MS4 ANNUAL REPORT
PERMIT NUMBER VAR040106

July 2013

Subject: GEORGE MASON UNIVERSITY MS4 ANNUAL REPORT, PERMIT NUMBER VAR040106

Dated: June 28, 2013

I certify under penalty of law that all documents and all attachments related to the submission and updating of the GEORGE MASON UNIVERSITY MS4 ANNUAL REPORT were prepared under my direction or supervision in 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 a fine and imprisonment for knowing violations.

Sincerely,

Thomas G Calhoun

Thomas Calhoun
Vice President of Facilities

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I. INTRODUCTION

As legislated by the Virginia Stormwater Management Program (VSMP) Permit Regulations (4VAC50-60 et. seq.), the Virginia Department of Conservation and Recreation (DCR) issued a VSMP General Permit (VAR040106) for small Municipal Separate Storm Sewer Systems (MS4) to George Mason University (Mason) 09 July 2008. This permit holds Mason accountable for developing and implementing an MS4 Program. The program guides Mason's design, construction, maintenance, and management of its facilities and campuses.

George Mason University's MS4 Program shall apply to all activities undertaken by the University, either by its internal workforce or contracted to external entities, where such activities are regulated by VSMP Permit Regulations. During any inspections of George Mason University's land disturbing activities, whether internal or by DCR, EPA, and other applicable environmental agencies, compliance with the permitted MS4 Program (and all parts thereof) will be verified.

George Mason University's MS4 Annual Report is submitted to the DCR for review and approval on an annual basis. George Mason University shall ensure compliance with the VSMP General Permit for MS4s issued 09 July 2008. This submittal constitutes Mason's commitment to execute all provisions contained herein on regulated land disturbing activities, land development projects, and operation and maintenance of installed stormwater management facilities. As such, this report will be made available to all appropriate Mason and DCR personnel and is available for download as a PDF file at:
http://facilities.gmu.edu/LandDevelopment/storm1.htm

II. ABBREVIATIONS and ACRONYMS

Abbreviation/ Acronym	Term
BMP	Best Management Practice
DCR	Virginia Department of Conservation and Recreation
EHS	Environmental, Health, & Safety
ESC	Erosion and Sediment Control
FM	Facilities Maintenance
Mason LD	George Mason University Land Development
MS4	Municipal Separate Storm Sewer System
OoS	Office of Sustainability
OCR	Office of Community Relations
PSA	Public Service Announcement
P&TS	Parking and Transportation Services
R&WM	Recycling and Waste Management
SWM	Stormwater Management
VESCL&R	Virginia Erosion and Sediment Control Law and Regulations
VSMP	Virginia Stormwater Management Program

III. ANNNUAL REPORT ADMINISTRATION

3.1 *George Mason University Annual MS4 Report* submitted to DCR includes the following background information as required by the General Permit:

3.1.1 The name and permit number of the program submitting the annual report.

This report is submitted under permit number VAR040106 by Brad Glatfelter under the supervision of Thomas Calhoun, Vice President of Facilities.

3.1.2 The annual report permit year.

This Annual Report is for the year from 01 July 2012 to 30 July 2013.

3.1.3 Modifications to any operator's department's roles and responsibilities.

There are no changes in Mason LD's roles and responsibilities.

3.1.4 Number of new MS4 outfalls and associated acreage by HUC added during the permit year.

There are no new, physically added, MS4 outfalls added during the reporting year. However as a result of a recent outfall reconnaissance study conducted by Mason LD, a total of 20 outfalls were identified both at Fairfax Campus and Prince William Campus, which were not depicted in the existing Mason's MS4 maps. All outfalls that were identified during the study were added to Mason's MS4 database and internal MS4 maps. Refer to Map 2.1 and 2.2.

3.1.5 A signed certification.

Refer to Page 1 of this report.

3.1.6 The status of compliance with permit conditions, an assessment of the appropriateness of the identified BMPs and progress towards achieving the identified measureable goals for each of the minimum control measures.

George Mason University continues to implement Best Management Practices in order to meet all requirements of the general permit. A summary of BMPs implemented by George Mason University is included in Section IV of this document. As a result of the annual program evaluation of the University's MS4, Mason LD was able to identify program deficiencies and areas that can be improved. A BMP has been proposed for areas identified as deficient or in the need of improvement. An estimated date of implementation and/or completion for each proposed BMP is provided in Appendix A.

3.1.7 Results of information collected and analyzed, including monitoring data, if any, during the reporting cycle.

No monitoring data has been collected. However, Mason LD is in the process of developing a quality monitoring program for surface waters within campus. Refer to Appendix A for more information on proposed BMPs associated with monitoring procedures.

3.1.8 A summary of the stormwater activities the operator plans to undertake during the next reporting cycle.

Refer to Appendix G for a list of the anticipated project expected to begin during the next reporting cycle. Each project includes a stormwater portion.

3.1.9 A change in any identified BMPs or measureable goal for any of the minimum control measures including steps to be taken to address any deficiencies.

No changes have been made during this permit year.

3.1.10 Notice that the operator is relying on another government entity to satisfy some of the permit obligations (if applicable).

Mason partners with Prince Willaim County's government entity to satisfy some of the permit obligations. A SWM Pond owned and maintained by Prince William County satisfies some of the permit obligations as a part of a cooperative development plan for Prince William Campus and the adjacent properties. The plans have been approved by Prince William County. Mason LD has identified several points where Mason discharges into other regulated MS4. A notification of potential interconnected stormwater system will be addressed to respective jurisdictions. Refer to Appendix J.

3.1.11 The approval status of any programs pursuant to Section II C (if appropriate), or the progress towards achieving full approval of these programs.

There are no programs waiting for approval.

3.1.12 Information required pursuant to Section I B 9.

No TMDL or WLA are calculated for this permit duration. More information is intended to be provided as the revised program develops.

3.1.13 The number of illicit discharges identified and the narrative on how they were controlled or eliminated pursuant to Section II B 3 f.

EHS has responded to a total of 25 incidents across the Fairfax, Prince William, and Arlington campuses in calendar year 2013; of which, only three incidents occurred in areas with potential to impact the environment. No incident required EHS to notify Virginia DEQ of the incident, and no incident required EHS to supplement its response with contractor assistance. No incident required EHS to notify Virginia Department of Environmental Quality (Northern Regional Office) or the incident, and no incident required EHS to supplement its response with contractor assistance.

3.1.14 Regulated land-disturbing activities data tracked under Section II 4 c.

Refer to Appendix G for the table of tracked land-disturbing activities.

3.1.15 All known permanent SWM facility data tracked under Section II B 5 b (6) submitted in database format to be prescribed by the department. Upon filing of this list, subsequent reports shall only include those new SWM facilities that have been brought online during the reporting period.

Refer to Appendix I for a list of permanent stormwater management facilities.

3.1.16 A list of new or terminated signed agreements between the operator and any applicable third parties where the operator has entered into an agreement in order to implement minimum control measures or portions of minimum control measures.

There are no new or terminated agreements with third parties.

3.1.17 Copies of any written comments received during a public comment period regarding the MS4 Program Plan or any modifications.

No written comments were received concerning the MS4.

IV. APPENDICIES

Appendix A:
Minimum Control Measures

Minimum Control Measure No. 1: Public Education and Outreach on Stormwater Impacts							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
1.a - Public Education Program	1.a.1 - Stormwater Management and Runoff Control Measures	Provide information on stormwater pollution prevention programs and stormwater management procedures used by Mason.	Information on SWM and pollution prevention programs is made available to the public through the Facilities Management website and various other mediums. Number of visitors to the website will be tracked through a users web counter.	FM/ Mason LD /OoS	YES	-	Information on SWM and pollution prevention programs is available to the public at the facilities website http://facilities.gmu.edu/LandDevelopment/stormMs4.htm. As a result of the information posted online, Mason LD personnel meet with 18 students who requested more information on stormwater management and control practices on campus.
	1.a.2 - Polluted Runoff in Urbanized Areas	Inform the public on how urbanized areas can effect water quality of water resources and provide a list of land disturbing activities on campus.	A publicized list of regulated disturbance disturbing activities expected to be under contract during the reference time period is regularly updated as necessary. Information on the effects of polluted runoff from urbanized areas on water bodies is also available to the public through the facilities management website and various other mediums. Number of visitors to the website will be tracked through a users web counter.	FM/ Mason LD /OoS	YES	-	Keep the public aware of the impacts of runoff from urbanized areas on local waterways. Additionally inform the public about current and future land disturbing activities on campus.

Minimum Control Measure No. 1: Public Education and Outreach on Stormwater Impacts							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE PERSON/DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
1.b - Public Awareness Program	1.b.1 - Environmental Impacts of Illegal Discharges	Provide information on environmental problems associated with illicit discharges.	A friendly reminder identifying the different pollutants resulting from human activity will be provided through various media. Information on water pollutants is also available on the Facilities Management website. Number of visitors to the website will be tracked through a users web counter.	FM/ Mason LD/ OoS/EHS/ Recycling and Waste Management	YES	-	Increase public awareness on environmental impacts of illegal discharges. Keep the public up to date on common pollutants found in the area (if any).
	1.b.2 - Hazardous Waste Management	Inform public, students, and staff of proper storage, use, and disposal of hazardous materials. Identify any temporary satellite accumulation areas available, as well as, procedures to manage waste properly.	Information on proper hazardous material handling, storage and disposal will be provided at least once a year during student and staff training sessions. Information on hazardous waters is also available through EHS website under their Hazard Communication Program. Number of visitors to the website will be tracked through a users web counter.	EHS	YES	-	Annual training to non-academic and academic personnel is provided by EHS to ensure proper disposal of hazardous waste. EHS provides training to Mason's staff for Hazardous waste management. The number of people who attend these sessions is recorded annually. A total of 535 employees attended the Chemical Safety and Hazard Communication training this year.

Minimum Control Measure No. 1: Public Education and Outreach on Stormwater Impacts							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE PERSON/DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
	1.b.3 - Recycling and Trash Management	Provide information on the negative impacts of littering and identify advantages of recycling. Identify locations on campus of waste management facilities.	Guidance is provided through the recycling and waste management website on proper disposal of trash. GMU aims to meet or exceed State mandates for recycling disposable materials and reduce the amount of disposable materials transported to landfill. Information of recycling and waste management locations is provided on the recycling and waste management website http://facilities.gmu.edu/physicalplant/recycling/index.htm. Number of pounds of recycled material is tracked for every year.	EHS/R&WM	YES	-	The recycling and waste management website continues to promote programs available for public participation. In 2013 the university collected a total of 1,646,822 pounds of recyclable materials; 5,154,174 pounds of waste giving a total of 6,810,996 pounds with an overall percentage of 2% recycled materials.
1.c - Programs and Initiatives	1.c.1 - Cleanup Project	Participate in stream and campus clean-ups lead by Mason LD/OoS.	Stream and campus clean-up projects will be hosted on campus at least twice a year. Number of pounds of trash is tracked. GMU will hold at least one stream cleanup annually.	Mason LD/OoS	YES	-	Several members of EHS, R&WM and the OoS participate in campus/stream cleanups every year. In 2013, Facilities Management held 2 stream cleanups on Fairfax Campus, from which 21 large bags of trash were collected weighing in at 159.88 pounds.

Minimum Control Measure No. 1: Public Education and Outreach on Stormwater Impacts							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE PERSON/DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
	1.c.2 - Patriot Pack Out Project	Help local families through donations of clothing, non-perishable food, and small appliances as part of the recycling program in order to facilitate waste reduction at George Mason University.	Patriot Pack Outs take place on campus at the beginning of every summer for resident students to donate unwanted clothes, appliances, and unopened food items. Number of pounds of trash is tracked.	OCR	YES	-	In 2013 the University had 40 volunteers who collected a total of 8,760 pounds of recyclable materials. This information is available in the Office of Community Relations' website: http://communityrelations.gmu.edu/patriot_pack_out/ppo_index.html
1.d-f - Target Campaigns	1.d.1 - Utilize diverse strategies to target audiences for public education campaigns.	Utilize diverse media (including but not limited to PSA's, print ads, flyers, etc.) to increase public awareness about stormwater pollution prevention.	Track public education campaigns targeting audience specific to the area serviced by Mason's MS4.	Mason LD/OoS	YES	-	Increase public awareness about stormwater pollution prevention targeting audiences specific to the area serviced by Mason's MS4 using a variety of media. Media is to include ads on Facilities Management website, brochures, and flyers handed out at educational events. See **Appendix B**.

Minimum Control Measure No. 1: Public Education and Outreach on Stormwater Impacts							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE PERSON/DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
	1.e.1 - Target public education campaigns to concerns of target audiences.	Using existing outreach campaigns, where possible, to address viewpoints and concerns of target audiences.	Target audiences are included in public education campaigns described in BMP 1.d.1 whenever possible. Track public education campaigns to concerns of target audiences.	Mason LD/OoS	YES	-	Outreach campaigns focus on increasing stormwater pollution prevention and awareness. Mason's goal for this reporting period is to reach a variety of people and be able to address their viewports and concerns. This year, Mason LD presented to the Fairfax County community on University stormwater management. Information on how to report concerns associated with stromwater is available on the Facilities website.

	1.f.1 - Target public education campaigns to groups likely to have significant stormwater impacts.	Continue implementing strategies targeted towards local groups of commercial, industrial, and institutional entities likely to have significant stormwater impacts.	Target industries as included in public education campaigns described in BMP 1.d.1 whenever possible. Number of public education campaigns to groups likely to have significant stormwater impact.	Mason LD/EHS	YES	-	Outreach campaigns focus on groups that require the use of hazardous materials and construction activity which are likely to have significant stormwater impacts. EHS guides and training sessions provide information on safely handling, labeling, and storing of chemical, hazardous, and universal waste. Moreover, Mason LD provides information on pollution prevention for personnel involved in construction activity in order to avoid pollution in surface waters from construction sites.
Minimum Control Measure No. 1: Public Education and Outreach on Stormwater Impacts							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE PERSON/DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
	1.f.2 - Erosion and Sediment Control Program	Identify standards and specifications on ESC, which shall apply to all plan design, construction, and maintenance activity undertaken by Mason, either by its internal workforce or contracted to external entities.	Information on Mason's ESC Standards and Specifications is available on the Facilities Management website. Number of notices to comply will be tracked through regular inspections of construction sites.	Mason LD	YES	-	Mason ESC standards and specifications program has focused on current construction projects to ensure implementation of sediment control practices and that polluted runoff is not reaching waterbodies resulting from construction sites. George Mason University's ESC standards and

							specifications is available at the facilities website: http://facilities.gmu.edu/LandDevelopment/erosion1.htm
Evaluation of appropriateness and effectiveness of Public Education/Outreach on impacts of stormwater discharges on water bodies	Public education on stormwater impacts is a very effective way to reduce illicit discharges on water bodies as it alerts people, not only on environmental hazards associated with polluted runoff, but also helps identify different ways in which the public can help reduce pollutants in stormwater runoff. Mason's MS4 program continues to conduct stormwater outreach campaigns through the Facilities Management website, brochures, and ads. Additionally, information focusing on car washing and pet waste also educates the public to understand the impact of human activity on stormwater.						

Minimum Control Measure No. 2: Public Involvement/ Participation							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE PERSON/DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
2.a-b - Availability of MS4 Program Material	2.a.1 - Public Awareness Education Material	Provide access to outreach materials on Mason's SWM program though the Facilities Management website. Information available to the public includes: SWM initiatives, pollution prevention strategies, and BMPs included in Minimum Measure No. 1.	Information on Mason's MS4 program is available on the Facilities Management website. This information is updated as needed. Number of visitors to the website will be tracked through a users web counter.	Mason LD	YES	-	Information about Mason MS4 program and stormwater management is available on the Facilities Management website: http://facilities.gmu.edu/LandDevelopment/storm1.htm. The user web counter can be found on the Facilities Management website: http://facilities.gmu.edu/LandDevelopment/index.htm
	2.b.1 - Access to Annual Reports	Provide access to annual reports on Mason's SWM and MS4 program plan.	MS4 annual reports for the University are posted on the facilities website as submitted to DCR. Number of visitors to the website will be tracked through a users web counter.	Mason LD	YES	-	Annual reports and other information about the MS4 permit will be periodically updated on the Facilities Management website: http://facilities.gmu.edu/LandDevelopment/stormMs4.htm
2.c - Public Participation in Water Quality Improvement Activities.	2.c.1 - Voluntary University Programs	Encourage students to volunteer for and/or participate in stream enhancement and education programs, which may include water quality monitoring, stream/ campus cleanups, etc.	Track voluntary programs and solicit student participation.	OoS	YES	-	Promote student and staff involvement in stream enhancement and education programs. Mason LD is currently coordinating with faculty personnel to manage water quality monitoring teams composed of students to conduct water testing on campus waterways. In addition,

							this permit year, we had 21 student volunteers participate in Stream Cleanups on Fairfax Campus.
Minimum Control Measure No. 2: Public Involvement/ Participation							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE PERSON/DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
	2.c.2 - Involvement in Other Water Quality Related Programs	Participate in programs promoted by other organizations, which relate to water quality issues.	Track the number of activities in which Mason participates. Increase Mason involvement and participation in programs promoted by other organizations, including public educational events.	Mason LD/OoS	YES	-	This year, Mason LD participated in several conferences related to water quality and assisted students in academic projects associated with stormwater quality control.
Evaluation of appropriateness and effectiveness of Public Involvement on impacts of stormwater discharges on water bodies	Mason seeks to implement more programs to actively engage the public in addressing problems associated with polluted runoff and non-stormwater discharges to impaired waterways. Outreach events represent a great opportunity to educate people on environmental hazards associated with polluted runoff and identify different ways the public can help reduce pollutants in stormwater runoff. Outreach opportunities, such as voluntary programs, are an effective way to get the public involved and educated on stormwater impacts to water resources.						

Minimum Control Measure No. 3: Illicit Discharge Detection and Elimination							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE PERSON/DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
3.a - Illicit Discharge Detection and Elimination Program	3.a.1 - Comply with Existing Regulations.	Comply with existing regulations that prohibit illegal discharges to storm sewers. George Mason University has developed and implemented a program to detect and eliminated illicit discharges. The program is composed of different techniques to prohibit non-stormwater discharges as well as regular inspection and enforcement.	Track the violations and spill responses. Mason's goal is to minimize violations and surfaces discharges. Violations include spills by students, staff and spills from construction activity. Number concerns and comments associated with water pollution, provided by the public, and are also tracked to test the effectiveness of the program in place.	Mason LD/ EHS	YES	-	EHS has responded to a total of 25 incidents across the Fairfax, Prince William, and Arlington campuses in calendar year 2013; of which, only three incidents occurred in areas with potential to impact the environment. No incident required EHS to notify Virginia DEQ of the incident, and no incident required EHS to supplement its response with contractor assistance.

Minimum Control Measure No. 3: Illicit Discharge Detection and Elimination							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE PERSON/DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
	3.a.2 - Environmental Compliance Inspections	Inspections for environmental compliance have been implemented as part of the ESC Inspection program in order to control and prevent illicit discharges on construction sites. If a discharge is suspected, EHS is immediately contacted.	Environmental Compliance Inspections is conducted at least bi-weekly on projects under construction. Inspections on the Storm Sewer system and outfalls are conducted twice a year by Mason LD to identify/ track illicit discharges. Track the type and number of illicit discharges identified in construction sites and the general campus area.	Mason LD/EHS	YES	-	Three incidents were reported to Mason LD on discharges from a construction site, two on Fairfax Campus and one on Prince William Campus. No incident required EHS to notify Virginia DEQ of the incident, and no incident required EHS to supplement its response with contractor assistance. The contractors for all three violations were given a Notice of Corrective Action. Refer to **Appendix C** for a copy of the Notice of Corrective Action reports**.** Resolution to the incident was provided promptly at the contractor's expense.

Minimum Control Measure No. 3: Illicit Discharge Detection and Elimination							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE PERSON/DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
3.b - Storm Sewer System Mapping	3.b.1 - Inventory Regulated Stormwater System	Provide an inventory of Mason's stormwater systems including SWM/BMP structural facilities and internal outfalls within the MS4. Information includes location, drainage areas, maintenance schedule, adequacy etc.	Inventory Mason's stormwater systems. The inventory is maintained by Mason LD and the number of updates to the stormwater system is tracked every year. A data base and a map are updated as needed to add new storm sewer system features installed on site. Mason LD recently conducted an outfall reconnaissance where 25 outfalls that were on the 2012 MS4 Fairfax map no longer exist and 1 outfall from that was on the MS4 Prince William map no longer exists. 18 new outfalls were identified on Fairfax campus and 2 new on Prince William campus which were not depicted on last year's MS4 maps.	Mason LD	YES	-	A detailed inventory of Mason's stromwater system is maintained by Mason LD through regular inspections and updating existing MS4 maps and database. The inventory includes information on drainage areas, maintenance schedule, type of structure etc, and shall be updated as needed. Currently, GMU's tracking database consists of a complete list of all permanent BMPs, MS4 maps depicting storm sewer lines, internal outfalls and interconnections to other MS4s. GMU has successfully developed a new Inventory system in which information can be accessed in a more efficient manner. GIS technology will be used to improve our record database.

Minimum Control Measure No. 3: Illicit Discharge Detection and Elimination							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
	3.b.2 - Internal MS4 Map	Use existing CAD format maps, surveys, to accurately map stormwater feature locations within Mason's MS4 using GIS Technologies.	Identify internal MS4 features for inventory, annual inspection, and illicit discharge tracking. Track number of updates and additions to the MS4.	Mason LD	YES	Improvements expected to be in place by 2014	All stormwater features within Mason MS4 are currently mapped on the MS4 maps. GMU keeps track of all existing structural controls through the campus utility maps which can be accessed in CAD. Maps are updated as outfalls are added or removed. Identification of new items is done through regular inspections conducted by Mason LD. An improved system using GIS technology is to be utilized in order to keep a more detailed record of the existing structures on-site. GIS Maps are to be stored on a password protected server for security purposes. GIS technologies are now in place as of 2013. Refer to **Section V** to view Mason's Internal MS4 Maps for Fairfax and Prince William Campuses.

Minimum Control Measure No. 3: Illicit Discharge Detection and Elimination							
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	3.b.3 - Interconnectivity and MS4 Outfall Map	Use existing CAD-format maps, surveys, and GIS technologies to accurately map interconnectivity with outside stormwater systems.	Identify all interconnections with outside stormwater systems. Track number of updates in the interconnectivity MS4 outfall map.	Mason LD	YES	-	All stormwater interconnections with outside stormwater systems are currently mapped on the MS4 maps. Maps are updated as connections are added or removed. Interconnectivity maps are developed in CAD format. The GIS database is developed and updated as new projects are being progress. Refer to **Section V** to view Mason's Interconnectivity MS4 Maps for Fairfax and Prince William Campuses.
3.c - Prohibition of Nonstormwater Discharges	3.c.1 - Inlet Labeling	Install stormwater pollution prohibition plaques on all inlets on campus.	Locate all inlets and install identification plaques. Track number of new inlets added to the system and number of inlets labeled on campus	Mason LD	YES	-	In this permitting year, Mason LD has labeled all existing inlets on every campus with pollution prohibition plates. Attached as **Appendix D,** a copy of "no dumping" markers placed on all inlets within Mason's MS4.

Minimum Control Measure No. 3: Illicit Discharge Detection and Elimination							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
	3.c.2 - Surface Water Signage	Install pollution prohibition signage at all surface water locations.	Identify and install pollution prohibition signage at surface water locations. Track the number of incidents and illicit discharges reported after installment of signs.	Mason LD/OoS	YES	Signage around all campuses expected to be in place by July 2013	Signage will be provided for all surface waters located on campus. Mason LD and the Office of Sustainability designed the signs as well as the identification of critical locations for these signs. In this permitting year, Mason LD is currently in the process of installing pollution prohibition signage on every campus. Attached as **Appendix E,** a copy of all 7 different classifications of signage expected to be on all surface water locations within Mason's MS4.

	3.c.4 Illicit discharge and Connection Policy	Create, implement and enforce illicit discharge Policies in order to provide for health, safety and general welfare of the Mason community through the regulation of non-stormwater discharges to the storm drainage system to the maximum extent practicable as required by federal and state law.	Number of illicit discharges and incidents reported in the permit year in order to test effectiveness of policies in place- prohibiting non-stormwater discharges into Mason's MS4 system.	Mason LD	YES	-	George Mason University Illicit Discharge Detection and Elimination Policy prohibits non-stormwater discharges into the University's MS4. The policy educates and instructs the public on what illicit discharges are and how to notify Mason LD and/or EHS of a spill. The policy also establishes enforcement procedures for violators. Mason LD started implementing Mason's IDDE policy at the beginning of 2013. Refer to **Appendix F**.
Minimum Control Measure No. 3: Illicit Discharge Detection and Elimination							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
3.d - Procedures to Prevent, Detect, and Address Illicit Discharges	3.d.1 - MS4 Inspections	Maintain MS4 inspection program that includes all stormwater outfalls. Inspection reports are generated based on visual observation, odor, and other indicators to identify illicit discharges.	Continue with current program. Track number of reports generated on stormwater outfalls.	Mason LD/FM	YES	-	A detail inspection of the MS4 system is performed at least twice a year to ensure proper functioning of facilities and monitoring illicit discharges. Inadequate structures are to be tracked and prioritized for corrective maintenance.

	3.d.2 - Trace and Remove Illicit Discharges	Continue to follow procedure for reporting and tracing illicit discharges and procedures for enforcing policies. Appropriate staff will be instructed with these procedures.	Track number of violations reported by inspectors and the public.	Mason LD/ EHS	YES	-	Standard procedures have been followed for reporting and tracing illicit discharges.
3. e - Minimization of Discharges of hazardous Substances	3.e.1 - Spill Response Program	Maintain current staffing to respond to oil or chemical spill incidents, as well as, other non-stormwater discharges reported by inspectors, students and neighbors.	Continue with current program. Track number spill reports generated and responses.	EHS	YES	-	All reported events of oil or chemical spill are responded to immediately. Staff is available 24 hours a day including weekends to respond to oil and chemical spill events.

Minimum Control Measure No. 3: Illicit Discharge Detection and Elimination							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
	3.e.2 - Hazardous Waste Management Training and procedures	Provides guidance on how to safely manage chemicals and communicate the hazards associated with chemicals used in the workplace through training, safety information, labels, signage and other forms of warning.	Number of people receiving training on hazardous management is tracked in every session. Information on the management and handling of hazardous substances is also available through EHS website under their Hazard Communication Program and the Spill Prevention Control and countermeasures Program.	EHS	YES	-	Annual training is required for all individuals who actively or non-routinely use, store, handle, or generate chemical, hazardous, or universal waste. Employees are responsible for ensuring that waste is properly labeled and stored.
3.f - Illicit Discharge Tracking	3.f.1 - Environmental Compliance Inspection for Construction Sites	As part of the Environmental Compliance Inspections (3.a.2), Mason LD staff will report and trace all nonstormwater discharges from construction sites. Environmental Inspections are to be conducted as part of the ESC and SWM inspections.	Environmental Compliance Inspections will be conducted at least bi-weekly on projects under construction as part of the ESC and SWM inspections. Track the type and number of illicit discharges.	Mason LD	YES	- Done in compliance with E&S inspections	All identified illicit discharges will be documented and reported (by Mason LD personnel) to EHS.

Minimum Control Measure No. 3: Illicit Discharge Detection and Elimination							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
	3.f.2 - Illicit Discharge Reporting	Publicize pollution prevention contact information to report problems related to illicit discharges.	Continue to publicize EHS and Mason LD's contact information for illicit discharges reporting.	Mason LD/EHS	YES	-	EHS and Mason LD's contact information is available to the public on the Facilities website to report illicit discharge at: http://facilities.gmu.edu/LandDevelopment/stormMs4.htm. Spill response information is also provided during training sessions for new members of Mason staff.
	3.f.3 - Illicit Discharge Tracking	Track number of illicit discharges.	Include in annual reports to the DCR any non-stormwater discharges identified during the permitted year. Track number spill responses and reported non-stormwater discharges.	Mason LD/EHS	YES	-	In calendar year 2013, EHS has responded to a total of 25 incidents across the Fairfax, Prince William, and Arlington campuses. Of these 25, only three incidents occurred in areas with potential to impact the environment. No incident required EHS to notify Virginia DEQ of the incident, and no incident required EHS to supplement its response with contractor assistance.

Minimum Control Measure No. 3: Illicit Discharge Detection and Elimination							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
3.g - Notification of connection to other MS4s	3.g.1 - MS4 Interconnection Notification	Notify the respective jurisdiction of locations where Mason's MS4 is physically interconnected to their MS4.	Provide information to the respective jurisdiction annually. Provide additional updates as necessary if new connections are created. Track number of interconnection notifications received and provided by Mason LD.	Mason LD	YES	-	All jurisdictions were notified in writing of Mason's connection to their respective MS4. Mason was also notified in writing by such jurisdictions.
Evaluation of appropriateness and effectiveness of Illicit Discharge Detection on impacts of stormwater discharges on water bodies	Mason's MS4 program looks to pro-actively prevent illicit discharges and negative impacts that can result from such discharges. Training and operating procedures have been created for many activities that could negatively impact the environment, such as washing equipment or properly disposing of chemicals. Other preventive measures include regular environmental compliance inspections, which focuses on possible contamination resulting from construction sites. Mason also uses the assistance of the public and inspectors in discovering and reporting illicit discharges and works hard to respond to problems and prevent future issues associated with stormwater pollution. Such practices are considered to be an effective way to track and control illicit discharges that can represent potential hazard to water bodies.						

Minimum Control Measure No. 4: Construction Site Stormwater Runoff Control							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
4 - Erosion & Sediment Control (ESC) and Stormwater Management (SWM) Program	4.a.1 - George Mason University Annual Standards and Specifications for ESC and SWM.	The Annual Standards and Specifications for ESC and SWM is a supplementary document to the ESC Laws and Regulations (VESCL&R) stipulated by the Department of Conservation and Recreation (DCR). Such regulations require the contractor to install Erosion and Sediment Controls and it applies to ALL construction activity within Mason Campuses. Regulations stipulated by Mason and DCR, are enforced by Mason LD to ensure proper installment of practices.	Maintain working relationship with DCR to ensure compliance with VESCL&R. The Mason ESC Administrator oversees all plan preparation and implementation.	Mason LD	YES	-	All land disturbing plans are reviewed and permitted by Mason LD. Mason LD also conducts regular inspections to ensure compliance with all laws and regulations on ESC.

Minimum Control Measure No. 4: Construction Site Stormwater Runoff Control							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
	4.a.2 - Proposed Erosion and Sediment Control Structures.	Section 10 of George Mason University's Annual Standards and Specifications for ESC and SWM provides details on different Best Management Practices (BMP) that the contractor may use alternative to the ones already identified in the VESC Handbook. These practices are annually reviewed and approved by DCR based on effectiveness. Mason LD revises this document as needed.	Encourage the use of structural and non-structural design techniques to create a design that has the goal of mimicking predevelopment characteristics and predevelopment hydrologic conditions.	Mason LD	YES	-	Refer to **Appendix G** for all current projects.

Minimum Control Measure No. 4: Construction Site Stormwater Runoff Control							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
	4.a.3- VSMP Permit Requirement	A VSMP permit is required for all land disturbing activities greater than or equal to (1) one acre. Mason LD ensures that all required permits are attained prior to commencement of construction and that the permit remains (posted) visible on the job site until the termination of the permit.	Keep track of all land disturbing activity within campus that require a VSMP permit and ensure the existence and availability of the permit.	Mason LD	YES	-	Land Disturbing activities that impacted (1) acre or more within George Mason University received a VSMP permit from DCR prior to start of construction. Mason LD personnel verified that the permit was posted on site as part of regular inspections.

Minimum Control Measure No. 4: Construction Site Stormwater Runoff Control							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
	4.a.4 - Public Acknowledgment	Mason LD receives public information via email at MasonLD@gmu.edu. This mechanism allows the facilities office to remain informed of any concerns from the public associated with water pollution or construction activity within campus. Procedures on how to contact Mason LD are posted on the facilities website for the public availability. Procedures on consideration and response to public concern are included as part of the training provided to Mason LD's personnel upon employment. This information is also included in the operating procedures for ESC and SWM inspectors and program administrators.	Track number of comments and concerns from the public associated with construction activity. Moreover, ensure all public concerns have been addressed and reported to the appropriate parties.	Mason LD	YES	-	Mason LD did not receive any information from the public associated with land disturbing activity during the permitting year.

BMP CATEGORY	PROPOSED BMP	PROGRAM	MEASURABLE GOAL	RESPONSIBLE PERSON/DPMT	CURRENT PROGRAM IN PLACE	ESTIMATED DATE OF IMPLEMENTATION	ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT
	4.a. (5) Procedures for Site Inspection and enforcement.	Inspections of ESC measures are conducted bi-weekly and/or within 48 hours of a significant rain event. Procedures on how to conduct inspections and enforcement is provided to Mason LD personnel (Inspectors and program administrator) upon employment. All procedures are based on DCR administrative guidelines.	Applicable sites are inspected as required and any infractions are identified and documented in accordance to specified policies and procedures. Mason LD tracks number of inspections reports generated and number of violations per construction site.	Mason LD	YES	-	Applicable sites were inspected as required and any infractions were identified and documented.
	4.b – DCR Certification	Mason LD requires that all plan reviewers, inspectors, program administrators and construction site Responsible Land Disturbers (RLDs) have appropriate certification for Erosion and Sediment Control as required under DCR's laws.	Mason LD keeps track of all personnel that receive DCR certification for Erosion and Sediment Control. Mason LD also keeps records certifications of RLDs for each construction activity conducted within Campus.	Mason LD	YES	-	All Erosion and Sediment Control inspectors and plan reviewers in Mason LD have successfully completed DCR's training and have acquired Certification for Combined administration. Mason LD has also verified that there is a registered RLD for construction activity that exceeded 1 acre of disturbance. This year, (1) employee was certified by DCR. (3) employees renewed their certifications by

							DCR. And (3) employees attended DCR's training and certification class planning on taking the certification exam later in 2013. In addition, (4) employees attended the basic Virginia stomwater management course held by DEQ. These employees plan on getting their certification in SWM as soon as DEQ offers the course and exam.

Minimum Control Measure No. 4: Construction Site Stormwater Runoff Control							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
4.c - Land Disturbance and Cumulative Impervious Area Tracking	4.c (1)&(2)- Track all land disturbing activities and their impact on Mason's cumulative impervious area.	Mason LD tracks all land disturbing activities, and provides disturbed acreage to DCR as part of the Annual Standards and Specifications submission. Mason LD also tracks all projects impact on Mason imperious area footprint, which ultimately affects the Stormwater Management Master Plan.	Continue with current program. Submit totals with Annual Standards and Specifications. Track number of updates to the land disturbing activities database.	Mason LD	YES	-	See attached **Appendix G** showing a table of all land disturbing activities requiring a formal ESC Permit from Mason LD.

Evaluation of appropriateness and effectiveness of Construction Site Stormwater Runoff Control in addressing discharges.	Mason works hard to eliminate or minimize to the greatest extent practicable the amount of sediment leaving Mason construction sites. Mason LD works closely with Project Managers and Contractors to identify and correct ESC issues. When necessary Mason LD contacts DCR for input and advice. Proper maintenance of ESC controls and proper handling of stormwater on construction sites minimizes sediment discharges into local waterways. Therefore, measures addressing construction site stormwater runoff at GMU are effective and appropriate.

Minimum Control Measure No. 5: Post-Construction Stormwater Management in New Development and Redevelopment							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
5.a - Mason SWM Master Plans	5.a.(1) i-Watershed Master Plans for Future Development and re-development	Mason operates (2) MS4s that drain to 3 different watersheds for which SWM Master Plan are developed and submitted for approval/record to DCR. Future development is to be guided by these plans with respect to stormwater quantity and quality. Mason LD requires through the permitting process the use of structural and non-structural BMPs to treat runoff to the MS4. The use of techniques that mimic predevelopment hydrologic conditions is strongly encouraged by Mason LD. Mason LD provides suggested BMPs in the Annual Standards and Specifications for ESC and SWM.	All development and redevelopment will be guided by the SWM Master Plan. Mason LD will track the percentage of property covered under the approved stormwater master plan.	Mason LD	YES	-	All projects are reviewed for compliance with the watershed management master plans and Virginia stormwater regulations. Cumulative impervious area impacts are tracked to ensure current and future SWM facilities adequacy. The SWM master plan for Fairfax Campus currently being drafted. Mason has a drafted executive summery which will be submitted to DCR in Fall 2013. For complete reports, email Mason LD at MasonLD@gmu.edu. See **Appendix H** for the drafted executive summery.

Minimum Control Measure No. 5: Post-Construction Stormwater Management in New Development and Redevelopment							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
	5.a. (1).ii-Stormwater Management Master Plans and Project Review	Approved SWM Master Plans guide all post-construction SWM. Mason LD has delegated authority to review and approve all SWM plans for construction projects.	Continue to develop and implement current post-construction program. Mason LD will track the percentage of property covered under the approved stormwater master plan.	Mason LD	YES	Fall 2013	Mason continues to be cognizant of the approved SWM Master Plan to guide all post-construction development. Under its delegated authority, Mason LD has also approved all applicable construction plans. The SWM master plan for Fairfax Campus is currently being drafted. Mason has a drafted executive summery which will be submitted to DCR in Fall 2013. For complete reports, email Mason LD at MasonLD@gmu.edu. See **Appendix H** for the drafted executive summery.

Minimum Control Measure No. 5: Post-Construction Stormwater Management in New Development and Redevelopment							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
	5.a.(2) i - George Mason University Annual Standards and Specifications for ESC and SWM.	The Annual Standards and Specifications for ESC and SWM reference both, DCR's VESC handbook and the VSWM handbook. It requires the contractor to address runoff for new development from a quality and quantity perspective. Such requirements are introduced in Mason's LD publication "How-to-Manual". Compliance with these requirements is verified by Mason LD during the plan review and permitting process. All designed techniques for runoff control are to be in accordance with the current master plan, VSWM and Mason Standards and Specifications.	Continue to develop and implement current plan review program. Mason LD is responsible for verifying compliance with SWM requirements during the plan review process.	Mason LD	YES	Fall 2013	All land disturbing plans were reviewed and permitted by Mason LD. All land disturbing plans were in compliance with VSWM regulations and Mason's Standards and Specifications.

Minimum Control Measure No. 5: Post-Construction Stormwater Management in New Development and Redevelopment							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
	5.b.(2) ii - MS4 Permit	Maintain MS4 systems in accordance with MS4 Program Plan that has been approved by DCR. Continue to develop Program to include new policies and technologies in attempt to improve stormwater discharge quality.	Annual report will indicate compliance with approved program. Track number of maintenance work orders issued within the permitting year.	Mason LD	YES	-	Report has been submitted to DCR for review. Comments have been received and incorporated into subsequent revision.
	5.b.(3)- VSMP Permit	A VSMP permit is required for all land disturbing activities greater than or equal to (1) one acre. Mason LD ensures that all permits are attained prior to commencement of construction and that the permit remains (posted) visible on the job site until the termination of the permit.	Keep track of all land disturbing activity within campus that require a VSMP permit and ensure the existence and availability of the permit.	Mason LD	YES	-	Land Disturbing activities that impacted (1) acre or more within George Mason University received a VSMP permit from DCR prior to start of construction. Mason LD personnel verified that the permit was posted on site as part of regular inspections.

Minimum Control Measure No. 5: Post-Construction Stormwater Management in New Development and Redevelopment							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
	5.b.(4) - O+M Program for Permanent Structural Stormwater Controls	The O+M mechanisms of the MS4 at George Mason University are based on regular inspections and maintenance activities conducted by Mason LD and the Facilities Maintenance Office. Inspection and maintenance schedules are managed through the computer software program "Maintenance Direct" All inspections, and preventive /corrective maintenance activities are schedule through this program.	Ensure stormwater controls are properly operated and maintained. Replacement of structures where it may be required. Track number of maintenance work orders issued within the permitting year.	Mason LD	YES	-	All structural controls are operating at peak performance. Mason FM performs preventative maintenance on all controls. Preventative maintenance includes dredging and removing trash and debris.
	5.b.(5) - MS4 Inspections	Systems inspections are conducted as a part of the operation and maintenance program discussed in 5.b.(4). Inspection reports are generated.	Continue current program. Track the number of inspection reports generated.	Mason LD	YES	-	Systems are inspected, at minimum twice a year, during preventative maintenance.

Minimum Control Measure No. 5: Post-Construction Stormwater Management in New Development and Redevelopment							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE PERSON/DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
	5.b.(6) - Track and catalog permanent SWM structures	Maintain inventory of stormwater management facilities. Catalog and label all system entities. Refer to **Appendix I** for information on type of structure, geographic location, and number of acres treated.	Continue to update inventory database. Develop GIS map showing maintenance facilities, stormwater conveyance and control structures, and receiving surface water bodies. Currently, GMU's tracking database consists of a complete list of all permanent BMPs. However, GMU is working on developing a new Inventory system in which information can be accessed in a more efficient manner. Include information about HUC, drainage area, maintenance schedule, and adequacy. Update database as new structures are added. Track the number of updates performed in the Stormwater Management Structures database.	Mason LD	YES	Improvements expected to be in place by July 2013	A new database is under development. A detailed inventory of Mason's stromwater system is to be maintained by Mason LD. The inventory will include information on drainage areas, maintenance schedule, type of structure etc, and shall be updated as needed. Moreover, GMU is also working on improving current MS4 system map by implementing GIS technology. Refer to **Appendix I** for a list of permanent SWM structures.
Evaluation of appropriateness and effectiveness of Post-Construction SWM in addressing discharges.	Mason continues to work with DCR to ensure post-construction SWM is adequate and meets the objectives of Mason's SWM Master Plans. Both Mason LD and FM (Landscaping) monitor the SWM system to ensure effectiveness. Preventative maintenance is performed. When functioning properly, the structures control water flow from Mason property to waterways, thereby minimizing erosion and sediment issues. By ensuring the stormwater controls are functioning properly, stormwater can be effectively managed in terms of both water quality and quantity in order to protect the local waterways. BMPs associated with Post-construction stormwater management in new development and redevelopment at GMU is appropriate and effective in addressing discharges into local waterways.						

Minimum Control Measure No. 6: Pollution Prevention/ Good Housekeeping for Mason Facility							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
6.a - Operation and Maintenance Program	6.a.1 - Staff Education	Educate staff on stormwater pollution Prevention, Spill Prevention, Control and Countermeasure, Erosion and Sediment Control and other pollution prevention methods as part of their training.	Provide training on environmental awareness. Track number of individuals trained	Mason LD/ FM/EHS	YES	-	(3) Mason LD staff member received training by DCR on ESC. In addition, EHS held 187 training sessions which educated 1487 Mason staff member on chemical storage, use, and proper disposal during the reporting period. A further break down includes 183 staff members at mason received training in Biological Safety. 535 staff members received hazardous communication and hazardous waste operations & emergency response training. More information on EHS training can be found on their website: http://ehs.gmu.edu/ training_all.html.

	6.a.2 - Facility Operation and Maintenance Program.	Maintain inventory of current facilities and the appropriate operation and maintenance schedules. Procedures on how to conduct inspections of the MS4 system and schedule information are provided to appropriate personnel through guidelines developed by Mason LD and/or EHS and training upon employment.	Ensure equipment and facilities are properly operated and maintained to reduce or eliminate illicit discharges to stormwater system. Track number of violations reported.	Mason LD/EHS	YES	-	All structural controls are operating at peak performance. Mason FM performs preventative maintenance on all controls. Preventative maintenance includes dredging and removing trash and debris.

Minimum Control Measure No. 6: Pollution Prevention/ Good Housekeeping for Mason Facility							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
6.b - Management of Municipal Facilities	6.b.1 - Parking Lot, Curb Inlet and Street Cleaning	All public areas located on campus are to be cleaned under Mason control including removal of trash and leaves as needed. Parking lots are monitored periodically and cleaned as necessary.	Continue with existing program. Track and evaluate current street cleaning routines and identify areas that need frequent cleaning.	FM	YES	-	Mason contracts a third party street cleaner as needed. Construction contractors are required to keep impervious areas free of sediment and use street cleaners on regular basis.
	6.b.2 - Maintained of Permanent Stormwater Structures	Identify structures that require maintenance and repair.	Improve stormwater quality by keeping stormwater controls properly maintained. Track number of maintenance work orders issued during the year.	FM	YES	-	Efficient stormwater structures that function as the original design intended.
	6.b.4 - Material and Chemical Storage Facilities	Continue to inspect and evaluate storage locations and methods of storing hazardous and other materials to ensure non-contact with stormwater.	Identify locations and methods for hazardous material storage and inspect storage facility on a regular basis. Track number of inspections performed during the year on material and chemical storage facilities.	EHS	YES	-	All hazardous materials storage locations are inspected at least annually.

Minimum Control Measure No. 6: Pollution Prevention/ Good Housekeeping for Mason Facility							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
6.c - Waste Material Management	6.c.1 - Waste Disposal	Mason has programs in place that address proper waste material disposal.	Improper waste material disposal will be reported. Track number of violations reported.	EHS	YES	-	Properly manage waste material through EHS Chemical, Hazardous and Universal Waste program which includes recycling of materials as well as labeling and handling of trash.
	6.c.2 - Dispose of Foliage Waste Properly	Ensure hydrologic conditions are not altered due to improper disposal of foliage waste (i.e. mulching, composting, etc.)	Improper waste material disposal will be reported. Track number of violations reported.	FM	YES	-	Guidelines have been established for sustainable disposal of foliage waste. (I.e. mulching, composting, etc.)
6.d - Soluble and Erodible Materials	6.d.1 - Soluble and Erodible Materials	Identify location and evaluate the adequacy of storage methods used for soluble and erodible materials.	Track location of storage facilities and inventory of soluble and erodible materials. Track number of inspections performed to storage facilities as well as quantities of product.	Mason LD/FM	YES	N/A	Currently, the university has no designated place for storing soluble and erodible materials. Therefore materials are purchased as needed and leftovers are discarded or returned as needed. Mason LD is committed remove any unused soluble and/or erodible materials until an adequate storage facility is constructed.

Minimum Control Measure No. 6: Pollution Prevention/ Good Housekeeping for Mason Facility							
BMP CATEGORY	**PROPOSED BMP**	**PROGRAM**	**MEASURABLE GOAL**	**RESPONSIBLE PERSON/DPMT**	**CURRENT PROGRAM IN PLACE**	**ESTIMATED DATE OF IMPLEMENTATION**	**ANNUAL OBJECTIVES ACHIEVED/ INTENDED ACHIEVEMENT**
	6.f.1 - Fertilizer Application	Ensure compliance with all regulations associated with the application of fertilizers. An Environmental Compliance Officer is in charge of evaluating the effectiveness of methods used in the application of fertilizers.	Update and maintain current program. Track percentage of certified applicators.	FM/EHS	YES	-	Apply appropriate type of fertilizers only when and where needed.
	6. f.2 - Nutrient Management Plan	Ensure compliance with state required Nutrient Management Plans for all lawn and landscaped areas. Certified Nutrient Management Planners work hard to ensure the plans accurate and up to date.	Update and maintain Nutrient Management Plan for review and approval of DCR every three years. Track number of updates to the Nutrient Management Plan.	FM/EHS	YES	-	Nutrient Management Plans were updated for each campus. Nutrient Management plans for all campuses were approved by DCR on April 10, 2012.
Evaluation of appropriateness and effectiveness of Pollution Prevention in addressing discharges.	Proper handling and disposal of chemical materials is supervised through different procedures and requirements in order to minimize impact to local environment. In addition, proper handling of soluble and erodible materials ensures that these materials are only used when necessary. Proper employee training also allows for better management of materials and emphasizes proper environmental stewardship. Therefore, BMPs associated with pollution prevention and good housekeeping at GMU are appropriate and effective in addressing discharges into existing waterbodies.						

Appendix B:
Public Education Campaigns

Below is George Mason University's Land Development flyer. This year, Mason LD posted 12 flyers per week around campus.

Land Development

George Mason University Land Development (Mason LD) assists the University's Project Management and Construction Department with the design and implementation of new projects. Our goal is to exceed environmental standards and principles. Besides overseeing the physical development of new projects, Mason LD is responsible for administering policies and programs. Some of the programs managed by Mason LD included the Stormwater Management Program, the Illicit Discharge Detection and Elimination Program, and Erosion and Sediment Control.

Mason LD seeks to alert homeowners, students, and faculty/staff regarding the impacts of stormwater runoff on water quality through free training sessions, workshops, and the distribution of educational materials. The public outreach and public participation programs at Mason provide guidance on how the community can help to minimize the adverse impacts of urban runoff to waterways.

More information can be found on our website:
facilities.gmu.edu/LandDevelopment

Below is George Mason University's Land Development brochure. This year, Mason LD printed and handed out about 50 brochures around campus.

[Front]

STORMWATER MANAGEMENT

Stormwater runoff is rainwater that doesn't soak into the ground. The rain that runs off is often washed pollutants from impervious surfaces like parking lots, streets, and gutters into the storm drain system, which then flows into our streams, ponds, and bays. Stormwater can flow into a storm sewer system or directly to a stream, wetland, river, or pond. Anything that enters a storm sewer system is discharged untreated into these bodies

EROSION AND SEDIMENT CONTROL

Erosion and Sediment Control and Stormwater Management Programs are integral components of GMU's design, construction, maintenance, and management of the university's facilities and campuses.

HOW DOES STORMWATER MANAGEMENT WORK?

Under natural conditions, rainwater is dissipated through the processes of transpiration, evaporations and percolation. Through transpiration, a large quantity of water is intercepted by plant foliage and evaporates back into the atmosphere. The remaining water that reaches the surface of ground infiltrates into the soils and through percolation, continues to travel underground until it slowly makes its way into the streams and aquifers.

As water seeps into the ground the process of percolation also allows for the removal of pollutants present in stormwater. The ability of water to seep into the ground, as well as, the amount of water that can be retained depends on soil properties such as porosity and permeability. A high porosity soil can hold large amounts of water and usually allows for rapid infiltration. When precipitation reaches the soil surface faster than it can be infiltrated into the ground, water collects at the surface and travels downhill.

WHY IS STORMWATER MANAGEMENT NECESSARY?

As more land cover is replaced with impervious surfaces, less rain can be naturally absorbed and treated by the environment. After development, stormwater discharges can increase by more that twice the amount under natural conditions. If not controlled, large quantities of water can cause flooding in our communities and stream channel erosion. Stormwater Management's policies are necessary in order to address impacts of urbanization on water resources, minimize flood damage, and significant erosion of channel bed and banks.

stormwater graphic courtesy John David Hardee

[Inside]

Appendix C:
Notice of Corrective Action

GEORGE MASON UNIVERSITY
Facilities Construction Office
4400 University Drive – Mail Stop 2C1
Fairfax, Virginia 22030-4444

(p): 703-993-4051
(c): 571-265-1977
Fax: 703-993-2521

September 18, 2012

Fort Myer Construction Corporation
2237 33rd Street, Northeast
Washington, DC 20018
Attn: Cesar Casanova, Project Manager

Re: Roanoke River Road Improvements [Project No: 247-A2247-150683]
VESCL Notice of Corrective Action (NOCA)

Dear Mr. Casanova:

On 14 September 2012, George Mason University (Mason) Land Development staff inspected the Roanoke River Road Improvements site, permit #ES-150683, for compliance with the Virginia Erosion and Sediment Control Law (VESCL). During the inspection, staff observed the following violations:

- Inlet protection needed on all newly active inlets
- Outfall protection not installed at pond outfall

The inspection report documenting these observations is attached. In addition, on 18 September 2012, an email was sent to Cesar Casanova directing Fort Myer to install the appropriate outlet protection prior to a significant hydrologic event. Attached is the respective email correspondence and affirmation from Cesar Casanova that Fort Myer would install the protection immediately.

George Mason University requests a meeting with the Contractor immediately. The purpose of this meeting is to review these infractions and the immediate steps that need to be taken.

The purpose of this letter is to provide you with the information Mason has gathered regarding the Roanoke River Road Erosion and Sediment Control conditions and allow you the opportunity to respond with information regarding the conditions observed at the site. Additionally, this letter serves as a Notice to Comply. As such, you have 72 hours to stabilize your site in accordance with the VESCL. In addition, Fort Myer will be held responsible for any downstream sedimentation in the storm system and stream channels resulting from their inaction in accordance with VESCL. As a result, Fort Myer will be completely responsible for any system maintenance or stream remediation deemed necessary.

Mason is concerned with Fort Myer's lack of response in addressing these items and installing the approved controls. If the discrepancies described above cannot be resolved to the satisfaction

of Mason within the time allotted, Mason has the authority to immediately pursue formal enforcement action. Mason has contacted the Department of Conservation and Recreation to inform them of this matter. Failure to provide corrective action by September 21, 2012 may result in additional enforcement action through the Department of Conservation and Recreation.

Sincerely,

Brad Glatfelter
Erosion and Sediment Control and Stormwater Administrator

Attachment:
(1) Email dated 18 September 2012
(2) E&S Inspection Report dated 18 September 2012 (*inspected 14 September 2012*)

Copy to:
- Robert Endebrock, Mason
- Robbie Houser, Mason
- Debbie Switzer, DCR
- Michael Shuler, Mason
- University E&S/SWM File

RE: Outfall protection on SWM pond

Subject: RE: Outfall protection on SWM pond
From: Cesar Casanova <ccasanova@fortmyer.com>
Date: 9/18/2012 8:40 AM
To: Brad Glatfelter <bglatfel@gmu.edu>
CC: Robert Houser <rhouser@gmu.edu>, Michael Shuler <mshuler1@gmu.edu>

It's getting taken care of.

Cesar Casanova
2237 33rd Street NE
Washington, DC 20018
Office: (202) 636-9535
Fax: (202) 529-1692

FORT MYER CONSTRUCTION CORPORATION
FMC
WASHINGTON, D.C.

-------- Original Message --------
Subject: Outfall protection on SWM pond
From: Brad Glatfelter <bglatfel@gmu.edu>
Date: Tue, September 18, 2012 8:05 am
To: Cesar Casanova <ccasanova@fortmyer.com>
Cc: Robert Houser <rhouser@gmu.edu>, Michael Shuler <mshuler1@gmu.edu>

Cesar-

Outfall protection (filter fabric) must be installed immediately. Call if there is a problem.

Brad Glatfelter
bg

Reply To:
Facilities Construction Office
4400 University Dr.
Fairfax, VA 22030
PHONE: (703) 993-2511 FAX: (703) 993-2521

LAND DEVELOPMENT INSPECTION REPORT

Project Name: Roanoke River Rd
Project Authority: GMU
Inspector: Michael Shuler
Project Location: Fairfax
Permit No.: ES-150683
Insp. Date/Time: Sep 14, 2012 T: 12:00 PM

Permit Displayed: Mason LD Permit ☑ VSMP ☐

STAGE OF CONSTRUCTION

Pre-Cons. Conference ☐ Building Construction ☐ Construction SWM Facilities ☑
Clearing & Grubbing ☐ Finish Grading ☑ Maintenance of SWM Facilities ☐
Rough Grading ☐ Final Stabilization ☐

State/Local Regulation (1) (citation)	*Violation*		*Practice/Problem/Violation Location and Description(2)*	*Corrective Action Required, Completed, and/or Recommendations/Comments*	Reference Image
	Initial	Repeat			
MS 10		X	Inlet protection is needed on all newly active inlets	Install inlet protection on all newly connected inlets	1,2,3
MS 17	X		Parking lots on both side of the project have excessive amounts sediment on the roadways due to run off.	Sweep road ways of sediment in both ajacent parking lots	4
Comments:					

(1) Refers to applicable regulation found in the most recent publication of the Virginia Erosion and Sediment Control Regulations (4VAC50-30-40), Virginia Stormwater Management Regulations (4VAC3-20), or local ESC/SWM ordinance.

(2) Note whether or not off-site damage resulting from the practice, problem, or violation was evident during the inspection.

REQUIRED CORRECTIVE ACTION DEADLINE DATE: Sep 21, 2012 **Re-inspection +/-: 1 Week**

The required corrective action deadline date applies to all violations noted on this report. If listed violation(s) currently constitute non-compliance as defined in the current version of the DCR Urban Programs Policy & Procedures Manual and/or required corrective actions are not completed by the deadline date, a **NOTICE TO COMPLY**, **STOP WORK ORDER**, and/or other enforcement actions may be issued to the entity responsible for ensuring compliance on the above project.

Inspector: Michael Shuler _____ 8/18/2012
Signature Date

Hand deliver or fax written notification to all appropriate parties within 24 hours of inspection date.
On-Site Recipient: _____ _____ _____
Signature Date

Copy 1-Onsite Project Representative Copy 2-Project Authority Copy 3-DCR Project File

1

Reply To:
Facilities Construction Office
4400 University Dr.
Fairfax, VA 22030
PHONE: (703) 993-2511 FAX: (703) 993-2521

GEORGE MASON UNIVERSITY

Figure 1

Figure 2

Figure 3

Figure 4

2

GEORGE MASON UNIVERSITY
Facilities Construction Office
4400 University Drive – Mail Stop 2C1
Fairfax, Virginia 22030-4444

(p): 703-993-4051
(c): 571-265-1977
Fax: 703-993-2521

February 13, 2013

Gilbane Building Company
10900 University Boulevard
Manassas, VA 20110
Attn: John Keegan,

Re: Upper Student Housing [Project #: 247-17489]
-VESCL Notice of Corrective Action (NOCA)

Dear Mr. Keegan,

On 1/31/2013 George Mason University (Mason) staff witnessed the flooding of a portion of the housing parking lot. The flooding of the parking lot is a violation of Minimum Standard 19, which regulates adequacy of all channels and pipes.

George Mason University requests a meeting with the Contractor and its Engineer immediately. The purpose of this meeting is to review the issue and the immediate steps that need to be taken.

The purpose of this letter is to provide you with the information Mason has gathered regarding the Upper Student Housing stormwater conditions and permit you the opportunity to provide information regarding the conditions observed at the site. Additionally, this letter serves as a Notice to Comply. As such, you have 72 hours to respond to this letter with a plan to remediate the violation that occurred

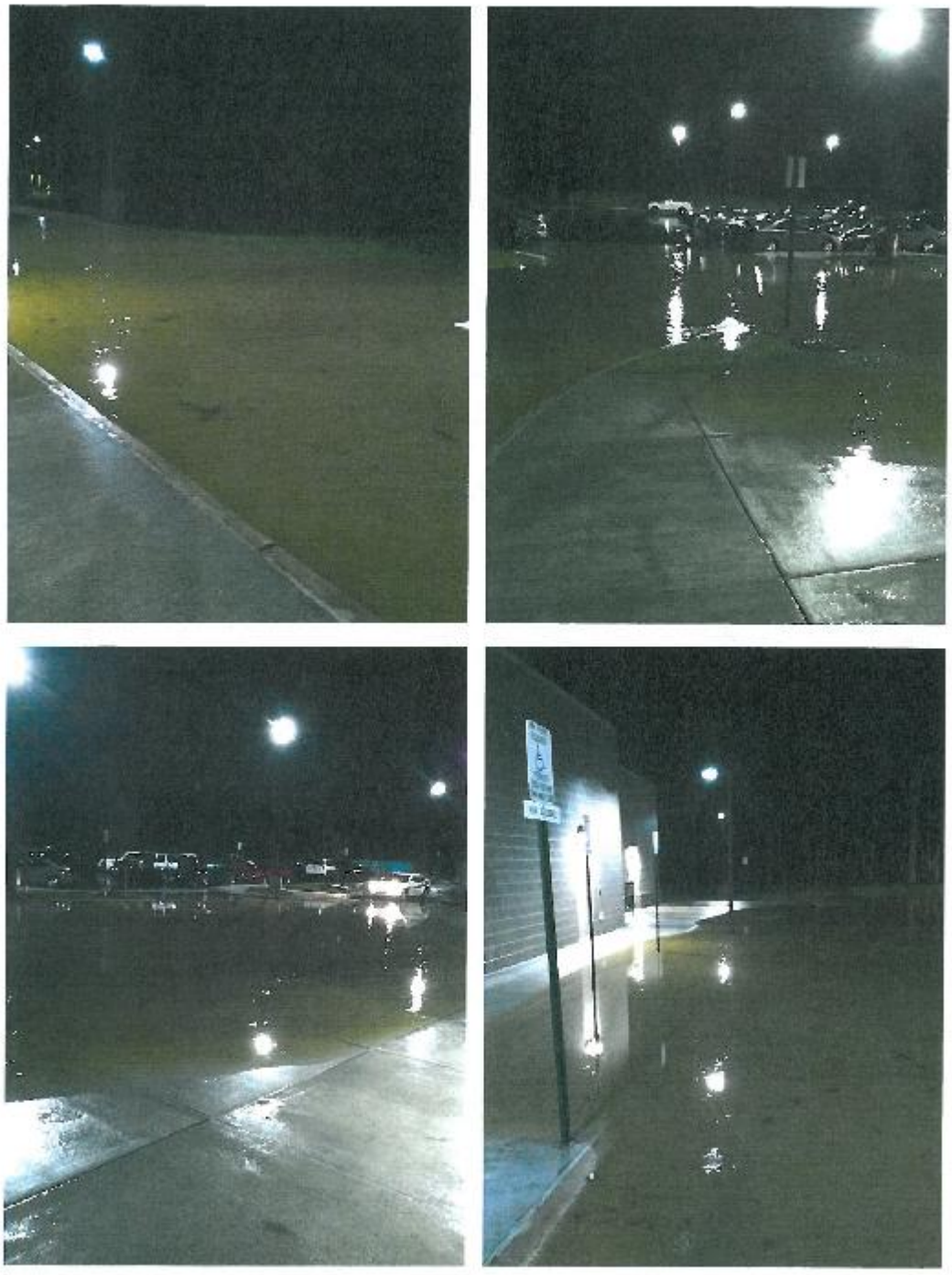
If the discrepancies described above cannot be resolved to the satisfaction of Mason within the time allotted, Mason has the authority to immediately pursue formal enforcement action. Mason will be contacting the Department of Environmental Quality to inform them of this matter. Failure to provide corrective action by February 18, 2013 may result in additional enforcement action through the Department of Environmental Quality.

Sincerely,

Brad Glatfelter
Erosion and Sediment Control and Stormwater Administrator

Attachment:
(1) 5 photos of the flooding incident

Copy to:
- Robert Endebrock, GMU
- Robbie Houser, GMU
- Brian Gustafson, Gilbane
- Mickey Boeckl, GMU
- Aaron Trout, Gilbane
- POST
- University E&S/SWM File



GEORGE MASON UNIVERSITY
Facilities Construction Office
4400 University Drive – Mail Stop 2C1
Fairfax, Virginia 22030-4444

(p): 703-993-4051
(c): 571-265-1977
Fax: 703-993-2521

March 14, 2013

Branch Highways
10440 Balls Ford Road
Suite 270
Manassas, VA 20109
Attn: William Myers, Project Manager

Re: Campus Drive [Project No: 0123-029-948.C501]
-VESCL Notice of Corrective Action (NOCA)

Dear Mr. Myers:

On 12 March 2013 George Mason University (Mason) staff inspected the Campus Drive site, permit #ES-029948, for compliance with the Virginia Erosion and Sediment Control Law (VESCL) due to the hydrologic event. During site inspection, staff observed the following violations:

- Land Disturbance not adequately stabilized
- Failure/Inadequacy of installed protection measures

Inspection reports documenting these observations are attached.

George Mason University requests a meeting with the Contractor and its Engineer immediately. The purpose of this meeting is to review these infractions and the immediate steps that need to be taken.

The intent of this letter is to provide you with the information Mason has gathered regarding the Campus Drive Erosion and Sediment control conditions and permit you the opportunity to provide information regarding the conditions observed at the site. Additionally, this letter serves as a Notice to Comply. As such, you have 72 hours to stabilize your site in accordance with the VESCL. Please respond formally with photographic evidence that compliance and stabilization have been achieved.

Though the response to these issues was quick and commendable, Mason would encourage the Contractor to be proactive rather than reactive in the future. While this incident was unfortunate and largely avoidable, Mason is confident the Contractor will immediately act to repair all failures, remediate any downstream impacts, consult with the Engineer-of-Record and Mason staff to review the ESC design, and adjust the installed measures accordingly in a timely manner to the satisfaction of the ESC Program Administrator.

If the discrepancies described above cannot be resolved to the satisfaction of Mason within the time allotted or continue to be issues in the future, Mason has the authority to immediately pursue formal enforcement action. Mason has contacted the Department of Conservation and Recreation to inform them of this matter. Failure to provide corrective action by 18 March 2013 may result in additional enforcement action through the Department of Conservation and Recreation.

Sincerely,

Brad Glatfelter
Erosion and Sediment Control and Stormwater Administrator

Attachment:
(1) E&S Reports dated 12 March 2013

Copy to:
- Robert Endebrock, Mason
- Robbie Houser, Mason
- Justin Campbell, Branch
- Troy Smith, DCR
- Nate Smith, Mason
- Pete Kramer, Branch
- Mark Gunn, RDA
- Cody Lanman, Mason
- Tim Vaughn, RDA
- University E&S/SWM File

Reply To:
Facilities Construction Office
4400 University Dr.
Fairfax, VA 22030
PHONE: (703) 993-2511 FAX: (703) 993-2521

LAND DEVELOPMENT INSPECTION REPORT

Project Name: Campus Drive
Project Location: Fairfax
Project Authority: GMU
Permit No.: ES-029948
Inspector: Cody Lanman
Insp. Date/Time: Mar 12, 2013 T: 2:00 PM

Permit Displayed: Mason LD Permit ☑ VSMP ☑

STAGE OF CONSTRUCTION

Pre-Cons. Conference ☐	Building Construction ☐	Construction SWM Facilities ☐
Clearing & Grubbing ☑	Finish Grading ☐	Maintenance of SWM Facilities ☐
Rough Grading ☑	Final Stabilization ☐	Construction of Site Utilities ☐

State/Local Regulation (1) (citation)	*Violation*		*Practice/Problem/Violation Location and Description(2)*	*Corrective Action Required, Completed, and/or Recommendations/Comments*	*Reference Image*
	Initial	Repeat			
MS 5	X		Rock Check Dam washed out	Fix Rock Check Dam (along Ox Road)	Figure 1-2
MS 1	X		Slope not stabilized	Stabilize slope	Figure 3
MS 8	X		Uncontrolled Concentrated flow	Engineers design a fix	Figure 4
MS 4	X		Sediment Trap failed	Install Trap Properly	Figure 5
MS 5	X		Check Dam Failed	Install Check Dam according to approved plans	Figure 6
MS 5	X		Check Dam Failed	Install Check Dam according to approved plans	Figure 7
MS 1	X		Concentrated flow	Stabilize slope	Figure 8
MS 1	X		Soil not stabilized	Stabilize soil	Figure 9-10
MS 4	X		Sediment Trap failed (water flowing over edges)	Install Trap Properly	Figure 11-12
MS 4	X		Sediment Trap failed	Install Trap Properly	Figure 13
	X		Saffey Fence down	Install Properly	Figure 14
	X		As seen by the Turbidity of the water, upstream protection of inlets and erosion precautions were not adequate		Figure 15-20
Comments:					

(1) Refers to applicable regulation found in the most recent publication of the Virginia Erosion and Sediment Control Regulations (4VAC50-30-40), Virginia Stormwater Management Regulations (4VAC3-20), or local ESC/SWM ordinance.

(2) Note whether or not off-site damage resulting from the practice, problem, or violation was evident during the inspection.

REQUIRED CORRECTIVE ACTION DEADLINE DATE: Mar 18, 2013 **Re-inspection +/-: 2 Weeks**

The required corrective action deadline date applies to all violations noted on this report. If listed violation(s) currently constitute non-compliance as defined in the current version of the DCR Urban Programs Policy & Procedures Manual and/or required corrective actions are not completed by the deadline date, a **NOTICE TO COMPLY, STOP WORK ORDER**, and/or other enforcement actions may be issued to the entity responsible for ensuring compliance on the above project.

Inspector: Cody Lanman — *Cody Lanman* (Signature) — 3/12/2013 (Date)

Hand deliver or fax written notification to all appropriate parties within 24 hours of inspection date.
On-Site Recipient: _____ (Signature) — 3/12/2013 (Date)

Copy 1-Onsite Project Representative Copy 2-Project Authority Copy 3-DCR Project File

1

Reply To:
Facilities Construction Office
4400 University Dr.
Fairfax, VA 22030
PHONE: (703) 993-2511 FAX: (703) 993-2521

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Figure 1 (Along Ox Road)

Figure 2 (Along Ox Road)

Figure 3 (Along Ox Road)

Figure 4 (Behind Field House)

2

Reply To:
Facilities Construction Office
4400 University Dr.
Fairfax, VA 22030
PHONE: (703) 993-2511 FAX: (703) 993-2521

GEORGE MASON UNIVERSITY

Figure 5 (Sediment Trap 6)

Figure 6 (Near Tree Stockpile (Sheet U(2)))

Figure 7 (Near Tree Stockpile (Sheet U(2)))

Figure 8 (Sediment Trap 3)

3

Reply To:
Facilities Construction Office
4400 University Dr.
Fairfax, VA 22030
PHONE: (703) 993-2511 FAX: (703) 993-2521

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Figure 9

Figure 10 (Area around Field 5)

Figure 11 (Sediment Trap 8)

Figure 12 (Sediment Trap 8)

4

Reply To:
Facilities Construction Office
4400 University Dr.
Fairfax, VA 22030
PHONE: (703) 993-2511 FAX: (703) 993-2521

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Figure 13 (Sediment Trap behind field 5)

Figure 14 (Behind Field House)

Figure 15 (Intersection of Mason Pond Drive and Ox Road)

Figure 16 (Kelley Drive)

5

Reply To:
Facilities Construction Office
4400 University Dr.
Fairfax, VA 22030
PHONE: (703) 993-2511 FAX: (703) 993-2521

Figure 17 (Kelley Drive)

Figure 18 (Kelley Drive)

Figure 19 (Outfall at the back of Kelley Drive)

Figure 20 (Along Ox Road)

6

Appendix D:
Drainage Markers

Drainage Markers are placed at all inlets around all three George Mason University main campuses. Once projects in this permit period have been completed, any new inlets will be marked with the same decal shown below.

Appendix E:
Signage

Surface water signage is in the process of being put at all surface water locations around all three George Mason University main campuses. The appropriate signage for each type is shown below.

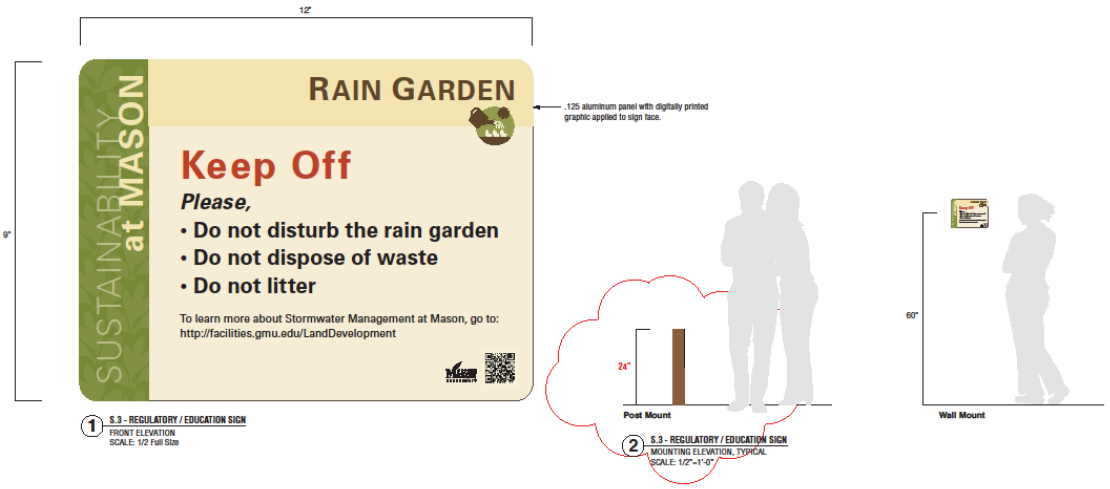
QUANTITY: 1

QUANTITY: 4

QUANTITY: 2

1 SIGN TYPE S.3 - REGULATORY/EDUCATION
FRONT ELEVATION
NTS

George Mason University	Sustainability Education Program Exterior Signage		Phase Design Intent	Date: 05.14.13	Scale: As noted	3.01



1 S.3 - REGULATORY / EDUCATION SIGN
FRONT ELEVATION
SCALE: 1/2 Full Size

2 S.3 - REGULATORY / EDUCATION SIGN
MOUNTING ELEVATION, TYPICAL
SCALE: 1/2"=1'-0"

George Mason University	Sustainability Education Program Exterior Signs		Phase DD	Date: REV. 5.27.13	Scale: As noted	3.02

Appendix F:
Illicit Discharge Detection and Elimination Program

Policy No. 1409

Illicit Discharge Detection and Elimination Policy

Responsible Office:

Environmental Health and Safety Office ("EHS")

Procedures:

George Mason University MS4 Program Plan

Related Law & Policy:

Virginia Stormwater Management Program (VSMP) Permit Regulations 4VAC50-60-10 et seq.

Clean Water Act 33 U.S.C. §1251 et seq.

University Policy Number 1406, Environmental Health and Safety; University Policy Number 1408, Environmental Management and Sustainability System

I. PURPOSE AND SCOPE

The purpose of this policy is to provide for the health, safety, and general welfare of the students, staff and visitors of George Mason University through the regulation of non-storm water discharges to the storm drainage system to the maximum extent practicable as required by federal and state law. This policy establishes methods for controlling the introduction of pollutants into the municipal separate storm sewer system (MS4) in order to comply with requirements of Virginia Stormwater Management Program permit for George Mason University.

II. DEFINITIONS

"Best Management Practices" (BMPs) means schedules of activities, prohibitions of practices, general good housekeeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to storm water, receiving waters, or storm water conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

"De Minimis" means small, minor, or insignificant spills of materials that occur during normal material handling operations (e.g., spills from unloading or transfer of materials, leaks from pipes or valves, minor leaks of process equipment, etc.).

"Hazardous Materials" means any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

"Illegal Discharge" means any direct or indirect non-storm water discharge to the storm drain system, except as exempted in Section III of this policy.

"Municipal Separate Storm Sewer System" (MS4) means the system of conveyances (including, roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) owned and operated by George Mason University and designed or used for collecting or conveying storm water, and that is not used for collecting or conveying sewage.

"Non-Storm Water Discharge" means any discharge to the storm drain system that is not composed entirely of storm water.

"Pollutant" means anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, polices, and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wasteland residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

"Storm Drainage System" means publicly-owned facilities by which storm water is collected and/or conveyed, including but not limited to any roads with drainage systems, municipal streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and human-made or altered drainage channels, reservoirs, and other drainage structures.

"Storm Water" means any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation.

"Wastewater" means any water or other liquid, other than uncontaminated stormwater, discharged from a facility.

III. PROHIBITION OF ILLICIT DISCHARGES

No university employee, student, visitor or contractor shall throw, drain, or otherwise discharge, cause, or allow others under its control to throw, drain, or otherwise discharge into the university's storm water drainage system any pollutants or waters containing any pollutants, other than storm water. It is the responsibility of the Offices of Environmental Health and Safety (EHS), Facilities Management and Facilities Project Management and Construction Management to train employees to recognize the hazards associated with illicit discharges and to identify illicit discharge sources. Additionally, Facilities Land Development ("Mason LD") is responsible for performing outfall inspections and surveys, including observation, documentation, and sampling (if deemed necessary).

The commencement, conduct, or continuance of any illegal discharge to the storm drain system is prohibited except as described as follows:

1. The following discharges are exempt as they are considered to be not significant contributors of pollutants to the MS4: water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration, uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, street wash water and flows that have been identified in writing by Virginia's Department of Environmental Quality as de minimis discharges that are not significant sources of pollutants to state waters and not requiring a VPDES permit.

2. Discharges or flow from firefighting, and other discharges specified in writing by Mason LD as being necessary to protect public health and safety.

3. Discharges associated with dye testing; however, this activity requires notification to Mason LD prior to the time of the test.

4. The prohibition shall not apply to any non-storm water discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the United States Environmental Protection Agency (EPA), provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for the permitted discharge to the storm drain system.

IV. NOTIFICATION OF SPILLS

Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials, which are resulting or may result in illegal discharges or pollutants discharging into storm water, the storm drain

system, or waters of the United States, said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release.

In the event of such a release of hazardous materials, said person shall immediately notify University Police, who will then notify EHS. In the event of a release of non-hazardous materials, said person shall notify EHS within 24 hours via email (safety@gmu.edu), phone (703-993-8448), or by calling University Police, who in turn will contact EHS. Failure to provide notification of a release as provided above is a violation of this Policy.

V. COMPLIANCE

A. The university may suspend or cease activities and operations that are not in full compliance with this policy.
B. Whenever George Mason University finds that a violation of this Policy has occurred, EHS may order compliance by written notice to the responsible person. Such notice may require, without limitation:
    1. The performance of monitoring, analyses, and reporting;
    2. The elimination of prohibited discharges or connections;
    3. Cessation of any violating discharges, practices, or operations;
    4. The abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property;
    5. Payment of any fee, penalty, or fine assessed against the university to cover remediation cost;
    6. The implementation of new stormwater management practices; and
    7. Disciplinary action up to and including dismissal, where appropriate.
C. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of these violation(s). Said notice may further advise that, if applicable, should the violator fail to take the required action within the established deadline. EHS will then initiate work orders for the appropriate corrective actions and the violator or university department will be charged for the cost.
D. The remedies listed in this Policy are not exclusive of any other remedies available under any applicable federal, state, or local law.

VI. EFFECTIVE DATE, REVIEW, AND APPROVAL:

This policy will become effective upon the date of approval by the Senior Vice President and Provost. This Policy, and any related procedures, shall be reviewed annually.

Approved:

_____ _____
Senior Vice President **Date**

Approved:

_____ _____
Provost **Date**

Appendix G:

Current and Future Land Disturbing Projects

Current and Future Land Disturbing Projects						
Project Name	**Total Disturbed Area (ac)**	**Projected Timeline**		**Location**	**On-Site Project Manager**	**Project Description**
		Start	**Finish**			
Projects Currently Under Construction						
Science & Tech II Addition	3.6	November-12	May-13	Fairfax	Alex Izard (703) 993-9220	Academic Science Addn.
Roanoke River Road	1.9	August-12	June-13	Fairfax	Brad Glatfelter (571) 265-1977	Campus Entrance
Discovery Hall II	5.2	July-12	August-13	Prince William	Micky Boeckl (703) 993-3726	Academic Laboratory Building
ICAR/POV	1.20 (?)	August-12	August-13	Mason Neck	Nancy Pickens (571) 296-1137	Conference Center and Housing
Fenwick Library	2.3 (?)	December-12	August-14	Fairfax	Alex Iszard (703) 993-9220	Academic Library
West Campus Connector Road	15 (?)	December- 12	July- 14	Fairfax	Brad Glatfelter (571) 265-1977	Road and Grade Separated Crossing
Potomac Science Center	2	June-13	June- 14	Belmont Bay	Alex Iszard (703) 993-9220	Academic Building
Shenandoah Dining	0.5	August- 13	August- 14	Fairfax	Nancy Pickens (571) 296-1137	Dining Building
Shenandoah Housing	1.5	May- 13	October- 15	Fairfax	Nancy Pickens (571) 296-1137	Student Housing
Plant Expansion	0.25	September -13	October-13	Fairfax	Mike Herman (703) 993-2242	Facilities Building

2013/2014 Proposed/Potential Future Construction Projects						
Baseball Stadium	3 (?)	August-13	February-14	Fairfax	Alex Iszard (703) 993-9220	Baseball Stadium
Academic VII	8	March-14	March-17	Fairfax	Micky Boeckl (703) 993-3726	Academic Building
Sandy Creek Transit Center	2.8 (?)	May-14	September-14	Fairfax	Brad Glatfelter (571) 265-1977	Transit Center Upgrades
Rappahannock Housing	1	May-16	September-18	Fairfax	Nancy Pickens (571) 296-1137	Student Housing

Appendix H:
Stormwater Management Master Plan

GEORGE MASON UNIVERSITY
FAIRFAX EAST CAMPUS
2013 STORMWATER MASTER PLAN

JULY 2013

Prepared by christopher consultants

christopher consultants
engineering · surveying · land planning

Client Team

George Mason University Committee Members

Tom Calhoun – Vice President, Facilities
Erik Backus, P.E., LEED AP – Engineering Planner, Facilities
Brad Glatfelter – Project Manager, Facilities
Margaret Lo – Director, Office of Sustainability
Mark Kitta – Assistant Director of Operations, Facilities

Community Committee Members

Corey Miles – Northern Virginia Regional Commission
LeAnne Astin – Fairfax County Stormwater PD
Sayedul H. Choudhury – Northern Virginia Regional Comission
City of Fairfax
Suzanne Dee – Environmental Science and Public Policy
Bill Garney – Housing
Archie Nesbitt – Facilities Management
Bruce Cooper – Intercollegiate Athletics
Chris Jones – Environmental Science and Policy
Greg Foster – Chemistry
Bob Jonas – Environmental Science and Policy
Ralph Lewis – Facilities
Cathy Wolfe – Campus Planning
Robbie Houser – Facilities

Consultant Team

christopher consultants, ltd.

Mike Albright, P.E. – Group Leader, Public Division
Brenda Barger, P.E. – Project Manager, Public Division
Katie Winters, E.I.T. – Project Engineer, Public Division

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2013 George Mason University Stormwater Master Plan

2013 George Mason University Stormwater Master Plan

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2013 George Mason University Stormwater Master Plan

Executive Summary

George Mason University (Mason) has prepared this stormwater master plan (SWMP) for its Fairfax East Campus to satisfy the Virginia Department of Conservation and Recreation's (VA DCR) requirement for Municipal Separate Storm Sewer (MS4) programs to have a stormwater master plan. This SWMP will influence all development and redevelopment on Mason's Fairfax East Campus.

Development increases the amount of impervious land cover, thereby increasing the rate and amount of stormwater runoff. High flow volumes and velocities cause excessive erosion and degradation of natural streams. Stormwater management facilities mitigate this effect through detention of stormwater runoff and protection of receiving channels and streams. Detention of stormwater runoff reduces the peak flow rate to match the pre-development flow rate, providing channel and flood protection downstream.

Development also increases the pollutant load in stormwater draining to natural water bodies. The specific pollutants focused on by the Virginia Runoff Reduction Method include sediment, suspended solids, phosphorus and nitrogen. VA DCR has developed specifications for facilities that attempt to mimic pre-development characteristics and conditions, and treat stormwater runoff for these pollutants. The different types of facilities lend themselves to either site-specific treatment of stormwater or regional treatment of stormwater. Mason's existing facilities and current approach to stormwater treatment is predominantly a regional approach.

Mason's Fairfax East Campus is located nearly at the top of the Rabbit Branch of the Pohick Creek watershed. This means the University has the ability to control the quality and quantity of s significant amount of stormwater on site, thereby mitigating negative downstream impacts to the receiving waters of Rabbit Branch and Pohick Creek. There are currently nine stormwater treatment facilities on this campus which drain to Rabbit Branch and Pohick Creek via two separate outfalls.

The Stormwater Master Plan uses results from previous studies relevant to Mason's compliance with VA DCR's 2011 stormwater regulations to determine the best approach for managing stormwater runoff on campus. Based on the results of these studies, Mason will upgrade and retrofit three of the existing stormwater treatment facilities to achieve compliance with DCR's water quality and quantity requirements. Mason Pond, the Rivanna River Basin and the Braddock Road Basin will be upgraded to include features such as sediment forebays, aquatic and safety benches, and micropools. Improvements beyond these required retrofits will include stream restoration and constructed wetlands.

Mason will continue to maintain and improve the University's current regional approach to stormwater management. Site-specific measures may still be proposed with future development in addition to the regional facility improvements to further increase the University's commitment to environmental preservation through treatment of stormwater for quality and quantity. In addition to the retrofits, Mason will increase the volume of treatment to accommodate a 5% increase in impervious area on campus, exceeding the minimum VA DCR requirements.

2013 George Mason University Stormwater Master Plan

I. Introduction

George Mason University (Mason) has prepared this Stormwater Master Plan (SWMP) in three phases. Phase 1 consisted of data collection and included an update to the "2010 GMU Stormwater Inventory" report for the Fairfax East Campus. This updated report used a hydrologic drainage model to analyze Mason's level of compliance with 2011 Virginia Department of Conservation and Recreation (VA DCR) water quantity requirements in its designed and current (2012) conditions. Phase 2 consisted of data analysis and investigated the compliance of the overall Fairfax East Campus with the 2011 DCR regulations and facility specifications for treatment of water quality. Upgrades and retrofits to existing treatment facilities were proposed to achieve compliance in accordance with the 2011 Best Management Practice (BMP) specifications. Phase 3 consisted of a series of visioning and working group meetings to identify and refine the stormwater management goals and objectives for the overall campus. These goals and objectives can be found in this report.

Ultimately, this SWMP will provide a framework to guide all development and redevelopment on campus, and allow Mason Facilities Management to track the percentage of property under covered material. As Mason moves forward with the University Master Plan, this SWMP will be incorporated into it and will encourage the use of structural and non-structural design techniques to create designs in keeping with the goal of mimicking predevelopment characteristics and predevelopment hydrologic conditions.

II. Goals and Objectives

Mason has defined its goals as ideals of the direction the University wants to take with stormwater management. Mason's objectives include specific actions that the University will take toward these goals.

The goals of this SWMP are as follows:

1. Be the regional leader in stormwater management (SWM) education and innovation.
2. Employ best land use practices which preserve the land for the future.
3. Reduce impervious area on all campuses of George Mason University from a 2012 baseline.

The objectives of this SWMP are as follows:

1. George Mason University is physically linked to its neighboring jurisdictions and is a critical part of the community. Therefore, stormwater management (SWM) will utilize partnering for regional, joint and combined solutions.
2. Participate in and lead ongoing discussions with neighboring jurisdictions on at least a quarterly basis in order to enhance regional cooperation, understanding, and strategy for SWM.
3. Going forward, utilize Low Impact Development (LID) practices wherever possible, without compromising regulatory compliance; recognizing that LIDs will be applied over and above allowable Best Management Practices (BMPs).
4. Use life-cycle cost and life-cycle water quantity/quality control modeling to determine the best application of particular BMPs (LID or traditional).

5. Execute reforestation as a part of overall SWM strategies; practice good forest management practices for existing stands to balance habitat and ground recharge.
6. Incorporate stream restoration and wetlands into SWM system.
7. Execute rehabilitation of conveyance ways and retrofits to existing storm structures to meet immediate regulatory compliance.
8. Engage in a broader discussion with regulators, policy makers, and decision makers to alter policy, regulations, or the enforcement thereof to enable innovation, especially at state institutions of higher learning.
9. Establish maintenance guidelines and procedures for SWM features on the campuses of George Mason University in order to maximize efficiency, effectiveness, and longevity.

III. Hydrology

A. Existing Watershed Characteristics and Conditions

1. Rabbit Branch and Pohick Creek

The Pohick Creek watershed, more than 36 square miles in area, is one of the larger watersheds in Fairfax County. Pohick Creek flows from the City of Fairfax south into Pohick Bay, then into Gunston Cove, before discharging into the Potomac River and finally the Chesapeake Bay. George Mason University's Fairfax East Campus is located in the upper reaches of the Rabbit Branch watershed management area (WMA), within the northern headwaters of the Pohick Creek watershed. The Rabbit Branch WMA contributes nearly four (4) square miles of drainage area into Pohick Creek. The Rabbit Branch WMA is generally considered to be fully developed and contains a large percentage of impervious areas. Consistent with older residential development, much of the stormwater runoff from this development is treated for quantity but not for quality. Due to the density of development in the area and the lack of treatment for water quality, the northern headwaters of the watershed are typically of poor quality. In order to improve water quality in this area, Fairfax County has considered restoration strategies as outlined below.

According to Fairfax County's "Draft Watershed Workbook – Pohick Creek Watershed", prepared in September 2008, the prevalent condition feature for streams in the Rabbit Branch WMA includes disturbed stream buffers and stream channel erosion and widening. To address these issues, Fairfax County has outlined several 0-10 year non-structural projects (projects that do not require traditional construction measures to be implemented and may be programmatic in nature) that will restore buffers, and will conduct water quality studies to determine the benefits of dredging existing lakes within the WMA. County proposed structural projects include retrofitting existing stormwater ponds, restoring streams and installing additional BMP/LID practices. One proposed pond retrofit applies to the existing Mason Pond.

2. Mason Fairfax East Campus

Mason's Fairfax East Campus is approximately 361.4 acres in area and is designated as Fairfax County Tax Assessment Map #68-2-01-003, 068-2-01-009A, 068-2-01-0009B, and 068-2-01-0010. The Fairfax East Campus is bound to the east by Roberts Road (Route #653), to the south by Braddock Road (Route #620), to the west by Ox Road (Route #123), and to the north by the Fairfax East Campus property line which is mostly coincident with the Fairfax County/City of Fairfax demarcation line. The Campus is located within the Pohick Creek Watershed and consists of generally flat to sloping topography with most drainage (approximately 90%) flowing towards the south central portion of campus and Pohick Creek. The remaining drainage flows west off the campus and into Popes Head Creek.

Two tributary streams, known as the West and East Rabbit Branches, flow through and drain the Mason Fairfax East Campus, which encompasses these two sub-watersheds. These streams are important signature elements in the campus identity, and give Mason the ability to significantly impact campus environmental health related to stormwater and hydrology.

Mason's approach to stormwater management currently relies primarily on regional facilities, rather than on individual, site-specific facilities. Stormwater runoff from the Fairfax East Campus is separated into three watersheds, the Kelley Drive watershed, the Braddock Road watershed and the Roberts Road watershed. Within these watersheds there are fourteen (14) separate drainage areas. Stormwater runoff from approximately 331 acres of on-site area (approximately 90% of the campus) is collected and treated by nine (9) on-site SWM and BMP facilities shown in Figure 1 and described below. There are approximately 31 acres of off-site area from within the City of Fairfax and Fairfax County that discharge runoff through the Mason Fairfax East Campus. There are approximately 31 acres of on-site area released from the Fairfax East Campus untreated for water quantity or quality via sheet flow. The existing on-campus facilities drain to Fairfax County via two separate outfalls, the Braddock Road Outfall and the Roberts Road Outfall, which flow into the Rabbit Branch tributary of Pohick Creek. Sheet flow to the Kelley Drive Watershed is collected in a roadside ditch, and flows into Popes Head Creek. In accordance with objective #1, Mason is a critical part of the community and must consider how it is physically linked to neighboring jurisdictions because the campus receives stormwater runoff from the City of Fairfax and Fairfax County, then discharges stormwater runoff to Fairfax County.

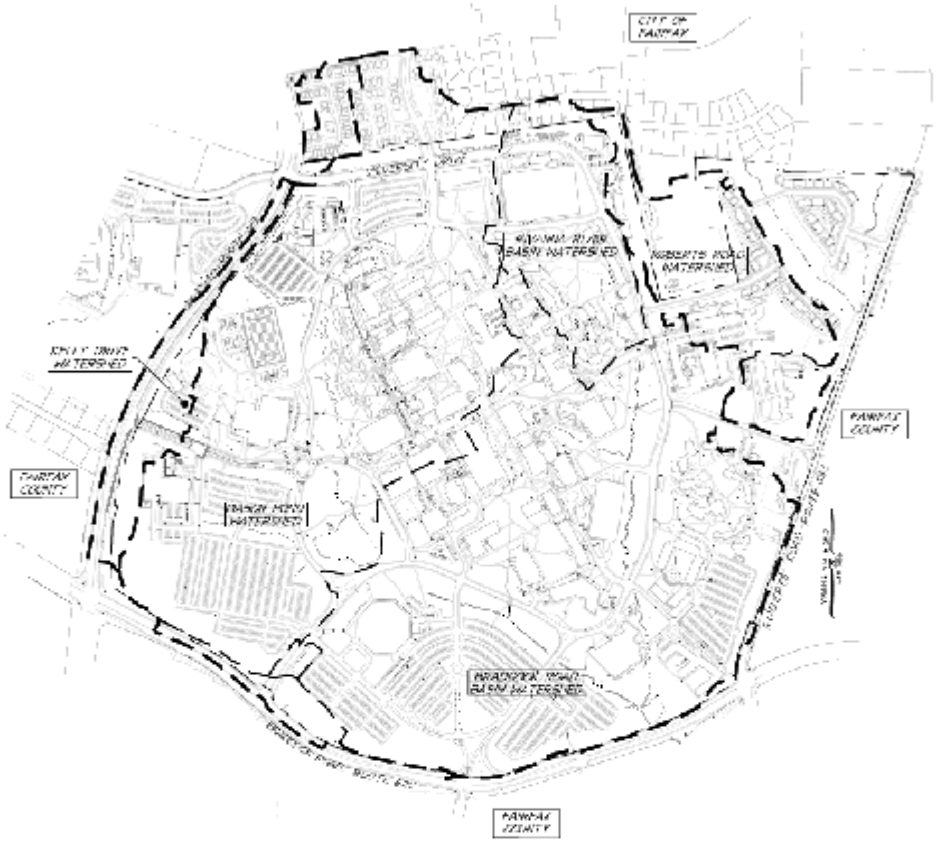

Figure 1: Mason Fairfax East Campus Watersheds

The Kelley Drive watershed is located along the western property line of the Fairfax East Campus, and its runoff is released undetained through a 36" pipe beneath Ox Road (Route 123) and into the Fairfax County Braddox Subdivision. Stormwater runoff from the Kelley Drive watershed drains southwest to the East Fork of the Popes Head Creek.

Stormwater runoff from the Braddock Road watershed is separated into four drainage areas defined by stormwater facilities which ultimately drain to the Braddock Road Outfall: the Mason Pond watershed, the Rivanna River Basin watershed, the Roanoke River Road watershed, and the Braddock Road Basin watershed. The four facilities that define these watersheds treat stormwater runoff from approximately 305 acres of on-site area for quantity and quality. Figure 2 shows the Braddock Road watershed as it is modeled in hydrologic software. The model shows individual facilities and their drainage areas.

2013 George Mason University Stormwater Master Plan

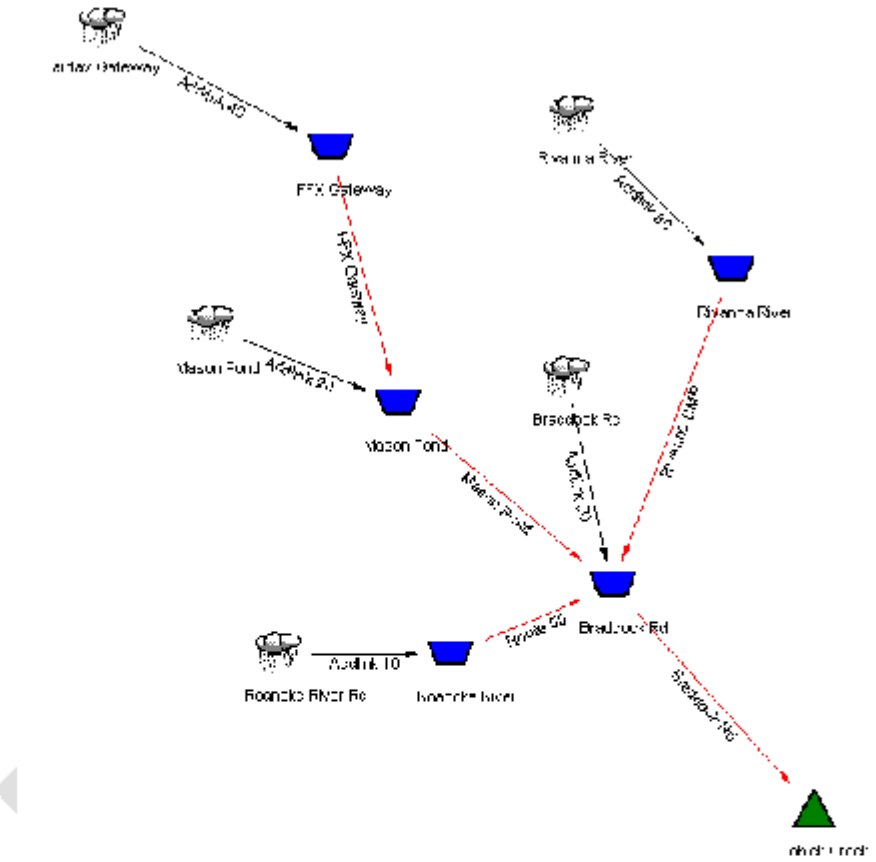

Figure 2: Braddock Road Watershed

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The Roberts Road watershed consists of the Krasnow Basin and the Faculty Staff Housing Basin drainage areas. The Roberts Road watershed also contains five sections of pervious pavement and three rain gardens for phosphorus removal. There are approximately 24 acres of undetained flow that drain into the Roberts Road watershed. Figure 3 shows the Roberts Road watershed as it is modeled in hydrologic software.

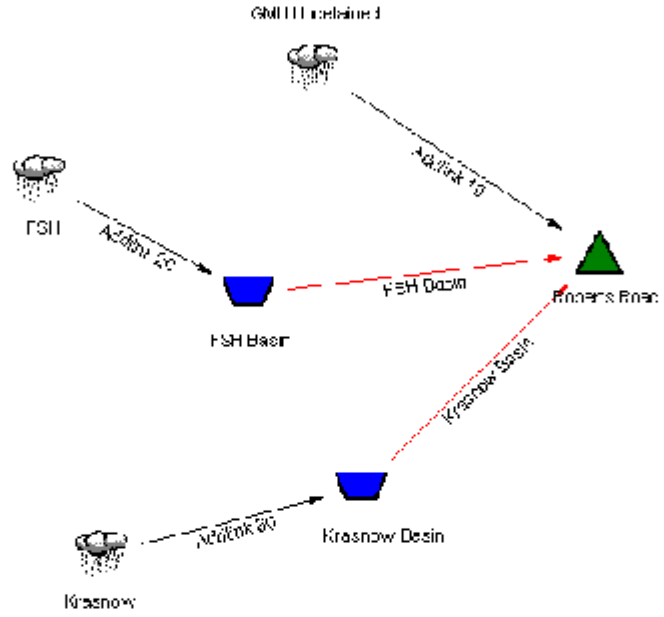

Figure 3: Roberts Road Watershed

There are approximately 31 acres of off-site area that discharge runoff through the Mason Fairfax East Campus, and approximately 31 acres of on-site area that is released untreated via sheet flow. The Mason Fairfax East Campus on- and off-site drainage areas are described as follows:

a. Braddock Road Watershed

Rivanna River Basin

Rivanna River Basin is an extended detention (ED) pond located on-campus, north of Rivanna River Lane and southwest of Residence Hall II. The Rivanna River Basin facility was designed by Write, Jones & Wilkerson on April 11, 1984 strictly as a SWM facility. No water quality treatment credits are available or allotted for this facility.

The Rivanna River Basin's watershed consists of approximately 26 acres of on-site area and approximately 2 aces of off-site area (28 acres total). Discharge from the facility is released into a natural watercourse which travels southward into the Braddock Road Basin.

Fairfax Gateway

The Fairfax Gateway subdivision is located north of the Fairfax East Campus, at the corner of Ox Road (Route #123) and University Drive (Route #383). Fairfax Gateway is partially located in the City of Fairfax, designated as tax assessment map #57-4-36 Parcels 1-10, and is partially located in the County of Fairfax, designated as Fairfax County tax assessment map #57-4 ((18)) Parcels 11-47.

Fairfax Gateway was developed with an extended detention (ED) dry pond to collect and treat approximately five (5) acres of stormwater runoff. The Fairfax Gateway pond serves as both a SWM and a BMP facility, and the entirety of the drainage area to the facility is off of Mason's Fairfax East Campus. The facility is currently owned and maintained by the Fairfax Gateway Homeowner's Association. Treated stormwater discharged from the facility enters Mason's Fairfax East Campus via an open channel, is collected by Mason's storm sewer pipe network, and then conveyed southward through the campus into Mason Pond.

Eleven Oaks Project

Also located north of the Fairfax East Campus, the Eleven Oaks property is partially within the City of Fairfax, designated as tax assessment map #57-4-01 Parcel 6 and #57-4-02 Parcels 3, 5, and 6, and is located partially in the County of Fairfax, designated as tax assessment map #57-4 ((01)) Parcel 6. The property is currently being designed as a residential subdivision.

The conceptual proposed preliminary drawings for the Eleven Oaks property prepared by Devereaux & Associates on October 28, 2011 serve as post-development existing conditions. The conceptual designs for the Eleven Oaks Project propose to discharge approximately 6.61 acres of runoff into the Mason Pond drainage shed. Mason Pond will provide both SWM and BMP treatment for this runoff, as agreed upon between Mason and Madison Homes Inc. (MHI), the developer for the Eleven Oaks properties.

Mason Pond

Mason Pond is an extended detention, single cell wet pond, located on-site between Mason Pond Drive and Patriot Circle. Mason Pond (previously referred to as Patriot Lake) was designed by Wilson Moreth Connock LTD. on February 1, 1991.

Mason Pond treats approximately 124 acres of on-site area, generally described as the northwestern third of the Fairfax East Campus, for water quality and quantity. Mason Pond's watershed also covers approximately ten (10) acres of off-site area north of the Fairfax East Campus, including areas within the City of Fairfax, the Fairfax Gateway

subdivision, and the Eleven Oaks property. Stormwater runoff from approximately five (5) acres of off-site area within the Fairfax Gateway subdivision is collected and treated for quantity and quality prior to being released into Mason Pond's watershed. Mason Pond was not designed to provide SWM or BMP treatment for any of these off-site areas. Discharge from Mason Pond travels southward by way of an 84" RCP storm pipe into a natural stream that continues to flow southward on-campus into Mason's Braddock Road Basin.

Roanoke River Road Basin

In April 2013, Mason completed construction for road improvements in the area surrounding the intersection of Roanoke River Road and Braddock Road (Route #620) which impact and utilize the existing Fairfax East Campus SWM and BMP facilities. The Roanoke River Road Basin was designed by Parsons Brinkerhoff in October 2012 as part of these improvements.

The Roanoke River Road Basin, located north of the intersection of Braddock Road and Roanoke River Road, provides extended detention for approximately six (6) acres of on-site area and approximately two (2) acres of off-site area. Mason will not provide SWM or BMP credits for treatment of runoff from off-site areas. The facility has a forebay located to the south-east of the main pond cell, which does not provide detention, sediment settling or pretreatment of any kind. The forebay collects flow from approximately four (4) acres of open space areas on both sides of Roanoke River Road. A DI-1 inlet within the forebay collects runoff and conveys it through an existing 24" storm sewer pipe which drains into the pond. Discharge from the main facility travels through storm sewer pipes into Mason's existing storm sewer network, and then travels down a natural stream that flows into the Braddock Road Basin.

Braddock Road Basin

Braddock Road Basin is an extended detention dry pond which serves as a combined SWM and BMP facility. It is located on-site along the Fairfax East Campus' southern property line and was designed by LBA in February 1993.

The Braddock Road Basin watershed consists of approximately 151 acres of on-site area not treated by other facilities, and approximately 1 acre of off-site area (152 acres total). The basin also receives discharge from Mason Pond, the Rivanna River Basin, and the Roanoke River Road Basin, therefore the total drainage area (including off-campus areas) to the Braddock Road Basin is 322 acres. Stormwater discharge from the Braddock Road Basin is released through a twin 72" x 96" reinforced concrete box culvert (RCBC) beneath Braddock Road (Route #620) into an adequate channel and off of Mason's Fairfax East Campus.

b. Roberts Road Watershed

Faculty Staff Housing Basin

The Faculty Staff Housing area, also known as Masonvale, is located in the Roberts Road watershed on the east side of campus. The facility was designed by Bowman Consulting on January 19, 2009 as an extended detention dry pond to treat both water quantity and quality. Its watershed consists of approximately 18 acres of on-site area and approximately 30 acres of off-site area from property in the City of Fairfax (48 acres total). The Faculty Staff Housing Basin was not designed to provide water quality or quantity treatment for off-site drainage areas. Discharge from Faculty Staff Housing Basin is released east into an existing open channel before crossing Roberts Road (Route #653), then continues eastward into an unnamed tributary of Rabbit Branch.

Krasnow Basin

The Krasnow Basin was designed by Dewberry & Davis on September 20, 1993 as an extended detention dry pond to provide both SWM and BMP treatment. The Krasnow Basin is located on-campus, along the eastern property line just east of Krasnow Hall and north of Shenandoah Lane.

The Krasnow Basin's watershed consists of approximately 7 acres of on-site area, with no off-site area draining to the facility. Discharge from the Krasnow Basin travels northward into an existing open channel, and then eastward off-site into an un-named tributary of Rabbit Branch.

Rain Gardens

There are four rain gardens located in the Faculty Staff Housing area, in the north-east corner of the campus. The rain gardens were designed by Bowman Consulting in June 2008, and treat a total area of 0.5 acres. The rain gardens were designed based on Fairfax County Public Facilities Manual section 6-1307 and the Virginia Stormwater Management Handbook BMP Minimum Standard 3.11.

Pervious Pavement

There are five sections of pervious pavement located in the Faculty Staff Housing. The total drainage area to the porous pavement is five (5) acres. They were designed based on VA DCR's standards as set forth in the 1999 edition of the "Virginia Stormwater Management Handbook", or "Blue Book".

3. Soils

Information regarding soils within the University property was obtained from Fairfax County's mapping and GIS website database. These soils maps were created through collaboration between Fairfax County, the Natural Resources Conservation Service (NRCS) and the Northern Virginia Soil and Water Conservation District (NVSWCD). The NRCS categorizes soils in one of four hydrologic soils group: Type A, B, C, and D according to the soil's potential to produce stormwater runoff. Typically, Type A soils are the most permeable and Type D soils are the least.

Mason's Fairfax East campus is predominantly made up of Type B soils with fair to high erosion potential and varying drainage capacity. Pockets of Type C and Type D soils with low to medium erosion potential also exist on the property, mostly along the stormwater conveyance channels. These soils have poor drainage capacities. Since several of the soil complexes existing on campus are not assigned a hydrologic soil group by the NRCS, assumptions were made in order to classify them conservatively. All soils designated as Urban Land were assigned hydrologic soil Type B; the Wheaton-Codorus complex was assigned hydrologic soil Type C; and the Codorus and Hatboro complex and the Wheaton-Sumerduck complex were assigned hydrologic soil Type D. A summary of the soils found on campus can be found in Table 1 below.

In accordance with code requirements, stormwater analyses for quantity are to be performed assuming the soil is in good condition. Since the campus is made up of mostly Type B soils, the model indicates that infiltration on-site is good. However, based on results of soil borings and testing performed at Mason in the past, the soils on campus are mostly made up of clays and silts and are typically not good for infiltration practices.

Table 1: Mason Fairfax East Campus Soils Summary

4. Land Cover

Mason's second goal is to employ the best land use practices on campus which will preserve land for the future. Land use efficiency is maximized by building in a compact manner (minimizing building footprints, replacing surface parking with structured, etc.), and balancing types of land cover. Different types of surfaces affect both the quantity and quality of stormwater runoff. For this reason, land cover is broken down for analysis into three categories:

1. Forest/Open Space – Undisturbed, protected forest or open space or reforested land
2. Managed Turf – Disturbed, graded for yards or other turf to be mowed/managed
3. Impervious Cover

Undisturbed forest and open space promote natural infiltration and filtering of stormwater runoff, closely mimicking pre-development runoff and loading rates. This means that the quantity of runoff produced by these areas will be less, and the pollutant load in the runoff will be reduced before it enters the stormwater conveyance system. Based on this principle, Mason developed objective #5 to execute reforestation as part of overall stormwater management strategies, and to practice good forest management practices for existing stands to balance habitat and ground water recharge. The intent of each redevelopment plan should be to reforest any cleared area required for the project to the extent practical so that much of the forested area that exists on the Mason Fairfax East Campus will be preserved and ultimately expanded in an effort to mitigate effects of development on stormwater runoff. This is consistent with goal #2, described above, to employ best land use practices which preserve the land for the future.

Managed turf promotes infiltration of stormwater, but due to the use of fertilizers and other chemical treatments, the quality of stormwater runoff filtered through it tends to be degraded. Typical examples of managed turf areas on campus include recreation fields, lawns and landscaped areas.

Impervious area consists of all paved areas and surfaces that do not allow stormwater to infiltrate. This creates a higher quantity of runoff at a faster rate than pre-development conditions. This runoff must be treated for quality and the peak flows reduced prior to release into the receiving channels. Ultimately, as described in goal #3, Mason wants to reduce impervious area on campus from a 2012 baseline. This goal assumes that the Fairfax East Campus is currently developed at the highest density of impervious area, and all future redevelopment projects will be required to balance or reduce impervious land cover to promote improved management of stormwater runoff quantity and quality. As Mason redevelops the campus, a temporary increase in impervious area is possible prior to the ultimate overall reduction. Therefore, the retrofits for the existing facilities will be designed to accommodate a 5% increase in impervious area on campus to ensure compliance during any interim conditions.

Land cover types within all drainage areas were delineated using the aerial photographs taken in March 2010, and the 2012 modified topographic base maps.

Mason's Fairfax East Campus consists of approximately 112.06 acres (31%) of forest/open space, 76.81 acres (21%) of managed turf, and 172.52 acres (48%) of impervious cover.

B. Hydrologic Modeling Approach

1. Methodology

Pursuant to Virginia Administrative Code 4VAC50-60-66, water quantity compliance may be achieved by demonstrating conformance with all of the following criteria:

A. Uphold the Minimum Standard 19 of the "Virginia Erosion and Sediment Control Regulations".
B. Channel Protection
C. Flood Protection
D. Sheet Flow Analysis
E. Pre-development Hydrologic Conditions
F. Verification of pre-development and post-development runoff characteristics and site hydrology

Compliance with all of the minimum standards set forth in 4VAC50-60-66 will also satisfy the requirements of the Minimum Standard 19 of the "Virginia Erosion and Sediment Control Regulations". Verification of compliance with 4VAC50-60-66 will ensure the first technical criterion (listed as "A" above) for water quantity compliance is met and the Minimum Standard 19 requirements are satisfied.

Channel protection requires concentrated stormwater runoff to be released into an adequate stormwater conveyance system, whether it is man-made, a restored system, or a natural system. The Mason Fairfax East Campus consists of man-made and natural stormwater conveyance systems. A man-made channel must be able to convey stormwater runoff from the two-year 24-hour storm event within its bed and banks without erosion, and the peak discharge flow rate to natural systems during the one-year 24-hour storm may not exceed the pre-development flow rate. These regulations help to protect the receiving channels from erosion in excess of pre-development conditions. Modeling software utilizing the Natural Resources Conservation Service (NRCS) Technical Release Number 55 (TR-55) methodology as a simplified method to calculate stormwater runoff can be used to determine Mason's compliance with these regulations within the campus by analyzing peak flow rates. It will be in Mason's best interest to analyze the main channels and tributaries on campus, as well as the outfall channels off campus for condition and capacity, so that restoration can be provided if necessary.

Similar to channel protection requirements, the flood protection regulations require concentrated stormwater discharge from the ten-year 24-hour storm to be released into an adequate stormwater conveyance system. To determine whether there is flooding, the system must be analyzed to a point where one of the following is true:

- The site's contributing drainage area is 1.0% or less of the total watershed area;

- The site's peak flow rate from the 10-year 24-hour storm event is 1.0% or less of the existing peak flow rate from the 10-year 24-hour storm prior to the implementation of any runoff control measures; or
- The stormwater conveyance system enters a mapped floodplain or other flood-prone area.

If the system does not currently experience flooding (defined as a volume of water too great to be confined within the banks or walls of the stream, water body or conveyance system and that overflows onto adjacent lands causing or threatening damage) during this storm event, then the channel is adequate. If the system is experiencing flooding however, then the analysis must prove that the post-development conditions are not making the condition worse. If necessary, the channel must be improved to contain the peak flow from the 10-year 24-hour storm or the flow rate must be reduced below the pre-development peak flow rate to prevent flooding. Previous studies have proven that the Kelley Drive, Braddock Road and Roberts Road outfalls are able to contain the 10-year 24-hour peak flow; therefore Mason's Fairfax East Campus outfalls are in compliance with these requirements. Mason will analyze the main channels and tributaries internal to campus for condition and capacity in compliance with these requirements as well, so that restoration can be provided if necessary.

Sheet flow must be identified and analyzed for downstream impacts by calculating the pre-development and post-development impervious areas within the watershed, and using modeling software to evaluate any increased volumes of sheet flow that may be generated. If the volume of sheet flow in the post-development conditions is determined to be more than the pre-development volume to the point of causing erosion, sedimentation or flooding, the sheet flow must be diverted to a stormwater management facility or channel that conveys the runoff without causing downstream erosion, sedimentation or flooding.

The Kelley Drive watershed drains offsite via sheet flow under the current conditions. Off-site channel and flood protection improvements will be reviewed for impacts due to on-campus sheet flow. Mason intends to mitigate downstream impacts in the Kelley Drive watershed through measures associated with the Campus Drive construction project. The Green Acres property in the City of Fairfax also discharges untreated stormwater runoff onto the Mason Fairfax East Campus and into the R3 perennial stream running through the faculty staff housing development. The channel conveys this water through Fairfax East Campus untreated for water quantity or quality, and discharges at the Roberts Road outfall.

Regulations establish that, "For the purposes of computing pre-development runoff, all pervious lands on site shall be assumed to be in good hydrologic condition in accordance with the U.S. Department of Agriculture's Natural Resource Conservation Service (NRCS) standards, regardless of conditions existing at the time of computation." In accordance with these requirements, all models used to perform NRCS hydrologic calculations utilized good soil and land cover conditions.

As stated in 4VAC50-60-66(F), "Pre-development and post-development runoff characteristics and site hydrology shall be verified by site inspections, topographic surveys,

available soil mapping or studies, and calculations consistent with good engineering practices. Guidance provided in the Virginia Stormwater Management Handbook and by the Virginia Stormwater BMP Clearinghouse shall be considered appropriate practices." The phases of development for this SWMP were performed in full accordance with this technical criterion as outlined throughout this Master Plan.

C. Baseline Conditions Model

1. Analysis

a. 2012-Existing Conditions

City of Fairfax and Fairfax County public records were used to obtain property assessment information for the campus and surrounding properties. An aerial topographic survey of the Fairfax East Campus, performed by christopher consultants, ltd (ccl) in March, 2010, and a field-run storm sewer as-built survey of the Fairfax East Campus performed by ccl in May, 2010 were used in conjunction with a field-run boundary survey of the Fairfax East Campus prepared by ccl in June and July, 2007, to produce a 2010 existing conditions base map of the Fairfax East Campus.

Since the March 2010 Fairfax East Campus aerial topographic survey was performed, campus development has continued and several projects have been completed which have changed the 2010 existing conditions. Therefore, a compilation of available design as-built records and a Mason Pond bathymetric survey were used to update the Fairfax East Campus 2010 existing conditions base map and create the 2012 existing conditions base map.

Mason also has several projects in the design stages of development that will be constructed in the near future which will affect and rely upon the capacity within the current existing Fairfax East Campus SWM and BMP facilities. Therefore, a compilation of Mason-provided design plans for upcoming development projects were used to update the Fairfax East Campus 2010 existing conditions base map.

2. Consistency with Previous Planning/Studies

Mason's Fairfax East Campus is surrounded predominantly by residential development. Fairfax County's Comprehensive Plan includes two planning districts, F1 – Braddock Community Planning Sector and F7 – George Mason Community Planning Sector, which specifically address existing and future development in the areas around the campus. The recommendations in these plans indicate that future development in this sector should be predominantly institutional and residential, and of a density consistent and compatible with existing development in the vicinity. As there is little vacant land within the Fairfax East Campus, and most adjacent residential developments are fully developed and provide on-site stormwater management and BMPs, Mason's existing stormwater facilities should not be negatively impacted by future development. Mason's agreement to provide stormwater quantity and quality control for the Eleven Oaks property will be taken into consideration during the Master Planning process. Downstream, Mason discharges

stormwater into residential development at the Kelley Drive, Roberts Road and Braddock Road Outfalls.

The "George Mason University Fairfax Main Campus 2012 Stormwater Management Report", prepared by ccl on April 20, 2012, analyzed the property in the 1978 conditions, the 2012 designed conditions and the 2012 existing conditions. Utilizing the 1978 conditions as a baseline for analysis is a very conservative method. Upon clarification from DCR, the existing 2012 conditions may be used as a baseline for analysis for the campus moving forward to determine compliance. Therefore, the "George Mason University Fairfax East Campus 2013 SWM Master Plan Phase 2" report prepared by ccl on March 25, 2013 utilized the 2012 existing conditions as a baseline. This Master Plan seeks to address compliance for the 2012 condition as well as providing for future increased development in accordance with the 2002 Master Plan.

The "George Mason University Master Plan", prepared by Sasaki Associates with MMM Design Group in September 2002, presents guidelines and concepts for the redevelopment of Mason's Fairfax East Campus. Mason's 2002 Master Plan also includes precinct plans for the North, North-East, and South-West sectors. Environmental preservation and restoration is included as a goal in both the North-East and South-West Sector Master Plans. Both plans indicate a desire to promote infiltration of stormwater through bioretention and porous pavement underlain by gravel recharge beds. Since a site is defined as the area within the limits of disturbance, this approach to treating run-off is less regionally focused and more site-specific.

As compared to the goals outlined in these previous Master Plans, the goals for this SWMP are more focused on a regional approach to stormwater management rather than a site-by-site approach. Utilizing regional facilities to treat stormwater runoff is more efficient based on the volume of runoff produced on Mason's campus, because it allows the University to treat a larger quantity of water at once. This regional approach, however, does not preclude the use of site-specific treatment measures in addition to regional facilities.

IV. Water Quality

A. Introduction to Water Quality

Increasing impervious land cover through development increases both the amount and rate of stormwater runoff. As this runoff flows across developed surfaces, such as parking lots or managed turf areas, it collects pollutants and carries them into the stormwater conveyance system. These pollutants degrade the quality of natural waterways receiving them. Effective as of September 13, 2011, VA DCR updated stormwater management regulations for water quality treatment to better protect the ecosystem of the Chesapeake Bay and its tributaries. The development of these new stormwater management regulations was the result of input from experts, a broad spectrum of stakeholders and significant public debate. The end result is a set of regulations that provides innovative tools for local decisions, protection of local waterways and consistent application of new state and federal requirements.

1. Pollutants in Stormwater

Pollutants frequently found in stormwater include petroleum hydrocarbons, metals, organic materials, dissolved oxygen and other oxygen-demanding substances. The Virginia Runoff Reduction Method (VRRM), discussed below, focuses on removing three main pollutants: sediment or suspended solids, phosphorus and nitrogen. Phosphorus in stormwater is found most often in the water-soluble orthophosphate form. The most common forms of nitrogen found in stormwater include particulate, dissolved organic, nitrate, nitrite and ammonium.

The EPA has established TMDL requirements for discharge into the Chesapeake Bay. TMDLs, or Total Maximum Daily Loads, are the total amount of pollution that a body of water can receive and still meet EPA quality standards. TMDLs include sediment, suspended solids, nitrogen, phosphorus and over 130 additional pollutants. The Rabbit Branch tributary of Pohick Creek is not listed as impaired, however, Pohick Creek does ultimately drain to the Chesapeake Bay, so the Bay TMDL requirements do apply. By following these state requirements, the TMDLs for the Fairfax East Campus shall be met.

2. Water Quality Control on a Site by Site Basis

As developed area increases, treating stormwater prior to releasing it into natural water bodies helps to prevent the degradation of the receiving channels and streams. Stormwater from any site being developed is required by state regulations to be treated by a BMP prior to discharge from the site. These BMPs provide a large pollutant removal percentage, but only for a small quantity of stormwater runoff. The 2011 VA DCR regulations continue to emphasize and promote this practice as development moves forward.

Mason's eighth objective is to engage in a broader discussion with stormwater regulators, policy makers, and decision makers to alter policy, regulations, or the enforcement thereof to enable innovation, especially at state institutions of higher learning. Though the University's approach to stormwater management compliance is based on regional facilities, the Mason community wants to be involved in the discussion, testing and implementation processes for new and innovative site-specific stormwater treatment features. Available resources make a state institution of higher learning an ideal environment for this to occur, and Mason's vision emphasizes innovation, research and engagement with the world.

3. Regional Water Quality Control

As discussed in reference to objective #1, Mason receives stormwater from the City of Fairfax, releases it to Fairfax County, and will utilize partnerships for regional, joint and combined solutions for stormwater management. The University intends to participate in and lead discussions with these neighboring jurisdictions on at least a quarterly basis in order to enhance regional cooperation, understanding, and strategy for stormwater management. Mason intends to accomplish this objective (listed as #2) by partnering with regional organizations, such as the Northern Virginia Regional Commission (NVRC). Not

only will this allow Mason to work together with neighboring jurisdictions to come up with viable stormwater management solutions, it will also promote outreach and education to the surrounding communities on the subject.

Pursuant to 4VAC 50-60-1190, state agencies "are encouraged to develop regional (stormwater management) plans where practical" when developing large tracts of land. Regional stormwater management facilities provide mitigation for new development, as well as the potential for remediation of existing development over an entire region or watershed rather than on the traditional individual, site-by-site basis. Regional facilities may provide a smaller pollutant removal percentage, but more effectively treat a large quantity of stormwater runoff.

Restoring, updating and retrofitting the existing regional stormwater conveyance system will allow Mason to continue to operate through a more regional approach to treat stormwater runoff prior to discharging it from University property. This approach is preferable to the site-by-site approach because it is the most responsible use of the University's land and maintenance resources. Regional facilities are easier to access and track for maintenance purposes. This approach also will not preclude the use of additional site-specific facilities or sustainability features as recommended in the North and Southwest Sector Master Plans. This Master Plan demonstrates that the regional approach to stormwater management will adequately and efficiently address water quality concerns within the existing watersheds on campus.

B. Virginia Runoff Reduction Method

According to the "Technical Memorandum: The Runoff Reduction Method" produced by Center for Watershed Protection & Chesapeake Stormwater Network on April 18, 2008, the Virginia Runoff Reduction Method is aimed at limiting the total nutrient load leaving a new development site, instead of focusing on matching or reducing post-development runoff rates to pre-development runoff rates. The VRRM Redevelopment conditions worksheet calculates the site performance as if all the facilities in the calculation are designed and operating per the current VA DCR Stormwater Design Specifications. Site performance is measured by calculating the required stormwater runoff treatment volume and total phosphorus removal. Required treatment volume is defined as treatment of the 90% storm, or the first inch of runoff. This represents the majority of runoff volume that can be effectively treated for quality. The Runoff Reduction Method worksheet also calculates the post-development nitrogen load, but at this time there are no requirements for the reduction of nitrogen.

Due to the reliance on gravitational settling as their primary pollutant removal mechanism, wet ponds and ED ponds tend to provide low removal of soluble pollutants such as phosphorus and nitrogen. Though there are currently no requirements for sediment reduction, wet ponds and ED ponds are effective for removing sediment and suspended solids prior to discharge into natural streams.

C. Characteristics and Benefits of Treatment Facilities

Before development, watershed ecosystems cleansed water as it travelled through natural waterways. These ecosystems were made up of a diverse variety of plants, animals and microorganisms which effectively "treated" the water and maintained a balanced natural habitat. Streams, ponds and wetlands create an environment that promotes this natural ecosystem habitat. All three tend to be characterized by unique hydrologic, soil and biotic conditions. The benefits provided by these facilities include aesthetics, recreation, erosion control, flood damage mitigation, improved water quality, and promotion and protection of biological life and productivity.

Though development has altered and even damaged these natural ecosystems, it is possible to restore streams, ponds and wetlands to improve water quality and enhance the environment. VA DCR provides specifications for engineered systems that attempt to mitigate stormwater runoff and restore facilities to natural conditions to maximize treatment of stormwater for quality. Several of these specifications, such as permeable pavement, and infiltration trenches are based on infiltration practices and are not as effective as runoff volume reduction measures on Mason's Fairfax East Campus due to soil conditions, but still provide efficient pollutant removal. Other specifications, such as vegetated roofs, bioretention, rainwater harvesting, and filtration practices are more practical on campus, but may incur excessive construction or maintenance costs due to the site specific design. These specifications are not generally practical as retrofits since the campus currently operates based on regional treatment facilities. However, future projects are not precluded from using these practices prior to discharging to one of the regional facilities.

There are two levels of compliance with the VA DCR Stormwater Design Specifications for most types of facilities. Level 1 baseline facilities meet minimum compliance criteria, and Level 2 enhanced facilities achieve a higher rate of pollutant removal and runoff reduction. Below is an explanation of criteria applicable for existing and proposed facilities which may be practical for Mason's Fairfax East Campus.

1. Constructed Wetlands Design Features

Constructed Wetlands are shallow depressions that treat stormwater runoff for quality. They are typically less than a foot deep, contain various wetland plant life, and promote variable biological processes which provide 50% phosphorus removal for Level 1 and 75% phosphorus removal for Level 2. To comply with the 2011 VA DCR Stormwater Design Specifications, constructed wetlands must meet the standards described as follows:

Level 1 Constructed Wetlands are suggested for contributing drainage areas less than 10 acres. They must be an emergent wetland design, and provide a single cell with a forebay with treatment volume as described in the sections below. The surface area of the wetland must be less than 3% of the contributing drainage area.

Level 2 Constructed Wetlands must be a mixed wetland design that does not provide extended detention. Utilizing multiple cells or a multi-cell pond/wetland combination, the facility must provide 50% more treatment volume than a Level 1 facility, and the surface area of the wetland must be more than 3% of the contributing drainage area.

Figure 4: Constructed Wetlands concept. (Source: VA DCR Specification No. 13).

2. Wet Pond Design Features

Wet ponds consist of a permanent pool of water that provide 50% phosphorus removal for Level 1 and 75% phosphorus removal for Level 2. To comply with the 2011 VA DCR Stormwater Design Specifications, a wet pond must meet the standards described as follows:

Level 1 Wet Ponds must provide a single cell with a forebay with treatment volume as described in the sections below. The pond must include aquatic and safety benches for permanent pool depths greater than four feet, and turf covered pond buffers with no internal pond mechanisms required.

Level 2 Wet Ponds must provide 50% more treatment volume than Level 1, a multiple cell design along with a 24 hour draw down. In addition to aquatic and safety benches for permanent pool depths greater than four feet, the design guidelines for a Level 2 pond require an aeration mechanism and provision of 10% of the pond area for wetlands and pond landscape to discourage geese and other wildlife.

Figure 5: An example of an aquatic bench in a wet pond.

3. Extended Detention Pond Design Features

ED Ponds are dry basins used to detain peak flows after storms by achieving a minimum drawdown time. They provide 15% phosphorus removal for Level 1 and up to 31% phosphorus removal for a Level 2 design. To comply with the 2011 VA DCR Stormwater Design Specifications, a dry pond must meet the standards described as follows:

Level 1 ED Ponds are used for contributing drainage areas less than 10 acres. They must provide a micropool and forebay with a minimum of 15% of the treatment volume. The pond must include aquatic/safety benches for depths greater than four feet and turf covered floors. The average treatment volume must have a draw down time of 24 hours or less.

Level 2 ED Ponds are used for contributing drainage areas more than 10 acres. They must provide a micropool and forebay with a minimum of 15% of the treatment volume. The pond must include aquatic/safety benches for depths greater than four feet and turf covered floors with a maximum treatment volume of 4 feet in height. Level 2 ED ponds must also include multiple cells to include wetlands and deep pools and the average treatment volume must have a draw down time of 36 hours.

4. Permeable Pavement Design Features

Permeable pavement allows stormwater to infiltrate through voids in the pavement surface to a stone reservoir beneath. The water is either able to infiltrate into the soil or is stored until draining back into the storm drain system through an underdrain. It provides a 45% annual runoff volume reduction and 25% phosphorus removal for Level 1, and 75% annual runoff volume reduction and 25% phosphorus removal for a Level 2 design. To comply with the 2011 VA DCR Stormwater Design Specifications, permeable pavement must meet the standards described as follows:

Level 1 permeable pavement is used for soils with infiltration rates less than 0.5 in./hr. Due to the low infiltration rate, an underdrain is required. Only the permeable pavement and

paved areas upstream may be part of the contributing drainage area without pre-treatment.

Level 2 permeable pavement is used for soils with infiltration rates exceeding 0.5 in./hr. Underdrains are not required, but if used, a one foot stone sump may need to be provided if the treatment volume does not achieve the required drain time. Only the permeable pavement area may contribute drainage to the reservoir.

5. Bioretention Design Features

Bioretention areas are shallow landscaped depressions that include many pollutant removal mechanisms which replenish the aquifer by allowing stormwater to infiltrate into the soil or drain into an underdrain after passing through the filter bed. The maximum contributing drainage area to a bioretention facility is 0.5 acres with 25% impervious cover. They provide 40% annual runoff volume reduction and 25% phosphorus removal for Level 1, and 80% annual runoff volume reduction and 50% phosphorus removal for a Level 2 design. To comply with the 2011 VA DCR Stormwater Design Specifications, bioretention areas must meet the standards described as follows:

Level 1 bioretention areas must be 3% of the contributing drainage area and utilize a corrugated HDPE or equivalent underdrain. Pretreatment occurs externally through leaf screens, grass filter strips, etc. The bioretention area must contain at least one of the following: turf, herbaceous vegetation or shrubs.

Level 2 bioretention areas must be 4% of the contributing drainage area, but can be divided into two different cells at downspouts. Underdrains are not needed if soil infiltration is greater than 1 in./hr., but if they are provided, must be corrugated HDPE or equivalent with a minimum 6 inch stone sump below the invert. Pretreatment occurs externally through devices such as leaf screens and must include a grass filter strip. The bioretention area must contain at least two of the following: turf, herbaceous vegetation, shrubs, or trees.

6. Grass Channel Design Features

Grass channels are a good alternative to the traditional method using curb, gutter and storm sewer as a stormwater conveyance system. They provide an annual runoff volume reduction of 20% in Type A and B soils not utilizing compost amended soils, 10% in Type C and D soils without compost amended soils, and 30% in Type C and D soils with compost amended soils. Implementation in all soil types provides 15% phosphorus removal.

Grass channels only have one level of design and therefore must meet all design criteria. Grass channels may treat contributing drainage areas no greater than five acres, and dimensions should ensure that the flow velocity is non-erosive during the 2-year and 10-year storm events, and the 10-year design flow is contained within the channel. Check dams may be used to meet slope and limiting velocity requirements.

7. Dry Swale Design Features

A dry swale is a bioretention cell that is shallower, configured as a linear channel, and covered with turf or other surface material. It provides a 40% annual runoff volume reduction and 20% phosphorus removal for Level 1, and 60% annual runoff volume reduction and 40% phosphorus removal for a Level 2 design. To comply with the 2011 VA DCR Stormwater Design Specifications, dry swales must meet the standards described as follows:

Level 1 dry swales must include a schedule 40 PVC underdrain with cleanouts, turf cover and an on-line design. A pretreatment cell, grass filter strip, gravel diaphragm, gravel flow spreader or other approved (manufactured) pre-treatment structure must also be provided.

Level 2 dry swales must include a schedule 40 PVC underdrain with cleanouts and a minimum twelve inch stone sump below the invert if soil infiltration rates are less than ½ in./hr. If infiltration rates exceed that, no underdrain is required. Level 2 dry swales must have an off-line design or multiple treatment cells, and turf cover with trees and shrubs. A pretreatment cell, grass filter strip, gravel diaphragm, gravel flow spreader or other approved (manufactured) pre-treatment structure must also be provided.

8. Wet Swale Design Features

A wet swale is a cross between a wetland and a swale that intercepts shallow groundwater to maintain a wetland plant community. Generally, a wet swale is only recommended for flat coastal plain conditions with a high water table (not applicable to Mason). It provides a 20% phosphorus removal for Level 1, and 40% phosphorus removal for a Level 2 design. To comply with the 2011 VA DCR Stormwater Design Specifications, wet swales must meet the standards described as follows:

Level 1 wet swales must be an on-line design and include turf cover in the buffer area. Swale slopes must be less than 2% and it is to have no plantings.

Level 2 wet swales must have off-line swale cells with swale slopes less than 1%. Wetland plants and trees must be included within the swale cells.

9. Vegetated Roof Design Features

A vegetated roof captures and stores stormwater briefly within a media engineered to support plant growth before releasing it to the storm drain system. It provides a 45% annual runoff volume reduction for Level 1, and 60% annual runoff volume reduction for a Level 2 design. No phosphorus removal is provided. To comply with the 2011 VA DCR Stormwater Design Specifications, vegetated roofs must meet the standards described as follows:

Level 1 vegetated roofs must have a four inch media depth with no more than 20% organic matter in the media. There must also be drainage mats included in the design.

Level 2 vegetated roofs must have a media depth of four to eight inches with no more than 10% organic matter in the media. There must be a two inch stone drainage layer, and the required treatment volume is 10% greater than the Level 1 treatment volume. All designs must be in conformance to ASTM (2005) International Green (Vegetated) Roof Standards.

D. Benefits of Watershed Restoration

Upgrades and retrofits of the existing stormwater facilities on the Mason Fairfax East Campus will help to reduce the pollutant loads of sediment, suspended solids, nitrogen and phosphorus being discharged into Pohick Creek. The health and quality of the branches of Rabbit Creek that run through campus will also be improved, which in turn also helps to improve the quality of the discharge into Pohick Creek. Implementation will be beneficial to multiple parties. Mason's treatment of stormwater, along with the community visioning meetings that were conducted to develop goals for stormwater management, shows a sense of environmental responsibility, and a desire to be viewed as a good member of the community. It will also mitigate or prevent erosion and degradation of natural streams on campus and at the outfalls from campus.

E. Proposed Watershed Restoration

Mason's first goal is to be the regional leader in SWM education and innovation. One of the actions the University will take to achieve this goal is to utilize Low Impact Development (LID) practices wherever possible above allowable Best Management Practices and retrofits per objective #3. LID designs will be evaluated for each project on campus to make sure they are practical (based on life-cycle cost analysis and water quantity/quality control modeling per objective #4) and in line with the Stormwater Master Plan goals and objectives. LID designs should also include a maintenance plan and a twenty year life-cycle evaluation based on facility capital costs, regular and major maintenance costs, and replacement costs. Mason will establish maintenance guidelines and procedures for all SWM features on campus in order to maximize efficiency, effectiveness, and longevity. Details of these maintenance guidelines will be included in the program section of the MS4 Permit.

Objective #7 of this Stormwater Master Plan is to execute rehabilitation of conveyance ways and retrofits to existing stormwater structures and facilities to meet immediate regulatory compliance. Mason's Fairfax East Campus currently exceeds the target volume of phosphorus removal, assuming that all existing facilities are operating in compliance with the 2011 SWM/BMP regulations and with the Virginia Runoff Reduction Method. Though the target volume of phosphorus removal is exceeded, the individual facilities are not currently in compliance with the VA DCR Stormwater Design specifications. Upgrades and retrofits to the existing facilities will bring them into compliance for current campus conditions. Mason will ultimately develop designs and cost estimates for the pond upgrades and retrofits based on an assumed maximum imperviousness coefficient determined from the 2002 George Mason University Master Plan. In accordance with objective #6, Mason will also incorporate stream restoration and constructed wetlands into the overall stormwater management system as discussed below. Restoration of the environmental corridor on campus should be performed

to the extent possible. Mason may require portions of existing streams to be restored in association with various campus building projects.

1. Braddock Road Watershed

a. Rivanna River Basin

The Rivanna River Basin (previously only a SWM facility) will be redesigned as a BMP facility. It currently meets requirements for both treatment volume and total phosphorus removal, but does not contain the physical features required for compliance with the VA DCR specifications. Due to the area draining to the facility, it will be designed as Level 2 ED Pond, and the outlet will be modified to provide the 36 hour draw down time required for a Level 2 facility. The basin will also be re-graded to include a micropool and forebay to achieve the required treatment volume for a Level 2 facility. Space is limited due to existing buildings, roads and parking surrounding the facility, so relocating these uses should be considered to provide room for all required features. For example, if there is future interest in removing the existing Rivanna Module and parking lot, Mason will expand the ED pond into the future open space to provide a full Level 2 facility by adding aquatic and safety benches and multiple cells, including constructed wetlands and deep pools.

Mason understands constructing wetlands will also be beneficial toward achieving the University's stormwater goals. Future campus improvements include concepts to provide constructed wetlands south of Rivanna River Lane. Mason will provide constructed wetlands along the main channel and branches of the stream. These wetlands will provide BMP treatment for the contributing areas discharging into the naturally restored stream.

Figure 6: Restored streams.

b. Mason Pond

Mason Pond can be retrofitted to meet specifications for a Level 1 Wet Pond by providing aquatic benches, turf covered pond buffers, and forebays. Mason will also raise the embankment in the south-east corner of the pond to accommodate the 10-year storm within the pond. An emergency spillway to convey the 100-year storm will also be included as part of the design for raising the embankment.

Mason Pond currently meets requirements for both treatment volume and total phosphorus removal. However, due to the future construction of the sediment forebays, aquatic benches and safety benches within the existing pond footprint, the existing treatment volume will be reduced. Mason will perform a detailed analysis of the pond's capacity for future development in accordance with the 2002 Master Plan and treatment volume to determine the appropriate size for the pond.

Mason's 2009 North Sector Master Plan proposes a future pond to treat runoff from the future Academic VII Building. Offsite properties, Fairfax Gateway and Eleven Oaks will also drain to this location. Eleven Oaks and Mason have a Letter of Understanding between the property owner and George Mason University allowing Mason to treat the area draining from Eleven Oaks. In return, Eleven Oaks will provide funding to Mason to comply with the SWM and BMP requirements. The construction of this new facility (Academic VII pond) upstream may reduce the required BMP treatment volume for Mason Pond, allowing more room for improvements.

Figure 7: Proposed Eleven Oaks and Academic VII Treatment Pond

This future pond will outfall into an existing channel, designated on the Mason Fairfax Campus Environmental Constraints Map as an R3 or perennial stream, west of the Aquia River Lane. The existing channel is experiencing erosion along a section of approximately 600 linear feet; therefore this channel will need improvement. Mason will provide constructed wetlands along the main channel and branches of the stream.

c. Braddock Road Basin

The Braddock Road Basin is the last layer of treatment for the site and conveys the discharge from both Mason Pond and the Rivanna River Basin. Due to the contributing drainage area, the Braddock Road Basin will warrant a Level 2 ED Pond design. The Braddock Road Basin currently meets requirements for both treatment volume and total phosphorus removal, but since Level 2 ED Ponds must also provide a 36 hour draw down time, outlet structure modifications will be necessary. Mason will upgrade and retrofit the Braddock Road Basin as a Level 2 ED Pond with forebays, a micropool, aquatic and safety benches, multiple cells, constructed wetlands and deep pools.

2. Roberts Road Watershed

a. Krasnow Basin

The contributing drainage area to the Krasnow Basin warrants a Level 1 ED Pond design. Due to sedimentation, the pond is no longer providing the designed treatment volume. Mason will modify the Krasnow Basin to include the addition of sediment forebays and aquatic and safety benches, as well as the adequate treatment volume.

3. Kelley Drive Watershed

The Kelley Drive watershed is located along the western property line of the Fairfax East Campus, and its runoff is released undetained into the Braddox Subdivision. Due to increased sheet flow within the drainage area, negative impacts to downstream properties have been noted. The Campus Drive project proposes to address and mitigate these negative impacts.

V. Conclusion

The goals Mason has set for a regional approach will be attained by restoration of natural ecosystems through phased upgrades and retrofits to the Rivanna River Basin, Mason Pond and the Braddock Road Basin. This will not preclude the proposal and installation of additional stormwater quantity and quality measures on a project-by-project basis on campus. The upgrades and retrofits proposed will serve as an interim condition to bring the campus into compliance with the 2011 VA DCR regulations, but will ultimately need to meet the final build-out conditions. Mason will size the facilities to accommodate a 5% increase in impervious area in order to ensure compliance throughout the redevelopment process, as Mason attempts to balance and reduce impervious area on campus.

2013 George Mason University Stormwater Master Plan

This Stormwater Master Plan satisfies the VA DCR requirements for MS4 programs to have a stormwater master plan. It will be an integral part of the overall campus Master Plan and will guide all development and redevelopment on campus. Implementation of the proposed retrofits in this Stormwater Master Plan will meet Mason's stormwater needs both in the short and long term by preserving the local environment while allowing the University to grow. It will serve to define Mason as a regional leader in stormwater management education and innovation.

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VI. References

1. "Comprehensive Plan. City of Fairfax, Virginia". 10 April 2012. City of Fairfax Department of Community Development and Planning.
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3. "George Mason University Fairfax East Campus 2013 SWM Master Plan Phase 2". 25 March 2013. christopher consultants.
4. "George Mason University Fairfax Main Campus 2012 Stormwater Management Report". 20 April 2012. christopher consultants.
5. "George Mason University Master Plan". September 2002. Saki Associates with MMM Design Group.
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7. "George Mason University Southwest Sector Master Plan". August 2007. Ehrenkrantz Eckstut & Kuhn Architects.
8. "George Mason University Fairfax Campus Virginia North Sector Master Plan & Design Guidelines". 22 June 2009. Ehrenkrantz Eckstut & Kuhn Architects.
9. "Pohick Creek Draft Watershed Workbook". September 2008. Fairfax County Watershed Planning & Assessment Branch.
10. "University of Virginia West Side Stormwater Management Master Plan". 15 March 2002. Revised 18 June 2002. Judith Nitsch Engineering, Inc and Patton Harris Rust & Associates.

Appendix I:
Permanent Stormwater Management Facilities

Inventory of Permanent Stormwater Management Facilities

Facility Name	Type	Location	HUC 8 Code	Virginia Code	Impaired Water	Drainage area (acres)	Facility size (acres)	BMP Efficiency (%)	TMDL	WQ Treatment Area (acres)
Braddock Road Pond	Wet Pond	East Fairfax Campus	1070010	PL29	Pohick Creek	315	~1.40 ac-ft	40	N/A	159.9
Mason Pond	Wet Pond	East Fairfax Campus	1070010	PL29	Pohick Creek	137	~9.79 ac-ft	50	N/A	163.02
Rivanna Basin	Dry Pond	East Fairfax Campus	1070010	PL29	Pohick Creek	28.12	28.12	N/A	N/A	Quantity Only
Krasnow Pond	Dry Pond		1070010	PL29	Pohick Creek	8.5	3.06	44.08	N/A	8.52
Masonvale Pond	Dry Pond		1070010	PL29	Pohick Creek	17.4	8.83	35	N/A	6.99
PW Pond	Wet Pond	Prince William Campus	02070010	PL34	Broad Rum/ Kettle Run	70.53		50	N/A	
MHI Rain Garden #1	Rain Garden	Masonvale Ph. 2	1070010	PL29	Pohick Creek	0.12	0.002	50	N/A	0.9
MHI Rain Garden #2	Rain Garden	Masonvale Ph. 2	1070010	PL29	Pohick Creek	0.08	0.002	50	N/A	0.6
MHI Rain Garden #3	Rain Garden	Masonvale Ph. 2	1070010	PL29	Pohick Creek	0.2	0.002	50	N/A	0.16
Bio-Swale #1	Bio-Swale	ACAD V X-Walk	1070010	PL29	Pohick Creek	0.6	0.04	35	N/A	0.15
Permeable Pavers	Permeable Surface	Masonvale Ph. 1 & 2	1070010	PL29	Pohick Creek	4.6	.09	40	N/A	4.6
West Campus Pond	Dry Pond	West Campus	02070010		Pohick Creek	46.98			N/A	
Piedmont Rain Garden	Rain Garden	East Fairfax Campus	1070010	PL29	Pohick Creek	0.045	0.006	50	N/A	0.04
Piedmont infiltration trench		East Fairfax Campus	1070010	PL29	Pohick Creek	0.05	0.006	50	N/A	0.03
Piedmont Rain Garden	Rain Garden	East Fairfax Campus	1070010	PL29	Pohick Creek	0.04	0.01	50	N/A	0.02
Roanoke SWM pond	Dry Pond	East Fairfax Campus	1070010	PL29	Pohick Creek	4.98	0.37	40	N/A	0.92
Smithsonian pervious pavers	Permeable Surface	Front Royal	02070005	PS48	Happy Creek	0.96	0.37	50	N/A	0.96
Smithsonian infiltration swale	Bio-Swale	Front Royal	02070005	PS48	Happy Creek	2	0.28	50	N/A	0.98
Research Hall Green Roof	Green Roof	East Fairfax Campus	1070010	PL29	Pohick Creek	0.0149	0.019	50	N/A	
Eastern Shore bike rack	Pervious Surface	East Fairfax Campus	1070010	PL29	Pohick Creek	0.01011	0.01011	45	N/A	
Hampton Roads bike rack	Pervious Surface	East Fairfax Campus	1070010	PL29	Pohick Creek	0.00984	0.00984	45	N/A	
Bio-Swale #2	Bio-Swale	Prince William	02070010	PL34	Broad Rum/ Kettle Run	1.52	0.13237	40	N/A	0
Potomac Heights infiltration trench		East Fairfax Campus	1070010	PL29	Pohick Creek	0.100069	0.00846	50	N/A	0.024313

Appendix J:
Notice of Potential Interconnected MS4

GEORGE MASON UNIVERSITY
Facilities Construction Office
4400 University Drive - MailStop 2C1
Fairfax, Virginia 22030-4444

Phone: 703-993-4051
Cell: 571-265-1977
Fax: 703-993-2521

June 19, 2013

City of Fairfax
City Hall Room 316
10455 Armstrong Street
Fairfax, VA 22030

Subject: MS4 Permit; Notice of Potential Interconnected Stormwater System

Attention: Robert Sisson, City Manager

George Mason University (Mason) is a Phase II small MS4 and is covered under the Virginia Stormwater Management Program (VSMP) General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (Registration Number VAR040106).

The purpose of this letter is to notify you of the potential for interconnections between the stormwater system operated by Mason and the stormwater systems that you operate. The MS4 permit requires that Mason notify in writing, any downstream regulated MS4 to which Mason is physically interconnected. We have identified several points where Mason discharges stormwater into your regulated MS4 stormwater system. Please see attached Figure 1: Map of MS4 Interconnectivity. There is no action required on your part at this time, as this letter is for notification purposes only. Please keep this for your records.

If you have any questions or desire additional information related to this subject, please contact me:

Brad Glatfelter
Land Development
Office: (703) 993-4051
Cell: (571) 265-1977
Email: bglatfel@gmu.edu

Sincerely,

Brad Glatfelter
Mason Land Development

Attachment(s):
(1) Figure 1: Map of MS4 Interconnectivity

Copy to:

- Tom Calhoun, Mason, Vice President of Facilities
- Robert Endebrock, Mason, Director of Project Management and Construction
- Leah Maslov, Mason, Land Development

POST

GEORGE MASON UNIVERSITY
Facilities Construction Office
4400 University Drive - MailStop 2C1
Fairfax, Virginia 22030-4444

Phone: 703-993-4051
Cell: 571-265-1977
Fax: 703-993-2521

June 19, 2013

Department of Transportation
Location and Design Division
1401 East Broad Street
Richmond, VA 23219-2000

Subject: MS4 Permit; Notice of Potential Interconnected Stormwater System

Attention: Roy T. Mills, State Stormwater Program Administrator

George Mason University (Mason) is a Phase II small MS4 and is covered under the Virginia Stormwater Management Program (VSMP) General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (Registration Number VAR040106).

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Land Development
Office: (703) 993-4051
Cell: (571) 265-1977
Email: bglatfel@gmu.edu

Sincerely,

Brad Glatfelter
Mason Land Development

Attachment(s):
(1) Figure 1: Map of MS4 Interconnectivity- Fairfax Campus
(2) Figure 2: Map of MS4 Interconnectivity- Prince William Campus

Copy to:

- Tracey Harmon, VDOT, Environmental Quality Division
- Christine Watlington, VDOT, Senior Policy Analyst
- Tom Calhoun, Mason, Vice President of Facilities
- Robert Endebrock, Mason, Director of Project Management and Construction
- Leah Maslov, Mason, Land Development

POST

GEORGE MASON UNIVERSITY
Facilities Construction Office
4400 University Drive - MailStop 2C1
Fairfax, Virginia 22030-4444

Phone: 703-993-4051
Cell: 571-265-1977
Fax: 703-993-2521

June 19, 2013

Fairfax County
DPWES Director's Office
12055 Government Center Pkwy
Fairfax, VA 22035

Subject: MS4 Permit; Notice of Potential Interconnected Stormwater System

Attention: James Patteson, Appointed Director of DPWES

George Mason University (Mason) is a Phase II small MS4 and is covered under the Virginia Stormwater Management Program (VSMP) General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (Registration Number VAR040106).

The purpose of this letter is to notify you of the potential for interconnections between the stormwater system operated by Mason and the stormwater systems that you operate. The MS4 permit requires that Mason notify in writing, any downstream regulated MS4 to which Mason is physically interconnected. We have identified several points where Mason discharges stormwater into your regulated MS4 stormwater system. Please see attached Figure 1: Map of MS4 Interconnectivity. There is no action required on your part at this time, as this letter is for notification purposes only. Please keep this for your records.

If you have any questions or desire additional information related to this subject, please contact me:

Brad Glatfelter
Land Development
Office: (703) 993-4051
Cell: (571) 265-1977
Email: bglatfel@gmu.edu

Sincerely,

Brad Glatfelter
Mason Land Development

Attachment(s):
(1) Figure 1: Map of MS4 Interconnectivity

Copy to:

- Tom Calhoun, Mason, Vice President of Facilities
- Robert Endebrock, Mason, Director of Project Management and Construction
- Leah Maslov, Mason, Land Development

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Fax: 703-993-2521

June 19, 2013

Prince William County
Watershed Management Branch
5 County Complex Suite 170
Prince William, VA 22192

Subject: MS4 Permit; Notice of Potential Interconnected Stormwater System

Attention: Benjamin Eib, Assistant Branch Chief of Watershed Management

George Mason University (Mason) is a Phase II small MS4 and is covered under the Virginia Stormwater Management Program (VSMP) General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (Registration Number VAR040106).

The purpose of this letter is to notify you of the potential for interconnections between the stormwater system operated by Mason and the stormwater systems that you operate. The MS4 permit requires that Mason notify in writing, any downstream regulated MS4 to which Mason is physically interconnected. We have identified several points where Mason discharges stormwater into your regulated MS4 stormwater system. Please see attached Figure 1: Map of MS4 Interconnectivity. There is no action required on your part at this time, as this letter is for notification purposes only. Please keep this for your records.

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Email: bglatfel@gmu.edu

Sincerely,

Brad Glatfelter
Mason Land Development

Attachment(s):
(1) Figure 1: Map of MS4 Interconnectivity

Copy to:

- Tom Calhoun, Mason, Vice President of Facilities
- Robert Endebrock, Mason, Director of Project Management and Construction
- Leah Maslov, Mason, Land Development

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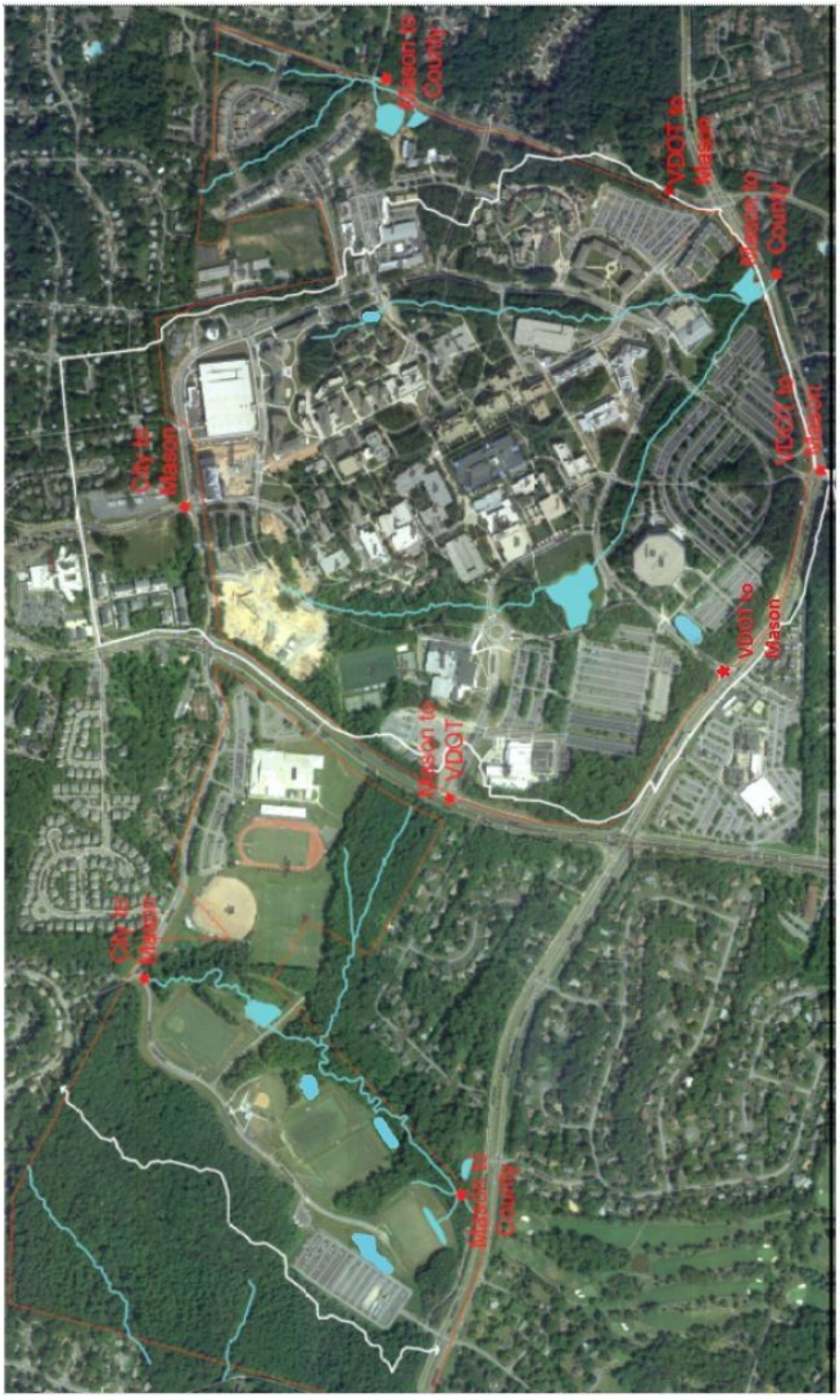
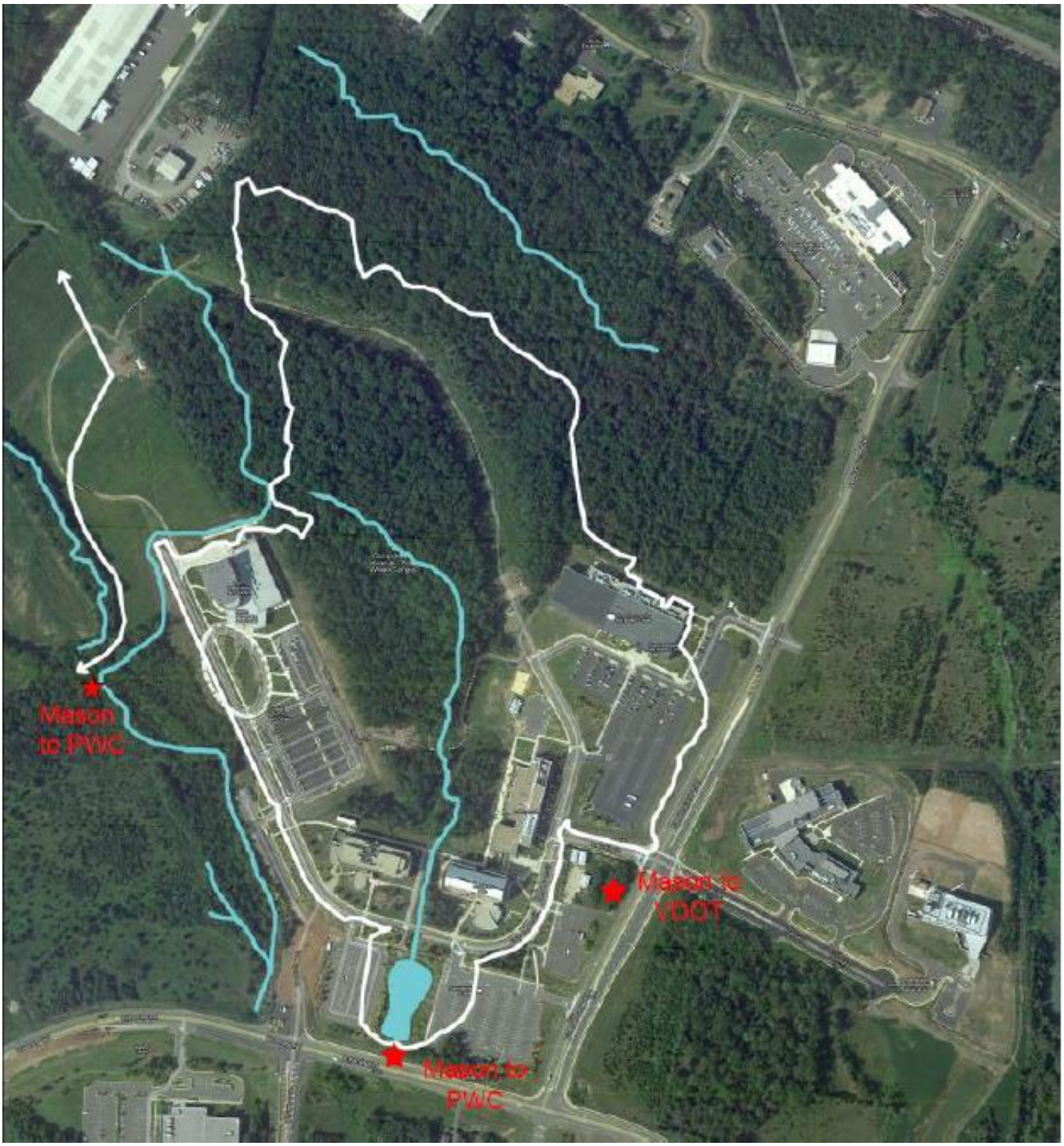
V. MAPS

Map A:
MS4 Interconnectivity

Map A.1: Connectivity Map –Fairfax Campus

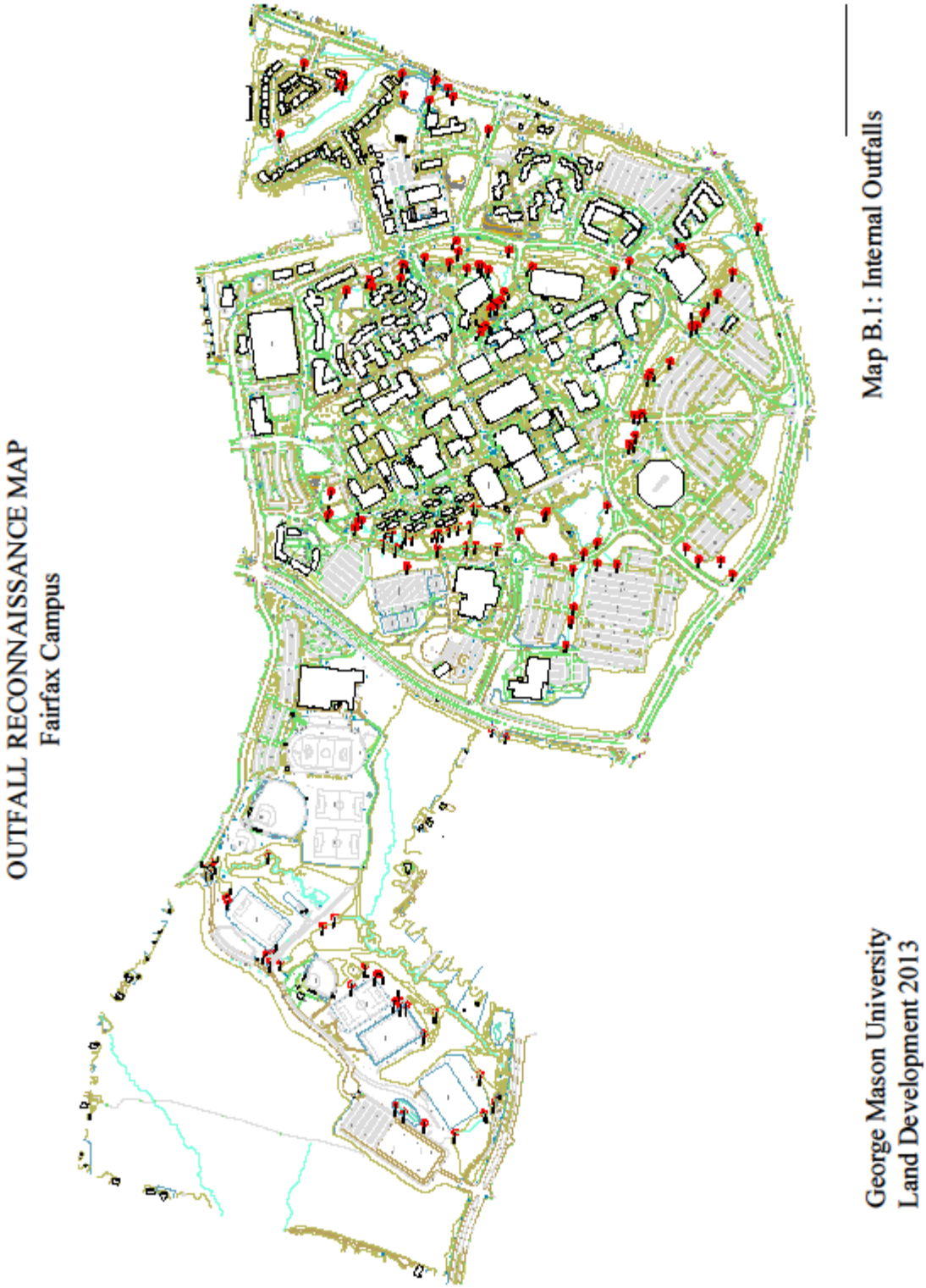


Map A.2: Connectivity Map –Prince William Campus



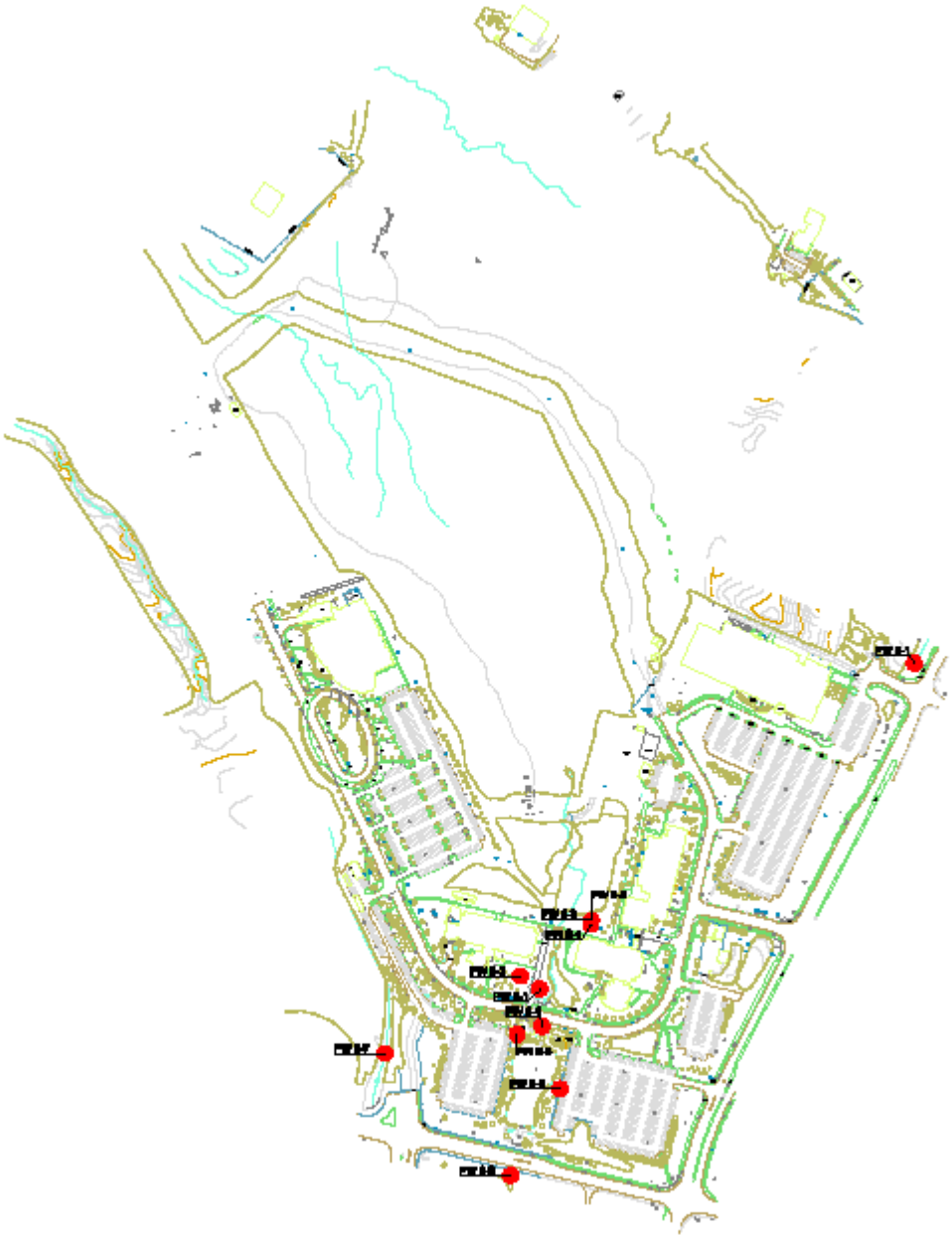
Map B:
MS4 Internal Outfalls

Map B.1: Internal Outfalls –Fairfax Campus



Map B.1: Internal Outfalls –Prince William Campus

OUTFALL RECONNAISSANCE MAP
Prince William Campus



George Mason University
Land Development 2013

Map B.2: Internal Outfalls