2015

Signaling Stormwater Management Opportunities: Analysis of the City of College Park, Maryland

A Smart Place to Live

Prepared by

The Environmental Finance Center

For the

Maryland Department of Natural Resources

And

The City of College Park, Maryland

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This report was prepared by the Environmental Finance Center's Stormwater Financing & Outreach Unit for the Department of Natural Resources.

The Environmental Finance Center (EFC) at the University of Maryland is one of a network of university-based centers across the country providing communities with the tools and information necessary to manage change for a healthy environment and an enhanced quality of life. The EFC believes that environmental finance can be used to develop a shared community vision. Our focus is protecting natural resources and watersheds by strengthening the capacity of local decision-makers to analyze environmental problems, develop innovative and effective methods of financing environmental efforts and educate communities about the role of finance and economic development in the protection of the environment. The Stormwater Financing and Outreach Unit was created in 2011 to address a community's stormwater financing questions and craft implementation and financing strategies that best meets local needs. For more information please visit: http://efc.umd.edu/stormwater.html

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Executive Summary

Project Overview

In July 2014, the Environmental Finance Center at the University of Maryland (EFC) began a one-year project in the City of College Park (the City) to provide technical assistance on their stormwater management program. Under the Municipal Separate Storm Sewer System (MS4) of the US EPA, the City is considered a Phase II permitted municipality located within a Phase I permitted jurisdiction, Prince George's County (the County). The City has opted to pay into the County's stormwater fee program and in return, to rely on the County for assistance managing certain aspects of the City's stormwater program, stormwater projects, and permit responsibilities.

The City's arrangement with Prince George's County has many advantages including reduced administrative burden on the City and the potential for more efficient and impactful stormwater capital improvement projects. Nonetheless, some risks and questions remain from the City's perspective. First, while City property owners began paying the stormwater fee in 2014, it is somewhat unclear what exactly City property owners should expect in return. Second, regardless of stormwater services and projects administered by the County in the City of College Park, the City retains some minimum control measure responsibilities under its Phase II permit. As a result of this complex arrangement of shared City-County permit responsibilities, and the split City-County stormwater fee revenue/expenditure structure, there is a high probability for misunderstood responsibilities, misaligned expectations, unaddressed stormwater issues, and inefficient capital investment.

The EFC sought to use this project as an opportunity to ensure that (1) the City understands the responsibilities it retains under its Phase II permit and has feasible compliance strategies, and (2) the City has a means to efficiently and credibly communicate to the County about stormwater services and/or capital projects that will benefit the College Park community. The second of these goals is based on the stormwater fee being collected from City property-owners by the County, and the subsequent expectation that the community will want those funds to be spent efficiently, effectively, and equitably.

Under this framework, the EFC provided the following elements of technical assistance to the City:

- Conducted outreach and education within the community to both assess community attitudes and priorities and demonstrate how future outreach and education efforts can be designed to meet permit requirements;
- Developed a mapping process to identify areas in the City where high community benefits could be achieved through the strategic investment of County stormwater dollars;
- Evaluated infrastructure funding and the capital improvement planning process to identify opportunities that will create efficiencies and leverage funds in support of stormwater management; and,
- Performed a level of service assessment of existing Phase II permit activities and developed a budget designed to enable the City to more comprehensively meet these responsibilities.

Project Approach

The project unfolded in five phases beginning in July 2014 and running until June 2015. Throughout the process, the EFC sought input and guidance from City of College Park officials as it related to our approach and ensuring the product delivered to the City was truly valuable. City officials were instrumental in the community input process helping the EFC to network with City of College Park Civic Associations and businesses, as well as conducting outreach of their own. In addition to the partnership with the City of College Park, the EFC communicated with residents, businesses, Prince George's County officials, various engineering firms (e.g., KCI), and others as part of the project. The five phases of the project are highlighted below.

First, the EFC built an understanding of the MS4 permit landscape. Through research and meetings with the City of College Park, Prince George's County, the Maryland Department of the Environment, and KCI engineering, among others, the EFC gained a better understanding of the division of responsibilities between the City of College Park and Prince George's County. Specifically, the City of College Park needs to focus on public education and outreach, public involvement and participation, pollution prevention recordkeeping and reporting, and management of stormwater on the City's public works facility.

Second, the EFC sought feedback on community values and attitude towards stormwater. Over the coming decade of the City-County stormwater relationship, the City will closely follow the County's spending patterns to ensure property-owner's stormwater concerns are being addressed through regular service and/or capital improvement projects. In turn, the EFC sought to establish baseline conditions of what residents and businesses are experiencing and where specifically in the City stormwater conditions are the worst. The EFC attended four College Park Civic Association meetings, as well as a meeting of the Downtown College Park Management Authority, with the goal of getting property-owner feedback via discussion, a survey, and a mapping exercise. To ensure all residents had a chance to provide feedback, an online survey was placed on the City's website and distributed through the City email listserv(s).

Third, the EFC developed a stormwater hotspot map integrating community feedback and physical features. If the City knows the areas in College Park that are of the greatest concern to property-owners and are the most prone to flooding and stormwater threats, and these areas are clearly and regularly communicated to the County, then the City will have done a great deal to ensure the County's stormwater management services and investments are efficient, equitable, and effective. Based on this premise, the EFC sought to develop an objective and relatively simple method for prioritizing areas of College Park most in need of stormwater management attention using geographic information system (GIS) mapping technology. The result is a stormwater hotspot map that incorporates community feedback and relevant physical attributes to arrive at a credible ranking of areas in College Park that stand to benefit the most from stormwater management.

Fourth, the EFC formulated strategies and budgets for complying with the City's Phase II permit. Working from case studies and past projects, the EFC established some common activities the City of College Park can perform to comply with its Phase II stormwater permit and an accompanying budget.

The EFC also communicated the results of the hotspot analysis and the needs of the City as it relates to public education and outreach to the Watershed Restoration Specialists of the Maryland Sea Grant Extension. By utilizing the expertise of the Watershed Restoration Specialists and other resources such as the Prince George's County Rain Check program, the City can more cost-effectively comply with its permit and ensure its property owners are making the most of technical and financial assistance to manage stormwater on their property.

Fifth, the EFC explored the implications of using the hotspot map results to leverage funding, from the County and other sources (e.g., grants), and to generally achieve efficiencies in the City's capital planning. The hotspot map is an objective and credible resource at the City's disposal and should be used in regular communications with the County to ensure adequate stormwater service and capital investments. The EFC also investigated how the hotspot map might be used in parallel with the City's capital planning process or to possibly attract grant dollars. For example, capital improvement projects with a non-obvious stormwater component may be located in a high priority area of the City, and with careful co-design of the project – to achieve both its original objective and supplemental stormwater benefits – the City can make limited dollars go further.

Findings and Recommendations

The key outcomes of this project include (1) a clearer understanding of the City's Phase II permit requirements and strategies for achieving those requirements, and (2) a stormwater hotspot map, which incorporates community feedback and physical attributes to objectively arrive at a system for prioritizing stormwater actions. The map can be used to effectively communicate City priorities with Prince George's County, to target technical assistance towards the neighborhoods with the greatest need, and to co-design capital improvement projects to create efficiencies in the planning process.

The EFC has developed a roadmap for the City of College Park to follow containing the responsibilities and actions the City needs to take to effectively manage stormwater and to do so cost effectively, and in partnership with Prince George's County and others. The responsibilities are divided into two categories including the "hard" responsibilities, which the City needs to address to comply with their Phase II permit, and "soft" good governance responsibilities, which the City should address on behalf of its residents and property-owners. The EFC has strived to provide resources to help the City kick-start the work ahead across each of these stormwater management responsibilities. A summary table of responsibilities and a detailed list of recommendations are below.

Table ES.1 – City of College Park stormwater responsibilities based in "hard" MS4 permit requirements and "soft" good governance obligations

Stormwater Responsibility	**Basis**	**Means of Achievement**
Minimum Control Measure 1 – Public Education and Outreach	MS4 Phase II Permit	Develop and implement a public outreach and education plan *(sample plan in appendix)*
Minimum Control Measure 2 – Public Involvement and Participation	MS4 Phase II Permit	Regularly gather public feedback and provide opportunities for public participation *(sample activities provided in report)*
Minimum Control Measure 6 – Pollution Prevention, Recordkeeping, and Reporting and Stormwater Management at the City's Public Works Facility	MS4 Phase II Permit and 12SW Permit	Develop and implement a written operation and maintenance plan *(list of sample plan elements provided in report)*
Engage with the County on College Park's specific stormwater needs and priorities	Good Governance	Use the hotspot map as a starting point for needs and priorities assessment *(see map and analysis in report)*
Track stormwater services and investments in College Park and evaluate the impact	Good Governance	Using the map as a focal point, conduct assessments and gather resident feedback on the effectiveness of the County's efforts *(see map and analysis in report)*
Leverage financial support from the County and/or grant dollars towards the City's capital planning	Good Governance	Co-design capital improvement projects to include stormwater management elements *(sample application to CIP provided)*
Connect residents to technical and financial resources to help manage stormwater on private property	Good Governance	Utilize existing resources and technical expertise including Watershed Restoration Specialists and Prince George's Rain Check program *(relationship between City and expertise underway).*

Detailed recommendations for the City of College Park are as follows:

Develop an overarching Public Outreach & Engagement Plan. An Outreach & Engagement Plan can serve as a roadmap for the City on these activities and ensure a level of coordination that builds partnerships, leverages existing programs and avoids duplication of efforts. This Plan attempts to align efforts the City is already engaged in or could relatively easily take on with little additional expense or capacity. The Plan focuses on subject areas that will serve both the City's own permit responsibilities, as well as the expectations of the agreement with the County.

Develop web-based stormwater management and pollution prevention information. Having stormwater management and pollution prevention educational materials centrally located and available on the City's website would be a highly cost-effective way of connecting with a broad audience. Web-based information also allows for quick and easy updates as new or more targeted information is available and provides the opportunity for site visitors to connect with partner organizations and agencies that can provide technical information or assistance outside of the City's skill set.

Develop a series of educational brochures, flyers, and door hangers. Educational brochures and door hangers can be a cost-effective way of disseminating stormwater management and pollution prevention information. There are many City committees, local watershed organizations, and County-level efforts already at work that the City can leverage. The City can then focus their resources on developing a collection of brochures that targets specific audiences or messaging gaps.

Develop and implement written operation and maintenance (O&M) program to prevent or reduce pollutant runoff from municipal operations. Identify and document all municipal operations, facilities, activities and land uses that are owned or operated by the City and have the potential for generating stormwater runoff, including activities conducted by contractors.

Co-design capital improvement projects to include stormwater management benefits to leverage funding sources and create efficiencies. By integrating stormwater best management practices into capital improvement projects, whether explicitly required or not, the City can attract additional financial support from the County or possibly grant dollars. For example, the City's capital improvement plan calls for underground utility work along Route 1 in FY 19. Many areas of Route 1 fall within the highest priority areas per the hotspot map, so it stands to reason that the City may be able to garner financial support from the County or others to integrate stormwater management BMPs into the project.

Utilize existing resources and assistance providers. Beyond the outreach and engagement activities that the City can take on itself, there are a number of ongoing activities in the community and surrounding watershed that offer an important opportunity to partner and leverage existing efforts. Perhaps the most significant opportunity would be for the City to work more closely with the Watershed Restoration Specialists serving Prince George's County who can help the City leverage existing efforts and access additional resources.

Focus on stormwater hotspots as areas that stand to benefit the most from capital improvements and regular stormwater maintenance. The hotspot map incorporates abiotic, biotic, and community feedback as geographic attributes, or "layers", and prioritizes the areas where the majority of these layers intersect. Each geographic layer represents an attribute that exacerbates stormwater or reflects community feedback indicating stormwater is a problem in a particular area. For example, the EFC selected land slope less than 2 percent, the 100-year floodplain, and resident feedback about the most flood-impacted roads in College Park, among others, as important layers indicating the status of stormwater management in College Park. The EFC does not intend to suggest that hotspot areas are the optimal area to locate stormwater BMPs; rather, the intention is to suggest that the hotspot locations have the highest community benefits from stormwater management investments and the precise location of stormwater investments may need to occur upstream along the hydrologic flow.

The hotspot map appears as the final page of the executive summary. The highlights of the map as follows[1]:

- Areas along Guilford Run at Route 1 and east towards the railroad tracks are considered to be a stormwater hotspot. This result is consistent with feedback from the Calvert Hills Civic Association meeting and survey responses in which 75 percent of property owners said stormwater was a moderate to serious concern;

- Much of Old Town College Park is considered to be a stormwater hotspot as the area is very flat, downstream from the University, and has significant traffic, the combination of which results in nuisance flooding for businesses and customers during extreme rain events. This result is consistent with feedback from the Downtown College Park Management Authority meeting and comments from business-owners.

- Much of Route 1 north of Paint Branch Parkway and south of Greenbelt road is considered a stormwater hotspot by virtue of physical attributes and by extension of community values. It is important to point out that very few residents or businesses pointed this specific area out via our mapping exercise. This outcome does not show that issues do not exist here, but rather that EFC was unable to target property-owners in this part of the City as part of our outreach.

- Residential areas to the north of the City including specifically properties along 51st and 52nd Avenues are not identified as hotspot areas in the map below. Nonetheless, 76 percent of property-owners in the North College Park Civic Association say that stormwater is a serious to moderate concern on their property and the City engineer emphasized the area as being a high priority. The area does not show up on our hotspot map because it includes a significant amount of tree canopy, is not in a floodplain, and doesn't include any of the highly impacted roads in the City. Despite not showing up on the hotspot map, the area is a high priority.

[1] *Appendix F contains a list of description of each of the maps developed for this project. Each of the maps can be found online at: https://www.dropbox.com/sh/asgkeyylypv2cwj/AADYVmi3lfUx7dMl08f4lET9a?dl=0*

Map ES.1 – City of College Park Stormwater Management Benefit Hotspot Map

NOTE: This analysis map ranks where stormwater managemnt will create the most benefits in College Park. Analysis of abiotic, biotic, and cultural factors were used to determine the rankings.

- HIGHEST BENEFITS FROM STORMWATER MANAGEMENT (18.60 ac)
- MODERATELY HIGH BENEFITS FROM STORMWATER MANAGEMENT (152.36 ac)
- MODERATE BENEFITS FROM STORMWATER MANAGEMENT (294.56 ac)
- MODERATELY LOW BENEFITS FROM STORMWATER MANAGEMENT (1,571.69 ac)
- LOWEST BENEFITS FROM STORMWATER MANAGEMENT (1,444.50 ac)

DATA SOURCES:
This map is the product of overlaying abiotic, biotic, and cultural analysis maps created by the University of Maryland's Environmental Fiance Center. Please see previous analysis maps for factor data source.

FINAL ANALYSIS - STORMWATER MANAGEMENT
COLLEGE PARK, MD

PROJECTION: Lambert Conformal Conic **COORDINATE SYSTEM:** NAD 1983 State Plane Maryland, FIPS 1900	**PREPARED BY:** Christopher Shipley, *Project Assistant* **KFS#** 4-305850	**DATE:** 5/12/2015 **REVISIONS:** 5/14/2015 Symbology revisions

Prepared for:
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Chapter 1 – Introduction and Background

What is Stormwater?

Stormwater runoff is defined by the U. S. Environmental Protection Agency as, "precipitation from rain and snowmelt events that flows over land or impervious surfaces and does not percolate into the ground. As the runoff flows over the land or impervious surfaces (paved streets, parking lots, and building rooftops), it accumulates debris, chemicals, sediment or other pollutants that could adversely affect water quality if the runoff is discharged untreated."[2] Stormwater, unlike the wastewater that enters the sewer system via sinks, toilets, and other traditional plumbing fixtures, generally does not go to a wastewater treatment plan. Instead, it flows underground and then is discharged into the nearest body of water.

Urban and suburban development has magnified the impact of stormwater runoff. The increase in acreage covered by impervious surfaces including roads, parking lots, houses, swimming pools, buildings, compacted soil (including many lawns) and sidewalks has changed the land's ability to naturally absorb stormwater. Until recent stormwater legislation was passed requiring stormwater best management practices (BMPs), developers built simple stormwater management systems, generally underground, to quickly convey runoff from rooftops, parking lots, driveways, and other surfaces in order to protect property and public safety. This stormwater eventually dumped from an exit pipe into a river, stream, bay, or ocean taking with it any pollutant picked up along the way. Adding to pollutant impacts, storm sewer systems concentrate stormwater into straight channels, increasing the rate of flow as it travels, and this excessive volume leads to streamside erosion, scouring, sedimentation, and often, warmer than usual water temperatures, all of which adversely impact natural systems.

Project Overview

Effectively managing stormwater is one of the greatest challenges communities face. As with other forms of infrastructure, as communities struggle to allocate limited resources across multiple priorities, stormwater management systems are frequently overlooked and underfunded. The issue of paying for stormwater for many Mid-Atlantic communities looms even larger as they prepare for Chesapeake Bay Total Maximum Daily Load (TMDL) requirements and Watershed Implementation Plans (WIP).

Staff time, technical information, expertise, and financial resources are necessary to successfully guide the development and implementation of sustainable stormwater management programs. Moreover, it is not enough that these resources are available; they must also be deployed in a way that meets the unique needs and values of each community. Developing a stormwater management plan for the City of College Park, particularly as its permit relationship with Prince George's County evolves, provides a prime opportunity to demonstrate the importance of blending resources with community context.

The City is considered a Phase II permitted municipality located within a Phase I County. The City has opted to pay into the County's fee program and in return, to rely on the County for assistance managing certain aspects of the City's stormwater program, stormwater projects, and permit responsibilities.

[2] water.epa.gov/polwaste/npdes/stormwater/

While City property owners have already begun paying the stormwater fee to the County, what can be expected in return still remains somewhat unclear. Regardless of stormwater services and projects administered by the County in the City of College Park, the City retains some minimum control measure responsibilities under its Phase II permit. As a result of this evolving and complex arrangement of shared City-County permit responsibilities, there is a high possibility for misunderstood responsibilities, misaligned expectations, unaddressed stormwater issues, and/or inefficient capital investment.

To avoid these potential pitfalls, the University of Maryland Environmental Finance Center (EFC) sought to use this project as an opportunity to ensure that (1) the City understands the responsibilities it retains under its Phase II permit and has feasible compliance strategies, and (2) the City has a means to efficiently and credibly communicate to the County about stormwater services and/or projects that will benefit the College Park community. The second of these goals is based in the stormwater fee being collected from City property-owners by the County, and the subsequent expectation that the community wants those funds to be spent efficiently, effectively, and equitably.

Under this framework, the EFC provided the following elements of technical assistance to the City:

- Conducted outreach and education within the community to both assess community attitudes and priorities and demonstrate how future outreach and education efforts can be designed to meet permit requirements;
- Developed a mapping process to identify areas in the City where high community benefits could be achieved through the strategic investment of County stormwater dollars;
- Evaluated infrastructure funding and the capital improvement planning process to identify opportunities to create efficiencies and leverage funds in a manner that could support stormwater management needs; and,
- Performed a level of service assessment of existing Phase II permit activities and developed a budget designed to enable the City to more comprehensively meet these responsibilities.

The Stormwater Permit Landscape

The stormwater permit landscape is complicated in the City of College Park. Stormwater runoff is the primary cause of water quality degradation in Prince George's County. As a result, the County has held a Phase I stormwater permit since 1993. This permit was designed to move the County towards developing a more comprehensive approach to managing stormwater runoff. The Phase I permit outlines very specific pollutant reductions that must be achieved by the County, and each permit renewal has brought increased responsibilities to the County.

By 2003, the majority of the County's municipalities were assigned a Phase II or "general" permit that sought to address gaps in the County program created by the presence of so many unregulated communities within the County's permitted area. These general permits are less specific than the Phase I permits and include six Minimum Control Measures (MCMs) that must be addressed by the permit holder. Rather than require all of these communities to create individual stormwater programs, each municipality was offered the option of sharing responsibility for stormwater management with the County. Twenty-two municipalities elected to do so, including the City of College Park.

Prince George's County's Clean Water Program is a multi-agency effort to comply with the requirements of the Phase I permit and includes seven focus areas referred to as "core components." These are: Stormwater Management, Erosion & Sediment Control, Public Education & Community Engagement, Trash & Litter, Illicit Discharge Detection & Elimination, Property Management & Maintenance, and Clean Water Restoration. The municipalities that signed onto the County permit are expected to support the County by conducting education and outreach around trash, litter, and other stormwater pollutants and implementing pollution prevention plans for municipal activities and facilities.

Despite signing onto Prince George's County's permit, the City of College Park still retains responsibility for certain aspects of their Phase II permit. Specifically, the City is responsible for activities associated with MCMs 1 and 2, Public Education & Outreach and Public Involvement & Participation. The City is also responsible for the Pollution Prevention & Good Housekeeping activities associated with MCM 6, as well as pollution control for their Public Works yard which holds its own industrial permit.

MCM 1

The intention of MCM 1, Public Education & Outreach, is to ensure the broader community understands the impacts of stormwater runoff and the practices that can address water resource management challenges. State and federal regulatory agencies require:

- The implementation of a public education program that distributes educational materials to the community; and,
- The distribution of stormwater educational materials and/or information to target audiences using a variety of distribution methods.

MCM 2

Similarly, MCM 2, Public Involvement & Participation, is intended to enable citizens to play an active role in stormwater management. Giving the community the opportunity to have a voice in the development, implementation, and updating of City stormwater plans allows for broader public support of decisions and expanded capacity in the form of partnerships with other stakeholder groups. State and federal regulatory agencies require:

- Compliance with state and local public notice requirements; and,
- Sponsorship, promotion, or participation in an annual "stream cleanup" or similar volunteer restoration day to encourage public involvement in the stormwater program.[3]

MCM 6

Under MCM 6, the City has obligations for pollution prevention, recordkeeping, and reporting requirements. State and federal regulations require:

- Development and implementation of an operation and maintenance program that includes a training component with the goal of preventing or reducing pollutant runoff from municipal sites and operations; and,
- Employee training to prevent and reduce stormwater pollution from municipal activities such as parks and open space maintenance, fleet and building maintenance, new construction and land disturbances, and stormwater system maintenance. [4]

12SW Industrial Permit

The City also holds a permit for its municipal public works maintenance facility, called an industrial stormwater permit, or 12SW permit. This permit provides coverage of the City-owned public works site to ensure efforts are underway to reduce stormwater pollution and non-stormwater discharges affiliated with that site. Under the 12SW permit, the City is currently required to develop a Stormwater Pollution Prevention Plan (SWPPP) and submit that annually to MDE. Prince George's County assists the City on 12SW compliance through their inter-governmental agreement and provides services to ensure the City is in compliance with the SWPPP, which focuses on the Phase II permit's MCM 6. In support of the City's fulfillment of their 12SW Permit, the County recently coordinated with an engineering consultant to conduct an inspection of the City-owned Public Works facility to identify areas of potential pollution, provided the City with a template SWPPP, and offered guidance and support in the preparation of the SWPPP.

Based on this deficiency analysis, the City prepared a SWPPP in November 2014 and in late December 2014 the County formally submitted the SWPPP to MDE on behalf of the City, in conformance with the 12SW permit. Under the SWPPP, the City is required to quarterly monitor the site, and collect samples from adjacent waterways after significant rainfall events. The County conducted a quarterly site inspection of the City-owned maintenance facility on April 23, 2015. The results of the site inspection

[3] www.mde.state.md.us/programs/Water/StormwaterManagementProgram/Documents/www.mde.state.md.us/assets/document/NPDES%20Phase%20II%20General%20Permit.pdf

[4] water.epa.gov/polwaste/npdes/swbmp/Stormwater-Phase-II-Regulatory-Requirements.cfm#minmeasure6

will be relayed to City SWPPP Team and the County will submit results of the quarterly inspection and monitoring data to MDE in June 2015, on behalf of the City. The County intends to continue to support the City on their annual SWPPP updates, reviewing monitoring data, offering technical assistance, and submitting the SWPPP annually to MDE on behalf of the City.

Many of these activities overlap and meet multiple permits, even though the SWPPP is specifically intended to meet 12SW requirements. By example, when the County supports the City under the SWPPP by preparing a DVD to train all municipal staff on BMP recordkeeping, the SWPPP is satisfied as are requirements of stormwater permits to train employees. Other activities that satisfy all permits that the City implements annually include: developing and implementing an O&M set of procedures to reduce stormwater pollutants, implementing alternative street sealants, cleaning catch basins, avoiding illicit discharges, properly storing potentially hazardous material, removing excess impermeable surfaces and replacing with semi or permeable materials, and street sweeping. In the future, with a new Phase II and the SWPPP updates, there may be more City-specific reporting to the MDE that may be implemented as the stormwater management program grows.

Stormwater Infrastructure within the City of College Park

The stormwater system in the City of College Park consists of pipes, culverts, swales, outfalls, and assets that are owned and maintained by various entities including Prince George's County, WSSC, and private residences. According to the City engineer, with the exception of three outfalls, Prince George's County manages upgrades and capital improvement projects for the stormwater system. The City is responsible for the three aforementioned outfalls in addition to stormwater infrastructure on City-owned property (e.g., Department of Public Works facility). Much of the stormwater infrastructure in the City was constructed over the last century, prior to the stormwater quality and quantity standards which exist today.

Prince George's County and WSSC maintain and upgrade various portions of the stormwater system within College Park, and the City does not have a full time individual staff person dedicated to stormwater management. Currently, when issues arise or when capital projects are being designed and implemented by the County, City planning and engineering staff provide information and feedback to the County. As a result, the nexus of capital project financial decisions relating to specific stormwater and flood control projects within the City rests with decision makers outside of College Park. According to City staff, the College Park staff notify the County when stormwater system items such as infalls and outfalls and culverts need to be cleared of trash and leaves.

Prince George's County Stormwater Programs

There are a collection of components that make up the Prince George's County's stormwater programing.

Prince George's County Clean Water Act

In 2010, the Federal government required states to meet new standards under the Clean Water Act to address stormwater runoff pollution from impervious areas such as rooftops, sidewalks, driveways, roadways, and parking lots. To meet this mandate, Maryland's governor signed into law House Bill 987

requiring nine Maryland counties and the City of Baltimore to collect a fee from property owners to implement a program to help clean up stormwater runoff pollution from impervious areas.

In 2013, in response to this mandate, the Prince George's County Council passed two pieces of legislation. The first bill, CB-45-2013 established the Clean Water Program; and provides for the setting, collection, and deposit of a Clean Water Act Fee into a local fund called the Local Watershed Protection and Restoration Fund. The County will use these funds for the following purposes:

- Capital improvements for stormwater management, including stream and wetland restoration projects;
- Operation and maintenance of stormwater management facilities and systems;
- Public education and outreach relating to stormwater management or stream and wetland restoration;
- Stormwater management planning;
- Review of stormwater management plans and permit applications for new development;
- Grants to nonprofit organizations for up to 100% of a project's cost for watershed restoration and rehabilitation projects; and,
- Reasonable costs necessary to administer the Local Watershed Protection and Restoration Fund.

The second piece of County legislation, CR-59-2013, established a schedule of fees to be collected in order to fund the Clean Water Program. The County has developed procedures for determining the Clean Water Act Fee charge to properties, and the criteria by which certain properties may qualify for financial hardship, fee appeals, fee reduction credits, and alternative compliance. The Clean Water Act Fee is paid annually by property owners through their property tax bill.[5]

- The Administrative Fee rate is $20.58 per tax account per year;
- The Impervious Area Fee rate is $20.90 per Equivalent Service Unit; and,
- An Equivalent Service Unit is equal to 2,465 square feet of impervious area.[6]

Properties in the City of College Park are subject to the Clean Water Act Fee, and County collection of the fee began in 2014. Based on an analysis of parcel data and using national estimates for imperviousness, we estimate that College Park property owners pay roughly $285,000 into Prince George's County's Water Protection and Restoration Program.[7] Further detail on the estimate can be found in the appendix.

Prince George's County Rain Check Program

As a part of the Clean Water Program, Prince George's County established the Rain Check Rebate Program. In an effort to advance stormwater management practices on private properties, homeowners, business and nonprofit entities can seek reimbursement for a portion of the costs of

[5] www.princegeorgescountymd.gov/sites/StormwaterManagement/Services/CleanWater/Act/Pages/default.aspx

[6] www.princegeorgescountymd.gov/sites/StormwaterManagement/Services/CleanWater/Act/Pages/CleanWaterActFeeStructure.aspx

[7] See calculation in Appendix E, Table E.1. Please note that this estimate is for discussion purposes and is based on rough estimates of the rate of imperviousness across multiple non-city owned parcels which could not be verified.

installing "Rain Check" approved stormwater BMPs.[8] Eligible stormwater management practices under the program include cisterns, green roofs, pavement removal, permeable pavement, rain barrels, rain gardens, and establishment of urban tree canopy. [9]

Prince George's County NPDES MS4 Permit

Previous permit conditions mandated the County to maintain legal authority to control storm drain system pollution; develop geographic information system mapping on a watershed basis; use a combination of chemical, physical, and biological monitoring to characterize urban stormwater; develop management programs to address runoff from new and significant redevelopment, construction site discharges, illegal storm drain system connections, and road maintenance operations; and provide education and outreach regarding stormwater pollution.

The 2014 permit renewal increased existing impervious area treatment goals from 10% to 20% of the total impervious area in the County. The County seeks to improve water quality conditions by increasing the total percentage of impervious areas retrofitted with stormwater controls by pursuing a strategy to construct capital improvement projects to reduce the percentage of impervious area where no stormwater management controls are in place.[10] Additionally, the County's 2015 Department of Environment Resources Budget set a flood mitigation goal and adopted a performance target of protecting 1,750 structures in the floodplain.[11] These two targets – reducing impervious cover and protecting structures in the floodplain – stand to weigh heavily in the County's stormwater investment decision making.

Prince George's County Flood Protection and Drainage Improvement

Through inter-governmental participation agreements, the Prince George's Capital Projects Section and the US Army Corps of Engineers designs and constructs environmental enhancement and flood control projects within Prince George's County. The Capital Projects Section plans, designs and constructs flood protection and drainage improvement projects with a particular focus on vulnerable residential, habitable structures. Eligible capital improvement projects address residential and road flooding outside of Prince George's County Department of Public Works and Transportation's jurisdiction.[12]

A three-tiered prioritization system outlines criteria for projects to be included in the County's Capital Improvements Program, including the severity of the issue and the proximity to residential structures. In order to focus resources and expenditures on improvements to water quality treatment of impervious areas, and TMDL reductions in accordance with the NPDES/MS4 and WIP II mandates, Prince George's County addresses and commits funding and resources to providing necessary assistance to creditable flooding and erosion problems, and all projects are evaluated for cost versus benefit.[13]

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[8] www.princegeorgescountymd.gov/sites/StormwaterManagement/Services/RainCheck/Rebates/Pages/default.aspx
[9] www.princegeorgescountymd.gov/sites/StormwaterManagement/Services/RainCheck/Rebates/Pages/EligiblePractices.aspx
[10] Prince George's County 2015 Department of Environmental Resources Budget
[11] Prince George's County 2015 Department of Environmental Resources Budget
[12] www.princegeorgescountymd.gov/sites/StormwaterManagement/Services/FloodControl/Drainage/Pages/FloodProtectionandDrainageImprovement.aspx
[13] www.princegeorgescountymd.gov/sites/StormwaterManagement/Services/FloodControl/Drainage/Pages/FloodProtectionandDrainageImprovement.aspx

Chapter 2 – Signaling Benefits and Opportunities of Stormwater Management

Introduction, Methodology, and Assumptions

As discussed above, as of 2014, property owners in the City of College Park are being assessed a Clean Water Act Fee by Prince George's County, the proceeds of which are to support stormwater management and restoration practices in the County. Based on our estimations, City property owners contribute roughly $285,000 annually in Prince George's County Clean Water Fees.[14]

Given the level of revenue the City contributes to the County stormwater program, local residents and businesses undoubtedly would like to see equitable, efficient, and impactful stormwater maintenance and capital projects completed in the City. The EFC would suggest that in addition to complying with its own MS4 permit, the other major focus of the City's stormwater activity should be to communicate, on behalf of its property owners, the opportunities for County stormwater investment in the City, including the associated needs that could be addressed and the potential benefits to be derived. By clearly signaling the opportunities and benefits of managing stormwater within College Park, the City will be serving its residents, businesses, and other property owners, as well as assisting the County in making decisions about stormwater services and capital improvement project funding allocations.

Determining how the City should define and identify an "opportunity," where these opportunities exist, and how best to prioritize and communicate opportunities and benefits to the County are a complicated set of parameters to consider. To guide the EFC's work to assist the City in defining, identifying, and communicating stormwater management benefits and opportunities in College Park, the following principles were established:

- Stormwater investments and routine stormwater services in College Park should reflect resident, business, and property owner values and attitudes, and alleviate their stormwater issues.
- The City's capital improvement projects, whether they have an explicit stormwater component or not, are likely to have a stormwater impact or an opportunity for onsite treatment that may yield additional offsite benefits in the areas of stormwater quantity or quality management. An opportunity exists in most capital improvement projects to improve stormwater and to potentially leverage County support.
- There are "hotspots" within the City of College Park where the management of stormwater and the reduction of the negative effects of uncontrolled stormwater events will yield comparatively greater benefit; these locations should be the focus of the City and communicated to the County.
- Specific areas in the City of College Park stand to benefit more and yield greater benefits from investments that manage stormwater impact; however, those same locations are not necessarily the most suitable or cost-effective for siting stormwater best management practices to treat the location. Many water quality and quantity problems occurring in specific locations originate upstream, dispersed across areas within/outside the City/County,

[14] See calculation in Appendix E, Table E.1.

or remediation projects can be located upstream at reduced costs or at greater scale to produce cost efficiencies.

Property Owner Feedback and Community Priorities

In the summer of 2014, EFC staff began developing a plan for gathering community feedback on stormwater issues. This plan was designed to also serve the City long-term as it works to comply with the public outreach and education and public participation components of its own Phase II permit. This effort directly engaged City residents through the City's network of civic associations. Additionally, EFC staff sought out feedback from the City's business community and City staff.

Background and community context. As part of the feedback process, EFC staff sought to assess general community values, as well as specific concerns related to stormwater on private and public property. In other words, it was important to understand the community's general values independent of stormwater and whether there was consensus around those issues. Better understanding the City's main concerns would enable the identification of projects and locations where co-benefits could be realized from stormwater investments.

The EFC's assumption prior to beginning the citizen feedback process was that transportation and flooding would be main concerns. Resident commuting trends shifted from 2000 – 2013, with a significant increase in the number of residents who work at home or use public transportation.[15] Frequently referenced transportation concerns in the community tend to involve traffic congestion around Route 1/Baltimore Avenue, as well as access to public transportation via Metro and the proposed purple line.

Flooding and water quantity issues are also known to be important to residents, and there are a number of factors at play. The City of College Park has about 8,200 housing units of which about 92% are occupied.[16] Compared to surrounding areas, College Park has a larger proportional stock of older housing built in 1949 or earlier,[17] prior to the stormwater quality and quantity standards that exist today.

In addition, an estimated 21% of the 2013 assessed value of properties in the census tracks encompassing College Park is located in areas considered to be in either the FEMA 100-year flood plain, the FEMA 500-year flood plain, and/or the Prince George's County 100-year flood plain (see Appendix E).[18] Most notably, on June 10, 2014 there was record rainfall in the City, approximately five inches in less than two hours, which resulted in significant road flooding and damaged property.[19] While this represents one recent event, storm frequency and intensity increases are projected for the Northeast

[15] Ibid. From 2000 – 2013 the percentage change In commuting activity for citizens utilizing public transport has increased 64.8% and for citizens working at home has increased 118.3%.
[16] Census 2010 and 2013 American Community Survey
[17] Ibid
[18] This is a rough estimate as the census tracts comprise some properties not in the City of College Park.
[19] Halverson, J. The June 10th College Park flash flood: How did it happen and why wasn't it forecasted? Washington Post, June 11, 2014. Available online at: www.washingtonpost.com/blogs/capital-weather-gang/wp/2014/06/11/the-june-10-college-park-flash-flood-how-did-it-happen-and-why-wasnt-it-forecast/.

US and Maryland, which can be expected to be associated with increased risk to the City's residents and potentially the City's revenue base.[20]

Residential properties comprise 58.9% of the City's tax base and commercial and industrial properties comprise the other 41.1%. Fiscal year 2016 operating revenues are estimated to be about $16 million, of which property taxes comprise about 48% of the total revenues for the City of College Park. [21]

The feedback process. The structure of our feedback process, which included Civic Association meetings and discussion with the Downtown College Park Management Association, followed a fairly consistent framework with the following steps:

1 – Introduction of EFC and overview of project goals;
2 – Facilitated discussion of stormwater and flooding issues in the City and on personal property;
3 – Completion of a ten-minute survey to provide more detailed feedback on general values, and specific stormwater concerns;
4 – Participation in a mapping exercise to pinpoint specific problem locations; and,
5 – Conclusion and thanking the audience for their time.

The remainder of this chapter will focus on the methods and findings from the College Park community input process. In particular, we will provide a detailed explanation of results from the survey and mapping exercises, and articulate how this information, along with supplemental data, can be plugged into a tool for objectively mapping and prioritizing stormwater projects.

[20] National Climate Assessment, 2014. See: nca2014.globalchange.gov/report/regions/northeast.
[21] Ibid 6

Survey Design and Results

The College Park stormwater survey was designed as a collaborative effort among EFC and City staff. The objective of the survey was to ensure all interested residents had a chance to express concerns, attitudes, and values as it relates to general issues and stormwater-specific issues in College Park. Although group discussions were fostered at community meetings, it is the experience of EFC staff that one or two individuals may dominate the conversation. In an effort to ensure all voices were heard; we offered a written survey and interactive mapping exercise.

The survey questions were selected to gauge status (i.e., homeowner, business owner, renter, University student, etc.), commuting patterns, experience with stormwater on public and private property, the most impacted public roads and property, impact from the recent severe rain event of June 2014, and investment priorities. The full set of survey questions can be found as Appendix B.

The survey was first administered at the October 9, 2014 meeting of the North College Park Civic Association, and was given at three subsequent Civic Association meetings attended by the EFC. The business community was also targeted via the Downtown College Park Management Authority.

Acknowledging that the EFC was unable to secure a presentation at each of the City's civic associations, and the fact that not all citizens attend civic association meetings, we sought to cast a broader net covering all College Park residents by offering an online survey. The online survey, posted on the front page of the City's website and promoted through mass emails (i.e., City list serve, etc.), ran from approximately March 11, 2015 to April 12, 2015.

Between November 2014 and April 2015, via both hard copies received at community meetings and responses from the online survey, a total of 98 responses were received (see Table 2.1). With approximately 30,413 people and 6,757 households in the City of College Park,[22] the survey responses account for less than one percent of the total population, and slightly over one percent of households. Given that the total number of survey responses is small relative to the City's population and the geographic distribution of responses is unbalanced – there are some noticeably under-represented areas (e.g., College Park Woods, College Park Estates) – the survey results should be interpreted carefully and limited in their application. Nonetheless, select survey results are telling, and when coupled with other information, can be very useful for decisions about allocating stormwater management resources.

[22] 2010 U.S. Census

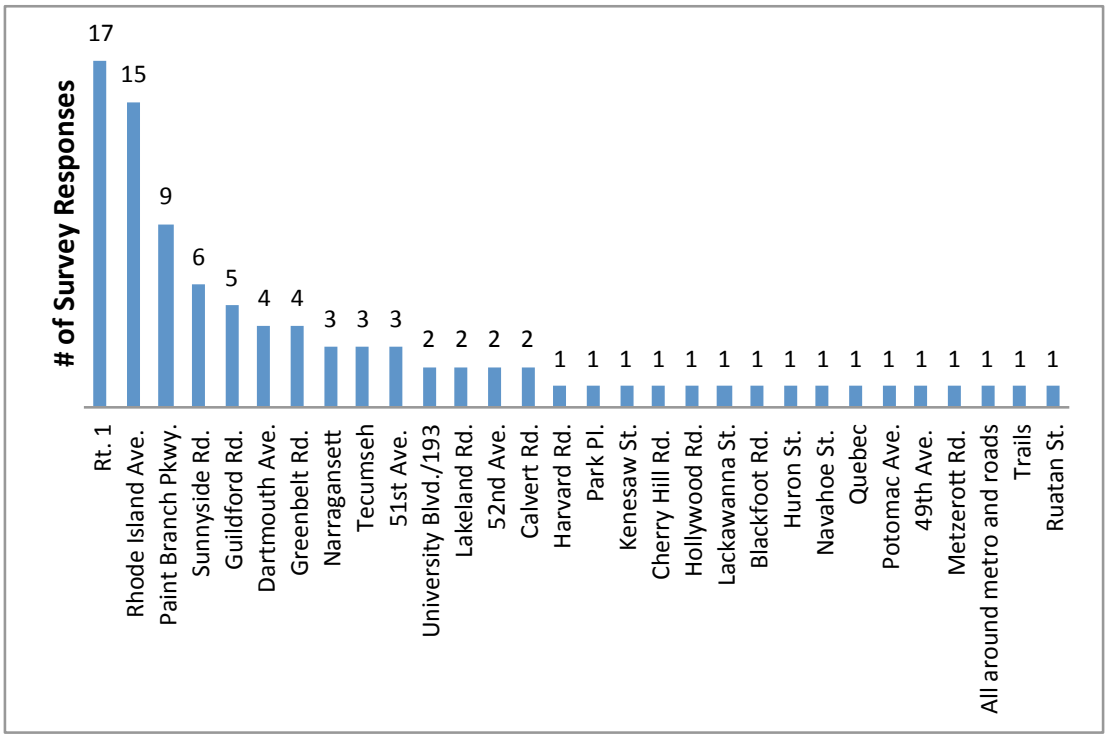
***Table 2.1** – Overview of College Park survey responses*

Geographic Area	# of survey responses	# of homeowners	Significant private property stormwater concerns*	Significant stormwater concerns on commute*
North College Park	29	86%; n=25	76%; n=22	59%; n=17
Berwyn	23	96%; n=22	30%; n=7	39%; n=9
Calvert Hills	16	94%; n=15	75% n=12	56%; n=9
Lakeland	8	88%; n=7	38%; n=3	50%; n=4
DCPMA	3	3 business owners	33%; n=1	66%; n=2
Online responses	19	26%; n=5	53%; n=10	37%; n=7
City-wide Total	98	86%; n=84	58% n=55	53% n=51

* Defined as responses that confirmed stormwater was either a serious or moderate concern; ^ Includes representation from Calvert Hills, Rt.1, Hollywood, Berwyn, Old Town, College Park Estates, and Daniels Park/Oak Springs/Branchville

Based on the survey results, and supported by other information described further below, a few areas of College Park standout as having more frequent and severe stormwater issues. Namely, private property owners in North College Park and Calvert Hills view stormwater – water quantity in this case – as a more serious problem than their counterparts in the rest of city (see Table 2.1). The survey also asked residents to list the roads most impacted by stormwater in College Park. Residents responded Route 1, Rhode Island Avenue, Paint Branch Parkway, Sunnyside Road, and Guilford Road, respectively, are the most impacted by stormwater (see Figure 3.1). Not surprisingly, these roads are also some of the most heavily traveled and congested roads in College Park.

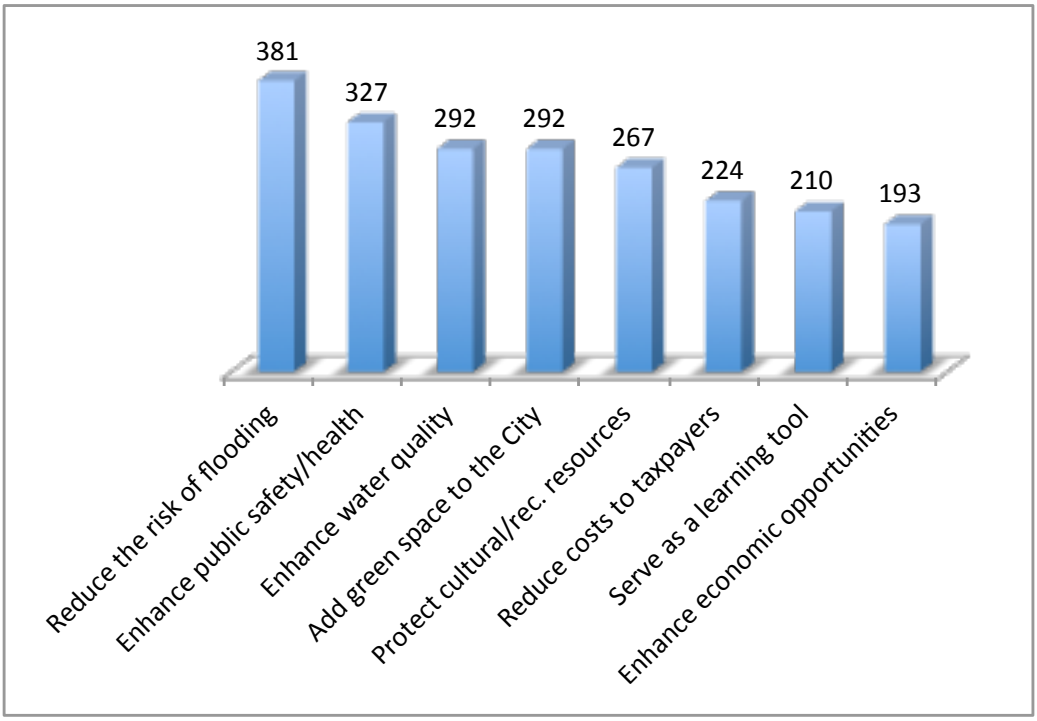
Figure 2.1 – Roads most impacted by stormwater in College Park



In addition to identifying geographic areas of concern in the City, the survey addressed resident values and their preferences for stormwater investments. When asked to select the top three issues in College Park most important to them, residents ranked transportation/walkability (18.4% of respondents), flooding (13.5%), and public green space (13%), respectively, as the three most important issues. Following closely behind is housing/cost of living (12.2%) and economic activity (11.8%). Stemming from the manner in which the survey was introduced – it was preceded by an introduction from EFC staff about our objective to evaluate stormwater concerns in College Park – there was undoubtedly some bias in resident survey responses. However, transportation/walkability stands out as the dominant issue in College Park, which is consistent with our initial assumptions.

The survey also asked how investments in stormwater should be prioritized across eight "investment goals." Residents prioritized reductions in flood risk and enhancements to public safety and health as the top two investment goals (see Figure 2.2 below). Compared to all other investment goals, residents view reductions in flood risk on private and public property as the primary goal they would like to see achieved through stormwater investments.

***Figure 2.2** – Weighted stormwater investment preferences*



The survey results support many of the initial assumptions about general residential values in College Park. Namely, that transportation/walkability, flooding, and economic development are the important issues in the community. Furthermore, we initially suspected that the most heavily traveled and historically flood-prone roads in the City would be reflected in survey feedback. These roads include Route 1, Guilford Road, and Paint Branch Parkway, and were identified via the survey results.

The most unexpected finding was the magnitude of concern in North College Park and Calvert Hills, and in particular, the difference between these two areas and the rest of the City. Among survey respondents, property owners in North College Park and Calvert Hills are far more concerned about stormwater than their counterparts in the rest of the City.

Property-Specific Feedback and Stormwater Mapping Exercises

The survey results provide a standardized benchmark across which to compare resident values and concerns. However, the defined format of the survey leaves much to be desired; surveys are unable to foster open-ended conversation and generate the personal, property-specific feedback from residents that can be highly valuable in informing decision-making. In the experience of EFC staff, residents and business owners are generally more comfortable articulating their concerns and experiences when given a platform to speak openly and when provided with visual cues such as maps or photographs. In turn, the EFC developed neighborhood specific maps and invited residents to express their concerns and issues via the map. Residents were asked to speak openly about stormwater issues or to write openly on a note card. EFC staff transcribed the feedback from these mapping exercises, described further below.

It should also be noted that the survey did not resonate with some groups and/or there was insufficient time to administer the mapping exercise. Given the limited time, the key objective was to foster a meaningful conversation with meeting attendees. This was the case at the Downtown College Park Management Authority meeting on January 20, 2015. Approximately eight businesses were represented, but only three surveys were filled out. With limited time on the agenda business owners engaged one another and EFC staff in conversation about stormwater issues in Old Town. The dialogue from that conversation is captured below.

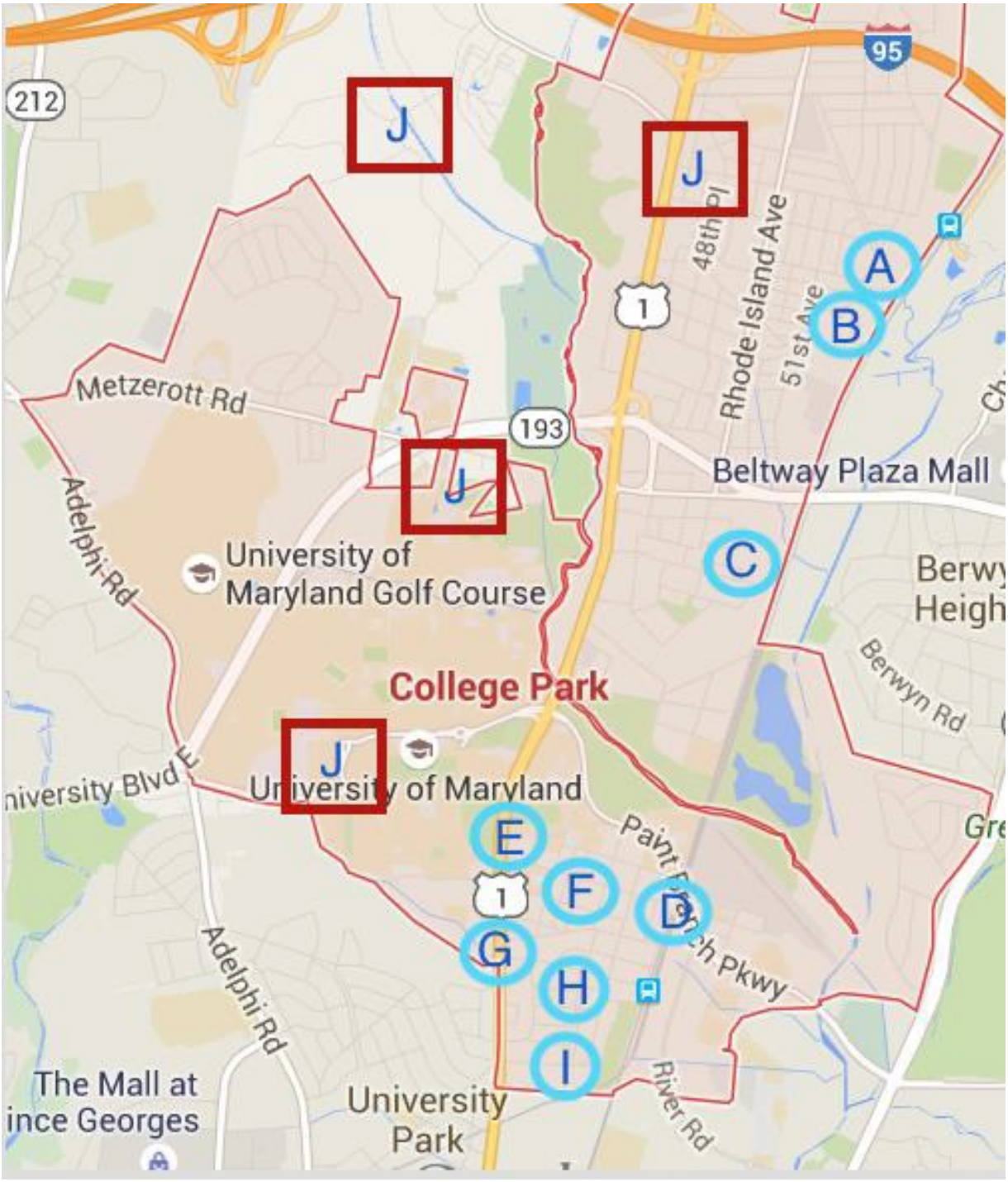
In addition to getting feedback from residents and businesses, EFC staff also sought feedback from City staff with intimate knowledge of stormwater issues in College Park. In late April, EFC staff met with City Engineer Steve Halpern to profile stormwater challenges and potential solutions in the City (see Appendix F).

The section that follows highlights the feedback received from residents, business owners, and City of College Park staff. Most of the feedback received has been tabulated and mapped (see Table 2.2, and Map 2.1 below). The EFC is confident that the most prominent issues have been documented, but acknowledges that some of the specific concerns expressed by business owners and residents are not explicitly spelled out in this report. Nonetheless, we feel that the major issues have been identified and are connected in some form to nearly all of the problems expressed by residents and businesses. Table 2.2 and accompanying Map 2.1 below summarize community feedback and pinpoint specific locations with the City.

Table 2.2 *– Specific concerns and feedback from community (not ranked, see corresponding map 3.1 to trace IDs)*

ID	Approx. Location	Description	Source
A	North College Park along WMATA railroad tracks	Stormwater drains along Narragansett Pkwy and bottlenecks at railroad tracks; areas to the south between Huron and Kenesaw get backed up as water makes 90 degree turn along railroad and waits to exit through Narragansett outfall; regular standing water on properties of 51st and 52nd avenues. Reports of mosquitoes and occasional flooding.	Steve Halpern, Residents @ North College Park
B	North College Park, 51st and Huron	The potential for a **water storage solution** and a reduction of problems along 51st/52nd avenues exists at the property at the corner of 51st and Huron, which is currently Board of Education owned property.	Steve Halpern
C	Berwyn, along WMATA railroad tracks	After severe storm events water occasionally backs up from the railroad tracks; issues cited with regular maintenance and clean-out on County owned culverts.	Residents @ Berwyn
D	Paint Branch Parkway at WMATA railroad tracks	There is a depression along Paint Branch Pkwy directly beneath the railroad overpass; severe, impassable flooding during June 2014 storm.	Residents
E	Route 1, Old Town	Severe rain events can result in standing water, splashing water along Old Town making for an unpleasant shopping experience; most reported the situation had **improved** over past 3 years attributed to regular clean-out and maintenance of storm drains.	Business Owners
F	Old Town, Route 1 to WMATA train tracks	Area is flat resulting in collection of water and slow drainage after storms.	Steve Halpern
G	Guilford Drive @ Route 1	The intersection is a low-point and Guilford Run is channelized; during severe rain events there is a bottleneck at the channel and water accumulates on Route 1 (1-2 times/year).	Business Owners
H	Guilford Run between Route 1 and WMATA train tracks	Guilford run backs up at the train tracks during severe rain events and multiple properties experience high water (a few times/year); there are also reports of underground springs and/or a high water table	Multiple residents @ Calvert Hills
I	Rhode Island @ Calvert Road	When stormwater is unable to drain out of Guilford it backs up and flows south along Rhode Island Avenue (1-2 times over past 5 years).	Steve Halpern, Multiple residents @ Calvert Hills
J	Multiple Upstream Locations	As reported by residents, upstream locations exacerbating stormwater/flooding issues in College Park including University of Maryland property (Lot 1), Upper Paint Branch by Xfinity Center, areas along Route 1, and multiple locations outside City including in Montgomery County.	Multiple Residents @ Calvert Hills, Business Owners

Map 2.1 – ***Summary stormwater feedback locations (corresponds to Table 3.2)***



While the map above highlights summary feedback from the College Park community, EFC staff also conducted a more detailed mapping exercise at each of the four civic association meetings attended. The results of that exercise appear as map 3.2 below. The exercise was structured to have residents identify specific problem locations and spots where green infrastructure solutions might be implemented. There were four colored dots available for residents to use, which translated to the following:

Red – Primary Neighborhood Flooding
(Public property most impact)

Yellow – Secondary Neighborhood Flooding
(Public property secondarily impacted)

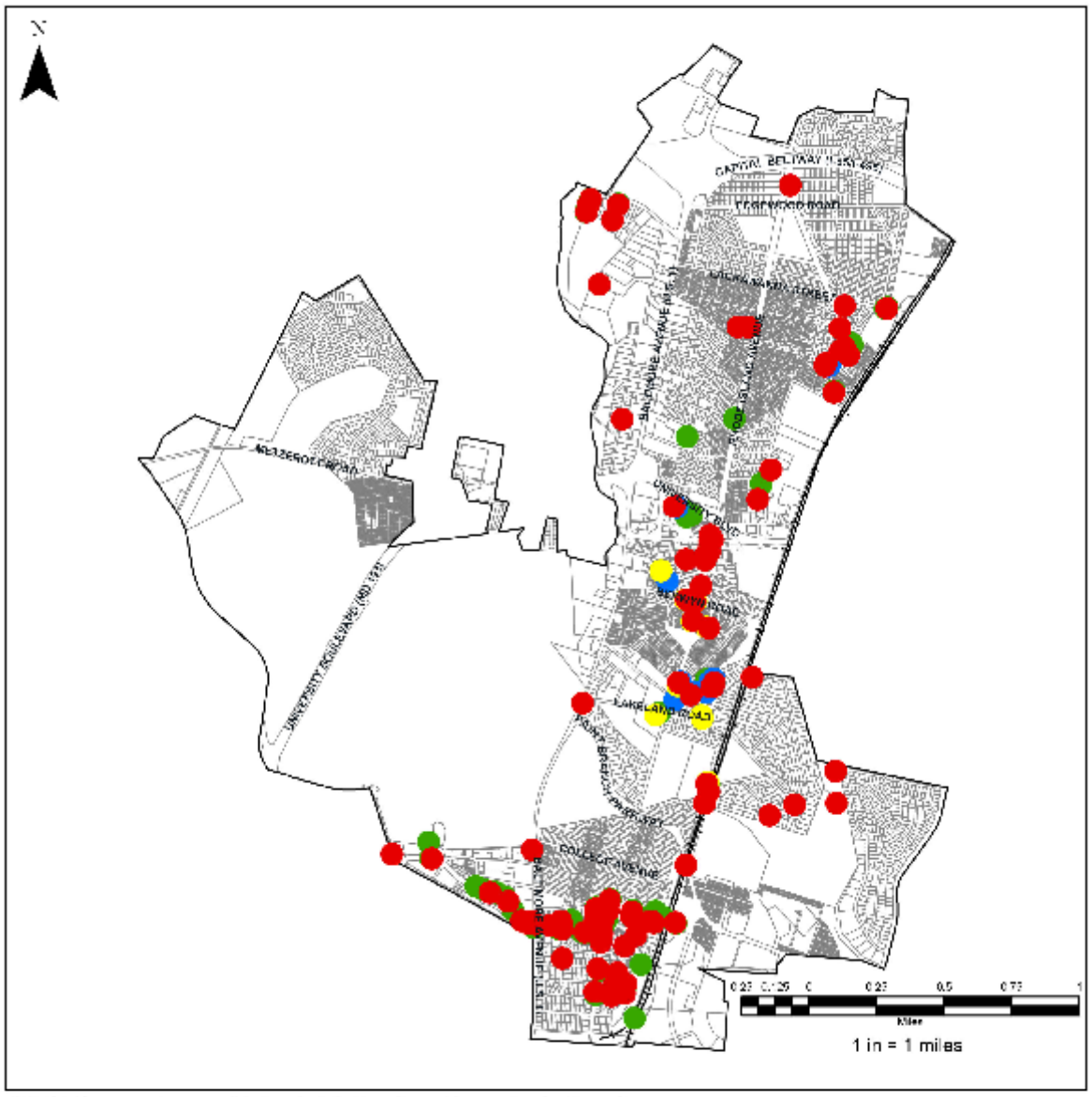
Blue – Flooding on Personal Property
(Personal property impacted)

Green – Green Infrastructure Investment
(Location where resident felt there should be investments made in stormwater management and/or public green space)

Lessons learned: Keep it simple!

Residents reacted favorably to the mapping exercise and openly talked about stormwater issues and solution preferences in relation to the maps. However, in the future, it is important to keep the mapping exercise open-ended and to allow participants to discuss at length particular issues/locations. After conducting the exercise a few times we realized the four-color design outlined above was overly complicated and had too many rules. Residents were worried about following the rules rather than simply talking and sharing experiences in relation to the map, which was the point of the exercise. If replicated, this exercise should involve fewer colors and more directly connect specific dots to resident comments via a system of annotated notes.

Map 2.2 *– Detailed resident responses from mapping exercises*



NOTE: This map locates areas at College Park that the citizens determined as flooding problems

PRIMARY NEIGHBORHOOD FLOODING -
Location where participant felt the most serious flooding in their neighborhood occurred.

SECONDARY NEIGHBORHOOD FLOODING -
Location where participant felt flooding was serious, but was not the most serious occurance in their neighborhood.

FLOODING ON PERSONAL PROPERTY -
Location where flooding occurred on participant's private property.

GREEN INFRASTRUCTURE INVESTMENT -
Location where the participant felt there should be investments in stormwater management and/or public green space.

DATA SOURCES:

ANALYSIS FACTOR - CITIZEN RESPONSES
COLLEGE PARK, MD

PROJECTION:
COORDINATE SYSTEM:
NAD 1983 State Plane

PREPARED BY:
Christopher Blanks
Project Assistant

DATE: 2/12/2015
REVISIONS:

Prepared for:
THE UNIVERSITY OF MARYLAND
ENVIRONMENTAL FINANCE CENTER
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Putting It All Together: A Stormwater Management Benefit Hotspot Map

As described above, a great deal of feedback has been collected and organized related to the College Park community's specific stormwater issues as well as general values. It is our belief that there are a number of ways that this information, coupled with the guiding principles outlined in the beginning of the chapter, will help the City of College Park answer an important set of questions:

- How should the City define an "opportunity" and how can one be identified?
- Where in the City of College Park do stormwater management opportunities exist?
- What is the best way to prioritize and communicate opportunities and benefits?

Through the use of geographic information system (GIS) software and development of a carefully constructed methodology that incorporates community feedback, the EFC believes the City of College Park will have a powerful tool and method for addressing these questions. The **10-3-1 ABC** system for hotspot mapping developed by the EFC can be used by the City to objectively identify, prioritize, and communicate the locational benefits yielded from stormwater management.

There are important financial implications of being able to communicate and demonstrate benefits. For example, when multiple stormwater capital projects across multiple locations are compared, and the projects are likely similar in many ways. This **10-3-1 ABC** map can help indicated projects with the potential to deliver greater community benefit value and as such could receive higher priority.

The process of identifying the potential benefits associated with these "hotspots" is intended to inform the stormwater project investment process. This information, along with hydrology, can be used to evaluate potential BMP and prioritize projects with the potential to deliver community benefits while remaining cost effective. On one level, this creates opportunities for efficiency in capital project planning by deploying limited capital and resources in a way that targets high community benefits. Additionally this may create an opportunity to offset, finance, or leverage capital projects with the locational benefits yielded from the management of stormwater.

Hotspot Mapping Methods and Results

The **10-3-1 ABC** system for mapping stormwater hotspots is designed to highlight locations in College Park where stormwater management will have the greatest potential impact in the community across multiple dimensions. The mapping system recognizes that stormwater investments should be made to serve multiple objectives. Some of these objectives are high priority for the County, such as reducing impervious surface cove or meeting TMDL requirements, while other objectives may be a higher priority for residents and the City, like opportunities to reduce flooding and increasing public green space. There are other objectives, which at first glance may not be directly impacted by stormwater investments, but could definitely be addressed, including economic development, transportation/walkability, and public education. The mapping system is predicated on the principle that (1) investment objectives and community benefits can be expressed as geographic layers, and (2) it is difficult to pick any one objective or geographic layer by which to prioritize stormwater management opportunities, but by focusing on the intersection of multiple objectives across space, it can confidently be said that select areas within the City of College Park warrant prioritization.

The GIS-based process integrates community outreach, interviews with City staff, and pertinent physical attribute datasets to construct the hotspot map for stormwater investment opportunities. The thought process behind the **10-3-1 ABC** system for constructing a hotspot map is as follows:

- Select "10" pertinent spatial layers across "3" categories;
    - Each of the ten layers corresponds to a stormwater driver, such as impervious surface, or an otherwise important community benefit, value, or investment objective, like increasing green infrastructure in the City;
- The "3" categories include **A**biotic (physical, non-living), **B**iotic (living), and **C**ommunity attributes (sociological, economic), or **ABC***;*
- The community layers are developed through community feedback and include high-priority locations identified in the mapping exercise by residents, business owners, or City staff. The community layers can also capture broad values and issues as identified by residents;
- The selected abiotic and biotic layers and the definition applied to them are adjustable depending on community and technical feedback;
- This data is used to develop ten independent maps showing the spatial distribution of the ten different attributes or investment objectives;
- These maps are then used to develop aggregate maps for each of the three categories showing the spatial distribution and highlighting areas based on geographic intersection (i.e., 1 for abiotic attributes, 1 for biotic attributes, and 1 for community attributes);
- The A, B, and C maps are used to develop one final aggregated hotspot map that combines all layers, and each of the categorized maps into a single map highlighting intersections; and,
- Areas where the most layers are intersecting (e.g., 10, 8, 9 independent layers) represent hotspots or top-tier locations and should be prioritized ahead of areas with fewer intersecting layers.

Lesson Learned: Community Context
For different communities with different values, there are resources and established GIS layers by other sources, which can serve as a layer. Even small communities with constrained resources can undertake this exercise by utilizing publicly available GIS layers. For instance:

In summary, there are "10" attributes represented as GIS layers across "3" categories (abiotic, biotic, and community). The areas where multiple layers intersect signal opportunities to address multiple objectives with stormwater investments. One hotspot map can then be constructed, which highlights the ordering of locations ranging from zero to two layers intersecting (low priority investment areas), to locations where there are eight to ten layers intersecting (high priority investment areas).

It is important to emphasize that given the nature of stormwater management and the importance of local hydrology and drainage patterns, upstream/downstream considerations should be factored into the interpretation of the hotspot map. Stormwater – including both large quantities of water and the pollution carried by stormwater – originates from many disperse locations. Stormwater – including both large quantities of

Lesson Learned: Hydrology
Upstream and downstream hydrology and drainage patterns are important factors to consider in the interpretation and use of the

water and the pollution carried by stormwater – originates from many disperse locations. It is not EFC's intention to suggest that hotspot areas are the optimal area to locate stormwater BMPs; rather, we intend to suggest that the hotspot locations have the highest community benefits from stormwater management investments somewhere along the hydrologic flow of stormwater to the benefit location, and precisely where along the hydrologic flow will depend on cost efficiencies.

The purpose of this mapping exercise is to graphically illustrate locations that yield a high combination of community benefits. This could provide the basis for the City, as a next step, to devote resources to an engineering study of the hydrology of the identified areas to better pinpoint where BMPs could potentially address the needs identified and deliver these multiple benefits. And, these associated benefits can be further examined for the purposes of identifying possible revenue streams or opportunities with which to finance or offset the costs of the stormwater capital project costs.

Table 2.3 offers an explanation of the ten attribute layers selected for the City of College Park. The method for defining each of the layers is binary, meaning the layer either exists or does not as based upon our definition. For example, although a range of land slope gradient in College Park could be shown, EFC staff elected to highlight only the areas with less than 2% slope, which was deemed a reasonable threshold for flat, poorly draining land. All areas of College Park with less than 2% slope are included in the layer, and all areas greater than 2% slope are excluded. Each is also subject to a threshold or buffer distance as selected by EFC staff. The layer thresholds and buffer distances can and should be revised in future iterations of this exercise as necessary.

***Table 2.3** – Summary of 10 attributes or geographic layers used in analysis*

Attributes used in analysis	Defined as…	Justification	Data Source
Abiotic Factors			
1. 100-year floodplain	The full extent of the Prince George's County built-out 100-year floodplain within College Park. *(23.8% of the City, 850 acres)*	Floodplains provide stormwater storage and slows the velocity of water thereby reducing flooding (Watson 2011)	FEMA, PG County full build-out obtained from Prince George's County OIT.
2. Slope gradient	All areas with <2% slope. *(11.5% of the City)*	Slopes with less than 2% slope generally drain too poorly and experience occasional standing water (Booth 1983)	Slope layer generated from DEM data obtained from the City of College Park.
3. Soil type	Hydrological groups C, D, and B/D. *(70.3% of the City)*	These soils have a slow to very slow rate of water transmission, and therefore a higher potential for stormwater runoff. (NRCS 2015)	USDA-NRCS Web Soil Survey (WSS).
4. Impervious Surface	Raster cells with an imperviousness value >= 75%. *(12.2% of the City)*	Increases stormwater runoff discharges, reduces time needed for runoff to reach surface waters, and increases frequency and severity of	National Land Cover Database (NLCD): NLCD 2011 Percent Developed

		flooding (LaGro 2013)	Imperviousness.
Biotic Factors			
5. Tree Canopy	Areas lacking significant tree canopy coverage. *(71.3% of the City)*	Large trees provide multiple ecoservices including reducing stormwater runoff quantity and improving runoff quality (Urban 2008)	2011 Tree Canopy Layer obtained from Prince George's County OIT.
6. Green Infrastructure	Green infrastructure gaps, or areas that complete green infrastructure corridors. *(7.8% of the City)*	Provides connectivity between habitat patches (Dramstad 1996)	Maryland Department of Natural Resources, GreenPrint.
Community Factors			
7. Transportation/ Walkability	¼ mile buffer (10 min. walk) around all bus stops. ½ mile buffer (10 min. walk) around Metro/MARC stations. 50 ft. buffer along Baltimore Ave., Paint Branch Pkwy, and Guilford Dr. *(69.2% of the City)*	Residents identified transportation as a top priority. Baltimore Ave., Paint Branch Pkwy, and Guilford Dr. were identified as particularly valued.	Resident survey responses from City of College Park, 2015.
8. Commerce and Economic Development	All parcels zoned as commercial or mixed-use. *(9.2% of the City)*	Economic development identified as a top priority by residents. Commercially zoned parcels serve as a proxy for economic development.	Resident survey responses from City of College Park, 2015.
9. Residents of College Park identified problem spots	200-ft buffer around all citizen identified problem areas. *(6.5% of the City)*	These areas reflect the specific locations most important to residents and businesses.	Citizen mapping exercise, 2015.
10. City of College Park staff identified problem spots	5 areas identified by City Engineer as experiencing greatest stormwater problems, defined by floodplain when available. *(8% of the City)*	These areas reflect the knowledge and experience of City staff.	City staff mapping exercise, 2015.

Based on the survey results, and in particular the question about the top three issues in College Park, transportation/walkability and commerce and economic development were selected as two of our community layers. The inclusion of a transportation layer, and the emphasis on Route 1, Paint Branch Parkway, and Guilford Drive specifically, is strongly supported by the survey results. Economic activity (i.e., commerce and economic development), on the other hand, ranked fifth in issues the College Park community prioritized after transportation, flooding, public green space, and the cost of living.

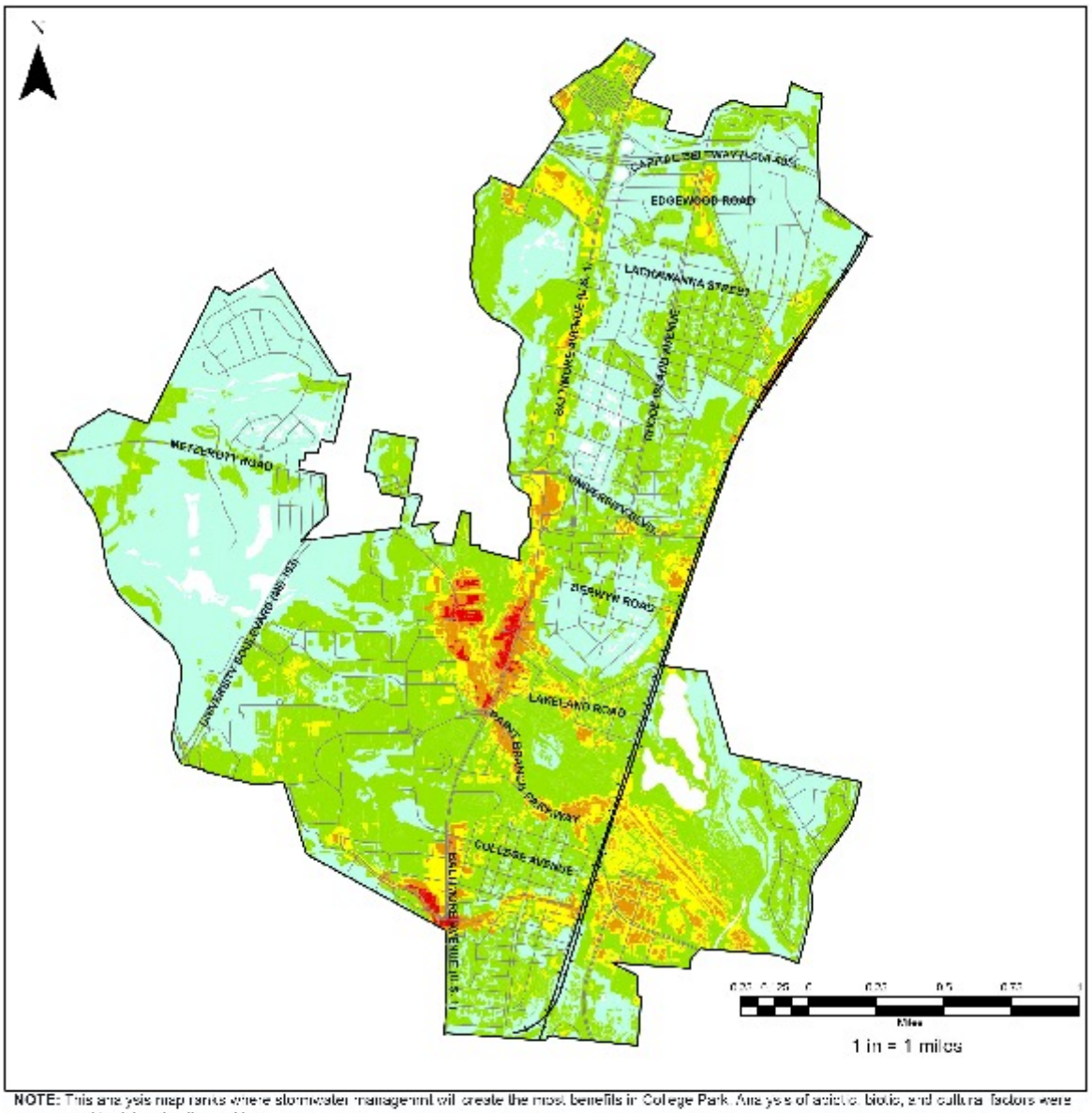
The EFC believes including economic development and commerce as a layer is justified. First, the difference in total responses between the top five issues was small; consequently, there was a need to appropriately represent the top five issues. Additionally, EFC staff concluded flooding and public green space are adequately represented in other abiotic and biotic layers, and that cost of living would be a challenging attribute to represent with spatial data. Commerce and economic development, as represented by parcels zoned as commercial or mixed-use, serves as one of our community layers primarily because the business sector of College Park was under-represented via the outreach process,

and the importance economic activity that was indicated in the survey response. By including commerce and economic development as one of our ten layers, the EFC sought to include a factor which demonstrates the importance of the business community in the stormwater investment process. The EFC acknowledges any debate as to whether or not land use zoning is the best spatial representation of economic activity, but determined this was the most readily available proxy. The final hotspot map aggregating each of the ten layers across three categories highlights the locations where the most layers are intersecting (see Map 2.3 below). For simplicity, each of the ten layers is weighted equally, but an alternative map weighing community feedback above other attributes is available in Appendix F.

Lesson Learned: Sometimes All Things Are NOT Created Equal

It is possible to integrate a weighting system into the City's hotspot map whereby one or two layers are valued more than others. For example, the direct feedback from residents and City staff (i.e., mapping results) is incredibly valuable and could justifiably be given a higher weight than other layers. Additionally a different community may discover in the outreach process that one benefit value is significantly more important than other values. Thus a different community may wish to alter the weighting.

Map 2.3 *– Hotspot map of stormwater benefits and opportunities in College Park*



NOTE: This analysis map ranks where stormwater management will create the most benefits in College Park. Analyses of additional biotic and cultural factors were used to determine the rankings.

HIGHEST BENEFITS FROM STORMWATER MANAGEMENT (10.60 ac)

MODERATELY HIGH BENEFITS FROM STORMWATER MANAGEMENT (152.36 ac)

MODERATE BENEFITS FROM STORMWATER MANAGEMENT (294.56 ac)

MODERATELY LOW BENEFITS FROM STORMWATER MANAGEMENT (1,571.69 ac)

LOWEST BENEFITS FROM STORMWATER MANAGEMENT (1,444.50 ac)

DATA SOURCES:

The map is the product of overlaying biotic, biotic and cultural analysis maps created by the University of Maryland Environmental Finance Center. These see previous analyses maps for more data sources.

FINAL ANALYSIS - STORMWATER MANAGEMENT

COLLEGE PARK, MD

PROJECTION: Lambert Conformal Conic
COORDINATE SYSTEM: NAD 1983 State Plane Maryland FIPS 1900

PREPARED BY: Christopher Stiska, Project Assistant

DATE: 2/12/2015
REVISIONS: 5/1/2015 Symbology revised

Prepared for:
THE UNIVERSITY OF MARYLAND
ENVIRONMENTAL FINANCE CENTER

EFC

www.efc.umd.edu

The highlights of the map as follows:

- Areas along Guilford Run at Route 1 and east towards the railroad tracks are considered to be a stormwater hotspot. This result is consistent with feedback from the Calvert Hills Civic Association meeting and survey responses in which 75 percent of property owners said stormwater was a moderate to serious concern;

- Much of Old Town College Park is considered to be a stormwater hotspot as the area is very flat, downstream from the University, and has significant traffic, the combination of which results in nuisance flooding for businesses and customers during extreme rain events. This result is consistent with feedback from the Downtown College Park Management Authority meeting and comments from business-owners.

- Much of Route 1 north of Paint Branch Parkway and south of Greenbelt road is considered a stormwater hotspot by virtue of physical attributes and by extension of community values. It is important to point out that very few residents or businesses pointed this specific area out via our mapping exercise. This outcome does not show that issues do not exist here, but rather that EFC was unable to target property-owners in this part of the City as part of our outreach.

- Residential areas to the north of the City including specifically properties along 51st and 52nd Avenues are not identified as hotspot areas in the map below. Nonetheless, 76 percent of property-owners in the North College Park Civic Association say that stormwater is a serious to moderate concern on their property and the City engineer emphasized the area as being a high priority. The area does not show up on our hotspot map because it includes a significant amount of tree canopy, is not in a floodplain, and doesn't include any of the highly impacted roads in the City. Despite not showing up on the hotspot map, the area is a high priority.

Chapter 3 - City Stormwater Responsibilities: Strategies for Compliance and Financing

The City of College Park shows a clear commitment to reducing runoff and preventing pollution through public outreach and engagement activities. The City's current Strategic Plan identifies "developing strategies to effectively manage local water resources and stormwater runoff" as an objective,[23] and the associated Action Plans for fiscal years 2013 through 2015 include ongoing outreach efforts with various partners to discourage illegal dumping and encourage reducing impervious surface on public and private property.[24] In addition, the City's *Resident Information Guide* covers topics such as recycling and proper waste disposal including yard waste and hazardous materials.[25]

The City also has a variety of entities working on various aspects of stormwater outreach and engagement, such as the Sustainable Maryland Green Team's work to promote a holistic vision for the City; the Committee for a Better Environment's activities including workshops, planting events, Earth Day celebrations, and educational brochures; and, the Tree and Landscape Board's promotion of enhancing the City's tree canopy and green space. While these many efforts are in and of themselves effective, they do not currently appear to be a cohesive or coordinated effort. The City could greatly enhance the impact of these activities and create efficiencies that could potentially result in cost-savings if there were an overarching plan guiding their implementation.

It starts with a plan. From a financing perspective, a good outreach and engagement plan will ensure that resources invested in these activities are directed towards the specific needs and objectives that the City, its residents, and its businesses have identified as priorities. These plans typically incorporate a number of components including the goals of the community; the target audiences that need to be reached; the messaging that will best promote behavior change; the best methods for formatting and distributing messaging; and, the method for evaluating impact.

When moving from planning to implementation, there are several additional considerations that could improve impact, such as defining a local leader who can coordinate activities and maintain momentum over time; ensuring consensus around the plan among leadership and stakeholders; seeking out partnerships that will reduce the burden to the City; planning to track work for reporting to the County, state, and federal entities as needed; and, evaluating success and adapting the approach based on lessons learned, as well as shifts in local needs and priorities.

[23] www.collegeparkmd.gov/document_center/Admin/Other/Strategic_Plan_2010_2015_Approved_8_10_10__Revised_June_14_2011.pdf

[24] www.collegeparkmd.gov/document_center/Admin/Other/FY_2015_Action_Plan_approved_5_27_2014.pdf
www.collegeparkmd.gov/document_center/Admin/Other/FY_2014_Action_Plan___Approved_May_14__2013.pdf
www.collegeparkmd.gov/document_center/Admin/Other/FY_2013_Action_Plan_Approved_July_10__2012.pdf

[25] www.collegeparkmd.gov/document_center/PublicWorks/Resident_Guide_2013_2014_FINAL.pdf

Outreach and Engagement Strategies and Recommendations

Develop an overarching Public Outreach & Engagement Plan. An Outreach & Engagement Plan can serve as a roadmap for the City on these activities and ensure a level of coordination that leverages partnerships and existing programs and avoids duplication of efforts. A sample Year One Plan is offered as an appendix to this report. This Plan attempts to align efforts the City is already engaged in or could relatively easily take on with little additional expense or capacity. The Plan focuses on subject areas that will serve both the City's own permit responsibilities, as well as the expectations of the agreement with the County. It also includes community examples of each of the ideas suggested and contact information for the potential partners and programs suggested. During the course of Year One, the City will want to consider if there are concerns, target audiences, and messages specific to College Park's circumstances that should be incorporated into this plan in subsequent years.

For Year One, the goals, audiences, messages, and distribution methods of the outreach plan are admittedly general. These are designed to bring the City's stormwater outreach and engagement resources and opportunities to a level of service that meets the City's obligations under their Phase II permit, as well as their agreement with the County, while also laying the groundwork for more targeted activities to be incorporated down the line. There are several immediate and relatively low-cost ways of establishing a more prominent stormwater outreach and engagement presence, including web-based and print materials and capitalizing on existing resources.

Develop web-based stormwater management and pollution prevention information. Having stormwater management and pollution prevention educational materials centrally located and available on the City's website would be a highly cost-effective way of connecting with a broad audience. Web-based information also allows for quick and easy updates as new or more targeted information is available and provides the opportunity for site visitors to connect with partner organizations and agencies that can provide technical information or assistance outside of the City's skill set.

Communities who use this communications vehicle for their MS4 program typically incorporate information on the types of pollutants that can be an issue, the impact these can have on water quality, and the practices residents and businesses can implement to address these issues. A stormwater-focused page on the City's website could also promote opportunities for citizens to become engaged in stormwater program decision-making, stream cleanups and other activities, and the installation of practices on their own properties, as well as resources to support these practices such as the County's Stormwater Stewardship grants and Rain Check rebate program, both of which are administered by the Chesapeake Bay Trust. Several examples of effective stormwater education websites can be found in the Outreach & Engagement Plan appendix of this report.

Develop a series of brochures that build on existing resources. Educational brochures can also be a cost-effective way of disseminating stormwater management and pollution prevention information. Developing a collection of brochures allows messaging to target various audiences and the specific steps they can take to address the issue. Subject areas often include ways to limit the use of pesticides and

fertilizers; to properly dispose of contaminants like pet and yard waste, fats-oils-grease, and hazardous materials; and, to reduce runoff through proper car washing techniques and water harvest and infiltration practices like rain barrels and rain gardens. There are a number of City groups and committees, as well as the County and local nonprofit organizations operating in the watershed that have already developed and distribute these types of brochures. The City will want to ensure existing brochure resources are available in the brochure racks at City Hall and the DPW building, assess the collection for information gaps and develop additional materials, and identify other opportunities to share these materials with the appropriate audiences.

Consider the need for more targeted Year One outreach via door hangers. For specific audiences that need to be reached with a more targeted message, many communities find door hangers with attached magnets to be an inexpensive and effective way of relaying stormwater management and pollution prevention information and engaging segments of the community. Designed to go straight from the front door to the refrigerator door, this type of door hanger usually features print information about the importance of keeping water clean and reducing flow, as well as the steps the target audience can take to assist in this effort. They also feature a magnet that can serve as a reminder of what to do or a reference for whom to contact with questions or concerns, providing another avenue for citizens to engage in the City's program.

Municipal Properties and Operations Strategies and Recommendations

Develop and implement written operation and maintenance (O&M) program to prevent or reduce pollutant runoff from municipal operations. Identify and document all municipal operations, facilities, activities and land uses that are owned or operated by the City and have the potential for generating stormwater runoff, including activities conducted by contractors. Municipal operations include the following: street sweeping; snow removal/deicing; inlet/outfall cleaning; lawn/grounds care; general storm sewer system inspections and maintenance/repairs; park and open space maintenance; municipal building maintenance; new construction and land disturbances; right-of-way maintenance; vehicle operation, fueling, washing and maintenance; and material transfer operations, including leaf/yard debris pickup and disposal procedures. Facilities can include parking lots and other large paved surfaces; maintenance and storage yards; waste transfer stations; parks; and fleet or maintenance shops. This information should be reviewed and updated each year and tracked. [26]

Emphasize pollution prevention and good housekeeping measures. Compile site-specific information, and address issues such as management practices, maintenance activities, inspection procedures, pollutant discharge controls, and waste disposal procedures. [27]

Provide employee training to prevent and reduce stormwater pollution from maintenance, new construction, and stormwater system maintenance of municipal operations. Implement a training

[26] U.S. EPA, Stormwater Phase II Final Rule Fact Sheet Series, Minimum Control Measures, 2.8, Pollution Prevention/Good Housekeeping.
[27] U.S. EPA, Stormwater Phase II Final Rule Fact Sheet Series, Minimum Control Measures, 2.8, Pollution Prevention/Good Housekeeping.

program that identifies the topics to be covered, as well as training methods and materials ensuring all relevant parts of the stormwater program that could affect municipal operations, such as illicit discharge detection and elimination, construction sites, and ordinance requirements, are covered. Annually review and update the training program, and fully document the offerings in periodic reports.

Develop controls for reducing or eliminating the discharge of pollutants from areas such as parking lots, maintenance and storage yards (including salt/sand storage and snow disposal areas), and waste transfer stations. These controls could include programs that promote recycling (to reduce litter), minimize pesticide use, and ensure the proper disposal of animal waste.

Develop procedures for the proper disposal of waste. This should include waste removed from separate storm sewer systems and municipal areas listed including dredge spoil, accumulated sediments, floatables, and other debris. This should be tracked and documented.

Ensure the proper maintenance of the BMPs implemented. For example, structural controls, such as grates on outfalls to capture floatables, typically need regular cleaning, while non-structural controls, such as training materials and recycling programs, need periodic updating.

Develop, implement and maintain a written operation and maintenance (O&M) program for all municipal operations and facilities that could contribute to the discharge of pollutants. The O&M program should stress pollution prevention and good housekeeping measures, contain site-specific information, and address:

- Management practices, policies, procedures that reduce or prevent the discharge of pollutant. Consider eliminating maintenance-area discharges from floor drains and other drains if they have the potential to discharge to storm sewers;
- Maintenance activities, maintenance schedules, and inspection procedures to reduce the potential for pollutants;
- Controls for reducing or eliminating the discharge of pollutants from municipal parking lots, maintenance and storage yards, waste transfer stations, fleet or maintenance shops with outdoor storage areas, and salt / sand (anti-skid) storage locations and snow disposal areas; and,
- Procedures for the proper disposal of waste removed from municipal operations, including dredge spoil, accumulated sediments, trash, household hazardous waste, used motor oil, and other debris. [28]

MCM Cost Estimate

The EFC estimates that the cost to implement activities in support of compliance with the City's Phase II permit MCMs is in the range of **$32,000 annually.** The methodology used to develop this estimate assumes that there is minimal current effort to complete these tasks and no existing capacity within the City, an assumption which may be overly conservative. Details on how this estimate was developed are contained in Appendix B. To offer a sense of scale, our estimate of staff and resources needed to

[28] U.S. EPA, Stormwater Phase II Final Rule Fact Sheet Series, Minimum Control Measures, 2.8, Pollution Prevention/Good Housekeeping.

implement MCMs 1, 2 & 6, assuming no current capacity in workflow, is less than a tenth of a percent of total property tax revenue. The cost to implement a fee or other funding mechanism for this amount is most likely not cost effective for the City, and until such time as the scale of these activities becomes significantly more costly the city should consider funding these operations through the general fund.

Chapter 4 - The Financing Implications of Recommended Strategies

The **10-3-1 ABC** mapping exercise can be used in a way that helps the City realize cost savings, develop programmatic efficiencies, and leverage outside resource. Co-designing and co-scheduling capital stormwater management projects in an effort to achieve multiple co-benefits has been shown to improve efficiencies, save scare capital funds, and also improve the ability to leverage and access additional sources of capital. By example, a recent study in the City of Lancaster showed that cost of including green infrastructure that is built at the same time as other capital improvements is approximately 45% lower than implementing green infrastructure projects in a stand-alone manner.[29]

Leverage the Capital Improvement Program

The City of College Park's 2016 Capital Improvement Program offers one avenue to create efficiencies and leverage funding. The City's capital improvement budget for the next five years is approximately $48.6 million. Table 4.1 below contains a list of projects and programs which, given their locations, or the nature of the project, may yield future benefits from coordination, such as co-design or co-scheduling, with stormwater planning. By using the map to identify where a non-stormwater capital improvement project is located in relation to the location of community benefits from stormwater management, the City may be able to create efficiencies and leverage additional sources of funding by demonstrating and communicating how the non-stormwater capital project can manage, control, or treat stormwater. Additionally, by co-planning and co-scheduling stormwater and non-stormwater capital projects, the City and County may be able to create efficiencies and economies of scale by allocating fixed project costs such as site preparation, earthwork and equipment across multiple co-scheduled project objectives.

Table 4.1 – FY 2016 Capital Improvement Plan

Project	Schedule of Expenditures by Project by Year	Total	Thru FY15	FY16	FY17	FY18	FY19	Past FY19
113004	Green Streets	$202,140	$35,000	$167,140	$0	$0	$0	$0
103004	Hollywood Commercial Revttalization	$1,324,995	$24,995	$300,000	$500,000	$500,000	$0	$0
103002	Hollywood Gateway Park	$727,778	$122,948	$454,830	$150,000	$0	$0	$0
073004	Hollywood Road Extended	$500,000	$0	$75,000	$425,000	$0	$0	$0
045008	Pavement Management Plan	$3,588,891	$467,891	$721,000	$600,000	$600,000	$600,000	$600,000
963028	Program Open Space Acquisition Projects	$946,427	$373,256	$75,000	498, 171	$0	$0	$0
143001	Route 1 Underground Utilities	$15,175,000	$140,000	$300,000	$655,000	$0	$14,080,000	$0
041003	City Hall Expansion	$8,705,021	$402,724	$302,297	$8,000,000	$0	$0	$0
163001	Complete Streets	$181,524	$30,000	$151,524	$0	$0	$0	$0
103001	Downtown Streetscape #2	$510	$108,605	$401,015	$0	$0	$0	$0
015002	Public Works FacilityImprovements	$1,178,528	$185,765	$992,763	$0	$0	$0	$0
091004	Sustainability Initiatives	$118,451	$60,615	$57,836	$0	$0	$0	$0
	Total Expenditures	**$34,207,298**	**$2,998,750**	**$4,322,363**	**$10,517,124**	**$1,100,000**	**$14,680,000**	**$600,000**

[29] water.epa.gov/infrastructure/greeninfrastructure/upload/CNT-Lancaster-Report-508.pdf

For instance, in Table 4.1, Project 143001 indicates that the City is planning to undertake a capital project for underground utility work along Route 1. The project is currently in the design phase with construction estimated to begin in fiscal year 2019. The hydrological nature of the flow of stormwater through College Park is such that it intersects with Route 1 at multiple locations, and, many of the stormwater management benefit "hotspot" areas depicted on the **10-3-1 ABC** map include areas that intersect with Route 1. If engineering, site work, trenching and regarding work is being done as part of the future underground utilities plan, there may be synergies and efficiencies created by also evaluating and implementing stormwater management during this work. While the EFC is not suggesting that all of the stormwater management practices that might be needed in these locations could be included in such a project, but rather that the nature of underground utility work is such that the landscape will be altered for a period of time, and the fact that engineering design, capital, equipment, and other resources will be deployed in this area may allow for an opportunity to incorporate some stormwater design and construction activities that could yield at least some stormwater management benefits in the area.

Additionally there may also be the ability to leverage outside capital in the project by communicating the stormwater management benefits which exist at the location of the project. The exact costs of stormwater management practice which could be installed in combination with underground utility work is not known with certainty without more engineering work. However, what is known is that there are certain locations along Route 1 of high benefit and that co-scheduling and co-designing green infrastructure and stormwater management project with other capital projects can result in significant savings to the cost of installing green infrastructure practices. As a result, there exists an opportunity to communicate potential benefits and potential costs savings to the county. Such cost savings could possibly be used to help finance the overall costs of the combined project, even assuming an efficiency rate significantly much lower than the 45% cited above.

For instance, the five year budget for underground utilities is in excess of $15 million. As above, if an ultra-conservative goal of a 1% leverage or efficiency with stormwater was set for the underground utilities project, hypothetically, this could yield $150,000 in possible leverage with stormwater. The cost to the County of installing stormwater practices in the area of Route 1 is not known; however, it assumed that those costs would also be significant. At the very least, given the magnitude of the benefits in these areas and the magnitude of the capital budgets of these projects, a recommendation would be to attempt to align the project with stormwater benefits in the area through co-design to explore additional stormwater benefits which could be yielded and then regularly communicate the stormwater benefits in order to leverage funding sources. If stormwater needs were integrated into the capital improvement plan where possible and cost-effective, it could result in efficiencies and outside leveraged capital over the five years span of the plan.

Regardless of the actual scale of efficiency or leverage achieved, ensuring capital project planning incorporates and evaluation of co-design opportunities is one way the **10-3-1 ABC** map stands to inform decision-making, improve community benefit yields, satisfy local citizens, and improve the competitiveness of projects when attempting to access grant programs and stormwater capital.

Leverage Existing Grant Programs

The City of College Park has rather adeptly made use of grant funding for stormwater projects in the past. The **10-3-1 ABC** map to help the City communicate the co-benefits of stormwater projects will enable College Park to become even more competitive in its applications for grant funding. The following grant programs represent a short list of opportunities the City of College Park might consider pursuing to help defray costs:

- National Flood Insurance Program, Community Rating System – A program that rewards communities for going beyond the minimum national flood insurance program requirements. Rewards do not include grant funding per se; instead, rewards include discounts on flood insurance premiums for the community's policyholders.

- Maryland DNR's Chesapeake and Atlantic Coastal Bays Trust Fund – Municipalities are eligible for funding under the program, which is aimed at maximizing nutrient and sediment reductions into Maryland's waterways by investing in a range of BMPs.

One project in particular that may be a particularly strategic next step would be for the City to pursue grant funding for an engineering study to determine the drainage area and cost of practices where the capital projects above intersect with hydrology and with the benefit "hotspots" to narrow the field of where integrating stormwater and other capital projects stand to provide the greatest level of leverage and co-benefits. An important part of any application for funding would be to articulate the co-benefits indicated by the **10-3-1 ABC** mapping process.

Leverage County Plans and Priorities

The project team reviewed a number of studies performed on project locations in and near College Park. Considering the Hollywood Study Area, portions of the Route 1 Plan, (especially in the areas of Guilford Run and Piney Branch), and the Riverdale Transit Development Plan in the context of the **10-3-1 ABC** map would seem to indicate that stormwater and flood management resulting from the improvements explored in the studies would yield multiple benefits. This could increase efficiencies and suggests additional opportunities for synergy and leverage.

A past flooding study was conducted by RKK for Prince George's County,[30] which identified approximately $3.3 million dollars of mitigation projects to address flooding along Guildford Run. This provides an interesting example to examine how City and County stormwater priorities might be leveraged. The community survey results and the **10-3-1 ABC** mapping indicate that the Guilford Run area ranks high as a "hotspot" for the benefits of addressing stormwater. While the existing Guilford Run effort is a County project, perhaps consider if the City of College Park wanted to undertake such a project. There are many assumptions, but given that there 5,897 parcels in College Park and 30,784 citizen. Assuming the project could be financed over 20 years at a 3% cost of capital, the cost of these improvements, in the absence of other funding sources and future maintenance and staff management,

[30] www.collegeparkmd.gov/document_center/Engineering/Other/County_Storm_Drain_Projects_Jan_2014.pdf

this would equate to approximately $38 dollars per parcel per year, or roughly $7.20 per citizen per year.

However, property owners in the City are currently paying a Clean Water Act Fee to the County for stormwater management projects. Under the assumption that the County finances capital projects through a borrowing or bonding facility with a payback period of 20 years or longer, the annual payment and debt service for the Guildford run project appears to be near to the estimated Clean Water Act Fee paid by the City of College Park property owners.[31]

So, if this project were **not** one that the County was already taking on, but **was** of interest to the City, the opportunity would exist for the City to communicate high stormwater management benefits the Guilford Run project could yield, as well as express how the cost of the project over time is in line with what the City is currently paying into the County fee system.

In short, the City should work to continue to analyze the benefits and risk/damage reduction from stormwater management, and routinely communicate local opportunities that could help the County meet permit, TMDL, and WIP load reductions.

Leverage Existing Resources and Assistance Providers

Beyond the outreach and engagement activities that the City can take on itself, there are a number of ongoing activities in the community and surrounding watershed that offer an important opportunity to partner and leverage existing efforts. Perhaps the most significant opportunity would be for the City to work more closely with the Watershed Restoration Specialists serving Prince George's County who can help the City leverage existing efforts and access additional resources. These are Maryland Sea Grant Extension staff members who work with local governments, citizen groups, and individuals to improve water quality across the state. These specialists are split up across the state geographically and two share responsibility for Prince George's County.

There appears to be two key immediate opportunities for the Watershed Restoration Specialists to help the City advance stormwater outreach and engagement efforts. First, the Watershed Restoration Specialists are acutely aware of existing outreach and engagement efforts in the County and watershed, as well as the stakeholders involved, and could help to connect College Park with partners, whose educational materials, citizen engagement opportunities, special events and voluntary services could be leveraged, thereby reducing the overall burden to the City. The Anacostia Watershed Society, the National Capital Region Watershed Stewards Academy, and the Interfaith Partners for the Chesapeake are just a few of examples of organizations leading ongoing efforts in the County that are well-aligned with the City's stormwater management requirements and priorities, and the Watershed Restoration Specialists could help the City better coordinate with these activities.

Second, the Watershed Restoration Specialists have extensive experience providing site-specific stormwater management technical assistance to property owners; and, they are highly knowledgeable

[31] Detail on estimate contained in Appendix E.

about funding streams that may help defray the costs of installing best management practices. Given the extent to which the community outreach and mapping exercises indicated a significant need for water quantity management on private properties, and the unlikelihood that the public sector would find investing in projects on private property cost-effective compared to implementing projects at a larger scale on public land, the Watershed Restoration Specialists could play a critical role in helping property owners identify appropriate solutions as well as funding opportunities that could help support implementation on private property.

The Watershed Restoration Specialists could be key players in helping the City and private property owner's access existing County funding opportunities. Prince George's County operates a "Rain Check" rebate program that offers incentives to homeowners, businesses, and others property owners for the installation of practices that reduce the quantity of runoff as well as improve runoff water quality. Despite the City's Committee for Better Environment and a number of citizen's associations providing workshops on this opportunity, it appears that few property owners have taken advantage of this program. The Watershed Restoration Specialists work closely with the County and Chesapeake Bay Trust staff members who manage this program. Their ability to help identify appropriate best practices and directly assist community members in navigating the Rain Check program process could significantly increase College Park property owner participation and resolve a number of the private property issues identified in the City.

A second and particularly time-sensitive funding opportunity could serve as an effective starting point for engaging both the Watershed Restoration Specialists and the many potential partner organization operating in the area is the recently announced Prince George's Stormwater Stewardship grants. This program is designed to support "on-the-ground restoration activities that improve communities and water quality and engage Prince George's County residents in the restoration and protection of the local rivers and streams of Prince George's County." Awards from $20,000 to $200,000 are available for water quality projects; citizen awareness and engagement projects can request between $5,000 and $50,000. While municipalities are eligible to apply, participating in a coalition of organizations looking to advance water resource management and stewardship in the City would make for a much more compelling proposal. Applications are due to the Chesapeake Bay Trust by July 30, 2015.

Chapter 5 Next Steps and Recommendations

The hotspot map created for the City of College Park is designed to serve as a tool for identifying, prioritizing, and communicating stormwater benefit opportunities, and should be viewed as a "living resource" and regularly modified as (1) stormwater problems persist and residents/City staff want to record additional evidence; (2) projects are put in the ground and can be documented as having a positive impact (i.e., flooding or otherwise) with photographs or stories; and, (3) community values change. The City can prioritize and update areas of the City where multiple benefit attributes intersect. Some recommended ways of incorporating and using the map are:

- As the endpoint, or a location where benefits in stormwater management investments can accrue. Thinking of the map as a "hub-and-spoke" model, there are multiple stormwater management projects that might be completed upstream from the hotpots to yield these benefits. Working backwards, decision makers can evaluate a portfolio of projects intended to support a hotspot and rank their costs.
- An opportunity to consider community benefits of stormwater management and leverage non-stormwater project and investment activity to yield stormwater benefits through greater coordination, engineering management, and policies.
- A tool for directly engaging Prince George's County to emphasize the importance of specific projects or areas.
- A method to continue to engage residents and achieve buy-in.
- A way to target outreach, scale programs, and direct funding for private property projects. A framework for tracking and communicating where efficiencies or leverage was achieved in by leveraging or co-designing City capital project s with stormwater projects.

The key outcomes of this project include (1) a clearer understanding of the City's Phase II permit requirements and strategies for achieving those requirements, and (2) a stormwater hotspot map, which incorporates community feedback and physical attributes to objectively arrive at a system for prioritizing stormwater actions. The map can be used to effectively communicate with Prince George's County priorities in the city, to target technical assistance towards the neighborhoods with the greatest need, and to co-design capital improvement projects to create efficiencies in the planning process.

EFC has developed a roadmap for the City of College Park to follow containing the responsibilities and actions the City needs to take to effectively manage stormwater and to do so cost effectively, and in partnership with Prince George's County and others. The responsibilities are divided into two categories including the "hard" responsibilities, which the City needs to address to comply with their Phase II permit, and "soft" good governance responsibilities, which the City should address on behalf of its' residents and property-owners. The EFC has strived to provide resources to help the City kick-start the work ahead across each of these stormwater management responsibilities. A list of recommendations are below.

Develop an overarching Public Outreach & Engagement Plan. An Outreach & Engagement Plan can serve as a roadmap for the City on these activities and ensure a level of coordination that builds partnerships, leverages existing programs and avoids duplication of efforts. This Plan attempts to align efforts the City is already engaged in or could relatively easily take on with little additional expense or capacity. The Plan focuses on subject areas that will serve both the City's own permit responsibilities, as well as the expectations of the agreement with the County.

Develop web-based stormwater management and pollution prevention information. Having stormwater management and pollution prevention educational materials centrally located and available on the City's website would be a highly cost-effective way of connecting with a broad audience. Web-based information also allows for quick and easy updates as new or more targeted information is available and provides the opportunity for site visitors to connect with partner organizations and agencies that can provide technical information or assistance outside of the City's skill set.

Develop a series of educational brochures, flyers, and door hangers. Educational brochures and door hangers can be a cost-effective way of disseminating stormwater management and pollution prevention information. Developing a collection of brochures allows messaging to target various audiences and the specific steps they can take to address stormwater issues.

Develop and implement written operation and maintenance (O&M) program to prevent or reduce pollutant runoff from municipal operations. Identify and document all municipal operations, facilities, activities and land uses that are owned or operated by the City and have the potential for generating stormwater runoff, including activities conducted by contractors.

Co-design capital improvement projects to include stormwater management benefits to leverage funding sources and create efficiencies. By integrating stormwater best management practices into capital improvement projects, whether explicitly required or not, the City can attract additional financial support from the County or possibly grant dollars. For example, the City's capital improvement plan calls for underground utility work along Route 1 in FY 19. Many areas of Route 1 fall within the highest priority areas per the hotspot map, so it stands to reason that the City may be able to garner financial support from the County or others to integrate stormwater management BMPs into the project.

Utilize existing resources and assistance providers. Beyond the outreach and engagement activities that the City can take on itself, there are a number of ongoing activities in the community and surrounding watershed that offer an important opportunity to partner and leverage existing efforts. Perhaps the most significant opportunity would be for the City to work more closely with the Watershed Restoration Specialists serving Prince George's County who can help the City leverage existing efforts and access additional resources.

Focus on stormwater hotspots as areas that stand to benefit the most from capital improvements and regular stormwater maintenance. The hotspot map incorporates abiotic, biotic, and community feedback as geographic attributes, or "layers", and prioritizes the areas where the majority of these layers intersect. Each geographic layer is defined in a way where its presence is a bad stormwater management such that a threshold has been crossed. For example, EFC selected land slope less than 2 percent, the 100-year floodplain, and resident feedback about the most flood-impacted roads in College Park, among others, as important layers indicating the status of stormwater management in College Park. EFC does not intend to suggest that hotspot areas are the optimal area to locate stormwater BMPs; rather, we intend to suggest that the hotspot locations have the highest community benefits from stormwater management investments and the precise location of stormwater investments may need to occur upstream along the hydrologic flow.

Project Team

Joanne Throwe, Director, Environmental Finance Center – jthrowe@umd.edu Hired in 2005 as the EFC's Agricultural Program Leader, Joanne Throwe became Assistant Director in 2007, Associate Director in 2008, and Director in 2009. In addition, she completed an 18-month assignment working with USDA/CSREES as shared-faculty to assist in the coordination of special agriculture projects. Ms. Throwe works with communities in the Mid- Atlantic region implementing innovative financing solutions for environmental protection. Her work experience includes extensive knowledge about agriculture, green infrastructure, biofuels, ecosystem services and solid waste management. Prior to joining the EFC, Ms. Throwe spent several years as a Development Resource Specialist at USDA's Foreign Agriculture Service and two years as an Agriculture Extension Agent for Peace Corps in the South Pacific. She holds a M.A. in Public Policy and Private Enterprise from the University of Maryland.

Eric Reed, Research Associate – Fiscal and Financial Analysis – ereed1@umd.edu - Eric's focus is on financial analysis to support the development of efficient, effective, and sustainable financing strategies for addressing resource management issues. He is involved with the development of a cohesive water infrastructure financing program that supports and expands the capacity of the EFC's Stormwater Financing and Outreach Unit and EFC's Water Systems Financing Unit. Eric also supports projects in which analysis can improve infrastructure asset management and the return on investments in sustainable projects. Eric holds an M.B.A. in Finance from The Robert H. Smith School of Business at The University of Maryland and a B.A. in Social & Behavioral Sciences from The Johns Hopkins University.

Sean Williamson, Program Manager - Climate Change and Energy - srw46@umd.edu - Sean joined the EFC in 2012 and manages energy and climate change work. Sean is actively involved in the Maryland Smart Energy Communities program, University System of Maryland greenhouse gas analysis, and stormwater projects for the Center. Prior to joining EFC, Sean worked at the Center for Integrative Environmental Research at the University of Maryland for three years where he researched renewable energy, greenhouse gas reduction policies, and ecological economics. Sean strives to make data-driven decision-making and clear communication the central components of his work with communities and stakeholders. He graduated from the University of Maryland School of Public Policy with a Master of Public Policy and holds a Bachelor of Science from Cornell University.

Jennifer Cotting, Research Associate – Green Infrastructure - jcotting@umd.edu – Jennifer joined the University of Maryland Environmental Finance Center in 2004 and is currently a Research Associate for Green Infrastructure. As a Research Associate, Jennifer manages EFC's green infrastructure programming which spans large landscape conservation and habitat management, as well as urban land use and stormwater management applications of green infrastructure. Jennifer serves as a guest lecturer on green infrastructure financing for Virginia Tech's Executive Masters in Natural Resources Program as well as the Conservation Fund's course Strategic Conservation Planning Using a Green Infrastructure Approach. Current and recent projects include: Assessing Federal Green Infrastructure Programming; Improving Local Government Capacity to Implement Watershed Planning; and Development of the National Urban and Community Forestry Advisory Council's Ten Year Action Plan. Prior to becoming a Research Associate, Jennifer served as the Center's Assistant Director for three

years and spent five years as a Program Manager. She received her M.S. in Sustainable Development and Conservation Biology from the University of Maryland and her B.A. in Communications from Marymount University.

Chris Shipley, Graduate Assistant – Graphical Information Science

With Contributions from:

Jill Jefferson – Program Manager – Sustainable Agriculture
Mariko Terasaki – Graduate Student Project Assistant
Albert Engel – Graduate Student, Project Assistant
Teresa Russell – Project Assistant, Student

Appendix A - Outreach Resources

Creating a plan. As suggested in the narrative of this document, the EFC recommends that the City develop an overarching stormwater outreach and engagement plan. Relying on a consensus-driven, adaptive plan will enable the City to realize certain efficiencies in program implementation and leverage the many existing efforts at work in the watershed and the capacity of the stakeholders involved.

Developing this plan is an analytical process that should include the following considerations:

Goal	Activity
Develop an overarching stormwater outreach and engagement plan to guide future efforts	Identify pollutants of concern (PoC)
	Identify target audiences associated with pollutants of concern
	Define message that resonates with each target audience and desired action to be communicated
	Determine the best way to deliver information to each target audience
	Consider potential partners already at work in the watershed to engage
	Determine how the City can promote existing engagement opportunities
	Identify engagement opportunity gaps that the City could fill
	Anticipate associated expenses for each activity
	Define evaluation method for each activity
	Identify process and timing for plan review and adaptation based on outcomes

Again, as the narrative of this report suggests, while the overarching plan is under development, there are still a few outreach and engagement activities that the City could begin to implement immediately with little resources needed and potentially significantly partnerships to be established. The suggested initial activities focus on pollutants associated with the City's obligations to the County permit. Any additional Pollutants of Concern (PoCs) specific to the City will be identified as a part of the larger outreach and engagement planning process and can be addressed in future years. The EFC offers guidance on these activities in the chart below; in addition, contact information for key personnel associated with immediate opportunities.

Goal	Activity	Target Audience	Message	Potential Evaluation
Help citizenry develop a better understanding of stormwater	Add a stormwater page to City website	General public	Explain why stormwater matters Help connect land activities to water management impacts	Website hits
	Develop a brochure series that complements existing resources			Brochures distributed, % population reached
Better engage citizens in pollution prevention and water quality and quantity management	Include everyday action steps available and promote volunteer opportunities on the City's stormwater webpage	Residential, commercial, nonprofit, faith-based, and other audiences	Communicate steps audience can take to reduce runoff or prevent pollution or activities community members can participate in	Website hits
	Develop a brochure series that complements existing resources	General public	Explain why stormwater matters and actions to be taken	Brochures distributed, % population reached
	Consider door hangers with magnets to target specific audiences	Residential, commercial, nonprofit, faith-based, or geographically specific audiences	Directly connect target audience with information on their role in improving stormwater management and pollution prevention	Hangers distributed, % population reached, response increase
Connect private property owners to existing resources to address geographically specific issues	Engage Maryland Sea Grant Extension Watershed Restoration Specialists responsible for Prince George's County	Private property owners	Communicate opportunities for private property owners to connect with existing resources	Number of participants, increase in City property owner participation
	Promote the Prince George's County Rain Check rebate program			

	Coordinate potential proposal partners to pursue a Prince George's County Stormwater Stewardship program grant	Private property owners and other potential City partners	Communicate opportunity to fund locally important project(s)	Number of new partners engaged, successful proposal

Outreach and Engagement Examples. There are many good examples of the types of activities suggested in this plan; some are offered below. In addition, contact info for key personnel for the programs indicated here can be found as well.

Website examples

- Prince George's County: www.princegeorgescountymd.gov/sites/StormwaterManagement/Services/CleanWaterActFees/BMP/Pages/default.aspx
- Montgomery County: www.montgomerycountymd.gov/dep/water/stormwater.html
- Anne Arundel County www.aacounty.org/DPW/Watershed/
- Lancaster, PA www.saveitlancaster.com/
- Stormwater Overview www.stormwaterpa.org/why-overview.html
- Maine www.thinkbluemaine.org/

Door hanger example

- www.3riverswetweather.org/storm-water-green-solutions/stormwater-bmps/storm-drain-stenciling-program

Outreach plan support

- water.epa.gov/plaster/npdes/swbmp/upload/getnstep.pdf
- www.epa.gov/nps/toolbox

Watershed Restoration, Rain Check, and Stormwater Stewardship Contact information

Contact	Program	Phone	Email
Jackie Takacs	Watershed Restoration Specialist	240-393-65082	Takcas.mdsg@umd.edu
Amanda Rockler	Watershed Restoration Specialist	301 590 2816	arockler@umd.edu
Natalia Sanchez	Rain Check Program Chesapeake Bay Trust	410-974-2941 ext 114	nsanchez@cbtrust.org
Sadie Drescher	Prince George's Stormwater Stewardship Chesapeake Bay Trust	410-974-2941 ext 103	sdrescher@cbtrust.org

Appendix B – College Park Stormwater Survey

College Park Stormwater Survey

Fall 2014

The University of Maryland Environmental Finance Center and the City of College Park want to know more about your stormwater concerns. All citizens are invited to participate in this short survey. The feedback from this survey will help to understand stormwater issues in the City and better prioritize capital improvement and stormwater investments. **Please complete and return the survey.**

> ***Stormwater*** *is water runoff generated when rain and snowmelt events flow over land, structures or other impervious surfaces and does not percolate into the ground. Stormwater carries pollution into area waterways including the Chesapeake Bay. During extreme rain events stormwater can create high water conditions disrupting lives and damaging property.*

In June 2014, the City of College Park experienced a series of intense rain events that resulted in closed roads, property damage, and disrupted lives. Events similar to those of June 2014 will likely continue to occur resulting in impacts to citizens and property throughout the City. Working with the University of Maryland Environmental Finance Center, the City is seeking feedback from citizens about their stormwater concerns and what steps they would like to see taken to reduce stormwater impacts.

Photo: Flooding from June 2014 event at Paint Branch Parkway near College Park Metro Station. Credit: WTOP News, Washington, D.C.

Survey Disclaimer:

This voluntary survey is open to anyone who spends time in College Park, MD. The results of this survey will be used to work towards better stormwater management solutions. Further inquiries can be sent to collegeparkstormwater@gmail.com or you may call Sean at 301-405-8259.

PRIVATE and PUBLIC PROPERTY STORMWATER SURVEY

1. **What is your tie to the City of College Park?** *Please check all the apply*

   ☐ Renter ☐ Homeowner ☐ Business owner ☐ Work in area ☐ University student ☐ University employee ☐ Other _____

2. **Please tell us where you live/work in College Park:** _____

3. **How do you commute within College Park?** *Please check all that apply*

   ☐ Walk ☐ Drive ☐ Bus ☐ Metro ☐ Rail ☐ Bike ☐ Other: _____

4. **How would you characterize stormwater on the property where you spend most of your time in College Park?** *Check just one*

   ☐ A non-issue ☐ A small concern ☐ A moderate concern ☐ A serious concern

5. **During most rain events, how would you characterize stormwater on your commute within College Park?** *Check just one*

   ☐ A non-issue ☐ A small concern ☐ A moderate concern ☐ A serious concern

6. **For you and your family, how would you describe the rain events of June 2014?** *Check just one*

   ☐ Not really a problem, no impacts ☐ Somewhat of a problem, small impacts ☐ Very concerning, serious impacts
   ☐ Extremely concerning, severe impacts ☐ Don't remember/I was not in College Park

7. **Have you noticed an increase in flood frequency or volume during your time in College Park?** *Check just one*

   ☐ Increase in flood frequency ☐ Increase in flood volume ☐ Increase in both ☐ Neither

8. **Please list in order which specific roads most impact you when subject to stormwater or rain events:**

   Most impacted road: _____ Next most impacted road: _____

9. **In your experience, what other public property is impacted by stormwater?** *Check all that apply*

   ☐ Sidewalks ☐ Parking lots ☐ Parks ☐ Schools ☐ Other_____

10. **Over the next several years, funds will go towards investments in stormwater management in the City of College Park. How should investments in stormwater projects be prioritized?** *Please rank from 1-8 with 1 being the highest project goal.*

Projects should:

___ Add trees, gardens, and green space to the City	___ Protect cultural and recreational resources
___ Reduce the risk of property and road flooding	___ Be inexpensive and reduce the cost to taxpayers
___ Enhance public safety and health	___ Create or enhance economic opportunities for the citizens
___ Be developed and sited as a learning tool	___ Protect local streams and water quality

11. **Do you have any further stormwater concerns or suggestions?** _____

_____

Appendix C - Development of MCM cost estimates

Based on interviews and a detailed review of the City's operational budget, it appears that the MCM 1, 2 and 6 will be similar to services currently being performed by the recreation section of the public services department (education and outreach), the planning department (education and outreach, reporting, review) and the Public Works department (maintenance, tracking, and reporting of municipal owned facilities). The additional costs for activities related to MCM 1 & 2 makes an assumption that there is no current capacity in current roles and duties, and it also assumes that stormwater roles would remain divided across departments. A recommendation is to designate one role or department to be lead for stormwater education, outreach, and integration activities. This would lead to increase efficiencies and reduce the cost estimate.

Table C.1 – MCM Budget Estimate

MCM Compliance	
Public Relations	$9,150
Planning	$13,500
Public Works	$9,969
Total	$32,619

Within The City of College Park, the Public Relations program provides information to citizens through responses to telephone inquiries and the semi-monthly publication of the Municipal Scene. Below is an estimate of the cost of departmental activities relating to outreach and education under MCM 1 and MCM 2. This estimate assumes no current capacity within the department or current roles to take on additional activities. The estimate includes consideration for costs related to updates to the City of College Park website to add pages and information directly related to stormwater education and outreach, including information relating to the Rain Check Program.

Table C.2 MCM Budget – Public Relations

Department	Budget Code	Position	Pay Scale Range	Pay Scale MidPoint	Budget FTE	Estimated Additional FTE	Additional Costs
Public Relations	1017	Assistant City Clerk	$46,163-$79,331	$ 62,747.00	0.45	0.05	$ 3,137.35
Program Name	**Program Number**	**GL Number**	**Item**	**2016 Budget**	**Notes**		**Estimated Additional**
Public Relations	1017	34-25	Contractual Services - Marketing	$ 10,000.00	updating website with stormwater		$ 2,500.00
Public Relations	1017	36-10	Printing of Municipal Scene	$ 36,144.00	24 issues @ 1,506 per issue, one issue for		$ 1,506.00
Public Relations	1017	36-10	Pinting	$ 1,000.00	Bi-Annual Stormwater Survey		$ 500.00
Public Relations	1017	36-99	Photographer	$ 2,000.00			$ 250.00
Public Relations	1017	38-99	Special Events - Miscellaneous	$ 900.00			$ 500.00
Public Relations	1017	52-99	Citizen Recognition	$ 500.00			$ 250.00
Public Relations	1017	60-10	Promotional Items	$ 1,500.00			$ 500.00
				Total Additional Costs, assuming no capacity			$9,143.35

It is also anticipated that activities related to MCM 1 and 2, such as the coordination of citywide communication, as well as reporting and communication with the County, would result in an increase in activities performed in the planning department. The 2016 Budget for Department 2012 contains the

time of a planner and an administrative assistant related to planning activities. The pay scale range for a planner is $49,095 - $84,370 and the pay scale range of an administrative assistant is $46,163 - $79,331. We estimate that the increase in activities related to education, outreach, and coordination of reporting to the County would result in an increase of a 10% of an FTE.

Table C.3 MCM Budget - Planning

Department	Budget Code	Position	Pay Scale Range	Pay Scale MidPoint	Budget FTE	Estimated Additional FTE	Additional Costs
Planning and Zoning	2012	Planner	$49,095- $84,370	$66,732.50	0.45	0.1	$6,673.25
Planning and Zoning	2012	Admin Assist	$46,163 - $79,331	$62,747.00	0.15	0.1	$6,274.70

It is further anticipate that activities related to MCM 6, and the coordination of staff training and reporting and communication with the County would result in an increase in activities performed in the public works department. The Budget Pay Scales for the Public Works Department contains the position of an Engineering Technician, he pay scale range of which is $36,634 - $62,956. We estimate that the increase in activities related to managing, training, and reporting on MCM 6 for municipal properties would result in a cost of about $9,900, under the assumption that is no capacity in current duties with which to absorb these activities.

Table C.4 MCM Budget - Engineering

Department	Budget Code	Position	PayScale Range	PayScale MidPoint	Estimated Additional FTE	Additional Costs	Notes
Public Works	5010	Engineering Technician I	36634 - 62,956	$49,795	15%	$7,469	Additional Time to oversee and manage reporting, training, and compliance with MCM 6 on municipal property

Program Name	Program Number	GL Number	Item	2016 Budget	Estimated Additional	Notes
Planning	3010	12	Training	0	$500	Staff Stormwater Training
Public Works	5010	12	Training	0	$2,000	Staff Stormwater Training
				Total	$9,969	

Appendix D – Map Benefit Layers Weighting Tables and Examples

Table D.1. Equal Binary Weighting of Benefit Layers

Equal Binary Weighting of Benefit Layers			
Layer / Benefit	Weight	Points	
		1	0
Floodplain	10%	Yes	No
Slope	10%	<2%	2%+
Soils	10%	Group C/D	Groups A & B
Imperviousness	10%	>75%	<75%
Tree Coverage	10%	No	Yes
G.I. Gaps	10%	Yes	No
Transportation	10%	Yes	No
Economics	10%	Commercial/ Mixed-Use	Non-Commercial
Citizen Responses	10%	Primary	None
Staff Responses	10%	Yes	No
Total	**100%**		

Table D.2. Example of Weighting to Emphasize Certain Benefit Layers

Example of Emphasizing Weighting of Benefit Layers			
Layer / Benefit	Weight	Points	
		1	0
Floodplain	5%	Yes	No
Slope	5%	<2%	2%+
Soils	5%	Group C/D	Groups A & B
Imperviousness	5%	>75%	<75%
Tree Coverage	5%	No	Yes
G.I. Gaps	5%	Yes	No
Transportation	5%	Yes	No
Economics	5%	Commercial/ Mixed-Use	Non-Commercial
Citizen Responses	30%	Primary	None
Staff Responses	30%	Yes	No
Total	**100%**		

Appendix E – Estimating City of College Park Clean Water Act Fee and Estimates of Equivalent Capital Project Financing Capacity

Table E.1 Estimate of the Annual Total Clean Water Act paid by City of College Park Properties

Estimating the Annual Total Clean Water Act Payment by City of College Park Properties

Clean Water Act Administrative Fee Per Parcel	$20.58
Clean Water Act Impervious Fee Per ERU	$20.90
Clean Water Act ERU (sq. ft)	2465

	Land Area (Sq Ft)	Nat Avg. of Impervious	Estimated Imperviousness	Estimated Non-Res Impervious ERU's
Non-Res Parcels	10,501,014	85%	8,925,862	3,621

	Count	Total Admin Fee	Estimated Impervious ERUs	Total Imperviousness Fee[1]	Total Clean Water Act Fee
Residential Parcels	4,562	$93,886	4,562	$95,346	$189,232
Non-Res Parcels	1,024	$21,074	3,621	$75,680	$100,375
		Estimated Total Annual Clean Water Act Fee Payment by City of College Park Properties			$289,606

Note 1: Assumes that each residential unit is charge 1 ERU.

Table D.2 Equivalent Capital Project Estimate

Calculation to Estimate an Equivalent Capital Project which could be financed with Estimated Clean Water

Rate / Cost of Capital	4.00%
Estimated Annual Clean Water Act Fee Payment	$289,606
Length of Payments / Length of Financing Term (Years)	Present Value or Equivalent Project Cost
10	$2,348,967.69
20	$3,935,846.09
30	$5,007,884.28
40	$5,732,114.87
50	$6,221,379.11

Table E.3 Flooding Study of College Park Cost Estimate

Projects from RKK Flooding Study City of College Park http://www.collegeparkmd.gov/document_center/Engineering/Other/County_Storm_Drain_Projects_Jan_2014.pdf			
Other Flood Mitigation	TBD	0%	Other Flood Mitigation Considerations including
			Implementing SWM Best Management Practices on Their Properties
			Evaluate Sub-Watershed Timing with Upland BMP Controls
Part A	$162,000	0%	Cornell Ave and Guilford Road Culvert Upgrade
	$399,000	0%	Rossburg Drive and Guilford Road Culvert Upgrade
	$22,000	0%	Cornell to Rowalt Ave Channel Maintenance
Part B	$502,000	0%	Part B: - Upgrade Culvert Entrance at Rowalt Ave/Guilford
			Resize Channel Between Rowal and Baltimore Road
			Upgrade Culvert Under Baltimore Ave.
Part C	$2,200,000	0%	Part C: Drainage, Diversion and Underground Storage Attenuation System at Calvert Park
	TBD	0%	Part D: - Dartmouth Ave Storm Drain Extension Upgrade
Total	**$3,285,000**		

Table E.4 Capital Project Annual Payment Estimates

Calculation to Estimate Annual Payment to Finance Equivalent Capital Project of Flooding Study Costs	
Rate / Cost of Capital	**4.00%**
Estimated Project Cost	**$3,285,000**
Length of Financing Term (Years)	**Annual Payment (Principal and Interest)**
10	$405,010.75
20	$241,716.05
30	$189,971.88
40	$165,969.66
50	$152,917.41

Appendix F – Maps for City of College Park Stormwater/Flood Management

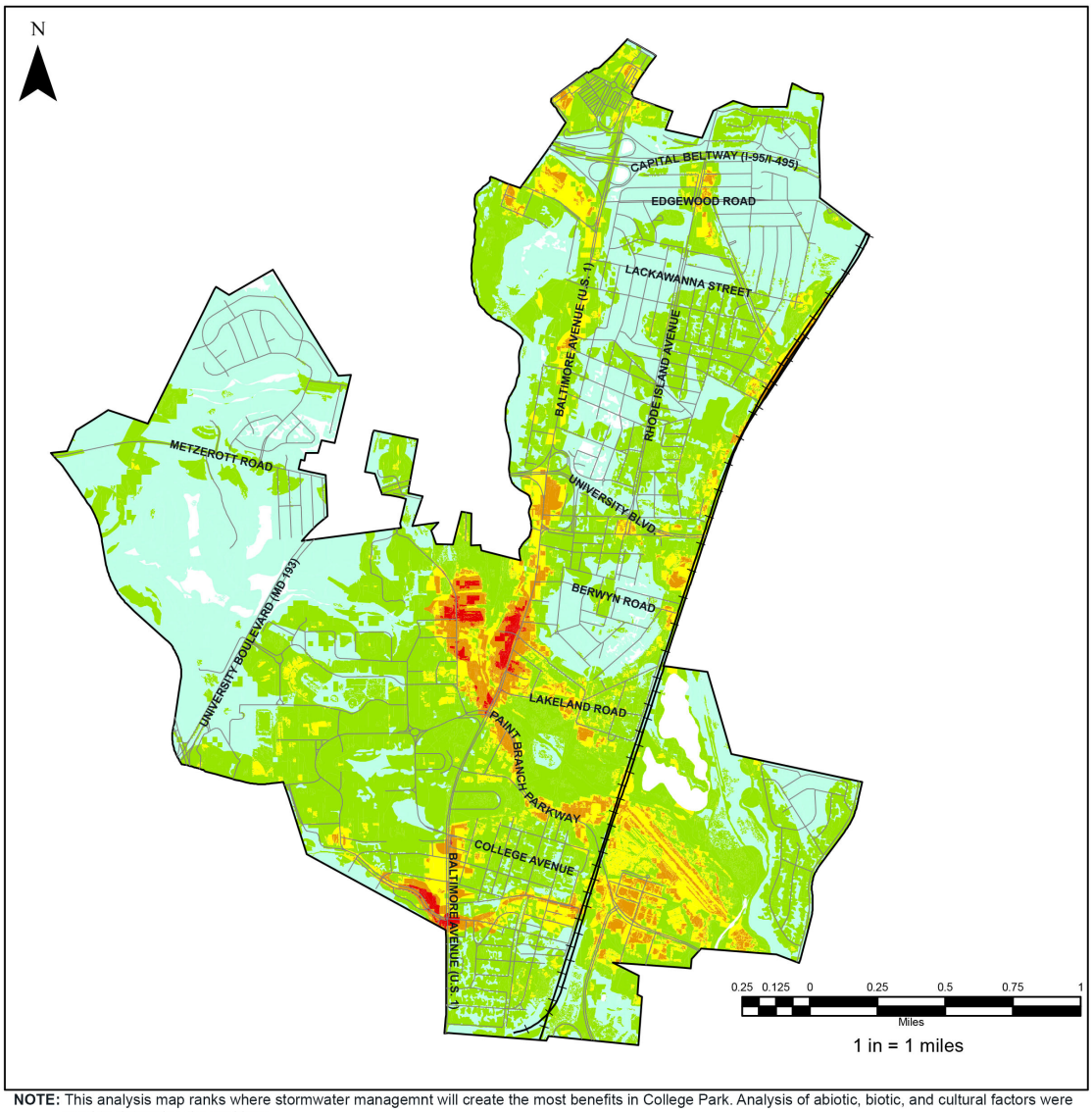
Table F.1 below lists the name of each map and a description of the map. A copy of each of the full maps can be found by following the link below:
https://www.dropbox.com/sh/asgkeyylypv2cwj/AADYVmi3lfUx7dMl08f4lET9a?dl=0

Table F.1

Map ID & Name	Description
1 – Final Analysis, V1 – Stormwater Management Hotspot Map (Equal Weighting)	Equal weighted hotspot map for the City of College Park
2 – Final Analysis, V2 – Stormwater Management Hotspot Map (Weighted)	Weighted hotspot map for the City of College Park
3 – Outreach Response Map	Outreach responses from mapping exercise with residents
4 – Analysis Factor Staff Response Map	Priority areas in City of College Park as identified by City Engineer Steve Halpern and interpreted/mapped by EFC
5 – College Park Neighborhoods, Floodplains, and Wetland Map	Neighborhoods of College Park and percent coverage in floodplain and wetland
6 – College Park Floodplain and Property Values by Census Tract *(2 pages)*	Total # of properties and property value in floodplain by census tract
7 – Abiotic Factor Summary Map for College Park	Includes all abiotic factors and only abiotic factors
8 – Biotic Factor Summary Map for College Park	Includes all biotic factors and only biotic factors
9 – Community Factor Summary Map for College Park	Includes all community factors and only community factors
10 – Final Analysis, V1 – Up-close Grid #1	Camden and Cherry Hill
11 – Final Analysis, V1 – Up-close Grid #2	Sunnyside and Hollywood
12 – Final Analysis, V1 – Up-close Grid #3	College Park Woods
13 – Final Analysis, V1 – Up-close Grid #4	College Park Woods
14 – Final Analysis, V1 – Up-close Grid #5	Hollywood and Daniels Park
15 – Final Analysis, V1 – Up-close Grid #6	Hollywood and Daniels Park

16 – Final Analysis, V1 – Up-close Grid #7	National Archives and UMD Golf Course
17 – Final Analysis, V1 – Up-close Grid #8	Crystal Springs and UMD Campus
18 – Final Analysis, V1 – Up-close Grid #9	Berwyn Neighborhood
19 – Final Analysis, V1 – Up-close Grid #10	Berwyn Neighborhood
20 – Final Analysis, V1 – Up-close Grid #11	UMUC Campus and UMD Golf Course
21 – Final Analysis, V1 – Up-close Grid #12	University of Maryland Campus
22 – Final Analysis, V1 – Up-close Grid #13	Lakelands and Paint Branch Park
23 – Final Analysis, V1 – Up-close Grid #14	College Park Estates
24 – Final Analysis, V1 – Up-close Grid #15	Lord Calvert Manor
25 – Final Analysis, V1 – Up-close Grid #16	Calvert Hills Neighborhood
26 – Final Analysis, V1 – Up-close Grid #17	Yarrow Neighborhood

Map F.1 – Stormwater Management Benefit Analysis Map, City of College Park, Maryland



NOTE: This analysis map ranks where stormwater managemnt will create the most benefits in College Park. Analysis of abiotic, biotic, and cultural factors were used to determine the rankings.

- HIGHEST BENEFITS FROM STORMWATER MANAGEMENT (18.60 ac)
- MODERATELY HIGH BENEFITS FROM STORMWATER MANAGEMENT (152.36 ac)
- MODERATE BENEFITS FROM STORMWATER MANAGEMENT (294.56 ac)
- MODERATELY LOW BENEFITS FROM STORMWATER MANAGEMENT (1,571.69 ac)
- LOWEST BENEFITS FROM STORMWATER MANAGEMENT (1,444.50 ac)

DATA SOURCES:
This map is the product of overlaying abiotic, biotic, and cultural analysis maps created by the University of Maryland's Environmental Fiance Center. Please see previous analysis maps for factor data source.

FINAL ANALYSIS - STORMWATER MANAGEMENT
COLLEGE PARK, MD

PROJECTION: Lambert Conformal Conic
COORDINATE SYSTEM: NAD 1983 State Plane Maryland, FIPS 1900
PREPARED BY: Christopher Shipley, *Project Assistant*
KFS# 4-305850
DATE: 5/12/2015
REVISIONS: 5/14/2015 Symbology revisions

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