



PRINCE WILLIAM COUNTY, VIRGINIA

Prince William County, Virginia

Department of Public Work's Environmental Services Division:
Virginia Stormwater Management Program Implementation
Analysis

Report Date: March 17, 2016

Table of Contents

Transmittal Letter	1
Executive Summary	2 - 5
Background	6 - 20
Objectives and Approach	21
Issues Matrix	22 - 25
Process Maps	26 - 27
Appendix	
Appendix A: Interview Questions.....	28
Appendix B: Watershed Organizational Chart.....	29 - 31
Appendix C: Best Management Practice Table.....	32 - 33



RSM US LLP

1861 International Drive
Suite 400
McLean, VA 22102
O: 252.637.5154 F: 252.637.5383
www.rsmus.com

March 17, 2016

The Audit Committee of
Prince William County, Virginia
1 County Complex Court
Prince William, Virginia 22192

Pursuant to the internal audit plan for fiscal year (“FY”) 2015-16 for Prince William County, Virginia (the “County”), approved by the Board of County Supervisors on October 13, 2015, we hereby present the implementation analysis of the Virginia Department of Environmental Quality Stormwater Management Program (“VSMP”) by the County’s Department of Public Work’s Environmental Services Division. We will be presenting this report to the Audit Committee of Prince William County at the next scheduled meeting on May 10, 2016.

Our report is organized in the following sections:

Executive Summary	This section provides a summary of the overview and issues related to our analysis of the County’s implementation of VSMP.
Background	This section provides an overview of the County’s implementation of the VSMP, including analysis and comparisons.
Objectives and Approach	The objectives and approach are expanded upon in this section as well a review of the various phases of our approach.
Issues Matrix	This section gives a description of the items noted during this analysis and recommended actions, management’s response, responsible party and estimated completion date.
Process Maps	This section provides a process map depicting the flow of the County’s VSMP permitting process.

We would like to thank the Public Works Department, specifically Environmental Services, the Department of Development Services and all those involved in assisting our firm in connection with our analysis.

Respectfully Submitted,

RSM US LLP

INTERNAL AUDITORS

Executive Summary

Executive Summary

On July 1, 2014, the Virginia Stormwater Management Program, went into effect as part of the Virginia Clean Water Act. This regulation transferred stormwater administration from the Department of Environmental Quality to Municipal Separate Storm Sewer Systems (“MS4”) localities, to individual jurisdictions within the Commonwealth of Virginia. MS4s are publicly owned systems such as storm drains, pipes, ditches or swales that collect or move water to surface waters, which require permit coverage and development of a stormwater management program. The County’s Watershed Management Branch within Environmental Services Division, is charged with enforcing compliance with the Commonwealth of Virginia’s regulated VSMP program in efforts to further control stormwater runoff and pollution entering local waterways. The overarching goal is to reduce or eliminate fertilizers, herbicides, insecticides, oil, grease, toxic chemicals bacteria, pet waste, and discarded trash from entering waterways.

In mid-2011, the DEQ announced the VSMP regulations and the mandatory adoption at the local level, by July 1, 2014. This included existing MS4 counties and municipalities. Plans were reviewed and approved by the Commonwealth prior to adoption at the local level. The Commonwealth provided a model ordinance with the opportunity to petition for more stringent regulations. A proposed fee schedule was also provided with a portion sent to the Commonwealth and the remainder held by the jurisdiction for administration of the VSMP. A provision was also added to allow the jurisdiction to petition the Commonwealth to charge additional/higher fees for their administration of the program. Changes to the stormwater permitting process changed dramatically, as the table below indicates.

Criteria	Current Regulation	New Regulation
Water Quality Computation	Impervious area only	Entire site must be managed
Water Quality Volume	0.5 inch of runoff from the impervious area only	1.0 Inch of rainfall from the entire site
Total Phosphorous (TP) Loading	50% reduction from post to pre development TP	0.41 Lbs./acre/year TP
Redevelopment Criteria	10% Reduction TP	<1 acre: 10% Reduction TP >1 acre: 20% Reduction TP
Modeling method	Various simple modeling methods	Must Use Runoff Reduction Method/ Low Impact Development
Channel Protection	Varied	Criteria For: Manmade Conveyance Systems Restored Conveyance Systems Natural Conveyance Systems

Provided by Public Works Department, Environmental Services

Jurisdictions that have become the administrators of VSMP are simultaneously the regulator via approving plans and inspecting sites, but also regulated by the Commonwealth and are subject to inspections and audits. Since advent of VSMP, the County has not been subject to audits; however, they have had multiple site visits by Commonwealth inspectors.

The Commonwealth put forth a model ordinance that the County adopted with the minimum standards outlined in the model ordinance. To prepare for implementation, Environmental Services worked with the County Attorney, among other County staff, to develop plans. Numerous meetings were held with stakeholder groups (e.g. developers, engineers, environmentalists and state representatives). The Prince William County Planning Commission, which is a panel of eight citizens appointed by the BOCS to advise the Board on land use and development issues in the County, held a work session and on December 3, 2013, the presentation was made to the Board of County Supervisors.

Executive Summary - continued

Stakeholders

As part of this analysis, we conducted interviews with the following stakeholders:

- Contractors/Developers (3)
- Consulting engineers (5)
- Conservation groups (2)

During our stakeholder interviews, we asked how the County's VSMP permitting process compared to other jurisdictions they do business. Seventy percent (70%) of the stakeholders rated the County's degree of difficulty as either easier than or in-line with the other jurisdictions they do business. Multiple stakeholders indicated that the County was proactive in enacting the regulations and are ahead of some other jurisdictions. Several stakeholders indicated as the regulations mature the jurisdictional differences may decrease.

During our interviews, it was noted that when issues have been identified during the County's plan approval process, in most instances the County has been able to work through to resolve satisfactorily. Some worksite issue examples provided occurred prior to the VSMP start date.

Stakeholders verbalized challenges adopting these new regulations. Difficulties in adoption can generally be classified as tactical and strategic. Tactical issues are policies, standard operating procedures and implementation of the regulation. Strategic issues are associated with overall adoption of stringent regulatory concerns, competitive advantage, and cost-benefit analysis. These differences are categorized by the following constituencies:

Counties/Jurisdictions: Transfer of administration from the Commonwealth to county level and the learning curve associated with administration of additional regulations created from VSMP.

Developers/Contractors: Increased cost of doing business and the potential inability to secure loans for projects, along with multi-jurisdiction administration.

Consulting Engineers: Learning curve associated with application of the laws and the multi-jurisdiction nuances.

Conservation Groups: Continued protection of land and water, along with concern the regulations administered are minimally adopted.

Counties/Municipalities across the Commonwealth of Virginia have faced similar issues in dealing with the implementation of this major regulatory overhaul, particularly with grandfathered property and redevelopment. During interviews with key stakeholders, all indicated Prince William County has been flexible and listens to industry to ease the learning curve. Many expressed their project management approach to development is a major positive that few other counties have embraced.

The County has committed to reviewing existing County rules and regulations to determine where streamlining could offset impediments to development. The County recently formed a Development Ordinance Review Team with the purpose of developing a prioritized list that includes (but not limited to) changing buffer rules, review mixed-use zoning and revising big-box ordinances.

Executive Summary - continued

Comparisons to Other Jurisdictions

As part of this review, we performed analysis and comparisons on VSMP rollout and administration for surrounding MS4 jurisdictions: City of Alexandria, City of Manassas, Fairfax County, Loudoun County and Stafford County. A summary of the comparisons is as follows:

Attribute	Prince William County	Other Jurisdictions
Adoption of More Stringent Regulations than Model Ordinance	Adopted model ordinance	<ul style="list-style-type: none"> One jurisdiction petitioned for more stringent regulations Two jurisdictions adopted model ordinance Two jurisdictions unknown
Permitting Fees	Adopted minimum fees structured by Commonwealth	<ul style="list-style-type: none"> One jurisdiction petitioned for higher fees One jurisdiction adopted fee schedule as written Three jurisdictions unknown
Additional Staff for VSMP	Hired three additional staff in various positions	<ul style="list-style-type: none"> Two jurisdictions hired additional staff One backfilled with previously frozen positions Two jurisdictions remained the same
VSMP Funding	Combination fees (VSMP, development and stormwater) with any deficits covered by development fees. No general fund appropriation.	<ul style="list-style-type: none"> Four jurisdictions fund out of a combination of general fund and fees One jurisdiction funds out of the general fund
Voluntary Concept Plan Offered¹	Yes	All offer
Separate Inspectors for Building and Site	Yes	All have separate building and site inspectors
Participation in Engineer and Surveyor Initiative²	Discontinued at least ten years ago	Three jurisdictions participate
Provisional Notice of Intent	Yes	None offered
Early Grading Option Offered³	Yes in certain circumstances	<ul style="list-style-type: none"> Three jurisdictions offer in some form Two jurisdictions unknown

¹ VCP allows contractors /developers to bring plans to Public Works and discuss what would be required for VSMP prior to formal submission or conceptually for land they are potentially purchasing for development to identify costs.

²ESI is an initiative by professional organizations to provide guidance and review documents prior to submission

³EGO allows for early bulldozing after the Construction General Permit is approved but prior to site plan approval

A summary of issues identified and their relative risk rating is provided below. We have assigned relative risk factors to each issue identified. This is the evaluation of the severity of the concern and the potential impact on operations. There are many areas of risk to consider in determining the relative risk rating of an issue, including financial, operational, and/or compliance, as well as public perception or 'brand' risk. Items are rated as High, Moderate, or Low.

- *High Risk Items* are considered to be of immediate concern and could cause significant operational issues if not addressed in a timely manner.
- *Moderate Risk Items* may also cause operational issues and do not require immediate attention, but should be addressed as soon as possible.
- *Low Risk Items* could escalate into operational issues, but can be addressed through the normal course of conducting business.

Executive Summary - continued

The details of the below summarized issues are included within the Issues Matrix section of this report.

Issues	Risk Rating
<p>1. Site Inspector and Plan Reviewer Certification</p>	<p>Moderate</p>
<p>Site inspectors and plan reviewers are required to be certified by the Commonwealth, which provided training during roll out. The Commonwealth has allowed provisional certification for 24 months after the site inspector/plan reviewer has completed the first required VSMP training course. As of our analysis, we noted the following:</p> <ul style="list-style-type: none"> • Two (2) out of five (5) of the County's plan reviewers are provisionally certified, two (2) have attained certification, and one (1) plan reviewer's provisional certification has expired without certification attained. • Three (3) out of 12 of the County's site inspectors are provisionally certified, seven (7) have attained certification, one (1) is new with training scheduled, and one (1) site inspector's provisional certification has expired without certification attained. <p>Training and proper certification strengthens site inspection and plan review consistency, accuracy and credibility to Stakeholders.</p> <p>We recommend that site inspector and plan review certifications be monitored and followed-up on until the proper certification has been properly and timely obtained. Additional training by the Commonwealth or industry conferences should be considered to augment certification training.</p>	
<p>2. Program Communication</p>	<p>Moderate</p>
<p>As part of their evolving VSMP Program, the County has developed programs the development community has viewed favorably. When interviewing some of the external stakeholders, many were not aware of them and expressed an interest in utilizing these services. Examples include:</p> <ul style="list-style-type: none"> • Provisional Notice of Intent approval • Voluntary concept meeting • Early grading program and • Nutrient bank credits • Internal informal appeals process <p>Increased communication on streamlined programs the County has developed is essential. We recommend that County enhance communication to inform stakeholders of program changes, issues and trends. Communication could be in the form of a newsletter or use of the County's webpage. We also recommend that the County consider developing a working alliance with other jurisdictions to vet common concerns and determine a consistent approach.</p>	
<p>3. Definition and Tracking of Periodic Inspections</p>	<p>Low</p>
<p>Due to multiple water regulations with differing inspection intervals, confusion exists within the development community as to how often the site inspections will occur. Site inspections are tracked in EnerGov, which is used to track over 1,000 projects at a given time. Although the software has useful applications at the County, it is not optimal for tracking multiple inspections per site. Due to system limitations, Site inspectors have relied on a manual work around via Excel spreadsheet. Some inspectors visit job sites they know from memory.</p> <p>We recommend that specific definitions for periodic inspections be provided to the site inspectors, with a priority system to ensure higher risk projects are inspected. This will also provide consistency to the program. Definitions and criteria should also be provided to the development community so they can rely on a consistent experience.</p>	

Background

Background

Overview

Regulation

On July 1, 2014, the Virginia Stormwater Management Program, went into effect as part of the Virginia Clean Water Act. This regulation transferred stormwater administration from the Department of Environmental Quality to Municipal Separate Storm Sewer Systems localities, to individual jurisdictions within the Commonwealth of Virginia. MS4s are publicly owned systems such as storm drains, pipes, ditches or swales that collect or move water to surface waters, which require permit coverage and development of a stormwater management program.

The County's Watershed Management Department, within Environmental Services, is charged with enforcing compliance with the Commonwealth of Virginia's regulated VSMP program in efforts to further control stormwater runoff and pollution entering local waterways. The overarching goal is to reduce or eliminate fertilizers, herbicides, insecticides, oil, grease, toxic chemicals bacteria, pet waste, and discarded trash from entering waterways.

The Environmental Protection Agency ("EPA"), under the regulatory guidance of the Clean Water Act directs the Virginia Department of Environmental Quality ("DEQ") and their administration of the Stormwater Management Act. This was, in part, a result of the Chesapeake Bay clean up mandate.

DEQ

The DEQ is the lead agency for developing and implementing storm water management and nonpoint source pollution control to protect the Commonwealth's water quality and quantity. Non-point pollution includes storm water runoff from streets, lawns, parking lots, construction sites, industrial facilities and other impervious surfaces as a result of precipitation events such as rain water or melted snow.

These runoffs can then enter surface waters directly or indirectly through natural or constructed storm water channel systems. Many activities which occur in developed or urban areas can contribute to the contamination of storm water runoff by pollutants such as excess fertilizers, herbicides and insecticides from residential areas, oil, grease and toxic chemicals from roadways and parking lots, sediment from improperly managed construction sites; bacteria and nutrients from pet waste, failing sewers and faulty septic systems, as well as carelessly discarded trash, are among the contaminants found in storm water runoff.

Upon entering nearby waterways, these non-natural additives inhibit recreational use, contaminate drinking water supplies, and interfere with aquatic wildlife habitats. Additionally, the effects of unmanaged storm water can lead to erosion and flooding and can also move excess nutrients (particularly phosphorous), sediment, among other pollutants into rivers and streams. However, properly managed storm water can recharge groundwater and protect land and streams from erosion, flooding and pollutants.

Virginia is an authorized state under the federal water permitting program. As mandated by the Clean Water Act and the EPA's storm water regulations, DEQ issues Virginia Pollutant Discharge Elimination System ("VPDES") permits to dischargers of storm water from MS4s and to dischargers of storm water from Industrial Activities, and VSMP permits to dischargers of storm water from construction activities meeting certain criteria. Those not meeting this criteria would be approved and permitted at the MS4 jurisdiction, such as Prince William County.

MS4's typically collect the majority of polluted storm water runoff. Some examples of these MS4's may be road drainage systems, municipal streets, catch basins, curbs, gutters, ditches, constructed channels and storm drains designed to collect and convey storm water and are owned or operated by a federal, state or local government entity. However, MS4's are not related or associated with any publicly owned treatment works system such as sewage collection or transportation and treatment nor are they part of a combined sewer (a system designed to carry sewage and storm water to a sewage treatment plant). Privately owned and operated drainage systems are not considered MS4s.

Background - continued

Overview - continued

VSMP

In mid-2011, the DEQ announced the VSMP regulations and the mandatory adoption at the local level, by July 1, 2014. This included existing MS4 counties and municipalities. Plans were reviewed and approved by the Commonwealth prior to adoption at the local level. The Commonwealth provided a model ordinance with the opportunity to petition for more stringent regulations. A proposed fee schedule was also provided with a portion sent to the Commonwealth and the remainder held by the jurisdiction for administration of the VSMP. A provision was also added to allow the jurisdiction to petition the Commonwealth to charge additional/higher fees for their administration of the program. Changes to the stormwater permitting process changed dramatically, as the table below indicates.

Criteria	Current Regulation	New Regulation
Water Quality Computation	Impervious area only	Entire site must be managed
Water Quality Volume	0.5 inch of runoff from the impervious area only	1.0 Inch of rainfall from the entire site
Total Phosphorous (TP) Loading	50% reduction from post to pre development TP	0.41 Lbs./acre/year TP
Redevelopment Criteria	10% Reduction TP	<1 acre: 10% Reduction TP >1 acre: 20% Reduction TP
Modeling method	Various simple modeling methods	Must Use Runoff Reduction Method/ Low Impact Development
Channel Protection	Varied	Criteria For: Manmade Conveyance Systems Restored Conveyance Systems Natural Conveyance Systems

Provided by Public Works Department, Environmental Services

Jurisdictions that have become the administrators of VSMP are simultaneously the regulator via approving plans and inspecting sites, but also regulated by the Commonwealth and are subject to inspections and audits. Since advent of VSMP, the County has not been subject to audits; however, they have had multiple site visits by Commonwealth inspectors.

Prince William County VSMP Implementation

In 1994, the Prince William County Board of County Supervisors established a Stormwater Management Program. The program was charged with effectively managing the County's stormwater management system through protecting streams and wetlands, reducing non-point source pollution loads, monitoring water quality, and protecting properties and the public from the risk of flooding. These activities will reciprocally help offer protection to the water quality in County streams and control the pollution into streams that eventually flow to the Chesapeake Bay. When the Clean Water Act was passed by Congress, the federal government took a position to dedicated improvement to protecting our nation's waters and Prince William County is committed to these goals as well. The County is the second-most populous county in Virginia and is located just 30 miles from Washington, D.C.

County Profile ¹	
Population Size (2015)	451,721
Land Area (sq. miles)	336.4
Housing Units (2014)	144,787
Population Change ('10-'15)	12.40%

¹ Source: www.census.gov

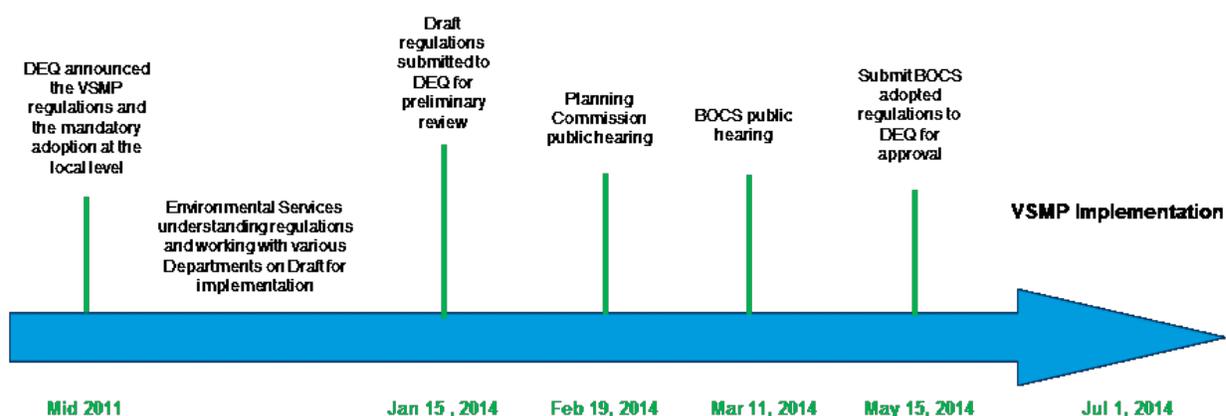
Background - continued

Prince William County VSMP Implementation - continued

As of July 1, 2014, the County, along with numerous other localities, were transitioned as the local VSMP Authority for their respective programs. Along with transfer of plan review and administration, new submission requirements have been implemented (see VSMP Overview chart above).

The County's Stormwater Management Program is administered by the Department of Public Works' Environmental Services Division. They offer a multitude of resources on the county website which provide additional guidance around areas of stormwater management, sources of funding, stormwater runoff and runoff prevention.

The Commonwealth put forth a model ordinance that the County adopted with the minimum standards outlined in the model ordinance. To prepare for implementation, Environmental Services worked with the County Attorney, among other County staff, to develop plans. Numerous meetings were held with stakeholder groups (e.g. developers, engineers, environmentalists and state representatives). The Prince William County Planning Commission, which is a panel of eight citizens appointed by the BOCS to advise the Board on land use and development issues in the County, held a work session and on December 3, 2013, the presentation was made to the Board of County Supervisors. The timeframe for rollout was:



To implement VSMP in the County, five (5) plan reviewers and 12 site inspectors are charged with approving plans and inspecting construction sites relative to water quality. However, it should be noted that these individuals are also tasked with administration of other watershed regulations in addition to VSMP. To accommodate the additional permitting activities of VSMP, three (3) additional personnel were hired.

Application and receipt of fees is necessary prior to being issued site permits for construction by Development Services. The process identified by the County is listed below. Additional process maps have been provided at the end of this report.

The number of initial plans reviewed is broken down as follows:

Fiscal Year	Number of Plans
2012	54
2013	56
2014	71
2015	46

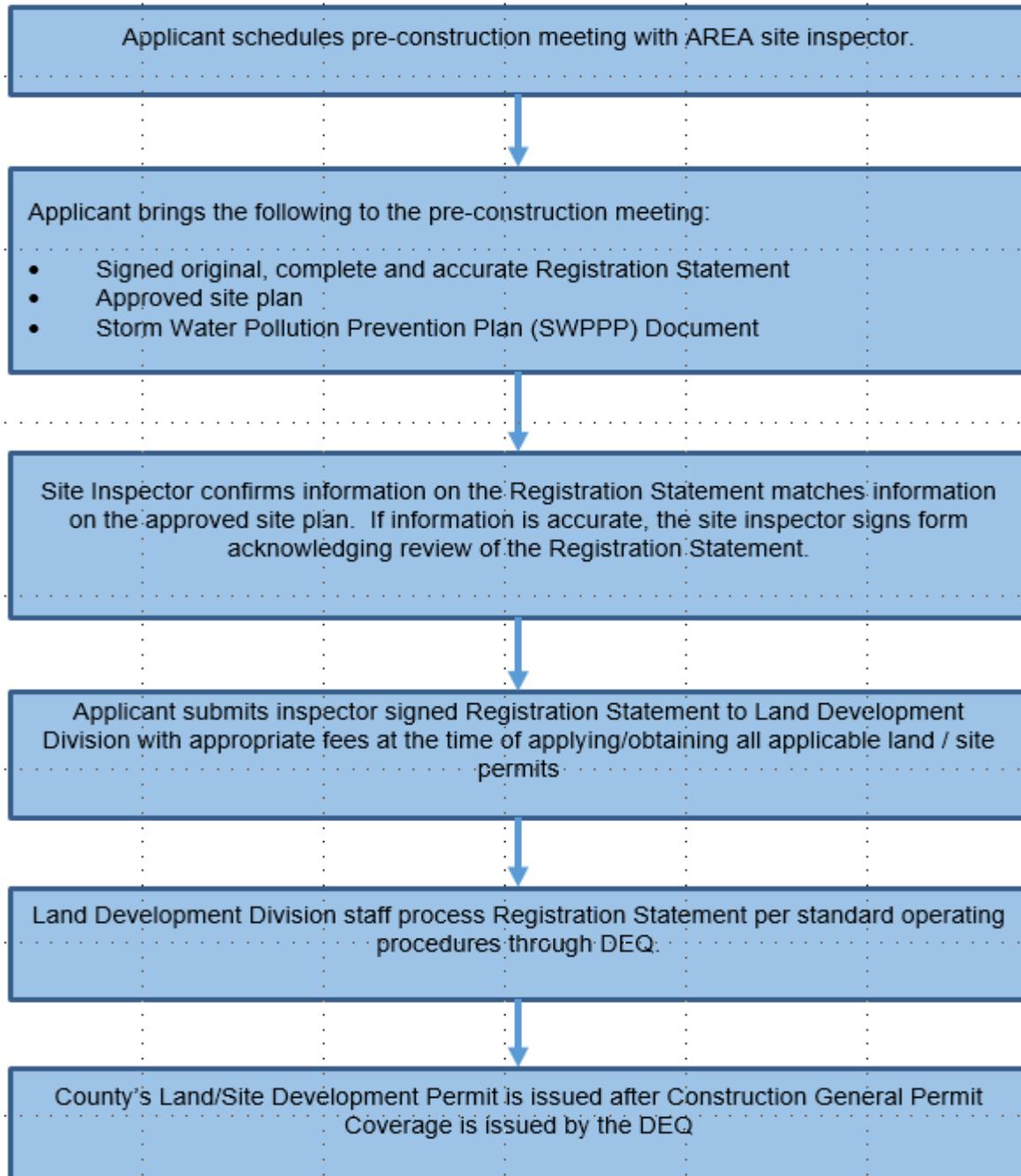
2014 was the year of VSMP implementation and many developers put plans in the pipeline in order to be grandfathered under the older regulations.

Background - continued

Prince William County VSMP Implementation - continued

The below represents how to submit and obtain permit coverage:

HOW TO SUBMIT AND OBTAIN PERMIT COVERAGE UNDER THE CONSTRUCTION GENERAL PERMIT (CGP)



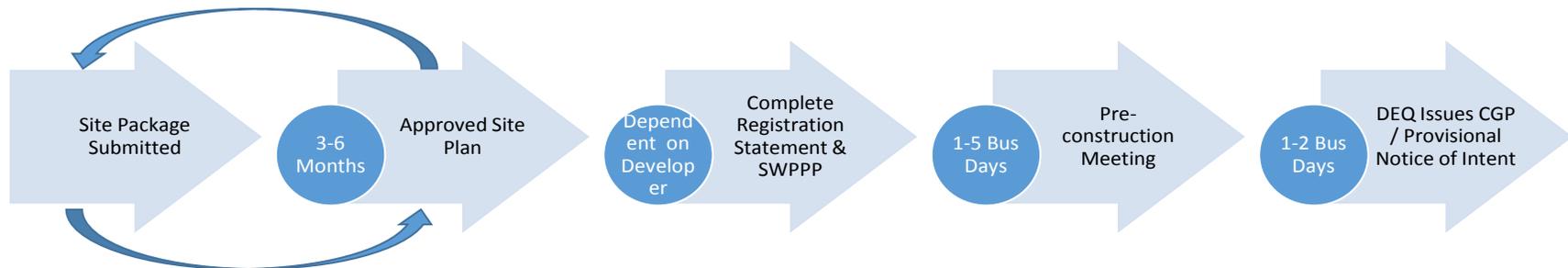
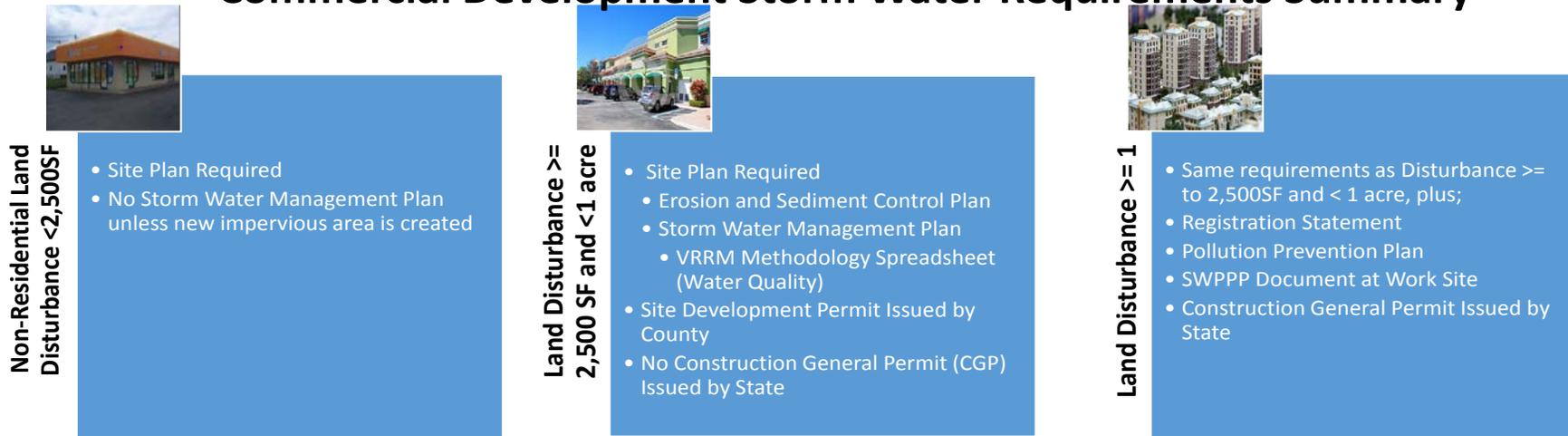
Provided by Public Works Department, Environmental Services

Background - continued

Prince William County VSMP Implementation - continued

There are different requirements for documentation, depending on the size and type of project. Listed below is a high-level overview and time frame typically noted from site plan development to a bulldozer ready project.

Commercial Development Storm Water Requirements Summary



Background - continued

Prince William County VSMP Implementation - continued

After the site plan is approved the pre-construction meeting is held with the site inspector. The site inspector will inspect the construction site periodically during construction. Generally, the inspector will inspect for compliance with VSMP, along with other land disturbance regulations. During construction, additional best management practices (“BMP”), type of water pollution control, may be needed (See Appendix C), or plans may change during construction and a revision to the plans may be required.

As part of VSMP, the County offers early grading on a case-by-case basis and voluntary concept plan meetings before plan submission. These concept planning meetings can be done prior to land being purchased or zoned. They also offer a provisional Notice of Intent, a feature no other jurisdiction contacted by this review offered.

Fees

The County adopted the Commonwealth-mandated minimum fees and did not opt to petition for additional fees as permitted by the Commonwealth. Registrants submit their registration statements, operator statements, and applicable fees to the county, with a portion going to DEQ. The new permit fee schedule for new sites or areas within common plans of development or sale is:

Criteria	County Fee	State Fee	Total
= or > Than 2,500 SF and < 1 Acre	\$209	\$81	\$290
= or > Than 1 Acre and < 5 Acres	\$1,944	\$756	\$2,700
= or > Than 5 Acres and < 10 Acres	\$2,448	\$952	\$3,400
= or > Than 10 Acres and < 50 Acres	\$3,240	\$1,260	\$4,500
= or > Than 50 Acres and < 100 Acres	\$4,392	\$1,708	\$6,100
Greater Than 100 Acres	\$6,912	\$2,688	\$9,600

Prior to transfer of VSMP to the local jurisdictions, the fee schedule was lower with fewer criteria:

Criteria	State Fee
Construction General/Stormwater Permit – Sites or common plans of development or sale equal or greater than 5 acres	\$750
Construction General/Stormwater Permit – Sites or common plans of development or sale greater than 1 acre and less than 5 acres	\$400
Construction General/Stormwater Permit – Sites or common plans of development or sale greater than 2,500 SF and less than 1 acre	\$200

Although the fees have increased significantly since the implementation of VSMP; it should be noted that the County adopted the Commonwealth-mandated minimum fees and did not opt to petition for additional fees as permitted by the Commonwealth. County stormwater fees prior to VSMP were bundled with other development fees; therefore, it is difficult to compare pre- and post-VSMP fees. Additionally, the Commonwealth has allowed for annual permit maintenance fees. The annual maintenance fee was new and not previously charged prior to VSMP.

Criteria	County Fee
= or > Than 2,500 SF and < 1 Acre	\$50
= or > Than 1 Acre and < 5 Acres	\$400
= or > Than 5 Acres and < 10 Acres	\$500
= or > Than 10 Acres and < 50 Acres	\$650
= or > Than 50 Acres and < 100 Acres	\$900
Greater Than 100 Acres	\$1,400

Because of the long construction time of some large commercial projects, the DEQ also allotted an annual maintenance fee the jurisdictions could charge for continued inspections throughout the time of construction. Because of the increase in fees as noted above, the County opted not to charge an annual maintenance fee; an additional \$200K to \$400K.

Background - continued

Stakeholder Overview

As part of this analysis, we conducted interviews with the following stakeholders

- Contractors/Developers (3)
- Consulting engineers (5)
- Conservation groups (2)

During our stakeholder interviews, we asked how the County's VSMP permitting process compared to other jurisdictions they do business. Seventy percent (70%) of the stakeholders rated the County's degree of difficulty as either easier than or in-line with the other jurisdictions they do business. Multiple stakeholders indicated that the County was proactive in enacting the regulations and are ahead of some other jurisdictions. Several stakeholders indicated as the regulations mature the jurisdictional differences may decrease.

Interview Comments

Views varied from not enough water management oversight is occurring to the interpretation is over-reaching. Quotes from the interviews from external stakeholders include:

"The regulations are objective. How they (counties) interpret is another thing. Right now other counties are figuring on the side of liberal but that could change" - Developer

"Implementation is differing widely. Little things like plan review and application for permits" – Engineer

"There is no documentation showing the County is adopting any more stringent standard . . . Communities upstream that are lax are just pushing the problem downstream. We are the last inland stream before the Chesapeake." - Conservationist

"Every county is going through a learning curve. It has turned everyone in the development community upside down." – Developer

"On the consultant side we have to break the habit with developers (late planning on stormwater). We have to do some education process with developers" – Engineer

"If there is an issue we can escalate with Raj and others. We can usually come to a reasonable conclusion. They have been good to deal with" – Engineer

Challenges

During the interviews with the sampled Stakeholders, challenges regarding VSMP were expressed. Depending on the stakeholder category (contractor/developer, engineer, or conservation group), the challenges differed widely. All are in agreement that building costs will increase in the Commonwealth of Virginia as a result of VSMP. Although unscientific, a 50% increase in effort for stormwater engineering planning was given by consulting engineers. Developers contacted also estimated that overall costs will increase significantly. Unquestionably, the rules have become more complex. Changes included both quantity of outflow along with quality of water.

Challenges can be categorized as follows:

1. *Adverse Costs of Doing Business Post-VSMP* – The developer community is particularly concerned about the overall cost of doing business in the County. Although the fees charged for VSMP have not been an issue, it is the increased costs of stormwater treatment and the increased costs for engineering. Some stakeholders indicated that with the increased costs and low land values in the County, the appraisal values cannot support the additional costs. Land values closer to the Washington D.C. metropolitan area are significantly higher, supporting the increased costs with vertical building. For example, real estate prices in the County average \$159/SF (source: realtor.com). Other jurisdictions can charge \$318/SF (Alexandria) and \$275 (Fairfax).

Background - continued

Stakeholder Overview – continued

Challenges - continued

1. *Adverse Costs of Doing Business Post-VSMP* – continued

All counties within the Commonwealth of Virginia are now subject to VSMP. There are no current plans to rescind the regulation, although there have been efforts to streamline some portions of the regulation (see #5, *Conflicting/Overlapping Regulations* below). During our interviews, it was noted that when issues have been identified during the County's plan approval process, in most instances the County has been able to work through to resolve satisfactorily. Some worksite issue examples provided occurred prior to the VSMP start date.

The County has committed to reviewing existing County rules and regulations to determine where streamlining could offset impediments to development. The County recently formed a Development Ordinance Review Team with the purpose of developing a prioritized list that includes (but not limited to) changing buffer rules, review mixed-use zoning and revising big-box ordinances.

2. *Multi-Jurisdictions* – Prior to July 1, 2014, the Commonwealth of Virginia Department of Environmental Quality administered the stormwater review and approvals process. Although the Commonwealth continues to issue the Construction General Permit required to start construction, pre-construction review and approvals, along with site inspections are conducted by the individual MS4 authority.

Although the regulations are uniform, each jurisdiction has variation in process. For example, some jurisdictions require the Registration Statement to be presented earlier, concept plan presentation and other procedural items. One criticism is the areas of regulation interpretation (e.g. grandfathered property). This has forced all stakeholders to adopt to the multiple processes and procedures versus a single process previously outlined when DEQ was issuing the permits.

Each jurisdiction contacted thoroughly reviews all plans presented for approval. Some jurisdictions participate in the Engineers and Surveyors Initiative ("ESI"). Prince William County previously was associated with the program but discontinued approximately some time ago. This provides peer-reviewed documents to the jurisdictions prior to plan review. Some jurisdictions may place a higher priority on the project or the time taken for review is shorter, due to the quality of presented documents from the peer review prior to submission.

3. *Interpretation of regulations* – The regulations were enacted without a lengthy lead time. The Commonwealth has provided a listing of approved BMPs (best management practices) for use of stormwater runoff and stabilization. The County has adopted all DEQ approved methods. It is up to the individual developer/engineer to determine their best method for resolution. The DEQ has provided a VA Run-Off Reduction Method Compliance Spreadsheet ("VRRM"). The Spreadsheet is designed to help designers and plan reviewers to quickly evaluate the implementation of BMPs on a given site and verify compliance with local and/or state requirements. If the BMP and plan specifications pass Commonwealth-mandated calculations, the BMP(s) chosen by the applicant is approved for stormwater run-off.

Some permits were grandfathered if permits were filed prior to the VSMP start date. Interpretation can be made on what was grandfathered and if plans were substantially changed, does it still qualify as a grandfathered plan. Other situations exist that could be subject to interpretation. When speaking with other jurisdictions, most indicated this was one of their biggest challenges. Individual development plans have different nuances and can delay the approval process. However, it was agreed that the management staff at the County has been evolving the program and is working with the development community to resolve issues within the regulation.

The County does provide some fast-tracking options that other jurisdictions do not provide. Well received by the developer/engineering community, these include early grading, voluntary concept meeting and provisional Notice of Intent.

Due to the short time that the law has been enacted, it will take some time to have enough experience and volume in reviewing similar plans under the new regulations for all jurisdictions.

Background - continued

Stakeholder Overview – continued

Challenges - continued

4. *Adoption of the regulations* - When each MS4 jurisdiction submitted plans for approval, the DEQ provided a model ordinance for minimum regulations. Any existing local ordinances that provided more stringent rules would be grandfathered, which the County had some regulations that qualified. If the local jurisdiction wanted any additional or more stringent rules, they could petition the DEQ for approval. The County submitted their plans with the minimum requirements as specified in the model ordinance. Of the jurisdictions contacted, one petitioned for additional/stronger regulations.
5. *Conflicting/Overlapping Regulations* – Multiple laws and regulations currently cover stormwater and land disturbance activity in Virginia. Before VSMP was enacted, development was subject to the Erosion and Sediment Control Act (1973) and the Chesapeake Bay Preservation Act (1988), among other regulations.

As these regulations were rolled out, some regulations were overlapping and, at times, contradictory. For example, the site inspection rules for Erosion and Sediment are very specific, whereas, VSMP is very broad. Additionally, not all development projects are subject to the stringent rules of VSMP due to the size of the project.

Recently, the VA House and Senate, through the DEQ, created a group to study the interconnectedness of the regulations and determine potential streamlining. This Senate and House recently passed bills to streamline some of the processes within the regulations and was just signed by the Governor. The two comprehensive bills integrate components of four statutes.

6. *VSMP Fees* - Prior to the DEQ administering plans, fees were paid directly to the Commonwealth. With the transfer of administration to local jurisdictions, the Commonwealth continues to receive a portion of fees with the majority going to the local jurisdiction. As part of the plan approval, DEQ provided a recommended fee structure, with a petition process for the jurisdiction to charge additional money to cover their administration costs if desired. The County chose to charge the minimum recommended by DEQ. Some jurisdictions have fee structures higher than the minimum.

Because of the long construction time of some large commercial projects, the DEQ also allotted an annual maintenance fee the jurisdictions could charge for continued inspections throughout the time of construction. Because of the increase in fees as noted above, the County opted not to charge an annual maintenance fee; an additional \$200K to \$400K.

Of the jurisdictions interviewed, none fully funded the administrative costs from VSMP fees. The County funds out of fees and not the general fund. For Plan Reviewers, the funding is an equal split between VSMP fees and site development fees. For inspectors it is funded via VSMP fees (25%), development fees (50%) and stormwater fees (25%).

For FY 2017, there is increased reliance on development fees and gradually reducing the storm water fee allocation. The purpose of storm water fees is for the maintenance of existing storm water infrastructure. Fees are paid annually based on impervious land. It is the County's intention to use construction fees to cover construction costs with storm water maintenance fees used for their original purpose, maintenance.

Background - continued

Comparisons to Other Jurisdictions

As part of this review, we performed analysis and comparisons on VSMP rollout and administration for surrounding MS4 jurisdictions. The jurisdictions include:

- City of Alexandria
- City of Manassas
- Fairfax County
- Loudoun County
- Stafford County

When the VSMP regulations were enacted, the DEQ allowed individual jurisdictions to petition for more stringent regulations. Most jurisdictions reviewed enacted the Commonwealth authored model regulation as drafted with the minimum regulations. However, existing, more stringent local regulations (not part of VSMP) were automatically grandfathered in and continue to be enforced.

Enforcement of VSMP required additional effort (manpower) for the individual jurisdictions. However, additional hiring has been limited. The responses were split: two jurisdictions did not hire additional staff, two did additional hiring and one jurisdiction filled with repurposed existing vacant positions. The County added three additional staff in various positions to support the initiative. To support VSMP efforts, fees are generated as part of the application process for development. Most jurisdictions contacted fund the administrative overhead through a combination of fees or general fund. One was funded fully from the general fund and the County funds through fees only. A summary is provided below:

Attribute	Prince William County	Other Jurisdictions
Adoption of More Stringent Regulations than Model Ordinance	Adopted model ordinance	<ul style="list-style-type: none"> • One jurisdiction petitioned for more stringent regulations • Two jurisdictions adopted model ordinance • Two jurisdictions unknown
Permitting Fees	Adopted minimum fees structured by Commonwealth	<ul style="list-style-type: none"> • One jurisdiction petitioned for higher fees • One jurisdiction adopted fee schedule as written • Three jurisdictions unknown
Additional Staff for VSMP	Hired three additional staff in various positions	<ul style="list-style-type: none"> • Two jurisdictions hired additional staff • One backfilled with previously frozen positions • Two jurisdictions remained the same
VSMP Funding	Combination fees (VSMP, development and stormwater) with any deficits covered by development fees. No general fund appropriation.	<ul style="list-style-type: none"> • Four jurisdictions fund out of a combination of general fund and fees • One jurisdiction funds out of the general fund
Voluntary Concept Plan Offered¹	Yes	All offer
Separate Inspectors for Building and Site	Yes	All have separate building and site inspectors
Participation in Engineer and Surveyor Initiative²	Discontinued at least ten years ago	Three jurisdictions participate
Provisional Notice of Intent	Yes	None offered
Early Grading Option Offered³	Yes in certain circumstances	<ul style="list-style-type: none"> • Three jurisdictions offer in some form • 2 jurisdictions unknown

¹ VCP allows contractors /developers to bring plans to Public Works and discuss what would be required for VSMP prior to formal submission or conceptually for land they are potentially purchasing for development to identify costs.

²ESI is an initiative by professional organizations to provide guidance and review documents prior to submission

³EGO allows for early bulldozing after the Construction General Permit is approved but prior to site plan approval

Background - continued

Comparisons to Other Jurisdictions - continued

Below please find information relative to the individual jurisdictions and their processes related to VSMP.

City of Alexandria

County Profile ¹	
Population Size (2015)	153,511
Land Area (sq. miles, (2010))	15.03
Housing Units (2014)	75,329
Population Change ('10-'15)	9.6%

¹Source: www.census.gov

City Summary

The city of Alexandria was founded in 1749 and is still regarded as a highly historic city. Alexandria is a mix of residential areas, along with national associations, corporations, restaurants, shops and other businesses. The city also offers many public parks which line the waterfront and the river is actively used by fishermen and recreational boaters. Alexandria offers a wide range of resources on their website which provide further information on stormwater management practices, procedures, and processes.

Stormwater Management Summary

Almost every street, lawn, driveway, rooftop, and parking lot in Alexandria is connected to a storm drain. When it rains, stormwater flows over these surfaces and mixes with pollutants such as spilled motor oil, pet waste, pesticides, paint, grease, and litter. This stormwater then runs directly to local waterways, which eventually flow to the Potomac River and the Chesapeake Bay carrying with it all of the pollutants it picked up along the way. Alexandria has long been proactive in its efforts to control stormwater pollution. During the development of Alexandria's Stormwater Management Plan, the City engaged in an extensive assessment of existing stormwater management options, ordinances, and programming and evaluated them against National Pollutant Discharge Elimination System compliance requirements. The City has incorporated many of these elements into its current stormwater management program.

When developing in Alexandria, stormwater management plans are required to be submitted in the first stages of the overall permitting process and require separate designated staff to review stormwater plans as opposed to other plan review process (e.g. building, fire, sewer, etc.). Additionally, Alexandria offers voluntary concept plan meetings before plan submission.

Background - continued

Comparisons to Other Jurisdictions - continued

Fairfax County

County Profile ¹	
Population Size (2015)	1,142,234
Land Area (sq. miles, 2010)	390.97
Housing Units (2014)	410,287
Population Change ('10-15)	5.6%

¹Source: www.census.gov

County Summary

Fairfax County is home to over one million residents and was founded in 1742. Its economy also boasts more than 590,000 jobs. Of these, over 142,000 are technology-driven, the largest concentration of anywhere in the United States. Its budget is also larger than four states and is comprised of 395 square miles of land.

Stormwater Management Summary

Fairfax County defines stormwater runoff as “water from rain or melting snow that flows over the ground. In natural conditions, land can absorb and soak up all of the stormwater however, in buildings, roads and parking lots, the water flows over these surfaces into storm drains. These storm drains then lead to streams and not to a wastewater treatment facility and anything which goes through a storm drain is taken directly to the nearest stream”. Stormwater management controls assist in taking this stormwater and sending it through storm drainage systems which are then distributed to lakes and streams. Fairfax County provides a wide variety of information regarding stormwater and stormwater management on its county website, including:

- Announcements and Newsletters
- Outreach and Education
- Reports
- Flood Information
- Projects
- Streams and Watersheds
- Maintenance and Inspections
- Regulatory Information

Fairfax County requests stormwater management plans to be submitted at initiation and maintains a team of 25 staff reviewers and 30 inspectors. These reviewers and inspectors' purpose is to review and inspect stormwater plans. The County also participates in the ESI initiative for VSMP. Voluntary concept planning is offered and approximately up to 10% take advantage of this service.

Background - continued

Comparisons to Other Jurisdictions - continued

Loudoun County

County Profile ¹	
Population Size (2015)	375,629
Land Area (sq. miles, 2010)	515.56
Housing Units (2014)	123,150
Population Change ('10-'15)	20.3%

¹Source: www.census.gov

County Summary

Loudoun County was founded in 1757 and in the last three decades the county's population has nearly quadrupled to over 363,000 citizens with a labor force of over 192,000. For the majority of the city's existence agriculture dominated its economy; however, in the 1960s with the development of Dulles international Airport in the southeastern part of the county, new business, labor forces, and families were attracted to the area. With the rapid growth in Washington, D.C. during this same timeframe, major road improvements also provided an easier commute from Loudoun County, which also contributed to the eastern part of county's growth. Loudoun is also recognized for its beautiful scenery, rich history, healthy diversity of expanding business opportunities, comfortable neighborhoods, and high quality public services.

Stormwater Management Summary

Loudoun County designed their Stormwater Management Program in order to address the design, development, improvement, operation, inspection, maintenance, and oversight of the stormwater management system. This program is administered through the Public Works Division of the Department of General Services. Loudoun County also offers a wide variety of resources on their county website surrounding their purpose, documents and resources, as well as quality and quantity education materials regarding stormwater.

During the permitting process, the County requires stormwater plans to be submitted first and these plans are reviewed by a designated team of four stormwater reviewers and 16 site inspectors. The County offers voluntary concept plan meetings before plan submission. Voluntary concept planning can be done before land is bought or zoned and is utilized on approximately less than 10% of all projects.

Background - continued

Comparisons to Other Jurisdictions - continued

City of Manassas

County Profile ¹	
Population Size (2014)	42,081
Land Area (sq. miles, 2010)	9.88
Housing Units (2010)	13,123
Population Change ('10-'14)	11.2%

¹Source: www.census.gov

City Summary

The City of Manassas serves as a transportation and business hub. Incorporated in 1975, the city is thirty miles southwest of the Nation's Capital and surrounded by Prince William County.

Stormwater Management Summary

Manassas' stormwater program is administered through the Department of Public Works. Manassas has 5,320 storm drains that connect to 22 public stormwater ponds and between 25 – 30 private ponds throughout the city. All of these ponds then empty into other tributaries such as Broad Run, which empties into the Occoquan River, which eventually leads to the Chesapeake Bay. The County also maintains two watersheds: Broad Run and Bull Run which drain to the Occoquan River.

Manassas requires stormwater management plans to be submitted first and has a team of four staff reviewers and one site inspector. The City has separate stormwater reviewers from other reviews conducted as part of the development process. Manassas offers voluntary concept plan meetings before plan submission and is utilized on 25%-30% of all projects.

Background - continued

Comparisons to Other Jurisdictions - continued

Stafford County

County Profile ¹	
Population Size (2015)	142,003
Land Area (sq. miles, 2010)	268.96
Housing Units(2014)	46,526
Population Change ('10-'15)	10.1%

¹Source: www.census.gov

County Summary

Stafford County was established in 1664. From 2000-2010, Stafford County population has increased by more than 40%. This growth is attributed largely to its proximity to the Washington, D.C. metropolitan area. Many of Stafford's residents utilize this service for easier commutes in and out of Washington, D.C. However, there is also an increasing number of employees who work in Stafford County, as well. Some of the major companies located in or near Stafford County's include GEICO's Regional Office, Northrop Grumman, Hilldrup United, ManTech and Patricio Enterprises, along with the FBI Crimelab, DEA and Marine Corps Base Quantico, stimulating Stafford's economy.

Stormwater Management Summary

Stafford County's Stormwater Management Program is administered by the Department of Public Works and the review of any and all plans is addressed by the Department of Planning and Zoning. The county offers multiple resources as guidance around stormwater management, specifically around plan review, construction inspections, and maintenance inspections.

With regards to the review of stormwater plans, Stafford County requires plans to be submitted as early as possible during the review process. Stafford County has reviewers and inspectors that are separate from the reviewers of any other plans (e.g. building, sewer, etc.). The funding for these resources comes through the General Fund. Additionally, Stafford offers voluntary concept plan meetings before plan submission. These concept planning meetings can be done prior to land being purchased or zoned.

Objectives and Approach

Objectives and Approach

Objectives

The overall objectives of the analysis of the County's implementation of the VSMP by the County's Department of Public Works Environmental Services Division included reviewing compliance, and the approach utilized by the County as it related to the implementation of the new regulations, including comparisons to applicable jurisdictions. Areas of focus to achieve the objectives included:

- Analysis of impact of process changes with implementation of VSMP;
- Reviewing the County's process in relation to other comparable jurisdictions;
- Assess stakeholder challenges/issues in relation to the newly enacted regulations; and
- Determine potential changes to VSMP commercial permitting plan review, resulting in a smarter process and allowing a more competitive environment for compliant development.

Approach

Our approach consisted of the following phases:

Understanding and Collecting Relevant Data and Information

During this phase, we conducted interviews with the appropriate representatives from the Department of Public Works to discuss the scope and objectives of the audit work, request relevant documentation, determine key contacts and establish working arrangements.

Detailed Analysis

The purpose of this phase was to conduct interviews, perform analysis and determine recommendations related to process, and comparisons to other jurisdictions to meet our audit objectives outlined above. Specific procedures performed included:

- Interviewed selected Department of Public Works employees to understand the current commercial stormwater plan review process and identify changes as a result of VSMP;
- Reviewed documentation received as it related to implementation of VSMP;
- Developed process maps of pre-VSMP and post-VSMP stormwater permit process;
- Interviewed the following stakeholders:
 - Developers/Contractors
 - Identified challenges of VSMP and implementation in the County
 - Compared to doing business in other VA jurisdictions
 - Engineers
 - Environmental/Conservation Groups
 - Identified challenges of VSMP and implementation in the County
 - Impact of VSMP to stormwater management
- Interviewed the County's Legal representatives to understand the review process during VSMP Plan drafting; and
- Interviewed representatives and reviewed information of other impacted jurisdictions to compare process, benchmarks, etc.

Reporting

At the conclusion of this audit, we summarized our findings into this report. We have reviewed the results with the appropriate persons in Management, and have incorporated management's response into the report.

Issues Matrix

Issues Matrix

The following are observations identified during our analysis to assist in enhancing current processes.

Rating	Issue
Moderate	1. Site Inspector and Plan Reviewer Certification
	<p>Site inspectors and plan reviewers are required to be certified by the Commonwealth, which provided training during roll out. The Commonwealth has allowed provisional certification for 24 months after the site inspector/plan reviewer has completed the first required VSMP training course. As of our analysis, we noted the following:</p> <ul style="list-style-type: none"> • Two (2) out of five (5) of the County’s plan reviewers are provisionally certified, two (2) have attained certification, and one (1) plan reviewer’s provisional certification has expired without certification attained. • Three (3) out of 12 of the County’s site inspectors are provisionally certified, seven (7) have attained certification, one (1) is new with training scheduled, and one (1) site inspector’s provisional certification has expired without certification attained. <p>Training and proper certification strengthens site inspection and plan review consistency, accuracy and credibility to Stakeholders.</p> <p>We recommend that site inspector and plan review certifications be monitored and followed-up on until the proper certification has been properly and timely obtained. Additional training by the Commonwealth or industry conferences should be considered to augment certification training.</p>
	Recommendation
	<p>We recommend that site inspector and plan review certifications be monitored and followed-up on until the proper certification has been properly and timely obtained.</p> <p>Additional training by the Commonwealth or industry conferences should be considered to augment certification training, particularly for site inspectors.</p>
	Management’s Response
	<p>Response: Management is diligently working with the appropriate staff to get certified from DEQ within the allowed time frame or to take additional training class through DEQ if necessary.</p> <p>Responsible Party: Environmental Services Division</p> <p>Estimated Completion Date (“ECD”): July 31, 2016</p>

Issues Matrix - continued

Rating	Issue
Moderate	2. Program Communication
	<p>As part of their evolving VSMP Program, the County has developed programs the development community has viewed favorably. When interviewing some of the external stakeholders, many were not aware of them and expressed an interest in utilizing these services. Examples include:</p> <ul style="list-style-type: none"> • Provisional Notice of Intent approval • Voluntary concept meeting • Early grading program and • Nutrient bank credits • Internal informal appeals process <p>VSMP regulations are a major overhaul to stormwater regulations in VA and have transferred administration from the Commonwealth to local MS4 jurisdictions. These regulations have been in existence for approximately 18 months. Along with increased costs associated with the regulations, interpretation of the regulations or variation in jurisdictional process has been the biggest concern for consulting engineers and developers. The learning curve is particularly challenging in redeveloped properties and grandfathered sites. Other variations include when to apply for permits, early grading, concept plans, etc. The frustration is coupled by not understanding the “why” increased costs occur.</p> <p>Although a frustration, many interviewees have indicated that the County has some of the well-versed engineers interpreting the regulations. County management has been flexible in understanding developer concerns but also understanding and enforcing the new regulations. Keeping the balance has been a constant challenge to the County’s plan reviewing staff.</p>
	Recommendation
	<p>Increased communication on streamlined programs the County has developed is essential. We recommend that County enhance communication to inform stakeholders of program changes, issues and trends. Communication could be in the form of a newsletter or use of the County’s webpage. It was noted during our stakeholder interviews, that the County’s website for VSMP information was particularly informative and easy to navigate, compared to other jurisdictions.</p> <p>Because the law is new and overarching, continued development and training of reviewing engineers and site inspectors is key and should remain a high priority for the County. Other jurisdictions have included communication mechanisms to evolve their program:</p> <ul style="list-style-type: none"> • Working groups with developers/conservation groups • Technical bulletins outlining updates <p>The County may also consider developing a working alliance with other jurisdictions to vet common concerns and determine a consistent approach. During interviews, other jurisdictions expressed interest in how others were handling the challenges. The chance to collaborate would provide a common platform to mature their processes.</p> <p>Where differences exist on individual work sites, County management has generally resolved issues informally. They may consider a more formalized escalation process. Although the Commonwealth has an appeals process, this would delay the project. The County has been able to resolve this timely and should continue to resolve without outside intervention, reducing contention in the process.</p>

Issues Matrix - continued

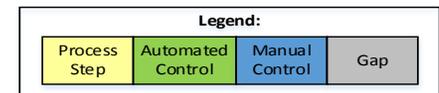
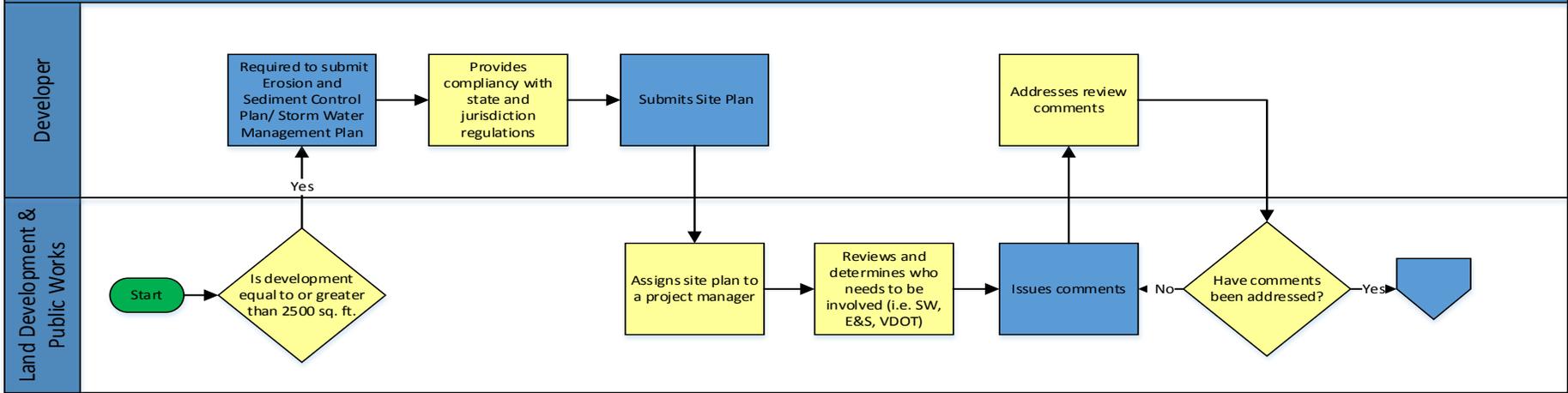
Rating	Issue
Moderate	2. Program Communication - continued
	<p data-bbox="737 275 1057 306" style="text-align: center;">Management's Response</p> <p data-bbox="383 323 1422 415">Response: We have several County representatives who are members of industry organizations (CDC, NAIOP, NVBIA, PW Chamber of Commerce, etc.). We fully intend to leverage these organizations and have them assist with this communication effort.</p> <p data-bbox="383 432 1422 491">We agree that our web page is a great source for promoting and disseminating information and we will continue to use it to get accurate information out to stakeholders.</p> <p data-bbox="383 508 1422 630">The County Communications Office is always looking for opportunities to assist agencies with developing marketing materials. They have the ability to generate news articles, brochures, video clips, etc. This is another great resource to assist us with getting our message out to the development community.</p> <p data-bbox="383 646 1422 768">We would caution against developing another newsletter. We have attempted this on two different occasions and the efforts were not successful. One, industry loses interest and doesn't follow the newsletter. Two, as workload increases, the newsletter tends to fall of the priority list. Starting and stopping the newsletter effort is not productive.</p> <p data-bbox="383 802 1336 833">Responsible Party: Development Services and Environmental Services Division</p> <p data-bbox="383 850 597 877">ECD: Continuous</p>

Issues Matrix - continued

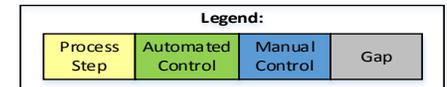
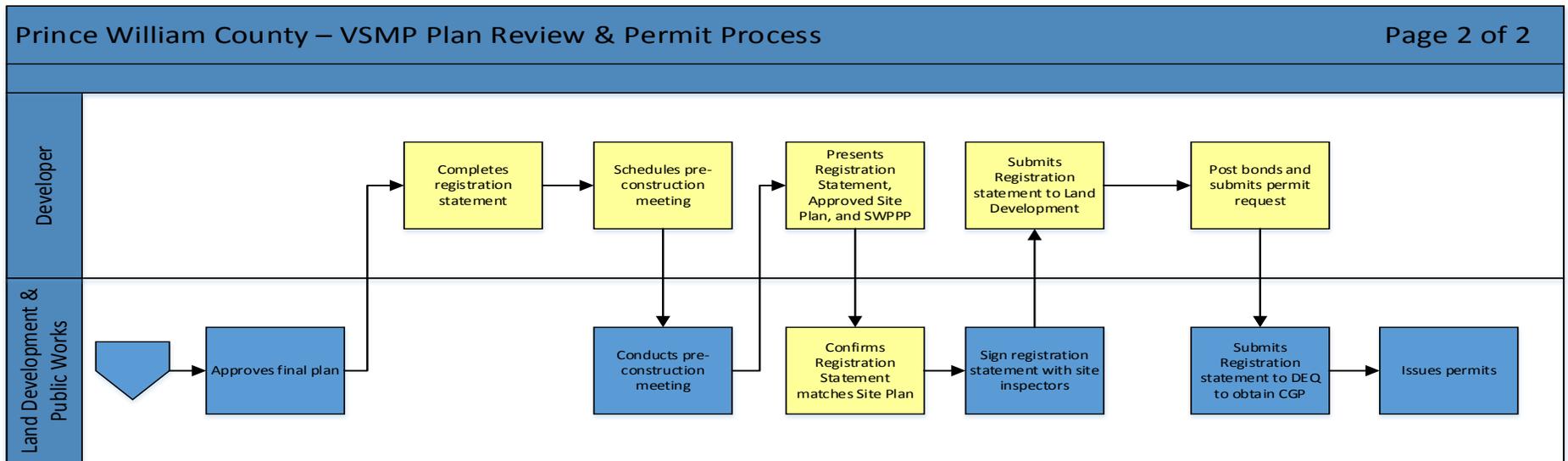
Rating	Issue
Low	3. Definition and Tracking of Periodic Inspections
	<p>Due to multiple water regulations with differing inspection intervals, confusion exists within the development community as to how often the site inspections will occur. For example, VSMP site inspections are defined as “periodic” with little criteria or guidance when to visit or where priority exists. Conversely, Erosion and Sediment site visits are strictly defined as every two weeks or within 48 hours after a major storm event. Not all projects qualify as VSMP but many regulations overlap.</p> <p>Site inspections are tracked in EnerGov, which is used to track over 1,000 projects at a given time. Although the software has useful applications at the County, it is not optimal for tracking multiple inspections per site. Due to system limitations, Site inspectors have relied on a manual work around via Excel spreadsheet. Some inspectors visit job sites they know from memory.</p> <p>The confluence of regulations with vague/conflicting inspection intervals and sub-optimal tracking software may cause inconsistent review and could cause over/under inspection of some sites.</p>
	<p style="text-align: center;">Recommendation</p>
	<p>We recommend that specific definitions for periodic inspections be provided to the site inspectors, with a priority system to ensure higher risk projects are inspected. This will also provide consistency to the program. Definitions and criteria should also be provided to the development community so they can rely on a consistent experience. It should be noted, however, with the advent of recent signed Commonwealth legislation regarding streamlining water regulations, this issue may be alleviated.</p>
	<p style="text-align: center;">Management’s Response</p>
	<p>Response: The VSMP Regulation provides the VSMP inspector the flexibility to determine when to inspect a particular site. This allows the inspector to prioritize their inspections based on the activities and conditions on the site. For example, inspector may conduct site inspections more frequently on a site where the land disturbance activity involves grading of steep slopes, presence of highly erodible soils, etc. (high risk sites). The mobile inspection application which is being developed and scheduled to go-live on July 1, 2016 will greatly assist the site inspectors in tracking of high risk projects that require more periodic inspections by flagging these sites at the pre-construction meeting.</p> <p>Responsible Party: Environmental Services Division</p> <p>ECD: July 1, 2016</p>

Process Maps

Process Maps



Process Maps



Appendix

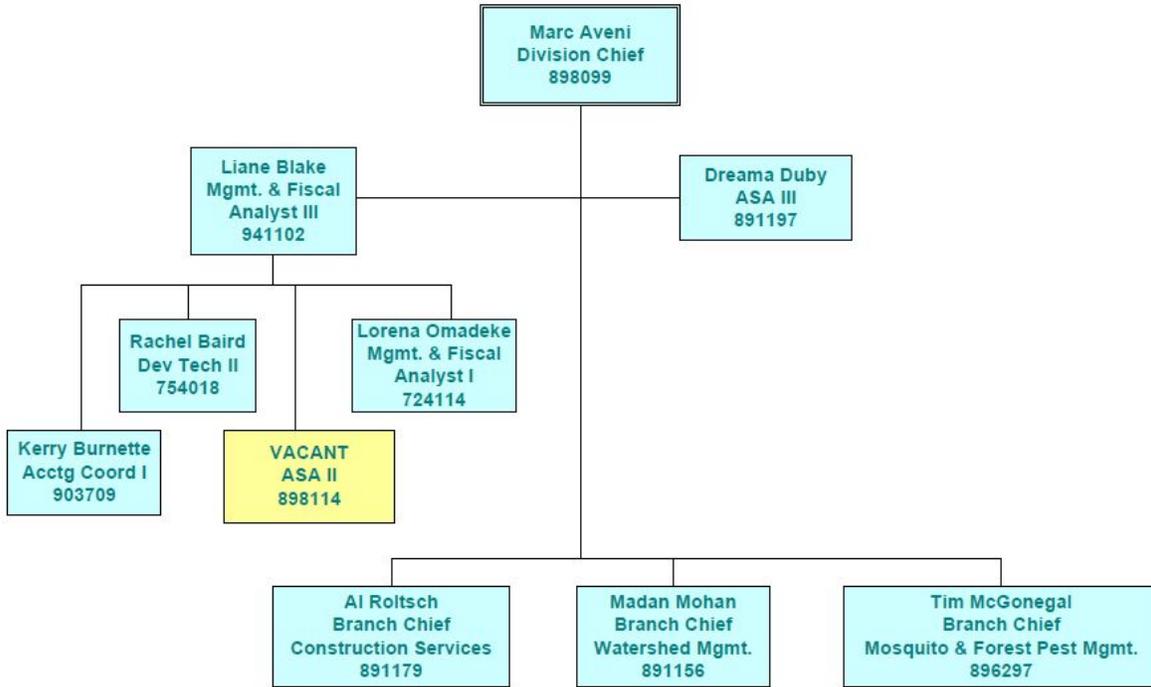
Appendix A Interview Questions

The following Interview Guide was used to interview the other jurisdictions. Not all questions may have been discussed during the interview time due to personnel attending the interview or time constraints and not all answers may have been provided by the individual jurisdictions.

1. At a high level what is the process for commercial stormwater permitting?
2. At a high level, what is your termination process? When do you release bonds related to the stormwater permitting process? Do you ever hold for other related work (e.g. road construction, etc.)
3. When do you require stormwater plans to be submitted?
4. Ratio of: Staff Reviewers/Site Inspectors/# of stormwater plans reviewed
5. How often, on average, is your site inspector completing a job site visit to follow up on self-inspections?
6. Do you have separate reviewers/inspectors for stormwater versus other building reviews/inspections?
7. Did you staff additional personnel to handle the provisions of VSMP? If so, in what role/position?
8. Please provide your fee structure. Are you funding VSMP administrative costs out of the fees or through the general fund? If both, what is the percentage?
9. How many stormwater plans do you review per quarter:
 - 2012
 - 2013
 - 2014
 - 2015
10. What is the average time from review to VSMP permit approval?
11. For stormwater reviews do you ever rely on a consulting engineer's stamping to do an acceleration or do you continue with a full review? If yes, under what type of circumstances.
12. NOI – Do you allow provisional permitting?
13. Do you have an early grading process?
14. Do you require contractor/developer inspection reports prepared by their engineer to be copied to you?
15. Do you require a concept plan/meeting or is it voluntary.

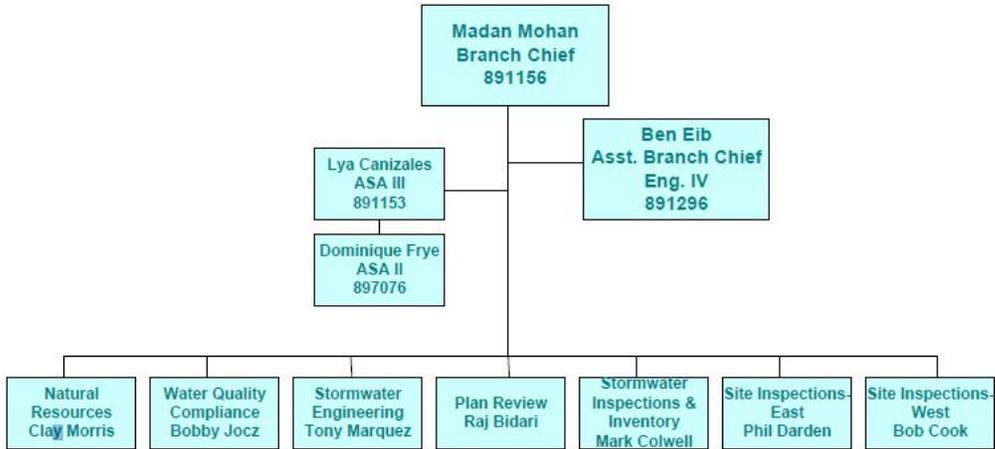
Appendix B Watershed Organizational Chart

Department of Public Works Environmental Services Division



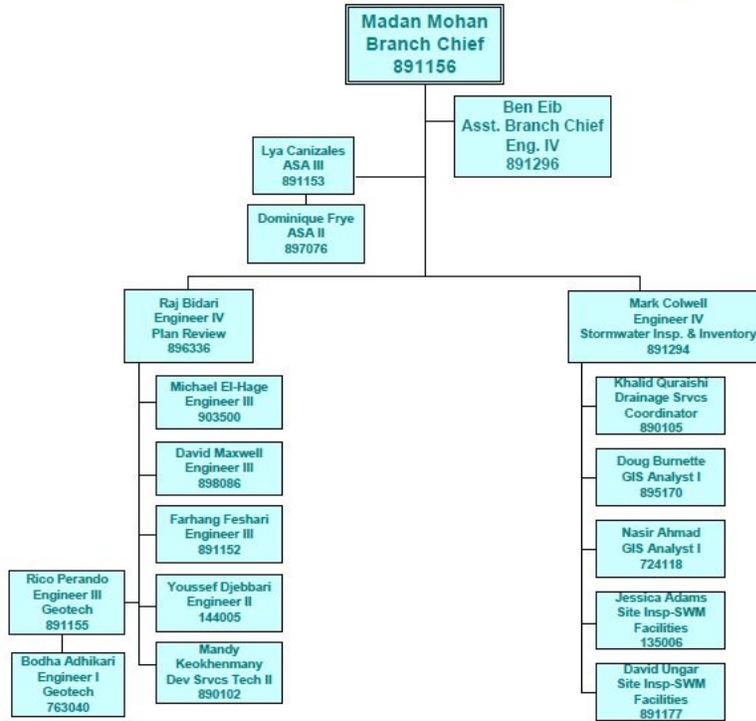
January 19, 2016

Watershed Management Branch



January 19, 2016

Watershed Management Branch Plan Review, GIS, Drainage Inspections



January 19, 2016

Appendix C

Best Management Practice Table

BMP Table 7-6

BMP Type	Non-residential ¹	Residential ² Subdivision Lots		VDOT right-of-way ³	Setback ^{4,5}	Minimum Lot Requirement	Major Maintenance Responsibility		Easement		BMP Sign Required	What is included in Maintenance
		Individual Lots	Common Area				Residential	Non Residential	BMP	Access		
1 <u>Rooftop (Impervious Surface) Disconnection</u>	A	A	A		10' from Foundation	Allowed on SF detached - Case basis on SF attached	Private	Private	Yes	Yes	No	Agreement/Deed Restriction
2 <u>Sheet Flow to Filter or Open Space</u>	A	A	A		10' from Building/ Dwelling		Private	Private	Yes	Yes	No	Agreement/Deed Restriction
3 <u>Grass Channels</u>	A	R	A		20' from Building/ Dwelling	Minimum lot size of 20,000 sf on SF detached lots	Private	Private	Yes	Yes	No	Agreement/Deed Restriction
4 <u>Soil Compost Amendment</u>	A	R	A		20' from Building/ Dwelling if Located on Individual SF Lot	Minimum lot size of 20,000 sf on SF detached lots	Private	Private	No	No	No	Agreement/Deed Restriction
5 <u>Vegetated Roof</u>	A	N	R				Private	Private	No	No	No	Agreement/Deed Restriction
6 <u>Rainwater Harvesting</u>	A	R	A		<ul style="list-style-type: none"> • Residential - Case Basis • Non Residential - NA 		Private	Private	Yes ⁶	Yes	No	Agreement/Deed Restriction
7 <u>Permeable Pavement</u>	A	N	R				Private	Private	No	No	Yes	Agreement/Deed Restriction
8 <u>Infiltration</u>	A	R	A		<ul style="list-style-type: none"> • 20' from Dwelling • 5' from ROW 		Private	Private	Yes ⁷	Yes	Yes	Agreement/Deed Restriction
9 <u>Bio-retention</u>	A	A	A		<ul style="list-style-type: none"> • 20' from Dwelling • 5' from ROW 	Minimum lot size of 20,000 sf on SF detached lots	Private	Private	Yes ⁷	Yes	Yes	Agreement/Deed Restriction
10 <u>Dry Swales</u>	A	R	A		25' from Dwelling	Minimum lot size of 20,000 sf if DA <= 1 acre	Public	Private	Yes ⁷	Yes	Yes	Agreement/Deed Restriction

Appendix C - continued

Best Management Practice Table - continued

11	<u>Wet Swale</u>	A	N	A		• 10' from Residential Property Line • 40' from Dwelling		Public	Private	Yes ⁷	Yes	Yes	Agreement/Deed Restriction
12	<u>Filtering Practices</u>	A	N	R		10' from Property Line		Public	Private	Yes ⁷	Yes	Yes	Agreement/Deed Restriction
13	<u>Constructed Wetland</u>	A	R	A		• 10' from Residential Property Line • 40' from Dwelling	Minimum 2 Ac. with Approval of Director of PW	Public	Private	Yes - Same as ponds	Yes	Yes	Agreement/Deed Restriction
14	<u>Wet Pond</u>	A	R	A		Per DCSM	Minimum 2 Ac. with Approval of Director of PW	Public	Private	Yes - Same as ponds	Yes	Yes	Agreement/Deed Restriction
15	<u>Extended Detention Pond</u>	A	R	A		Per DCSM		Public	Case Basis	Yes - Same as ponds	Yes	Yes	Agreement/Deed Restriction
16	<u>Manufactured (Proprietary) BMP</u>	A	N	R				Private	Private	Yes ⁶	Yes	No	Agreement/Deed Restriction

A - Accepted, R - Restricted, N - Not Allowed, N/A - Not Applicable

¹ Non-residential properties include apartment rental complexes and mobile home developments

² Residential properties include single family attached (townhome and condominium) developments

³ Any BMP in the street right-of-way shall require approval from VDOT

⁴ Distance to easement line (if easement required)

⁵ A minimum setback of 5 feet shall be required from the parcel boundary to the easement line. Design standards may require a greater setback than identified

⁶ Ten (10) ft. easement around the facility

⁷ Ten (10) ft. easement around the facility or Ponding elevation corresponding to the design WSE plus 10 feet (horizontal), whichever is greater

Adopted June 17, 2014

Effective July 1, 2014

2

RSM US LLP is a limited liability partnership and the U.S. member firm of RSM International, a global network of independent audit, tax and consulting firms. The member firms of RSM International collaborate to provide services to global clients, but are separate and distinct legal entities that cannot obligate each other. Each member firm is responsible only for its own acts and omissions, and not those of any other party. Visit rsmus.com/aboutus for more information regarding RSM US LLP and RSM International.

RSM® and the RSM logo are registered trademarks of RSM International Association.

The power of being understood® is a registered trademark of RSM US LLP.

© 2015 RSM US LLP. All Rights Reserved.