Stormwater Action Plan

Rosemary Hills
Neighbors Association

Contents

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Preface

This document, prepared by the Environmental Finance Center (EFC) at the University of Maryland, is part of an outreach and education effort designed to increase awareness about the issue of stormwater pollution, increase the rate of participation by residents in Montgomery County programs, and more fully engage the leadership and residents of County homeowners' and neighborhood associations in the implementation of watershed restoration activities in their communities.

The purpose of this document is to better equip Montgomery County homeowners to access available resources and implement meaningful and successful projects that support the County's stormwater permit requirements as well as the community's priorities. This document is not meant to provide specific engineering solutions, but rather to provide a foundation for pursuing these solutions, if warranted, in addition to community-led solutions and initiatives.

On July 16, 2019, EFC staff met with a group of stakeholders comprised of representatives from the Rosemary Hills Neighbors Association (RHNA) to discuss stormwater related issues in the community, to review a detailed map of the community and identify problem areas, and to learn about upcoming community projects. On July 25, 2019, EFC performed a comprehensive walking tour of the community during which staff conducted a visual assessment of on-the-ground conditions, inspected the issues identified during the stakeholder meeting, and identified potential locations for community stormwater projects. Photo documentation of issues and potential project areas were also obtained at this time. A second stakeholder meeting was held on August 12, 2019 to present the findings of the walking tour, answer additional questions, and outline the format of the action plan.

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Introduction

Throughout the United States, including Montgomery County, the main policies that protect water quality are the Clean Water Act, Total Maximum Daily Loads (TMDL), and Municipal Separate Storm Sewer System (MS4) Permits, all of which are designed to prevent the violation of water quality standards. Established in 1972, the Clean Water Act established the basic structure for regulating water pollution. A TMDL is essentially a "pollution diet" in the sense that TMDLs set the maximum amount of a pollutant that can enter a waterbody. MS4 permits, which are federally mandated and issued by the state, are designed to reduce pollution that is coming specifically from the stormwater traveling through storm drains. Together, these policies protect both large and small water bodies, including the Chesapeake Bay, Potomac River, Rock Creek, and its tributaries. The Rosemary Hills neighborhood lies within the Rock Creek watershed.

Due to poor water quality, the US Environmental Protection Agency (EPA) set TMDLs for the amounts of nitrogen, phosphorus, and sediment entering the Chesapeake Bay. Consequently, every state in the Bay watershed, including Maryland, is expected to do their part to reduce these pollutants and achieve load limitations. In addition to the Chesapeake Bay TMDL, many jurisdictions, including Montgomery County, also have MS4 permits to regulate stormwater pollution and local TMDLs to address local water quality impairments. In order to address water quality impairments and meet pollution reduction requirements, the County has developed Watershed Implementation Plans (WIP). A WIP serves as a roadmap for how a jurisdiction is going to achieve their water quality goals.

Montgomery County has developed WIPs for multiple watersheds in the County including Rock Creek[1] and the Anacostia River. These WIPs were developed in order to help the County meet the requirements set forth in the MS4 Permit issued by the Maryland Department of the Environment. In addition to providing a thorough overview of the existing conditions of the watersheds, the WIPs also include a list of practices and projects that will help the County meet its MS4 requirements. These lists include projects that support watershed restoration through runoff management and impervious cover treatment, as well as projects that support trash and litter management as mandated through the Anacostia River Trash Total Maximum Daily Load (TMDL) and the Potomac River Watershed Trash Treaty. Lastly, the WIPs recognize the importance of educating residents by identifying Outreach and Stewardship Strategies.

In February 2019, the County released the Rock Creek Watershed Assessment.[2] The watershed assessment provides an overview of existing conditions within the watershed and identifies potential restoration opportunities. The assessment also includes a more detailed evaluation of the Rosemary Hills Catchment, which encompasses all of the Rosemary Hills neighborhood including Rosemary-Lyttonsville Local Park, Paddington Square Apartments, and Rosemary Hills Elementary School, as well as some additional area lying south of East-West Highway. While the Rosemary Hills Catchment does not include the Gwendolyn Coffield Community Center, it has been included in the discussions of this report as the community identified it as an important local resource (Appendix A).

1 https://www.montgomerycountymd.gov/DEP/Resources/Files/ReportsandPublications/Water/Watershed studies/Rock-creek-watershed-implementation-plan-11.pdf

2 https://www.montgomerycountymd.gov/water/Resources/Files/stormwater/implementation-strategy/rock-creek-summary-2018.pdf

Approved and adopted in May 2017, the Greater Lyttonsville Sector Plan (Sector Plan)[3] includes strategies focused on connectivity, environment, land use, transportation, housing, and quality of life throughout the Greater Lyttonsville community, including Rosemary Hills. Unlike the Rock Creek WIP and Watershed Assessment, the primary focus of the Sector Plan, which was prepared by the Montgomery County Planning Department, is to preserve, enhance, and expand the core strengths of Greater Lyttonsville. Although the Sector Plan does not specifically focus on the environment, it does give careful consideration to environmental issues, how the environment is connected to land use, transportation, and housing, and the role the environment plays in residents' overall quality of life.

Managing stormwater and achieving the required water quality improvements in Montgomery County is a major endeavor that requires significant investments. Green infrastructure implementation projects that will reduce flooding, and outreach programs that educate local stakeholders on the importance of stormwater management, are two strategies that can offer multiple co-benefits and enhanced return on investment. While Montgomery County has a longstanding commitment to protecting and enhancing the natural and built environments to ensure improved water quality, their ultimate goals cannot be accomplished without the increased participation of local communities such as Rosemary Hills, and the active participation of their leadership and residents.

In an effort to more broadly engage County citizens in these efforts, Montgomery County developed a Watershed Restoration and Outreach grant program. The program, which is managed by the Chesapeake Bay Trust, provides funds to local non-profits to help them carry out programming designed to educate citizens and implement projects on community property to reduce stormwater runoff, improve water quality, and expand the reach of County efforts.

The Environmental Finance Center (EFC) at the University of Maryland developed the *Sustainable Maryland Stormwater Outreach Campaign* with funding by the Chesapeake Bay Trust – Montgomery County Watershed Restoration and Outreach Grant Program. This outreach and education campaign was designed to increase awareness about the issue of stormwater pollution, increase the rate of participation by residents in County programs, and more fully engage the leadership and residents of civic associations in the implementation of watershed restoration activities in their communities.

As part of this campaign, EFC worked with local homeowners' and neighborhood associations to develop stormwater-based community action plans. A community action plan is a participatory tool used to build the capacity of community members and empower them to take action. It helps residents identify areas of concern, specify what actions can be taken, define who will be responsible, and explore the resources available to help the community take action. The development of these action plans has been informed by County and community engagement and input.

It is important to note that while some priorities identified in the action plan will require Montgomery County to intervene, other actions may be led entirely by the community, and some will require cooperative effort from both the County and the local community. Beyond the context of the immediate issues and initiatives within any specific community, there may also be opportunities to coordinate with neighboring communities on regional stormwater plans and initiatives.

About this Document

This action plan is not meant to provide prescriptive strategies or specific engineering solutions, but rather to provide a foundation for pursuing these solutions if warranted. It seeks to provide support

3 https://montgomeryplanning.org/wp-content/uploads/2018/10/Lyttonsville-Approved-and-Adopted-5-29-2017-WEB-MASTER.pdf

for the outreach and behavior change activities that can be championed by the community itself, and to highlight when a community should be advocating for County intervention on larger infrastructure projects and deeper legislative issues. There are six main parts to this action plan: Community Overview, Stormwater and Pet Waste Survey Results, Community Priority Areas, Community Action Areas, a glossary, and lastly, a comprehensive appendix of resources. A brief description of each section is provided below.

Community Overview – This section provides a basic overview of the process EFC went through to gather the information compiled in this action plan. It also provides background information on the community including history, location, local demographic information, and a summary of the surrounding built and natural environment.

Survey Results – Prior to the first stakeholder meeting, surveys to assess knowledge and opinions about stormwater and pet waste were distributed electronically and via hardcopy to Rosemary Hills residents. Approximately sixty (60) surveys were completed. This section contains a summary of the results from each survey. Information from the surveys was factored into recommendations made in the action plan, particularly when considering recommendations for actions residents can take on their own. The complete survey results are available in Appendix B.

Community Priority Areas – After reviewing the information from the stakeholder meeting, the walking tour, and the survey results, the issues identified were broken into two categories: *Community Priority Areas* and *Community Action Areas*. The topography of Rosemary Hills and the surrounding area, combined with large amounts of impervious surface (parking lots, streets, etc.), has led to some significant stormwater issues. These issues have been categorized as *Community Priority Areas*. Generally speaking, these issues are complex in nature and will require significant financial investment and outside assistance.

Community Action Areas – Through the survey results and conversations with the stakeholder group, EFC was able to identify key issues and topics in which the residents are interested. These opportunities have been categorized as *Community Action Areas* because in most cases, they can easily be pursued by residents on their own, in small groups, or organized by the community with little or no funding. This section outlines these opportunities and provides suggestions for ways to kick-start some of these actions. It also contains recommendations for formalizing RHNA's communication channels and forming an official Green Team.

Glossary – The glossary is located immediately following the text of the document. Words and acronyms that are defined in the glossary will appear underlined in the text. If you are viewing the document electronically, you can click on the word and jump to the definition.

Appendix – The appendix contains the complete survey results, an outreach calendar, copies of County documents that are relevant to the community, and a comprehensive list of resources that includes websites, contact information for local watershed groups, information on County programs, volunteer opportunities, and funding sources. The appendix is designed to help the community implement meaningful and successful projects that address local stormwater issues.

Figure 1 Stakeholders identify hot spots and areas of concern

Community Overview

On July 16, 2019, EFC staff met with a group of stakeholders from the Rosemary Hills Neighbors Association (RHNA) to discuss stormwater related issues in their community. Prior to this initial meeting, RHNA residents were asked to complete an online survey about stormwater. The survey was designed to assess residents' knowledge and opinions about stormwater and stormwater management. The results of the survey (Appendix B) helped to inform the direction of the initial stakeholder meeting as well as the recommendations made in this action plan. At the initial meeting, EFC facilitated an interactive discussion about stormwater concerns within the community. Participating stakeholders reviewed a detailed aerial map of the community, identifying hot spots and areas of concern (Figure 1). RHNA stakeholders also provided EFC with an overview of the community and RHNA's communication channels. An image of the map from the meeting can be found in Appendix C.

On July 25, 2019, EFC staff, accompanied by RHNA resident Joel Teitelbaum, conducted a comprehensive walking tour of the community, inspecting and photo-documenting the concerns raised during the initial stakeholder meeting. At this time, EFC also identified other potential concerns throughout the community. EFC reconvened with the stakeholder group on August 12, 2019 with the purpose of presenting the findings of the walking tour, answering additional questions about the community, and outlining the format of the action plan.

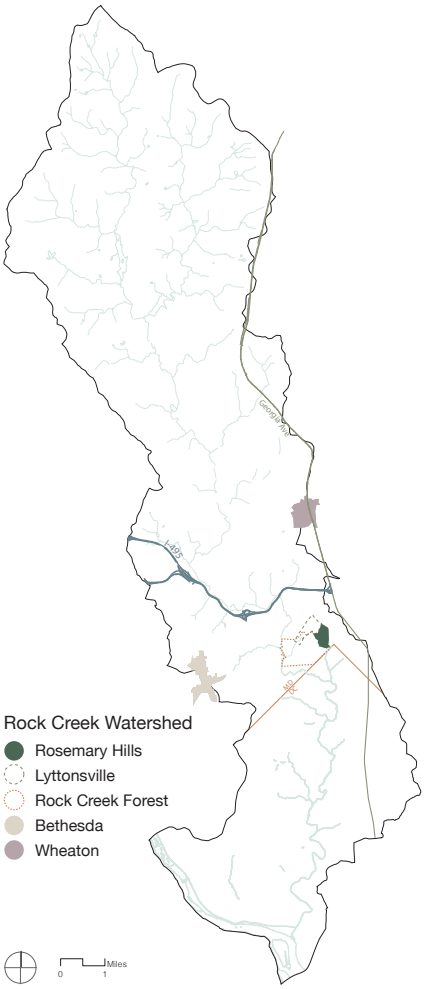


Figure 3 Location of Rosemary Hills within Rock Creek watershed

The Rosemary Hills community is located in the 20910 zip code. According to the most recent census data (the year of the data varies depending on the category), the median age in the area is 35.7 years old with an annual household income of $81,429. The unemployment rate for the area is 4.4% with 8.6% of the population living below the poverty level. Demographic information for race and education levels within the zip code is seen in Figure 2.

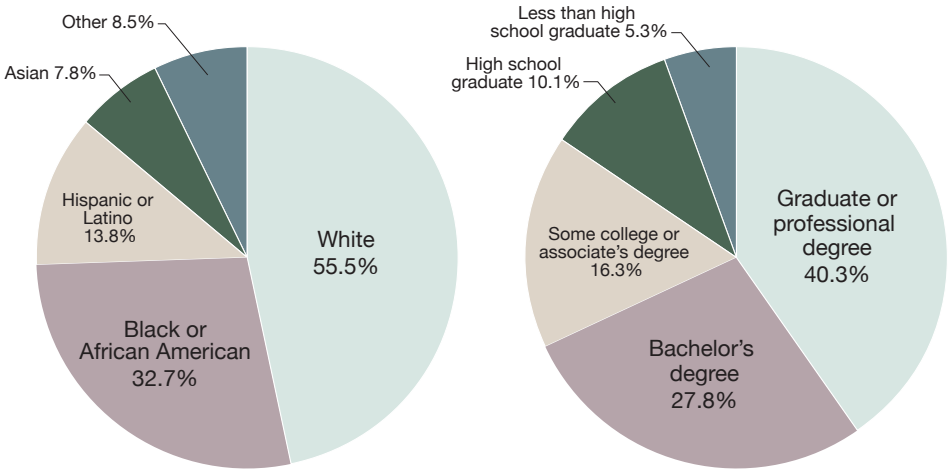


Figure 2 Rosemary Hills race and education demographics

Containing approximately 300 single-family homes, Rosemary Hills is bound to the north by existing railroad tracks, and eventually, the Purple Line, and to the south by East-West Highway. Lanier Drive serves as the western boundary and Rosemary Hills Drive serves as the eastern boundary. It should also be noted that the Barrington Apartments, located along Rosemary

Hills Drive are not considered part of the community. Although not technically part of the community, RHNA requested that the Gwendolyn Coffield Community Center and Rosemary Hills-Lyttonsville Local Park be considered within the community boundary for the purposes of this project. (Figure 4).

Neighboring communities include Lyttonsville to the west and Rock Creek Forest to the south-west. The community is served by Rosemary Hills and North Chevy Chase Elementary Schools, Silver Creek Middle School, and Bethesda-Chevy Chase High School, all of which except Rosemary Hills Elementary, which serves a culturally diverse group of pre-K through second grade and the students, are located outside of the community.

Rosemary Hills lies within the Rock Creek watershed, but there are no bodies of water within the community. Rosemary Hills-Lyttonsville Local Park, which is approximately 17 acres in size and includes the Gwendolyn Coffield Community Center, is located just outside the western edge of the community. The park also contains basketball and tennis courts, softball and soccer fields, and a playground. The park underwent a rehabilitation project (completed in 2019) that included trail improvements and the installation of a stormwater management project.[4]

Rosemary Hills is a fairly isolated community (Figure 4). Although there are multiple ways to access the community by car, on foot, and on bike, there is no commercial property within or immediately adjacent to the community, and only a small portion of the community borders East-West Highway. Because of its relatively isolated nature and lack of a commercial corridor, Rosemary Hills is not significantly impacted by many of the issues that typically arise in urban/suburban communities. It is relatively quiet and there is a limited amount of through-traffic, helping to prevent litter and illegal dumping from becoming pervasive issues. There are some minor issues with pet waste management and trash, but these problems appear to be limited to specific areas. The biggest issues currently impacting Rosemary Hills are the topography and significant amounts of impervious surface within the community itself, as well as within the neighboring communities. However, it is worth noting that the isolated nature of the community may change upon completion of the Purple Line, the Capital Crescent Trail, and projects in the Greater Lyttonsville Sector Plan that were specifically identified to make the area more pedestrian and bike friendly.

Rosemary Hills Community Stormwater and Pet Waste Survey

At the onset of this project, a survey to assess residents' knowledge and opinions about stormwater and pet waste was conducted. The surveys were distributed electronically, as well as in a paper version that was distributed door-to-door and at National Night Out. EFC also provided RHNA with yard signs to promote the surveys. Individuals that completed the surveys electronically took two separate surveys. Individuals that completed the surveys on paper took one consolidated survey. The results from the paper surveys were then entered into the electronic platform so that they could be included in the automated report generation process. The online surveys required respondents to answer every question, whereas people taking the paper surveys could skip questions if they so desired. This fact, combined with the fact that not everyone completed both surveys online, resulted in slightly different response numbers and answers to some of the questions. In total, sixty-two (62) people answered the pet waste survey, and sixty-three (63) people took the storm water survey. A comparison of answers to questions that appeared on both surveys indicated that answers varied only slightly. This comparison, combined with the similar number of respondents, leads EFC to assume that most people completed both surveys.

4 https://www.montgomeryparks.org/projects/directory/rosemary-hills/

The results of the survey are important because they provide insight into the community on a greater level than those provided by the stakeholder group. By nature, the stakeholder group is comprised of people that already have interest in, and a better knowledge base of, environmental issues. Having a more broad-based understanding of the community's knowledge and opinions allows EFC to make more informed recommendations, especially when it comes to actions requiring community participation or buy-in.

The first survey contained questions about various aspects of stormwater including where stormwater comes from and its impacts on water quality, how people view their own role and impact on water quality issues, the types of environmental activities in which people participate, and if stormwater is an issue within the Rosemary Hills community. The second survey contained a series of questions pertaining to the impacts of pet waste on water quality and human health, people's behavior with respect to picking up pet waste, and, whether or not proper pet waste management is an issue. As previously noted, people that took the survey on paper received one, consolidated survey. The surveys and results can be found in Appendix B. As expected, the results showed that knowledge and opinions about stormwater and pet waste varied dramatically among the respondents.

Highlights from the stormwater survey include the following:

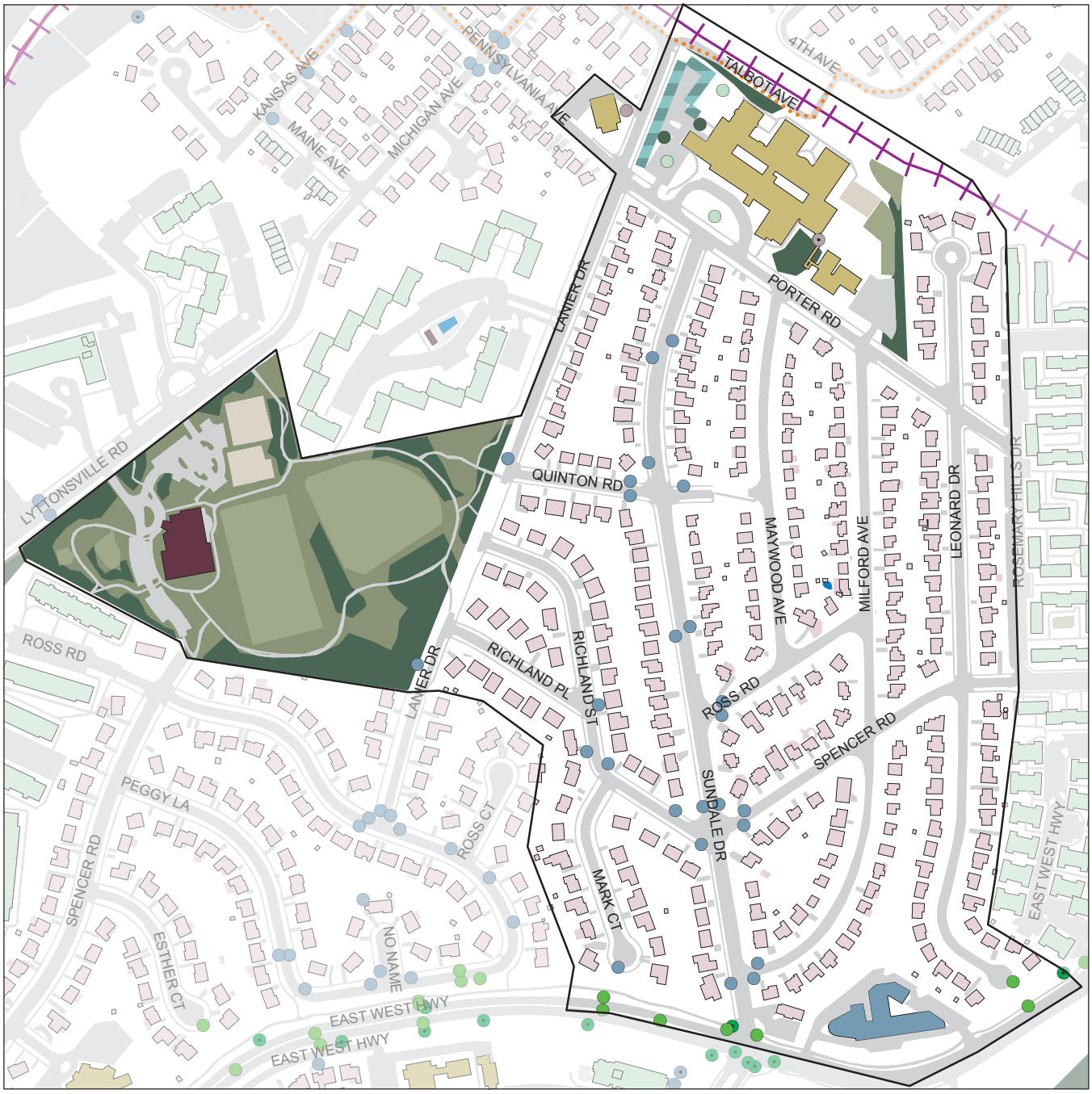
- **42%** of the respondents have lived in Rosemary Hills for less than 10 years
- **97%** own their homes
- **98%** indicated that they have a yard
- **19%** said they rely on a sump pump during heavy rains and **5%** said they use one all the time
- **59%** of the respondents believe stormwater is an issue in the community during heavy rain events and 24% believe it is an issue all of the time
- **24%** do not believe their activities have a significant impact on water quality and **24%** were not sure if their actions impacted water quality
- **15%** of the respondents do not know what happens to water when it enters a storm drain and **10%** incorrectly believe that it goes to the waste water treatment plant
- Who respondents believe is the biggest polluter within the County was relatively evenly split among development (**19%**), homeowners (**18%**), and construction activities (**17%**)
- Reasons for concern about water quality were evenly split among future generations (**17%**), public health (**16%**), drinking water (**16%**), and fish and wildlife (**15%**), with one person indicating that they were not concerned about water quality
- **18%** of the respondents said they had not seen or heard anything about water quality in the County over the past year
- **13%** said they pick up litter in the community

- **14%** said they practice smart lawn care
- With the exception of trash cleanup opportunities, respondents had very little knowledge of, and few had participated in, any Montgomery County programs
- **35%** of respondents believe that promoting environmental lawn care and reducing the use of pesticides/herbicides would have the most benefit for the community. The second most popular answer was promoting the RainScapes program (**30%**)
- **21%** of the respondents indicated that they would be interested in learning about composting and trash cleanups. The second most popular answer was learning about environmentally friendly cleaning products (**20%**)

Highlights from the pet waste survey include the following:

- Approximately **half** of the respondents in both surveys said that they own a dog
- **35%** indicated that they own one dog, **15%** own 2 dogs, and one respondent indicated that they own 3 or more dogs
- **22%** of the respondents believe that pet waste management is an issue in Rosemary Hills
- **94%** understand that pet waste can pollute waterways and **95%** understand that pet waste can make humans and other animals sick, but only **81%** understand that dog waste can decrease business and hurt property values
- **22%** said they had not heard or seen anything about dog waste causing water pollution
- **34%** said that learning about the connections between pet waste and water pollution made them more likely to pick up, **50%** said it had no impact on their behavior
- **72%** said they pick up in their yards, with most people (**41%**) saying they clean up their yards weekly and **9%** saying they never clean it up
- **100%** of respondents said they pick up after their dogs while on walks **90%** of the time

Initially, EFC intended only to have an online survey. However, the stakeholder group indicated that they felt a paper survey would generate more results. This feeling was based on the belief that there are many older residents in the community that are not computer savvy and the fact that RHNA does not have well-established electronic communication channels. Members of the stakeholder group took responsibility for distributing the paper surveys door-to-door, collecting the completed surveys, and returning them to EFC. The paper survey also contained links to the electronic surveys. The majority of the people that received paper surveys opted to use the links provided and take the surveys electronically. An unintended result from this process was learning that RHNA residents may be more open to electronic communication than originally believed.



Features of the Built & Natural Environment

- Institutional/Community Facility
- Multi-Family
- Office
- Open Space/Recreation
- Single Family Attached
- Single Family Detached
- Capital Crescent Trail
- Purple Line
- Woodland
- Park
- Athletic Court
- Athletic Field
- Swimming Pool
- Patio
- Non-Residential Pad
- Impervious
- RHNA Boundary

0 125 250 500 Feet

Stormwater Infrastructure

- County Inlets
- County Outlets
- State Inlets
- State Outlets
- Bioretention
- Infiltration Trench
- Infiltration Trench, Underground
- Oil/Grit Separator
- Pervious Pavers

Figure 4 Rosemary Hills street and land use map

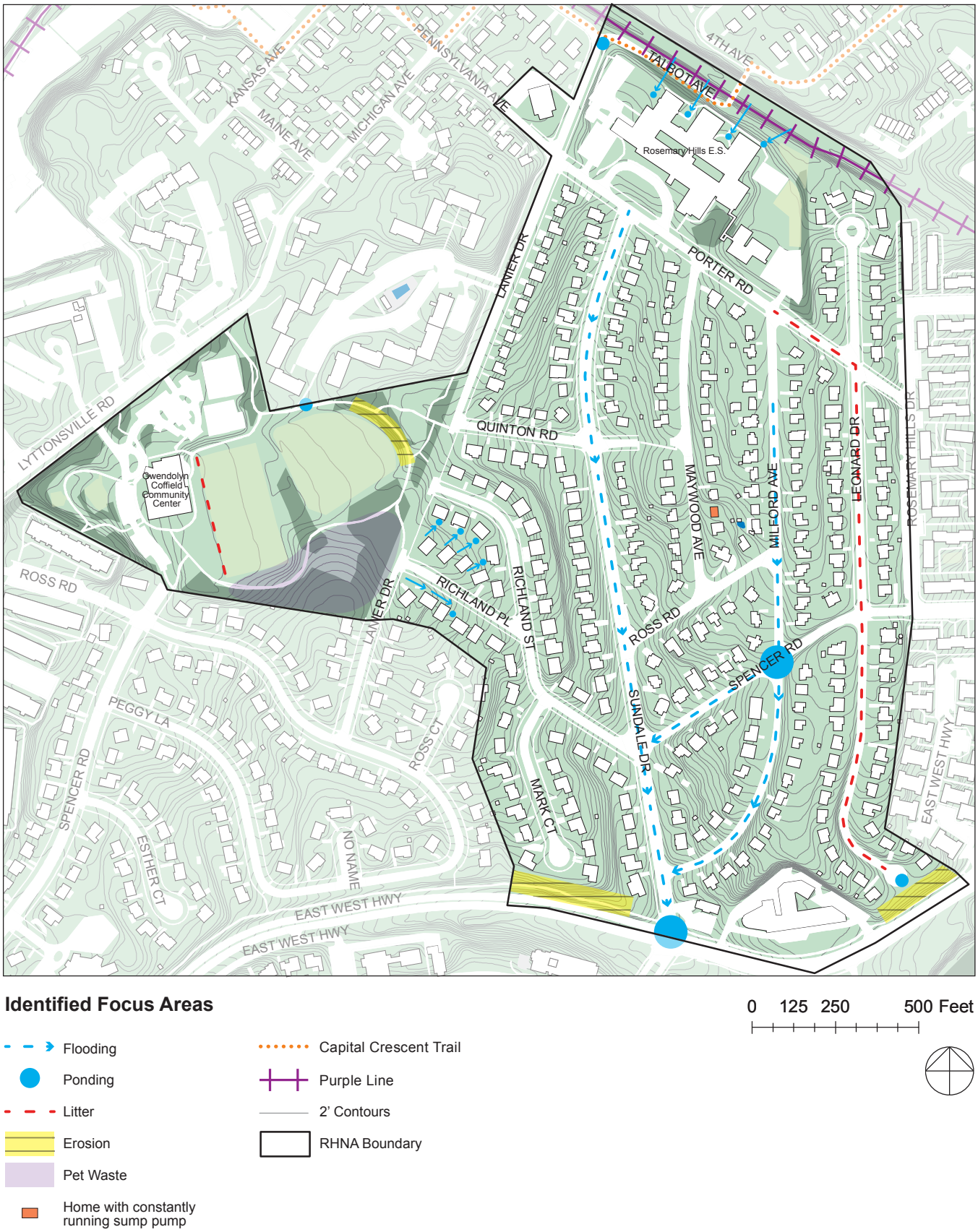


Figure 5 Map of Rosemary Hills stormwater concerns

Community Priority Areas

As previously discussed, the topography and large amount of impervious surface in Rosemary Hills and the surrounding area create multiple stormwater challenges. Many of the issues that were identified during the stakeholder meeting are similar in nature – street flooding and significant stormwater flow from one yard to another during moderate to heavy rain events. Stakeholders also expressed significant concern over stormwater issues at Rosemary Hills Elementary School and the Gwendolyn Coffield Community Center. Unfortunately, none of these are issues that can easily be resolved without coordination among multiple entities, and in some cases, County or State-led infrastructure improvements.

Stormwater Flow and Street Flooding

The northern part of the neighborhood, as well as Paddington Square Apartments and Rosemary Hills Elementary School represent the highest elevation within the community. This topography creates a situation where all of the water is flowing downhill, converging on Sundale Drive, and resulting in regularly occurring street flooding. Generally speaking, most of the streets in the community do have storm drains, and the number and placement of the drains most likely made sense when the roads were constructed. Over time, urbanization and an increase in impermeable surfaces has led to an increase in stormwater runoff. This increase, combined with the steep topography of the community, has resulted in a situation where stormwater is flowing so swiftly down the streets that it often completely bypasses the storm drains. The streets most commonly mentioned with regard to flooding were Milford Avenue and Sundale Drive. Persistent flooding at the intersection of Sundale Drive and East-West Highway was also referenced repeatedly (Figure 5). While there are things that the community can do to lessen the amount of stormwater runoff making it to the street, large-scale flood control measures, such as installing storm drains or green streets, are not projects that the RHNA can undertake on their own. The County and the Department of Transportation will need to intervene to eliminate or significantly decrease the problem. This is especially true at the intersection of Sundale Drive and East-West Highway. Suggestions for ways that RHNA can help to reduce stormwater runoff from yards, thereby reducing the amount of water reaching the street are discussed in the next section.

Private Yards

The same topographic issues discussed above also result in significant amounts of water flowing through yards. Stormwater flow through yards is a persistent problem, particularly at the homes along Richland Place and Richland Street (Figure 5). Furthermore, the large amount of water flowing off private property exacerbates already problematic street flooding. The flow of water through the community is dictated by the topography, and unfortunately, everything in Rosemary Hills is flowing downhill. The simplest, cheapest, and quickest way to lessen these impacts is by thinking residentially and installing stormwater management practices at home. These practices include rain water harvesting (rain barrels and cisterns), conservation landscapes, rain gardens, and permeable hardscapes (Figure 6).

The survey results indicate that there is limited knowledge about, and participation in, the RainScapes program. Over 40% of respondents have never heard of the program, and only 3% have participated in it. That said, 30% of the respondents said that they believed an effort to promote the RainScapes program would be beneficial to the community. RHNA should harness the interest in the RainScapes program by developing and implementing an outreach campaign. Through this process, residents can be provided with access to county resources and peer-to-peer learning and support throughout the

process. A community outreach campaign will help provide capacity to residents that are interested in installing projects at home but do not know where to begin. Some suggestions for activities to include would be to:

- **Schedule a community meeting and have a representative from the RainScapes program in attendance to educate residents and answer questions about the program.**
- **Identify community members that have gone through the program and use them as ambassadors.** Have them talk to interested residents about the process and use the projects on their property to show others what RainScapes projects can look like and educate residents about the process.
- **Use RHNA's communication channels to promote the program.** Customize existing marketing materials to fit RHNA's needs, and set up a schedule and assign responsibilities for executing outreach to residents.
- **If RHNA wants to take this process to the next level, consider partnering with a local service provider that can help the community apply for a grant and assist with a large-scale campaign.** Information about service providers and funding sources can be found in Appendix D.

All RainScapes projects will have an impact, but that impact will be magnified if projects are clustered together. An emphasis should be put on installing RainScapes projects at homes where there are known stormwater issues. This includes areas where there are issues with street flooding, as well as homes where there are issues with water flowing from one yard to another. Areas to focus on include Richland Place and Richland Street where water is flowing downhill from one yard to another, as well as Sundale Drive, Milford Avenue, and Spencer Road where street flooding is frequently an issue. Residents that are heavily reliant on sump pumps should also consider installing a RainScapes practice (rain garden, conservation landscape, etc.) that can capture pump discharge and reduce the amount of water flowing across yards or to the street.

There are also additional benefits to clustering projects. Some RainScapes projects, such as rain gardens, will require the use of a contractor. If you have multiple homes in the same area that want to install projects, you may be able to get a better rate from a contractor and on supplies. Encourage residents to talk to one another and install projects at the same time. This is especially important in up-slope/down-slope situations where flow from the up-slope neighbor will impact the down-slope neighbor's project.

Should residents need to hire a designer or contractor for their RainScapes projects, there are several important things to consider. First and foremost, seek bids from multiple entities and make sure that anyone under consideration has ample experience in stormwater management projects. It is perfectly acceptable to ask about their experience with similar projects. It is also acceptable to request to see a portfolio, or to ask where local projects are so that you can go and see their work first hand. Understanding the post-construction relationship, the type of follow-up that will be provided, and how any post-construction issues will be handled is also very important. Lastly, it is also important to feel comfortable with any professional you are choosing to work with. Make sure they will listen to your needs and that you feel you can have a good working relationship with them. The Chesapeake Bay Landscape Professionals and the Montgomery County RainScapes websites are good places to start if you are looking for a contractor or designer. Information about these websites can be found in Appendix D.

RainScapes

Rain Water Harvesting

Rain water harvesting is the use of rain barrels, cisterns, or other devices to capture and reuse water from rooftops, typically by connecting to a downspout. They come in a wide variety of shapes and sizes. Rain barrels typically hold between 55 and 125 gallons. The smaller (55 gallon) barrels are about the size of an average outdoor trashcan and can be easily purchased online or from a big box store such as Lowes or The Home Depot. They can also be chained together to maximize storage capacity. They are installed above ground and can easily be moved or disconnected. Cisterns are large (typically 250 gallons or larger) sealed tanks that can be located above ground, partially buried, or below ground. In either case, the collected water is not potable, but can be used to do most things you would use metered water for, including watering plants. The most important questions to ask when considering installing rainwater harvesting devices is how much water can be captured and is there a use for the water? In order to function properly, devices must be emptied on a regular basis, ideally before the next rain. This is especially true of smaller devices.

Conservation Landscaping

Conservation landscaping is a garden that is designed to slow down the flow of water. Typically planted with native species, they improve water quality and provide habitat for native wildlife species, especially birds, butterflies, and other insects. To the average observer, they look just like any other flowerbed or garden.

Rain Gardens

Rain gardens look just like traditional flower gardens. The key difference between a rain garden and a traditional garden or a conservation landscape is that rain gardens are specifically designed to include a shallow depression. This depression allows them to briefly hold a small amount of water which slowly soaks into the ground. Rain gardens contain special soils that allow for better infiltration, are typically planted with native plants that have deep roots, and are mulched. This combination of soils, plants, and mulch allows rain water to soak into the ground more easily. The mulch also helps trap sediment and other pollutants that are picked up by rain water as it flows across the landscape. Rain gardens have the ability to capture, treat, and allow more water to soak back into the ground that traditional and conservation landscaping. A common misconception about rain gardens is that they provide a breeding ground for mosquitos. If properly designed and installed, the water in rain gardens will soak into the ground in approximately 24 hours, thus preventing them from providing mosquito habitat. In order for a rain garden to function properly, it must be carefully sized and installed. Because of the technical aspects of rain gardens, most people opt to have them professionally designed and installed.

Permeable Hardscapes (Pavers, Concrete, and Asphalt)

Photo: Anacostia Watershed Society

Permeable hardscapes (pavers, concrete, and asphalt) provide an alternative to traditional impermeable surfaces. Permeable surfaces allow water to infiltrate into the ground rather than causing it to pool or run across impermeable surfaces and they can dramatically decrease stormwater runoff and erosion. Permeable hardscapes can be used in heavy and light traffic areas including sidewalks, patios, and parking lots, and if installed properly, they stand up to traditional maintenance such as shoveling and snow plowing. Installing permeable hardscapes is a technical process that requires a lot of materials and should be completed by a qualified professional, making them more expensive than traditional hardscapes. For these reasons, they are typically recommended for areas where a new surface is being installed or an existing surface needs to be replaced.

Figure 6 Rainscape project examples

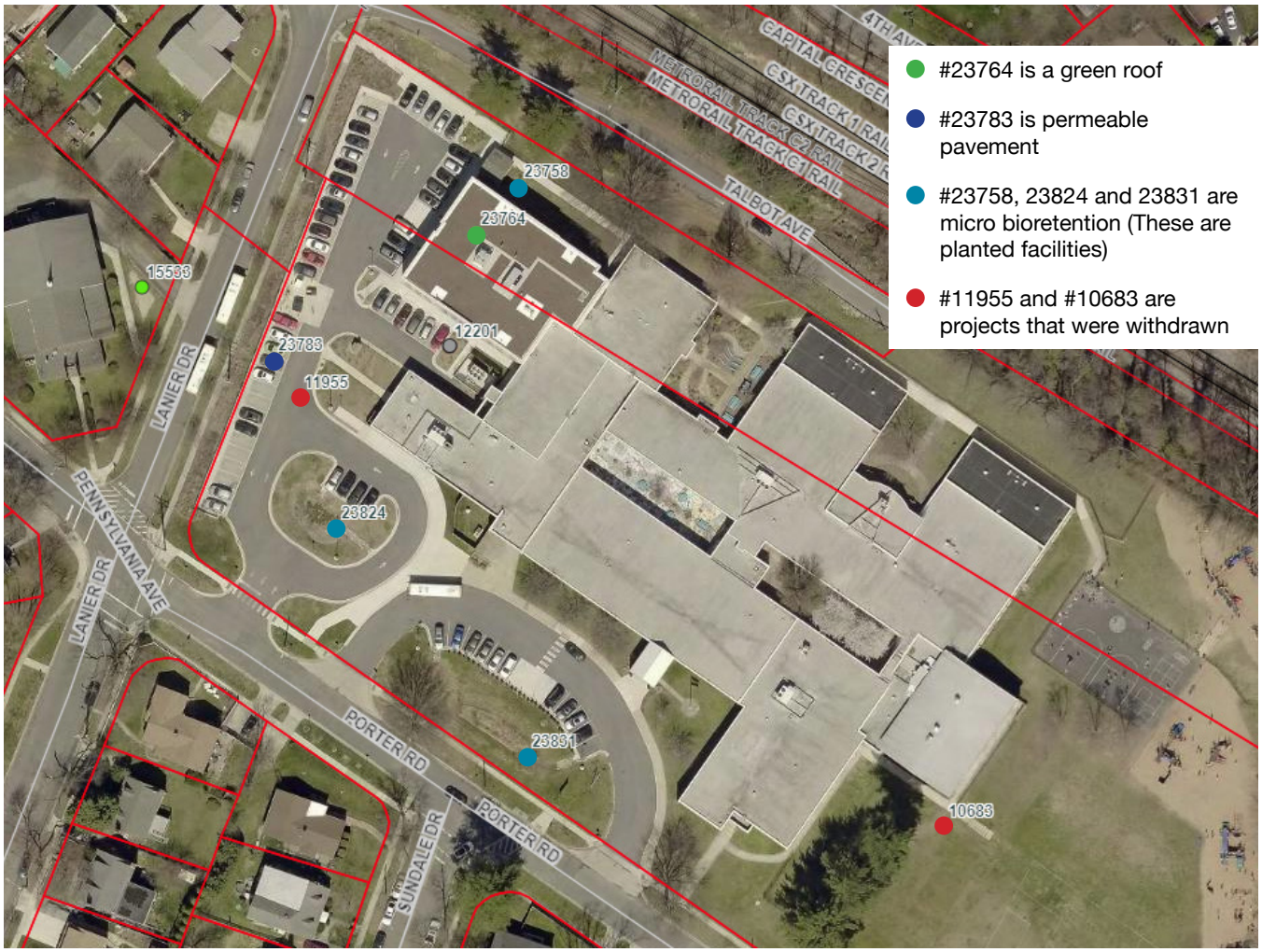


Figure 7 Rosemary Hills Elementary School stormwater assets

Rosemary Hills Elementary School

Concerns about stormwater runoff and flooding at Rosemary Hills Elementary School were raised both at the stakeholder meeting and in the open-ended survey question. During the walking tour, the project team took a close look at the school property to assess the existing conditions and determine if there was the potential for the community to collaborate with the school on a stormwater management project.

The Rosemary Hills Elementary School building and grounds recently underwent a renovation. As part of this process, several stormwater management practices were installed (Figure 7). These practices were permitted by the County and include:

- A green roof on the northwest side of the school
- Permeable pavers in the parking area adjacent to Lanier Drive on the west side of the building
- Bioretention cells (3) installed around the front and back of the school
- Oil & grit separators in the parking area on the west side of the school
- An underground infiltration trench on the southeast corner of the main building

When compared to many other schools, Rosemary Hills Elementary is ahead of the curve in terms of stormwater management. While there is nothing currently indicating that stormwater is an issue at the school, there is opportunity to install additional stormwater management practices. To that end, the Rosemary Hills Catchment Plan (Appendix A) recommends expanding the green roof and installing additional stormwater management treatment practices on the property. Based on the well-documented practices that have already been installed, combined with the young age of the students that attend the school, engaging with the school regarding stormwater management and stewardship opportunities does not need to be a priority for the community. However, if additional projects are brought to the public's attention, RHNA should take advantage of the opportunity to let their opinion be heard.

Rosemary Hills-Lyttonsville Local Park

Rosemary Hills-Lyttonsville Local Park is a 17.1 acre park that is located just west of the Rosemary Hills neighborhood. The park consists of a playground, multiple athletic fields, tennis courts, and a picnic area. The Gwendolyn Coffield Community Center is also considered to be part of the park, although it is managed by the Department of Recreation, not Montgomery Parks (Parks), which oversees all of the other facilities.

Stakeholders raised concerns about erosion along the back of the athletic field (near Lanier Drive) and trash at the ball fields. They also expressed concern over a lack of trail maintenance and maintenance of a County-installed stormwater management project. In 2019, Rosemary Hills-Lyttonsville Local Park was the beneficiary of a recent Environmental Restoration and Stormwater Outfall Infrastructure Rehabilitation Program Project. This project, which was overseen by Montgomery Parks, included resurfacing, regrading, and realigning the trails and walkways near the playground to conform to the Americans with Disabilities Act (ADA) requirements, and the installation of a stormwater management project to better channel stormwater flow, improve water quality, and reduce flooding. The project map can be found in Appendix E.

EFC reached out to Parks regarding the concerns about maintenance of the stormwater management project, specifically the fact that residents are concerned that it is overgrown. Through these conversations, EFC learned that the project was designed to be a bioswale, and therefore, is not scheduled to be mowed regularly. Additional concerns about erosion, flooding, and maintenance should be reported to Parks. This can be done via phone, email or through a form that is available on the parks website (See Appendix D for contact information).

The issue of trash being left on the ball fields is also a matter for Parks. Community members who observe this can start by contacting Parks to make them aware of the situation. The same is true of overflowing trash cans or dumpsters. This can be done through the same channels listed above. Although the fields are the responsibility of Parks, chances are that the teams utilizing the fields are also using the community center, at least for access to the restrooms. RHNA members could bring the problem to the attention of the community center staff and discuss the possibility of hanging signs inside to remind people to pick up outside.

The last recommendation is to hold a community cleanup event at the ball fields. Through conversations with Parks staff, EFC learned that Parks already partners with a YMCA outreach program that is based at GCCC to conduct cleanups on a fairly regular basis. Parks staff also indicated that they are willing to coordinate and support any additional cleanups that the community wants to have at this location, adding that they believe if a group of people were willing to hold a quick cleanup on Sundays after all the games are done, there would be a huge difference. They believe that difference in appearance would be enough to influence behavior change, the idea being that people are less likely to litter when an area is clean to begin with. Lastly, they indicated that they will revisit the site to determine if there is any place that an additional trash can could be located. More details about this recommendation are discussed in the section of this document that deals specifically with litter issues.

Gwendolyn Coffield Community Center (GCCC)

Both the stakeholder group and survey respondents raised concerns about flooding at GCCC. The primary concern is over flooding in the weight room that results from heavy rain events. It appears that the door to the weight room lies at a low point. There is also a downspout located near the door. Presumably, what is happening here is that water is pooling in the low spot and soaking under the door. This is an issue that needs to be handled by the Department of Recreation. The Sector Plan indicates that there is money in the Capital Improvement Program that is ear-marked for improvements/ upgrades to GCCC, though specifics are not provided.

RHNA stakeholders have indicated that GCCC has a Community Advisory Committee, which is meant to represent users of the facility from all surrounding communities. RHNA residents can, and do, provide representation on the committee. The Community Advisory Committee has made County Council Members aware of the flooding issues, as well as the community's desire to see this issues be handled before the next cycle of capital improvement projects. In the interim, Rosemary Hills residents can continue advocating for repairs, as individuals and as a community, by remaining in communication with Council members and by contacting the Department of Recreation and filing complaints about the issue. It may seem like an insignificant step, especially given the fact that the GCCC Community Advisory Committee has already been engaged in conversation with Council members, but the more people they hear from, the more likely it is that the issue will be taken seriously. The Department of Recreation also has a countywide Recreation & Parks Advisory Board that is comprised of residents that are interested in working on matters relating to recreation/park policies, programs, and services. RHNA should consider reaching out to the advisory board to raise RHNA's concerns about the flooding. This communication could also be led by the GCCC Community Advisory Committee. Information about how to contact the Department of Recreation, the Advisory Board, and elected officials can be found in Appendix D.

It was also noted that there is a portion of the GCCC parking lot that is subject to significant flooding. This same area has a storm drain that stakeholders noted as "ineffective," but they were unable to say whether it had ever been reported to 311. The first and most important step is calling 311. More importantly, Rosemary Hills residents should call every single time the drain is backed up. The purpose of 311 is to report, log, and correct issues, but issues are categorized based on urgency, and it can be a slow process. The more frequently an issue is reported, the more seriously it will be taken. When calling 311, a Service Request Number is issued that enables the status of the request to be tracked on the 311 website. When used to its full extent, the 311 reporting system can be highly effective.

Community Action Areas

Through the survey results and conversations with the stakeholder group, EFC was able to identify key issues and topics the residents are interested in. EFC also identified a need for formalized communication channels and the formation of a Green Team. These opportunities have been categorized as *Community Action Areas* because they can easily be pursued by residents on their own, in small groups, or organized by the community for little or no funding. Generally speaking, *Community Action Areas* are issues that are currently maintained or not posing a significant problem. It is important to monitor these areas so that if an issue arises or escalates, appropriate action can be taken.

Formalizing Communication Channels

RHNA does not currently have formalized communication channels. There is no community website, email alerts, Google Group, social media, or newsletter. There is a community email listserv that is regularly used by those that are on it, however, only approximately 50% of the 300 RHNA homes are represented. Likewise, some residents use Next Door, but it is not widely used by everyone, nor is it the best format for community-specific communication. The stakeholder group indicated that part of the reason a concerted effort has not been made to formalize communication channels is because a large portion of the community is older and not comfortable with electronic communication. For this reason, word-of-mouth has been the primary method of communication. EFC's experience with the stormwater and pet waste surveys suggests otherwise. Paper surveys were distributed door-to-door. The surveys contained links to the electronic surveys, and residents were told that they could either use the link, or complete and return the paper survey. Of the 63 people that completed the surveys, only 12 of them chose to use the paper option, the remainder used the links and completed the surveys online. This may suggest a higher level of comfort with electronic communication than originally thought and presents a question that is worth investigating further.

If RHNA wants to successfully organize its residents around any issues, environmental or otherwise, they need to develop formalized, publicized, and utilized communication channels. These channels will also make promoting events such as RHNA meetings and National Night Out a more streamlined and effective process.

Not every option works, or needs to be employed, by every community, and to be effective any of these options will require residents willing to set them up and manage them. Some of the options, such as social media and a printed or electronic newsletter, require considerably more effort than the others. Likewise, some options can be undertaken for free and others may have costs associated with them. By far, having a comprehensive email list that is used for regular communication is the easiest, cheapest, and least time-consuming of the options. The following are recommendations for how RHNA can work to formalize communication channels:

- **Survey the stakeholder group and RHNA Board members to determine which options are viable for RHNA and which are not.** Consider cost, time commitment, and availability/ willingness of residents to manage it, as well as what the channel(s) will be used for.

- **Survey the community.** Ask residents which of the viable options they think make the most sense and how they would like to receive their information.

- **Talk to the Boards or associations for Lyttonsville and Rock Creek Forest.** The stakeholder group indicated that the communities have a history of working together on areas of common interest. Reigniting those efforts to routinely present joint communications may make sense at this point. Working collaboratively on communication could also reduce any potential costs and increase the possibility of working collaboratively on other issues, such as stormwater.

- **Depending on which options are on the table, it may also make sense to ask residents if they would be willing to help manage communications.** It is possible that there are residents that have the skills to build a community website, or are willing to oversee a social media account.

- **Review the existing email list.** Develop a plan for how to verify and update the existing information and how to increase the number of residents on it.

- **Advertise your new communication channels.** Let residents know what channels are going to be used, what they will be used for, and how they can make sure that they are subscribed/on the list.

A calendar of suggested outreach and education opportunities can be found in Appendix F. This calendar can be used as a guide for when to engage residents in some of the community's issues and action areas. Once RHNA has identified which communication channels will be used, update this calendar to include the appropriate channels for each of the suggestions.

Form a Green Team

In order to successfully organize the community around environmental issues and make progress toward reducing flooding, RHNA needs a group of residents that are willing to lead the effort. The process of starting a Green Team and planning activities will be easier once RHNA has formalized their communication channels. The Green Team can take a leadership role in educating the community about environmental issues, organizing stewardship activities, and promoting opportunities for residents to learn about County initiatives and volunteer opportunities.

Starting a committee can be a daunting task. It will be helpful if at least one person on the team has some level of environmental knowledge, but it is certainly not necessary. The only requirements should be that individuals are interested in the environment and are willing to help plan, promote, and participate in stewardship activities. As for activities, start small. Identify one or two simple activities and go from there. Community Action Areas provide excellent opportunities for community engagement and education. Many of them are inexpensive or free, and could easily be led by the Green Team. More information about these opportunities is provided below and in the Resource Guide (Appendix D).

If RHNA would like more information about Green Teams, or desire assistance with the process of starting a Green Team, they should contact Mike Hunninghake, Manager of the Sustainable Maryland Program[5] at the Environmental Finance Center. Sustainable Maryland is a certification program designed to help communities that want to "go green" to improve and sustain the quality of life for the community. Forming a Green Team is one step in the process. Although Sustainable Maryland is designed for municipalities, forming a Green Team can be helpful for any type of community that wants to better organize residents around environmental issues. In the case of RHNA, formalizing communication channels would be the first step in the formation of a Green Team.

5 http://sustainablemaryland.com/

General Stormwater Education

As shown in the results of the Community Stormwater Survey, while there are some members of the community that have a deeper understanding of stormwater and its impacts, many of the residents do not. Nearly half of the survey respondents either said that they did not think their daily activities had a significant impact on water quality or said that they did not know if their activities had an impact on water quality, and a quarter of the residents surveyed do not know what happens to runoff when it enters the storm drain. Likewise, residents are also lacking awareness about Montgomery County programs and volunteer opportunities. The good news is, the community seems interested in learning more about stormwater and becoming more engaged in environmental activities. Residents are particularly interested in ways to reduce flooding, litter prevention, and environmentally friendly lawn care practices.

RHNA should focus on developing a campaign to educate the community about stormwater and engage them in environmental stewardship activities. The topics discussed in this section of the action plan all present good opportunities to educate and engage residents, and would serve as excellent first projects for a Green Team. The Green Team should start small by focusing on one or two opportunities or topics. Once a system is developed and there is a better understanding of how best to engage residents, consider expanding into a larger program. The County has a variety of materials available about these topics and others that can be used for educational purposes. There are also many educational and volunteer opportunities through local non-profit organizations, such as Audubon Naturalist Society. Should the decision be made to develop a large-scale program, there are funding opportunities available that could assist with the process. Information about educational resources, volunteer opportunities, partner organizations, and funding opportunities are available in Appendix D.

Litter and Illegal Dumping

Generally speaking, RHNA does not appear to have a significant litter or dumping issue. During the walking tour, EFC staff noted that the streets were surprisingly clean for an urban/suburban neighborhood. This is most likely due to its relatively isolated nature and lack of commercial infrastructure. The one area of the community where there is a trash concern is on Leonard Drive, especially in the cul-de-sac at the southern end of the street (Figure 5). As previously discussed, there is also a concern about litter at the ball fields at GCCC.

Despite there not appearing to be a significant issue, 27% of the survey participants said that the number one activity that would be most beneficial to the community is a litter reduction program, and 21% said that they personally were interested in stream and community litter cleanups. When asked about their participation in County litter programs, 26% said they have participated in a County litter cleanup, 45% said they were aware of the programs but did not participate, and 29% said that they were unaware of County run litter cleanups. Sixteen percent (16%) of respondents said that they make sure the street-side curb and gutter by their homes is free of trash and debris, and 13% said they are already picking up litter in the neighborhood.

Even though litter is not prevalent in Rosemary Hills, there is something to be said for showcasing a clean neighborhood. If people see that others care, they are more inclined to care themselves, and less inclined to litter. Additionally, the bike and pedestrian paths that are proposed in the Sector Plan (see Sector Plan Figure 1.1.2, Page 9), as well as a general increase in pedestrian and bike traffic due to the purple line stations, may result in increased litter within the community in the future. Even though these changes are still several years off and litter is not currently an issue, it is important to monitor the situation and take action if necessary.

Litter cleanups are one of the easiest and cheapest community engagement opportunities. They make great, family-friendly events, can be held on any scale, provide opportunities for students and scouts to

fulfil community service/student service learning hours, and are great opportunities to educate others about the impacts of trash. Organizing community cleanups would be an easy activity for the Green Team to spearhead. Because RHNA does not have a significant trash issue, start small by organizing a cleanup around Earth Day and another in the fall. The areas that are most likely to benefit from cleanups are Leonard Drive and the ball fields at GCCC. Consider coupling the cleanups with storm drain marking. Combining these activities provides an additional opportunity to educate residents about the connection between storm drains and water pollution.

There are several avenues that can be taken to get assistance with holding a cleanup. Montgomery County DEP and Montgomery Parks both have volunteer programs. ***Holding a cleanup on County or park land, including GCCC, requires prior approval from Montgomery County DEP and Montgomery Parks.*** Rock Creek Conservancy and the Alice Ferguson Foundation also have robust volunteer programs focusing on trash cleanups. All of these entities are available to assist with community cleanups and in most cases, supplies (bags, gloves, etc.) can be provided and arrangements can be made the have the bags collected free of charge. Contact information for cleanup partners is listed in Appendix D.

As with litter, the community has not expressed a significant concern over illegal dumping. Five (5) survey respondents indicated that they have seen people illegally dumping items into storm drains, and one individual indicated that their neighbor periodically dumps oil in a storm drain. EFC saw no indications of illegal dumping (in storm drains or otherwise) when they toured the community and it was not raised as a concern by the stakeholder group.

Illegal dumping of any kind is a serious issue. In Montgomery County, people convicted of illegal dumping are subject to a minimum $500 fine and in some cases criminal prosecution. Effectively reporting illegal dumping, including the dumping of materials into storm drains, will require as much information as possible, and most importantly, the exact location. When directly witnessing dumping happening, the make, model and license plate number of the vehicle, the date and time of the incident, a description of the person(s) involved, and photos or a description of the materials would be key details to report to 311. In addition to calling 311, Montgomery County DEP's online form can be used to report the issue electronically.[6]

Pet Waste Management

Pet waste, specifically dog waste, contains two main pollutants, nutrients and pathogens. When it rains, these pollutants, including nitrogen, fecal coliform bacteria, hook worms, and other parasites, wash into waterbodies. This influx of nutrients and pathogens can make waterbodies unsuitable for swimming, fishing, drinking, and general contact. Humans and other animals can also come in contact with these parasites when pet waste is left on the ground.

Concern over pet waste is mixed. As with litter, some survey respondents and stakeholders were adamant about pet waste being an issue, while others did not seem to think it is. When EFC toured the community, no pet waste was seen along the streets, sidewalks, or green spaces. Again, this was somewhat surprising for an urban/suburban neighborhood. Roughly half of the survey respondents indicated that they own at least one dog. The survey results also indicate that residents are fairly well educated about the connections between pet waste, water quality, and human health. However, they also indicate that having this knowledge did not make them change their behavior with regard to how they manage their dogs' waste.

When residents were asked about how they manage their dogs' waste in their own yards, seventy-two percent (72%) of people said that they bag it and put it in the trash. Approximately ten percent (10%)

6 https://www.montgomerycountymd.gov/dep/contact.html

said that they leave it in the yard to decompose, with one person saying they pick it up off the grass but leave it as fertilizer if it is in the garden. Over half of the respondents indicated that they pick up waste in their yards daily (15%) or weekly (41%). When asked about how dog waste is managed on walks, 100% of survey respondents indicated that they bag the waste and put it in the trash 90% of the time.

Residents who do feel that there is a pet waste problem all agreed that the biggest issue is at the park, particularly adjacent to the ball fields. The survey also asked people to identify where they most frequently walked their dogs. Responses varied, but the park, ball fields, and around GCCC were common answers.

Developing an education and outreach campaign about pet waste would also be a good activity for the Green Team. However, before moving forward with any of the options presented below, the first step is to complete a thorough assessment of the community to determine if there really is a problem, and if there is, where the problem spots and high dog traffic areas are located. The survey answers will provide a good starting point. RHNA may also want to consider re-distributing the pet waste survey (Appendix B) to try and obtain more input.

There are many resources online that provide guidance through the process of assessing the pet waste problem and developing an appropriate maintenance plan. A good place to start is the Zero Waste USA website. It provides useful information on why pet waste management is important and outlines many of the options. The EPA also has a helpful manual that focuses on figuring out what type of program is the best fit for a community. Links to both of these websites are in Appendix D.

There were several responses in the survey that related to the need for pet waste stations. The challenge pet waste stations present is that RHNA does not have any commonly owned land to install them on. The most obvious locations for pet waste stations are near the school, the park, and GCCC. The respective property owners would need to approve the installation of stations at these locations. If the community does the appropriate leg-work to identify and document that there is an issue at one or any of these locations, it may make sense to reach out to the property owners to have a discussion about the possibility of installing stations.

Montgomery County has a pet waste management program designed to educate residents and install pet waste stations in common areas managed by homeowners associations. As a neighbors association that does not own any common property, the RHNA does not qualify for this program. However, the RHNA can leverage this experience and potentially explore piloting a neighborhood association based program to install pet waste stations. RHNA can also take advantage of educational materials from the County. Links and contact information for all of the tools referenced above are available in Appendix D.

Regardless of whether or not a suitable location for a station is identified, RHNA may also want to consider an outreach campaign to promote proper pet waste management. Yard signs can be requested from Montgomery County DEP and posted in problem areas to remind and encourage pet owners to pick up after their pets. Signs can also be purchased for a relatively low cost online. RHNA should also share pet waste related facts and reminders about picking up after your dog through its communication channels. Residents should be encouraged to remind offenders that not picking up after pets is punishable with a fine and to report repeat offenders through 311.

Protecting and Labeling Storm Drains

Over 50% of the survey participants did not know that Montgomery County has a storm drain marking program. Furthermore, 25% of the survey participants did not know that water from storm drains empties directly into rivers and streams.

Montgomery County has a storm drain marking program as well as a storm drain art program. Storm drain marking uses stencils or plaques to indicate that a drain is connected directly to a local waterbody,

whereas storm drain art involves painting educational murals on top of the drain. Both programs represent excellent examples of simple, community education and outreach programs that could be spearheaded by a Green Team.

It is also important to note that if a storm drain is clogged with leaves or trash, the issue can, and should, be reported through 311. As previously mentioned, dumping materials, such as oils, trash, and chemicals, into storm drains is considered illegal dumping. If this is occurring, incidents can be reported through 311.

Figure 8 Storm drain marker

Storm Drain Marking

Storm drain marking is a permitted activity. The County will provide storm drain markers for free (Figure 8), but the community/project leader must complete an online application. Storm drain marking can be a highly effective educational tool, especially if paired with a cleanup event. Many people believe that storm drains go directly to the wastewater treatment plant and are not aware of the fact that storm drains often empty directly into bodies of water. Coupling a storm drain marking event with a cleanup provides additional opportunities to talk about the connections between storm drains and water pollution, including litter, lawn debris, and the illegal dumping of grease and oil.

Figure 9 Montgomery County storm drain art

Storm Drain Art

Similar to the storm drain marking, storm drain art also serves to educate people about the connection between storm drains and our local waterways (Figure 9). One advantage of murals over plaques is that murals are much more visible. If there are artistic individuals within the community, this may provide a more creative educational opportunity than the traditional storm drain markers. Large storm drains, such as the one seen in Figure 10, make the best candidates for art. As with storm drain marking, storm drain art must also be approved by the County. See Appendix D for contact information.

Figure 10 Storm drain

Street Sweeping

A Montgomery County contractor runs a street sweeper through the community once a year in the spring (typically in mid- to late-April). Stakeholders did not identify problems with this program in general, but did note that the date is not well-publicized and that not everyone will move their car as requested.

As with most residential communities, better advance notice of the street sweeper's schedule and stronger penalties for not moving cars would improve the effectiveness of this program. RHNA should communicate with residents to educate them about why street sweeping is important, reinforce the request for people to move their cars, and publicize the date street sweeping will occur. Having a better established communications network will make disseminating this information easier and more effective. Information about street sweeping, including the schedule, is available on the MC DOT website. See Appendix D for the link.

Leaf Pickup

Montgomery County conducts two leaf pickups in the fall, typically one in late November and one in early December. Residents are instructed to collect leaves in loose piles in their yards. Stakeholders noted that not everyone participates and that residents tend to pile leaves in the street, rather than in their yards. Piling leaves in the street not only hinders the effectiveness of collection, but also leads to clogged storm drains. RHNA should educate residents about why leaf collection, including proper placement of the leaves, is important, and to publicize collection dates. Residents should also be educated about alternative ways to utilize leaves in lieu of the County's collection program. These options include using them in place or traditional mulch and mowing over them to use them as organic material in yards. Lastly, if a resident misses the scheduled leaf collection dates, leaves can also be collected by regular recycle collections, *provided they are placed at the curb in brown paper bags*. Information about leaf collection, including the schedule, is available on the MC DOT website. Links to resources for alternative uses of leaves and the MC DOT website can be found in Appendix D.

Tree Canopy

A healthy tree canopy is essential for reducing runoff, dampening the heat island effect, and improving local air quality. Rosemary Hills has a relatively intact tree canopy, however, the canopy is aging, and residents need to be considering options for planting new trees.

If the community is interested in conducting a tree canopy analysis, that can be completed using the i-Tree Canopy tool. The i-Tree Canopy tool uses Google Maps aerial photography to conduct a canopy assessment within a defined area. It can also be used to estimate tree benefits. RHNA could use the information from i-Tree Canopy to develop a community tree planting initiative.

There are several County and State programs in place to assist with increasing tree canopy for little or no cost. Tree Montgomery provides and plants free trees on private property and the Montgomery County DOT tree program provides and plants free street trees. Marylanders Plant Trees is a program designed for individuals that want to purchase and plant their own tree. Through this program, individuals receive a coupon to purchase a tree at a discounted price from participating nurseries. These programs are very popular and there is often a waiting list. If you want to plant a tree in the fall, it is recommended that you apply for the program in the spring, and vice-versa. Information about these programs can be found in Appendix D.

Environmentally Friendly Lawn Care

The Community Stormwater Survey asked respondents which environmental stewardship activities they thought would have the biggest benefit to the community and which they were the most interested in learning more about personally. Nearly 35% of residents said that a campaign promoting environmental lawn care and reducing the amount of pesticides/herbicides used would have the greatest impact on the community, making it the most common answer. In addition to the information provided below, additional information about environmentally friendly lawn care can be found in the Resource Guide (Appendix D).

There is a direct connection between how yards are maintained and water quality. When it comes to water quality, how yards are *physically treated* (mowing, watering, and the type of plantings) is just as important as the types of chemicals used to keep grass green and the dandelions away. These actions impact the quantity of runoff yards generate and the quantity of water that soaks back into the ground. They also impact the quality of the runoff. In other words, these regimes influence what pollutants, and how much of them, are in the runoff leaving yards. The *quantity* and *quality* of runoff are both very important when it comes to water quality.

There are simple things that can be done to reduce the *quantity* of yard runoff:

- **Mow high.** The amount of grass above the ground is indicative of the size of the root system underground. In other words, grass mowed to be 1" high will have roots that run about 1" deep. The longer the roots, the more water and nutrients they can take up. Deeper roots will reduce runoff because they will take up more water (and nutrients), and because they can take up more water from deeper in the ground, the grass will require less watering. Generally speaking, a healthy, and water friendly, height for grass is about 3".

- **Follow the 1/3 rule.** Removing more than 1/3 of the existing height stresses the grass and causes it to grow less effectively, so regardless of the targeted height, it is best not to remove more than a 1/3 of the total height at a time.

- **Keep mower blades sharp.** Sharp blades cut better, reducing damage to the leaves and resulting in healthier grass. Healthier grass means less watering and less fertilizing.

- **Water slow and deep.** Whether watering a lawn or garden, use less pressure over a longer period of time. This reduces runoff by allowing water to more effectively soak into the ground. It also lets the water soak deeper into the ground, allowing the ground to stay moister for longer periods of time.

- **Water early.** Lawns and gardens should be watered in the morning before the heat of the day. This decreases evaporation and allows the water to soak into the ground. It also causes less stress on plants and provides water during the period of the day when the most photosynthesis is occurring. When watering must occur later in the day, in the evening after the temperature has dropped, but before it is completely dark, is best.

- **Aerate the lawn.** The soils that support lawns have a tendency to become compacted. Compaction prevents water from soaking into the ground, increasing runoff and making water less accessible to plants. Aerating can be done using hand-held tools that are available for purchase and rental at big-box home improvement and garden centers, or by a professional lawn care company.

- **Plant natives.** A plant is considered native if it has occurred naturally in a specific region without human introduction. Native plants are better suited to the environments they are found in, meaning they typically require less watering and fertilizing. They have deep root systems that prevent soils from becoming compacted, take up water more efficiently, and reduce erosion.

In addition to reducing the quantity of yard runoff, there are also simple actions that can be taken to increase the *quality* of runoff:

- **Test your soil.** Before fertilizing or planting, having soil tested can determine what nutrients are lacking. Simple soil test kits can be purchased at big box lawn and garden centers and online. More comprehensive tests can be conducted by labs. Resources for soil testing can be found in Appendix D.

- **Fertilize properly.** One of the most common mistakes people make is over fertilizing, both in the number of times they fertilize and the amount of fertilizer applied. The best time to fertilize a lawn

is in the spring. Depending on the climate and grass species, it may also make sense to fertilize again in the fall. It is best to apply the appropriate fertilizer according to the directions on the package and *always use a spreader to apply fertilizer*.

- Fertilizer is made up of nutrients and every plant has a maximum amount of nutrients it can absorb. Applying more than the recommended amount of fertilizer does not make grass greener or tomatoes bigger, it will just runoff the next time the plants are watered or when it rains. In other words, in addition to being bad for water quality, over fertilizing is a waste of money. Lastly, it is good to water a lawn *lightly* after fertilizing, and to avoid fertilizing before a heavy rain.

- **Consider fertilizer alternatives.** Chemical fertilizer is not the only path to a healthy lawn. Two alternatives to chemical fertilizers are grass clippings and compost. Rather than collecting clippings during mowing, they can be left on the ground to slowly breakdown into the nutrients lawns need. This is commonly referred to as *grasscycling*. Grass clipping can provide up to 25% of your lawn's fertilizer needs.

  - Another good alternative for nourishing a lawn is using compost. Compost not only feeds your grass, it also helps build healthy soil. A thin layer of compost can be spread in the spring when fertilizer would normally be applied. Working the compost between the blades of grass can be done with a leaf rake, followed by a gentle watering. A thin layer of compost can also be applied any time the lawn is to be aerated and before over-seeding.

- **Switch to environmentally friendly pesticides and herbicides.** The number of environmentally friendly pesticides and herbicides, many of which are botanical based, is much greater than it used to be. These earth friendly alternatives are much easier to find, many being available at big box lawn and garden stores, and cheaper than in the past. There are also some highly effective treatments, especially for insects, that can easily be made at home using common products such as dish soap, garlic, and chili peppers. The downside to the earth friendly approach is that many of these methods are not as fast acting and are more species specific (meaning it may require making more than one home remedy to treat a variety of common lawn and garden pests). There is no shortage of websites discussing this topic, and after visiting a few, the most effective options become apparent. See the Resource Guide (Appendix D) for more information.

- **Switch to an environmentally friendly lawn care company.** There are a number of companies that employ environmentally friendly lawn care practices. An internet search for "organic lawn care" or "environmentally friendly lawn care" will identify service providers in the area.

Environmentally Friendly Cleaning Products

The survey also asked respondents which environmental stewardship activities they were personally the most interested in learning more about. Twenty percent (20%) of respondents said they were interested in environmentally friendly cleaning products, tying that answer with litter cleanups and composting as the most popular responses. Though not as direct as the connection between products used outside, there is a connection between cleaning products used in the home and water quality. Products that reduce risks to human health are most likely going to reduce risks to water quality as well. More specifically, in some areas, water from household drains travels through the same pipes and mixes

with stormwater. This is called a Combined Sewer System (CSS). During heavy rains, the combined system can become overwhelmed, resulting in overflows. This means that stormwater from roofs and roads, combined with water from household drains, enters our rivers and streams. Though this is not the case in Rosemary Hills, it is a frequent occurrence in other portions of the Rock Creek watershed. Using "green" products at home means less chemicals entering the water, and in the case of combined systems, less chemicals in the overflow.

Environmentally friendly or "green" cleaning products are much more readily available than they used to be. Traditional cleaning products often contain hazardous chemicals that can impact both our health and the environment. In addition to containing fewer harmful chemicals, many "green" products also come in more environmentally friendly packaging. With so many options available, making the "right" choice can be confusing. One of the best tips is to look for products with the "Green Seal."[7] Green Seal has developed standards for over 500 product categories including sanitary paper products, personal care and cosmetic products, household laundry products, and household cleaning products. As an alternative to purchasing products, home cleaning products can be made using ingredients such as tap water, baking soda, vinegar, and plant-based liquid soap. A list of websites providing guidance on selecting environmentally friendly cleaning products is found in Appendix D.

Advocacy

As residents and property owners, the Rosemary Hills community can take advantage of opportunities to advocate for federal, state, and local projects and initiatives they support. The best way to do this is to sign up to receive action alerts from one of several local, state, or Bay-wide organizations such as Audubon Naturalist Society or the Chesapeake Bay Foundation. Through these listservs, subscribers receive emails providing them with easy links and pre-written letters that can be used to reach out to elected officials in support of a variety of environmental initiatives that may be of interest. Residents can also reach out to elected officials and County Council members to show support for, or oppose, local initiatives and legislation, and when available, take advantage of opportunities to respond to calls for public comment. Informing residents of these opportunities and encouraging others to educate themselves and to take advantage of advocacy opportunities is excellent example of a Green Team project. Links to organizations with advocacy alerts and a link to identify your elected officials and council member are included in Appendix D.

In addition to staying abreast of general federal, state, and local environmental initiatives, there are three significant projects happening in and adjacent to the Rosemary Hills community that residents should stay informed about, and take advantage of opportunities to provide input on. These projects are the Purple Line, the Capital-Crescent Trail, and the Greater Lyttonsville Sector Plan.

Not everyone understands why advocacy is important, and not everyone understands how to find out about advocacy opportunities. RHNA or the Green Team can play an important role in disseminating information about projects of interest and ways to appropriately engage with the rest of the community. The list below provides some examples of ways that the residents of Rosemary Hills can become more engaged in advocacy opportunities they identify as important, both as individuals and as a community.

- **Stay informed on County watershed plans and take advantage of public comment periods.** Review and provide comments where appropriate. It is a resident's prerogative to let the County staff and elected officials know that individuals and the community as a whole support green infrastructure and other stormwater management practices.

7 https://www.greenseal.org/

- **Stay informed about the Purple Line, Capital Crescent Trail, and the Greater Lyttonsville Sector Plan.** All three of these projects will impact Rosemary Hills in various ways, and it is important to engage in the process when the appropriate opportunities arise.

- **Take advantage of opportunities to let the County and elected officials know about issues within the community.** Encourage them to incorporate stormwater management practices into other road and sidewalk projects and show support for the Green Streets program.

- **Document the stormwater management and environmental stewardship efforts taking place in Rosemary Hills.** This local-led effort and groundswell of community support conveys to the County a level of commitment and initiative on the part of the community.

- **Connect to local, state, and Bay-wide advocacy organizations.**

Rock Creek Watershed Assessment and Rosemary Hills Catchment Plan

Montgomery County released the Rock Creek Watershed Assessment in February 2019. The watershed assessment provides a detailed overview of the watershed, including existing conditions and land use, existing pollutant loads, and the existing impervious cover within the watershed. The assessment also identifies potential restoration opportunities. The appendix of the watershed assessment includes detailed assessments of select catchments, including the Rosemary Hills Catchment (Appendix A), which includes all of the Rosemary Hills community within its boundary, with the exception of the homes along Leonard Drive.

While there is important information available in the Rock Creek Watershed Assessment, it is quite lengthy and portions of it are very technical. The Rosemary Hills Catchment Plan is significantly shorter and easier to digest. The purpose of the catchment plans was to identify focus areas where multiple stormwater management projects could be installed to develop treatment trains in order to maximize the benefits. The assessment determined that Rosemary Hills has "fair" potential to support Public Property Environmental Site Design (ESD) projects. In other words, low-impact stormwater management projects including green roofs, underground storage/treatment facilities, replacing impermeable surfaces with permeable ones, and bioretention projects such as rain gardens. As previously noted, the topography of the community presents a challenge for many types of stormwater management practices, especially smaller ones. As such, the County's options within the community are somewhat limited.

Summary

This action plan contains many recommendations for how Rosemary Hills can address stormwater issues within the community. A list highlighting those recommendations is located at the end of this summary. Specific details about the recommendations can be found throughout the various sections of the action plan. RHNA should also review the information presented in Montgomery County's Rock Creek Watershed Assessment, the Rosemary Hills Catchment Plan, and the Greater Lyttonsville Sector Plan to identify opportunities to work with or support the County, or to join forces with other entities, on stormwater management practices and other environmental initiatives.

RHNA has done a good job identifying issues and problem areas. Formalizing communication channels and determining the best way to organize around issues will create a pathway to taking action on these issues. The recommendations and resources provided in this action plan can be used to provide that roadmap. An important part of that process will be starting to think locally. In other words, thinking about what can be done at home as individual citizens, not just what can be done as a community.

The primary concerns identified through this process were pervasive flooding and stormwater flow, both from yard to yard and on the street, as well as at the Gwendolyn Coffield Community Center. Other topics that were discussed, but not noted as significant issues, include storm drain protection and labeling, litter, pet waste, street sweeping, leaf pickup, and tree canopy. Some of the recommendations made (trash cleanups, promoting street sweeping, contacting elected officials, etc.) can easily be undertaken without any assistance from partners. However, some of the recommendations, such as those that have to do with flooding, will either require, or be easier with, some level of assistance from the County or other partner entity.

There are a lot of exciting, large-scale projects happening in and around Rosemary Hills including the Purple Line, the Capital Crescent Trail, and those identified in the Sector Plan. Many of these projects will impact the community in the not-so-distant future. While some of them, such as the Purple Line, are well underway, there is still ample time to have a voice in this process, both as citizens and as a community, for some of the other projects. While some of the projects will potentially bring new benefits to the community, such as additional green space and transportation alternatives, some of the projects have the potential to have detrimental effects such as increased foot traffic and the associated littering that may occur. RHNA should remain vigilant as these projects progress in order to make sure that these projects provide citizens with the most benefits and do not have negative impacts on the community.

Should RHNA decide to pursue forming a Green Team, they should contact Mike Hunninghake at the Environmental Finance Center. Mr. Hunninghake manages the Sustainable Maryland program and is uniquely positioned to help communities form Green Teams and identify environmental priorities. Should the community decide to move forward with some of the more complex recommendations that do not require County interaction, such as developing a litter or pet waste management program, RHNA should consider reaching out to Amanda Rockler at the Maryland Extension/Sea Grant office. Ms. Rockler was part of the EFC team that met with RHNA stakeholders and her organization has the capacity to help the community navigate the process and nuances of the more complex recommendations given in this document. Contact information for Ms. Rockler and Mr. Hunninghake can be found in Appendix D.

Regardless of how RHNA decides to proceed from this point, is it paramount that residents talk to each other and continue to take ownership of the community. The best way to have an impact is to educate each other.

Recommendations

1. Review the Rock Creek Watershed Assessment and Rosemary Hills Catchment Plan (Appendix A). These documents provide an overview of existing conditions within the watershed and identify potential restoration opportunities. This document will not only help residents better understand the pressures impacting local water quality, but it may also help identify County projects that the community will want to support.
2. Review the Greater Lyttonsville Sector Plan. This document will help the community better understand the County's overall vision for the area as it pertains to environmental, transportation, quality of life, and other issues.
3. Work to formalize RHNA's communication channels. This process should include surveying residents about what means of communication they would prefer, updating the existing email list, and reaching out to Lyttonsville and Rock Creek Forest to see if they would be interested in joining forces to implement a routine, joint communication endeavor (such as a listserv, newsletter, or social media page) for the communities as opposed to only communicating where there are issues of mutual interest. Re-starting this joint effort could also be applied to community activities such as trash cleanups.
4. Form a Green Team to help organize the community around common environmental concerns. In lieu of a Green Team, the RHNA board members could fill this role.
5. Use the Green Team to spearhead outreach and education opportunities throughout the community including general education related to stormwater and its impacts, trash cleanups, pet waste management, and storm drain marking.
6. Arrange for a representative from the RainScapes program to come to a community meeting to educate residents and answer questions about the RainScapes program and process.
7. Reach out to the Recreation and Parks Advisory Board to voice concerns over flooding, trash, and pet waste at GCCC. This can be done through the GCCC Community Advisory Committee.
8. Promote street sweeping and leaf collection dates. Reinforce the importance of participating in these programs and moving vehicles as requested.
9. Conduct a tree canopy assessment using i-Tree and develop a plan for increasing tree canopy in yards as well as through street trees.
10. Provide residents with information about environmentally friendly lawn care and cleaning products. In order to maximize impact, consider outreach to the neighboring apartment complex as well.
11. Utilize the Outreach Calendar (Appendix F) to schedule activities and educational posts throughout the year.
12. Step up advocacy efforts by signing up to receive action alerts and taking advantage of opportunities to show support for green infrastructure and other stormwater management practices by reaching out to elected officials and council members.

Glossary

Clean Water Act (CWA) – The Clean Water Act is a U.S. federal law that regulates the discharge of pollutants into the nation's surface waters, including lakes, rivers, streams, wetlands, and coastal areas. Passed in 1972 and amended in 1977 and 1987, the Clean Water Act was originally known as the Federal Water Pollution Control Act.

Total Maximum Daily Load (TMDL) – The maximum amount of a pollutant that can enter a body of water while still meeting water quality standards. A TMDL determines a pollutant reduction target and allocates load reductions necessary to the source(s) of the pollutant.

Municipal Separate Storm Sewer System (MS4) Permit – MS4 permits are designed to reduce pollution that is coming specifically from the stormwater travelling through storm drains. They are federally mandated and issued by the state.

Stormwater/Stormwater Runoff – Water that originates from precipitation events, including rain and snow fall and ice melt. Stormwater runoff is stormwater that runs across surfaces, picking up pollutants such as nutrients from lawn care, contaminants from pet waste, and oil from cars and sediment, rather than soaking into the ground.

Impairments – Any contaminant that causes a body of water to not meet the set water quality standards. Impairments can include nutrients (nitrogen, phosphorus, etc.), chemicals (pesticides, herbicides, etc.), bacteria, trash, and other pollutants such as oil and gas.

Watershed Implementation Plan (WIP) – WIPs serve as a roadmap for how a jurisdiction is going to partner with federal and local governments to achieve and maintain water quality standards. They include detailed, specific steps each of the seven Bay watershed jurisdictions will take to meet the pollution reduction goals of the Chesapeake Bay Total Maximum Daily Load (TMDL) by 2025. These plans consider such things as ecological restoration and sustainability while allowing for greater transparency and accountability for improved performance.

Runoff – Any water, regardless of source, that flows over the land and into a water body. Runoff can be generated by many sources including rain fall, snow melt, and man.

Impervious – Impervious surfaces, also called impermeable surfaces, are hard surfaces that do not allow water to soak into the ground and increase runoff. They are often man-made, such as sidewalks, roads, and rooftops, but can also be naturally occurring, such as compacted soils.

Green Infrastructure (GI) – Green Infrastructure is a technique that treats stormwater at it source while providing environmental, social, and economic benefits. Many GI practices mimic the natural water cycle. Examples of GI practices include rain gardens, rain water harvesting, permeable pavers, and green roofs.

Green Team – A group of people representing a community that take responsibility for educating others about environmental issues and promote environmental stewardship by organizing events to educate and engage the community.

Smart Lawn Care – Activities that promote healthy lawns while minimizing the use of pesticides, herbicides, fertilizers, and other common lawn management practices.

RainScapes Program – A Montgomery County program designed to provide technical and financial assistance to Montgomery County residents so that they can implement stormwater management practices on their own property.

Green Streets – A stormwater management approach that utilizes a combination of practices including permeable surfaces, bioretention, infiltration trenches, native vegetation, etc., to capture and treat rainwater where it falls.

Rainwater Harvesting – Capturing and storing water from rooftops so that it can be re-used at a later date. The most common practices used for rain water harvesting are rain barrels and cisterns.

Rain Barrel – A device that is attached to a downspout in order to capture and store water from rooftops. Rain barrels are installed above ground and typically store between 50 and 150 gallons of water. Due to their smaller size, rain barrels are most frequently used for residential purposes.

Cistern – Similar to a rain barrel, cisterns are used to capture and store water from rooftops. The main difference between a cistern and a rain barrel is size. Cisterns typically store 250 gallons or more. They can be installed above or below ground and are most often used on larger buildings and can be appropriate for commercial settings.

Conservation Landscaping – A garden that is designed to slow down the flow of water. Slowing the flow gives plants the opportunity to take up more water and nutrients, and allows more water to soak into the ground. The mulch in the landscape also serves to trap sediments and other pollutants. All of these things result in improved water quality. Typically planted with native species, conservation landscaping also provides important habitat for native wildlife species, especially birds, butterflies, and other insects.

Rain Garden – A depressed area in a landscape that is designed to collect rainwater from a roof, driveway, or street and allow it to soak into the ground. Rain gardens are typically planted with native plants and can look just like any other traditional garden.

Permeable – Permeable or pervious surfaces allow water to infiltrate into the ground rather than causing it to pool or runoff. Permeable surfaces can dramatically reduce stormwater runoff and erosion.

Potable – Water that is safe to drink. The water harvested in barrels or cisterns is not potable.

Green Roof – A vegetated landscape that is planted on the roof of a building. Green Roofs are specially designed to capture, treat, and in some cases, retain rain water. They also provide other benefits including increased species diversity and insulation against heat gain or loss.

Bioretention – A type of stormwater management project that uses a combination of plants, substrates (soil, sand, mulch, etc.), and ponding to capture stormwater and remove pollutants before the water is either discharged or soaks into the ground.

Oil & Grit Separator – Typically installed in parking lots, oil & grit separators are underground systems which are designed to separate oil, sediment, and other particulate matter from stormwater.

Infiltration Trench – Linear ditches, typically with a grass or gravel surface, used to collect and treat rain water from adjacent surfaces. Infiltration trenches are designed to be highly permeable so that they can allow water to quickly soak into the ground and reduce runoff. They are often installed parallel to roads and around the perimeter of parking lots.

Erosion – The wearing-away of surfaces by wind or water. With regard to stormwater, the word erosion is most frequently referring to the wearing away, or loss of soil due to the flow of water.

Bioswale – Similar to an infiltration trench, a bioswale is a linear channel designed to convey (move) stormwater runoff while removing sediment and other pollution. Bioswales are typically vegetated and can also be referred to as grass swales, vegetated swales, and filter strips.

Heat Island Effect – The phenomenon where developed areas are hotter than nearby rural or less developed areas. This is largely due to an increased amount of paved and dark surfaces. The heat island effect can affect communities by increasing energy demand, air conditioning costs, air pollution, greenhouse gas emissions, heat-related illness/mortality, and water pollution. One of the best ways to combat the heat island effect is by reducing paved areas and increasing the presence of green spaces and trees.

Compacted – As it relates to soils, compacted soils occur when the soil particles are pressed together, reducing the space between them. Compacted soils do not absorb water as easily as non-compacted soils. Compacted soils increase runoff and erosion and often make it more challenging for plants to grow.

Native Plants – A plant is considered native if it has occurred naturally in a specific region without human introduction. Native plants are better suited to the environments they are found in, meaning they typically require less watering and fertilizing. They have deep root systems that prevent soils from becoming compacted and take up water more efficiently and provide important habitat for native insects, birds, and other animals, especially pollinator species.

Grasscycling – Grasscycling is the process of allowing grass clippings to remain on the lawn after mowing so that they can decompose and return nutrients to the soil. Grass clippings can provide up to 25% of a lawn's fertilizer needs, making grasscycling and easy and effective smart lawn care practive.

Over-seeding – Spreading grass seed over an existing lawn. Over-seeding helps keep lawns green and competitive by mixing new grass in with old grass.

Combined Sewer System (CSS) – A sewer system in which wastewater from homes and businesses and stormwater share the same pipes. In a combined system, when there is too much water flowing in the pipes, such as after a large storm event, excess water overflows from the system. These overflows result in untreated wastewater and stormwater directly entering water bodies.

Catchment Plan – Another name for a watershed plan. The Rosemary Hills Catchment extends beyond the boundaries of the Rosemary Hills neighborhood. It is intersected by East-West Highway, bordered on the north by Talbot Avenue, and extends to Spencer Road on the west and Milford Avenue on the east. The catchment plan was created by Montgomery County DEP in order to assess the current conditions of the Rosemary Hills watershed and evaluate opportunities for future stormwater management and water quality projects.

Treatment Train – A treatment train is a combination of projects designed to lessen the impacts of stormwater by capturing, slowing, and removing pollutants from stormwater. An example of a treatment train would be capturing the water from a downspout with a rain barrel, using the water from the barrel to water a conservation landscape, and directing the overflow from the barrel to a permeable paver patio.

Environmental Site Design (ESD) – A stormwater management technique that takes the existing environmental conditions into consideration when choosing the project type and location.

Appendix A:

Catchment Plan

Rosemary Hills Catchment Plan

Overview

The Rosemary Hills catchment is a 145-acre area that drains to Rock Creek and is located in Montgomery County's Lower Rock Creek watershed. The catchment is approximately 38% (55 acres) impervious and is largely residential. The Rosemary Hills catchment is intersected by East West Highway, is bordered on the north by Talbot Avenue, and extends as far west as Spencer Road and as far east as Milford Avenue.

Streams throughout the Rock Creek watershed, including within the Rosemary Hills catchment area, were assessed between 2016 and 2017. Based on stream conditions and other factors, described under "Priority for Assessment Factors" below, some catchments within the Rock Creek watershed were prioritized for further assessment of stormwater management opportunities. The intent of these assessments was to identify focus areas where multiple projects could be combined in order to maximize the benefits of restoration efforts, provide enhanced improvement in local water quality and ecosystems, and to protect the investments made in these projects.

Priority for Assessment Factors – Rosemary Hills Catchment

- **1st or 2nd Order Stream:** Majority of catchment piped. Includes a 1st order stream at the connection with Rock Creek mainstem.
- **High Priority Stream:**
    - Derby Ridge Stream Restoration Project (WRE Task Order cancelled in 2018)
- **Synergy of Opportunities:** New upland stormwater management important to help minimize downstream erosion.
- **Existing SWM Projects:** Very little existing stormwater treatment in catchment.
- **Known Issues:** Significant stream erosion impacting adjacent residential parking and structures. WSSC completed a repair project in 2018. WSSC project and infrastructure may limit future stream restoration engineering options.
- **Public Interest:** Property Manager for multifamily residential properties near stream concerned about significant stream erosion and has positively supported restoration opportunities.

Characteristics

Of the total 145-acre catchment, 133 acres were further assessed for stormwater management opportunities. Locations not assessed included areas excluded from Montgomery County's Municipal Separate Storm Sewer System (MS4) Permit and some areas that already provide credited stormwater management treatment.

The Rosemary Hills catchment characteristics are summarized in the series of tables below. As depicted in Table 1 below, little existing stormwater quality treatment exists in the Rosemary Hills catchment and the majority of the impervious area is covered by the County MS4 Permit.

Table 1: Rosemary Hills Catchment Impervious Cover Breakdown

Impervious Area (IA) Breakdown	Area (acres)	Area (%)
Credited IA[1]	1.0	1.7
Uncredited IA[2]	54.0	98.3
MS4 Excluded IA[3]	4.9	8.8
MS4 Permit Area IA	50.1	91.2
Total impervious area	**55.0**	**100.0**

1: Credited impervious area (IA), includes the treated IA within the catchment draining to credited stormwater management practices.
2: Uncredited impervious area (IA), includes both the treated IA within the catchment draining to an uncredited stormwater management practice and untreated IA.
3: Area excluded from the MS4 Permit includes rural zoning, Maryland-National Capital Park and Planning Commission (M-NCPPC) lands, federal and state property, and federal and state roads.

The land uses in the Rosemary Hills catchment are shown in Table 2. Medium-density residential is the dominant land use in the catchment covering about 54% of the catchment. This use is followed by high-density residential uses at 29% and institutional uses at 10%.

Table 2: Rosemary Hills Catchment Land Use

Maryland Department of Planning 2010 Land Cover / Land Use	Area (acres)	Area (%)
Agricultural [1]	0.0	0.0
Forested [2]	0.0	0.0
Institutional[3]	15.0	10.3
High-Density Residential (>4 du/acre)	41.9	28.8
Medium-Density Residential (1-4 du/acre)	78.9	54.3
Low-Density Residential (<1 du/acre)	0.0	0.0
Industrial	0.0	0.0
Commercial	0.0	0.0
Bare Ground	0.0	0.0
Open Urban Land	9.6	6.6
Transportation	0.0	0.0
Water	0.0	0.0

du: dwelling unit
1: Orchards, Vineyards, Horticulture, Feeding Operations, Cropland, Pasture, and Agricultural Buildings land use
2: Deciduous Forests, Evergreen Forests, Mixed Forest, and Brush
3: Institutional land use (churches, schools, municipal buildings)

Landownership in the Rosemary Hills catchment primarily consists of private ownership followed by public ownership (e.g., road rights-of-way). The breakdown of landownership type is detailed in Table 3 below.

Table 3: Rosemary Hills Catchment Landownership Type

Ownership Type	Area (acres)	Area (%)
Private	113.8	78%
Public	22.3	15%
Parks	9.2	6%
HOA	0.0	0%
Other Jurisdictions	0.0	0%

Summary of Opportunities

The Rosemary Hills catchment was evaluated for restoration opportunities with an emphasis on providing treatment for uncredited impervious areas within the MS4 Permit area. A desktop and field verification were conducted for the following types of opportunities:

- **Stream Restoration**: Streams were identified as good candidates for restoration when they were highly eroded or ecologically deteriorated. Restoration consists of techniques or methods to protect infrastructure and improve water quality by reducing stream bank erosion, minimizing down-cutting of stream beds, and restoring aquatic ecosystems. Some streams were not field-assessed for restoration. These include streams that were located along the mainstem of Rock Creek, already had draft stream restoration designs, already had completed stream restoration, or were located outside Montgomery County's jurisdiction (e.g., SHA property).
- **Regenerative Stormwater Conveyance (RSC) and Outfall Stabilization**: Outfall areas and channel reaches with intermittent or ephemeral flows and significant erosion were identified as potential opportunities. RSC consists of a series of step pools and sand filters constructed to allow surface water to replenish the shallow groundwater. Outfall stabilization is typically implemented for a short distance from an outfall and uses techniques to minimize erosion in the outfall area.
- **Stormwater Management Facility**: Suitable specific locations with drainage areas of about an acre or more were identified for retrofit, or new individual or clustered facilities:
    - **New Stormwater Management Facility**: Locations where a stormwater management facility does not currently exist, but where there may be sufficient space for a facility and a drainage area of approximately one acre or greater.
    - **Retrofit Stormwater Management Facility**: Locations where there is an existing stormwater management facility, but the facility does not sufficiently treat runoff from its associated drainage area. Retrofit would consist of upgrades to improve water quality in the receiving stream.
- **Stormwater Management**: Neighborhoods and other areas were assessed for general suitability of introducing various types of stormwater management which mimic nature to capture and treat stormwater as close to the source as possible:
    - **Green Streets**: Rain gardens and other low-impact practices constructed within the public street right-of-way that reduce and filter stormwater runoff.
    - **RainScapes**: Low-impact design techniques such as raingardens, conservation landscaping, and permeable pavement that are voluntarily implemented by private property owners. Under this program, typically on single-family residential lots, the owner receives a rebate for a portion of the implementation costs from the County.
    - **Community Environmental Site Design (ESD)**: Low-impact stormwater management practices that are constructed on private property with the approval of the property owner. These could include capital improvement projects, grant projects, or RainScapes projects on larger parcels.

  - **Public Property Environmental Site Design (ESD)**: Low-impact stormwater management practices that are constructed on public property. These could include capital improvement projects, grant projects, or RainScapes projects on larger parcels.
- **Potential Green Streets Corridor**: County arterial and collector roads which may have opportunity for low-impact stormwater practices within the right-of-way and for which these practices should be prioritized during the design of roadway improvement projects.

Whenever possible, homogenous areas were delineated and identified using a unique identification code (i.e., RH-01, RH-02, etc.). Areas were delineated based on similar characteristics such as land use, density, slope, and potential for restoration opportunity implementation. Areas may be viable opportunities for multiple restoration types (e.g., green streets and RainScapes). A summary of each restoration area is provided in Table 4 and is depicted in Figure 3. Criteria for determining restoration potential can be found in Appendix B.

In general, the Rosemary Hills catchment has fair potential to support several environmental site design opportunities (see Figures 1 and 2). **Six** new community environmental site design opportunities were observed and are summarized in Table 5 below. **One** new public property environmental site design opportunities were observed and are summarized in Table 6 below. **One** stream restoration project was previously identified in WRE Task Order 12-36, but its design phase was not moving forward at the time of this assessment due to a WSSC project in the area.

Figure 1: Opportunities for permeable paving or underground facilities at a place of worship

Figure 2: Opportunity for a bioswale/bioretention installation

Table 4: Detailed Summary of Restoration Opportunities

Catchment Restoration ID [1]	In Credited Area (Yes, No, Partial) [2]	Type of Opportunity	Restoration Potential (Good, Fair, Limited) [3]	Details
RH-01	No		Limited	Temple Shalom - Temple Shalom is in the process of installing parking lot permeable pavers through a CBT grant and has installed RainScapes conservation landscaping.
RH-07	Partial	Public Property Environmental Site Design	Good	Rosemary Hills Elementary School. - There are additional opportunities to expand the green roof on Rosemary Hills E.S. and to install additional stormwater treatment practices.
RH-08	Partial		Limited	Pilgrim Baptist Church - This place of worship has an existing infiltration trench.
RH-09	No	Community Environmental Site Design	Fair	Paddington Square Apartments - This apartment complex might be retrofit with underground facilities and green roofs. Low-level apartments and slopes may preclude permeable pavers and bioretention.
RH-10	No	Community Environmental Site Design	Fair	Christ the Kind Catholic Church - Permeable pavers and underground facilities are possibilities at the northern side of this place of worship.
RH-11	No		Limited	There are limited opportunities in this area given the narrow rights-of-way area, the slopes and the need for street parking.
RH-12	No	Community Environmental Site Design	Fair	A green roof on this assisted living facility is possible. Slopes on this well-forested property preclude most types of stormwater management practices.
RH-13	No	Community Environmental Site Design	Fair	A green roof on this apartment building may be a good complement to the existing green roof on its parking garage. Underground storage also possible
RH-14	No	Community Environmental Site Design	Fair	The parking area at this site could be retrofit to allow plantings, bioswales, underground facilities and bioretention in the northwest portion of the property.
RH-15	No	Community Environmental Site Design	Fair	Underground facilities and some permeable paver areas are opportunities for this nursing facility.
RH-16	No		Limited	Access denied.
RH-18	No		Limited	Limited opportunities in this single-family residential area with narrow rights-of-way and homes close to the street.

Catchment Restoration ID [1]	In Credited Area (Yes, No, Partial) [2]	Type of Opportunity	Restoration Potential (Good, Fair, Limited) [3]	Details
RH-20 (RCDC-RI-002a)	No		Limited	Potential location for a series of three proposed bioretention facilities. Receives sheet flow from parking lots and roof drainage to inlets. Drainage area is 0.9 acres with 46% impervious cover. Potential utility conflicts are present. Community is interested in stormwater management.
RH-21 (RCDC-RI-002b)	No		Limited	Potential location for a micro-bioretention facility. Receives sheet flow and roof drainage to inlets. Drainage area is 0.24 acres with 31% impervious cover. Potential utility conflicts are present. Community is interested in stormwater management.
RH-22 (RCDC-RI-002c)	No		Limited	Potential location for a bioretention facility. May be possible with flow splitter at downstream inlet, or with upstream inlet. Receives sheet flow to inlets. Drainage area is 0.73 acres with 75% impervious cover. Potential utility conflicts present. Community is interested in stormwater management.
RH-23 (RCDC-RI-002d)	No		Limited	Potential location for a bioretention facility. Receives sheet flow from roof drain. Drainage area is 0.76 acres with 21% impervious cover. Potential utility conflicts are present. Community is interested in stormwater management.
RH-24 (RCDC-RI-003a)	No		Limited	Potential location for a bioretention facility. Receives flow from roof drain. Drainage area is 0.65 acres with 30% impervious cover. Potential utility conflicts are present. Community is interested in stormwater management.
RH-25 (RCDC-RI-003b)	No		Limited	Potential location for a bioretention facility. Receives flow from roof drain. Drainage area is 1.13 acres with 41% impervious cover. Potential utility conflicts are present. Community is interested in stormwater management.
RH-26 (RCDC-RI-003c)	No		Limited	Potential location for a bioretention facility. Receives flow from roof drain. Drainage area is 0.76 acres with 35% impervious cover. Potential utility conflicts are present. Community is interested in stormwater management.

Catchment Restoration ID [1]	In Credited Area (Yes, No, Partial) [2]	Type of Opportunity	Restoration Potential (Good, Fair, Limited) [3]	Details
RH-27 (RCDC-RI-003d)	No		Limited	Great opportunity for a bioretention facility. Receives flow from roof drain. Drainage area is 0.74 acres with 35% impervious cover. Potential utility conflicts are present. Community is interested in stormwater management.
RH-28 (RCDC-RI-003e)	No		Limited	Potential location for a bioretention facility. Receives flow from roof drains to a yard inlet. Drainage area is 0.23 acres with 22% impervious cover. Potential utility conflicts are present. Community is interested in stormwater management.
RH-29 (RCDC-RI-003f)	No		Limited	Potential location for a micro-bioretention facility. Receives flow from roof drains to an inlet. Drainage area is 0.19 acres with 30% impervious cover. Potential utility conflicts are present. Community is interested in stormwater management.
RH-30 (RCDC-RI-003g)	No		Limited	Potential location for a micro-bioretention facility. Receives flow from roof drains to an inlet. Drainage area is 0.42 acres with 37% impervious cover. Potential utility conflicts are present. Community is interested in stormwater management.
RH-31	No		Limited	Project was previously identified in Task Order WRE12-36, but was not moving forward at the time of this assessment due to constraints with WSSC infrastructure.

1: Opportunities with the ID in the format of RCDC-RI-005 were identified as part of the 2016 Rock Creek watershed assessment field work. Opportunities with the ID in the format of RH-03 were identified as part of the 2018 Rosemary Hills catchment plan assessment.
2: "Yes" or "Partial" indicates the opportunity is in an area already receiving some MS4 credit or treatment.
3: Criteria for establishing restoration potential can be found in Appendix B.

The following series of tables are organized by the type of opportunity and provide estimated pollutant load reductions. Pollutant load reductions were calculated for opportunities rated as good and fair (i.e., not calculated for limited opportunities).

Table 5: Rosemary Hills Community Environmental Site Design Opportunities

Area ID	Estimated Drainage Area (ac)	Estimated Impervious Area (ac)	Pollutant Load Reduction			Planning -Level Construction Cost	Restoration Potential
			TSS (tons/yr)	TN (lbs/yr)	TP (lbs/yr)		
RH-09	7.6	3.2	0.4	4.2	1.2	$288,600	Fair
RH-10	1.9	1.2	0.1	1.6	0.4	$125,400	Fair
RH-12	2.2	0.8	0.0	0.3	0.1	$89,300	Fair
RH-13	1.0	0.5	0.1	0.6	0.2	$64,100	Fair
RH-14	1.5	1.0	0.1	2.3	0.5	$109,400	Fair
RH-15	1.1	0.8	0.1	1.1	0.3	$91,700	Fair

Table 6: Rosemary Hills Public Property Environmental Site Design Opportunities

Area ID	Estimated Drainage Area (ac)	Estimated Impervious Area (ac)	Pollutant Load Reduction			Planning -Level Construction Cost	Restoration Potential
			TSS (tons/yr)	TN (lbs/yr)	TP (lbs/yr)		
RH-07	7.2	3.2	0.4	8.4	1.7	$292,000	Good

Rock Creek Watershed
Rosemary Hills

Catchment Assessment
October 2018

Assessed for Stormwater Management
- Good/Fair Opportunity
- Limited Opportunity

Assessed for Stormwater Management Facility
- Good/Fair Opportunity
- Limited Opportunity
- Good/Fair Opportunity Drainage Area

Assessed for RSC or Outfall Stabilization
- Good/Fair Opportunity
- Limited Opportunity

Potential Green Streets Corridor

- Streams
- Priority Streams for Restoration
- Erosion Along Stream
- Catchment Boundary
- Property Boundaries
- Impervious Area (2014)
- MS4 Excluded Area (2009)

Existing Stormwater Management Facility (2017)
- Not Credited
- Credited
- Not Credited Drainage Area
- Credited Drainage Area

DEPARTMENT OF ENVIRONMENTAL PROTECTION
MONTGOMERY COUNTY • MARYLAND

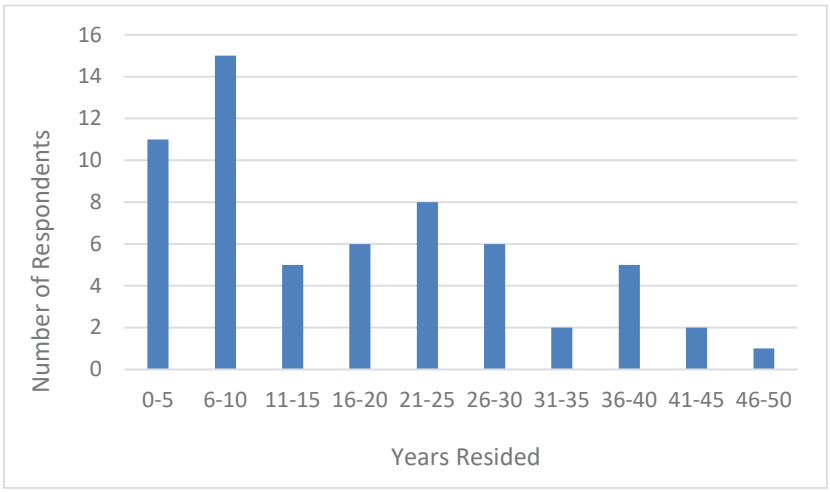
Biohabitats
Brown AND Caldwell
A Joint Venture

Appendix B:

Surveys

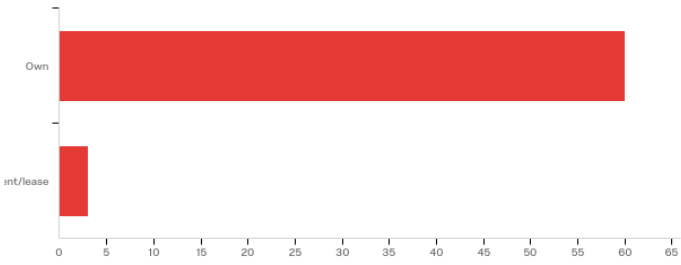
Q1 - How long have you lived in the Rosemary Hills community?

Years	*Frequency*
0-5	11
6-10	15
11-15	5
16-20	6
21-25	8
26-30	6
31-35	2
36-40	5
41-45	2
46-50	1



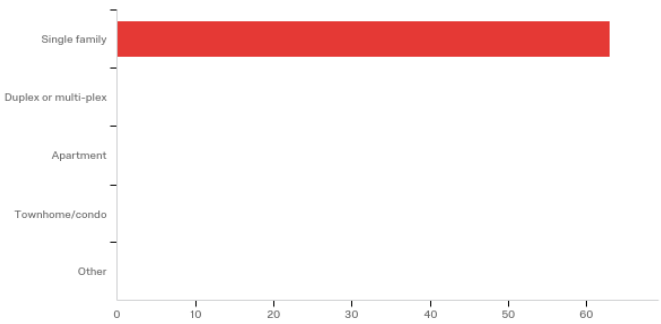
Q2 - Do you own or rent/lease your home?

#	Answer	%	Count
1	Own	95.24%	60
2	Rent/lease	4.76%	3
	Total	100%	63



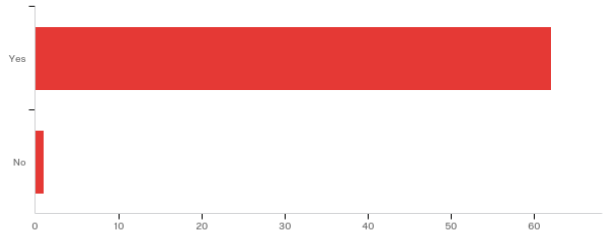
Q3 - What type of home do you live in?

#	Answer	%	Count
1	Single family	100.00%	63
2	Duplex or multi-plex	0.00%	0
3	Apartment	0.00%	0
4	Townhome/condo	0.00%	0
5	Other	0.00%	0
	Total	100%	63



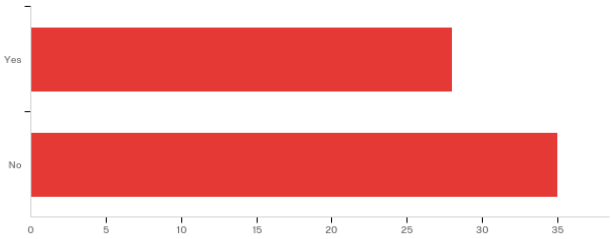
Q4 - Do you have a lawn or yard?

#	Answer	%	Count
1	Yes	98.41%	62
2	No	1.59%	1
	Total	100%	63



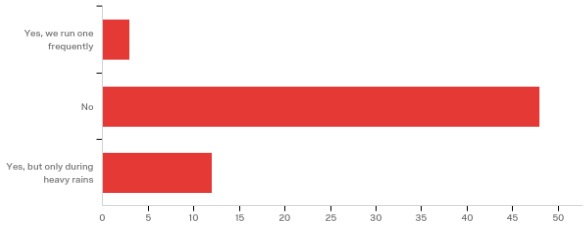
Q5 - Do you have a dog?

#	Answer	%	Count
1	Yes	44.44%	28
2	No	55.56%	35
	Total	100%	63



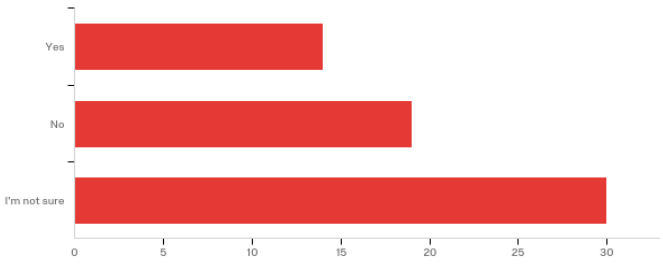
Q6 - Does your home rely on a sump pump?

#	Answer	%	Count
1	Yes, we run one frequently	4.76%	3
2	No	76.19%	48
3	Yes, but only during heavy rains	19.05%	12
	Total	100%	63



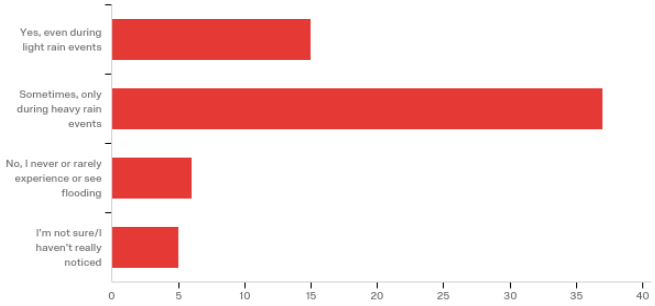
Q7 - Do you think that pet waste is an issue in your community?

#	Answer	%	Count
1	Yes	22.22%	14
2	No	30.16%	19
3	I'm not sure	47.62%	30
	Total	100%	63



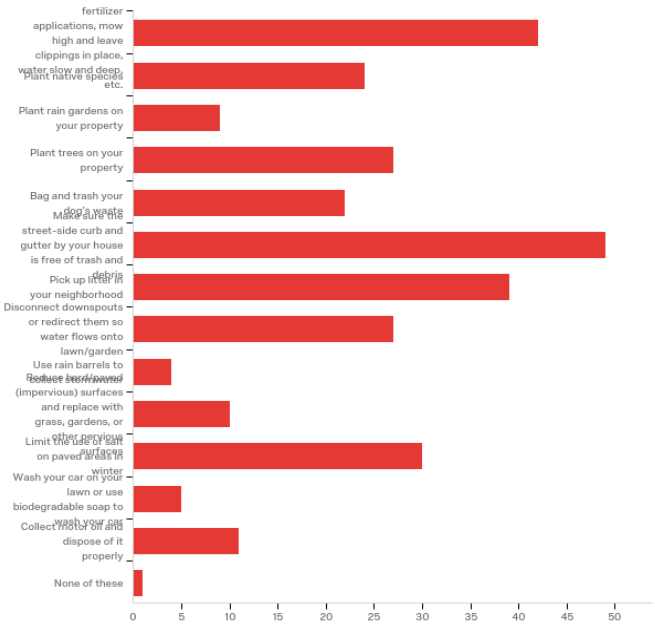
Q8 - Do you think that stormwater runoff is a problem in your neighborhood?

#	Answer	%	Count
1	Yes, even during light rain events	23.81%	15
2	Sometimes, only during heavy rain events	58.73%	37
3	No, I never or rarely experience or see flooding	9.52%	6
4	I'm not sure/I haven't really noticed	7.94%	5
	Total	100%	63



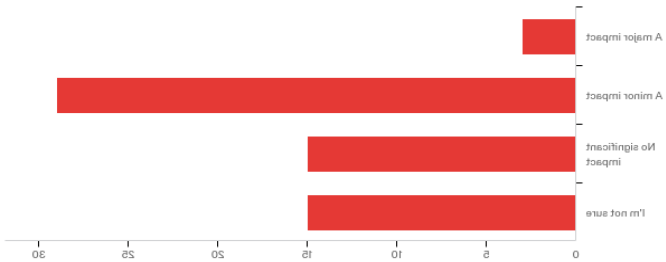
Q9 - Does your household do any of the following? (Check all that apply)

	Answer	%	Count
	Practice smart lawn care: reduce fertilizer applications, mow high and leave clippings in place, water slow and deep, etc.	14.00%	42
	Plant native species	8.00%	24
	Plant rain gardens on your property	3.00%	9
	Plant trees on your property	9.00%	27
	Bag and trash your dog's waste	7.33%	22
	Make sure the street-side curb and gutter by your house is free of trash and debris	16.33%	49
	Pick up litter in your neighborhood	13.00%	39
	Disconnect downspouts or redirect them so water flows onto lawn/garden	9.00%	27
	Use rain barrels to collect stormwater	1.33%	4
	Reduce hard/paved (impervious) surfaces and replace with grass, gardens, or other pervious surfaces	3.33%	10
	Limit the use of salt on paved areas in winter	10.00%	30
	Wash your car on your lawn or use biodegradable soap to wash your car	1.67%	5
	Collect motor oil and dispose of it properly	3.67%	11
	None of these	0.33%	1
	Total	100%	300



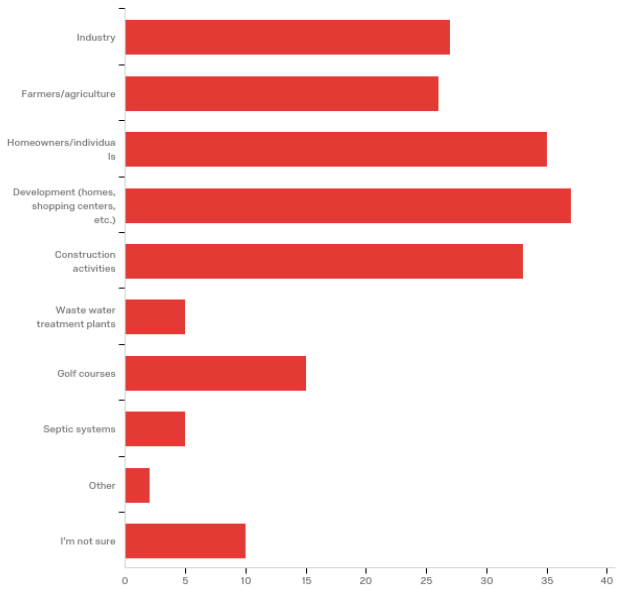
Q10 - How much of a negative impact do you feel your own daily activities have on water quality?

#	Answer	%	Count
1	A major impact	4.84%	3
2	A minor impact	46.77%	29
3	No significant impact	24.19%	15
4	I'm not sure	24.19%	15
	Total	100%	62



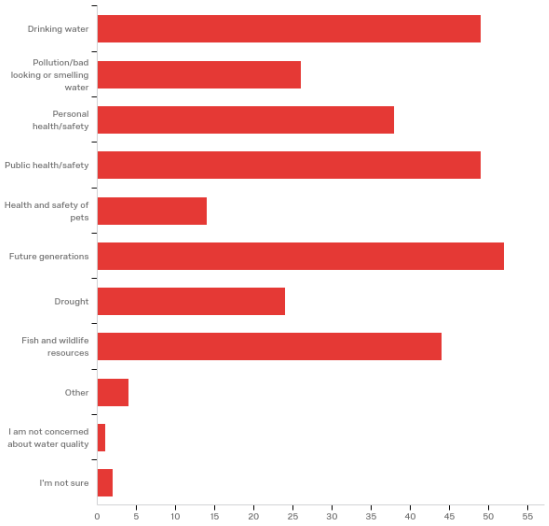
Q11 - Who do you think are the largest polluters of water in Montgomery County? (Check all that apply)

#	Answer	%	Count
1	Industry	13.85%	27
2	Farmers/agriculture	13.33%	26
3	Homeowners/individuals	17.95%	35
4	Development (homes, shopping centers, etc.)	18.97%	37
5	Construction activities	16.92%	33
6	Waste water treatment plants	2.56%	5
7	Golf courses	7.69%	15
8	Septic systems	2.56%	5
9	Other: Local Government and Purple line construction, Montco public buildings and commercial real estate	1.03%	2
10	I'm not sure	5.13%	10
	Total	100%	195



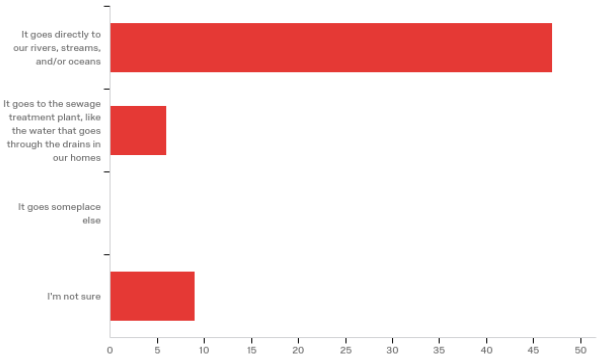
Q12 - What are the main reasons you are concerned about water quality? (Check all that apply)

#	Answer	%	Count
1	Drinking water	16.17%	49
2	Pollution/bad looking or smelling water	8.58%	26
3	Personal health/safety	12.54%	38
4	Public health/safety	16.17%	49
5	Health and safety of pets	4.62%	14
6	Future generations	17.16%	52
7	Drought	7.92%	24
8	Fish and wildlife resources	14.52%	44
9	Other: Excessive higher costs of providing safe drinking water and remediation of polluted Bay and rivers, Plant life, Recreation (kayaking), General health of waterways	1.32%	4
10	I am not concerned about water quality	0.33%	1
11	I'm not sure	0.66%	2
	Total	100%	303



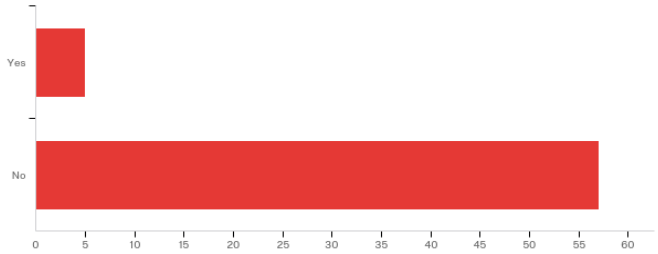
Q13 - Which of the following best describes what happens to the water that goes into storm drains?

#	Answer	%	Count
1	It goes directly to our rivers, streams, and/or oceans	75.81%	47
2	It goes to the sewage treatment plant, like the water that goes through the drains in our homes	9.68%	6
3	It goes someplace else	0.00%	0
4	I'm not sure	14.52%	9
	Total	100%	62



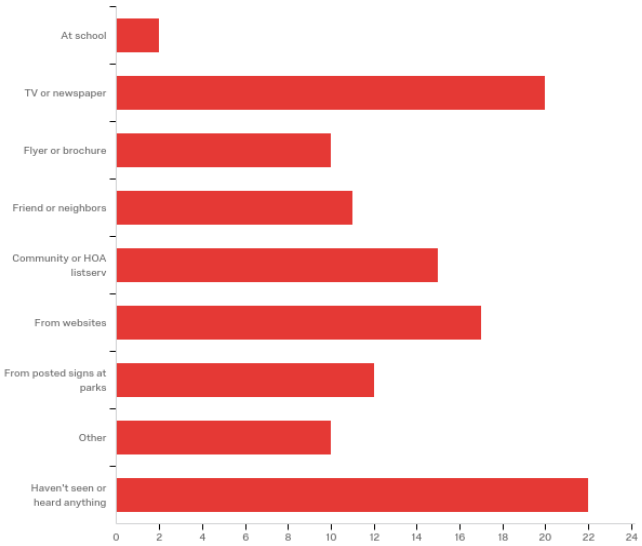
Q14 - In the past year, have you seen anyone in your community dumping items into a storm drain?

#	Answer	%	Count
1	Yes	8.06%	5
2	No	91.94%	57
	Total	100%	62

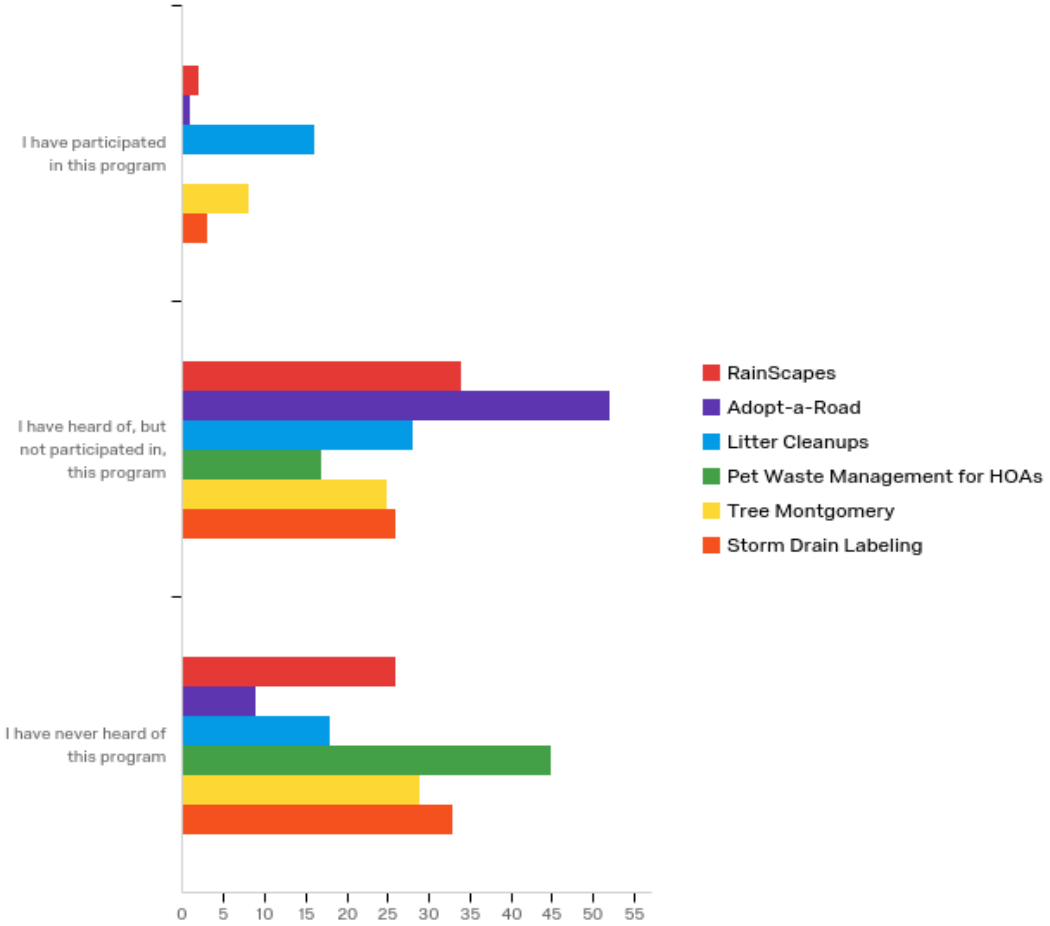


Q15 - Where have you seen or heard anything about stormwater runoff or water quality in Montgomery County over the past year? (check all that apply)

#	Answer	%	Count
1	At school	1.68%	2
2	TV or newspaper	16.81%	20
3	Flyer or brochure	8.40%	10
4	Friend or neighbors	9.24%	11
5	Community or HOA listserv	12.61%	15
6	From websites	14.29%	17
7	From posted signs at parks	10.08%	12
8	Other: Workshop at Silver Spring Civic Center, Public events/presentations, UMD/SM process/program, This survey, County emails, Work, Storm drain marking, MoCo Ag Fair, My stormwater work with MoCo Parks, County regulations, Local elected officials	8.40%	10
9	Haven't seen or heard anything	18.49%	22
	Total	100%	119

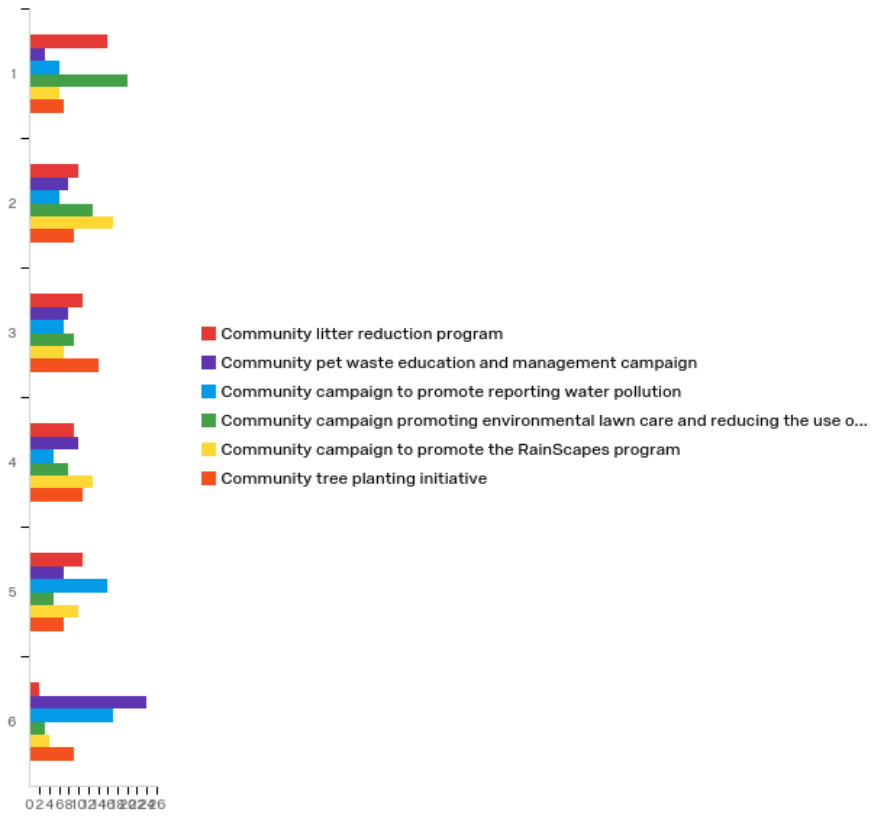


Q16 - What is your experience with following Montgomery County programs?



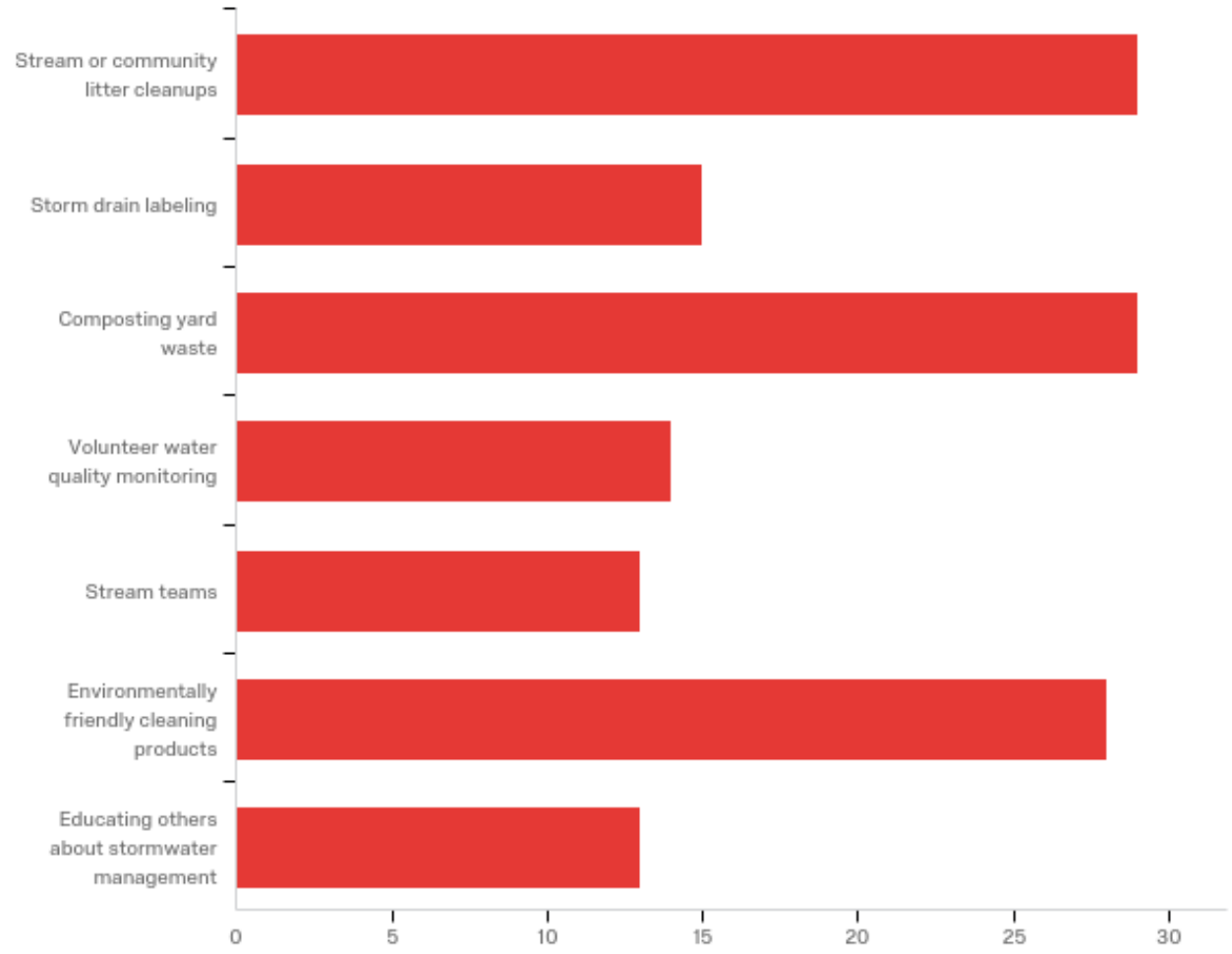
#	Question	I have participated in this program		I have heard of, but not participated in, this program		I have never heard of this program		Total
	RainScapes	3.23%	2	54.84%	34	41.94%	26	62
	Adopt-a-Road	1.61%	1	83.87%	52	14.52%	9	62
	Litter Cleanups	25.81%	16	45.16%	28	29.03%	18	62
	Pet Waste Management for HOAs	0.00%	0	27.42%	17	72.58%	45	62
	Tree Montgomery	12.90%	8	40.32%	25	46.77%	29	62
	Storm Drain Labeling	4.84%	3	41.94%	26	53.23%	33	62

Q17 - Which of the programs/activities below do you think would have the most benefit if taken on by your community? Please rank the options in order with 1 being the highest/most beneficial.



#	Question	1		2		3		4		5		6		Total
1	Community litter reduction program	27.12%	16	16.95%	10	18.64%	11	15.25%	9	18.64%	11	3.39%	2	59
2	Community pet waste education and management campaign	5.00%	3	13.33%	8	13.33%	8	16.67%	10	11.67%	7	40.00%	24	60
3	Community campaign to promote reporting water pollution	10.53%	6	10.53%	6	12.28%	7	8.77%	5	28.07%	16	29.82%	17	57
4	Community campaign promoting environmental lawn care and reducing the use of herbicides / chemicals in the yard	34.48%	20	22.41%	13	15.52%	9	13.79%	8	8.62%	5	5.17%	3	58
5	Community campaign to promote the RainScapes program	10.53%	6	29.82%	17	12.28%	7	22.81%	13	17.54%	10	7.02%	4	57
6	Community tree planting initiative	12.28%	7	15.79%	9	24.56%	14	19.30%	11	12.28%	7	15.79%	9	57

Q18 - Which, if any, of the following are you personally interested in participating in or learning more about? (Check all that apply)



#	Answer	%	Count
1	Stream or community litter cleanups	20.57%	29
2	Storm drain labeling	10.64%	15
9	Composting yard waste	20.57%	29
4	Volunteer water quality monitoring	9.93%	14
5	Stream teams	9.22%	13
10	Environmentally friendly cleaning products	19.86%	28
6	Educating others about stormwater management	9.22%	13
	Total	100%	141

Q19 - Do you have any other thoughts or concerns about stormwater management in your community?

Do you have any other thoughts or concerns about stormwater management in your community?
Learning more about county programs to reduce impervious surfaces (driveways, parking lots)
Not answered
Not answered
I'm interested in solving property drainage problem and using techniques like Rainscape and water capture
We live very close to Rock Creek Park, which is where we walk our dogs and where our children (when younger) would sometimes play in the creek with the dogs. We have always been concerned about the water quality within Rock Creek and were never sure if it was safe for humans or pets to be exposed to this water. We have noticed that a small tributary by the Army Walter Reed Annex have signs posted indicating that the water is unsafe for pets to consume. Our recommendation is to work with the National Park Service to post signs around the park indicating if the water is safe or not (similar to coastal/beach communities with red tide warnings signs)
There are old drains built by the county in between the old houses but it doesn't drain anywhere or do anything. Not sue what this system was engineered to do but it doesn't work.
As a walker, I'm frequently walking around the Gwendolyn Coffield Recreation Center pathways. I'm dismayed at how frequently the teams that play on the soccer field leave plastic bottles about on the grass even though there are several dumpsters available for them to use. How can the center's management monitor this and penalize them if they don't clean up after themselves? It's a simple sense of personal responsibility that can go a long way in getting people aware about their respective behavior having an effect on the community.
Yes, neighbor who is dumping play into the storm water and has farm animal waste produced in the yard which then spreads to neighboring yards
Coordinating efforts of several homeowners might help with runoff
PARKS Department needs to initiate and expand a program to control stormwater including educating the public through signage and website bulletins/pamphlets and presentations to Park users and many other residents, workers, passers-by. Montgomery Department of Transportation should publicly advise and inform residents/businesses about stormwater damage to streets and curbs as well as stormwater causes of recurrent flooding in neighborhoods and along lower streets and roads. State Highway Administration should do the same thing about risks of highway floods.
Combined sewage overflows into the creeks and rivers Also drains backing up and flooding roads
In my time in the neighborhood, I have not seen a problem with water on my street or in my yard/basement. But the layout of the terrain does seem potentially problematic.
I would participate in the rainscapes program if the rules allowed for more flexibility. I have planted native plants, and made an effort to reduce storm water runoff, but because I don't use a contractor for such projects, the reimbursement is not easily available to our household.
Not at this time
I successfully worked with Montco Parks, ADA div., to redesign/rebuild/plant storm water flood plane in Rosemary Hills Park. Storm water run off construction plane complete Road/walkway pending construction summer 2019. As a successful engagement with Montco officials, this can serve as an example of "Act Locally" and ID problems to local officials. Note: Action required I file an official ADA complaint with Americans with Disibilities. Multiple work orders to Park Maint. were ignored. "Institutional Knowledge" Forty Seven years in government!!
no
We need to think beyond current Civic Association boundaries of our neighborhood into adjacent Local Park and near Recreation Center in that Park. We lso need to look at the local public schoo grounds and drainages that impact school buildings/plantings - especially current and impending run-off from higher area behind the school next to CSX tracks and complicating add-on stormwater issues during construction and future operations of Purple Line Light Rail system which skirts our neighborhood and passes thru adjacent Lyttonsville residential/light industrial neighborhood and Rock Creek Park abuting our community and adjacent neighborhoods. Massive tree removal hurts.

I would love to see county and state government take the lead on funding and organizing community tree-planting and rainscape initiatives. Does it seem crazy to make these youth jobs programs? I realize there are some downsides in terms of efficiency and targeting. But the minor leakage in terms of efficiency and targeting could be balanced by broader investment and more tangible benefits of these programs.

A number of people on Sundale Ave and one house on Maywood Ave have sump pumps that discharge into their yard, instead of being tied into a storm drain. The end result is that ice flows form during the winter and make sidewalks and areas of the street hazardous. I would like to see an end to that!

Need for swales on the main streets to reduce flooding and calm traffic.

We need to do so much more, myself included...whenever there is a heavy rain (like today 7/7/19), I cringe at how much water rushes down the gutter, into the storm drains and floods into Rock Creek, taking with it oil and sediment and litter and crap.

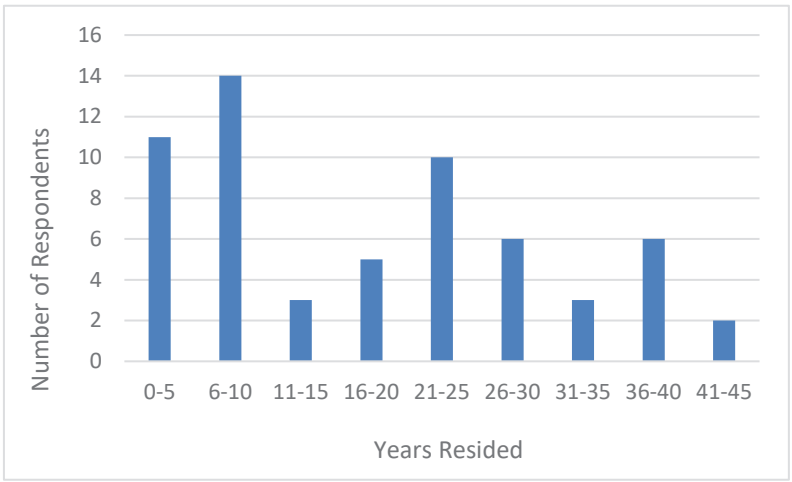
We have significant flooding during heavy rains, particularly at the intersection of East West Highway and Washington/Sundale. During a heavy rain, the gutters on Sundale are full of water; it all rushes downhill to East West.

My community pays little or no attention to neighborhood PUBLIC facilities (or lack thereof) for stormwater management. Single family homes predominate - most are owner-occupied, some are rented. Ours is a hilly neighborhood with high points around perimeter, flowing downward along street curbs to a single primary 'drive' reaching its low point at junction with a MD State Highway. Homeowners tend to 'groom their lawns', have flower beds, and do some gardening, but do not try to manage or minimize surface stormwater flows on their properties except to sluice/pipe it away from house foundations onto their neighbors' lower yards or toward street curbs. This causes overflows on/thru properties below causing ponding and silt as well as overflow onto sidewalks and streets downhill. It is a classic situation of neighbors at higher levels disregarding those lower down, and everyone trying to direct stormwater away from their own homes/gardens toward street-sides. We need guidance on how to cooperate with our neighbors on public-oriented (neighborhood-wide), as well as better ways to manage stormwater and other issues on our private property cooperatively with (not against or uncaring about) our next door neighbors and neighbors 'downstream' from us. This situation is more urgent in some ways than 'Saving the Chesapeake Bay' or improving drinking water quality - as it cuts closer to home these days with heavy, frequent rains and local flooding. Thanks, Joel Teitelbaum

Rosemary Hills Pet Waste Survey

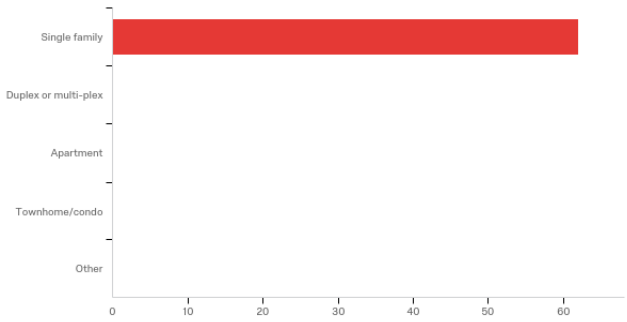
Q1 - How long have you lived in the Rosemary Hills Community?

Years	*Frequency*
0-5	11
6-10	14
11-15	3
16-20	5
21-25	10
26-30	6
31-35	3
36-40	6
41-45	2



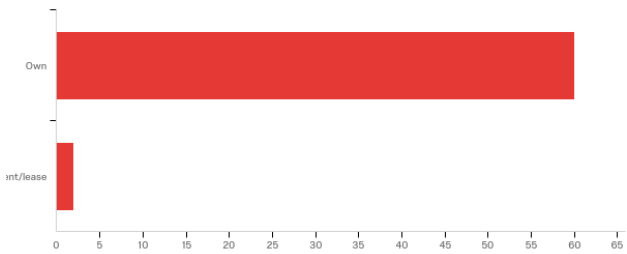
Q2 - What type of home do you live in?

#	Answer	%	Count
1	Single family	100.00%	62
2	Duplex or multi-plex	0.00%	0
3	Apartment	0.00%	0
4	Townhome/condo	0.00%	0
5	Other	0.00%	0
	Total	100%	62



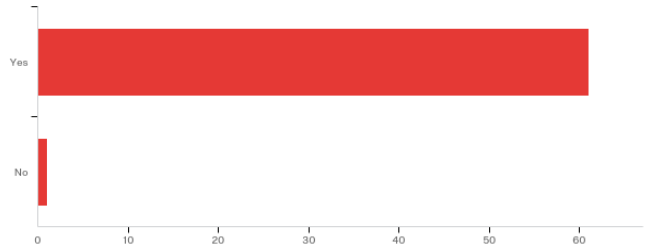
Q3 - Do you own or rent/lease your home?

#	Answer	%	Count
1	Own	96.77%	60
2	Rent/lease	3.23%	2
	Total	100%	62



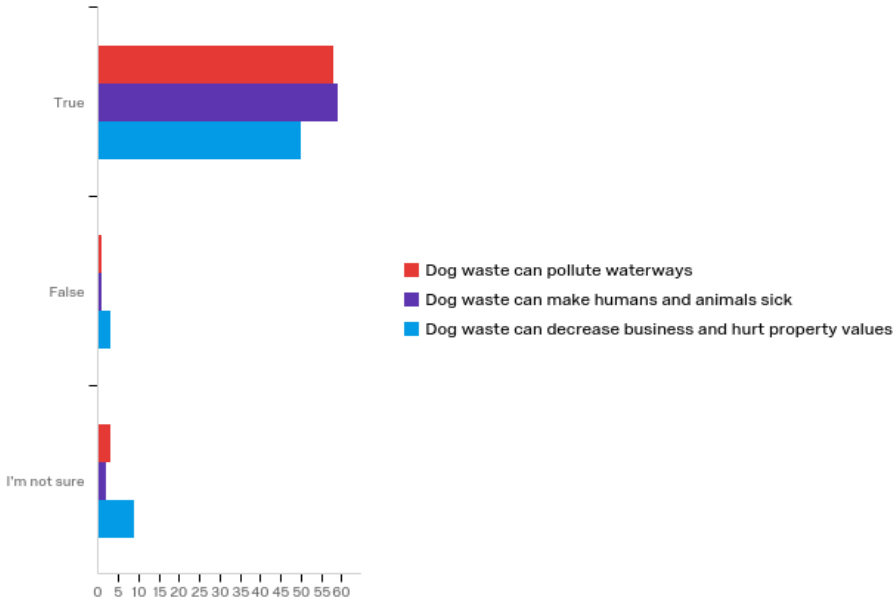
Q4 - Do you have a lawn or yard?

#	Answer	%	Count
1	Yes	98.39%	61
2	No	1.61%	1
	Total	100%	62



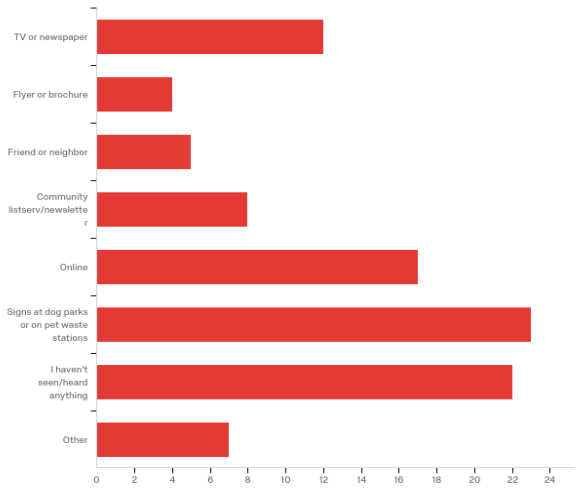
Q5 - Please answer the questions below about dog waste.

#	Question	True		False		I'm not sure		Total
1	Dog waste can pollute waterways	93.55%	58	1.61%	1	4.84%	3	62
2	Dog waste can make humans and animals sick	95.16%	59	1.61%	1	3.23%	2	62
3	Dog waste can decrease business and hurt property values	80.65%	50	4.84%	3	14.52%	9	62



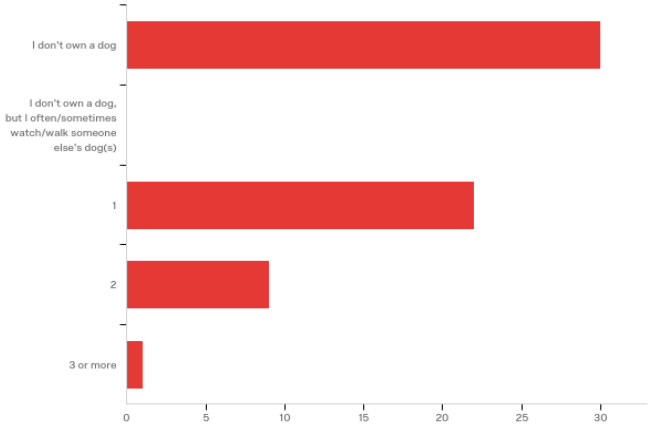
Q6 - Prior to today, where have you seen or heard about dog waste causing water pollution? Check all that apply.

#	Answer	%	Count
1	TV or newspaper	12.24%	12
2	Flyer or brochure	4.08%	4
3	Friend or neighbor	5.10%	5
4	Community listserv/newsletter	8.16%	8
5	Online	17.35%	17
6	Signs at dog parks or on pet waste stations	23.47%	23
7	I haven't seen/heard anything	22.45%	22
8	Other: Meeting at Silver Spring Civic Center, Common Sense (2), I have seen spray paint on the sidewalks where dog waste has been cleaned up, Hadn't heard this before, Saw it happen myself	7.14%	7
	Total	100%	98



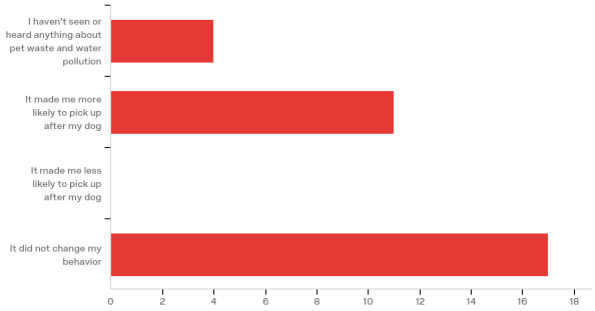
Q7 - How many dogs do you own?

#	Answer	%	Count
4	I don't own a dog	48.39%	30
8	I don't own a dog, but I often/sometimes watch/walk someone else's dog(s)	0.00%	0
5	1	35.48%	22
6	2	14.52%	9
7	3 or more	1.61%	1
	Total	100%	62



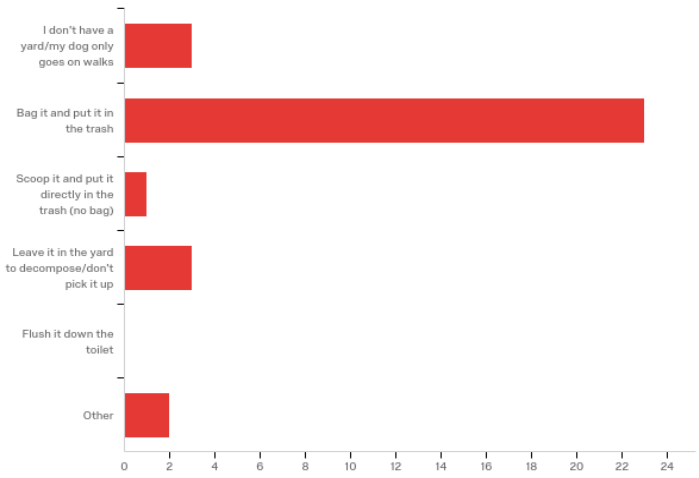
Q8 - How did learning about dog waste and water pollution impact your behavior?

#	Answer	%	Count
1	I haven't seen or heard anything about pet waste and water pollution	12.50%	4
2	It made me more likely to pick up after my dog	34.38%	11
3	It made me less likely to pick up after my dog	0.00%	0
4	It did not change my behavior	53.13%	17
	Total	100%	32



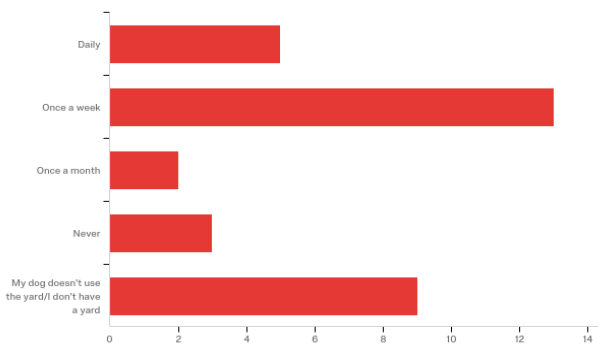
Q9 - How do you typically take care of your dog's waste in your yard?

#	Answer	%	Count
1	I don't have a yard/my dog only goes on walks	9.38%	3
2	Bag it and put it in the trash	71.88%	23
6	Scoop it and put it directly in the trash (no bag)	3.13%	1
3	Leave it in the yard to decompose/don't pick it up	9.38%	3
4	Flush it down the toilet	0.00%	0
5	Other: Scoop it up and I have a poop disposal bucket with a bag, We leave dog waste in the garden but pick it up off the grass	6.25%	2
	Total	100%	32



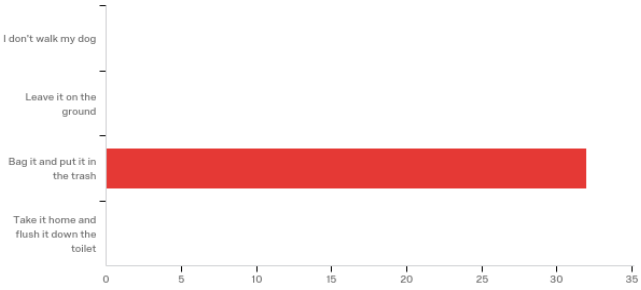
Q10 - How often do you pick up your dog's waste in your yard?

#	Answer	%	Count
1	Daily	15.63%	5
2	Once a week	40.63%	13
3	Once a month	6.25%	2
4	Never	9.38%	3
5	My dog doesn't use the yard/I don't have a yard	28.13%	9
	Total	100%	32



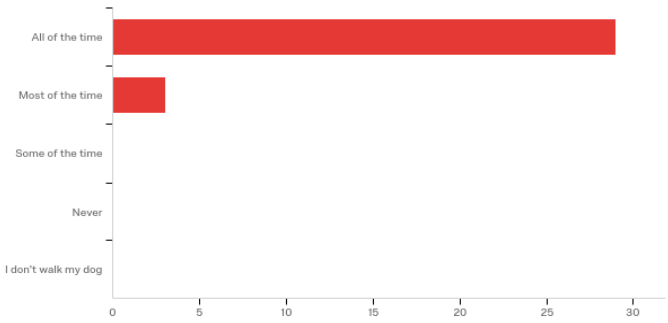
Q11 - How do you typically take care of your dog's waste when on walks?

#	Answer	%	Count
1	I don't walk my dog	0.00%	0
2	Leave it on the ground	0.00%	0
3	Bag it and put it in the trash	100.00%	32
4	Take it home and flush it down the toilet	0.00%	0
	Total	100%	32



Q12 - How often do you pick up your dog's waste when on walks?

#	Answer	%	Count
1	All of the time	90.63%	29
2	Most of the time	9.38%	3
3	Some of the time	0.00%	0
4	Never	0.00%	0
5	I don't walk my dog	0.00%	0
	Total	100%	32



Q13 - Where do you usually walk your dog? If you walk in your neighborhood, please list the streets you typically walk on. If you take your dog to a specific park/field/area within the community, please tell us where. This will help us identify areas within the community where pet waste stations may be useful.

Where do you usually walk your dog? If you walk in your neighborhood, please list the streets you typically walk on. If you take your dog to a specific park/field/area within the community, please tell us where. This will help us identify areas within the community where pet waste stations may be useful.
Sundale, Maywood, Milford, Porter
Leonard, EW, Sundale, Porter (also Milford)
Leonard, Porter
Rosemary Hills-Lyttonsville Local Park and surrounds
Not answered
Leonard bown Porter and Spence Milford Porter in front of school; RHES playground
around the Caffield rec center / park
Around the community center. Up Sundale to RHPS. Down Porter Street.
Up Richland St through Rosemary Hills Park & then back down Richland Place. Also Mark COurt, Sundale and throughout Rosemary Hills Neighborhood.
Penn Ave, Talbot, Michigan and Kansas
Streets, Coffield, RHPS
I walk my dog on Sundale Drive, Ross Rd, and in the park.
Streets: Sundale, Spencer, Milford, Maywood, Leonard, Porter
Milford, Spencer, Leonard, Maywood, Ross, Quinton, Sundale, Porter, E/W Hwy, Mark Court, Richland, Lanier, Lyttonsville Park, Rock Creek Park, Rosemary Hills Primary School
Around the block on sidewalks and streets and in the Local area park or another Silver Spring park.
Sundale, Quinton, Porter, Coffield loop
Sundale, Maywood, Milford, Ross, porter, quinton, Lanier, Rosemary Hills Elementary school, Rosemary Hills Park/Coffield

Quinton Road toward Rosemary Hills Park and around the park

spencer, sundale, ross, milford -- sometimes the park, but they have trash cans there

Rock Creek Park

Rosemary Hills Park, Ricgland Pl, Richland St. Lyttonsville Rd., Lenier Dr., Ross Road.

Mark Ct, Ross Rd, Sundale Drive

Mark Ct. Park at the Coffield Center

I'm sorry, but this question is too intrusive, and is frankly none of your business. I am shocked this question got through IRB. And it makes me wonder if the study is IRB approved. Are you asking me where pet waste stations would be helpful in the neighborhood? Lyttonsville-Rosemary Hills Local Park (Coffield Center), Rosemary Hills Primary School and fields, Quinton Stub (between Sundale and Maywood).

Sundale Porter Spencer Richland Coffield Park Milford Lanier

Milford Avenue, Ross Road, Porter Road

Porter, Sundale, Quinton, Milford, Rosemary Hills Park, often all the way to Ohr Kodesh or Rock Creek Park and surrounding neighborhoods. My walk is already dictated by location of garbage cans. I make sure the first part of my walk goes by garbage cans where I can dispose of the waste. I often use the garbage cans in Rosemary Hills Park and at bus stops. I am concerned for the people living near the garbage cans though, because in the summer, the stench of dog waste can travel far, even with waste in bags and the bags in a can with a lid. A garbage can on Sundale would be nice (for me, anyway).

Rosemary Hills Park, Rosemary Hills ES, Maywood, Sundale, Porter, Milford, Leonard, Richland, East West Highway (in the old days used to go over the bridge to North Woodside, also no longer!)

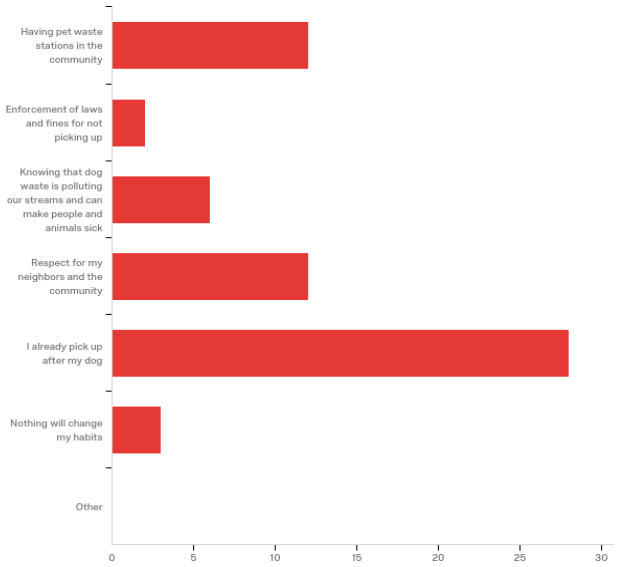
THE PARK AND STREETS NEXT TO THE PARK.

Along streets (sidewalks) of my residential neighborhood, and in the adjacent Rosemary Hills Local Park on paved Trail and in open grassy areas away from playing fields. Occasionally we let our family members' dogs off their leashes to chase balls and Frisbies, then re-attach them once they have run for a while, and give them water. We follow them around to pick up and bag dog poop, but it is impossible to collect dog urine from grassy areas in the Park. We try to keep our dogs off our neighbors' lawns to prevent pooping and peeing on private property, but find it hard to control. Pet Waste 'Stations' are very much needed (with a regular supply of disposable bags) in the Local Park near the grassy areas and along winding paved Trails especially near benches and fixed Trash cans and benches. Too many dog-walkers leave their pets' waste on/near the Trails or in grassy areas. I will be glad to show UMD staff the potentially 'best' locations for Petwaste Stations in the Park. It will be harder to identify Stations along sidewalks except publicly-owned corners away from homes.

We walk our dog throughout the neighborhood and at the park.

Q14 - Which of the following would make you more likely to pick up after your dog? Check all that apply.

#	Answer	%	Count
1	Having pet waste stations in the community	19.05%	12
2	Enforcement of laws and fines for not picking up	3.17%	2
3	Knowing that dog waste is polluting our streams and can make people and animals sick	9.52%	6
4	Respect for my neighbors and the community	19.05%	12
5	I already pick up after my dog	44.44%	28
6	Nothing will change my habits	4.76%	3
7	Other	0.00%	0
	Total	100%	63



Q15 - Do you have any thoughts on pet waste "hot spots" or problem areas within your community?

Do you have any thoughts on pet waste "hot spots" or problem areas within your community?
Don't think it's a problem
Most dog owners are responsible "picker uppers" Signage might inspire lazy owners to do better (mention of fines?)
No
Porter St. between Milford and Leonard End of cul-de-sac between Leonard and EW Dead road that runs off of Sundale and Maywood (Quinton??)
Not answered
Running/play areas in Local Park frequented by dogwalkers who unleash them dogs to run and play, defecate and urinate all over the grassy hillside and pathways, pet waste bag stations and waste disposal containers located along all these trails are needed in this park
Not answered
The pet walkers in my community appear to be respectful of community property here
I see very little poop left behind
None that I can think of. For the most part, the dog owners in my neighborhood do a great job picking up after their dog(s). Trash on the other hand, is a big problem with lots of water bottles, etc. around the park (soccer field and baseball field).
I see a lot of dog waste along Porter street near RHPS and up Richland Street on the way to the community center
More signage in the park and neighborhood. Knowledge that pet waste can cause disease for kids would probably prompt action.
No.
The dog-walkers from the 400+ unit apartment buildings routinely permit their dogs to poop on the public right-of-way. Not one of them caries a pooper-scooper bag.

In recent times, most pet owners have been well socialized to removing poop from public walkways and parklands. However, some will deposit it in my compost or yard waste, causing me to have to deal with it. This is un-neighborly.

no

We seem to have a plethora of wild cats being fed by my neighbors and of course they leave behind waste that no one picks up.

It's gross

Don't know

As much as pet waste is a problem, we have an even bigger problem with food and plastic waste. There are substantial numbers of folks in the neighborhood who come from other countries, and others who park overnight in RH. I sense that they are a major source of trash. Also kids walking to and from school and the park often leave partially eaten food and wrappers lying on the ground or in people's yards. I'd like a major educational campaign to address that, and the dog waste problem.

On corner lots in neighborhoods, in cut-thru areas with grass, and in parts of local area Parks.

Some bins along quinton would be convenient for us, plus one inside the Rosemary Hills elementary field

Some dog walkers don't know that when their dogs pee on curbside gardens, it can kill the plants there (or minimally, make it gross for homeowners to garden in those plots). Their dogs should pee on grass, not on landscape items.

"Smart Cans" "Smart Trash Bins". Disposal systems that the human users do NOT have to open by hand. People will NOT use the Park bins as they have to lift the filthy lids by had. Got to a Grainger Supply cat. for examples

I didn't realize there was an issue with dog waste in this community

We have more problems with feral cat waste rather than pet waste. Pet waste is the responsibility of the pet owner.

no

Yes. I live next door to a large apartment building where people routinely walk their dogs without picking up their waste.

I see a lot in the park.

Yes- they pee on my plants and the acid is killing my trees.

Two bad behaviors have been observed: 1) They don't pick up after themselves if no one is watching 2) Or they throw the waste in other people's trash can, especially on Mondays and Tuesdays when the can is on the street 3) lot of dog waste in the park is not picked up

I don't see a lot of pet waste around the neighborhood. Occasionally in curbside locations in people's front yards, and in large open spaces like Rosemary Hills ES or Lyttonsville park.

Trails in Rock Creek Park

Yes. This is not rocket science. Pet waste stations and regular pickup from them would make a vast improvement.

It is a problem only in the summer as far as I can see when dog walkers walk pets instead of their owners

Even in our relatively enlightened neighborhood, our neighbors could use an ongoing lesson reminder to clean up after their pets!!!! Signage might help.

My house is a hot spot - corner of Ross Road and Milford Avenue. we have a huge front lawn and people let their dogs poop there and don't pick it up

I do see a lot of dog waste and it concerns me. More garbage cans might be helpful in getting others to pick up. Quinton & Sundale (closer to Maywood) has a lot of dog waste. I actually avoid walking there sometimes with my dogs because there's so much waste. I definitely keep my feet on the sidewalk where I can see clearly whether or not there's waste. I think waste stations with bags would be helpful. I appreciate it when someone not only has the "no poop fairy" sign in their yard but also bags. Every dog owner has had it happen where they are out for a walk and run out of bags.

Inside private fenced off yards where dogs roam around and owners don't try to get rid of poops.

Neighbors are generally good about picking up after their dogs on the street. Two spots where I have noticed waste: in Rosemary Hills Local Park and in the field next to Rosemary Hills Elementary School.

See my comments above about the Local Park petwaste ‘hotspots’. In the Rosemary Hills single family home residential neighborhood, it is mainly on grassy or ground-cover lawns near street junctions and corners that petwaste is deposited. But petwaste accumulates along street curbs and near storm-drains that are frequently blocked by rubbish or accumulated large pieces of waste paper and plastic bags, tree limbs, and piles of fallen leaves. We need better Stormwater street drain maintenance and repair, and repositioning/adding streetside drains to strategic locations within the neighborhood where stormwater and debris wash down uncontrolled much too often.

Most of our neighbors and dog walkers are very conscientious about bagging their dog's waste.

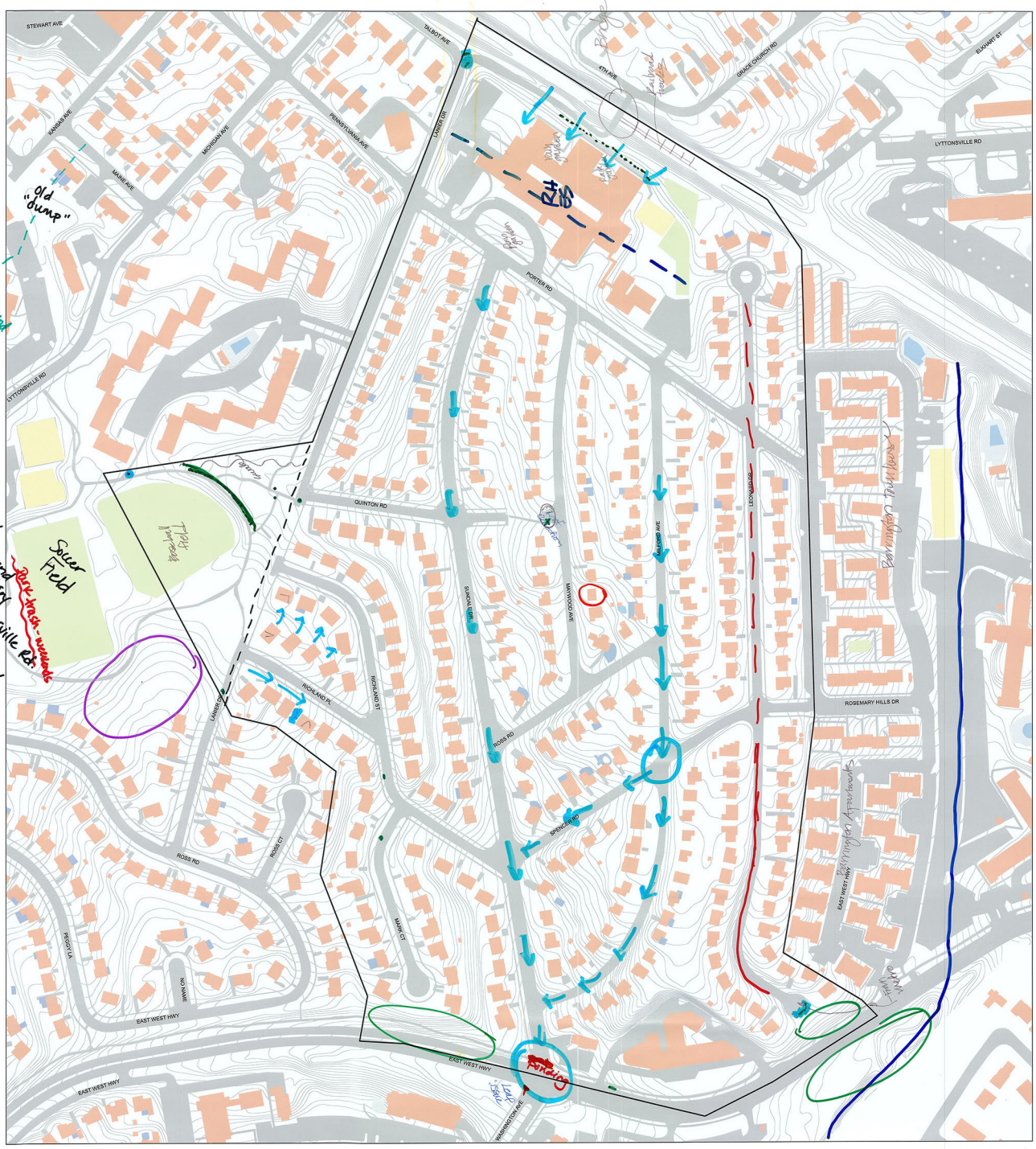
Maybe if there is a station with plastic bags there would be less waste, but it’s probably too expensive to maintain.

Pet waste accumulates on private property lawns exposed to misuse by careless dog walkers and on/adjacent to paved trails in adjacent Rosemary Hills/Lyttonsville Local Park. Pet waste ‘hot spots’ include next to large refuse cans in the Park where dogs and people ‘dump’ gobs of petwaste. Odd! Cat and wild animal petwaste tends to accumulate behind bushes in residents’ yards. Recent rise in ‘gentrification’ of our neighborhoods has dramatically increased number of pet dogs per household without concomitant increase in personal responsibility to dispose of petwaste safely/sanitarily.

Appendix C:

Stakeholder Map

Rosemary Hills Neighbors' Association



Legend

- Rosemary Hills Neighbors' Association
- Building
- Athletic Court
- Athletic Field
- Swimming Pool
- Patio
- Non-Residential Pad
- Impervious
- 2' Contours

Sump Pump Constant floods road

pet waste

trash issue

underground stream

stream

0 125 250 500 Feet

Appendix D: Resources

Montgomery County's Stormwater and Restoration Programs

Stormwater Management

General	**Stormwater Management** - Basic information on stormwater management, facility maintenance fact sheets, and links to more clean water programs.	https://www.montgomerycountymd.gov/water/stormwater/index.html
General	**County Implementation Strategy** - Details how the County will meet the MS4 Permit required watershed restoration goals and water quality standards. This webpage includes the county's public outreach workplan, watershed implementation plans, and watershed pre-assessment reviews.	https://www.montgomerycountymd.gov/water/stormwater/county-implementation-strategy.html
General	**Rock Creek Implementation Plan** - Details the County's plan for how they are going to meet their stormwater management and pollution reduction goals as required by the EPA and the Maryland Department of the Environment.	https://www.montgomerycountymd.gov/DEP/Resources/Files/ReportsandPublications/Water/Watershed%20studies/Rock-creek-watershed-implementation-plan-11.pdf
General	**Rock Creek Watershed Assessment** - This document summarizes the County's assessment of the Rock Creek watershed. It provides an overview of the existing conditions in the watershed and identifies restoration opportunities.	https://www.montgomerycountymd.gov/water/Resources/Files/stormwater/implementation-strategy/rock-creek-summary-2018.pdf
General	**Rock Creek Watershed Assessment Appendix** - The appendix to the previously listed Watershed Assessment, this appendix provides more extensive information about specific catchments in within the Rock Creek Watershed, including Rosemary Hills (pages 85-93)	https://www.montgomerycountymd.gov/water/Resources/Files/stormwater/implementation-strategy/rock-creek-appendix-a.pdf
General	**Stormwater Facility Maintenance Program** - The County is responsible for inspecting and ensuring maintenance of all public and private stormwater management facilities within Montgomery County. The Stormwater Facility Maintenance Program inspects stormwater facilities at least every three years in order to make sure the facilities are functioning. This page contains an interactive map of current stormwater facilities maintained by the county.	https://www.montgomerycountymd.gov/water/stormwater/maintenance.html

Stream Restoration

General	**Watershed Restoration** - Summary of restoration tools, watershed study process, and watershed restoration project process.	https://www.montgomerycountymd.gov/water/restoration/process.html

General	**Watershed study and restoration project selection** Describes the process by which the county selects restoration projects.	https://www.montgomerycountymd.gov/water/restoration/process.html
General	**Stream Restoration** - Summary of stream restoration techniques including brush layering, coir logs, cross vane, and more.	https://www.montgomerycountymd.gov/water/restoration/streams.html
General	**Restoration monitoring** - summary of how and what the county monitors.	https://www.montgomerycountymd.gov/water/restoration/monitoring.html
Infographic	**Stream restoration brochure** - Infographic of stream restoration techniques.	https://www.montgomerycountymd.gov/DEP/Resources/Files/PostersPamphlets/Restoring_Montgomery_Countys_Streams.pdf
Video	**Why restore local streams video** - Two-minute video on the importance of restoring local streams.	https://www.youtube.com/

Green Streets

Guidance	**Green Streets** - Guidance and information on green streets practices, how to maintain them, and frequently asked questions.	https://www.montgomerycountymd.gov/water/restoration/green-streets.html
Guidance	**Green Streets in Your Neighborhood** - This guidance document describes the neighborhood experience of installing a green street. It explains the various aspects of a green street, how they benefit your community, and how they are maintained.	https://www.montgomerycountymd.gov/DEP/Resources/Files/brochures/GreenStreetsHandout.pdf
Photos	**Montgomery County Green Streets Flickr Album** Picture album of Montgomery County green street projects.	https://www.flickr.com/photos/mocobio/sets/72157633663354666/
Video	**Did You Know 57: Green Streets Montgomery County** - YouTube Video at 5:14 they discuss how informational signage posted during green streets project helped keep residents informed of the ongoing stormwater management projects.	https://youtu.be/SgL0A5whL9A?t=314

RainScapes Rebates

Rebate	**Montgomery County RainScapes Rebate Program** Comprehensive resources for the RainScapes program including manuals and guides, choosing a professional, plant lists, and additional resources. Multi-lingual resources are available (Amharic, Chinese, French, Korean and Spanish). Potential projects include canopy trees, conservation landscapes, green roofs, pavement removal, permeable pavement, rain barrels & cisterns, and rain gardens.	https://www.montgomerycountymd.gov/water/rainscapes/resources.html#manuals
Video	**Did You Know #53** - Montgomery County RainScapes Program- Seven-minute video introduction to the County's RainScapes program, what it is, and how to take advantage of the available resources.	https://www.youtube.com/

Rebate	**RainScapes Community Program** - RainScapes project resources designed for specific community stakeholders such as schools, congregations, pools, neighborhoods, and HOAs. Requirements for funding, project opportunities, and planning support.	https://www.montgomerycountymd.gov/water/rainscapes/communities.html
Video	**Sacred Waters: RainScapes and Congregations in Action** - Eight-minute video introduction for places of worship, how the County's RainScapes program can benefit them, and how to take advantage of the available resources.	https://www.youtube.com/watch?v=8pNAkd3PoI0
Guidance	**RainScapes Choosing a Professional** - Guidance on choosing the right professional to help develop a stormwater or watershed restoration project. Describes the different services offered by designer, architect, or contractor professionals and provides links to reputable resources.	https://www.montgomerycountymd.gov/water/Resources/Files/rainscapes/ChoosingAProfessional_01_18.pdf
Contacts	**RainScapes Landscape Professionals List** - A list of landscape professional who have attended the RainScapes Landscape Professionals training series and the number of projects installed under the RainScapes Rebate program. This is not a County endorsement.	https://www.montgomerycountymd.gov/water/Resources/Files/rainscapes/Contractor_List.pdf

Stormwater Reduction Strategies

Guidance	**RainScapes Rain Barrels and Cisterns** - How to guide for installing a rain barrel or cistern including, what is the difference between rain barrel or cistern, what are the benefits, how to asses your property, developing a design and plan, and how to install them on your own.	https://www.montgomerycountymd.gov/DEP/Resources/Files/downloads/rainscapes/fact-sheets/rainbarrelsCisterns.pdf
Flyer	**Rain Barrels** - Basic flyer explaining rain barrels.	https://www.montgomerycountymd.gov/DEP/Resources/Files/downloads/stormwater/signs/Rain-Barrel-sign.pdf
Guidance	**RainScapes Rain Gardens** - How to guide for installing a rain garden including, what is rain garden and what are the benefits, how to asses your property, developing a design and plan, and how to build and implement.	https://www.montgomerycountymd.gov/DEP/Resources/Files/downloads/rainscapes/fact-sheets/rain-gardens.pdf
Flyer	**Bioretention Gardens** - Basic flyer explaining bioretention gardens.	https://www.montgomerycountymd.gov/DEP/Resources/Files/downloads/stormwater/signs/Bioretention-sign.pdf
Guidance	**Conservation Landscaping** - General information about conservation landscaping and a link to a more detailed fact sheet.	https://extension.umd.edu/watershed/conservation-landscaping
Flyer	**Rain Gardens** - Basic flyer explaining rain gardens.	https://www.montgomerycountymd.gov/DEP/Resources/Files/downloads/stormwater/signs/Rain-Garden-sign.pdf
Guidance	**Rain Gardens** - General information about rain gardens and a video about installing them.	https://extension.umd.edu/watershed/rain-gardens

Video	**RainScapes Rain Garden Video** - Nine-minute video describing what is rain garden, the benefits of installing one on your property, and a step-by-step process for getting started.	https://www.youtube.com/watch?v=eunRYZps67c
Guidance	**RainScapes Dry Wells** - How to guide for installing a dry well including, what is a dry well and when is it appropriate to install one, how to asses your property, developing a design and plan, and questions to ask a contractor.	https://www.montgomerycountymd.gov/DEP/Resources/Files/downloads/rainscapes/fact-sheets/drywells.pdf
Guidance	**RainScapes Conservation Landscaping** - How to guide for conservation landscaping techniques, what is conservation landscaping and what are the benefits, how to asses your property, developing a design and plan, appropriate native plants, and questions to ask a contractor.	https://www.montgomerycountymd.gov/DEP/Resources/Files/downloads/rainscapes/fact-sheets/
Guidance	**RainScapes Pavement Removal** - How to guide for installing a green roofs including, what is a green roof and what are the benefits, how to asses your property, developing a design and plan, and questions to ask a contractor.	https://www.montgomerycountymd.gov/DEP/Resources/Files/downloads/rainscapes/fact-sheets/pavementremoval.pdf
Guidance	**RainScapes Permeable Pavers** - How to guide for installing a permeable pavers including, what is permeable pavement and what are the benefits, how to asses your property, developing a design and plan, and how to build and implement.	https://www.montgomerycountymd.gov/DEP/Resources/Files/downloads/rainscapes/fact-sheets/permpavers.pdf
Flyer	**Porous Pavement** - Basic flyer explaining porous pavement.	https://www.montgomerycountymd.gov/DEP/Resources/Files/downloads/stormwater/signs/Porous-Pavement-sign.pdf
Flyer	**Wet Ponds** - Basic flyer explaining wet ponds.	https://www.montgomerycountymd.gov/DEP/Resources/Files/downloads/stormwater/signs/Wet-Pond-sign.pdf
Guidance	**RainScapes Green Roofs** - How to guide for installing a green roofs including, what is a green roof and what are the benefits, how to asses your property, developing a design and plan, and questions to ask a contractor.	https://www.montgomerycountymd.gov/DEP/Resources/Files/downloads/rainscapes/fact-sheets/greenroofs.pdf
Flyer	**Green Roofs** - Basic flyer explaining green roofs.	https://www.montgomerycountymd.gov/DEP/Resources/Files/downloads/stormwater/signs/Green-Roof-sign.pdf

Water Quality Improvement Strategies

Storm Drain Marking

Program	**Montgomery County's Storm Drain Marking Program** - County's storm drain marking project request form.	https://www.montgomerycountymd.gov/water/volunteer/index.html#marking

Guidance	**Keep Your Storm Drain Clean** - Steps to keep residential storm drains clean, information on reporting illegal dumping, and an educational video on how stormwater destroys our streams.	https://mygreenmontgomery.org/project/keep-your-storm-drain-clean/
Guidance	**Storm Drain Art** - Information about the County's storm drain art program.	https://www.montgomerycountymd.gov/water/volunteer/index.html#art
Guidance/ Contest	**Montgomery County Storm Drain Art Contest Info** Information about the 2019 storm drain art contest.	https://mygreenmontgomery.org/art/
Photos	**Montgomery County Storm Drain Art Flickr Album** Picture album of Montgomery County storm drain art for inspiration.	https://www.flickr.com/photos/mocobio/albums/72157648949583875
Program	**Storm Drain Stenciling** - Maryland Department of Natural Resources storm drain stenciling program and instructions.	https://dnr.maryland.gov/ccs/Pages/stormdrain.aspx
Guidance	**Stenciling Storm Drains** - Steps for developing a storm drain stenciling event including setting a budget, identifying locations, recruiting volunteers, and follow up. Includes additional resources and links to local programs.	https://www.potomacriver.org/resources/get-involved/water/storm-drains/

Waste Management

Guidance	**Help Stop Water Pollution** - This webpage provides resources and guidance to help prevent water pollution and how to report pollution issues to the county. It discusses littering and illegal dumping, automobiles, septic systems, construction, and many other substances that contaminate our water ways.	https://www.montgomerycountymd.gov/water/streams/pollution.html
Guidance	**Household Hazardous Waste Program** - This webpage discusses how residents can dispose of and recycle common household hazardous waste such as pesticides, batteries, and syringes.	https://www2.montgomerycountymd.gov/DepHowDoI/material.aspx?tag=household-hazardous-waste&key=224
Guidance	**How to recycle / dispose of salt and sand** - Information on how residents can properly dispose of their snow salt and sand.	https://www2.montgomerycountymd.gov/DepHowDoI/material.aspx?material_key=67&tag=salt-sand
Guidance	**How to recycle / dispose of motor oil** - Information on how residents can properly dispose of their used motor oil.	https://www2.montgomerycountymd.gov/DepHowDoI/material.aspx?tag=motor-oil&material_key=34
Guidance	**Hazardous Waste Management in Montgomery County** - A guide for businesses generating hazardous waste.	https://www.montgomerycountymd.gov/sws/resources/files/ecowise/ecowise_guide.pdf

Anti-Litter

Guidance	**Anti-Littering Public Outreach and Stewardship Workplan** - This is the workplan for an anti-littering pilot at White Oak Neighborhood. This pilot work plan can serve as a model for developing an outreach campaign.	https://www.montgomerycountymd.gov/DEP/Resources/Files/ReportsandPublications/Water/Countywide%20Implementation%20Strategy/White-Oak-Anti-litter-Factsheet.pdf
Program	**Adopt a Road** - This is a volunteer program that encourages residents to participate in a community activity by keeping roadsides litter free. This webpage describes the benefit of the Adopt a Road program, a program application, and available roads to adopt.	https://www.montgomerycountymd.gov/dot-dir/AdoptARoad/index.html
Service	**Residential Street Sweeping** - This webpage describes the street sweeping program and provides an interactive map and schedule for upcoming services.	https://www.montgomerycountymd.gov/DOT-Highway/streetsweep/index.html
Guidance	**Montgomery County Vacuum Leaf Collection Program** - This website provides guidance on how to properly manage leaf piles and hosts the County's Leaf Collection Schedule.	https://www.montgomerycountymd.gov/DOT-Highway/leaf/index.html
Guidance	**Recycle Everything!** -Guidance and resources for recycling household products in Montgomery County.	https://mygreenmontgomery.org/project/recycle-everything/
Guidance	**Residents and the Bag Law** -This webpage explains the 5 cent bag charge, provides strategies for keeping reusable bags clean, and answers other related questions.	https://www.montgomerycountymd.gov/bag/residents.html
Guidance	**Yard Trim Disposal** - This website provides guidance on how to properly manage yard waste including trim leaves, grass, and brush piles.	https://www2.montgomerycountymd.gov/DepHowDoI/material.aspx?tag=yard-trim&material_key=72
Guidance	**Leaf Management** - These website provides information and links to additional sources with information about to use leaves in your yard if you don't want to rake them up for collection.	https://www.todayshomeowner.com/how-to-recycle-leaves-in-your-yard/
Service	**Washington Suburban Sanitary Commission (WSSC)** - This website provides information about the dumping of fats, oils, and grease (FOGs) and has the contact information for WSSC's Customer Advocates. There are also educational resources available on the WSSC website.	https://www.wsscwater.com/education-and-recreation/community-outreach/outreach-in-your-community.html
Program	**Trash Free Maryland** - This group works specifically on trash issues including styrofoam, plastic bags, straws, and the bottle bill. They also have a listserv that you can join to be alerted about advocacy opportunities.	https://trashfreemaryland.org/
Events	**Trash Free Potomac Network** - Database for Potomac Watershed trash clean up events. Designed to foster connections between volunteers, organizations, businesses, and governments who are involved with solving the litter problem and to help promote local cleanup events.	http://trashnetwork.fergusonfoundation.org/map/

Pet Waste

Program	**Montgomery County Pet Waste Program** - Montgomery County provides a number of educational materials for residents to promote proper pet waste management. Also, HOAs may be eligible to participate in the County's pet waste management program.	https://www.montgomerycountymd.gov/water/education/pet-waste.html
Guidance	**Dog Waste Stations** - Information and pricing for stations. Basic stations generally range in price from $119-$339.	https://www.dogwastedepot.com/dog-waste-stations-and-mini-stations-prodlist.html
Guidance	**Zero Waste USA** - This website contains good information about why it is important to manage pet waste as well as information about different types of management plans and pet waste stations	https://zerowasteusa.com/advice.asp
Service	**Doody Calls** - Doody Calls is a pet waste management service that can contracted to install and maintain pet waste stations.	http://www.doodycalls.com/
Guidance	**The Inside Scoop** -The EPA has written a guidance document called "The Inside Scoop: How to Conduct a Pet Waste Outreach Campaign" designed to help navigate the process of determining what type of outreach is best for your organization or community.	https://cfpub.epa.gov/npstbx/files/NHDES%20Pet%20Waste%20Campaign2.pdf
Outreach	**Poop Toss Game** - Originally developed by Snohomish County Public Works, this game is a fun interactive way to engage youth and adults of all ages with learning how to best dispose of their pet waste.	https://umd.box.com/s/vy4hd-6n4gst7k8vpkp9hlucysfywnb9k

Environmentally Friendly Cleaning & Lawn Care

Guidance	**Green Seal** - This program generates standards and manages a certification program for environmentally friendly products. THe website contains a searchable list of all the products they have certified, including a wide variety of cleaning products.	https://www.greenseal.org
Guidance	**Environmental Working Group** - EWG is a non-profit dedicated to protecting human health and the environment. Their website includes a wide variety of consumer guides and information about environmentally friendly products.	https://www.ewg.org/consumer-guides
Guidance	**Responsible Purchasing Network** - RPN is an international network of buyers that are dedicated to socially responsible and environmentally sustainable purchasing. Their website has a variety of purchasing guides, including cleaning products. The guides also include information about certification programs and the differences between them.	http://www.responsiblepurchasing.org/index.php#
Guidance	**Organic Lawn Care** - General information about organic lawn care.	https://extension.umd.edu/hgic/topics/organic-lawn-care
Guidance	**Mowing and Grasscycling** - Recommendations for proper mowing techniques that will improve the quality of your lawn without the use of chemicals.	https://extension.umd.edu/hgic/topics/mowing-grasscycling-lawns

Guidance	**Soil Testing for Lawns** - Montgomery County DEP website that provides information on why it is important to test soil, how to get your soil tested, and what to do after you get the results.	https://www.montgomerycountymd.gov/lawns/homeowner/tips/soil-tests.html
Guidance	**Soil Testing** - This Extension website provides information on why it is important to test soil, FAQs about soil testing, and a list of regional soil testing labs.	https://extension.umd.edu/hgic/topics/soil-testing
Guidance	**Montgomery County Pesticide Law** - This website contains infomation about the County's Pesticide Law including what substances are banned and examptions from the law.	https://montgomerycountymd.gov/lawns/law/
Guidance	**Montgomery Parks Integrated Pest Management Program and Pesticide Use** - This website discusses the county's pesticide use in Montgomery Parks and notifies residents when pesticides are used on public parks.	https://www.montgomeryparks.org/about/parks/pesticides/
Guidance	**Lawn Care Guide** - This website provides tips and best practices for switching to organic lawn care, explains the current laws and regulations, and has a list of resource providers.	https://www.montgomerycountymd.gov/lawns/

Trees & Native Plants

General	**Forest Conservation Program** - Montgomery County's Forest Conservation Law protects and maintains the urban forest cover. This explains who is subject to the law and provides detailed guidance on how to report forest conservation violations.	https://montgomeryplanning.org/planning/environment/forest-conservation-and-trees/
Service	**Tree Concerns and Removal** - This page provides information on receiving a permit to remove trees, hiring a tree experts, and how to dispute neighbor disputes focused on trees.	https://www.montgomerycountymd.gov/green/trees/permits-and-concerns.html
Service	**Highway Services** - Montgomery County Department of Transportation is responsible for any tree growing in a street right-of-way. Residents can request that the County plant a street tree, conduct an inspection, remove or maintain trees.	https://www.montgomerycountymd.gov/dot-highway/tree/index.html
Program	**Tree Montgomery** - A free shade tree program for County residents.	https://treemontgomery.org/
Guidance	**Planting and Caring for Trees** - This page provides information on where to plant your tree, how to choose a tree, when to plant, and how to maintain trees.	https://www.montgomerycountymd.gov/green/trees/plant-a-tree.html
Guidance	**Tree Care Guide** - Guidance on how to properly fertilize, weed, water, mulch, and protect newly planted trees from deer grazing.	https://treemontgomery.org/care-guide/
Funding	**Shades of Green** - Montgomery County's Planning Department provides free trees and planting for qualifying property owners in specific urban areas.	https://montgomeryplanning.org/planning/environment/forest-conservation-and-trees/shades-of-green/
Funding	**Leaves for Neighborhoods** - Montgomery County Planning Department tree planting program to increase the county's tree canopy on residential properties. This program offers a $40 coupon for purchasing and planting shade trees.	https://montgomeryplanning.org/planning/environment/forest-conservation-and-trees/leaves-for-neighborhoods/

Program	**Montgomery County Champion Trees** - The Montgomery County Forestry Board keeps track of and measures significant trees. Residents can nominate a Champion Tree to be considered.	https://www.montgomerycountymd.gov/green/trees/champion-trees.html
Funding	**Marylanders Plant Trees** - Citizens can receive $25 off the purchase of a native tree at 86 participating nurseries across the State. It is funded through a settlement from a major power generator for Clean Air Act violations.	http://dnr.maryland.gov/forests/Pages/MarylandersPlantTrees/Introduction.aspx
Funding	**TREE-MENDOUS Maryland** - Provides trees at a reduced cost to be planted on public property.	http://dnr.maryland.gov/forests/Pages/treemendous/default.aspx
Funding	**Backyard Buffers program** - This program for small landowners who have a drainage ditch, stream, creek or river adjacent to their property may be eligible for a free "buffer in a bag" to help get homeowners started in buffering their streamside.	http://dnr.maryland.gov/forests/Pages/programs/Backyard-Buffer-Program.aspx
Funding	**Trees for Sacred Places** - Faith-based institutions can receive free trees for planting, technical support, and workshops on trees, planting, and maintenance.	https://www.allianceforthebay.org/our-work/key-program-focuses/conserving-chesapeake-forests/forest-restoration-old/trees-for-sacred-places/
Guidance	**i-Tree Canopy** - This tool uses Google imagry to conduct a canopy assessment within a defined project area. It can also be used to estimate tree benefits.	https://canopy.itreetools.org/
Funding	**Maryland Urban and Community Forestry Committee (MUCFC)** - Grants program- helps community groups fund tree planting and education projects statewide to enhance Maryland's urban forest.	http://dnr.maryland.gov/forests/Pages/programs/urban/mucfcgrant.aspx
Guidance	**Recommended Native Plants for Maryland** - This website contains a list of recommended native plants for MD, including pictures and information about each plant	https://extension.umd.edu/hgic/topics/recommended-native-plants-maryland
Guidance	**Native Plant Center Database** - A seachable database for native plants. You cans search based on region and habitat requirements.	http://www.nativeplantcenter.net/
Guidance	**Native Plants for Wildlife Habitat and Conservation Landscaping** - A link to the U.S. Fish & Wildlife Service's native plant guide for the Chesapeake Region.	https://www.fws.gov/chesapeake-bay/pdf/NativePlantsforWildlifeHabitatandConservationLandscaping.pdf
Guidance	**Maryland Native Plant Society** - A link to the Society's homepage where you can find a variety of information about native plants.	https://mdflora.org/

Montgomery County Parks and Recreation

Service	**Montgomery County DEP Contact Us** - This is the general link to report issues to Montgomery County regarding any type of litter, pollution, dumping, or noise violations. In addition to using this link, issues should also be reported via 311.	https://www.montgomerycountymd.gov/dep/contact.html
Service	**Montgomery County Parks Customer Service** - This is the general link to report park issues including any type of litter, pollution, or dumping violations. In addition to using this link, issues should also be reported via 311.	https://www.montgomeryparks.org/services/report-a-problem/

Service	**Montgomery County Recreation Customer Service** This is the general contact information for all curstomer service related issues for recreation facilities, including filing a complaint.	https://www.montgomerycountymd.gov/rec/about/customerservice.html
Program	**Countywide Recreation Parks Advisory Board** - Information about the advicosry board including a list of representatives, meeting minutes, and meeting schedule.	https://www.montgomerycountymd.gov/rec/about/advisoryboard.html

Other Outreach and Education Opportunities

Community Organizing

Contacts	**Federal, State, and County Elected Officials** Database of current elected officials can be used to advocate for development of policies that require long-term maintenance plans for public infrastructure and increased green infrastructure installations.	https://www.montgomerycountymd.gov/Elections/Information/electedofficials.html
Contacts	**County Council Member** - This website lists current Montgomery County Council members and an has an interactive map that will help you identify your council member.	https://www2.montgomerycountymd.gov/mccouncildistrict/
Guidance	**Maps for Community Organizing** -Toolbox for identifying, organizing, and sharing its collective voice with decision makers at the local and state levels.	https://hc-v6-static.s3.amazonaws.com/media/resources/tmp/Community_Organizing.pdf
Guidance	**Community Engagement Toolkit: Organizing Your Community** - Toolkit is designed for individuals and organizations implementing local community engagement campaigns. This resource is an example of community organizing around demand for energy services but the principles can by applied to stormwater.	https://powershift.org/sites/default/files/resources/1.31.2012_Organizing_Your_Community.pdf
Program	**Sustainable Maryland**- A "one-stop-shopping" program helping municipalities choose a direction for their sustainability efforts, improve access to resources needed to implement action, measure their progress, and gain recognition for their accomplishments	http://sustainablemaryland.com/

Training and Education

Education	**Municipal Online Stormwater Training Center** Online platform to provide stormwater education and training that includes tools, resources, and brief educational videos for the purpose of increasing awareness and empowering its stakeholders to take action toward effective stormwater management.	https://mostcenter.org/
Education	**Master Naturalist Training Courses** - University of Maryland Extension and Audubon Naturalist Society offer a variety of courses to engage citizens as stewards of nature. Master naturalists conduct field research, build and maintain natural areas, and lead nature walks and programs.	https://extension.umd.edu/masternaturalist/become-master-naturalist/training-courses-piedmont-region-scroll-down-full-listing https://anshome.org/master-naturalist/

Education	**Nature Classes and Field Trips** - The Maryland Audobon Society offers a number of educational opportunities	https://anshome.org/adults/
Engagement	**Montgomery County's Stream Stewards Program** Benefits of joining the Stream Stewards program, available volunteer opportunities, and Stream Stewards Informational Form.	https://www.montgomerycountymd.gov/water/volunteer/index.html#stewards
Engagement	**Alice Ferguson Foundation** - Offers education, stewardship, and advocacy opportunities to people interested in natural world, sustainable agricutlure, and cultural heritgate in their community.	http://fergusonfoundation.org/trash-free-potomac-watershed-initiative/
Engagement	**Montgomery Parks Weed Warriors** - This website contains information about invasive plant species in Montgomery County as well as information about how to become a certified Weed Warrior. There is also information about volunteer events for individuals that are already certified.	https://www.montgomeryparks.org/caring-for-our-parks/natural-spaces/weed-warriors/
Engagement	**Arlington Alexandria Tree Stewards** - This website contains a variety of information and resources related to tree care and selection. It also includes information about how to properly remove Elnglish ivy from trees.	https://treestewards.org/

Funding Opportunities***

***Please note that most of these opportunities will require a non-profit partner

Chesapeake Bay Trust Montgomery County Watershed Restoration and Outreach Grants- Up to $100,000 with larger awards possible with prior approval from the Trust.	https://cbtrust.org/grants/montgomery-county-watershed-restoration-outreach/
Chesapeake Grants-Grants typically under $25,000 to accelerate the pace of nutrient reduction in the Bay through engagement of diverse stakeholders and partnerships between agricultural interests and environmental concerns.	http://www.campbellfoundation.org/
Greater Washington Community Foundation Montgomery County- The County's community foundation may be an opportunity for community-based project funding.	https://www.thecommunityfoundation.org/montgomery/
Green Streets, Green Jobs, Green Towns (G3)- Up to $15,000 for conceptual plans, up to $30,000 for engineered designs, up to $75,000 for implementation projects.	https://cbtrust.org/grants/green-streets-green-jobs-green-towns/
Innovative Nutrient and Sediment Reduction Grants-Grants between $200,000 and $500,000 to collaborative and sustainable regional-scale partnerships and networks of practitioners with a shared focus on water quality restoration and protection in order to accelerate the implementation of water quality improvements.	https://www.nfwf.org/chesapeake/Pages/innovative-nutrient-and-sediment-reduction-grants.aspx
Montgomery County RainScapes Rebate Program- Comprehensive resources for the RainScapes program including manuals and guides, choosing a professional, plant lists, and additional resources. Multi-lingual resources are available (Amharic, Chinese, French, Korean and Spanish). Potential projects include canopy trees, conservation landscapes, green roofs, pavement removal, permeable pavement, rain barrels & cisterns, and rain gardens.	https://www.montgomerycountymd.gov/water/rainscapes/resources.html#manuals

Small Watershed Grants- Grants between $20,000 and $200,000 for projects that result in improvements to local stream health and habitat, and/or the water quality of the Chesapeake Bay.	https://www.nfwf.org/chesapeake/Pages/small-watershed-grants.aspx
TD Green Streets Grant Program-Grants up to $20,000 for innovative local forestry projects in low- to moderate-income neighborhoods.	https://www.arborday.org/programs/tdgreenstreets/requirements.cfm

Organizations and Contacts

Partnership Groups

Audubon Naturalist Society	https://anshome.org/	Eliza Cava Director of Conservation eliza.cava@anshome.org
Chesapeake Bay Foundation (CBF)	https://www.cbf.org/	
Chesapeake Bay Landscape Professionals - Contractors and designers that have been certified in skills related to designing, installing, and maintaining a variety of environmental projects. If you are looking for an engineer or contractor to assist with stormwater management projects, or if you are looking for someone to assist with invasive plant species issues, start your seach on this website.	https://cblpro.org/	
Design Green	https://www.designgreenllc.com/	Rebecca Stack info@designgreenllc.com
Environmental Finance Center	https://efc.umd.edu/	Michelle Kokolis Program Manager mkokolis@umd.edu
Interfaith Partners for the Chesapeake	https://www.interfaithchesapeake.org/	Jodi Rose Executive Director Jodi@interfaithchesapeake.org
Alice Ferguson Foundation	http://fergusonfoundation.org/trash-free-potomac-watershed-initiative/	
Low Impact Development Center Non-profit organization that focuses on sustainable stormwater management solutions for urban and developing areas.	https://lowimpactdevelopment.org/	Emily Clifton Senior Environmental Planner emily.clifton@me.com
Maryland Sea Grant	https://www.mdsg.umd.edu/topics/extension/our-services	Amanda Rockler Central Maryland Regional Watershed Restoration Specialist arockler@umd.edu
Rock Creek Conservancy	https://www.rockcreekconservancy.org/	Jeanne Braha Executive Director jbraha@rockcreekconservancy.org
Sustainable Maryland	http://sustainablemaryland.com/	Mike Hunninghake Program Manager: Sustainable Maryland Mikeh75@umd.edu

University of Maryland Extension Programs - The grant writing assistance program offers advice, information, and resources to help ag service providers and others turn a bright idea into a fundable project.	http://extension.umd.edu/grants	Amanda Rockler Central Maryland Regional Watershed Restoration Specialist arockler@umd.edu
Maryland Urban and Community Forestry Committee (MUCFC) Grants program- helps community groups fund tree planting and education projects statewide to enhance Maryland's urban forest.	http://dnr.maryland.gov/forests/Pages/programs/urban/mucfcgrant.aspx	Wanda MacLachlan MUCFC Grants Chair University of Maryland Extension wtm@umd.edu

Policy Action Alerts

Audubon Naturalist Society	https://anshome.org/policy-and-advocacy/	
Trash Free Maryland	https://trashfreemaryland.org/support-us/	
Natural Resources Defense Council (NRDC)	https://www.nrdc.org/get-involved	
Chesapeake Bay Foundation	http://www.cbf.org/take-action/	
Purple Line Updates	https://www.purplelinemd.com/contact/sign-up-for-updates	
Purple Line Community Advisory Teams	https://www.purplelinemd.com/public-involvement/community-advisory-teams-cats	
Coalition for the Capital Crescent Trail	https://www.cctrail.org/	

Training and Education

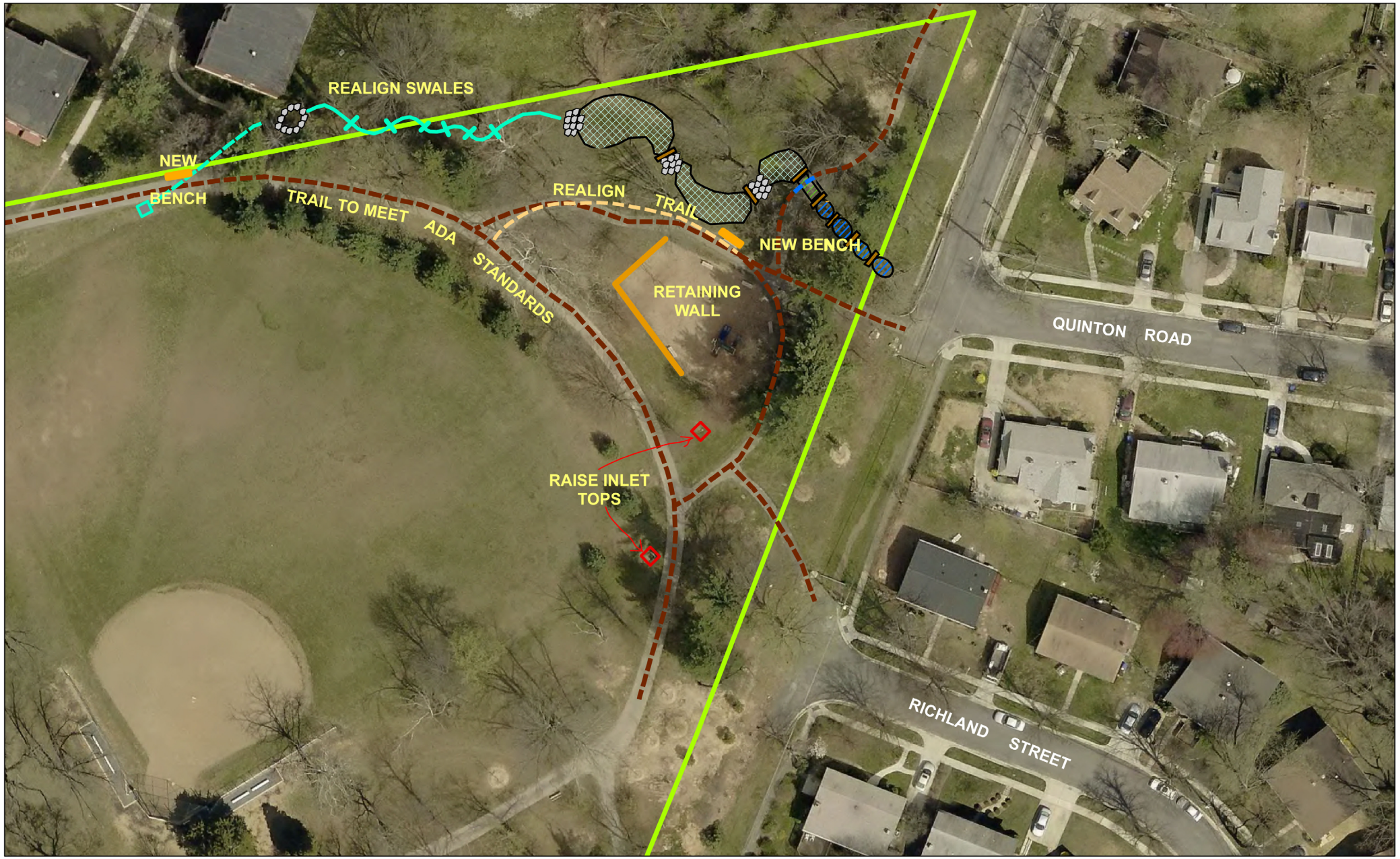
Audubon Naturalist Society Environmental Education Classes	https://anshome.org/adults/#	
Master Gardener Training – UMD Extension	https://extension.umd.edu/mg/locations/montgomery-county-master-gardeners	
Master Naturalist Training – Audubon Naturalist Society	https://anshome.org/master-naturalist/	
Master Naturalist Training – UMD Extension	https://extension.umd.edu/masternaturalist/become-master-naturalist/training-courses-piedmont-region-scroll-down-full-listing	

Volunteer Opportunities

Audubon Naturalist Society	https://anshome.org/volunteer/	
Montgomery County	https://www.montgomerycountymd.gov/water/volunteer/	
Montgomery County Parks	https://www.montgomeryparks.org/support/volunteer/	301-495-2504
Rock Creek Conservancy	https://www.rockcreekconservancy.org/get-involved/volunteer	

Appendix E:

Park Project Map



ROSEMARY HILLS - LYTTONSVILLE LOCAL PARK

1 in = 44 ft

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Appendix F:

Outreach Calendar

Rosemary Hills Stormwater Outreach & Education Plan

	January	February	March	April	May	June
Stormwater	• Redistribute Stormwater Survey • Promote County-led RainScapes meeting	• RainScapes Informational Meeting	• Review & Disseminate Stormwater Survey Results	• Reminder: Report clogged storm drains and road flooding to 311	•	• Tour of Homes with RainScapes Projects Installed
Pet Waste	• Redistribute Pet Waste Survey • Reminder: Carry a flashlight when walking your dog so you can see to pick up	•	• Review & Disseminate Pet Waste Survey Results	•	• Pet Waste Facts & Reminder to Pick Up	•
Litter	•	• Hazardous Waste Drop-off at Shady Grove	•	• Earth Day Cleanup	•	• Cleanup at GCCC Athletic Fields
Lawn Care	• Tree Montgomery: Apply now for fall tree planting	•	• Environmentally Friendly Lawn Care Tips	•	•	•
Local Initiatives	• Research upcoming meetings for Purple Line, Capital Crescent Trail, Sector Plan projects, etc.	•	•	• County Street Sweeping	•	•
Special Events	• County Christmas Tree Recycling	• RainScapes Informational Meeting	•	• Earth Day Cleanup & Storm Drain Marking • Street Sweeping	•	•

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	July	August	September	October	November	December
Stormwater	• Plan Now for Fall Plantings		• Reminder: Report clogged storm drains and road flooding to 311	• Tree Montgomery: Apply now for spring tree planting	•	•
Pet Waste	•	• Pet Waste Facts & Reminder to Pick Up	•	•	• Reminder: Carry a flashlight when walking your dog so you can see to pick up	•
Litter	•	• Hazardous Waste Drop-off at Shady Grove	• Fall Trash Cleanup	•	•	•
Lawn Care	•	• Environmentally Friendly Lawn Care Tips	•	• Promote Alternative Used for Leaves	• Promote Alternative Used for Leaves	•
Local Initiatives	• Research upcoming meetings for Purple Line, Capital Crescent Trail, Sector Plan projects, etc.		•	•	• County Leaf Pickup	• County Leaf Pickup
Special Events	• Volunteer Tree Canopy Assessment (using iTree)	• National Night Out	•	• Fall Trash Cleanup	• County Leaf Pickup	• County Leaf Pickup