 | 6% | $11,028,079 |

The EFC recommends the PSSD collaborate with Region 9 and other entities, including overlapping MS4 municipalities such as the City of Martinsburg and the WV Department of Highways, to seek funds to develop their MS4 Programs. The CBIG and CBRAP funding streams typically open in January each year and awards are announced in March. The EFC Project Team recommends the PSSD verify the dates for the 2016 cycles of funding and seek to apply. The funding through those two streams is allocated to projects located within the Chesapeake Bay drainage basin, which includes Berkeley County.

It should be noted that during the final presentation to the Berkeley County Council on June 25th, 2015, the Project Team learned that the County has a dedicated grant writer. Where possible, the PSSD should include support from the grant writer, written into the recommended MOU between PSSD and County, to support the development of grants identified by the Project Team, and beyond.

[23] U.S. Environmental Protection Agency, Chesapeake Bay Program Office Grant and Cooperative Agreement Guidance, Attachment 15, States Final Allocations, March 3, 2015, http://www.epa.gov/region3/chesapeake/grants/2015Guidance/2015-CBPO-GG_030315.pdf and http://www.epa.gov/region3/chesapeake/grants/2015Guidance/Attachment15_Allocations_States-final030315.pdf

# Chapter 7: Conclusion

As a result of this study, the PSSD, as well as the County, has a plan and a better understanding of the resources and activities needed to achieve an imporved level of service for stormwater management. The time is now for Berkeley County to act on developing a robust MS4 Program to meet the PSSD's existing MS4 permit and improve local and regional water quality. After exploring a suite of financing options, the Project Team recommends the creation of a dedicated stormwater user fee to support the MS4 compliance program. The fee will support an estimated annual stormwater program budget, developed as an interim three-year budget, of approximately $1.12 million annually. The EFC Project Team recommends charging existing PSSD customers a flat fee of **$46.56** annually to residential customers and a flat fee which is twice the size of the residential fee, **$93.12** annually to non-residential customers. The Project Team received extensive feedback on the recommended rate structure, and provided additional scenarios that the PSSD and County will ultimately need to decide on given what is best for the community.

Berkeley County, the only MS4-designated County in the state, is paving the way for creating countywide stormwater programs in West Virginia. While examples of countywide stormwater programs, dedicated fee systems, and sewer districts serving as stormwater districts exist throughout the region and nation, there are aspects of West Virginia that make Berkeley County unique, such as its rural composition and limited hard infrastructure in place, lack of zoning, and its ability to collect and enforce stormwater fees. While the program components must be tailored to provide a level of service specific to the context of Berkeley County, the need for a stable, sufficient, flexible and recurring revenue stream; for analyzed engineering data; for prioritized projects; for staff capacity; and, for partnerships that reduce implementation costs are common to any community seeking to host a comprehensive stormwater program, avoid penalties, and prevent increased costs over time due to system neglect.

While developing a stormwater fee should be done expeditiously, there is also a pressing need to bring resources to the PSSD through partnerships, technical assistance, and grants in order to fill the current resource gap, although these opportunities alone will not be sufficient to support the MS4 Program. The Project Team identified many groups in the region that are interested in partnering with the PSSD to support their efforts, helping leverage resources to advance water quality in the West Virginia portion of the Chesapeake Bay and educating the community through consistent messaging around water quality and the importance of proper stormwater management. Such partnerships must be fostered and maintained over time to fully leverage the region's resources and reduce the collective burden.

Assuming a stormwater fee is passed, there will still be hurdles for the PSSD to overcome, as with any program startup. These hurdles are certainly not insurmountable and can be overcome with the help of partners and additional local resource available to the PSSD. This effort has provided a unique perspective on the importance of communicating and ensuring dedicated funding is in place when a stormwater program is planned and started. As with any program, the MS4 Program budget and goals should be reevaluated often. Given the uncertainties around the County's stormwater system currently, the program will change and needs to be adapted as it develops and as new information on which to seek efficiencies is gathered.

# Appendix A: Geography, Geology, and Flooding in Berkeley County

Geographically, Berkeley County terrain is typical of the Ridge and Valley provinces. It is bisected entirely by North Mountain running north to south with elevations of 400 to 1,000 feet. The lowest elevation in the County is 340 feet, where the Potomac River leaves the County. The eastern three-fifths of the county is part of the Great Valley and has gentle rolling hills typically at an elevation of 500 to 600 feet above mean sea level within the Shenandoah Valley.[24]

Opequon Creek and its tributaries drain most of the eastern land area. This area has geology of limestone with caves, sinkholes and springs. The land in the western two-fifths of the County consists of a series of narrow valleys and steep, rugged mountains. The land in the west is underlain by shale where there are strongly steep slopes, resulting in flashy streams prone to flooding after storms.

Surface water in streams and quarries cross the landscape, and 0.4 square miles of the County is water. With annual average precipitation of 37.6 inches (including rain and snow) in combination with the steep slopes, flooding is rated the most prominent hazard in Berkeley County. The Region 9 Planning & Development Council Multi-Jurisdictional Hazard Mitigation Plan developed for Berkeley and Morgan Counties and their municipalities notes flood damage throughout the County is a result of both flash flooding and riverine flooding.[25]

In 2009, the Federal Emergency Management Agency (FEMA) prepared an updated Flood Insurance Study (FIS) and flood hazard ranking in Berkeley County, noting principle streams prone to flooding include Opequon, especially reaches in the County near the City of Martinsburg. The FIS determined there are no existing local flood protection measures in the unincorporated areas of Berkeley County. [26] Therefore, stormwater runoff poses a safety threat to the County. In response, the County has a floodplain ordinance and is a member of FEMA's Community Rating System (CRS) Program.

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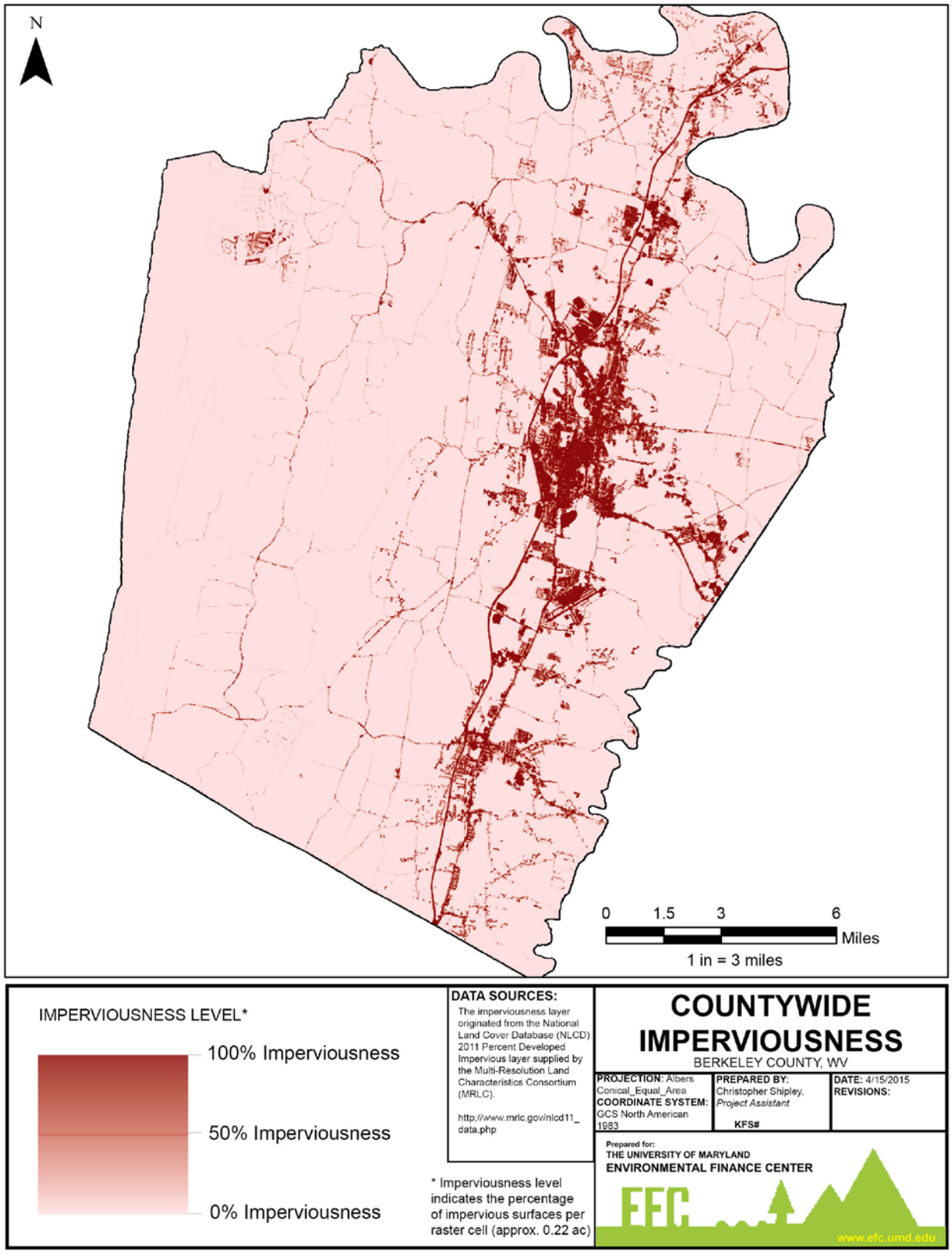
[24] M. Kozar, U.S. Geological Survey, Synopsis of Karst Investigations Conducted in Jefferson and Berkeley Counties, West Virginia, by the U.S. Geological Survey, West Virginia District, http://water.usgs.gov/ogw/karst/kig2002/mdk_synopsis.html

[25] Region 9, Planning & Development Council, 2012, Draft, Multi-Jurisdictional Hazard Mitigation Plan for Morgan and Berkeley Counties, West Virginia http://www.berkeleycountycomm.org/pdf/hmp2012.pdf

[26] Federal Emergency Management Agency, Community Rating System, 2014, http://www.fema.gov/media-library-data/1398878892102-5cbcaa727a635327277d834491210fec/CRS_Communites_May_1_2014.pdf

# Appendix B: Berkeley County Impervious Level



# Appendix C: Meeting List

*The following is a list of all formal in-person meetings held during the project timeline, as well as any formal phone interviews. In addition to this list, the EFC Project Team met often, held informal phone meetings with Berkeley County Public Service Sewer District (PSSD) staff periodically, and communicated via phone and email with multiple County representatives and external project partners throughout the project timeline.*

**August 18th, 2014 –** Kickoff meeting with the EFC Project Team and PSSD staff representatives

**October 8th, 2014 –** In-person meeting with the EFC Project Team, PSSD staff representatives, and engineering consultants; in-person meeting with the EFC Project Team and Berkeley County engineering department staff

**November 11th, 2014** – Phone interview with the EFC Project Team and City of Fairmont, WV, a community who has implemented a stormwater fee and gone through a WV Department of Environmental Protection (WV DEP) audit of its stormwater management program

**November 18th, 2014** – The EFC Project Team held four 1:1 meetings with the Berkeley County Solicitor, Berkeley County Planner, PSSD General Manager, and BC PSSD consulting engineer

**December 15th, 2014 –** In-person meeting with the EFC Project Team and WV DEP staff representatives; 1:1 meeting with the EFC Project Team and PSSD Attorney

**December 16th, 2014** – The EFC Project Team attended the monthly Tuscarora Creek Project Team meeting; In-person meeting with the EFC Project Team and Berkeley County Planning and Engineering staff representatives

**March 3rd, 2015 –** The EFC Project Team presented our interim recommendations to the PSSD Board of Directors

**March 4th, 2015 –** The EFC Project Team along with the PSSD General Manager attended the monthly Tuscarora Creek Project Team meeting

**March 10th, 2015** – Phone interview with the EFC Project Team and newly hired Berkeley County Engineering Department Director

**April 16th, 2015** – In-person meeting with the EFC Project Team, PSSD General Manager, and staff representative from the Eastern Panhandle Regional Planning and Development Council

**May 5th, 2015** – In-person meeting with the EFC Project Team, PSSD General Manager, and Berkeley County staff and elected officials; The EFC Project Team along with the PSSD General Manager met with the Tuscarora Creek Project Team to prepare for the May 27th outreach event

**May 13th, 2015 –** 1:1 meeting with the EFC Project Team and PSSD General Manager

**May 27th, 2015 –** 1:1 meeting with the EFC Project Team and PSSD General Manager followed by the EFC Project Team hosting an outreach event with the Tuscarora Creek Project Team and watershed partners including watershed groups and state agencies at Oatesdale Park in Martinsburg, WV

**June 16th, 2015 –** The EFC Project Team presented our final recommendations to the PSSD Board of Directors

**June 25th 2015 –** The EFC Project Team presented our final recommendations to the Berkeley County Council

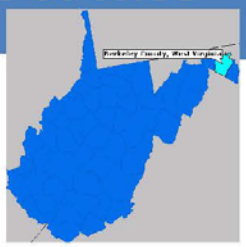
# Appendix D: Photos from Oatesdale Park Outreach Event




*Photo: Courtesy of M. Whyte, Bureau of Public Health*

# Appendix E: Berkeley County Regional Stormwater Outreach Flyer

## STORMWATER MANAGEMENT IN BERKELEY COUNTY



***Why is stormwater management important in Berkeley County?***

* Heavy rains have occurred in the past, and will continue in the future to endanger livelihoods – from property to crops to lives in the panhandle.
* The Potomac River and its tributaries have played an important part in Berkeley County's economy and culture; poorly managed stormwater runoff pollutes the water and threatens the communities using these waterways.
* Due to the pollution of local and regional waters, many communities across the nation – including Berkeley County – are required to comply with Municipal Separate Storm Sewer (MS4) Permits that regulate stormwater management.
* The Berkeley County Public Service Sewer District (PSSD) has the responsibility to meet the MS4 stormwater regulations. Through many partners such as the Tuscarora Creek Project Team and the groups below, the PSSD is working to address the County's MS4 Permit and save Berkeley County money in a stormwater management program.

Berkeley County Public Service Sewer District

City of Martinsburg WEST VIRGINIA

Serving Berkeley, Jefferson, and Morgan Counties
THE EASTERN PANHANDLE REGIONAL PLANNING AND DEVELOPMENT COUNCIL

***As citizens, what can WE do to minimize the negative impacts of stormwater runoff?***

* Limit the amount of solid surfaces or use permeable materials.
* Allow buffers of vegetation alongside waterways to filter and slow runoff, and plant native trees, shrubs and groundcover to absorb rainwater.
* Consider a rain garden or rain barrel to manage runoff on your property.
* Find ways to reduce the amount of litter, sediment, and other debris entering waters.
* Use natural alternatives to chemical fertilizers and pesticides.
* Pick up pet waste to prevent from entering streams after storms.

***What are the efforts of the Berkeley County PSSD Stormwater Financing Feasibility Study?***

* The Environmental Finance Center (EFC) is working with the Berkeley County PSSD through funding provided by the National Fish & Wildlife Foundation (NFWF) to find long-term solutions to managing stormwater and address the County's stormwater regulations.
* The EFC is crafting a program for the PSSD and Berkeley County, while tapping into the knowledge and passion of community groups, to help develop a stormwater program that addresses clean waters, minimizes flooding, and meets regulatory needs in a long-term, cost effective manner.
* The EFC will provide financing recommendations designed to support stormwater program needs in a way that reflects the nature and characteristic of Berkeley County.

EFC

***Want to learn more or share your thoughts on the BC PSSD Stormwater Financing Feasibility Study?***

CONTACT: Jill Jefferson, EFC, Virginia Satellite Office; jilljeff@umd.edu; 540-987-9010

# Appendix F: MS4 Program Staffing Costs, Years 1-3

| Position Title | Annual Wage | Overhead | FTE | Total Salary (wages + overhead; 2.5% inflation added each year) | | | Notes |
|---|---|---|---|---|---|---|---|
| | | | | Year 1 | Year 2 | Year 3 | |
| MS4 Program Assistant | $35,000 | $12,250 | 100% | $47,250 | $48,431 | $49,642 | MCMs 1 & 2; administrative tasks of other MCMs (developing protocols for tracking, documentation, etc.); working closely in year 1 alongside MS4 Program GM |
| MS4 Program General Manager | $55,000 | $19,250 | 100% | $74,250 | $76,106 | $78,009 | Lead in developing MS4 permit compliance program; will work with Region 9 consultant to develop Standard Operating Procedures |
| MS4 O&M Foreman | $45,000 | $15,750 | 100% | [redacted] | $60,750 | $62,269 | Main focus in beginning of program will be MCMs 4 & 5 (serve as liaison with County); also work on developing MCMs 3 & 6 |
| Fiscal Officer | $65,000 | $2,275 | 10% | $8,775 | $8,994 | $9,219 | Utilize existing staff |
| IT Administrator | $40,000 | $1,400 | 10% | $5,400 | $5,535 | $5,673 | Utilize existing staff |
| MS4 Inspector I | $35,000 | $12,250 | 100% | $47,250 | $47,250 | $48,431 | Need inspector to handle inspection and tracking of current permits. Currently it appears that this inspection is being handled within the County, however, the extent to which the current operations meets the required level of service is concerning. Consequently, this estimate contemplates this work would be perfumed by a new position reporting to the Stormwater Program Manager above. Once fee in place and better understanding of system is known, can hire additional inspector(s). |
| MS4 Inspector II | $38,000 | $13,300 | 100% | [redacted] | | | |

| Position Title | Annual Wage | Overhead | FTE | Total Salary (wages + overhead; 2.5% inflation added each year) | | | Notes |
|---|---|---|---|---|---|---|---|
| | | | | Year 1 | Year 2 | Year 3 | |
| MS4 O&M Technician I | $30,000 | $10,500 | 100% | [redacted] | | | Once fee in place and better understanding of system is known, can hire O&M technician(s). In the event that the Inwood project is finalized prior to year three, that project would necessitate O&M Tech labor. The associated O&M costs with the potential Inwood project are included as a line item in the capital budget below. |
| Staffing Reserve & Contingency | | | | $18,293 | $24,707 | $25,324 | 10% for reserve and contingency |
| **Total Staffing Costs** | | | | **$201,218** | **$271,774** | **$278,568** | |

# Appendix G: MS4 Program Operations & Maintenance Costs, Years 1-3

| Description | Year 1 | Year 2 | Year 3 | Notes |
|---|---|---|---|---|
| *Engineering Studies* | | | | |
| Stormwater Management Plan for 4 watersheds | $230,000 | $230,000 | | Year 1 and 2 reflect cost provided by Thrasher Engineering for developing stormwater management plan per watershed (assuming 4 large watersheds) to better understand stormwater system and develop plan for MS4 program implementation; $115,000/watershed |
| Mapping stormwater and sewer system | $50,000 | $50,000 | | Cost provided by Thrasher Engineering to complete manholes for sewer system + digitize all files into GPS with field crew running Arc Pad; Total Cost of project is $192,000. Thrasher estimate contemplates that work would be a combination of sewer and stormwater. Estimate contemplates that total costs of work would be born by both sewer and new stormwater equally. Budget reflects stormwater portion of total project estimate. Estimated 18 month project time. (Per Thrasher, the cost doubles if only map stormwater and do not map sewer) paid for over 18 months. |
| Service to Update Inwood Study to bring to date cost estimate and design | $60,000 | | | Cost provided by the PSSD GM |
| *Traditional O&M* | | | | |
| Education & Outreach -- Mailings | $3,000 | $1,500 | $1,500 | $1,500 per mailing for additional insert; assume 2 mailings sent out in year 1 (1 general education; 1 explanation of new fee); 1 mailing/year after |
| Legal services | $25,000 | $25,000 | $25,000 | Legal services currently $175/hour; estimate of 150 hours annually for development of authority and fee, collections, capital project easements, recording of BMP transfer, property issues relating to projects |
| Truck | $5,000 | $5,000 | $5,000 | Assumes $25,000 vehicle and service 5 year life |

| Description | Year 1 | Year 2 | Year 3 | Notes |
|---|---|---|---|---|
| Auto Expenses (gas and maintenance) | $4,400 | $4,400 | $4,400 | Assumes 20,000 miles per year @ 25 mpg @ $3.00 per gallon inspecting sites and projects, $2,000 per year for maintenance |
| Operating expenses to support staff activities | $18,658 | $25,201 | $25,831 | Assumes 10.2% of salaries & benefits based on sewer operating expenses (includes training & education, office & janitorial supplies, tools & computer expense, materials & supplies, shipping, miscellaneous, director compensation, dues & subscriptions, advertising, postage, travel, office utilities, and communications) |
| GIS software and services | $15,000 | $15,000 | $15,000 | Software purchase in year 1 to develop in-house data; annual cost for GIS software |
| O&M Reserve & Contingency | $41,106 | $35,610 | $7,673 | 10% for reserve and contingency |
| **Total O&M Costs** | **$452,164** | **$391,711** | **$84,404** | |

# Appendix H: MS4 Program Capital Costs, Years 1-3

| Description | Year 1 | Year 2 | Year 3 | Notes |
|---|---|---|---|---|
| Inwood Project Sewer Fund Due To Stormwater Fund | | $35,282 | $35,282 | Costs from 2014 BC PSSD Financial Audited Statement |
| Inwood Project 1A - Green Infrastructure Project (GIP) | | $396,573 | $396,573 | Costs based on Inwood Report. Assumes 20 year payback at 3% cost of capital. |
| Inwood Project 1 B - Green Infrastructure Upgrad | | $268,863 | $268,863 | |
| Inwood Project - Green Infrastructure Basin Operations and Maintenance | | | $126,000 | Annual contracted services to operate and maintain. Costs based on Inwood Report. |
| Inwood Project - Green Infrastructure Pump Station O&M | | | $20,000 | |
| Capital Reserve & Contingency | | $70,072 | $84,672 | 10% for reserve and contingency |
| **Total Capital Costs** | **$0** | **$770,789** | **$931,389** | |

# Appendix I: How a Stormwater Fee Works

The basic premise behind a community's stormwater program is that all property owners receive some benefit from the system being maintained; therefore, all properties should be required to participate in the cost of maintaining that service. Most stormwater fee rates are therefore based on the size, or footprint, of the structural part of a property. This physical part of the property is known as ***impervious surface*** and includes all of the hard surfaces of a property such as a roof, patio, paved area, or sidewalk. The reason for basing a fee on impervious surface is that a hard surface does not allow water to infiltrate into the ground, thereby increasing the volume and flow of stormwater that a community must manage.

Effective stormwater fees make a direct connection between the anticipated expenses to properly manage the system and the revenue generated. In other words, the fee should be determined by the level of revenue needed to deliver stormwater management services to the community, with some allowance for the level to which a property contributes to runoff.

There are several ways to calculate a stormwater utility rate. The most simple, fair, and common method is based on a parcel's amount of impervious surface – the extent to which a parcel contributes to runoff. When implemented, the fee may take the form of a flat or tiered rate structure, or some combination of both. An Equivalent Residential Unit (ERU) is a unit of measure based on either the average impervious surface of a single family dwelling or residential parcel. A specific fee level is attached to an ERU, and the number of ERUs on a given property often serves as the basis for the stormwater charge.

In many cases for residential properties, a flat fee is often recommended over exact parcel based measurements due to the level of program development and administrative burden that would be involved. This flat fee becomes the rate charge for non-residential properties, since it is assumed that the typical residential property is 1 ERU. Determining the fee for non-residential parcels is typically done by calculating the exact amount of impervious surface on the site and then dividing the amount of impervious surface that was calculated for residential properties to determine the number of ERUs for a particular property. The property is then charged a rate (often the same as the residential flat rate) per ERU.

Implementing a stormwater user fee is a national trend on the increase in the U.S., primarily because these fee structures, if designed correctly, will collect a sufficient amount of revenue to support program costs in the most equitable manner possible. Also, utility-based stormwater programs tend to be more efficient, as the responsibility for managing stormwater is coordinated in one program rather than piecemeal across several departments.

# Appendix J: Credit System and Exemptions

### *Explanation of Credit System*

A stormwater credit is a reduction in the portion of the stormwater user fee that is made available if certain approved practices are put in place to reduce the impact of stormwater generated on a property. Many stormwater utilities around the country are required by law to have some type of credit system in place; not all states have a legal requirement, however, and some communities prefer not to put a credit system in place.

There are many factors to take into account when a community decides whether or not to develop a credit program for their stormwater program. One reason some communities avoid a credit system is the administrative burdens associated with a fair, easily understood, and straightforward credit program. Another is the challenge of needing additional capacity to inspect installations and verify the information submitted on an application for credit is accurate. Lastly, it is difficult to gauge the level of credit system participation a community can expect and therefore equally difficult to determine the impacts a credit system may have on revenue generation. It takes several years of local data before a community is able to determine the difference in revenue collected with their program.

These challenges aside, there are also many reasons why communities move ahead with putting a credit program in place, even when not legally required by state law. To begin, the ability to reduce a property owner's stormwater charge helps to define these as a fee rather than a tax. In addition, credit systems give a community a way of encouraging behavior change on private property, because while local governments can go to great lengths to limit runoff on public lands, this will have little impact on a community's stormwater issues if it cannot be coupled with addressing runoff on private lands.

Rarely, if ever, is a credit program available at 100% reduction of the imposed fee. It is usually a certain percentage allowed for credit that correlates with the cost, size, and the degree of sophistication of the approved practice. Receiving credit is typically the responsibility of the property owner, who must apply for the credit. To be considered eligible for the credit, the property owner should be current in paying any tax and fee. A stated number of years that a credit is good are determined, as the general policy is that if the approved practice is not found to be well maintained or becomes non-functional during the eligible credit years then the credit can be terminated at any time. Supporting documentation is usually required when submitting an application and some communities charge a small processing fee to cover the cost of review, which may help offset the loss of revenue from imposing a credit system.

A clearly understood enforcement policy should be put in place right from the beginning of an approved credit program. For example, should the PSSD and/or Berkeley County decide to develop a credit program, the entity would reserve the right to review any application for accuracy and also have the right to inspect at any time. Appropriate action of consequences for failing to meet or maintain the approved practice should have some notification period to correct the deficiency followed by steps that are followed if not remedied within the appropriate amount of time.

A stormwater credit manual is usually developed and should be written to be easily understood. The same is done for the application process, thus limiting the time needed to answer questions regarding the program.

### *Types of Credits*

Both residential and non-residential credits can be included in a credit system. Residential credits are made available to residents based on the installation of a typical BMP applicable to homes such as rain barrels and rain gardens. Non-residential credits are made available to all properties that are considered commercial, multi-family, education, or industrial for the installation of typical non-residential BMPs such as permeable pavement, tree canopy improvements, and other practices that treat runoff on-site or slow volume and allow infiltration. Common credits are usually broken up into categories as follows:

- Quantity credits: Credit can be made available to properties that reduce the rate and/or volume of stormwater runoff from a property. An example of this would be a retention or detention pond, storm sewers, storm culverts, or storm channels.
- Quality credits: Credit can be made available to properties that reduce pollutants in stormwater runoff through the deployment of BMPs and help manage stormwater. An example of a BMP would be vegetative swales, pervious pavements, infiltration basins, or constructed wetlands.
- Outreach: Credit can be made available to those who undertake a specific action to educate or engage on stormwater management issues.
- Education: Credit can be made available to those such as public and private schools who wish to get credit for including stormwater education into the curriculum or through school programs. This is not a very common credit but may be helpful, along with outreach, to help meet one of the six MCMs required within the NPDES MS4 Phase II Permit.
- Financial hardship: Credit can be made available to those considered to be unable to pay the stormwater fee based on economic need or some other financial hardship. This is not always a set dollar figure threshold but often used as a case-by-case basis. Other credits for elderly may fall under this category as well.

### *Exemptions*

Occasionally, stormwater utilities will offer an exemption to a property that will clear the property owner of paying all or some of their stormwater fee. The general rule of thumb is to proceed with caution when granting exemptions. The basis for recommending a dedicated user fee in the first place is because it is the fairest and most equitable method of calculating a charge for the service needed to manage stormwater. Exemptions can be considered discriminatory in nature if not considered justifiable and fair. The other reason for proceeding with caution on granting exemptions is that it may severely restrict or reduce estimated revenue needed to maintain a certain level of service.

The most commonly exempted properties include undeveloped lots, vacant land, or agriculture. Other considerations for possible exemptions include public roads maintained by the state and county (popular exemption with many states), non-profits, federal or state properties, and elderly or welfare recipients (financial hardship). Finally, properties that were already designed and developed with on-site runoff management practices in place might also be candidates for an exemption.

# Appendix K: Existing Berkeley County PSSD Customer Flat Rate Scenarios to Support MS4 Program, Years 1-3

| Assumptions | | |
|---|---|---|
| Number of Stormwater Rate Payers | 25,011 | *Information provided by PSSD Finance staff* |
| Adjustment for Bad Debts (BD) | 5% | *In conversations, PSSD estimated indicated that current BD ratio is approximately 200 and/or 5% of customers per month.* |
| Net Payers | 23,760 | |

| **Total Monthly Fee Using Average Rate Across Years 1-3** | **$3.95** |
|---|---|

| | Year 1 Budget | Annual Rate Per Customer | Monthly Rate Per Customer |
|---|---|---|---|
| **Staffing** | $182,925 | $7.70 | $0.64 |
| **O&M** | $411,058 | $17.30 | $1.44 |
| **Capital Improvements** | $0 | $0.00 | $0.00 |
| **Reserve & Contingency** | $59,398 | $2.50 | $0.21 |
| **Total** | **$653,382** | **$27.50** | **$2.29** |

| | Year 2 Budget | Annual Rate Per Customer | Monthly Rate Per Customer |
|---|---|---|---|
| **Staffing** | $247,067 | $10.40 | $0.87 |
| **O&M** | $356,101 | $14.99 | $1.25 |
| **Capital Improvements** | $700,717 | $29.49 | $2.46 |
| **Reserve & Contingency** | $130,388 | $5.49 | $0.46 |
| **Total** | **$1,434,273** | **$60.36** | **$5.03** |

| | Year 3 Budget | Annual Rate Per Customer | Monthly Rate Per Customer |
|---|---|---|---|
| **Staffing** | $253,244 | $10.66 | $0.89 |
| **O&M** | $76,731 | $3.23 | $0.27 |
| **Capital Improvements** | $846,717 | $35.64 | $2.97 |
| **Reserve & Contingency** | $117,669 | $4.95 | $0.41 |
| **Total** | **$1,294,361** | **$54.48** | **$4.54** |

# Appendix L: All Berkeley County Parcels Flat Rate Scenarios to Support Stormwater (MS4) Program, Years 1-3

| Assumptions | | |
|---|---|---|
| Number of Stormwater Rate Payers | 45,865 | *Information provided by Berkeley County Tax Assessors' Office* |
| Adjustment for Bad Debts (BD) | 5% for existing PSSD customers; 50% applied to all other parcels in County | *In conversations, PSSD estimated indicated that current BD ratio is approximately 200 and/or 5% of customers per month. Assumed 50% BD ratio for all other parcels in County.* |
| Net Payers | 34,187 | |

| **Total Monthly Fee Using Average Rate Across Years 1-3** | **$2.75** |
|---|---|

| | Year 1 Budget | Annual Rate Per Customer | Monthly Rate Per Customer |
|---|---|---|---|
| **Staffing** | $182,925 | $5.35 | $0.45 |
| **O&M** | $411,058 | $12.02 | $1.00 |
| **Capital Improvements** | $0 | $0.00 | $0.00 |
| **Reserve & Contingency** | $59,398 | $1.74 | $0.14 |
| **Total** | **$653,382** | **$19.11** | **$1.59** |

| | Year 2 Budget | Annual Rate Per Customer | Monthly Rate Per Customer |
|---|---|---|---|
| **Staffing** | $247,067 | $7.23 | $0.60 |
| **O&M** | $356,101 | $10.42 | $0.87 |
| **Capital Improvements** | $700,717 | $20.50 | $1.71 |
| **Reserve & Contingency** | $130,388 | $3.81 | $0.32 |
| **Total** | **$1,434,273** | **$41.95** | **$3.50** |

| | Year 3 Budget | Annual Rate Per Customer | Monthly Rate Per Customer |
|---|---|---|---|
| **Staffing** | $253,244 | $7.41 | $0.62 |
| **O&M** | $76,731 | $2.24 | $0.19 |
| **Capital Improvements** | $846,717 | $24.77 | $2.06 |
| **Reserve & Contingency** | $117,669 | $3.44 | $0.29 |
| **Total** | **$1,294,361** | **$37.86** | **$3.16** |

# Appendix M: Existing PSSD Customer Stormwater Fee Rates under various Commercial: Residential Scenarios to Support MS4 Program, Years 1-3

| | |
|---|---|
| Average Annual Budget | $1,127,339 |
| Residential Customers | 24,534 |
| Commercial Customers | 477 |
| Collection Rate | 95% |
| Net Residential | 23,307 |
| Net Commercial | 453 |
| Net All PSSD Customers | 23,760 |

| Relationship of Commercial to Residential | 1 | 2 | 3 | 4 | 5 | 10 | 25 | 50 | 100 |
|---|---|---|---|---|---|---|---|---|---|
| **Annual Rate to Maintain Commercial: Residential Ratio** | | | | | | | | | |
| Residential | $47.45 | **$46.56** | $45.70 | $44.88 | $44.08 | $40.50 | $32.55 | $24.53 | $16.43 |
| Commercial | $47.45 | **$93.12** | $137.11 | $179.51 | $220.42 | $404.95 | $813.70 | $1,226.31 | $1,642.82 |
| | | | | | | | | | |
| **Monthly Rate to Maintain Commercial: Residential Ratio** | | | | | | | | | |
| Residential | $3.95 | **$3.88** | $3.81 | $3.74 | $3.67 | $3.37 | $2.71 | $2.04 | $1.37 |
| Commercial | $3.95 | **$7.76** | $11.43 | $14.96 | $18.37 | $33.75 | $67.81 | $102.19 | $136.90 |

# Appendix N: News Article from Tuscarora Creek Project Team Meeting

***Representatives meet to discuss MS4 requirements***
December 22, 2014
By John McVey (jmcvey@journal-news.net) , Journal News

MARTINSBURG - Representatives of the Environmental Finance Center met Tuesday with the Tuscarora Creek Project Team as part of the EFC's outreach program for the Berkeley County Public Service Sewer District.

Located in College Park, Maryland, EFC has won a grant through the National Fish and Wildlife Foundation to do a stormwater management feasibility study for the Sewer District as part of the district's new MS4 designation.

MS4 stands for municipal separate storm sewer system. Berkeley County has been designated a MS4 community by the U.S. Environmental Protection Agency because it is part of the Hagerstown-Martinsburg urbanized area as designated by the U.S. Census Bureau.

The Public Sewer District must get a MS4 permit to discharge stormwater runoff into local creeks and streams. The permit requires the district to institute Best Management Practices to control stormwater runoff.

TCPT was formed a little more than two years ago to implement a watershed plan for the creek. The Tuscarora is a tributary of the Opequon Creek, which flows into the Potomac River.

The EFC representatives met with the TCPT to learn how the Sewer District can join with the watershed group to meet the MS4 requirements.

"Partnerships are a huge part of the program," Monica Billig, a program manager for EFC, told members of the TCPT Tuesday. "About a quarter of the program is outreach."

Jill Jefferson, also a program manager for EFC, described two components to an outreach program: sending out information about stormwater management and taking in information from residents, businesses, agencies and others.

"We need to know what are their concerns," Jefferson said. "We need the community (in order) to succeed to make stormwater management a priority."

Among other questions, Jefferson wanted to know if the community would be open to a public meeting to discuss stormwater management issues, which spurred a discussion about how to encourage people -other than members of watershed associations - to attend.

Free pizza was one suggestion.

Billing the meeting as a discussion of a "rain tax" also was suggested.

Rain tax is the less-than-complimentary name given to fees to fund stormwater management utilities.

In an earlier interview with The Journal, Curtis Keller, general manager of the Sewer District, said that a stormwater utility will eventually be created in Berkeley County, with its own revenue through a stormwater fee, and will be a division of the sewer district. No time frame has been established for forming a stormwater utility.

"Are we willing to put money into protecting our water?" Jefferson asked. "A stormwater management fee could be a consideration. We should want to invest in our water."

The EFC representatives presumably will be meeting with other organizations and agencies as it develops the feasibility study. The study is due in the spring.

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# Appendix O: News Article from Final Presentation to the Berkeley County PSSD Board of Directors

## Sewer District hears findings

By **Samantha Cronk**, www.journal-news.net
(http://getpocket.com/redirect?url=http%3A%2F%2Fwww.journal-news.net%2Fpage%2Fcontent.detail%2Fid%2F636627%2FSewer-District-hears-findings.html%3Fnav%3D5006)
June 17th, 2015
View Original

The Environmental Finance Center at the University of Maryland presented the findings of its stormwater feasibility study for the county during the district's board meeting Tuesday. The district partnered with the Environmental Finance Center through a grant to determine the best process to implement, and fund, a stormwater utility.

All results presented were recommendations, with all final decisions requiring approval from the sewer district's board members.

As part of the MS4 permit requirements, the district has to meet six Minimum Control Measures and continuously document their achievement. The measures include aspects like public education and participation, controlling runoff from construction sites, new development and redevelopment.

Berkeley County is the first county in West Virginia to become an MS4 county. MS4 stands for municipal separate storm sewer system and is a program designed to regulate the stormwater and other discharge of a given area. The permit was issued to Berkeley County in 2004 and transferred to the sewer district in 2011.

The Center's final recommendations include implementing a three-year interim phased program to allow the district to develop staff, management and procedures during that time. To implement a stormwater utility, the district would have to increase its operating, engineering and capital budgets to meet the six MS4 requirements and is not permitted to use funds generated through existing sewer funds.

Eric Reed, research associate with fiscal and financial analysis for the Center, estimates the sewer district needs $1.12 million per year during the three-year interim to support program activities. The $1.12 million would be divided into revenue for staff, operation and maintenance and engineering costs and capital improvements.

"We don't see using general funds as an option, the reason being, I think one of the issues we ran into is, under the current utility rate plan, there are no funds available for stormwater," Reed said.

Reed recommended the district establish a stormwater fee as the most efficient way to generate revenue for the utility program. The recommended cost to customers during the three-year interim is a $46.56 annual rate per residential customers and $93.12 annually per residential customer. He added that the fee has the potential to be tied to impervious surface in the county, which affects stormwater, which is part of the group's long-term recommendation.

Throughout the three-year period, there is the potential to create a credit program for customers who implement stormwater management practices either at their homes or businesses, Reed said.

But, the recommendation was to only charge water or sewer district customers during the three years, since it is easier to enforce collection from established customers.

Board member Greg Rhoe stated that it may be wiser to charge all county residents, excluding those who live in the City of Martinsburg, equally when trying to promote the program, but enforcement could be an issue.

"If they're not connected to water or sewer, if they don't pay their stormwater fee, you can't shut their water and sewer off. It's not fair, but as a practical matter, it is what it is. I'm not sure what the right answer is," he said.

Resident Robert Ryan also advocated for opening the billing to all county customers.

"The initial capital costs are going to be horrendous to start up; you might as well fold (everyone) into that. Go after everybody, and all the residents pay equally," Ryan said. "If you start at the beginning (of the interim process) and bill everyone, everybody's unhappy, but we're all unhappy together."

Reed said the customer rates proposed were around the mid-range of stormwater fees when compared nationally. Any fee that is established must be approved by the Berkeley County Council.

Monica Billig, program manager with the Center, stressed that it was imperative the district begin the three-year interim program and establish a stormwater fee as soon as possible to avoid fines from the Environmental Protection Agency, citing surrounding regional areas that have received up to $35,000 per day in fines for noncompliance.

Curtis Keller, general manager for the sewer district, said there's no timeline to establish a fee, and he believes it will be several months before the board is ready to recommend a fee.

The presentation made to the sewer district board will also be presented to the Berkeley County Council on Thursday, since the county currently shares some of the resources the district will need in its implementation.

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# Appendix P: News Article from Final Presentation to the Berkeley County Council

## County hears recommendations for creating stormwater utility and fee

By Samantha Cronk, www.journal-news.net (http://getpocket.com/redirect?url=http%3A%2F%2Fwww.journal-news.net%2Fpage%2Fcontent.detail%2Fid%2F637269%2FCounty-hears-recommendations-for-creating-stormwater-utility-and-fee.html%3Fnav%3D5006)
June 26th, 2015
View Original

During the council meeting, members heard the results of a year-long stormwater feasibility study by the Environmental Finance Center of Maryland University on the recommended steps needed to begin establishing a countywide program for stormwater management, including creating a stormwater utility and fee. The program will be administered by the Berkeley County Public Service Sewer District.

Berkeley County is the first county in West Virginia to become an MS4 county. MS4 stands for municipal separate storm sewer system and is a program designed to regulate the stormwater and other discharge of a given area.

The Center's final recommendations include implementing a three-year interim phased program to allow the sewer district to develop staff, management and procedures during that time. To implement a stormwater utility, the district would have to increase its operating, engineering and capital budgets to meet the six MS4 requirements and could not sustain those needs through revenue generated by the existing sewer funds.

Eric Reed, research associate with fiscal and financial analysis with the Center, estimates the sewer district needs $1.12 million per year during the three-year interim to support program activities. The $1.12 million would be divided into revenue for staff, operation and maintenance and engineering costs and capital improvements.

The recommended cost to customers during the three-year interim is a $46.56 annual rate per residential customers and $93.12 annually per residential customer. However, the cost analysis did not have enough information to take into account factors like the upcoming construction of the Inwood Bypass, which would impact the suggested rates.

Additionally, council president Doug Copenhaver said the county will be able to offer several in-kind services toward meeting some of the standards of a stormwater utility, called minimum control measures, like inspections performed by the engineering department and the services of the county's grant writer, which could potentially reduce the cost to customers.

Reed recommended the district establish a stormwater fee as the most efficient way to generate revenue for the utility program, with the fee assessed on current water and sewer customers, due to a better collectibility rate, for the first three years before going into effect countywide.

However, several council members felt the fee should be assessed countywide from the beginning since the stormwater ordinance will affect the entire county.

"Is it easier to collect the fees for the people who are on water and sewer - absolutely. Is it the best advice for the county council to do that or the sewer district - no. It's a countywide MS4," Copenhaver said.

As the first county in the state to establish and implement a program, Copenhaver said he feels the county should be receiving help, especially financial help, from the state in creating the first county model of a stormwater utility.

Reed proposed a flat fee for the first three years, stating that there is not enough GIS available to determine a fee based on a structure's impervious surface, which is how the fee is typically calculated.

However, Copenhaver suggested using information from the assessor's office to record residential and commercial structures' square footage to determine a more true fee.

Council members agreed to form a committee with members from the county and the Berkeley County Public Service Sewer District to discuss the recommendations from EFC and determine a fee.

Speaking during the public comment section of the council meeting, Greg Rhoe, water and sewer district board member, stated that while no taxpayer will likely embrace a new fee, he believes a countywide approach is the best way to address establishing a stormwater fee.

"We're going to have some of the highest rates in West Virginia for sewer service in Berkeley County from the PSC ranking. All of this is coming from regulatory burdens placed upon us. I know nobody is for dirty water, but it's rarely asked what we're going to pay to get (clean water)," he said.

"In light of all that, it's important to keep in mind that no new fee is going to be welcomed by anyone here in the county. I do believe it behooves us to try to do whatever we can. If it is a countywide problem, then we need to use countywide resources to try and solve it," he said.

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