Background Information

The departments of Capital Outlay and Landscape and Grounds are responsible for implementation and maintenance of BMP’s for the university. Roles and responsibilities of these departments in enacting compliance with the General Permit remain unchanged since those roles were defined. Beneath the umbrella of the Facilities Services Division, the Capital Outlay department remains tasked with identifying and implementing construction of management controls through its oversight capacity of capital projects with land disturbing components. Once completed, information pertaining to the operation and maintenance of the management devices is passed to the Landscaping and Grounds department. Landscaping and Grounds also continues contribution to, and monitoring of, community outreach programs.

Unlike recent years, no new MS4 facilities have been added to the University. UMW campuses in Fredericksburg, in Stafford County, and in King George County, Virginia are included in this annual report. UMW Stafford has not experienced land disturbing activity, but UMW Dahlgren has with the expansion of parking facilities. At Dahlgren the original site development planning anticipated this growth, and the stormwater facilities were sized to accommodate the current work.

Certification: “I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

<table>
<thead>
<tr>
<th>Responsible Official Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAR040094</td>
<td></td>
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<tr>
<td>University of Mary Washington</td>
<td></td>
</tr>
<tr>
<td>Permit Number</td>
<td>MS4 Name</td>
</tr>
</tbody>
</table>
Status of permit compliance, including BMP effectiveness analysis

The University of Mary Washington strives for permit compliance through application of its Stormwater Master Plan (approved April 2009, revised 2012). Calculations done as a part of the Master Plan study indicate the University is required to remove 29.7 lbs of phosphorus annually. The reductions are spread across the three campuses thusly:

- Fredericksburg – 25.8 lbs; existing and newly constructed BMPs remove 25.8 lbs: status neutral.
- Stafford – 2.6 lbs; existing BMPs remove 7.1 lbs: 4.5 lbs surplus reduction.
- Dahlgren – 1.3 lbs.; existing BMPs remove 3.2 lbs: 1.9 lbs surplus reduction.

There are currently twenty-nine devices for treatment of stormwater runoff, addressing the majority of the required phosphorus removal. Recent projects through a Commonwealth of Virginia pool-funded master project have included improvements to water quantity concentrations and improved treatment of stormwater. Currently UMW exceeds the removal requirements by 6.4 lbs (cumulative) annually.
Results of monitoring data, if any, collected and analyzed

2016   The University of Mary Washington does not currently employ permanent monitoring stations. However, in 2015 UMW completed a pool-funded project which included improvements to five streambed segments. These segments had shown evidence of the ill effects from erosive velocities. Since addressing the erosive velocities with weirs and checks, and introducing additional native plant species adjacent to the streambeds, the banks are noticeably less eroded. Observations during and following rain events indicates that velocities and turbulences have been dramatically decreased. Furthermore, the apparent groundwater adjacent to the streambeds is markedly improved as witnessed by an increased number of water seeps, permanently damp areas, and growth of plants more common to wet areas.
Activities anticipated for the next reporting cycle

2016 There are two land disturbing activities expected during the next reporting cycle: renovation of the track and field facility on the Battleground Athletic Complex, and a renovation / addition to the Jepson Science Center.

The track and field renovation was begun during this reporting period, and extended beyond the completion date into the next reporting period, 2016-2017. The overall footprint remained the same, and the disturbed area is four acres (more or less).

Renovation and expansion of the Jepson Science Center has been delayed, but is expected to commence land disturbance in early 2017. The three-story addition does require two new routes for vehicular traffic and, with those considerations, the construction-impacted areas amount to approximately 5-1/2 acres.

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Changes in BMP’s or goals for the minimum measures, and steps to address deficiencies

2016  During this cycle UMW revised educational outreach to promote the three goals stated in the UMW Program Plan (2015). UMW strives to inform their community on the: proper collection and disposal of pet waste; disposal of human generated litter; and the stormwater reuse strategies which incorporate Virginia native plant materials.

In the area of non-Stormwater Discharge reporting, UMW enlarged staff training to include the Housekeeping department along with the continuing education training provided to the Landscape and Grounds department.

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Reliance on other governmental agencies for compliance

2016  UMW maintains a collegial relation with MS4 coordinators in the City of Fredericksburg, Stafford County, and VDOT. UMW maintains campuses in the city, and in the counties of Stafford and King George. There is interdependency between the stormwater management systems in the city of Fredericksburg and Stafford County, while the Dahlgren campus in King George County remains stand-alone. VDOT, of course, has general oversight of the roadways between the campuses.

The next two pages provide copies of the letters provided to the city of Fredericksburg, and to Stafford county.
10 October 2016

Kevin W. Utt  
Stormwater Administrator & Environmental Planner  
City of Fredericksburg Planning Services Division  
Fredericksburg, VA 22401

re: MS4 interconnectivity

Dear Mr. Utt,

The University of Mary Washington, Fredericksburg campus, herein provides annual notification of MS4 interconnectivity. There exists interconnection between the storm sewer system installed and maintained by the university, and the storm sewer system operated by the City of Fredericksburg. The systems are co-dependent, with conveyed waters being received from and discharged to each political entity / government agency.

During the past twelve months there have not been alterations to the points of connection, nor have any existing points been eliminated, nor have new points been added to the system operated by the University of Mary Washington.

Sincerely,

A. Leslie Johnson  
Project Manager, Capital Outlay department  
University of Mary Washington  
Fredericksburg, VA 22401
10 October 2016

Paul Santay
Environmental Programs Manager
Stafford County Environmental Division
1300 Courthouse Road, 2nd Floor
Stafford, VA 22554

re: MS4 interconnectivity

Dear Mr. Santay

The University of Mary Washington, Stafford campus, herein provides annual notification of MS4 interconnectivity. There exists interconnection between the storm sewer system installed and maintained by the university, and the downstream stormwater pond (44R-CC) located in the Stafford Lakes Village housing development. The systems are not co-dependent; the UMW Stafford system flows into the Stafford County system.

During the past twelve months there have not been alterations to the points of connection, nor have any existing points been eliminated, nor have new points been added to the system operated by the University of Mary Washington.

Sincerely,

A. Leslie Johnson
Project Manager, Capital Outlay department
University of Mary Washington
Fredericksburg, VA 22401

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Status of Section IIC programs

Implementation of Section II B minimum control measures

1. Public education and outreach on stormwater impacts.

BMP 1.1 – Education

As a state supported institution of higher education, UMW recognizes the value of both formal as well as informal education and supports life-long learning opportunities for the citizens of the Commonwealth of Virginia. As a practical effort in student learning and community education the University will annually support the employment of a student position to work approximately 150 hours per year with Facilities Services staff in support of education and outreach regarding the University’s sustainability programs, including storm water.

Measurable Goals: UMW will promote stormwater awareness through the UMW website. This will include a summary statement of the annual evaluation report.

2016 result: UMW landscape and Grounds hosted a Sustainability table at the annual UMW Multicultural Fair. This table featured stormwater, the negative effects of the many pollutants that stormwater runoff carries, and the opportunities for mitigating the negative effects. Visitors to the table were offered a variety of handouts describing the potential sources of pollution and suggesting ways to eliminate or offset the pollutants.

06 June 2016

Joni Wilson volunteered at the Tree Fredericksburg and Virginia Bluebird Society’s tents on Saturday’s Rock the River event. The event was a Virginia Green event that combined activities from various communities who benefit from, are inspired by, and enjoy their time on the Rappahannock River, and seemed well attended. During my time there 2 hours was devoted to discussing proper tree planting, mulching and the general benefit of trees to our community. In addition, I asked every visitor to our table if they owned a pet and distributed the pamphlet on managing pet waste. After my 2 hour shift I wandered the vendor area and distributed pamphlets to people in attendance with a dog. I distributed pamphlets to at least 50 people and left additional materials for the volunteers that were there remainder of the day.

Attached are the pamphlets that I distributed specifically for UMW. There were many additional handouts on trees, their care and community benefits, as well as a demonstration of improper mulch volcanoes and what tree roots look like below ground.
Why Forests Matter

- Forests provide habitat for wildlife and support biodiversity.
- They help maintain water quality and quantity by reducing erosion and improving water filtration.
- Forests play a crucial role in regulating the carbon cycle, helping to combat climate change.
- Forests provide economic benefits through timber production, recreation, and tourism.
- They contribute to soil health and nutrient cycles.
- Forests help prevent floods and reduce stormwater runoff.
- They support the development of renewable energy sources.

Forest Buffer Zones

- Forest buffer zones act as natural filters, reducing sediment and nutrient runoff from agricultural activities.
- They help protect water quality by trapping sediment and reducing the amount of nutrients reaching water bodies.
- Forest buffer zones can also help prevent erosion and stabilize soil.

Forest Management Practices

- Forest management practices focus on ensuring sustainable use of forest resources.
- Practices include selective harvesting, reforestation, and conservation strategies.
- The goal is to maintain forest health while allowing for economic benefits.

American Watersheds

- American watersheds are critical to maintaining water quality and quantity.
- They support diverse ecosystems and provide habitat for many species.
- Effective management of watersheds is essential for maintaining ecological balance and human well-being.
DCR is your watershed connection across Virginia.
For more information, other tips on how you can help and a list of local DCR watershed office contacts, visit DCR’s website at http://www.dcr.state.va.us or call 1-877-42WATER.

Chesapeake Bay Program
A Watershed Partnership

Department of Conservation and Recreation
203 Governor St., Suite 213
Richmond, VA 23219

DCR
Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES

Watershed Connection
Do you know your watershed address?

Rivers don't know county boundaries or state border;
It's watersheds that connect us to our waters . .
and you can make a difference.
BMP 1.2 – Outreach
For several years the University has worked jointly with local organizations including: the George Washington Regional Green Commission, Fredericksburg Clean and Green Commission, Friends of the Rappahannock, the Rappahannock Group Sierra Club, Tri-County/City Soil and Water Conservation District, Rappahannock Regional R-Board, and Stafford County. Meetings of these groups cover a range of horticultural, conservation, and environmental topics, provide educational and outreach opportunities allowing for the dissemination of informational brochures. UMW shall, at least once annually, provide informational brochures concerning stormwater, the University’s MS4 Program or other sustainability related topics at a public event.

Measurable Goal: Provision of brochures at designated event.

2016 result: Riparian Buffer Restoration – Margaret Magliato, Environmental Sciences major 2016, was awarded the ‘Go Green’ grant from Sodexo Inc., funds from the grant were used to fund the replanting of a riparian buffer along the campus stream at Woodard Hall. 10 student volunteers worked for over 3 hours and planted 56 plants: 3 varieties of Blueberry, Ilex verticillata ‘Red Sprite’ (Deciduous Holly), Amsonia tabernaemontana (Willowleaf Amsonia), Callicarpa americana, Asimina triloba (PawPaw), and Hydrangea quercifolia (Oakleaf Hydrangea). The importance and role of riparian buffers to the watershed was discussed along with the UMW’s stormwater stewardship and MS4 obligations. Attendees were appreciative of the efforts made by the University to preserve not only the immediate stream but the Rappahannock River and Chesapeake Bay. Most attendees were Eco Reps (sustainability programming volunteers) Environmental Sciences majors or from the Bio Club and had a basic understanding of the processes discussed. They were impressed that the University readily embraced their stewardship responsibilities.

2. Public involvement / participation.

BMP 2.1 – Public Involvement (Local Jurisdictions)
The University has endeavored to maintain effective communication and coordination with officials both in the City of Fredericksburg and in Stafford County. Numerous formal and informal meetings and communications are exchanged on a variety of topics throughout any year. The University will specifically include storm water as an agenda topic at least once
annually in meeting with the appropriate administrative staff personnel in the two local jurisdictions.

**Measurable Goal:** Record of each meeting in which storm water topics are discussed.

**2016 result:** UMW staff meet informally with the City of Fredericksburg, Stafford County, and VDOT MS4 officials to discuss issues and opportunities related to stormwater. During this cycle we met once in March for a lunchtime meeting. We discussed the projects we separately had in progress, and the opportunities to use the projects as teaching outreach moments for the communities we serve. Stafford’s Paul Santay described how the county has produced and airs three public service spots encouraging residential appreciation of the environment. Specifically, Stafford residents are reminded of the negative effects of over-fertilization of lawns, the importance of collecting pet waste, and that “Only Rain Down The Drain” is the best consideration of the county’s storm sewer system.

BMP 2.2 – Public Involvement (University Neighbors)

UMW is in regular communication with local neighborhood associations in an effort to keep community members informed of campus activities such as construction and special events. University officials mail newsletters to local homeowners and are in turn invited to attend periodic neighborhood association meetings. UMW will provide the storm water brochure (discussed in BMP 1.2) in at least one newsletter per year. UMW administrators will solicit comment and questions concerning storm water from the neighborhood associations at least one annual meeting to which they are invited.

**Measurable Goal:** Record of annual mailing of storm water brochure and each meeting in which storm water topics are discussed with neighborhood associations.

**2016 result:**

On May 19, 2015, Joni Wilson led 30+ Elder Study members on a UMW Trees walking tour. The theme of the walk was native trees and their role in the eco-system, as well as uses of these trees in the landscape. Attendees were given information on the role plants play in supporting all life, and how connected the food web is between native trees, caterpillars and birds, as well as the role of native pollinators. We visited a bio-retention basin and discussed why it was in place, it’s role in reducing pollutants such as heavy metals, nitrogen and phosphorus; and the part the native trees play in the reduction. The native species of River Birch was discussed for its suitability for not only use in the bio-retention pond but in bank restoration and erosion control. In addition, we discussed litter as a storm water issue and how we can help.

Below is a sample of the information shared throughout the walk:

“In the mid-Atlantic – native oaks provide food for 534 caterpillar species while the Ginko – supports just one. Kousa dogwood, a species from China that supports no insect herbivores, instead of our native flowering dogwood (Cornus florida) that supports 117 species of moths
and butterflies alone. This is striking – Tallamy and others believe bird populations are good indicators of the health of the ecosystem.

But this is not a problem just for the environmentalists, and foresters - no this is a problem for us all - the suburban and urban property owner can make a difference.

Jack Kostyack, National Wildlife Federation – Home to 82% of the nation’s population, cities and suburbs in the US, house 2/3 of all N. American wildlife species including imperiled plants and animals. It is important to recognize that people in developed areas have enormous opportunities to protect bio-diversity where they live.’

‘Betula nigra -only native birch to coastal plain in SE, stream bank restoration and other erosion control situations, Minnesota to Fla & Texas, only birch takes tight clay soil’

‘Nearly every creature on the planet owes its existence to plants. Diversity of animals is linked to diversity of plants. Approximately 50,000 alien species of plants and animals have colonized N. America – so that’s diversity so what is the problem? Through eons of evolution living things adapted to their physical environment. Humans have changed that setting drastically – and almost instantly- when viewed on an evolutionary scale. Plants and animals today have had no time to adapt to these sudden changes. Non-natives affect the entire food webs by reducing plant eating insects – the most important food for animals – 96% of terrestrial birds rear young on insects.’

‘Research shows that in some areas availability of abundant forage is more of a limiting factor on native bee abundance than pesticides. Pollinators are important in wildlife food webs both as essential step in the production of seeds, nuts and fruits and as direct prey. Bears, rodents, small mammals, birds, and many terrestrial invertebrates all depend directly or indirectly on pollinators for much of their diet. Many native bee species are much more effective than honey bees at pollinating on a bee per bee basis. 250 female blue orchard bees can effectively pollinate an acre of apples, requires over 20 thousand honey bees. More than 80 species of bees recorded pollinating berry crops in Maine and Massachusetts. More than 100 species of native bees have been found visiting cranberry bogs in Wisconsin. More than 100 native bee species have been documented in New York and PA apple orchards. Native pollinators have been shown to triple production of cherry tomatoes in California. Wild native bees improve pollination efficiency of honey bees in hybrid sunflower seed crops by causing them to move between male and female rows more often. Only the fields with both abundant native bees and honey bees had 100% seed set.’

Later that spring (on May 27) Meredith Palumbo, UMW student and intern with Friends of the Rappahannock, accompanied Brian Hofmann of FOR during the installation of 6 storm drain markers at the new construction along College Ave at the Fredericksburg Campus.
3. Illicit discharge detection and elimination.
BMP 3.1 – Staff Training
Historical data indicates that the University’s front line service employees are, by nature of their duties, collectively more likely to observe and report unusual or aberrant conditions than any other constituent group on the University grounds. Consequently all grounds and maintenance services staff will be provided annual training to allow them to detect and eliminate illicit discharges. This training will be provided based on available EPA, DCR and other authoritative resources.

**Measurable Goal:** Record of annual training.

**2016 result:** UMW Grounds and Housekeeping departments receive re-iterative training about reporting and handling suspected stormwater pollution (illicit discharges) through safety training. The training occurs on a monthly basis, with different topics each month. Stormwater information is provided twice annually.

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BMP 3.2 – Campus Community Reporting
While Facilities Services staff is most likely to detect illicit discharges, it is still important to provide reporting mechanisms to allow students, faculty, other staff, and visitors to detect and report illicit discharges or suspected discharges. UMW will provide reporting guidelines on the University’s MS4 (storm water) program web site for this purpose. The MS4 Program Plan brochure (see BMP 1.2) will also provide reporting information. The campus community is informed of the web site via the employee electronic information newsletter or other electronic notification.

**Measurable Goal:** Twice yearly announcements via electronic means (web page or email).

**2016 result:** UMW issues a ['President’s Community Newsletter' (Spring 2016)] semi-annually to the Fredericksburg campus and the larger Fredericksburg community via e-newsletter.

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4. Construction site stormwater runoff control.
BMP 4.1 – Erosion and Sediment Control Authority
As a state agency, UMW is required to comply with the statutes and regulations of the Commonwealth of Virginia, including construction requirements as reflected in the Code of Virginia and implementing regulations. Erosion and Sediment Control plans are prepared by the University and submitted to DCR for review and approval. As the University performs almost all construction via contracted services, UMW incorporates appropriate contractual requirements by which contractors are required to meet the conditions of the approved Erosion and Control plans.

**Measurable Goals:** All appropriate projects will have approved ESC plans.
2016 result: UMW continues to the practice of reviewing E&S drawings and programs, ensuring the SWPPP information is available at each construction site, and performs regular inspections of E&S controls. During this cycle, the only new Fredericksburg campus project requiring review was the renovation of the existing track and field venue. This venue is in the vicinity of the recently renovated Rugby pitch, and within the drainage area of the stormwater improvements projects of 2014-2015. An existing project, renovation of Mercer-Woodard, created significant land disturbance. The design called for installation of some pervious. The other reviewable project is an expansion of the parking area at the Dahlgren campus. The appropriate E&S installations are cognizant of their proximity to the Potomac River.

BMP 4.2 – Construction Site Operator Training
The University requires that all land disturbing projects provide the name and telephone number of the DCR certified Responsible Land Developer (RLD). The RLD information is maintained with the official contract files for each respective project and made available to DCR staff as may be requested. A copy of the land disturbance permit is also required. Measurable Goals: All appropriate projects will have a RLD.

2016 result: The projects described above maintain and update their RDL certifications as necessary.

BMP 4.3 – Staff Training
UMW will ensure that site inspections are conducted by a DCR certified inspector. Copies of certifications will be maintained by the Director of Capital Outlay for the University. Measurable Goal: All appropriate staff will be certified as required by Virginia ESCL.

2016 result: UMW’s E&S inspector maintains the most current Virginia inspector’s certificate.

5. Post-construction stormwater management in new development and re-development.
BMP 5.1 – Site Monitoring
The University will conduct both routine as well as event generated inspection of storm water runoff for a two-year period following completion of construction or redevelopment work. Grounds maintenance staff will inspect sites at least once monthly as well as both during and subsequent to major rain fall in order to ensure that constructed storm water management devices are working as designed and intended. Measurable Goals: All designated sites will be inspected monthly for the first two years following completion of construction.
2016 result: The Hurley Convergence Center (formerly the ITCC), the renovation of Mercer-Woodard, and the University Center are the currently completed projects which fall within the described parameters of BMP 5.1. As regards the Hurley Center, the BMP has performed as designed during the past year and has not required repair beyond normal maintenance or alteration.

Mercer-Woodard is a renovation / expansion project which did not require new BMPs, but did have E&S controls. These are discussed in BMP 4.1. Similarly, the University Center BMPs have not required repair. However, observations of rainfall runoff have indicated three minor additional interceptors to prevent premature maintenance of the BMP features.

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BMP 5.2 Records Management
The availability of accurate utility drawings is essential for staff that may need to respond to illicit discharges, plan for new facilities, and for training new staff. UMW shall maintain accurate and detailed drawings of all storm water system features. Drawings shall be updated following every major construction project.

Measurable Goals: All storm water system components shall be mapped and available for plan review.

2016 result: The policy of mapping existing utilities and stormwater conveyances through construction project civil work continues in force.

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6. Pollution prevention / good housekeeping for municipal operations.
   BMP 6.1- Nutrient Management Program
In accordance with DCR requirements, the University has prepared nutrient management plans for each major discrete physical area owned by UMW. The university is committed to responsible environmental stewardship and will maintain turf and field areas, as well as naturalized areas with care to control storm water runoff of chemical and biological elements.

Measurable Goals: Campus grounds operations shall comply with approved Nutrient Management Plans.

2016 result: The UMW 2015-2018 Nutrient Management Plan is found [here].

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**BMP 6.2 – Recycling Program**
For over fifteen years the university has operated a highly effective recycling program aimed not only at high volume materials such as paper, glass, and aluminum, but also including relative low volume, but equally important potential pollutants such as vehicle batteries, printer cartridges, and fats/greases.

**Measurable Goals:** Maintain or improve the annual amount of recycled material. Accurate figures are not available on monthly or annual waste amounts so accurate comparisons of waste to recycling are not possible.

**2016 result:** UWM continues to successfully participate in RecycleMania, but moved to single-stream recycling in late 2015.

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**BMP 6.3 – Waste Management Program**
Along with the recycling efforts of the University, the Facilities Services department has also led numerous initiatives to minimize waste stream of hazardous as well as non-hazardous materials. Wastes are segregated and handled to reduce weight (e.g. allowing waste latex paints to evaporate water vapor prior to disposal of remaining paint solids) as well as for reducing waste management costs.

**Measurable Goals:** See BMP 6.2

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**Required Section IB9 information**

1. **Copy of updated MS4 Program Plan along with any new information regarding TMDL.**
   UMW’s revised (June 2015) [MS4 Program Plan] is found on the UMW website.

2. **Estimate of the cubic foot volume of stormwater discharged, and the quantity of pollutant identified in the WLA.**

**2016** Estimated stormwater totals, utilizing precipitation observations from the National Weather Service at Dulles International Airport, totaling 37.21”, slightly less than the 2015-2016 total. Precipitation distributions across the three university campuses are:

- UMW Fredericksburg (170 acres): 171,354,368.5 gallons / 22,906,745.6 cu ft
- UMW Stafford (48 acres): 48,382,409.9 gallons / 6,467,787 cu ft
- UMW Dahlgren (28 acres): 28,223,072.5 gallons / 3,772,875.7 cu ft

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Illicit Discharge information

2016 result: All construction projects during this cycle are located on the Fredericksburg campus. Appropriate E&S measures are in-place and reviewed by UMW’s E&S inspector. The projects include the larger projects of the University Center, renovation of Woodard – Mercer, and completion of the Stormwater Management Improvements. There is also a recreational turf field that was renovated beginning during the second half of this reporting cycle.

Run off from a UMW walking trail after a major rain event, effectively stopped by a riprap trap on the right side of this photo. Road and trap cleaned by UMW Landscape & Grounds.
Crushed automotive oil filter. Discovered in a UMW parking lot, reported to Landscape & Grounds for cleanup & remediation. Report and cleanup occurred the same day.
Regulated Land Disturbance Activities

2016 result: During the reporting period, the Woodard-Mercer renovation experienced one or more breaches to the E&S controls. Contractors responded with proper corrective actions, and no significant damage to downstream controls were detected.

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Appendix A

Stormwater Management Facility data

<table>
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<th>HUC: RA66, Rappahannock basin</th>
<th>Drainage Area</th>
<th>Pervious Area</th>
<th>Impervious Area</th>
<th>Total Area</th>
<th>Inspection Date</th>
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<td>Frequency</td>
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<td>Frequency</td>
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<td>Water Quality</td>
<td>Alvey Parking Garage</td>
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<td>Bi-Annually</td>
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<td>Underground System</td>
<td>Sunken Road Parking Lot</td>
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<td>Rose Indoor Tennis</td>
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<td>Sand Filter</td>
<td>Fire Hall</td>
<td>06/2007</td>
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<td>Rain Garden</td>
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<td>06/2015</td>
<td>Bi-Annually</td>
<td>No problems noted.</td>
<td></td>
</tr>
<tr>
<td>Bio-Retention</td>
<td>F-17</td>
<td>06/2013</td>
<td>Bi-Annually</td>
<td>06/2015</td>
<td>Bi-Annually</td>
<td>No problems noted.</td>
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<tr>
<td>Bio-Retention</td>
<td>F-18</td>
<td>06/2014</td>
<td>Bi-Annually</td>
<td>06/2015</td>
<td>Bi-Annually</td>
<td>No problems noted.</td>
<td></td>
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<td>Bio-Retention</td>
<td>F-19</td>
<td>06/2015</td>
<td>Bi-Annually</td>
<td>06/2015</td>
<td>Bi-Annually</td>
<td>No problems noted.</td>
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<tr>
<td>Bio-Retention</td>
<td>F-20</td>
<td>06/2016</td>
<td>Bi-Annually</td>
<td>06/2015</td>
<td>Bi-Annually</td>
<td>No problems noted.</td>
<td></td>
</tr>
</tbody>
</table>

Notes:  
- All of the BMPs are owned and maintained by UMW.  
- No TMDL has been established for Hazel Run.  
- All of the BMPs are owned and maintained by UMW.

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University of Mary Washington  
MS4 General Permit
I. PURPOSE

To assure that University operations comply with best practices for the protection of storm water and comply with the MS4 Permit VA040094.

II. BACKGROUND

The Virginia Department of Conservation and Recreation (DCR) is tasked with regulation of discharges of contaminates from businesses and industry to surface water. The majority of pollution to surface water now comes from non-specific sources such as pesticide over-applications, motor oil from poorly maintained vehicles, and run off carrying animal waste, construction sediment, etc. In an effort to address this type of pollution, DCR's storm water management requirements were established to guide municipalities to reduce contamination of this nature and to educate the public concerning best practices to protect surface water. Procedures to identify and remediate illicit discharges to storm water systems are also part of storm water protection programs.

III. POLICY

Under this policy it is not permitted for any University employee, student or contractor to place any chemical or chemical containing solution into a drain that leads to the storm water system without prior approval from Facilities Services.

The University in partnership with the City of Fredericksburg and Stafford County is committed to implementing a storm water management program that addresses the four areas of public education and outreach, public involvement and participation, illicit discharge and removal, and construction site runoff control.

The University will complete the requirements set forth in the permit obtained through DCR and will report activities as required.
For more information regarding storm water management or to view permit requirements please contact Facilities Services at 654-1047.
Appendix C

UMW's TMDL Action Plan begins on the next page. Please scroll down.
INTRODUCTION

In accordance with the Virginia Pollution Discharge Elimination System (VPDES) General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (GP), the University of Mary Washington (UMW) presents this Chesapeake Bay TMDL Action Plan (Plan). The Plan fulfills the special condition for the Chesapeake Bay TMDL requirements of the GP (VAR040094).

The Virginia Department of Environmental Quality (DEQ) Guidance Memo No. 14-2012 dated August 18, 2014, providing permittees in the Chesapeake Bay Watershed with background information and procedures to meet the Chesapeake Bay TMDL Special Conditions requirements in the 2013-2018 General Permit for Discharges of Stormwater from Small (Phase II MS4s), was used to develop this Action Plan.

According to the GP, “the plan shall include:

(1) A review of the current MS4 program implemented as a requirement of this state permit including a review of the existing legal authorities and the operator’s ability to ensure compliance with this special condition;

(2) The identification of any new modified legal authorities such as ordinances, state and other permits, orders, specific contract language, and interjurisdictional agreements implemented or needing to be implemented to meet the requirements of this special condition;

(3) The means and methods that will be utilized to address discharges into the MS4 from new sources;

(4) An estimate of the annual POC loads discharged from the existing sources as of June 30, 2009, based on the 2009 progress run. The operator shall utilize the applicable versions of Tables 2 a-d in the section based on the river basin to which the MS4 discharges by multiplying the total existing acres served by the MS4 on June 30, 2009, and the 2009 Edge of Stream (EOS) loading rate;

(5) The means and methods, such as management practices and retrofit programs that will be utilized to meet the required reductions included in subdivision 2 a (5) of this subsection, and a schedule to achieve those reductions. The schedule should include annual benchmarks to demonstrate the ongoing progress in meeting those reductions;

(6) The means and methods to offset the increased loads from new sources initiating construction between July 1, 2009, and June 30, 2014, that disturb one acre or greater as a result of the utilization of an average land cover condition greater than 16% impervious cover for the design of post-development stormwater management facilities. The operator shall utilize Table 4 in this section to develop the equivalent pollutant load for nitrogen and total suspended solids. The operator shall offset 5.0% of the calculated increased load from these new sources during the permit cycle.

(7) The means and methods to offset the increased loads from projects as grandfathered in accordance with 9VAC25-870-48, that disturb one acre or greater that begin construction after July 1, 2014, where the project utilizes an average land cover condition greater than 16% impervious cover in the design of post-development stormwater management
facilities. The operator shall utilize Table 4 in this section to develop the equivalent pollutant load for nitrogen and total suspended solids.

(8) A list of future projects and associated acreage that qualify as grandfatehred in accordance with 9VA25-870-48.

(9) An estimate of the expected costs to implement the requirements of this special condition during the state permit cycle;

(10.a) An opportunity for receipt and consideration of public comment regarding the draft Chesapeake Bay TMDL Action Plan;

(10.b) An opportunity for receipt and consideration of public comment on the draft Chesapeake Bay TMDL Action Plan; and a list of all comments received as a result of public comment and any modifications made to the draft Chesapeake Bay TMDL Action Plan as a result of the public comments.
BACKGROUND

The University of Mary Washington's MS4 program encompasses three campuses, Fredericksburg, Stafford, and Dahlgren. The Fredericksburg campus is +/- 169.91 acres in size and the Stafford campus is +/- 48.2 acres in size. Both of these campuses are within the Rappahannock watershed and total +/- 218.11 acres. The Dahlgren campus is +/- 28.41 acres in size and is within the Potomac River watershed. Figures 1-3 depict the limits of the University’s MS-4 program.

1. CURRENT MS4 PROGRAM AND EXISTING LEGAL AUTHORITIES

The University of Mary Washington has established and implemented best management practices (BMPs), as required by the MS4 permit, including public education and outreach, public involvement and participation, illicit discharge and removal, and construction site runoff control. The MS4 program is reviewed annually and revised, as needed, to address any deficiencies and permit conditions, as necessary.

The Capitol Outlay Department and Landscape and Grounds implement the MS4 program, providing construction management of all capitol projects involving land disturbing activities. UMW prepares the erosion and sediment control plans for each project and the plans are submitted for approval from the Virginia Department of Environmental Quality (DEQ). Sub-contractors are contractually obligated to meet the conditions of the approved E&SC and stormwater plans, as well as, local, state, and federal regulations for the permitting and conduct of their projects. The Department of Landscape and Grounds maintains the permanent stormwater controls, including required post construction inspections.

2. NEW OR MODIFIED LEGAL AUTHORITY

The current contract language and policies established by The University of Mary Washington are sufficient to meet the requirements of the GP Special Condition.

3. MEANS AND METHODS TO ADDRESS DISCHARGES FROM NEW SOURCES

New sources (developed or redeveloped on or after July 1, 2009) are limited to construction projects undertaken on the respective campuses. UMW has developed a master plan for the management of stormwater that allows for the planning and implementation of stormwater management conveyances, structural BMPs, and policies. This enables for the planning and implementation of the necessary components to comply with the conditions of the GP. Through the construction management program, all new sources will be required to comply with the required POC reductions, as well as, discharge quantities. UMW is the local VSMP for land disturbing activities at their campuses and approves E&SC plans for each land disturbing activity conducted on their campuses. The Landscape and Grounds department conducts the required inspections of on-going projects, as well as, inspections and maintenance of permanent stormwater units.
4. ESTIMATED EXISTING LOADS AND CALCULATED TOTAL POLLUTANT OF CONCERN (POC) REQUIRED REDUCTIONS

Information used to determine the pervious and impervious areas include the Commonwealth of Virginia – Virginia Geographic Information Network GIS Maps, Stormwater Quality and Quantity Management Study 2012 Update (Koontz-Bryant, 2012) and aerial photography (Google Earth) for each of the campuses.

The POC loads were calculated using Table 2c: Calculation Sheet for Estimating Existing Source Loads for the Rappahannock River Basin for the Fredericksburg and Stafford campuses and Table 2b: Calculation Sheet for Estimating Existing Source Loads for the Potomac River Basin for the Dahlgren campus.

These tables are included in the summary table presented in the following section.

5. MEANS AND METHODS TO MEET THE REQUIRED REDUCTIONS AND SCHEDULE

The required 5% reductions were calculated using Table 3c: Calculation Sheet for Determining Total POC Reductions Required During the Permit Cycle for the Rappahannock River Basin and Table 3b: Calculation Sheet for Determining Total POC Reductions Required During the Permit Cycle for the Potomac River Basin.

The corrected values recommended in the DEQ Guidance were used for the loading rate calculations.

The following tables summarize the reduction requirements for the University:
## Compliance Summary

<table>
<thead>
<tr>
<th>MS-4 Area</th>
<th>Impervious</th>
<th>Pervious</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acres</td>
<td>55.67</td>
<td>190.91</td>
<td>246.58</td>
</tr>
</tbody>
</table>

### Dahlgren Campus

Table 2b: Calculation Sheet for Estimating Existing Source Loads for the Potomac River Basin (*Based on Chesapeake Bay Program Watershed Model Phase 5.3.2*)

<table>
<thead>
<tr>
<th>Subsource</th>
<th>Pollutant</th>
<th>Total Existing Acres Served by MS4 (06/30/09)</th>
<th>2009 EOS Loading Rate (lbs/acre)</th>
<th>Estimated Total POC Load Based on 2009 Progress Run</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulated Urban Impervious</td>
<td>Nitrogen</td>
<td>0.00</td>
<td>16.86</td>
<td>0.00</td>
</tr>
<tr>
<td>Regulated Urban Pervious</td>
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<td>28.41</td>
<td>10.07</td>
<td>286.09</td>
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<tr>
<td>Regulated Urban Impervious</td>
<td>Phosphorous</td>
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<td>1.62</td>
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<td>Regulated Urban Pervious</td>
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<td>28.41</td>
<td>0.41</td>
<td>11.65</td>
</tr>
<tr>
<td>Regulated Urban Impervious</td>
<td>Total Suspended Solids</td>
<td>0.00</td>
<td>1171.32</td>
<td>0.00</td>
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</table>

### Fredericksburg/Stafford Campuses

Table 2c: Calculation Sheet for Estimating Existing Source Loads for the Rappahannock River Basin (*Based on Chesapeake Bay Program Watershed Model Phase 5.3.2*)

<table>
<thead>
<tr>
<th>Subsource</th>
<th>Pollutant</th>
<th>Total Existing Acres Served by MS4 (06/30/09)</th>
<th>2009 EOS Loading Rate (lbs/acre)</th>
<th>Estimated Total POC Load Based on 2009 Progress Run</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulated Urban Impervious</td>
<td>Nitrogen</td>
<td>55.67</td>
<td>9.38</td>
<td>522.18</td>
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<tr>
<td>Regulated Urban Pervious</td>
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<td>162.50</td>
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<tr>
<td>Regulated Urban Impervious</td>
<td>Phosphorous</td>
<td>55.67</td>
<td>1.41</td>
<td>78.49</td>
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<tr>
<td>Regulated Urban Pervious</td>
<td></td>
<td>162.50</td>
<td>0.38</td>
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<tr>
<td>Regulated Urban Impervious</td>
<td>Total Suspended Solids</td>
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<td>23602.41</td>
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<tr>
<td>Regulated Urban Pervious</td>
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<td>165.50</td>
<td>56.01</td>
<td>9269.66</td>
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</tbody>
</table>
### Dahlgren Campus

**Table 3 b: Calculation Sheet for Determining Total POC Reductions Required During the Permit Cycle for the Potomac River Basin (Based on Chesapeake Bay Program Watershed Model Phase 5.3.2)**

<table>
<thead>
<tr>
<th>Subsource</th>
<th>Pollutant</th>
<th>Total Existing Acres Served by MS4 (06/30/09)</th>
<th>First Permit Cycle Required Reduction in Loading Rate (lbs/acre/yr)(^1)</th>
<th>Total Reduction Required First Permit Cycle (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulated Urban Impervious</td>
<td>Nitrogen</td>
<td>0.00</td>
<td>0.08</td>
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<tr>
<td>Regulated Urban Pervious</td>
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<td>28.41</td>
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<tr>
<td>Regulated Urban Impervious</td>
<td>Phosphorous</td>
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<td>Regulated Urban Impervious</td>
<td>Total Suspended Solids</td>
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### Fredericksburg/Stafford Campuses

**Table 3 c: Calculation Sheet for Determining Total POC Reductions Required During the Permit Cycle for the Rappahannock River Basin (Based on Chesapeake Bay Program Watershed Model Phase 5.3.2)**

<table>
<thead>
<tr>
<th>Subsource</th>
<th>Pollutant</th>
<th>Total Existing Acres Served by MS4 (06/30/09)</th>
<th>First Permit Cycle Required Reduction in Loading Rate (lbs/acre/yr)(^1)</th>
<th>Total Reduction Required First Permit Cycle (lbs/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulated Urban Impervious</td>
<td>Nitrogen</td>
<td>55.67</td>
<td>0.04</td>
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<tr>
<td>Regulated Urban Pervious</td>
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<td>162.50</td>
<td>0.02</td>
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<tr>
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<td>Phosphorous</td>
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<td>0.01</td>
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<tr>
<td>Regulated Urban Pervious</td>
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<td>162.50</td>
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<td>Total Suspended Solids</td>
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<td>Regulated Urban Pervious</td>
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<td>162.50</td>
<td>0.25</td>
<td>39.82</td>
</tr>
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</table>

1. Corrected loading rates per DEQ Guidance.
6. MEANS AND METHODS TO OFFSET INCREASED LOADS FROM NEW SOURCES INITIATING CONSTRUCTION BETWEEN JULY 1, 2009 AND JUNE 30, 2014

Projects constructed between July 1, 2009 and June 30, 2014 were subject to Technical Criteria II C under the VSMP regulations and the technology based criteria was used for these projects. Therefore, no additional reductions are required.

7. MEANS AND METHODS TO OFFSET INCREASED LOADS FROM GRANDFATHERED PROJECTS THAT BEGAN CONSTRUCTION AFTER JULY 1, 2014

8. A LIST OF FUTURE PROJECTS, AND ASSOCIATED ACREAGE THAT QUALIFY AS GRANDFATHERED

A list of grandfathered projects including acreages and stormwater calculations are located in the Stormwater Management Plan and MS4 General Permit Annual Report.

9. AN ESTIMATE OF THE EXPECTED COST TO IMPLEMENT THE NECESSARY REDUCTIONS

The University will require that current and future projects be designed and constructed using BMPs that meet current VSMP requirements and provide additional POC removal, in order to satisfy the removal goals. Based on previous cost of BMP installation, it is anticipated that the average cost for structural BMP installation is $60,000 per project. In the event that, due to funding, size, or construction constraints, BMPs are not feasible, the University will utilize nutrient credits to offset the deficiency. The cost for nutrient credits is approximately $16,000 per pound.

The costs identified in this Action Plan are strictly planning level. There are many unknowns that exist and can only be captured during the design phase of the individual projects. During the design phase, the type of BMP, location and site constraints will be addressed. Local watershed-specific permit requirements along with regional geology and soils will affect costs. In addition, the type of design/build contracting mechanism that is chosen will also affect the cost. All of these concerns are typically addressed during the design phase, which will establish final construction cost estimates.

10.a PUBLIC COMMENTS ON DRAFT ACTION PLAN (GENERAL PERMIT REQUIREMENTS)

The Action Plan will be made available for public comment via the University’s web site. NOTE: per guidance, Public will be considered staff and students residing within the boundary of the Campus.

10.b PUBLIC COMMENTS ON DRAFT ACTION PLAN (PHASE I PERMIT REQUIREMENTS)
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